JOURNAL

ROYAL ARCHITECTURAL INSTITUTE OF CANADA

VOL. 22 TORONTO, AUGUST, 1945 NO. 8


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JOURNAL

ROYAL ARCHITECTURAL INSTITUTE OF CANADA

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Editorial and Advertising Offices - - - - - - 57 Queen Street West, Toronto 1

J. F. SULLIVAN, PUBLISHER

SUBSCRIPTION RATES

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

BEFORE this issue of the Journal is in the mails, part two of the second world war will likely be over, and the period of Reconstruction, with all its uncertainties, will be before us. Industry everywhere contemplates expansion and remodelling, and from what we know from personal experience, and from what we read, it will be done, in the main, intelligently and with expert advice. Most modern industrialists have come to realize that a cramped and chaotic assemblage of mediocre buildings, surrounded and plastered by sign boards, is a poorer medium of advertising than a well planned building or group in an attractive setting of lawns and gardens. The firm name on such a group carries more weight with the passing public than acres of competing bill boards. General Motors have led the way in obtaining designs that will indicate a proper setting for their product, and others will follow suit.

IN THE great scheme of rehabilitation and reconstruction, we hope the railways will not sit back behind a comfortable wall of comparative monopoly and assume that what was good enough for the pioneer, in the tasteless period of the nineteenth century, is good enough for us today. We have just travelled over a thousand miles by rail, and, with each stop, have been confirmed in the opinion that no buildings in Canada are as crude and grimy and vulgar as are our small and medium stations. Our railway companies are known by letters and their stations might also. They really all belong to that period, which we associate with the more depressing public lavatories, where lumber was freely used in the manner known to the trade as T. & G. & V., to which we might add, S. & V., for stained and varnished. These T. & G. & V., S. & V., stations represent accommodation that no industry would dare offer its customer, and are a blot on the prairies, the Rocky Mountains, and the shores of our Great Lakes. We no longer live in an age where that kind of public building is tolerable, or where the defacement of places of great natural beauty can be tolerated by an intelligent public.

NO TYPE of building lends itself as readily to competition as the railway station. A competition programme could be drawn up for railway buildings from the flag station to the station required for the small town. The results would astonish the Railway Companies in the realization that structural methods and materials, and the accommodation necessary for the travelling public have changed in the last seventy-five years.

THE NEW materials alone offer endless possibilities. We know why our stations are stained brown and that paint, where used, is the colour of dried blood. Those are colours that stand up well to soot. We have in mind materials, in a variety of beautiful colours, that could constantly be kept clean with a hose and a mop. We have no authority to say so but, if it were asked, we are sure that the R.A.I.C. could gladly indicate to the Railway Companies how, through competition or some other medium, the railway stations of Canada could be transformed in a manner in keeping with the beauty of the country and with the prestige and dignity of the companies themselves. The companies must surely see a strange anomaly in a new air-conditioned train pulling up in a grimy Victorian shed.

ON A TRIP much nearer home we have only the happiest memories of Guelph. We have for a long time looked for a city as clean, unspoilt, and architecturally as well mannered. There is, in Guelph, it is true, a unity of building in stone that could not be achieved in other cities that have to rely on many materials for their buildings. But even so, a higher standard of taste is evident in nearly all the Guelph buildings than one can find in any city that we know of in Canada. The streets are broad and have great dignity, and even the shopkeepers' signs, with one or two exceptions, show a restraint that is quite remarkable in this day and age. Guelph is not yet so large that it is approached through a slum and industrial area like most of our cities, but, even there, opposite the admirably planned, romantic gardens of the Reformatory, one can see a lack of planning in a housing subdivision that is sadly out of keeping with the substantial orderliness of the city itself. We would like to write more, and know more, of Guelph. Perhaps some local architect could give us plans and photographs that would be of great interest to the readers of this Journal.

Editor.

DIMENSIONAL CO-ORDINATION

By **PRENTICE BRADLEY**

Prentice Bradley, B. S. Dartmouth College, 1928. Master in Architecture, Harvard, 1933. Appleton Travelling Fellowship, Harvard, 1935. With Guy Lowell, J. F. Larson, Phoenix Belknap, Architects, and Stone and Webster as designer. With Modular Service Association from 1938, when formed to provide secretarial and technical services for newly organized Project A62 of American Standards Association. Canada, 1941, on loan to Cottingham Supply Company to direct prefabrication and erection of Staff House in Sorel. Now engaged in preparation of A62 of a Guide for Architects in the use of dimensional co-ordination and modular products.

The objective of dimensional co-ordination is economy, more and better building for the consumer's dollar. Savings will be effected throughout the cycle of manufacture, distribution, design and erection. The architect is the hub to which all spokes of the cycle are joined. As general co-ordinator and consumer representative, the architect will find dimensional co-ordination an invaluable help in the attainment of better building value.

There was a time when architects would have been little interested in dimensional co-ordination. Their problems were few and simple. They were solved for each job as it came along, unhampered by sizes and dimensions created by manufacturers or by some established practice of a producing industry. Wood was hewn and stone was cut on the job, and the architect told the craftsmen what the sizes would be. Doors and windows were made locally in accordance with his details. He could use brick, but back-up units and glazed tile with their various grades and combinations were unknown. For building equipment he had to provide fireplaces and chimneys, and perhaps candelabra or chandeliers for candles and whale oil. There were no plumbing, heating, or electrical layouts to be made, no kitchen or bathroom equipment to plan, and certainly no air-conditioning to be installed.

Through the years new manufacturing processes have been adopted, new materials developed, and new mechanical devices for living comfort invented. These have come gradually, one by one, so that their cumulative effect on the architect cannot be realized without a comparison with the forgotten past. Each improved product and each new item of equipment has added new problems of co-ordination. The producer creates sizes and dimensions which the architect must usually adopt as best he can, although he can order special items for the job —at a price. The freedom which he once enjoyed in working out his own details and sizes has become more and more circumscribed, yet the number of details required has greatly increased and become more and more a burden. He is faced with increasingly complicated and vexing problems of figuring out how materials and equipment, in generally unrelated sizes, can be assembled and made to fit his building plan. For instance, window sizes were developed around glass sizes, whereas they are installed in masonry. This is just one illustration of the fact that sizes of building products are for the most part unrelated and that no method of combination which the architect can devise will succeed in harmonizing all of them.

Under these conditions field cutting and fitting is unavoidable, but it is essentially wasteful and inefficient. It is contrary to the trend of modern industrial development and large-scale production. Instead, progress lies in the direction of harmonizing the sizes for building products and in simplifying their application to building dimensions and layout. Fig. 1.

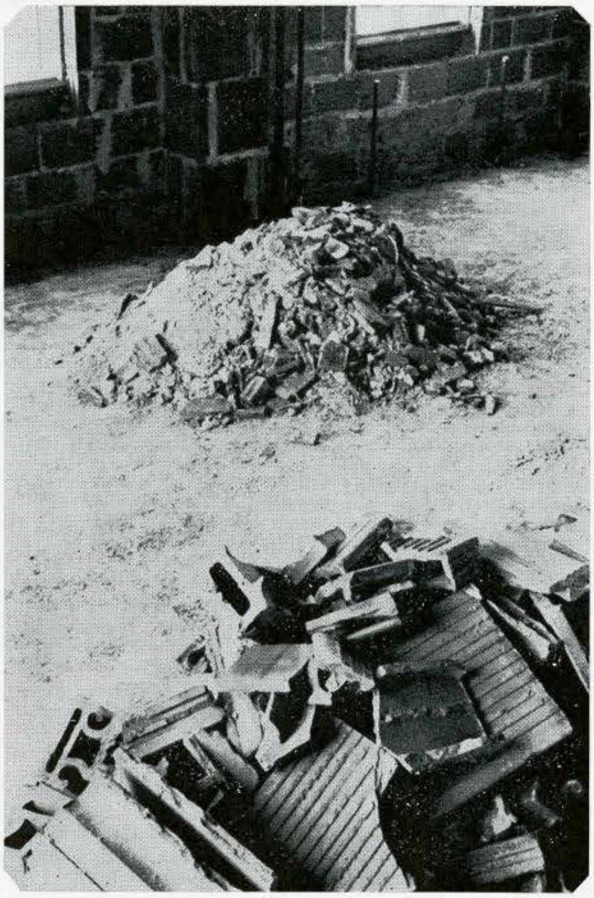


Fig. 1.—Broken tile and masonry waste under field cutting and fitting of these materials.

Let us consider a relatively simple problem of co-ordination. This drawing represents a portion of the elevation for a low-cost housing project. The problem involves combining certain stock window sizes and a minimum clear ceiling height with a standard brick height of 2¼″ plus a ½″ mortar joint. As is usually the case, these dimensions do not match, and compromises must be made. Fig. 2.

The architect gave the number of brick courses against each vertical dimension. The ½″ joint has had to be sacrificed, and joints vary between a minimum of 0.46″ and a maximum of 0.61″. This variation probably does not affect appearance but it certainly affects the mason. He cannot possibly get along with his foot rule nor can he use the brick mason's rule. He must figure and make a story pole for each different condition around the building and then force the courses up or down to meet the variations in their heights. The architect did everything

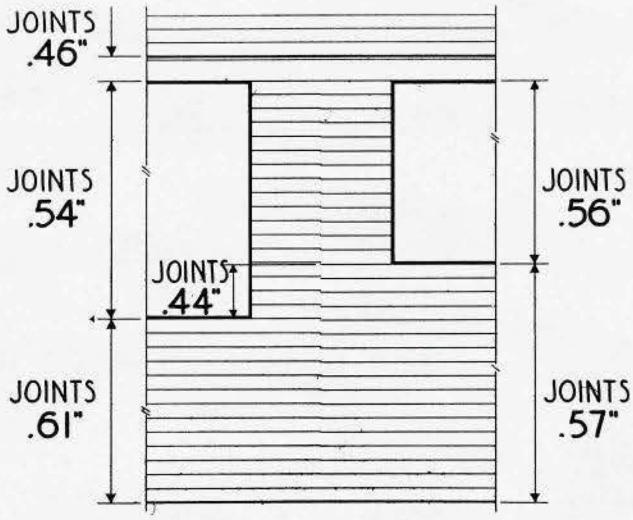


Fig. 2. — Low-cost housing project showing waste of time and materials when dimensions are not co-ordinated.

for the mason that was possible under the given conditions, and at a considerable cost to him in time and effort.

An analysis of ordinary processes of building design would reveal that this business of co-ordination, of getting things to fit, consumes a lot of the architect's time. Even with a lavish expenditure of time and effort the results may be far from satisfactory. What can you do when sizes of building products are unrelated and cannot be harmonized? Usually it is not practicable to specify a special size of brick, glazed tile or bathtub. You must detail special parts which the carpenter or mason cuts and fits in the field. This is unsatisfactory because it makes your control of quality more difficult and leaves you dependent on the skill and integrity of the field mechanic. It is wasteful and inefficient, not only in the field but also in the architect's office. You would certainly prefer to devote this time and energy to planning, creative design, administration and supervision. Fig. 3.

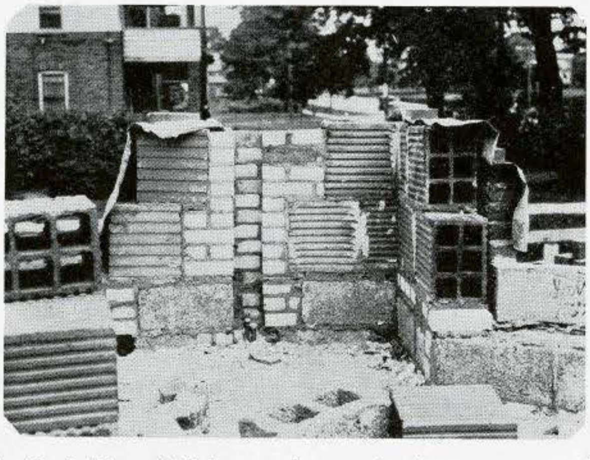


Fig. 3.—Problem of fitting together unrelated masonry parts in the field.

The industry has already demonstrated that co-ordination of sizes can improve this situation substantially. Many products, such as medicine cabinets, wallboard and insulation, have been made in sizes to fit the layout of studs on 16″ centres. The widths of wood frames for many types of doors and windows correspond to usual wall thicknesses. These are instances of successful, but isolated, dimensional co-ordination. Since these efforts have been so successful, it is natural to ask why they should not be extended to items such as brick, tile and all masonry; to windows and doors; and to kitchen, bathroom, and heating equipment. In fact, the industry has asked, "Cannot all sizes of building products be co-ordinated?"

ASA Project A62 was assigned the task of finding the answer to this question. After considerable research and exhaustive study, its answer is an unqualified—"Yes, it can be done." And the Project has gone a long way in showing *how* it is done.

It is evident that this broad co-ordination poses a problem of a different order than that of two interfitting parts. Building products comprehend a vast assortment of materials and equipment which may be used in countless combinations. Their co-ordination will require a basis that is universally and uniformly applicable. This basis must guide manufacturers in determining the sizes for their products and must provide architects with a direct relationship between these sizes and building dimensions.

Therefore, the first task of Project A62 was to develop such a basis. This it has done. A basis has been offered to the industry for adoption as the "Proposed American Standard Basis for the Co-ordination of Dimensions of Building Materials and Equipment—A62. 1″.

The many study committees of Project A62 have also been busy. As a result of their diligent work, co-ordinated sizes for most types of masonry units, windows and doors have been determined and the producing industries either have announced or expect to announce soon that these modular products will be made available.

In short, the project has developed co-ordination to the point where you can use it now with great advantage. To assist you in planning postwar buildings, let us examine some of the underlying and basic principles.

The basis for co-ordination is a three-dimensional grid, spaced on the standard four-inch module. Assembly drawings and building layouts are both related or "referenced" to this standard grid. It guides manufacturers in determining the co-ordinated sizes for their products and it provides architects with a direct correspondence between the sizes of parts and the layout dimensions. The building and its components are thus related to a common measure and brought under a uniform control. Fig. 4.

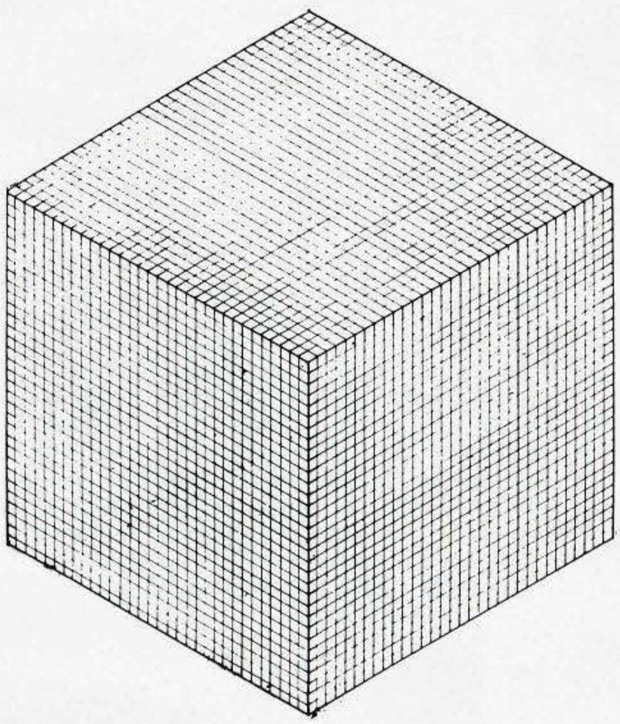


Fig. 4.—Standard module as basis for co-ordination; 3-dimensional grid spaced on standard 4-in. module.

Correlation between the sizes of building materials and the dimensions of the building is the very essence of co-ordination. Through the complex and intricate maze of materials and equipment that comprise a modern building, the continuous and uniformly spaced lines of the grid act as the warp and woof of dimensional harmony. Upon them may be woven the most complicated structure by the most direct and simple means yet placed in the hands of the architect.

Details that are referenced to the grid are called "modular details". Referencing is accomplished by dimensions to the grid lines which establish definite grid locations for the parts involved. For example, this drawing represents the grid location for a typical wall in plan. If the wall thickness is 4″ minus the fixed amount d, then the dimensions ½d to the grid lines establish a definite grid location for the wall surfaces. Usually there would be many of these typical walls in any one building. For each of them the grid location established by the ½d dimensions on the modular detail would remain unchanged. Fig. 5.

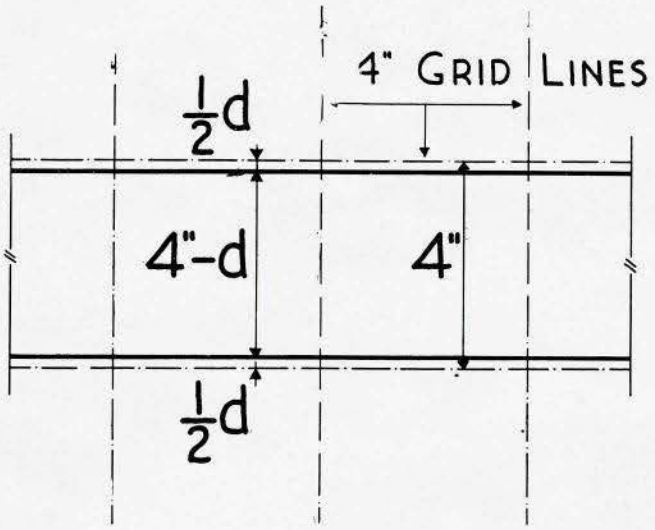


Fig. 5.—Grid location for typical wall; this figure and those following show dot and dash method of representation.

This fact that modular details establish grid locations which are maintained by the building layout is the entire basis for co-ordination. Any layout dimension that fulfils this requirement references the building plan to the grid. We see here how simply this dimensional relationship applies. Whatever type of dimension is used for the layout, parallel walls of this thickness will be placed so that the distances between them are always multiples of 4″, plus the fixed amount d. Fig. 6.

This drawing of a 2 x 4 stud partition is a simple modular detail. Placing the framing symmetrically on the grid locates stud faces 3/16″ back of the grid lines. This grid location would normally be maintained for all 2 x 4 stud partitions.

Any part or assembly of parts may thus be "referenced" to the grid and become a modular detail. The basic method of co-ordination imposes no limitation on the sizes that may be used. Let me further state, as emphatically as possible, that the dimensions of modular products, or their assemblies to form walls or floors, do *not* have to equal some multiple of 4″ or even closely approximate it.

It happened that the 2 x 4 studs were nominally 4″ wide. In order to prevent any impression that such an approximation to 4″ is required, please note this modular detail for a solid plaster partition, 1¾″ thick. As shown, each plaster surface is located 1⅛″ back of a grid line.

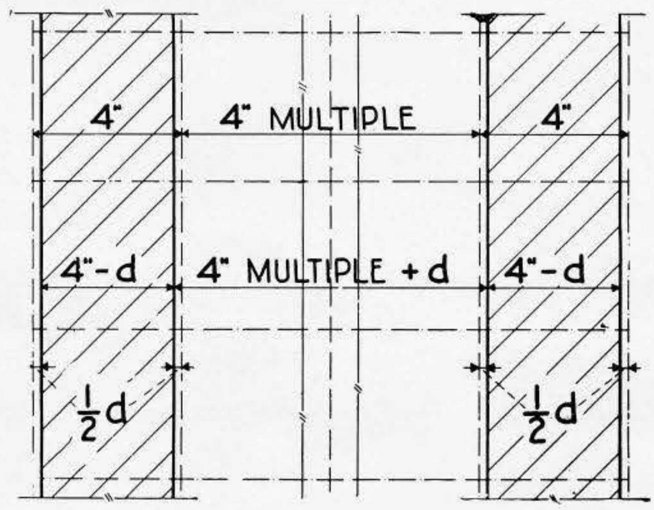


Fig. 6.—Simple dimensional layout.

Again assume that one wall of a bathroom uses 2 x 6 studs to provide space for a soil pipe. One face of the stud is placed 3/16″ back of the grid line so that in the adjacent room the walls, which include 2 x 4 studs, may have uniform grid locations for finish. On the bathroom side, the stud faces are 2 3/16″ from a grid line. Details for the installation of bathroom fixtures against this wall would be based on this grid location.

Building layouts are made at such small scale that it would be inconvenient, if not impossible, to show the grid lines. However, the grid is literally on the architect's scale and all that is needed for "referencing" is a method of dimensioning which shows a definite relationship to the continuous 4″ grid. Fig. 7.

As an example, consider these two parallel 2 x 4 stud partitions. The distance, A, between stud faces, is some multiple of 4″, plus ⅜″, maintaining the grid location established by the modular detail. In this instance, the 4″ dimension, B, between parallel grid lines, can be used for the layout and the partitions can be shown as 4″ thick. These grid dimensions have the obvious advantage of being simple 4″ multiples and avoiding fractions of inches. Furthermore, if it is made clear that they are grid dimensions, they give directly the relationship of the building plan to the grid and thus accomplish the essential referencing.

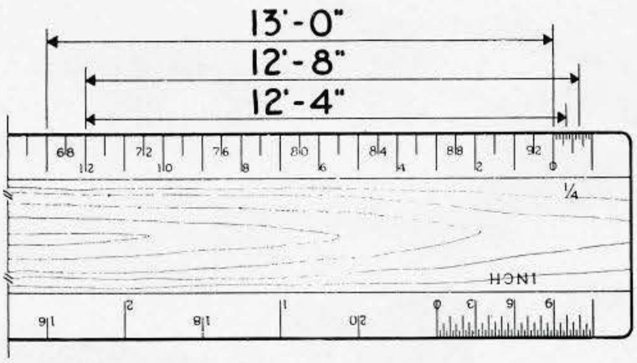


Fig. 7.—Referencing of building layout by dimensioning method which shows relationship to the continuous 4-in. grid.

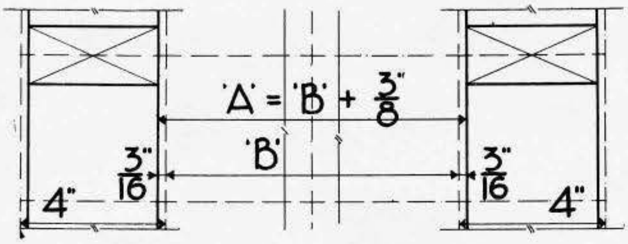


Fig. 8.—Correlation obtained by relationship of building plan to grid with simple 4-in. dimensioning.

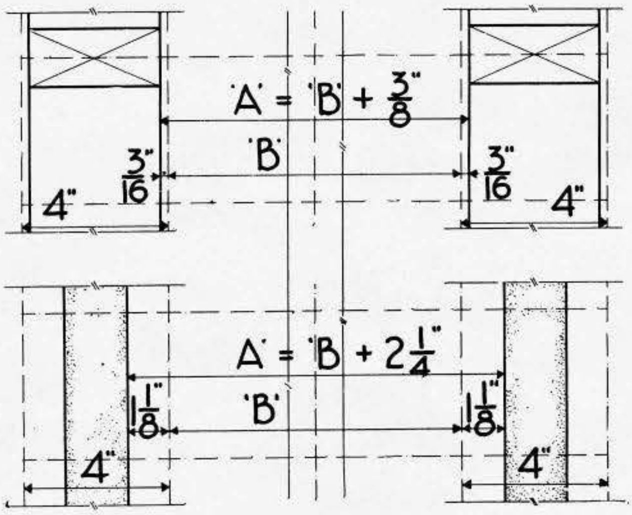


Fig. 9.—Examples of difference between grid and actual dimensions; in this case, centre-line dimensioning could be recommended.

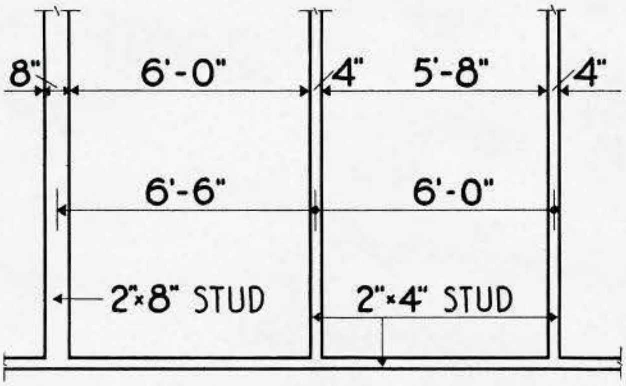


Fig. 10.—Arrow and dot symbols used to distinguish between grid and nongrid dimensions; arrow at end of dimensions indicates coincidence with grid line; small dot indicates nongrid dimensions.

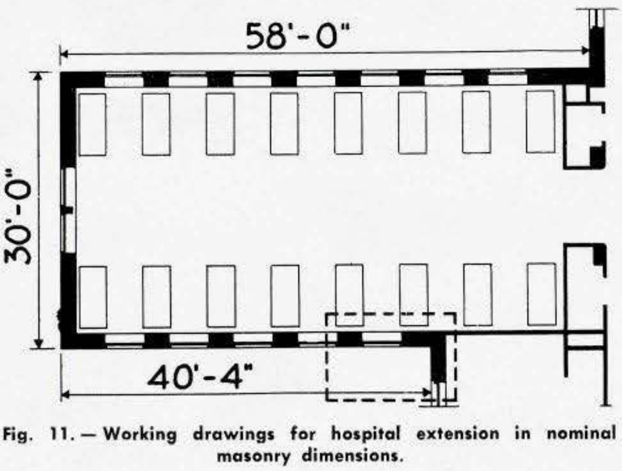


Fig. 11. — Working drawings for hospital extension in nominal masonry dimensions.

However, the difference between grid and actual dimensions may be much larger than ⅜″. For example, for the solid plaster partition, 1¾″ thick, the difference would be 2¼″. Fig. 8 and 9.

While, for many types of construction, grid dimensions afford a simple means of referencing building plans, this partition illustrates a case where the centre-line dimension might be more convenient. Centre-lines are often used to locate partitions, columns, and openings.

As you see in this drawing, centre-line dimensions are not necessarily grid dimensions, even when they are 4″ multiples. In order to keep track of the grid on the layout, some convention is needed to distinguish between grid and non-grid dimensions. The symbols shown have been adopted for this purpose. The arrow at the end of a dimension line indicates coincidence with a grid line. The small circle is otherwise used. This simple convention enables the draftsman and all who use the drawing to see at a glance the relationship of the layout to the grid. Fig. 10.

To illustrate the use of this convention, let us see how it was applied to the preliminary drawings for a hospital extension. The over-all dimensions are grid dimensions as indicated by the arrows. The next drawing will show the wing enclosed by the broken lines. Fig. 11.

The exterior walls are nominally 20″ thick, with 4″ of facing brick, 8″ of back-up, 4″ air space and 4″ partition tile. The nominal masonry dimensions for this wing are grid dimensions, for the exterior nominal wall faces are on grid lines. The portion enclosed in the rectangle indicates the next drawing.

This enlarged portion of the wing plan shows complete dimensioning. Here we see how the layout involves both grid and non-grid dimensions, the latter indicated by the small circle. Grid dimensions are used for the masonry while the columns are centred between grid lines. Note that the 9′-8″ dimension between columns is not a grid dimension. By means of the dimensioning symbol you can see at a glance the relation of each portion of the building to the grid. Fig. 12.

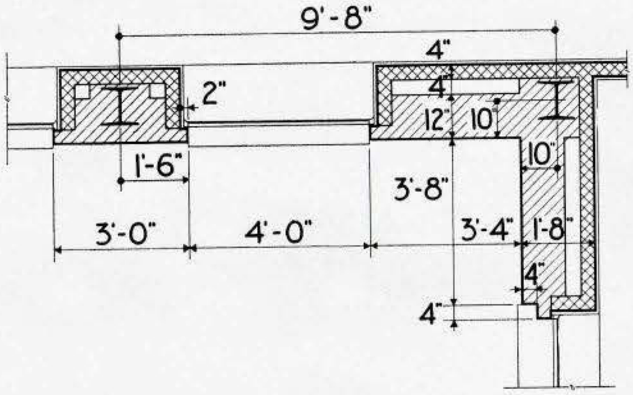


Fig. 12.—Enlarged dimensions of Fig. 11, lower right portion inclosed by heavy broken lines; portion of wing plan with layout dimensioning with grid and nongrid dimensions.

The import to the architect of drawings dimensioned on the basis just explained is clear. They are simple, rapid, easily read and quickly checked. The modular details that apply to the layouts are indicated by number and conventional section lines. These modular details will probably include both approved A62 details and modular details designed by the architect for the particular job. In every case, however, their applicability is a known and constant factor.

Dimensional co-ordination places no restriction upon you in making your preliminary sketches. Those among you who prefer to use a large layout module for the initial planning can continue this practice, but it is suggested that some multiple of 4″ be used. You will first consider co-ordination in the transition from studies to preliminary working drawings. The changes of dimensions that then may be involved do not exceed 2″, which is negligible on small-scale sketches. Preliminary working drawings can start with an approximate layout using all grid dimensions, as a first step, or else they may be developed from convenient grid points, taking into account the modular details for various portions of the structure. Thus, in your practice, dimensional co-ordination enters with the referencing of building structure to the grid.

The basis for modular co-ordination has now been stated. In using it you reference your building plan and your structural details to the grid. Producers of building materials use modular details in designing their stock sizes. Their modular products and approved modular details then automatically fit your plans and harmonious interfitting of parts results. This both simplifies your dimensional problems and reduces waste of cutting and fitting in the field.

What the sizes of various modular products are, and how particular assembly details for them are located on the grid are matters of importance to the architect. For, as we have seen, these facts will govern his layout. Each type of construction and each structural material has its own peculiar problems.

Let us consider two important classes of materials—masonry and windows.

Masonry co-ordination has for a main objective a simple correlation of wall layout dimensions with the sizes of units. Unit sizes affect wall lengths and heights, as well as thicknesses. The sizes of openings for windows, doors, and other items also involve masonry units and shapes. Thus, masonry has an important bearing on the sizes for many classes of building products and inevitably plays a major role in co-ordination.

After years of study the producing industries have determined the variety of units needed for co-ordination. Both the structural clay products industry and the concrete masonry industry have decided to manufacture these as standard modular products. Modular masonry, which is either available now or else will be made as soon as new equipment for manufacturing can be had, includes brick, structural tile, facing and glazed clay products, concrete and cinder blocks.

The co-ordination of masonry is to a considerable extent determined by the fact that units are laid up with mortar joints of appreciable thickness. Masonry wall dimensions include the joint as well as the unit. For example, in brick walls one brick-plus-joint is the significant dimension and, with the usual half bond between brick, a half of the brick-plus-joint dimension becomes the unit for layout. When the wall layout is referenced to the standard grid, 4″ is the layout unit, which indicates that the brick-plus-joint length should be 8″. This is exactly the dimension that has been adopted for the length of modular brick. Fig. 13.

The fact that a brick-plus-joint dimension is the standard is significant because the thicknesses of joints differ for various types of brick. With modular brick, the brick length plus joint always is equal to 8″ so the actual brick lengths differ slightly to compensate for the variations in joint thickness. This rule applies to all three dimensions of the brick, and, in fact, to all types and sizes of modular masonry units.

This drawing illustrates the familiar joint centre-line masonry dimensions, which we shall call "nominal". Nominal dimensions are useful because they often avoid fractions of inches and as here shown may be identical with 4″ grid dimensions. All modular masonry units are based on standard nominal unit sizes. From what has been said about 4″ layout, it is evident

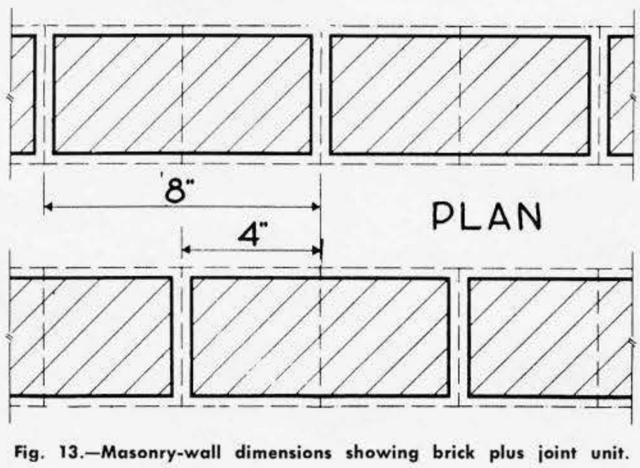


Fig. 13.—Masonry-wall dimensions showing brick plus joint unit.

that the individual brick will have grid locations as shown. In the stretcher courses we can turn corners and bond wall intersections without cutting the brick or varying the joint thickness. Header brick for bonding are offset 2″ and call for the use of three-quarter stretchers as shown. The nominal thickness of solid brick walls is 4″ for each wythe.

It should not be supposed that, because a grid location is shown for each brick, an impractical degree of accuracy is required either of the manufacturer or the mason.

Brick will continue to vary in size within permitted tolerances, and the mason will handle them very much as he always has, except that he now has the standard 4″ grid plainly marked on the ordinary foot scale, as indicated on the drawing. If brick (a) is a little short, the following brick may be laid a little behind his scale until he comes to a brick (b) which is a little long. Of course, if the cutting of brick is to be avoided, the average joint thickness for the job will be exactly the difference between the standard nominal unit and the average size of brick that is delivered.

The co-ordination of concrete block is extremely simple. The industry has adopted ⅜″ as the standard thickness of mortar joint, making the full-size block 15⅝″ x 7⅝″ x 7⅝″. With the half-bond of block in alternate courses and the 8″ nominal course height, 8″ wall dimensions are used whenever possible.

One of the advantages of co-ordination is that various types of masonry units may be used in combinations according to their nominal unit sizes. The fact that the facing brick use ⅜″ joints and the back-up tile ½″ joints presents no difficulty. The joints between dissimilar units are always the average of the joints used with each. Fig. 14.

Co-ordination between different classes of products is well illustrated by the window sizes that have been developed to fit with modular masonry. The modular details for jamb, head, and sill, showing their satisfactory installation, establish grid locations for the masonry openings and for the windows. Layout dimensions are selected so as to maintain these locations, preferably by the use of 4″ grid dimensions.

The metal window industry has adopted co-ordinated sizes for all types of solid-section steel windows, excepting the lightweight residential casements. These fit interchangeably in prepared masonry openings, with details that permit their installation after the wall is built. They can be laid out in simple 4″ dimensions, with approved details for their installation, a simplification that applies to a wide variety of steel window products.

The co-ordinated sizes for these solid-section steel windows are based on a standard spacing between bar centres of 20″

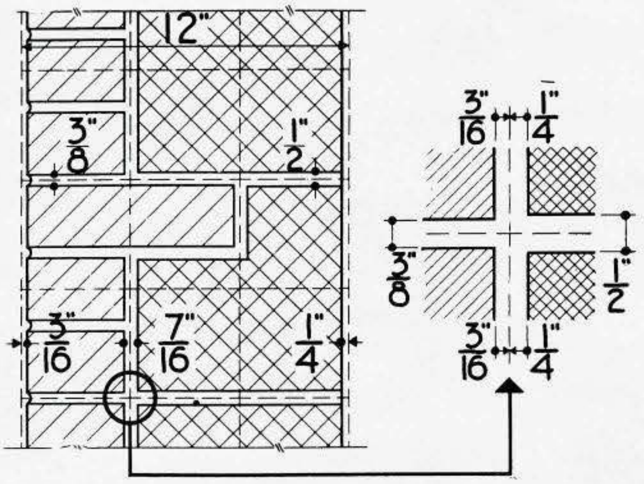


Fig. 14.—Combined masonry units used according to nominal unit sizes.

horizontally and 16″ vertically. Thus the window sizes measured between outside frame centre lines, are multiples of 4″ in both width and height. This elevation indicates their location on the grid which will be shown more completely by the following modular details. These are modular details developed by study committees but they have not yet been finally passed as Approved A62 Details.

At the jamb, the frame bar centre is placed on a grid line to give minimum distance from masonry to glass. The face of the frame also coincides with a grid line so as to provide an optimum calking space. A nominal 2″ recess in the back-up masonry gives adequate space for installing the window after the rough trades are through. If the edge of the facing masonry were in the normal location, half a mortar joint back of the grid line, it would in some cases interfere with ventilator operation. A slightly increased set-back of 7/16″ as shown has been adopted as the standard dimension which will suit all solid section steel windows. Fig. 15.

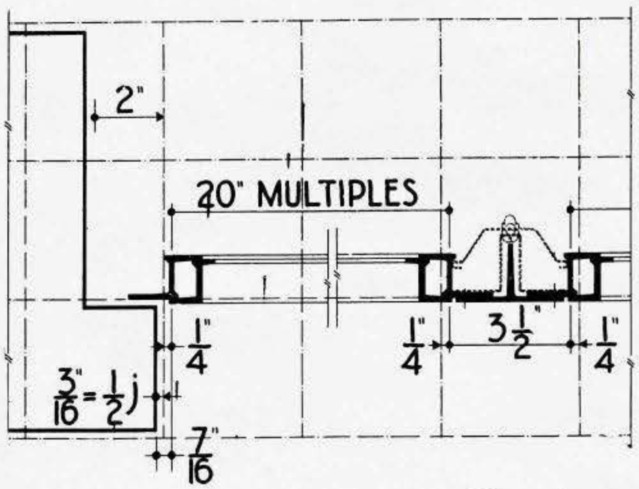


Fig. 15.—Group windows showing use of extendable mullion to obtain $\frac{7}{16}$ in. (minimum) distance between bar centre and masonry.

This drawing of individual masonry units of the jamb illustrates how the additional set-back of approximately 3/16″ is absorbed in the facing brick by a compression of the vertical joints. The amount of compression is very small and may often be taken up by selecting a brick that is a little short.

The nominal 2″ recess requires only standard fractional units. They may be either three-quarter brick lengths or back-up tile kerfed for a 2″ break. This masonry recess accomplishes many things: windows can be installed after the structural wall is completed, space is provided for a plaster return, and the windows may be removed. Also the recess allows better shade lap and opens up the possibility of standardizing shades, venetian blinds, stools, and trim.

The widths of actual masonry openings for solid-section windows are multiples of 20″ plus a constant dimension of ⅞″. With this established by the modular details, the architect's layout in plan need only show grid dimensions for the window openings. Thus the use of fractional dimensions can still be avoided.

Vertically, the bar centres are placed ⅝″ below grid lines as shown in this head section. The reveal below the lintel angle is 7/16″, the same as at the jamb. The location for the face of the frame, already fixed by the jamb detail, requires the lintel angle to be set forward.

As shown by this masonry head detail, special lintel brick, 3″ wide, may be used in either stretcher or soldier position. These brick may be field cut, or because of their standard application to window installations, they may be manufactured as a standard item. The masonry back-up is raised one brick course to provide a recess at the head. By the use of blocking, the plaster line is so located that the space for the moulding is the same as at the jambs. The window is secured to the lintel angle by clips. Fig. 16.

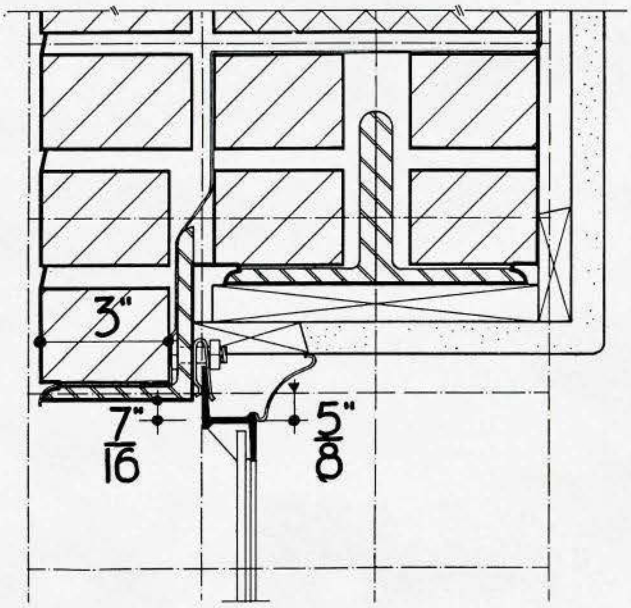


Fig. 16.—Masonry head detail with special 3-in. lintel brick used in stretcher or soldier position.

At the sill the bar centre is, of course, also ⅝″ below a grid line. The bed joint under the masonry sill is centred on a grid line, making the distance to the lintel bearing a multiple of 8″. Thus the sill shown may be used with any co-ordinated steel window and, at the same time, fit exactly the course heights for common brick, or 4″, or 8″ course heights. This broad application creates a useful standard sill profile.

Returning to our view of the window in elevation, we can now observe how masonry, such as the facing brick shown, co-ordinates with solid-section steel windows. The compression of joints beside the jambs is indicated but, even at this scale, is hardly noticeable. Otherwise, the brick falls neatly into place with no cutting required except possibly for the half and three-quarter lengths.

The co-ordination of masonry and windows includes a great variety of masonry units and many types of windows. As a further illustration of what has been accomplished, let us examine wood windows installed in concrete block walls.

The wood window industry has developed an all-purpose, double-hung window frame that fits either wood or masonry constructions, having a wide variety of siding and interior finish thicknesses. These windows have a considerable range of sizes which may be used with all types of modular masonry. This co-ordination affords the maximum of simplicity in layout and design and the full economy inherent in modular masonry.

Again we show the window in elevation superimposed upon the grid. Sash opening widths are 4″ multiples and heights are 4″ multiples plus 2″. These are known to the industry as New York market opening sizes. Since the space for the brick mould is about 2″, the edge of the sash is centred between grid lines. Approximately the same space is needed at the top of the sash. Fig. 17.

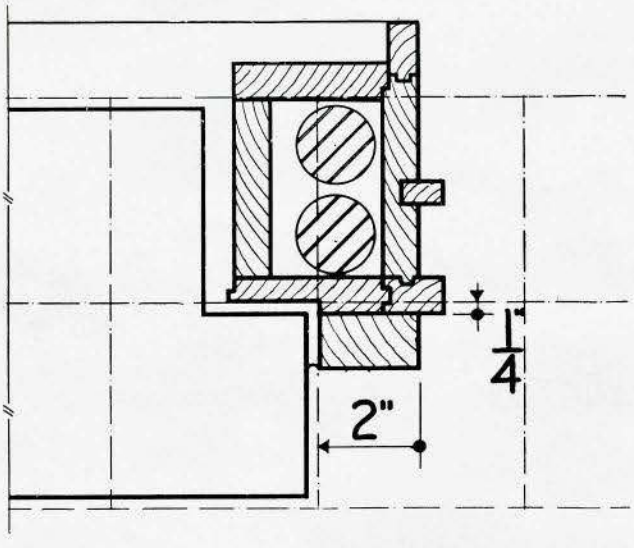


Fig. 18.—Large-scale view of jamb with window frame in detail and masonry jamb in profile; sash face of frame 2 in. from grid line at opening.

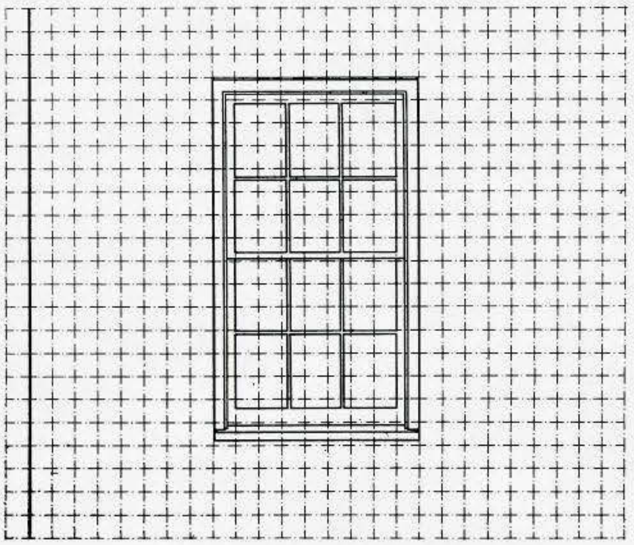


Fig. 17.—All-purpose, double-hung wood window frame that fits wood or masonry construction.

The following modular details have been submitted to the industry for final approval:

This large scale view of the jamb shows the window frame in detail and the masonry jamb in profile. The sash face of the frame is located 2″ from the grid line at the opening and, through the wall, the exterior face of the blind stop is ¼″ from a grid line. Two elements of this frame deserve special notice. First, the extension blind stop. Its shape, the result of careful design, permits it to be reversed so that in wood frame walls the window may be installed with either sheathing of standard thickness or sheathing ½″ thick. Second, a series of jamb liners permit this frame to meet a great variety of interior finish thicknesses. Fig. 18.

The exterior masonry jamb has the normal location, one-half a joint from a grid line. The nominal 2″ recess provides an optimum space for the weight box.

Standard recessed jamb blocks locate the masonry jamb 3/16″ from the grid line with the 2″ recess. For patented balance windows the standard grooved block, shown dotted, is used and the extension blind stop is ripped down ¾″.

It will be remembered that the window heights are 4″ multiples plus 2″, and that the head space to match the jamb space should be about 2″. As a result the lower edge of the sash will be approximately on a grid line. However, it was considered desirable to have the usual two-brick high lug sill available for brick walls. To accomplish this the lower edge of the sash is lowered to 9/16″ below the grid line.

With the lower edge of the sash 9/16″ below a grid line and the 4″ multiple plus 2″ window heights, the sash at the head is 2 9/16″ below the grid line at the lintel bearing. This gives comfortable space for a 2 3/16″ bed mould. The recess in the lintel is the same as for steel windows, so that only a few standard types and sizes of precast lintels are needed. Space is also available for overhead balances.

The window installation details are samples of what has been done by the committees of Project A62. Masonry-window co-ordination has been analyzed as one problem that comprehends most of the conventional types of windows and masonry, as well as a considerable variety of sills and lintels. All the combinations of these products that have been provided for would involve many more modular details than could possibly be shown or even mentioned at this time.

The committee programme calls for an application standard for each producing industry which will establish standard co-ordinated sizes for their modular products. Material will be prepared to explain the use of modular products in buildings designed on the grid, and this will be supplemented by modular details, approved by the committee.

We hope that in this short time we have given you some understanding of dimensional co-ordination; what it means, and a few hints on its use. Remember, modular details always start with the grid lines which tie the detail in with the grid locations established for the adjacent structure. The grid is your guide—on the drafting board let it be your constant companion.

If time permitted we would add other suggestions, but no amount of advice and help can take the place of actual experience on the board. Fortunately, just a little practice will convince you of the many advantages inherent in this broad method of dimensional co-ordination.

Photo J. H. Wagner

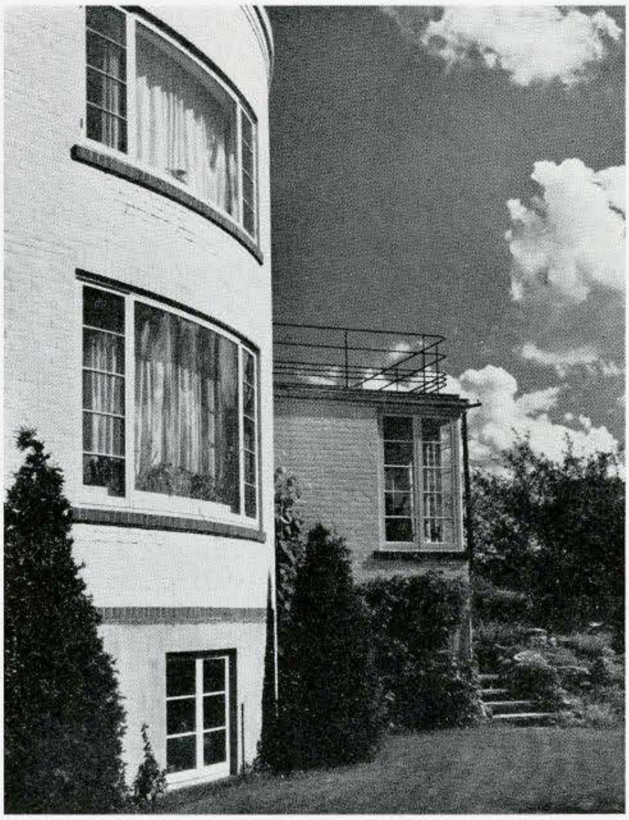
FIRE HALL, TOWNSHIP OF NORTH YORK, ONTARIO

MURRAY BROWN, ARCHITECT

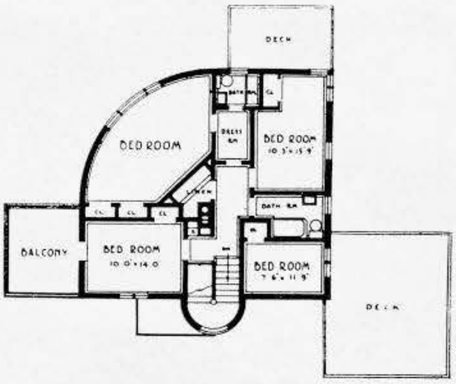
Photos J. H. Wagner

HOUSE OF DR. P. G. ANDERSON, YORK MILLS, ONTARIO

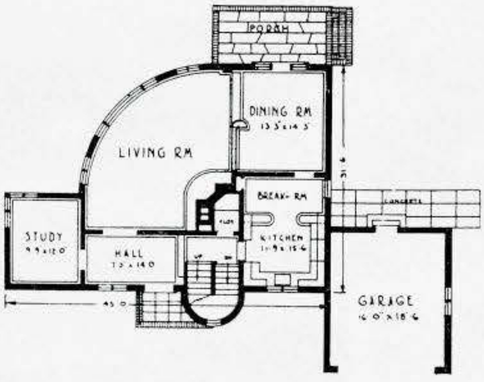
MURRAY BROWN, ARCHITECT



VIEW FROM GARDEN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

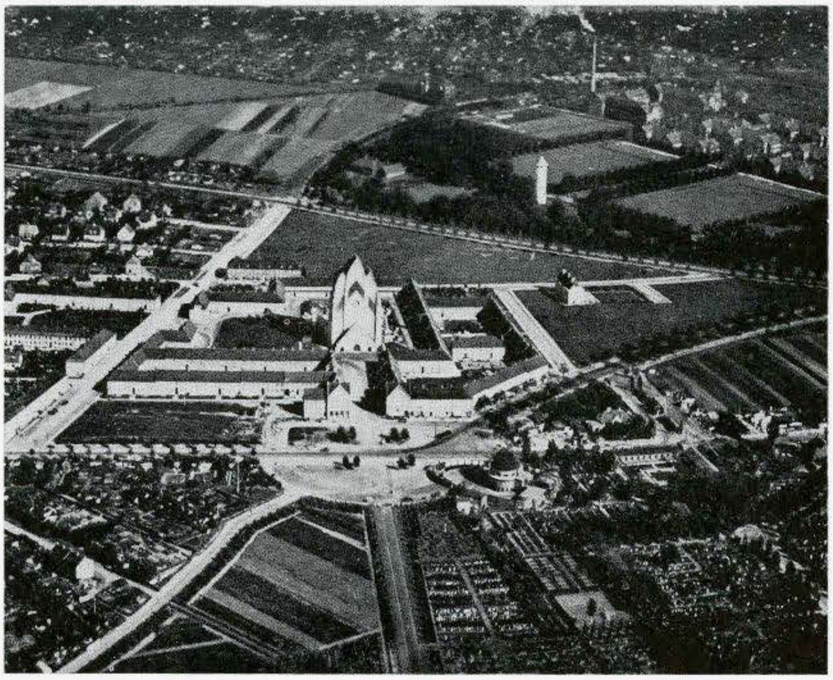
Photos, The Hands Studios

HOUSEHOLD SCIENCE ROOM

VOCATIONAL TRAINING WORKSHOP

ARNPRIOR HIGH SCHOOL, ARNPRIOR, ONTARIO

RICHARDS AND ABRA, ARCHITECTS



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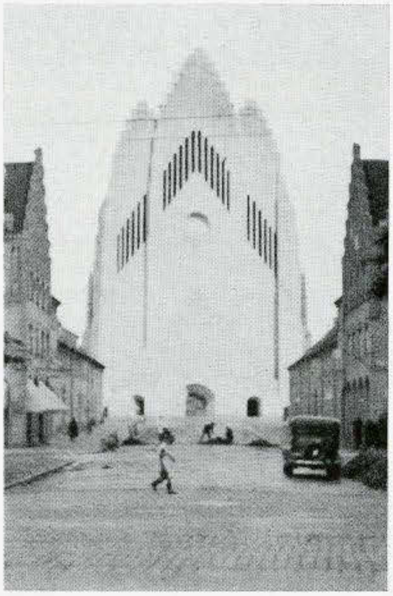

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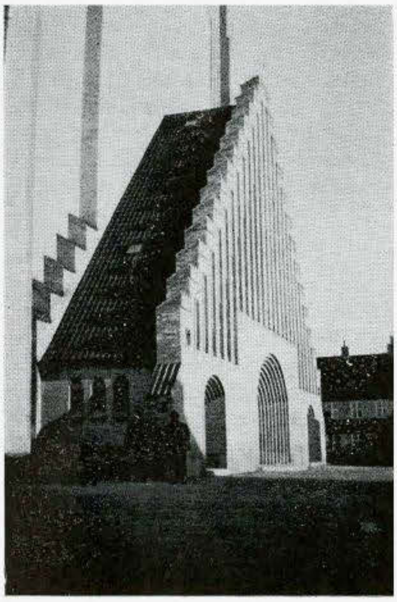
GRUNDTVIGS CHURCH, COPENHAGEN, DENMARK

Illustrations are from photographs by A. S. Mathers except for No. 3 by W. L. Somerville



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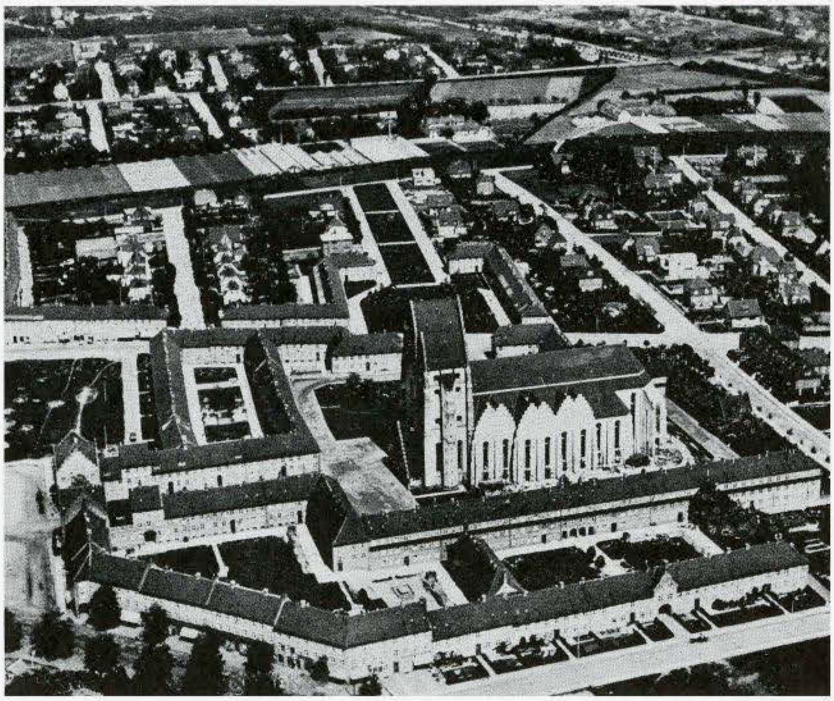

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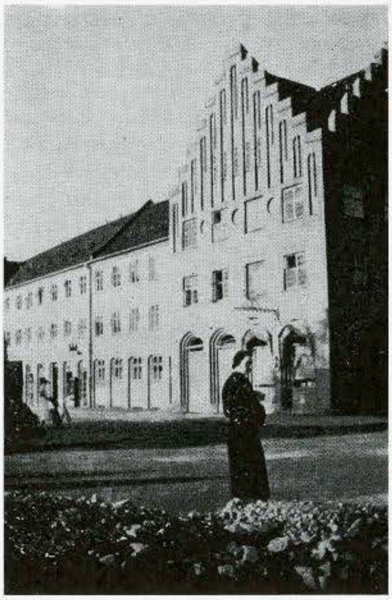


5

CONSTRUCTION MANPOWER
...HOW AND WHEN?

By W. D. BLACK

Mr. W. D. Black is President of the Otis-Fensom Elevator Company Limited of Hamilton and Executive Director of the Bank of Canada and the Industrial Development Bank. He was born in Toronto 1882 and was educated in public schools of the city and graduated in 1910 with the degree B.A.Sc. from the School of Practical Science, University of Toronto.

All postwar planners lean heavily on the construction industry in projecting their "full employment" curves into the postwar future. No talk or treatise on the subject is complete without its reference to "40,000 homes per year", "the postwar building boom" or "$1,000,000,000 of construction per annum". The sound of saw and hammer, it seems, will drown out all others in the days to come.

Few, if any, will quarrel with this cheerful prospect. We need homes, schools, hospitals and most other forms of construction, urgently and in great volume. There can be little difference of opinion about the end in view, but what of the availability of the means to achieve the desired end, in the contemplated time? How about the money, the materials and the men?

As to the availability of the first there can be little doubt. The drastic limitation of civilian wartime construction has created a reserve of demand for all types of construction and, inferentially, a corresponding accumulation of funds for the purpose. Also to be considered are the aggregate wartime savings of the public in general, amounting to many hundreds of millions of dollars, much of which we can reasonably assume is mentally ear-marked for residential and smaller business construction. Apart from any new programmes, sizeable public expenditures on construction will be required to repair the obsolescence and depreciation of the war years. There will be no lack of need and no lack of funds. But it must be noted that these potential expenditures are not at the disposition of the construction industry itself. They will be made at the discretion of the public, business and private communities. They will be diverted to construction purposes only to the extent that the construction industry, relative to other avenues of postwar investment or spending, can render a postwar dollar value for every postwar dollar spent.

A few construction materials, notably lumber, may continue in short supply into the immediate postwar years. But on the whole, the materials supply situation is not unfavourable. The wartime curtailment of civilian building has not resulted in a corresponding decrease in the operations or capacity of construction material or equipment suppliers in general. On the contrary they have, in practically all cases, been engaged in direct or indirect war production in the same or similar lines. As a result their capacity has been increased, both by physical expansion and by stepped-up efficiency. Their labour forces have been greatly expanded and have had time and opportunity to acquire at least a basic degree of skill. Their redirection and, if necessary, retraining for postwar production presents no serious obstacle. Finally, the sources of raw materials and commodities used in the Canadian construction industry remain almost entirely unimpaired by the war. It is reasonable to infer that difficulties of material supply will, in general, be of localized and temporary significance in the rapid expansion of postwar construction.

This brings us to the third and most important factor in postwar construction—men. It should be needless to say that by men is meant skilled and competent men, available in all the construction and building trades. Construction manpower falls into two general categories—the off-site and on-site trades. In general, the off-site materials and manufactured equipments which are subsequently erected or installed on the building site by the on-site trades. As trades are engaged in production of the processed or semi-processed previously noted, postwar manpower conditions in the off-site or supply trades are, with a few exceptions, not likely to be critical though they may well be stringent for some time. But since most of these trades involve mechanical rather than purely manual processes, in contrast to on-site operations, a comparatively rapid expansion of production can be achieved by a combination of employee training, improved equipment and intensified organization. Furthermore, there will be no occasion for off-site production of construction materials and equipment if the necessary on-site manpower is not available. It may be said therefore, that the availability of competent on-site labour is the strategic factor in attaining a high, "full employment" level of construction activity in immediate postwar years.

On the broadest considerations alone, the prospect is far from encouraging. For eleven of the thirteen complete years of record since 1931, the construction industry has operated at level below the long-term average. Since the peak year of 1929 all the processes of attrition, natural and economic, have been operating to reduce the working force of skilled construction mechanics developed prior to and during the expanding 'twenties. Death, retirement, the attraction of other more active and stable industries and the war have all taken their toll. A large proportion of the few qualified and experienced tradesmen remaining are advanced in years and many of them are or will be, in the natural course of events, advanced to supervisory capacities. During these same years only the irreducible minimum of new men has been inducted into the construction trades, due to the restricted demand and uncertainty of prospects. Many of these in turn have been displaced or their experience interrupted by military call-up and other wartime disruptions. These generalizations alone point to an impending acute scarcity of competent construction operatives. How then can the construction industry become a major source of immediate postwar employment, if sufficient effective manpower is not available?

It might be contended that, because the value of construction contracts awarded in 1944 ($291,000,000) approximated the 1919-1944 average ($281,000,000), an adequate construction working force is now in existence. For the consideration of postwar conditions, this argument is illusory. In the first place, the 1944 volume of construction represents only a fraction of the potential postwar demand. The Minister of Finance has recently announced the Dominion Government's intention of fostering, by every means, the earliest possible construction of 50,000 residential units, presumably in the first postwar year, to be followed by comparable volume in subsequent years. At a conservative estimate this represents an annual value of residential construction closely approaching the value of all construction contracts awarded in 1944. The construction industry as constituted in 1944, is, therefore, capable of carrying out only the anticipated residential construction requirements of the immediate postwar years. For all other forms of postwar construction—business, public, industrial, engineering, repairs, etc. —we have no visible on-site manpower.

Anyone conversant with current building conditions knows at what cost, in sub-standard materials and inefficient workmanship, the 1944 level of activity was achieved. This long-term average year of construction was carried out with a leaven of competent mechanics thinly dispersed through a working force that was, in the main, untrained and inexperienced, and hence inefficient. This was done of necessity, but at high cost to the consumer. In an Extension Course lecture recently delivered at McGill University by J. L. E. Price, M.E.I.C., President of the National House Builders' Association, it was demonstrated, with ample corroborative detail, that a home costing $6,450 in Montreal in 1939 would today cost $9,100, an increase of $2,650 or 41.1 per cent. Considered in terms of materials and labour, the cost of materials (including, of course, the cost of off-site labour) increased 32.9 per cent. and on-site labour 54.6 per cent., during the war years. Increased cost due to labour inefficiency was evident in the fact that, while local wage rates increased approximately 37.5 per cent., total on-site cost increased to the stated extent, 54.6 per cent.

In a brief submitted to the Special House of Commons Committee on Reconstruction the Canadian Construction Association estimated a possible postwar construction volume of $450,000,000 in the first postwar year, $650,000,000 in the second postwar year and $800,000,000 in subsequent years. As these figures include all construction, contractual and non-contractual, they must be discounted to some extent for comparison in terms of contracts awarded. But making liberal allowance for this, and recalling that 1944 contracts awarded amounted to less than $300,000,000, it is obvious that postwar construction at such levels will call for at least the doubling of present construction manpower in the course of two to three years.

We have then, two potential obstacles to rapid expansion of construction volume and employment in the immediate postwar years. These are:

1. Non-availability of sufficient competent manpower.
2. High building costs.

A little consideration will reveal that the second of these derives largely, if not entirely, from the first. As we have seen in the case of the prospective Montreal home, increased labour cost was in part attributable to increased wage rates and in part to decreased efficiency. But both these sources of increased cost can be considered as arising in the first instance from the simple inflationary condition of an excess of demand over supply, in this case in terms of competent on-site construction labour. The self-evident solution is to increase the supply to meet the demand. It would be unrealistic, and it is not essential to the present argument, to assume that this would result in a material reduction in construction wage rates. Such a reduction, in face of heavy demand, is not in the usual nature of things. But it may be admissable to conceive its stopping or retarding the present inflationary process before these rates rise to levels that will strangle postwar construction expansion at its very beginning. If the labour supplied to meet the demand is reasonably competent labour, inefficiency as a factor in high construction costs will be eliminated or at least minimized. In effect, the speed and extent of postwar construction expansion, with its high potentialities as a source of widespread direct and indirect employment, depends directly upon a corresponding expansion of efficient on-site construction labour. The construction industry must not merely induct large numbers of men but must also rapidly train them if postwar construction is to play anything like the part visualized for it by our postwar planners.

The traditional method of training in the on-site construction trades is by apprenticeship. Currently these apprenticeships are for terms of from four to five years. Since the length of apprenticeship is specifically laid down and is not in any degree dependent upon the native or acquired ability of the apprentice, and since earnings throughout are on apprenticeship scales, there is no incentive for the trainee to acquire or apply skill at anything more than the prescribed rate.

The attractions of apprenticeships in the construction trades are attested by the following facts: Under the Ontario Apprenticeship Act, Provincial Advisory Committees were set up in 1928 for each construction trade. These Committees are jointly representative of construction trades employers and the appropriate trades unions. One of their functions is to establish quotas for the induction of apprentices into the various trades. Since the inception of the plan, not a single quota has been filled. No doubt this was in part due to the seasonal and variable nature of the construction industry, but since we can do little about the seasons we have more reason to seek other means of making construction trades apprenticeships more attractive and stimulating to prospective recruits. Certainly a training system of the present type, duration and appeal will be entirely inadequate to meet the volume of postwar construction already in evident requirement. How otherwise, then, can the construction industry meet the emergency?

The recent parallel case of the many war industries called upon to multiply their employment, under emergency conditions, naturally suggests itself. How did these industries, in extreme urgency, train their vastly expanded labour forces? That they succeeded in doing so is amply proved by the record of Canadian war production. The writer may be excused for citing the example of his own Company, as being that with which he is naturally best acquainted. This Company was called upon to erect and operate on behalf of the Crown a large Ordnance Plant with an ultimate employment requirement of approximately 5,000 operators, some ten times that of the prewar establishment. Under normal conditions this would have constituted a severe employment problem, but in circumstances of great urgency, non-existence of trained help and a rapidly contracting labour supply of any kind, the problem was critical.

It was immediately apparent that previous conceptions of industrial employee training would be inadequate in both scale and tempo. These were therefore abandoned and studies of alternative means immediately initiated, concurrent with plant construction. It was decided that a specific, self-contained Employee Training Programme should be at once initiated and intensively developed. A first major difficulty was the organization of an instructing staff from the very limited technical personnel available. A Training Supervisor and nucleous Instructor Group were appointed. These analysed all available data on the subject and developed therefrom an academic outline of training procedure. A limited selection of experienced machine operators was given an intensive course in the elements of employee training. These, in turn, were assigned to instruction of the inexperienced and unskilled newcomers. As the Training Programme expanded, the instruction staff was enlarged as required by a continuation of this process of selection, training and succession.

The actual tuition period for inexperienced entrants was six weeks during which they received both academic instruction under Classroom Instructors and practical training under Job Instructors. This physical instruction was carried out on actual productive operations of suitable type rather than on "practice pieces", a fact which afforded satisfaction to the trainee and encouraged keenness and concentration. At the end of this period they were rated as improvers and assigned to shop departments where they served a further period up to four weeks, still under Instructor supervision. As quickly as they demonstrated the necessary competence, under actual working conditions, they were placed on the regular payroll as full-fledged operators on the machines and operation for which they had been advisedly trained. For those entering with sufficient previous experience to rate as improvers the tuition period was reduced to four weeks and their subsequent advancement expedited accordingly.

Various systematic records of the studies and performance of each individual trainee were maintained on a daily basis. These served to keep both Instructors and the trainees themselves conversant with the subjects covered and propensities shown by each individual, and incidentally supplied a strong competitive incentive to advancement. These records were distinguished as between academic, or "class-room", and practical, or "job" training and so served to disclose natural aptitudes for non-productive duties, such as inspection, storekeeping, etc., or for actual physical production. When the trainee qualified as a regular operator these records became, in consolidated form, the basis of his subsequent employment record.

Starting rates for trainees entering the Training Course was set at favourable levels for unskilled help, with reasonable allowance made for previous part experience and for personal responsibilities as between single and married men, and males and females. Automatic increases in rates were given on completion of the six-week tuition period and again on assignment as a regular operator. After assignment as an operator, subsequent wage rates came under the general Plant up-grading system, based primarily on productive capacity, thus ensuring that any further development of skill would be systematically recognized and rewarded, up to the limits prescribed by wartime wages control. It was naturally not to be expected that all trainees would show similar capacities to assimilate or apply their instruction. It was found, however, that the tuition period of six weeks was sufficient to reasonably determine the natural aptitudes of the students. To the extent that they were found lacking in propensity for more exacting duties they were assigned to others requiring less knowledge or skill, This minimized wastage of both training effort and manpower and assured trainees that, short of total incompetence, their services would be utilized in some capacity appropriate to their demonstrated ability.

This Programme, providing as it did an organized and sympathetically supervised opportunity to advance from complete inexperience to a definite, if specialized, competence in the course of seven to ten weeks, was a powerful incentive to application and effort. That it was successful is amply proved by the fact that in the course of twenty-five months Company employment was multiplied eleven times, during a period when trained help was virtually unprocurable. In all, more than 5,000 persons were trained under the Programme in this one Plant, the significance of which is evident in the fact that total employment at its inception was less than one-tenth of that figure. Expansion on this scale and at this tempo would have been entirely impossible without special intensive training measures. The inadequacy of anything resembling normal "apprenticeship" procedures is self-evident. By the same token, the necessity of such apprenticeships is brought into serious question. In general, it was by such means, and such means only, that Canada's vast wartime industrial programme was manned and made possible.

It is a fair deduction that the construction industry, faced with a problem of comparable nature and dimensions, will find previous conceptions and methods of employee training to be equally inadequate. It is true that the problems of training machine operators and on-site construction tradesmen may differ materially in detail, but the general principle remains. In this matter, the construction industry, in all its branches, must be prepared to abandon precedents and seek new ways. It must be prepared to set up organized facilities and develop intensive methods for the training of new help, particularly of on-site labour. It must make it possible for those who are willing to make the effort, to become productive specialized tradesmen in months rather than years. It must offer a powerful incentive to this effort by progressive rates of pay scaled to the proved capacity and advancement of the individual and not to the mere passage of time. It must give interested and sympathetic vocational guidance by inducting those who prove incapable of rapidly acquiring particular skills into other trades or capacities within their scope. All these are but generalities of the case, capable, nevertheless, of translation into practical working terms as has been proved by many a wartime industry, to say nothing of the Active Services. Necessity, in these cases, enforced the solution, which was made possible only by a previous abandonment of old methods and outlooks, always the most difficult and critical part of change and progress. A similar necessity now confronts the construction industry, in the matter of manpower training.

Both authority and responsibility with regard to construction manpower rest, in the first instance, with the general and trades contractors and the appropriate trades union. Nothing is possible towards a solution until these primary interests agree as to the reality and urgency of the problem and the necessity of new outlooks and new methods. Once the main objective has been recognized, the development of ways and means should present no great difficulty. As some indication of the attitude of organized labour it might be mentioned that the Company previously referred to has instituted a training programme for its field construction forces, with the full co-operation of the trade union effected. Men are brought in from the outside physical staff to the manufacturing plant and, for as many months as may be necessary in each individual case, are given training and experience in operations bearing upon their proficiency as field constructors. Regular wage rates are paid. In this way an efficient field force is being built up to the ultimate mutual advantage of the consumer, the trade union members and the company.

If the problem of construction manpower is not soon and vigorously attacked or is permitted to drift until the industry is completely preoccupied by the struggle to meet soaring demand with inadequate manpower resources, postwar construction will prove disappointing, as to the scale and rapidity with which it can provide postwar employment. It will be discredited and repressed by delays, poor performance and high costs. Already these factors, in residential building, are matters of widespread public comment and concern. Many potential home builders are becoming discouraged by the prospects of extended delays, defective workmanship and high costs, arising very largely from lack of competent labour. Business men, industrialists, public trustees and other principal customers of the construction industry will be even more alive to these aspects when, in the near future, they turn to consideration of major construction projects.

Unless immediate special steps are taken to develop competent construction manpower (and these can be effectively taken only by the general and trades contractors in collaboration with the trades unions) the public must, and will, look elsewhere than to the construction industry for an equitable postwar investment field and, incidentally, for the high levels of postwar employment so universally desired and so soon to be needed.

Courtesy, Daily Commercial News and Building Record.

THE POSTWAR HOBBY HOUSE

By RICHARD S. ROBBINS

Richard S. Robbins, one of North America's leading experts on hobbies and handicrafts, offers a suggestion to the postwar house designers of Canada.

The war has given the building trade a chance to sit back and study the home of the postwar world. It has given the designers of these new homes of the future a chance to get a new perspective on what the public would like their new abode to be. Manufacturers and designers have been permitted a long rest from their specialties, an opportunity, as it were, to sit back and gain a new outlook, to get out of the trees in order to see the woods. Many a manufacturer, builder, engineer and designer has said, "If I could only start all over again, knowing what I do now!", now have that opportunity.

For once, everyone *can* start all over again, start fresh with no strings tied, no handicaps of tradition, a minimum of consideration need be given for what has gone before, and what is left of old stock and old obligations to old users.

Many designers will have the courage not only to start fresh, but to start with new and radical ideas—ideas that create a new ideal in living—an ideal of not only high quality, but of maximum service with a minimum of low price, and embracing a life full of new ways and of new interests.

Perhaps the designers along with the hobby fan will recognize *hobbies* as a YEAR ROUND activity, for young and old, for novice and old-timer—a brotherhood of like interests worthy of encouragement and opportunity *at all times* under all circumstances.

And since we have chosen to dream of the future, of the happy things to come, perhaps we will see the day when every home not only has a hobby, but provides a place to practise the hobby—made possible by the architects of the postwar home. Perhaps we will see the day when homes will be built around, or at least will include a hobby room, where the hobby fan may follow, to his heart's content, the hobby of his (or her) heart's choice, without interference *with* or *from* the rest of the family.

Postwar homes are being planned right now. The plans of the future home are on the drawing board. New ideas are cropping up by the dozen. Ideas to take advantage of all the new products and schemes adaptable from war-time ingenuity. Like many other things, fresh viewpoints, fresh departures from tradition and "old-time *necessities*" are found at every turn of the planner's pencil.

It is to be doubted, however, if the postwar home of the future will be a thing of push-buttons, a palace of metal, glass, and plastics, or a functional box of sharp angles or tear-drop streamlining. Why streamline something which has no place to go—and is going nowhere? Hobbies were meant for people who like to "stay put". Homes were meant to "stay put". For people who like to live in their homes, WITH their families. Homes were meant to be shared—and so are hobbies.

More than likely the home of the future will be a combination of the best of the new—and the best of the old. We may have less tendency to *copy,* more tendency to *originate,* less to be *tied down* to tradition, more inclination to dare *to please* ourselves, to build *what* we want, to satisfy our desires and habits of living, in other words, to build sincerely and sensibly.

Which brings this writer right to the point. His postwar home will have a HOBBY-ROOM! And we see no reason why many homes should not have a HOBBY-ROOM, a room reserved exclusively to the family hobby—or, if the family has several hobbies—reserved to the pursuit of the several hobbies in harmony.

This demand for space will raise many an objection on the part of the designer, for it is his problem to make the most of the postwar home for the dollars of the hopeful purchasers, who will live in these creations "of the architect's mind". But why shouldn't we build homes around the hobby? Why shouldn't we consider the HOBBY-ROOM as important as the sewing-room, the den, the music-room, the basement "play-room", the powder-room, the dressing-room — important, even, as the "breakfast-room"—or say the dining-room itself—that room used but one to three hours of every working day, yet considered so important to the training for and enjoyment of "graceful living".

All normal persons, and that means children, too, have talent resources, hidden aptitudes, unsuspected skills, half-forgotten or lightly recognized urges, half-thwarted desires for self-expression, unused and perhaps unsuspected energies and abilities which can be discovered or brought out by the trial and error ground of the hobby activity. Under the guise of play, and if one plays at the things one likes to do, one is happy. Father can often recognize in his "son" the beginnings and interests of an engineer or of an artist. He can play his hunch, he can offer his son greater opportunities to try and help himself, to attempt, in play, the things which will, perhaps, determine his destiny.

What finer or higher purpose can one find for a room in one's house or home than a room which will, perhaps, discover and encourage the whole future life, happiness and success of the youth of the family? What higher purpose can we have, as parents, than the discovery in our children of the things they can best do to serve themselves and their future and their fellows? And what greater pleasure can we have than the companionship, the friendship, the association of these growing youngsters, our future men and women, through their years of self-discovery and development? What greater reason could we have for building a home, or a room in a home?

The home builder in our land is going to be faced with shorter working hours, which in turn will force upon him the problem of filling in these long hours with new pleasures. Perhaps, here is the natural outlet for these leisure hours. For a man's hobby is something he can do just the way he wants to do it—here a man is free—no one can dictate to him just how, when and why he must pursue the desires of his creative pastime. Freedom is our heritage. Why not build our homes to help us live, the heritage for which we fight?

For the past two decades the natural desire to "have a good time" has been to pursue it away from the home. To leave the security of the fireside and to seek the pleasures of the outside world. Perhaps the wheel of time has completed a cycle, and now our natural desire is to create the "pleasures of life" within the home. The increased interest being shown, by the people, in the valued necessity of a postwar home certainly suggest that this is so.

We commend, therefore, to your consideration, the postwar home of OUR dreams, the HOBBY HOME—the HOME of side interests and room inside for these interests. The Home, for instance, with room for "trains" all the year round, where "trains" are not just a Christmas season experience, a part of the "decoration", but a part of the life experience of the youngster, a part of his training for life in the future, through his contact with "Life-in-Miniature".

THE PROVINCIAL PAGE

AEDIFICAVIT

MAURICE PAYETTE

One of the disadvantages of living and practising a profession in a country as large as Canada, is that many of our confreres are known to us only by their work and their names. The Editorial Board felt that this paragraph might do much to convert those names into persons. The persons selected are, therefore, not presidents or vice-presidents necessarily, either of the Institute or the Provincial Associations. They are all architects who have served their professions well, and whom we are delighted to honour. In any list of such architects, Mr. Maurice Payette would rank high. Those of us who do not live in Montreal see him only at Annual Meetings in Toronto or Montreal, but one invariably looks forward to seeing him. You get the impression always that he can be relied upon to do a job, and that the smooth running of an Annual Convention must somewhere be due to his energy or influence. His is a characteristically French face, but one that one remembers more in the Boulevard St. Germaine than in his own Quebec. In looking over his professional career, it is interesting to note that, like any other student of architecture in Ontario, or Manitoba, he has obtained his experience on this continent. It is, perhaps, characteristic of him that, while his interest in architecture is world wide, he has remained on this continent. When one meets Mr. Payette, whose French, I am sure, is as good as his English, one is never aware of that French Canadian problem that is supposed to loom so large in our national life. You feel it in its proper perspective along with English Canadian, Scottish Canadian and Indian problems. One is aware, only, of being in the presence of a Canadian, a gentleman, and an enthusiastic and able architect.

ALBERTA

Our cities owe their growth not primarily to the big businesses which are only attracted there by the numbers of people that have already become gathered together by other agents. The manager of a chain of restaurants examines a city to ascertain whether it will pay to open up a branch there. He sends men with tickers to count the number of passers-by at likely situations. If the figures do not reach a certain number no action is taken. It is, of course, true that such accessions speed the growth greatly. It is owing to this process in the development of cities that many apparent mis-growths occur. The pioneers must work with the tools they have and without leisure to think of or, still less, to carry out needful projects in any ideal or even orderly manner. Towns grow like Topsy without sufficient care for their manners and appearance. Hence, arise many problems that occasion headaches for later planners.

A fairly typical example of these headaches is the problem of car parking. At first the sides of the streets will serve well enough. Then, vacant lots are turned to some account. To so small account that they cannot afford any sort of paving or enclosing walls and weeds possess themselves of the corners. As more money comes into circulation, covered garages may be able to pay their way. But more money brings also more cars to be looked after. The sides of streets are still crowded. Storey is added to storey in huge garages. Still the cars multiply and the ground is burrowed into for underground storage. The problem becomes more difficult and more ingenious makeshifts are resorted to, all adding nothing to any fine civic appearance and heads begin to ache. Should a city depend upon private enterprise for this sort of storage or has it become a necessary civic utility?

Now if this problem could have been foreseen and provided for at, or near, the start, could not a better approach and solution have been suggested? At the present day, when reconstruction calls for better ways of doing things, cannot a more liberal and more spacious method be adopted and a virtue be made of our necessities? Ground is very valuable in cities, valuable for use, for utility, but is it not also valuable for beauty, for good life? In this as in many other cases it is the grudging of space that condemns our populations to sordidness of surroundings. A car park, if space were liberally allowed, might well be pleasant in appearance and serve our citizens in a hospitable and gracious manner. It might be planted both around and all about with trees and be paved and drained effectually. A city interspersed with a sufficiency of such real car "parks" would be quite another story. In prosperous cities car shelters of fine appearance could be built and warmed and made civic improvements rather than hole-in-corner makeshifts. Service stations would then find appropriate places in the car park for their purpose, where they ought to be found, rather than co-opting, as they too often do, all the best business corners of the town. A section of such a car park might serve as an organized bus station. Such stations are coming into more importance with the greater use of buses independent of street car lines.

Car parks of this nature would definitely become centres of a considerable class of businesses. This is observably the case in parking places attached to town markets. These become surrounded by businesses that supply home goods for those who come to sell in the market and these businesses incidentally become known and patronised by those who come to buy in the market. Car parks would thus come to be the nuclei of shopping business which, at present, having no such nuclei, tend to ribbon out in straggling and disorderly ways.

It is well accepted that residential areas require community centres to form nuclei in order to give good service and introduce form and order in the otherwise chaotic condition of these districts. Similarly, fine car parks could do this service for our business areas.

Cecil S. Burgess.

ONTARIO

Whither Housing? The demand for Housing in Ontario day by day becomes more vocal. Periodic outbursts from civic officials dealing with dispossessed families result in optimistic statements from Ottawa as to future plans for some solution to the problem *next year*.

Summarized, these plans include:—

(a) Immediate construction, by Wartime Housing, of some 600 houses for War Veterans' families.

(b) An unduly optimistic hope that the Insurance Companies will agree to form limited dividend housing companies to build and operate rental housing for those who can afford to pay a reasonable rent, amount not stated.

(c) The announcement that the Dominion-Provincial Conference will discuss this problem.

(d) An offer to builders of housing projects to guarantee them against partial loss if the houses are unsold one year after completion. To those builders agreeing, priorities are granted.

None of these schemes can make more than a slight dent in the housing shortage. Priorities on materials merely allow the possessors to scramble in the diminishing pool of lumber, bricks, etc., for what they can get. The fact is that the Department of Reconstruction has been asleep when they should have been working out plans and gradually building up reserves of materials and labour to meet the known demand. The reports prepared two years ago by the hard-working sub-committees gave all the statistics necessary and recommended very definite ways and means of doing the job. The present shortage of building materials is unlikely to be remedied for at least two years so that instead of an annual production of 70,000 to 100,000 houses we will see a niggardly 20,000 to 30,000, if that!

In all these plans for houses, those who need them most won't get them. No plan has been announced whereby low-rental public housing projects for the forgotten third of the population are likely to be built. The hope that we might see the slums of today replaced by the planned communities of tomorrow dies aborning—almost.

The N.H.A. (somebody there must have read the Curtis Report) has the elements of town planning controls and in a small weak voice suggests that town planning is a good thing. But in practice the N.H.A. financed housing developments in the suburban sub-divisions consider the gods of town planning propitiated if one-half acre of grass and shrubs is labelled Park or Recreation Centre.

Concrete legislation, both Dominion and Provincial, to make possible planned communities and provide some form of co-ordination in the building industry is still lacking. Toronto's Planning Bill is buried at Queen's Park and the Department of Planning and Development is hampered by an inadequate budget.

On the side of optimism, one small measure of achievement is reported by the O.A.A. Committee on Planning and Housing. The Director of Community Planning, Department of Planning and Development, at the request of the Committee, called a conference in June of official representatives of the professional associations of Engineers, Surveyors, Landscape Architects, and the O.A.A. to discuss town planning legislation. If, as and when the Director's recommendation is approved by the Minister, this group is to act in an advisory capacity to the Department.

P. Alan Deacon.

FRANKFURT-ON-MAIN

The Devil and the Architect

The house of Goethe's birth still stands in Frankfurt "am Groszen Hirschgraben", a stately patrician building. It is pointed out to all visitors as one of the town's landmarks, as is the famous town hall, the "Roemer". Here the German Emperors were elected in the middle ages and even later, here the great coronation banquet was held. The town hall actually was at first a private residence. The city bought it, added the adjoining properties, laid out grounds, and built a high clock tower to surmount the whole assembly of houses, till finally there rose on this small hill the most colourful civic building on the Continent, a medley of timbered, mediaeval houses, of many styles and of various periods, but all belonging together and agreeing with one another because every one house expressed the spirit of its own time, it was no sham trying to ape the architecture of another age conceived by different minds.

The Cathedral in which the coronation took place was founded over a thousand years ago. The ceremony was presided over by the primate of Germany, the archbishop of nearby Mainz. This magnificent house of God with its soaring tower, its many turrets and immense transepts is most impressive; its interior does not belie the grandeur of its conception.

Not far from the Cathedral, spanning the river Main, could be seen another mediaeval landmark, the old Main bridge. It has stood since the fourteenth century, quite a respectable age for a bridge. But when you realise how it was built, actually patched together at the last moment, then you must agree that it is indeed a remarkable bridge. The architect who was commissioned to build it had promised to finish the bridge by a certain date so that the burgomaster and all his company could open it in state. The day of the opening approached, a great banquet was arranged by the city, everyone was happy and looking forward to the great event—everyone, that is, except the architect. Two out of the 18 spans of the bridge had yet to be completed, and no mortal man could hope to finish the task in time. The architect, however, in the manner of some of his old and most of his modern colleagues, bethought himself of the devil. The devil does seem to like architects; his influence is only too apparent even in this fair city. Well, he promised to complete the bridge the night before the opening if he could have as a small recompense the soul of the first living creature to cross it.

Now you know how these things work—there are speeches and ribbons to cut and cheering from all sides, and then, so the devil expected, the burgomaster would lead a procession across the bridge. The architect, remembering the fat burgomaster and the money he would have to squeeze out of the City Council for all his labours, and all the nagging that had gone on about the delay, thought it an excellent idea that the devil should have the burgomaster and even, as far as he was concerned, the whole City Council too. The pact was sealed: the architect promised the devil what after all did not belong to him in any case; the devil completed the two middle spans of the bridge; and then next morning came the formal opening.

The city fathers were there, the speeches were made, the cheering was loud and lusty, but—a cockerel was so alarmed by it all that he, poor fowl, ran across the bridge before the burgomaster even had a chance. The devil, cheated of the burgomaster's immortal soul by this sad accident and only getting the cockerel for his troubles, was so annoyed he tore the bird to pieces and flung the bits at the bridge with such force that those two spans simply collapsed. Now if you want proof of this you will find on the Alte Main Bruecke, the old Main bridge of Frankfurt, an ancient cross surmounted by the cockerel to commemorate the event.

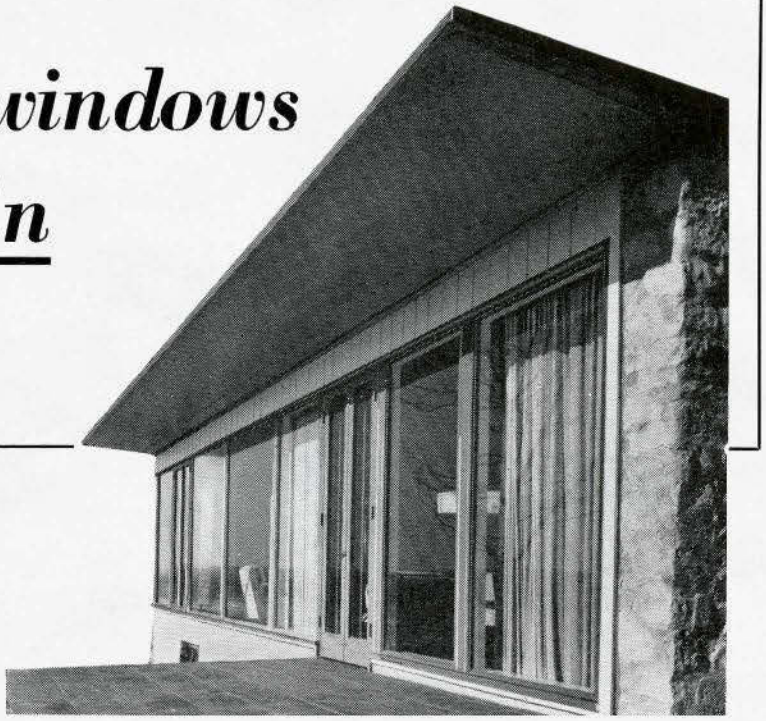
—Greatly abbreviated from an article in a New Zealand paper.

☆

Recommended Practice of Home Lighting Released by Illuminating Engineering Society.—The first official Recommended Practice of Home Lighting has recently been released by the Illuminating Engineering Society. The report, developed and prepared by the Society's Committee on Residence Lighting, appears in the June issue of *Illuminating Engineering*, and will be available soon as a separate 40-page, 6 x 9 illustrated booklet, with cover.

The booklet is available from the Illuminating Engineering Society, 51 Madison Avenue, New York 10, N.Y., in single copies or in quantity lots.

These larger windows have built-in insulation



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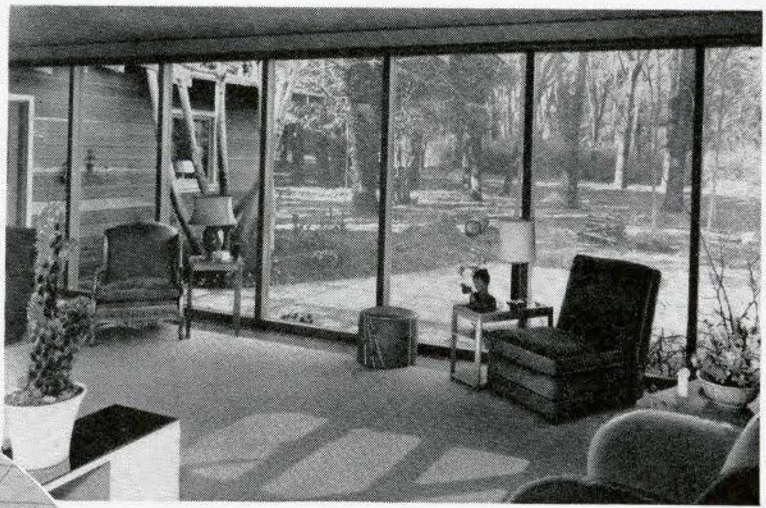

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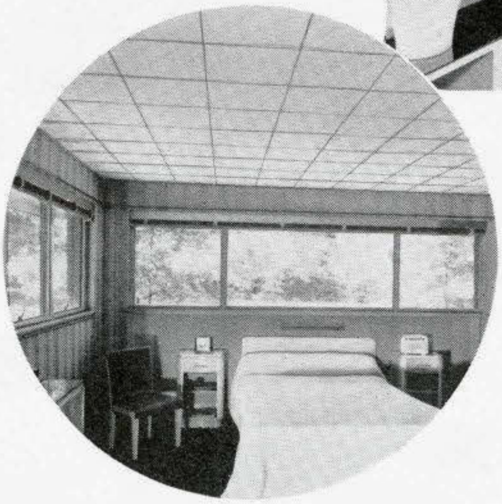

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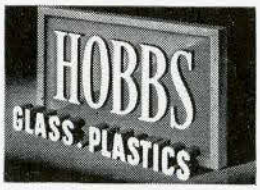

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