# THE JOVRNAL ROYAL ARCHITECTVRAL INSTITVTE OF CANADA


Vol. XIII, No. 4 APRIL, 1936 TORONTO

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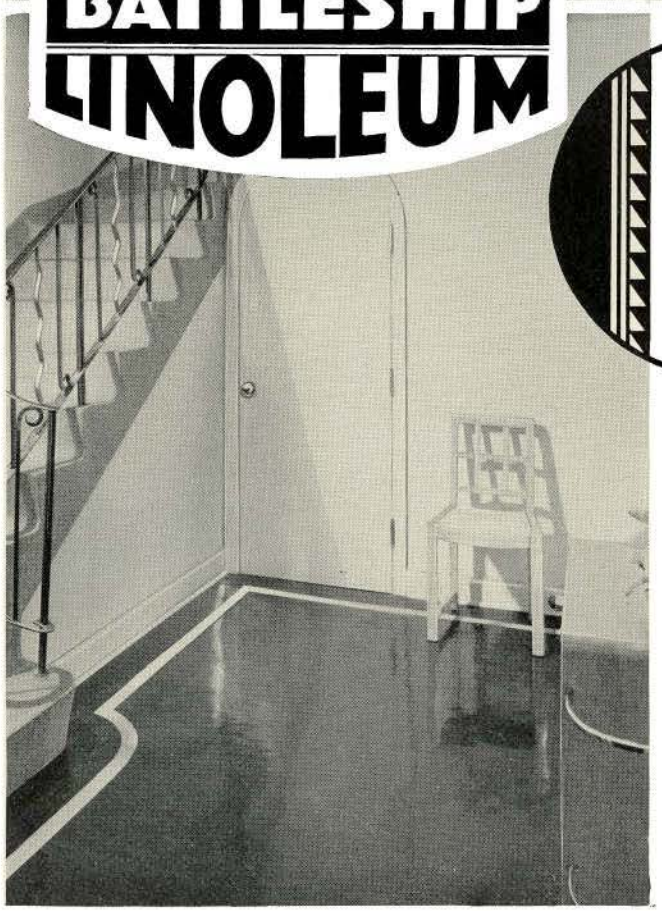

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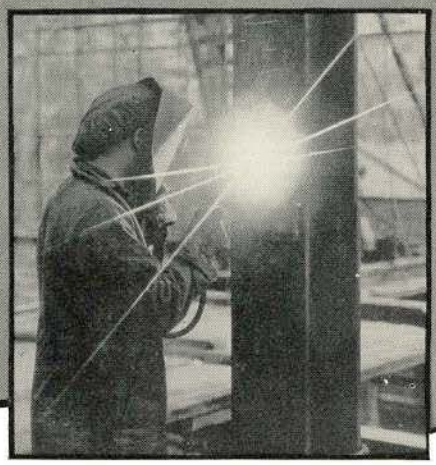

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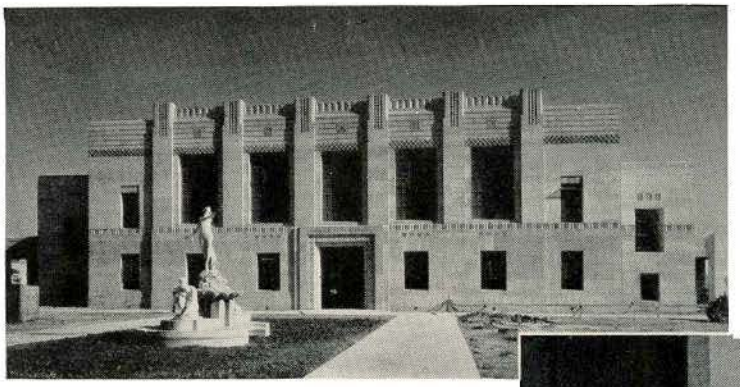

*Main building and detail of entrance facade, Venice High School group, Venice, California. John C. Austin and Frederick Ashley, architects; G. A. Schulte, engineer; Clinton Construction Co., contractor.*

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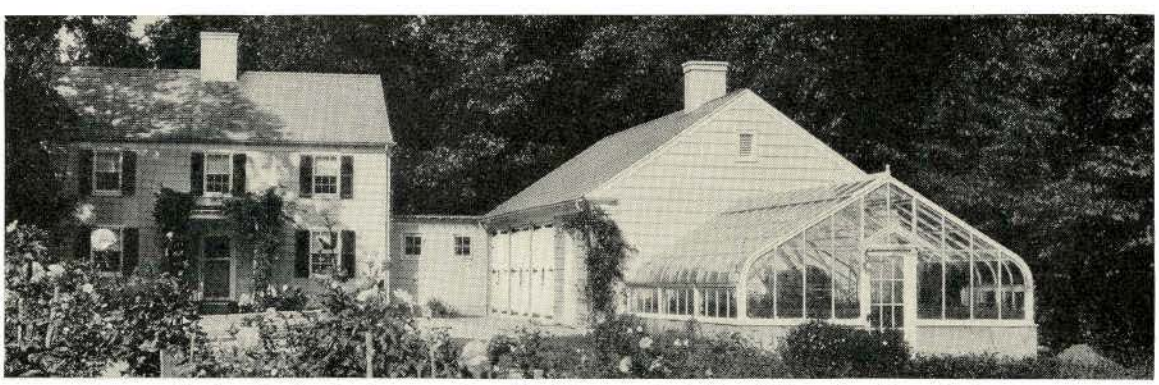

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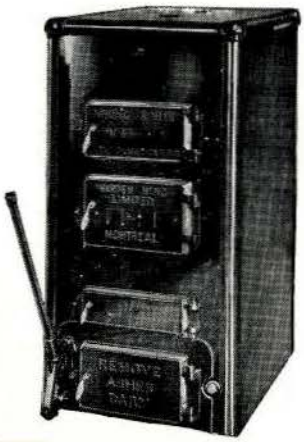

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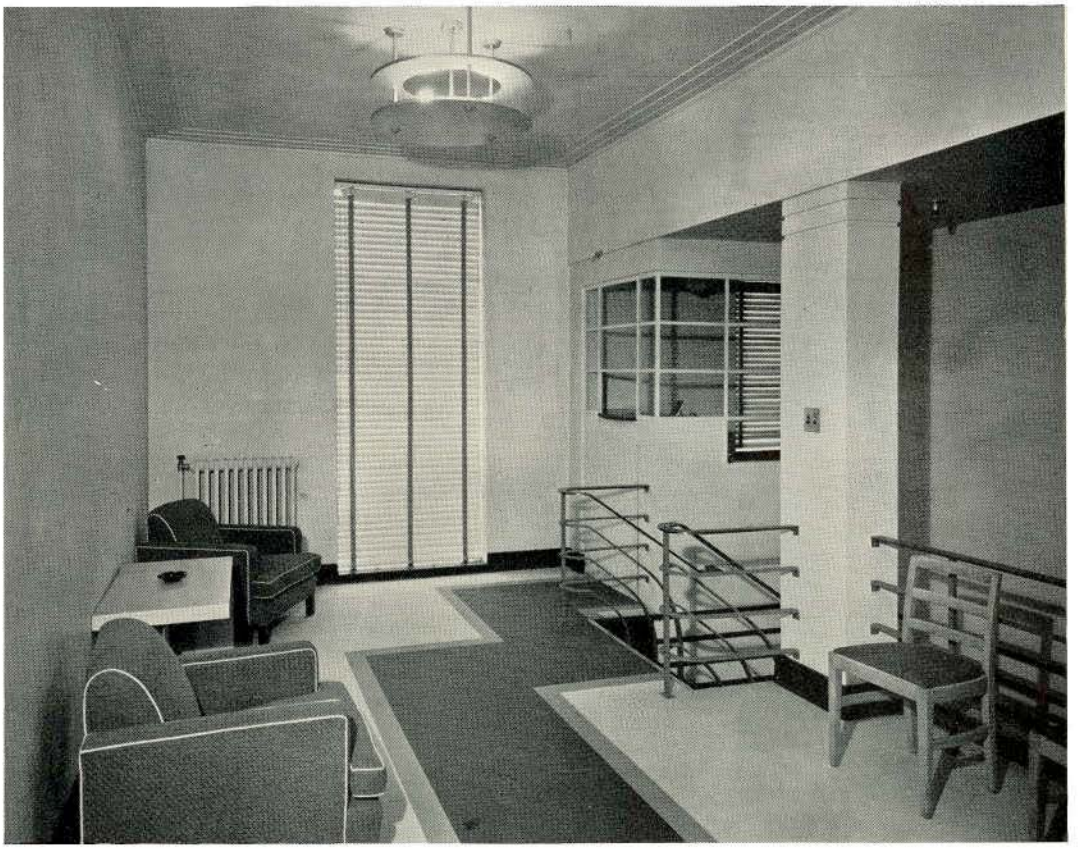

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# THE JOURNAL

## ROYAL ARCHITECTURAL INSTITUTE OF CANADA

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## CONTENTS



### PLATE ILLUSTRATIONS



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ENTRANCE DETAIL—RESIDENCE OF TREVOR ROSS, ESQ., MONTREAL

*Fetherstonhaugh and Durnford, MM.R.A.I.C., Architects*

# THE MODERN AND TRADITIONAL INTERPRETATION OF ARCHITECTURE

BY MILTON S. OSBORNE, B.ARCH., M.Sc., F.R.A.I.C.
HEAD OF DEPARTMENT OF ARCHITECTURE AND FINE ARTS, UNIVERSITY OF MANITOBA

THE architecture of the past twenty-five years has shown sufficient individuality that we have been searching for a name expressive of its distinguishing characteristics. This is probably unnecessary, for future generations will undoubtedly give it the name that it justly deserves. It might be safer and more complimentary for us to suggest what we would consider appropriate. I recall a certain professor of mine referring to that period from 1860 to 1890 as the "Dark Ages" in architectural development, a much more expressive if not so flattering a title as the "Victorian Gothic" or the "Romanesque Revival."

A few years ago an eminent architect suggested the term "perpendicular" as being expressive of the new movement in architectural design. That happened to be the period when we spoke in glowing terms of the architect who "expressed" the vertical supports of his building in vertical lines on the exterior. It is true that oftentimes these vertical lines actually meant very little on anything but the beautifully rendered drawings, for in many cases, the set-backs or the projections were not sufficient to give the desired effect in the building when constructed. There are, however, many examples familiar to all of us in which this expression of structure has been very successfully demonstrated.

There are equally enthusiastic advocates of the use only of horizontal lines in modern buildings. Frank Lloyd Wright and Walter Gropius might be considered the leading exponents of this method of banding a building with lines of windows, expressing the horizontal lines of the various floors rather than the steel framework of the supporting columns and piers. Since there is no apparent reason why this is illogical, "perpendicular" may reasonably be a misnomer.

There are certain general characteristics apparent in the work in all countries at the present time, based upon functionalism. This, in its simplest terms is the attempt to show in the form and design of the building the activities that will be carried on within its walls. Because this principle of design has been recognized in all countries, the movement has been called "International" or the "International Style." The chief concern of the functionalist is the truthful expression of the plan on the exterior of his building. This has been the basic problem of designers in all ages, to build with as much logic as possible. It has always been necessary to fit the envelope or the enclosing walls of the building to the plan, and this problem has been handled with varying success through all periods of architectural development. In this respect, therefore, functionalism might be considered a revival, if its premis is entirely one of logic.

Modern architectural design has not kept pace with the scientific factors that have produced it. The first truly modern building was the Crystal Palace in London, designed in 1851 by Joseph Paxton, a glass building on an iron skeleton, an expression of complete suitability of form to function. Without consideration for traditional forms that immediately preceded it, this building was erected of a new building material that opened new possibilities hithertofore undreamed-of. The public was not only not ready to accept this new development in architecture, which was based upon the latest scientific discoveries of the time, but it protested vigorously the erection of other buildings in which these new materials might be employed.

It was not until the Transportation Building was erected by Louis Sullivan at the Chicago Exposition in 1893 that we have again a revival of the structural principles demonstrated so well in the Crystal Palace. This was such a simple, straightforward solution of the problem of a train-shed and so different from the flamboyant, semi-classic palaces of the rest of the exposition that it was ignored by all but the foreign visitors. They apparently recognized the possibilities of enclosing space by the use of light thin walls, supported by a light structural skeleton.

The first of the skyscraper buildings were influenced in their design by Italian Renaissance palaces, with wide projecting cornices hanging precariously over the sidewalks below. There seemed to be a very serious attempt on the part of some designers to proportion the overhang of the cornice to the full height of the building, a problem that was solved conclusively through the passing of certain city by-laws relative to the projection of any portion of a building over the building line.

As land values in some of our cities made concentration necessary, and as the advances in the field of science and engineering made possible the erection of higher buildings, a structure modelled

in its exterior treatment on the classic column, was the next development. The base, with its attached columns or pilasters, was a Greek or Roman temple on which was mounted the shaft of typical floors. The whole was often crowned by a capital which took the form of a second colonnade with a low roof and a sculptured pediment that looked very much like a classic building sitting perched uncomfortably on top of a post. There was usually the futile attempt to make the building look like a self-supporting masonry structure, although everyone knew that the exterior stonework was not over eight inches in thickness and that it was hung by metal hangers to the steel skeleton beneath. The classic precedent was so heavy upon us that many architects could visualize a tall building only as a series of horizontal buildings of classic design piled one upon the other.

The last few years has fortunately brought a recognition of mechanistic ideals not only in the field of commercial buildings but to factories and educational buildings as well, and has certainly brought greater rationalization and honesty into the construction of dwelling houses. Buildings are no longer heavy masses supported by great masonry piers and columns, but are considered as screen walls of glass or some thin cold and heat resisting materials hung to a light structural framework of steel.

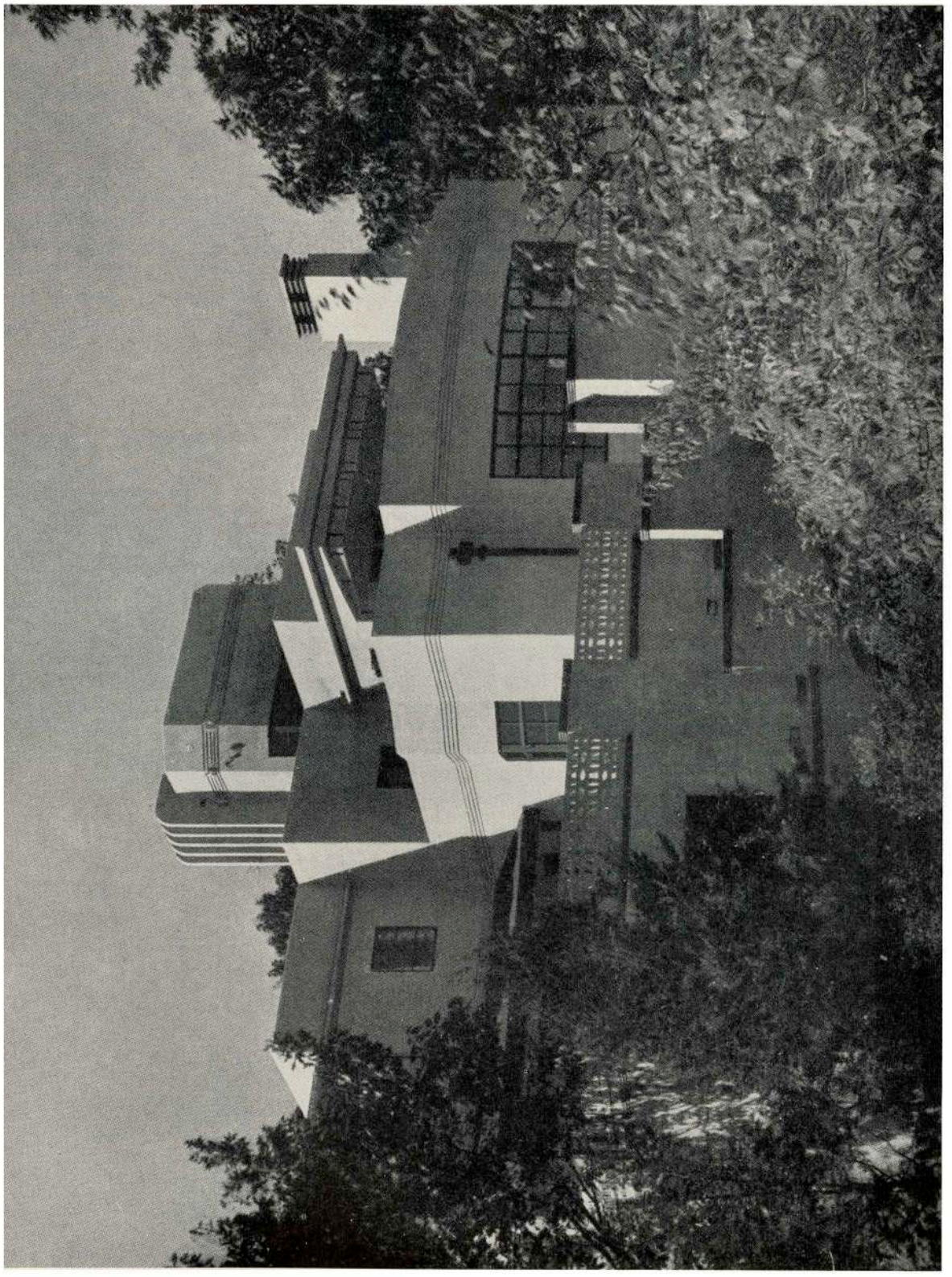
In the field of science the invention of new materials will gradually overcome the problems that must be expected from any radical departure from antiquated methods of building or customs of living. Large window areas which in a cold climate are attended by serious heat losses will be corrected by the use of non-conducting glass, some of which is already on the market, or by the use of double windows with a dead air space between the individual glasses. The glare of direct sunlight will be softened by toned glass, and will be made to exclude or admit certain rays of the sun for certain desired effects. If we are to take full advantage of all that is offered in the field of new materials we must experiment with an open mind to the advantages and disadvantages of each. Many new products will be found to be unsuited to peculiar climatic conditions. They will be discarded; perhaps they will be improved. Standards are constantly being raised: new products must face an increasingly rigid efficiency test and will stand or fall on their own merits.

We in Canada must judge the new ideas of design and the new building materials upon their ability to answer our peculiar problems of climate. Our heating problems are such that large unprotected window areas, thin walls and flat roofs, the features on which much of the modern design is based, offer many difficult problems. Our walls must be well insulated against the passage of heat and cold. Flat roofs, which offer perfect insulation against the cold when snow-covered, must not allow the water to drain into the house during the thawing season. We are slow to take up new materials until we are convinced of their efficiency and reliability. Our complicated mechanical systems may be a snare and a delusion when not adaptable to our conditions or when improperly installed.

In much of our residence work in Canada we have taken as precedent the chateau buildings of France, a style of architecture belonging to a very different age than our own, a style notably rich in detail, expressive of a sumptuous court life, and oftentimes extravagant in its wastefulness of space. The high ceilings and circular towers may play havoc with our up-to-date ideas of economy and efficiency. Nor is there much to be said in favor of the rambling picturesque house with its serious problems of heating over a long period of extreme cold. We must remember that the prototypes of these houses belong to a period when an even temperature probably meant anything above freezing and clothing was worn for warmth rather than for style. If we insist on dressing for summer temperatures we must build our houses accordingly.

We recognize the advantages of correct orientation. Even the facetious remark by Prof. Ramsay Traquair was to the point when he said that the only solution of this problem was to build our houses at the North Pole so that all windows would have southern exposures. Correct orientation is an essential consideration in this climate, and yet we see houses constructed around us without the slightest thought to the placement of rooms. This necessarily complicates our problem of design, for many styles are dependent for their effect upon the placement of windows symmetrically in the facade. If we would use a stylized facade dependent for effect upon absolute symmetry of openings, we will often find it possible only with great sacrifice to interior arrangement.

Our cold climate seems to call for low buildings protected as far as possible from the cold winds, with a compact plan to simplify as much as possible our problems of heating and air conditioning. The style of architectural treatment should be such as to give us as much freedom as possible in the placing of openings. In residence work, I am afraid that I might be accused of double standards for I cannot see eye to eye with LeCorbusier who demands the elimination of *all* traditional forms, with the "efficiency of our homes expressed in the hard lines, brilliant metallic surfaces, the sweet harmony of smoothly running machinery." We cannot entirely overlook the personal factor. Human nature, after all, must still be considered in architectural development. While the office and the factory may be the ultimate in their expression of efficiency and utility, a symbol of func-

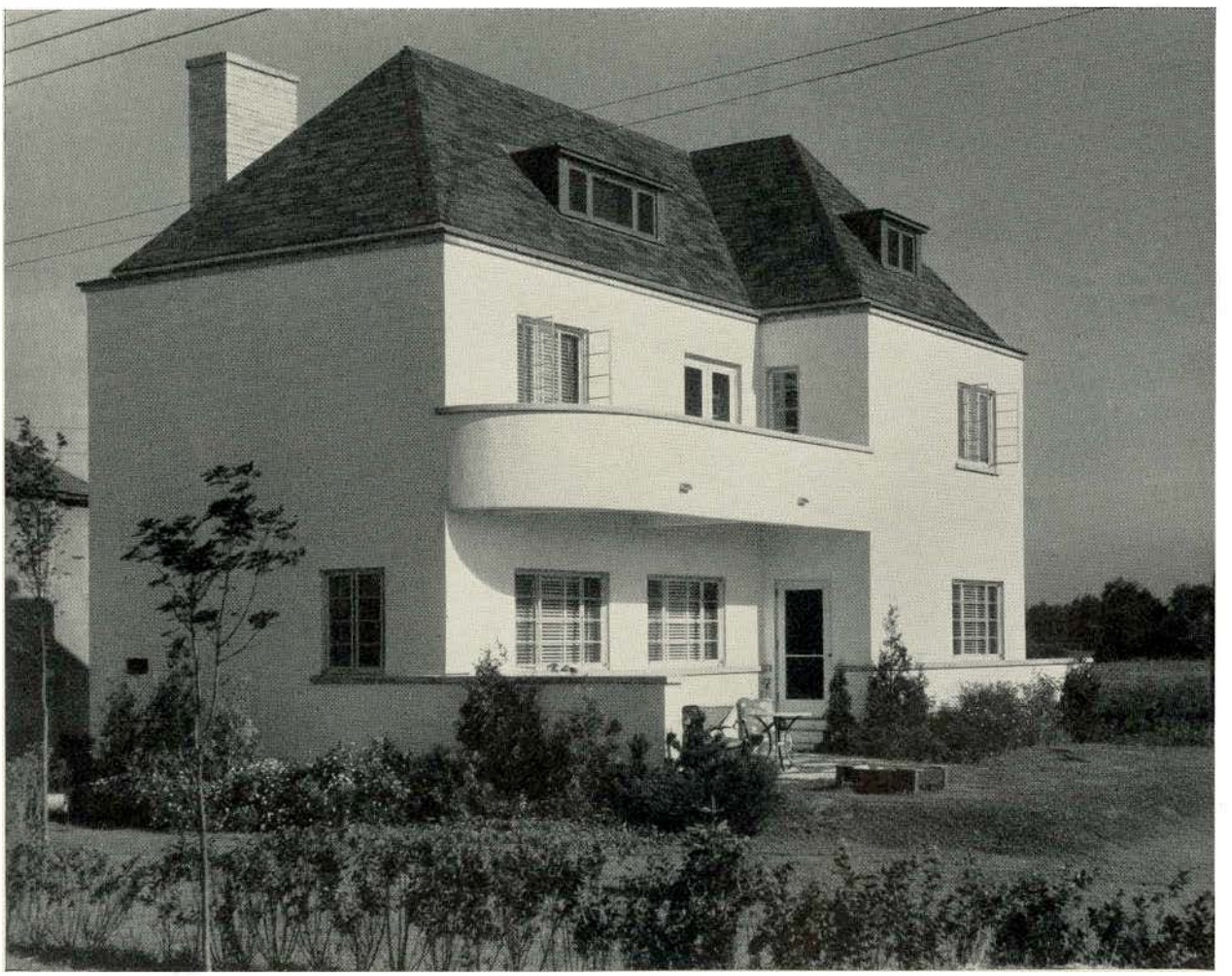


RESIDENCE OF SHERMAN PRATT, NIAGARA ISLAND, ST. LAWRENCE RIVER, N. Y.
*John Walter Wood, Architect*

tionalism in themselves, the home may be over-emphasized in its colourfulness and romance as a retreat from the cold impersonality of the work-a-day world.

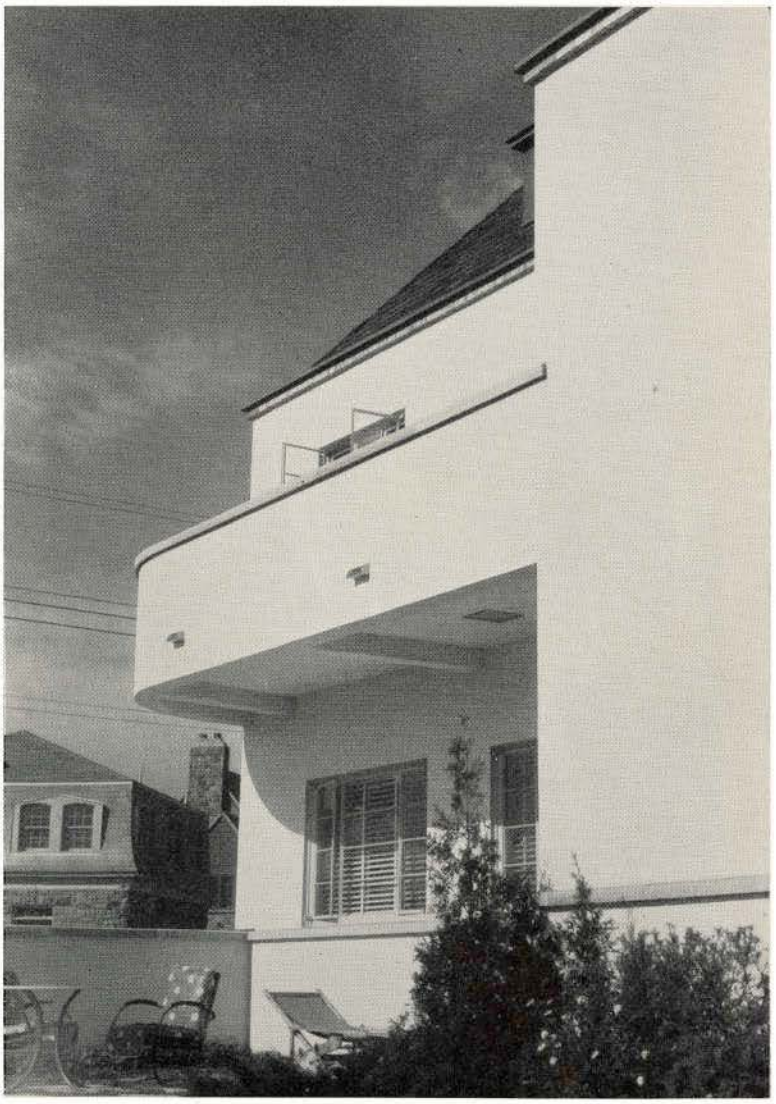
There must be a happy medium, a common meeting ground, between the traditional in residence architecture and the ultra-modern with its simplicity based upon geometrical forms and shapes. The box-like concrete house, with its pipe rails and its hospital bareness, needs the touch of human intimacy and the application of colour, the softening of its harsh corners and a compromise with the comfort necessary for good living. Let us open the windows to the outdoors, but if the outdoors is too blustery and over-zealous of our hospitality, let us bring its colour and life into our homes through our rugs, our hangings and our pictures.

Whether machine-minded or not, our houses and our offices should be so designed that they will serve us most efficiently. The past few years have made of the kitchen a laboratory, modern science has made of electricity our mechanical servant. In what other age have we spoken of leisure as belonging to any but the wealthy? We should build for a new leisure which will have as its counterpart aesthetic enjoyment and creative thought. Our architecture, therefore, should not be bound too closely by standardization. If it follows the principles of good design, there should be in our modern building as much opportunity for individual expression and creativeness as has been found in any age. "We are children of our day, yet, however important the present may seem to us, it is but an interlude between the past and the future."



GARDEN ELEVATION—RESIDENCE OF E. WILSON MELLEN, ESQ., MONTREAL

*Norton A. Fellowes, M.R.A.I.C., Architect*



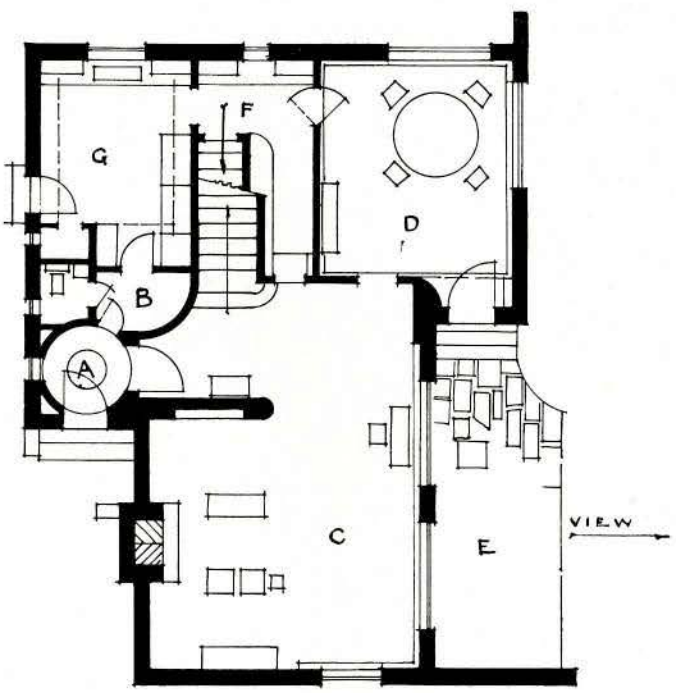
DETAIL OF GARDEN ELEVATION

RESIDENCE OF
E. WILSON MELLEN, ESQ.,
MONTREAL

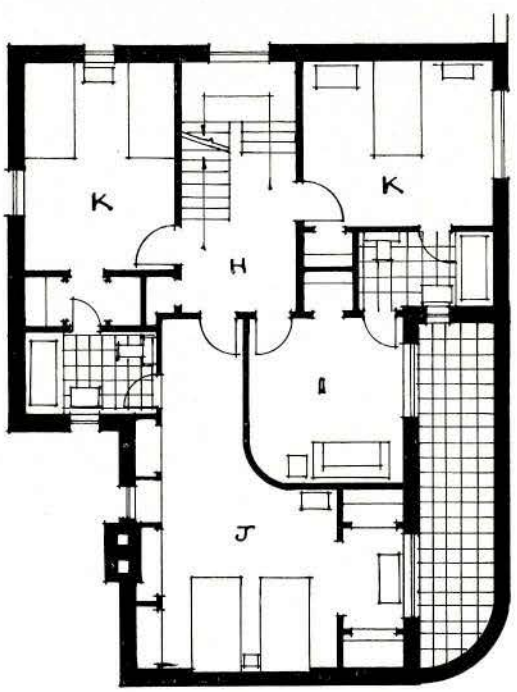
*Norton A. Fellowes, M.R.A.I.C., Architect*

LEGEND TO PLANS

| | |
|---|---|
| *A—Vestibule* | *F—Serving Pantry* |
| *B—Coat Room* | *G—Kitchen* |
| *C—Living Room* | *H—Hall* |
| *D—Dining Room* | *I—Den* |
| *E—Loggia* | *J—Master Bed Room* |
| *K—Bed Rooms* | |



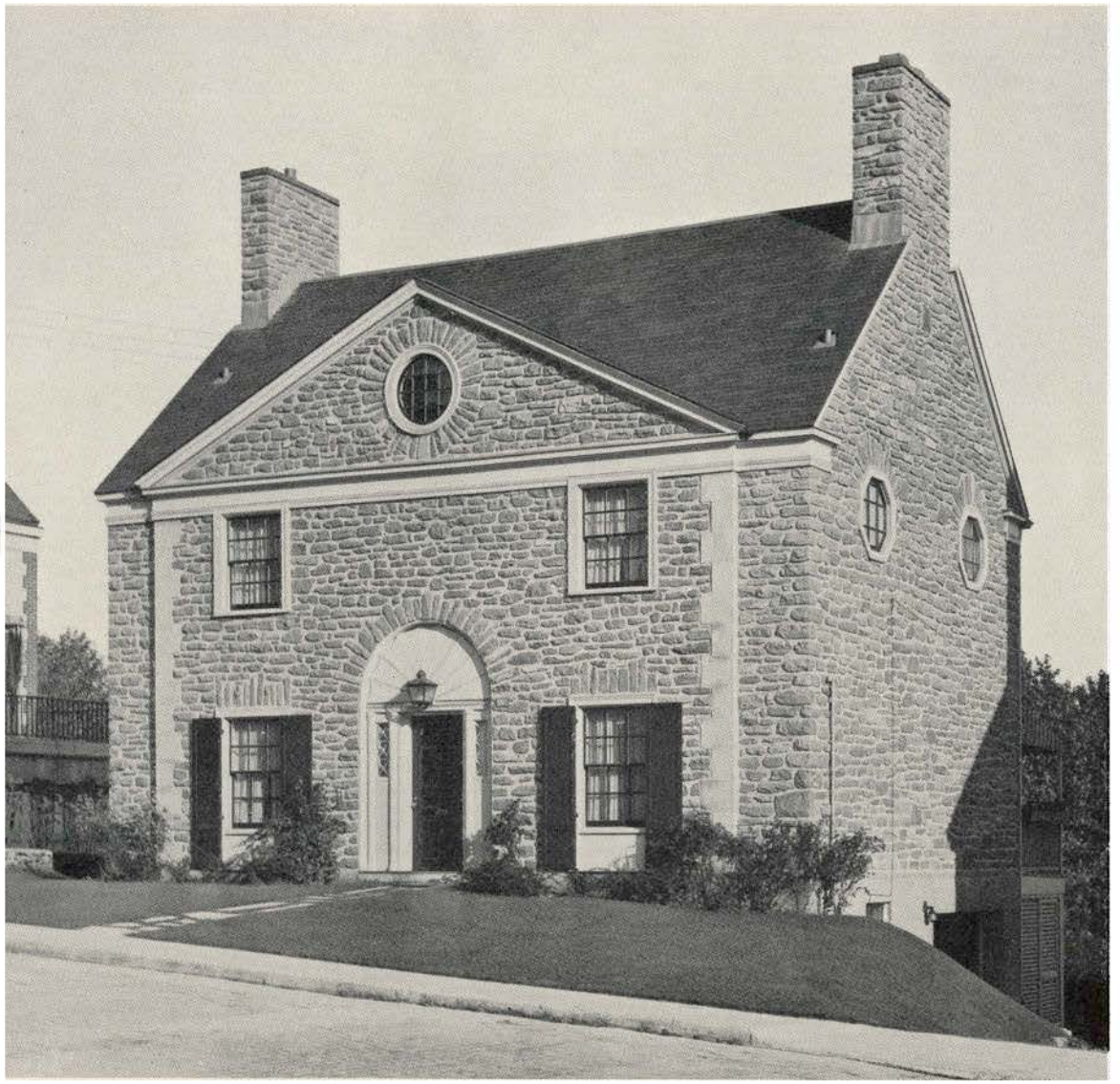

GROUND FLOOR PLAN




FIRST FLOOR PLAN

LIVING ROOM—RESIDENCE OF E. WILSON MELLEN, ESQ., MONTREAL

*Norton A. Fellowes, M.R.A.I.C., Architect*



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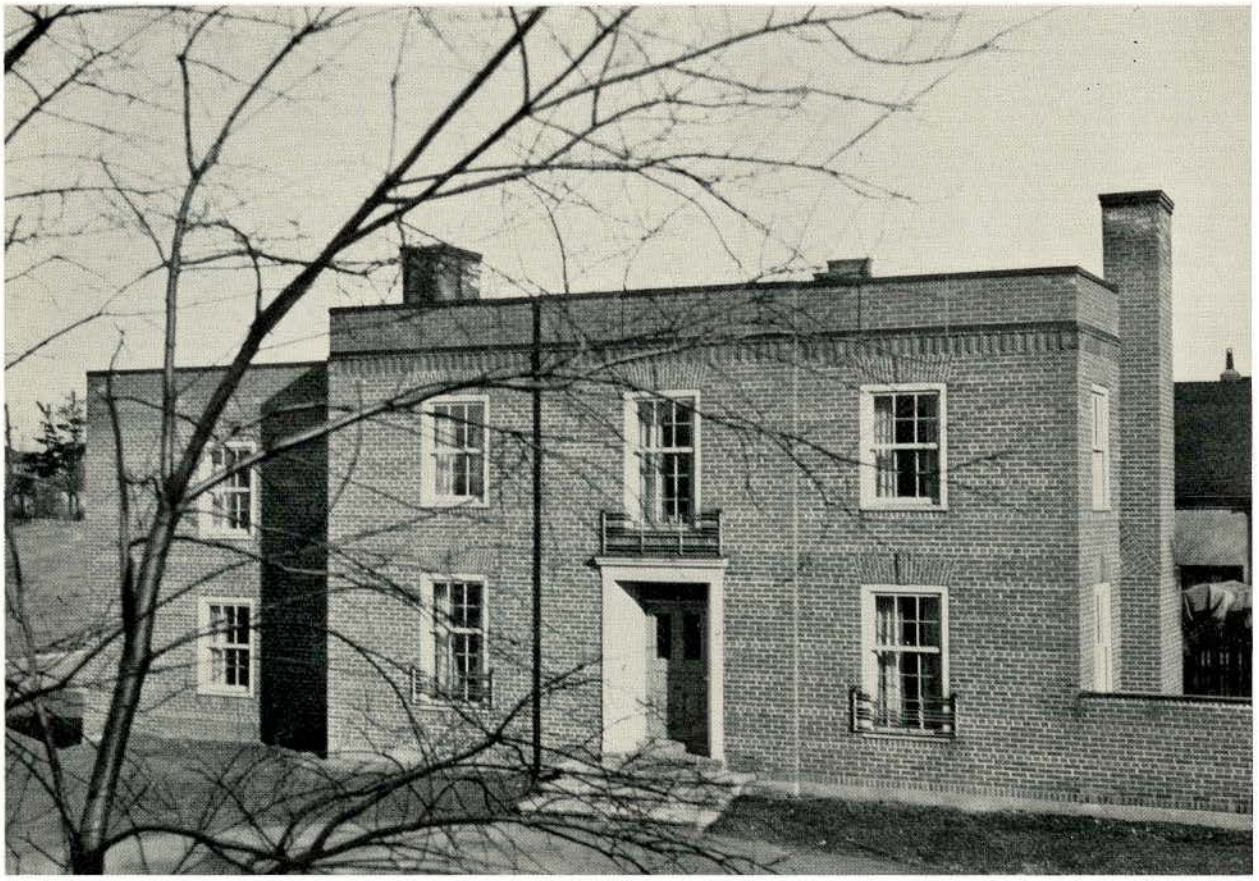
*Fetherstonhaugh and Durnford, MM.R.A.I.C., Architects*

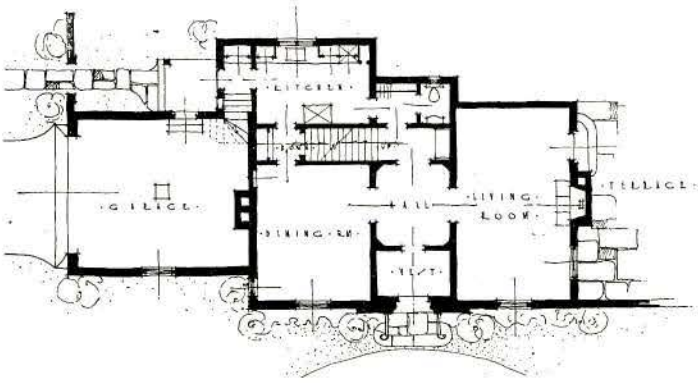

GROUND FLOOR PLAN


FIRST FLOOR PLAN



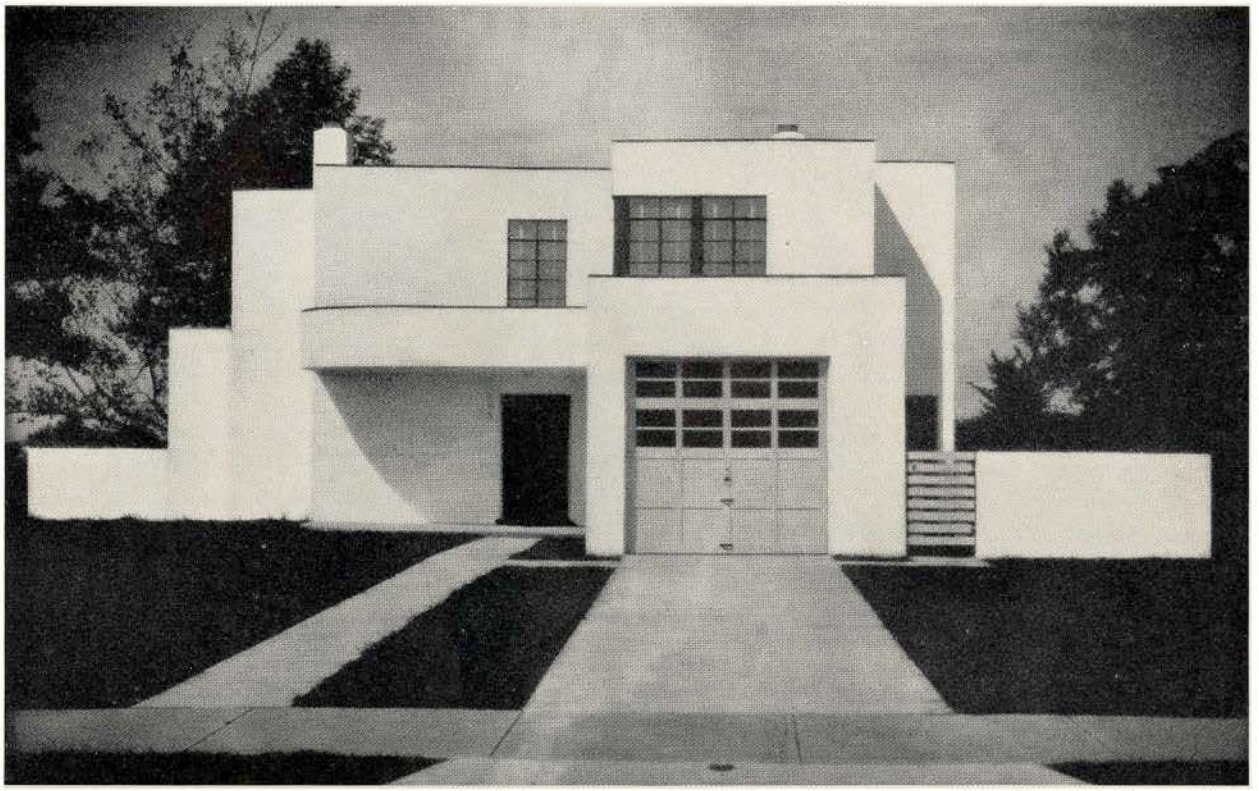
RESIDENCE OF FORSEY PAGE, ESQ., TORONTO

*Forsey Page and Steele, MM.R.A.I.C., Architects*



GROUND FLOOR PLAN

FIRST FLOOR PLAN



*Courtesy Architectural Forum*

AN EXAMPLE OF MODERN DOMESTIC ARCHITECTURE
*Hillard Russell, Architect*

# THE MODERN SMALL HOME

BY BRUCE H. WRIGHT, B.A.Sc., M.R.A.I.C.

IF WE look back for the reasons for the present so-called modern trend in Architecture, we will find that there was a desire for something different by the path of simplification, the necessity for reducing costs, and the availability of new materials and methods of construction. The number of the latter are still growing and can simplify our houses and consequently our way of living; therefore we must approach the problem of designing the small house, not with the intention of making the house *look* modern, but rather that it must be modern because modern living requires modern planning, materials and methods. The designer must study the reason for everything going into the building of the house and decide whether anything can be eliminated or something better economically substituted.

The small house is just as much, if not even more, a problem in economics, as it is in design. It seems that the smaller the job, the farther the architect must stretch the client's money.

Here in conservative Canada we have been less ready to accept the modern trend; we seem to appreciate the comfort, economy and reasonableness of the moderns, but "she just don't look like a house." One of the biggest objections, except conceivably in the Montreal district, has been the flat roof, which is no doubt due partly to lack of familiarity with it, but also because the architect so far may have failed to handle it in a way acceptable to the public. This also applies to the exterior appearance as a whole, since most of the new work has but little precedent and the general idea of architectural beauty has been formed by the habit of observing our immediate surroundings. However, the interest in the newer work is growing so rapidly that we must be prepared to produce it or be classed as "has-beens". The flat roof is inevitable because it is more efficient.

It is unfortunate that there is no adequate research department for building. The art of building is now more complicated than ever, but, there are no means of experimentation with the many new and untried materials, except with a client's money. In other industries facilities for experiment are afforded by the manufacturer. Since the archi-

tect can gain experience of new construction only with actual building, the small house commission is valuable to him as the nearest approach to an opportunity for research.

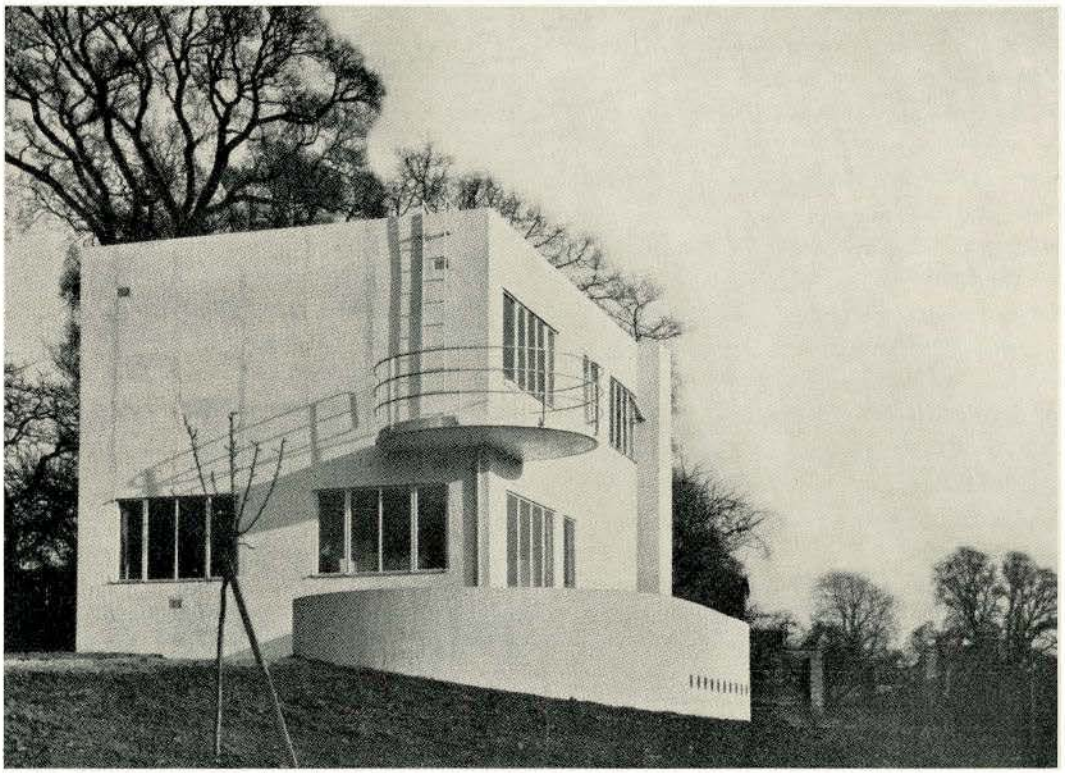
The architect to do justice to the small house problem must be prepared to serve his client in more ways than merely planning and supervising construction. He must be prepared to give advice on where to go to get the largest mortgages; the cheapest methods of decoration, the layout of the garden, walks, hedges, etc. The landscaping problem for the modern house is one worthy of careful study. Up to the present, very little consideration has been given to this important feature. The rambling walk, unclipped hedges and clumps of bushes, do not seem to be suitable for this type of house. He must also be familiar with the local cost of various materials. He will find with his first rough sketch that in order to get the accommodation his client expects for the money, he must tax his ingenuity to the utmost; all ornament must be left behind; as much basement as possible omitted. Roof construction must be the most economical. He must forget all preconceived notions of plan and question the necessity for everything put in the house. For example, have we ever stopped to consider the number of pieces of wood that are required to form the trim of an interior door? Without back-bands or plinth blocks the number is 12, which must be cut, fitted, nailed and painted. Surely we are ingenious enough to simplify this. Another problem that comes to mind is the double-hung window—are not some of the members used from force of habit, in view of the almost universal use of weather-stripping and caulking? There are numbers of these small problems which to some architects may seem trivial, but if they are improvements—economically or in usefulness—they are as important to the client as the most careful planning.

Judging from the interest the prospective owner has in the various rooms, architects have not been sufficiently considering the kitchen and bathroom. They have become the show places of the house. The living room if large, is unfortunately, seldom criticized for its proportions, orientation or window arrangement. The hall is only a hall; if spacious so much the better, but not necessarily damned for this reason.

But the kitchen, and bathrooms must be up to the minute and if extra money is forthcoming it can be well spent in these rooms.

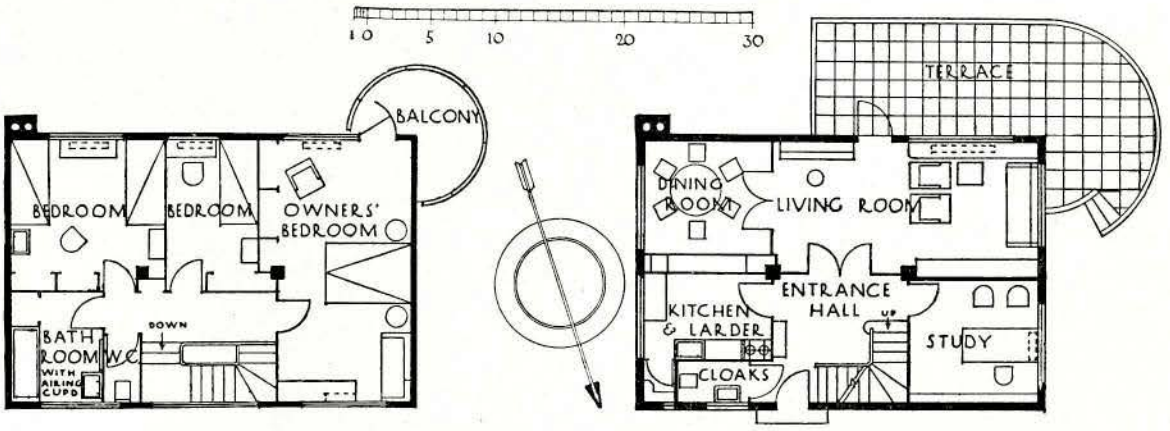
The kitchen need not be more than 8′ x 12′ for the seven or eight room house, provided it is properly laid out; it should have as much wall space as possible without making it narrower than 7′ 0″, otherwise there is not sufficient width to use both side walls. The openings, doors and windows, should be as few as possible and not in the corners or the amount of usable wall space is reduced; allow 2′ 0″ at least from an opening to the nearest corner. If there is a pantry in the house it may be found that having the rear entry to the house into it will eliminate one opening into the kitchen. The most satisfactory kitchen has a door at one end, a window or a ventilator at the other and a window on one side wall over the sink; this will allow the stove, table, and refrigerator to go on the opposite wall and the counter and cupboards on either side of the sink, full length of the room. The material to be used for the counter top always seems to give rise to discussion. Metal is very satisfactory except for its cost, which makes it prohibitive for the small house. Tile is satisfactory and looks well until the cement joints become impregnated with grease, or, as in the case of some tile, until a hot frying pan placed on it has crazed and cracked the surface. Dishes are most apt to be broken with this material. Cypress wood is excellent for its non-absorbent qualities and low cost, but rather unpopular because of its dull appearance unless it is kept well scrubbed. Linoleum with bright metal edging is also excellent, not too expensive, easily renewed and can be obtained to blend with any colour scheme, though it will not stand the hot frying pan. Some difficulty may be found in providing enough cupboard space in the small kitchen. One space that is often overlooked is beneath the stoves; the legs of most stoves may be removed and a cupboard built to support it instead. Care should be taken to have all working spaces at the same height, about 3′ 0″.

Now for the bathroom. No doubt spaciousness helps more than anything to make this room attractive, but in the small house, something must be sacrificed to provide it and we usually must get along with very close to the minimum size. If an extra 6″ or more can be found to add to the width, provide a shelf as an extension of the tub, increasing its apparent length and providing a very useful space. Make sure the shelf is at the opposite end from the taps or the cost will go up with the extra long spout required to reach over it. The new style of basin with the cabinet built in under it is attractive and fills the demand for a space to keep extra towels. Often, in the small bathroom there does not seem to be sufficient space for all the required built-in fixtures; so where there is a radiator, a heated towel bar may be installed by connecting each end of a bent, plated pipe to plugged holes at the ends of the radiator. The medicine cabinet is best concealed behind the mirror over the basin and fitted preferably with adjustable shelves but if a stock article is used, make sure that one shelf is high enough to take the milk of magnesia bottle. If it doesn't, the architect's reputation will surely



HOUSE AT RUGBY, ENGLAND

*Serge Chermayeff, Architect*




FIRST FLOOR PLAN

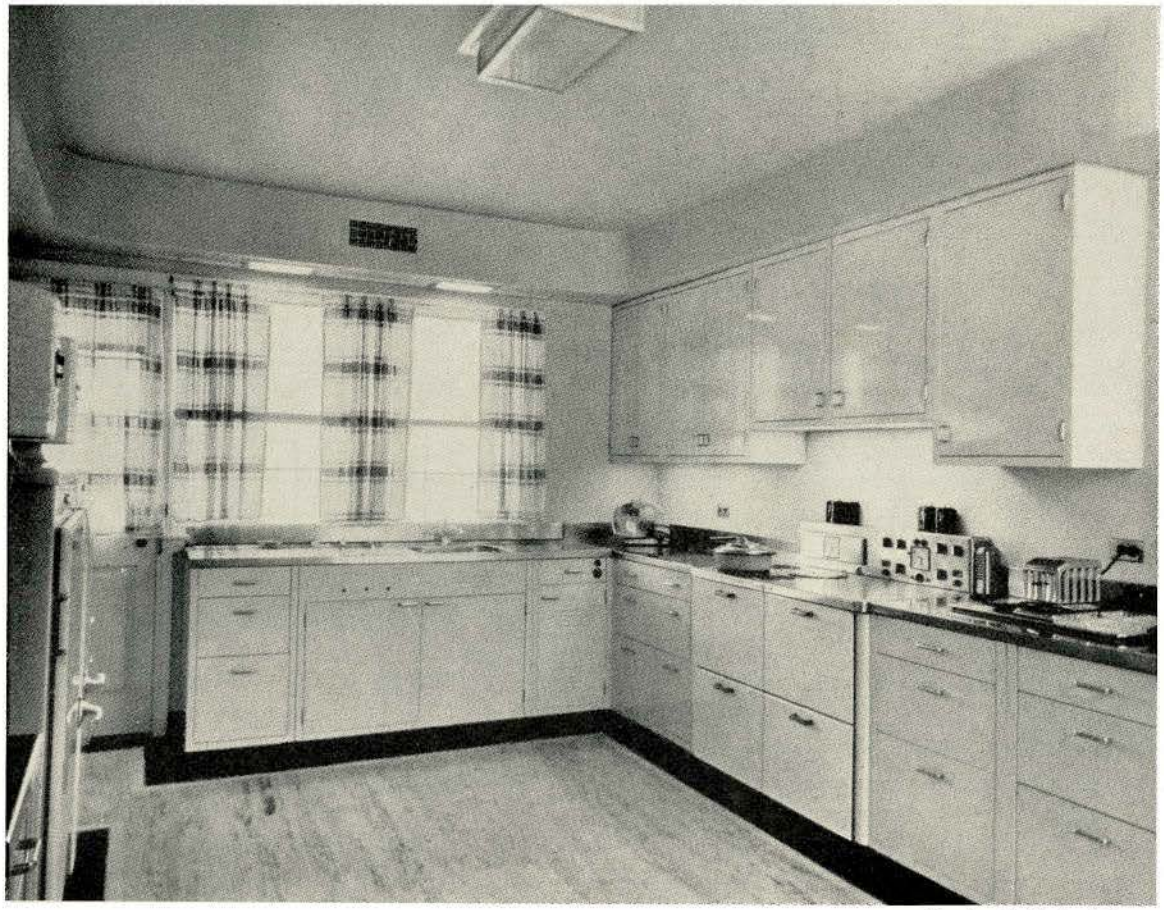
GROUND FLOOR PLAN

suffer. Here is a place where the new strip lighting may be used to advantage and with no extra cost. A strip light on each side of the mirror or in the case of the lower cost house, one over the top, provides excellent lighting and is most decorative.

Tile is still the most economical and satisfactory covering for the walls up to say 4′ 0″ high; the treatment of the plaster above that should be considered very carefully because of the tendency to develop cracks—probably because of the repeated steaming and drying that goes on. Decorating with a washable paint for the first year and then using cotton and paint as a permanent decoration seems to be most satisfactory. The window stool is a place that is often overlooked in the finishing of the bathroom—if it is left in the wood, painted, it soon becomes grubby; it can be tiled, covered with linoleum; or an inexpensive marble may be used.

The treatment of floors is receiving more consideration than before. It used to be that oak was the only thing that was used and in the smaller house the 3/8″ thickness was all that could be afforded—how it squeaked. Now, edge-grain fir 7/8″ thick may be used for about the same cost, eliminating the squeaks and taking a much darker finish than oak without the colour wearing off. It is of course a slightly softer wood and will show bruises if heavy furniture is moved over it. Linoleum is also becoming more popular and though not cheap if the best grades are used, with inlaid borders, it is exceedingly practical in entrance halls and bathrooms where water is sure to be left on the floor.

If there is a recreation room in the basement, dampness must be taken into consideration when selecting the flooring. A wood floor raised above the concrete on sleepers is of course the warmest for children who may play there, but, it is subject to dryrot and warping. Fir floors in such locations have proved very satisfactory. Another material is wood blocks set in asphalt, directly on the concrete. Quarry tile, though cold, will withstand all the wet conditions that will be encountered and is much in demand.

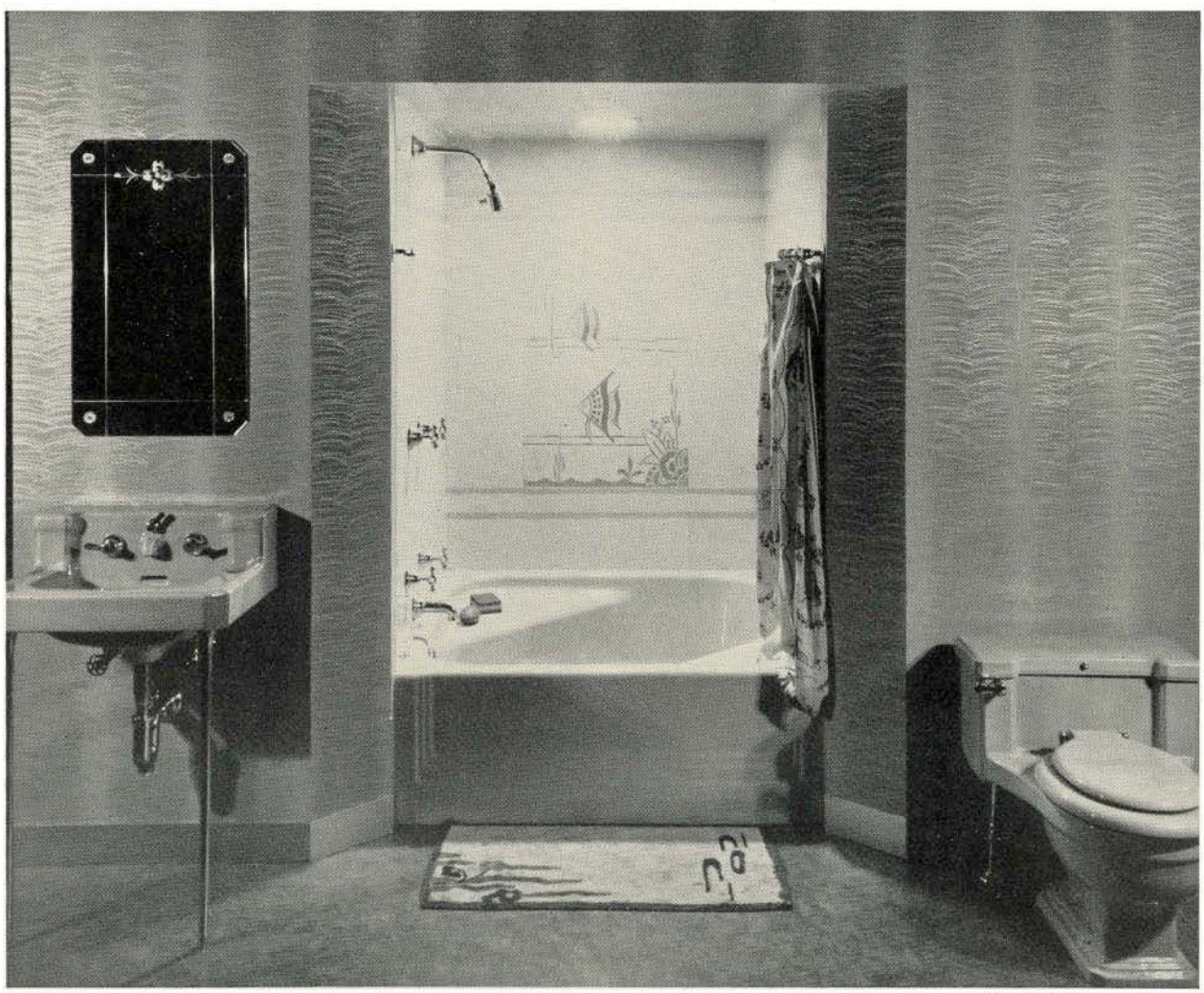


*Courtesy Architectural Forum*

A TYPICAL MODERN KITCHEN

In finishing the walls the question of cracks in the plaster comes up: will there be a lot of them and when will they occur? No matter how much care we take in providing sound construction and the best base for it, and insuring the best conditions for drying, plaster will still crack. In spite of all our prayers it always happens in the most conspicuous spots—over the living room fireplace or on the front stair. Cannot some one invent a better finish for our walls? At present the best we can do is resign ourselves to these inevitable blemishes, most of which should appear in the first year and in the meantime decorate inexpensively with washable kalsomine which can be papered or cottoned over later, when the cracks have been filled. Cotton may be used from the start since most cracks won't show through it, but, it is comparatively costly and generally can only be used in special places. Another method is to use a cheap paper which can be sacrificed later with no great loss. Sand-finished and "Jazz" plasters should be used sparingly since little can be done with them, except with paint, to change the decoration unless they are replastered; also they have a habit of scratching knuckles when used in confined spaces or in the play room.

The recreation room also known in real estate circles as the "rumpus room" or to be right up to the minute, the "continental room" seems to be a necessary evil but in nine cases out of ten is placed in the basement where it is always damp. Being designed for the use of the children on rainy days, it is certainly the dullest, most unhealthy spot. The ground floor is the best location for this room, since it is more accessible from the garden, but it could well be designed to go over the garage or with the modern flat roof, treated as a pent-house sun-room, opening on to a roof garden.



*Courtesy Sanitary Engineer*

A MODERN BATHROOM

# MECHANICAL SERVICES IN THE MODERN HOUSE

BY ROWLAND P. ALLSOP, A.S.H.V.E.
OF MATHERS & HALDENBY, ARCHITECTS

## HEATING

THE choice between steam, hot water, or warmed air for the heating of small houses is largely a matter of individual preference, influenced to some extent by local custom, by the relative cost factor, and by the suitability to the particular problem of one of the three systems.

Generally speaking, warmed air should not be used in this climate for houses of more than 1,200 square feet in area, nor more than two storeys in height unless forced circulation of the air is used. Under the latter condition quite large houses can be economically heated by warm air and the problem of air conditioning simplified with this type of heating. In houses which have a cubic content of 40,000 cubic feet and over, a conditioned air system using a steam or hot water blast heater, air filter and washer or sprays can be used quite successfully. With the combination of a gas or oil burning heating boiler this is decidedly de luxe equipment. Such a system should most certainly be seriously considered by any architect designing a house in this category.

In forced warm air heated houses the air is heated either directly or indirectly. In the direct method the air is blown around the outside of the fire pot which is baffled to provide the maximum heat transfer and in the indirect method the air is blown through finned coils heated by steam or water. The boiler may be located anywhere in the basement, the heating medium being piped to the coils. The direct heat transfer system has the advantage of lower first cost but without coils or a washer chamber no cooling can be accomplished. Another disadvantage is that in spite of welded and rivetted fire pots and combustion chambers, there is the possibility of contamination of the air stream by the products of combustion. A great deal of misunderstanding exists of the requirements of "An Air Conditioning System." The correct definition is "An Air Conditioning System provides ventilation, air circulation, air cleaning and equipment for maintaining temperature and humidity within prescribed limits." Most of the so-called Air Conditioning Systems fall short in one or more requirements and a close investigation is essential before purchasing.

In the indirect system of heating the air, the blast heating coils may be used for cooling by water, and since the unit is entirely separated from the boiler and may be in another room, there is no danger of air contamination. Blast heating coils when used for cooling by water should be provided with spiral agitators and should be connected on the counter-flow principle to ensure the greatest temperature difference between the air and the water.

In cases where it is impossible or impractical to use cold water as a cooling medium, a refrigerating machine of the methyl chloride or Freon refrigerant type may be used with excellent results, although the cost of such equipment is fairly high.

Warm air heating in a room is accomplished solely by convection currents set up between the supply and return registers. These convection currents tend to eliminate stratification of air, one of the disadvantages of the radiation system of heating. Concealed heaters which depend upon convection are therefore in this respect more satisfactory than exposed cast iron radiation.

A large number of new houses are heated by means of hot water circulated through cast iron radiators, some simple means of humidifying should always be provided. Where space for radiators is limited or much concealed radiation is used, forced circulation by means of a pump and a higher temperature for the heated water will be found a great advantage. Under ordinary conditions the water leaves the boiler at about 180 degrees Fahr., and returns at about 150 degrees Fahr. with a designed radiator temperature of approximately 165 degrees Fahr. in the radiator. With forced circulation the temperature drop from the supply header to the return header on the boiler can be maintained between 5 to 10 degrees Fahr. An increased boiler temperature of approximately 200 degrees Fahr. and a radiator temperature of 190 degrees to 195 degrees Fahr. is quite possible and is within the realm of good practice.

Cast iron radiators with a forced system can be concealed behind grilles without increasing their size over that required for exposed radiators on gravity circulation. In most cases sizes can be reduced. A properly designed forced hot water system as far as size of radiators is concerned approaches very closely indeed to a steam system and has the additional advantage of the constant body of heated water, always available with a closer temperature control than can be obtained with the ordinary steam system.

A hot water heating system is much more economical and flexible than steam, because of the great range of temperature possible with this medium. A heating plant is designed to operate successfully with the lowest outdoor temperatures to be expected in the particular locality and since this condition only occurs once or twice per year the advantages of a heating medium with a large temperature range can be readily seen.

Constant temperature regulation of ordinary steam heating can only be obtained by means of thermostatic radiator control or very skilful firing, since the temperature of steam at atmospheric pressure is approximately 212 degrees Fahr. This being far too high for the majority of the heating season.

Of recent years however, steam systems have been perfected, operating on sub-atmospheric pressures with the consequent reduction of temperature. In fact, it is common practice to circulate steam at 24" vacuum with a corresponding temperature of 140 degrees Fahr. This type of system incorporates the advantage of hot water heating; that is, flexibility of temperature.

Steam systems in common with warmed air have the advantages of a quicker response to firing. The modern sub-atmospheric steam heating system is an extremely efficient affair for larger houses and is preferred by a considerable number of owners. In both forced high temperature water and steam systems the radiation on account of its high temperature should be concealed or otherwise protected from contact with the occupants of the building.

Recently several types of concealed heaters have been placed on the market and used in a great many dwellings. They vary from straight convection heaters, to improved cast iron direct radiation. All of these concealed types have a much smaller water or steam capacity than standard cast iron radiation, and therefore cannot be used on the same system as the standard radiators without the possibility of unbalancing the system.

Generally speaking, the standard concealed radiator complete with cabinet is far from satisfactory in appearance and the architect should carefully consider the design of the exposed parts. Modern standard cast iron radiation is, in the writer's opinion, better in appearance than the pressed steel commercial concealed units for use in residences.

Piping for either steam or hot water heating cannot be too carefully designed. Some otherwise good installations are rendered ineffective by undersized or "trapped" piping.

A gravity circulating hot water heating system depends entirely on the difference in pressure head between the supply and return risers for its circulation. On the average system this pressure is exceptionally small and great care must be taken in designing and installing the equipment to balance the circuits carefully and to grade all piping properly as this type of system is very susceptible to "short circuiting." More liberties may be taken with the "forced" type of system however, since the circulation is effected by means of a pump, generally electrically driven. With a circulating pump it is possible to overcome trapped piping and imperfectly designed systems, and is considered by many as a 'cure all' for circulating troubles.

All mains, risers and runouts should be covered with insulating pipe covering as well as the heating boiler. The extra cost involved is easily repaid in fuel saving in a few seasons.

The heating boiler so often chosen on an empirical basis should be selected with some care. Where hand firing either for forced or gravity draft is used a boiler with an ample fire pot permits more complete combustion and greater efficiency from the fuel consumed. The amount of heating surface exposed to the fire should also be considered and as long a fire travel as possible be obtained without reducing the stack temperature too low to ensure efficient draft or cause condensation. In most cases an oversize boiler is the cheapest in the long run. Boilers for houses are roughly of three types, the round sectional cast iron, the horizontal sectional cast iron and the horizontal fire tube steel boiler. The difference between the vertical or round, and the horizontal sectional boilers lies chiefly in their vertical dimensions and the choice between them depends on the head room available. Generally the round boiler is a little cheaper.

For modern installations where oil burners or forced draft (blowers) are used the horizontal fire tube boiler is much to be preferred in spite of its extra cost. Great changes are taking place in the design of oil burning boilers and a number of boiler and burner units are now available with high operating efficiencies.

All blower and oil burning equipment should of course be thermostatically controlled. If it is placed in a room which is normally easily heated or has a surplus of radiation the rest of the building will be cold. The converse is true also. In buildings heated by thermostatically controlled boilers, radiation must be carefully designed and in perfect balance, otherwise a series of excessively hot or cold rooms will be the result.

Hot air furnaces are to-day quite different from those of a few years ago. To-day they can be fired with oil, gas, coal or wood. With coal blower equipment they are quite efficient. In the new models a quite satisfactory humidifying unit is built in.

The choice of fuel is one that depends mainly on the pocket of the owner. Generally the cleaner

the fuel the more expensive. Coal and coke, or straight coal screenings, or pea coal are the cheapest of modern fuels. Wood of course in rural districts is the logical fuel but is extremely expensive in the large towns and cities. Oil and anthracite in the larger sizes is about on a par, and gas more expensive again.

The use of the cheaper coals necessitates the employment of a mechanical draft of some sort. A great many "blowers" of satisfactory design and manufacture are on the market, some of which are incorporated with mechanical stokers. A very satisfactory installation consists of a standard blower and a magazine boiler.

The domestic stokers have the disadvantage of being somewhat noisy in operation and some thought should be given to this point in locating the boiler room. In all such installations special grates must be used, the standard grates being too open.

Oil burners have been greatly improved in the past ten years and any one of the well known burners can be used without hesitation. For blowers and oil burners, especially in the larger installations, some sort of automatic damper should be placed in the chimney stack to control the draft.

The advantage of oil as a fuel over coal of any type consists entirely in the elimination of coal dust and ashes. Whether the extra cost is justified or not is a matter of personal opinion.

For large houses or those where the owner is prepared to pay still a little more for fuel the gas fired boiler or furnace should be used.

Fuel supply is constant and uninterrupted and the absence of machinery such as motors, fans, etc., renders this installation practically trouble proof. The boiler in itself is extremely compact and the whole equipment can be placed in a space of about 10 feet square for the largest houses. The cost of operation is more than oil but the absence of oil tanks, ashes or coal bunkers is a distinct advantage.

In addition to hot water or steam boilers, welded or rivetted hot air furnaces can also be fired with coal using blowers, oil or gas with the same relative advantages as pertain to boilers.

In England during the past few years an entirely new idea in distribution of heat has been developed and successfully applied especially in schools, office buildings and large houses. The heating of the rooms being accomplished by means of a heat radiating element built in the walls or ceilings and completely concealed by the plaster.

Generally, electrically heated panels are used, constructed of light pressed steel and loaded to 80-100 watts per square foot, giving a surface temperature of 155 degrees Fahr.—195 degrees Fahr. The panels are thermostatically controlled with a resulting even temperature regulation.

A similar result is obtained by circulating water or steam through piping built in to the walls or ceilings. Of course the practice of building piping in masonry work for heat transfer had been adopted some time ago, especially by refrigerating engineers for the freezing of hockey cushions, the piping being laid on wooden sleepers and then buried in a concrete slab.

Panel heating is installed in the British Embassy in Washington D.C., and will undoubtedly be more generally used in this country sooner or later. Its obvious advantages, in eliminating radiators and grilles are so great as to merit the closest study and investigation by Canadian architects.

## AIR CONDITIONING

A large and ever increasing amount of money is spent annually on mechanical equipment in the attempt to reproduce ideal outdoor conditions within our homes or offices. We are all familiar with the feeling of lassitude caused by an overheated room and the parched dry skin and throat irritation brought about by lack of moisture in the air. The average relative humidity over the land surface of the earth is about 60%, whereas the air over the ocean is about 85% saturated.

A series of tests made in typical government offices in Ottawa showed a relative humidity of 8% with moderately cold outdoor conditions. Death Valley in California has the driest climate on the North American Continent, yet the relative humidity is 23%, nearly three times as much as a typical Canadian office in the winter.

The human body is able to adapt itself to changes in climatic conditions within reasonable limits, but should the surrounding air temperature be raised fairly high, the heat regulating mechanism of the nervous system fails to dissipate heat as fast as it is produced. The action of the heart is increased, respiration accelerated, the blood is drawn to the surface of the body and it is believed that the consequent anaemic condition of the brain induces the lassitude we all know. People working in hot rooms, being unable to dispose of the surplus body heat by radiation or convection drink abnormally large quantities of liquids which appear on the skin in the form of perspiration. The evaporation of this liquid into the air absorbs from the body some of the latent heat required to accomplish this producing a cooling effect.

Research work shows that an adult at work in an effective temperature of 70° Fahr., gives off .6 lb. of moisture per hour in the form of perspiration. This amounts to nearly 1½ imperial gallons per

24 hours. It can be readily seen that if atmospheric and working conditions are overworking this natural process of elimination, serious bodily harm can develop.

Essential features that should be combined in a heating system are:

1. To heat the air sufficiently to offset the heat loss from the building.
2. To add sufficient moisture to the air to raise the relative humidity to 40% or 50%.
3. To filter the air.
4. To agitate the air in all the rooms without causing draughts.

The medium used for heating the air should be flexible, so that the final air temperature at the grilles rises as the outside temperature falls. The controls should be synchronized to obtain this condition which would allow the fan to circulate the air at all times.

Great care should be used in the selection of spray nozzles as these will choke continually if unsuited to the particular conditions under which they are installed. The trouble is usually caused by water evaporating in the orifice and leaving a deposit of the salts found in the water of that particular locality. The humidistat has been improved (not before its time) and is much more reliable than the instruments of the last few years. If a spray type humidifier is of sufficient capacity to maintain the proper relative humidity under extreme conditions, some type of control will be required to prevent over humidification when the demand for moisture is not so great. Eliminator plates or some similar device should be installed to prevent entrained moisture from the spray chamber from being carried through the ductwork.

Filters are of several types which may possibly be bracketted as follows:

1. The self cleaning filter.
2. The manually cleaned filter.
3. The renewable filter.

Self cleaning filters are again subdivided into two groups. One type has a time controlled motor which revolves an endless type filter at certain intervals, the lower portion of the filter passing through a trough filled with a viscous liquid, the dirt settling to the bottom of the trough. The other type consists of a densely packed curtain of glass strands which are cleaned by means of the humidifier sprays. This type of filter can be arranged to serve as both filter and eliminator making the use of special baffles unnecessary. This filter is only self cleaning in the winter season unless spray nozzles are used for cooling.

Manually cleaned filters are given a new lease of life, either by washing in an oil bath or spraying with a hose depending upon the nature of the filtering material. Renewable type filters are becoming increasingly popular; they are very cheap in price; perfectly efficient and easily disposed of.

The important features to be incorporated in a cooling unit are:

1. To remove the sensible heat.
2. To remove latent heat.
3. To filter the air.
4. To agitate the air in all rooms without causing draughts.

Cooling of air may be accomplished by several means, the two most popular methods are:

1. Passing the air through finned coil surface supplied with a cooling medium, or
2. Passing the air through a spray chamber of cooled water.

Dehumidification is usually attained by lowering the temperature of the air below its dew point and precipitating the excess moisture.

1. By passing the air over coils chilled by water or a refrigerant.
2. By passing the air over ice, or
3. By passing the air through some adsorbing material such as silica gel. ($SiO_2$).

The last two methods are not used very extensively and need not be discussed here, although it would not be surprising to see the adsorption method gain in popularity during the next few years.

Many cities, especially around the great lakes, are blessed with a fairly cold water supply enabling people in these localities to avail themselves of a cheap cooling medium. Except for a few days each summer when water temperatures are high due to wind direction, etc., cooling and dehumidifying can be accomplished in a perfectly satisfactory manner.

The fresh air intake for a cooling system should be of sufficient size to enable 100% outdoor air to be drawn into the system; this intake should be located on the cool side of the house but away from garbage cans, motor exhausts, or other sources of odour. Very beneficial cooling has been attained by placing a quiet running exhaust fan in the roof space of a house and drawing the warm air up through the house, the cooler air coming in at the lower levels. This type of system is particularly suited to night cooling, but great care must be exercised in the selection and mounting of the fan to ensure quietness of operation.

Better air distribution and lower floor to ceiling temperature differential can be obtained by introducing warm air at the floor level than would be possible with the air inlet located 6′ 6″ or 7′ 0″ above the floor. If cooling is to be accomplished by the same system of ductwork, it is imperative that the inlet grilles be placed high, otherwise the incoming cold air being heavy, billows along the floor and down the return opening without building up to the

breathing level. Grilles and registers are now obtainable with a positive connecting flange to secure to the ductwork, eliminating the dust streaks on the walls so often caused by the surface mounted grille.

One of the greatest troubles experienced with air conditioning is objectionable noise caused by fans, motors, etc. Mechanical equipment should be located in the basement away from living rooms, dining rooms, libraries, etc. Special attention should be paid to electric motors. A wise precaution is to consult the manufacturer of this important machine before specifying as it is often possible to eliminate a great deal of magnetic hum by using a size larger frame than is usually supplied.

Fans should be selected with a low tip speed, depending upon the curve of the blade used. Fans and motors should be separately mounted on some sound absorbing material such as cork or rubber and no rigid metallic connection allowed for the motor feeders. Various acoustical treating materials may be used for lining the ductwork but care must be taken in the selection, as trouble has been experienced from the use of felts using a glue binder which disintegrates and emits a particularly offensive odour.

## PLUMBING

The modern plumbing system varies considerably from that of 20 or even 10 years ago in many particulars, especially water piping and fixtures. Lead water piping has given way to steel, wrought iron, brass and copper.

A tremendous amount of lead work has been replaced within the past few years due to the lead crystallizing and crumbling to a powder when touched.

Steel pipe being the cheapest is generally used in small houses and, only too often in larger ones with disastrous results after a few years use, particularly on the hot water lines. The slight extra cost of non-corrosive piping either of brass or copper tubing, is sufficient reason for its use for all concealed or inaccessible lines as a matter of standard practice. For exposed fittings of fixtures, polished brass has been supplanted first by brass, nickle plated and within the past ten years by chromium plated work. These new fittings when properly made are a distinct improvement. However, through ignorance or a desire to keep the price down, the chromium plating is sometimes quite unsatisfactory and has a tendency to flake off within a short time. Chromium plating is an extremely delicate operation, and almost microscopic thinness of the plate being one of the difficulties. While it is possible to deposit chromium directly on almost any surface, the practice only leads to trouble. The plating peels off and if over iron, rust shows within a very short time. To get a satisfactory result it should be applied over brass which has been nickle plated. Specifications should read, "all exposed piping, etc., shall be seamless drawn brass tubing, iron pipe size, heavily nickle plated and finally heavily chromium plated on all exposed surface." Iron and steel pipe may be chromium plated by successive coatings of copper, nickle and chromium.

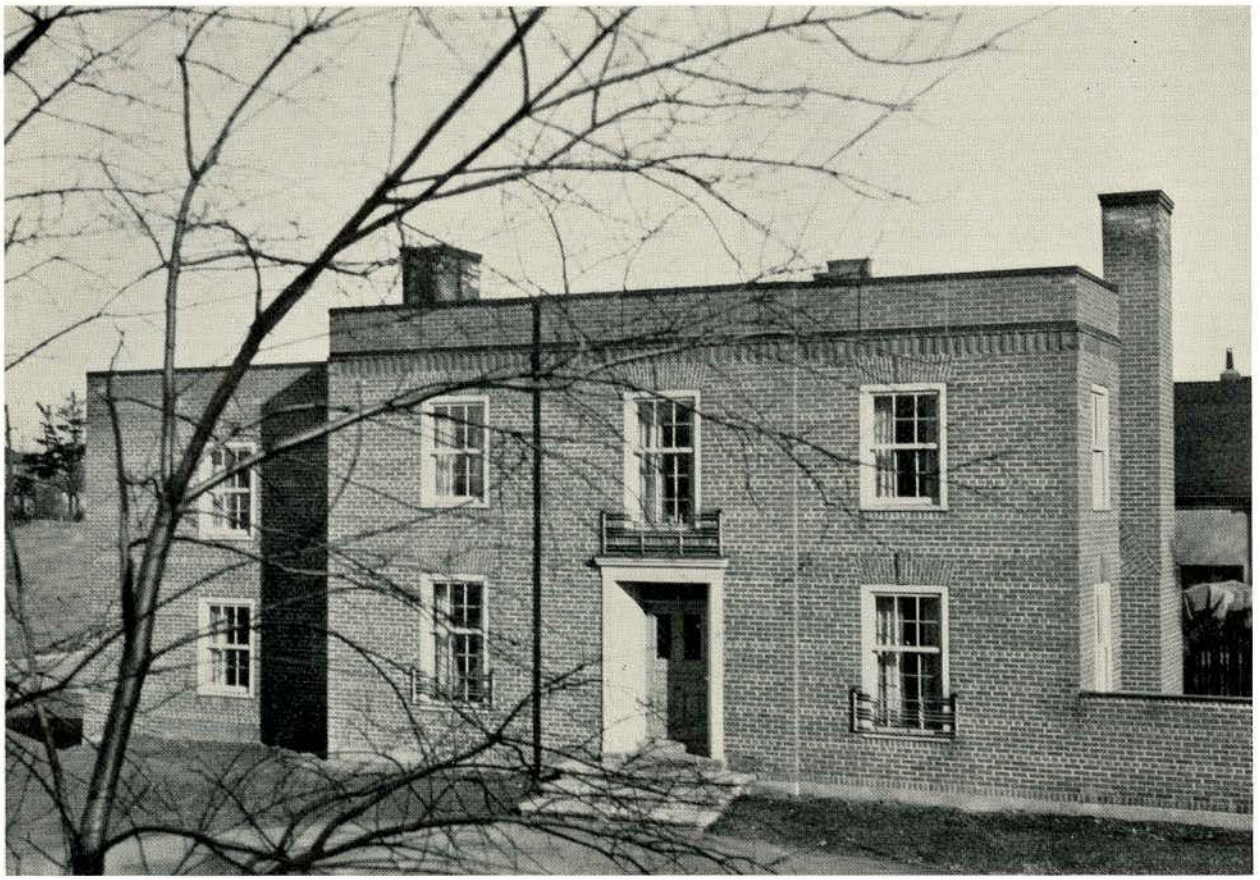
Plumbing fixtures have been radically changed and in better class work vitreous china has almost entirely replaced enamelled iron for lavatories. The old enamelled iron sinks have to some extent given way to vitreous china, monel metal and copper. Kitchen sinks which formerly were set about 30 inches from the floor are now set at 34 inches to 36 inches from the floor.

Plumbing fixture manufacturers have improved their designs to conform to modern architectural treatment with clean sweeping lines and a freedom from dust and dirt collecting pockets.

Water closets in particular have been designed along these lines and for residences and hospitals the one-piece quiet operating fixtures are now being installed where silence of operation is necessary. One manufacturer of this type of fixture has incorporated a non-overflow feature which is highly desirable.

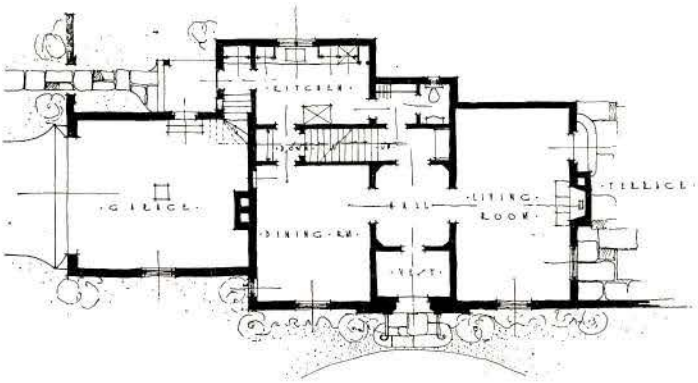
Plumbing brass fittings have many new features such as interchangeable stems and renewable monel metal seats, tending to reduce maintenance costs. There are a number of attractive designs available for those who prefer ornamental fittings; one manufacturer, at least, having a range of period designs. Fixtures are now obtainable made from steel and finished in various colours at very slight additional cost. They are extremely light in weight, very strong and the enamels used have the added advantage of being acid resisting.

Domestic hot water supply is something which requires considerable thought and analysis. No two families are exactly alike in their demands for hot water. As a general rule, however, the equipment usually installed for this service is seriously undersized. For the sake of argument let us consider a typical 8 roomed house with a laundry, a kitchen and two bath rooms as a minimum, and a family of five to six persons, three of which are adults. The average installation in such a house consists of a 25 gallon galvanized storage tank not insulated, a 1500 watt electric water heater, or a small one burner manually controlled gas coil heater, or the smallest size coal jacket heater and the usual coil in the furnace. Assuming that a



RESIDENCE OF FORSEY PAGE, ESQ., TORONTO

*Forsey Page and Steele, MM.R.A.I.C., Architects*



GROUND FLOOR PLAN

FIRST FLOOR PLAN

on lighting circuits is generally the cause, as the plugging in of heaters, fans, irons, etc., on such circuits causes a temporary overload.

The majority of these troubles could be eliminated by keeping plug receptacles on circuits reserved for them alone and such circuits should be designed particularly for the probable actual loading. As a general practice not more than four duplex receptacles should be placed on one 10 ampere circuit. Toasters, heaters, sun lamps, washing machines and irons should each have an individual circuit or at least not more than two such appliances should go on any one circuit. Vacuum cleaners can on the other hand be generally plugged in anywhere as they are most often used during the day when other outlets on the circuit are dead. A further improvement in this connection is the new type of receptacle and plug. The receptacles have slot finding faces and the plugs have integral grips; the latter obviates the necessity of pulling the actual wire when disengaging the plug. In living rooms and other places where table lamps are connected to receptacles, such receptacles should be controlled by switches.

However in spite of these suggested remedies plug fuses will continue to burn out, due to arcing at receptacles and lamps when same are disconnected or to defective wiring in appliances. The remedy lies in the use of automatic circuit breakers on each circuit at the distribution panel, instead of plug fuses. Satisfactory equipment of this type is now available consisting of a panel in which are mounted combination circuit switches and circuit breakers. Overloading simply causes the switch to open automatically. The switch can then be closed by hand but not until the cause of the overloading is removed.

Modern electrical equipment for houses covers a vast number of small motorized labour saving devices and therapeutic equipment, such as fans, oil burners, washing and ironing machines, floor polishers, vibrators, refrigerators, vacuum cleaners, sun lamps, fruit squeezers, choppers, etc. With such an array of possible causes of circuit overloading, fuseless distribution panels seem to be very desirable in addition to careful planning of circuits.

A highly desirable feature of the modern kitchen is the provision of some means of removing cooking odours and preventing them spreading to other parts of the house. This can be accomplished by providing one of the many unit ventilators which are usually supplied complete with automatic louvres and a steel box for installation during the course of construction.

Very compact flush type annunciators may be obtained with manual or electro-manual re-set. Front door, service door and dining room should each have their own bell with a distinctive ring or buzz obviating reference to the annunciator. Pleasant sounding chimes may be obtained for this purpose.

A system of rigid conduit work should be provided for the Bell Telephone System to prevent exposed surface wiring later. Flush boxes with perforated grilles should be built in to accommodate the ringer box.

Special combination radio outlets may be obtained combining antenna, ground and power outlets. The antenna may be concealed in the roof space but should be L shaped.

Receptacle outlets for ironing or toasters, etc., should be provided with a bulls-eye to ensure the appliance being switched off after use.

The standard cover plate of .04″ is apt to buckle when secured to the outlet box. At a slight extra charge, cover plates may be obtained .06″ in thickness. These plates have a much more substantial appearance.

An otherwise fine house may be marred by the unsightly overhead hydro or telephone service. The use of underground services in lead covered cable should be investigated, the extra cost involved is amply repaid by the absence of overhead wires or pole line.

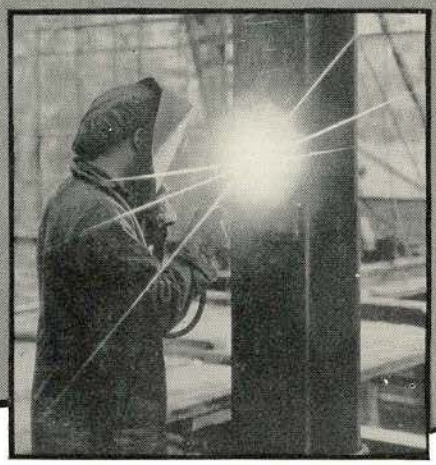
## PRACTICAL TRAINING FOR ARCHITECTURAL STUDENTS

A year of practice in handling typical problems of an architect's office is to be given to students of architecture at Syracuse University, N.Y., in a wholly new curriculum which goes into effect immediately. As part of the requirement for graduation the student must have completed contract drawings which he can defend before a jury of faculty members and visiting architects.

Under the new program there will be a greater concentration of the former curriculum in the first four years, leaving the fifth year for an original departure in what college officials describe as "setting up office," or "playing at architectural practice."

In that year the student will be encouraged to seek out actual problems. These will include, among other things, a study of logical building conditions from the standpoint of need and finance. He will be guided by the faculty in visiting practicing architects and in seeking such additional advice as may be necessary to help him solve social, financial, scientific and utilitarian problems.

Field trips will be made to study completed buildings and those under construction. There will be courses dealing with problems the student must face in actual practice, such as office administration and the real estate business. An extended trip to a metropolitan centre will be required.



## MODERN ARC WELDING

Dominion Bridge Co. Limited is equipped to design and fabricate all types of steel structures, tanks, pressure vessels and machine frames by arc welding.

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jacket heater is used; not more than 20 gallons of hot water at 140 degrees can be drawn off at one time. In other words two baths can be drawn, or the laundry can be done before the supply is exhausted. Changing the size of the storage tank to 50 gallons would cure this condition. The extra cost of heating this amount of water can be practically eliminated by insulating the tank and hot water piping.

Of the three systems of heating water, coal, gas or electricity, the coal jacket heater is undoubtedly the cheapest and the smallest size of jacket heater sold will easily handle a 50 gallon tank.

The question of coal storage and ash removal, however, requires a considerable amount of labour by someone. Gas and electricity are to be preferred on this account. Of the two, gas is cheaper except where a flat rate electric heater can be obtained. The electric heaters are very much slower in heating the tank but are quite satisfactory except when exceptional demands are made on the system. An electric heater may be controlled by a switch from the kitchen, but gas requires lighting at the heater which is generally in the basement. Modern electric and gas heaters are usually automatically controlled by an aquastat, however, and as such are preferable. The use of a coil in the furnace, contrary to common opinion, does impose quite a load on a boiler. To heat 25 gallons of water per hour from 50 degrees Fahrenheit to 140 degrees Fahrenheit requires as much heat as 135 square feet of hot water radiation with boiler water at 180 degrees Fahrenheit.

For the typical 8 roomed house which we have taken as an example, a proper and economical system can be installed consisting of a 50 gallon tank covered with 1½″ of good insulation, a 1,000 watt flat rate electric heater, a coal jacket heater with a 10″ grate or a small automatic gas heater.

Automatic gas heaters and tank units are perhaps the cleanest and most satisfactory method of heating water although the self contained oil burning units run a close second and are somewhat cheaper to operate. An increasingly popular method is to heat the domestic water by means of the heating boiler through a heat exchanger, usually of the copper tube type. For summer and winter, domestic water heating from the heating boiler, a thermostatically controlled valve is required on the mains supplying the radiation.

The storage tank should, if possible, be made of monel metal or copper. Galvanized iron tanks are invariably used for economy but recent findings seem to indicate that a black iron tank would last as long if not longer than a galvanized one. The reason being that it is not commercially possible to guarantee to completely cover the inside of a tank with the zinc coating, consequently a galvanic action is set up with the resultant pitting and erosion with which we are all familiar. A method of spraying zinc or copper onto metal which has been previously sand blasted has been recently developed and may be a solution to the problem. This process is known as "metalizing."

A sufficient number of hose bibbs should be installed outside the house for lawn sprinkling. If these are taken off a special line with one central draining cock conveniently located, many troubles connected with freezing up in the fall can be obviated.

The underground "Spraylawn" equipment is a great time and labour saver. It consists of spray nozzles located throughout the lawn and gardens, controlled from one central point eliminating the garden hose entirely. Great care must be exercised in locating the spray nozzles to ensure that all the ground is sprinkled and no corners or other spots omitted. The even ground coverage obtained by this method will effect a reduction in the quantity of water used by haphazard methods.

One of the most recent and popular additions to modern house plumbing is the mechanical water softener. Where the water is hard and laundry is done in the house it is almost a necessity. The usual practice with softeners is to install them only on the hot water system and is quite satisfactory. The boiler feed water should be softened, thus eliminating scale in the boiler.

## ELECTRIC WIRING

Concealed knob and tube style wiring has been greatly improved by better materials and is probably the most suitable type for small house wiring. Where metal lath is used, armoured and bushed cable or rigid conduit is required. Armoured and bushed cable, commonly called BX is quite satisfactory providing the bushings are properly installed, the only disadvantage being that a last minute change in the location of a fixture often means that the entire run has to be scrapped as it is impossible to splice BX without providing an accessible box. The most satisfactory but most expensive type of wiring is, of course, rigid conduit. Any change of location of a lighting outlet is often quite difficult as the conduit cannot be "fished" through partition or ceiling spaces as is the case with BX. One great advantage of rigid conduit is that it is practically immune from damage during construction. Carpenters and other mechanics cannot drive nails through it as often happens with open or armoured wiring.

All house wiring up till recently had one most annoying feature, namely the well known blown out fuse. The practice of connecting plug receptacles

# ARCHITECTURE TO THE FORE

BY B. EVAN PARRY, F.R.A.I.C.

*Director of Publicity for the Ontario Association of Architects*

## SYNOPSES OF RADIO BROADCASTS

*Given weekly under the auspices of the Ontario Association of Architects*

### THE SMALL HOUSE

By Gordon S. Adamson, m.r.a.i.c.

There is a desire on the part of most people to live in a single family dwelling which for the vast majority of us means and will continue to mean the small house. This need not discourage us however, since like the larger ones, the small house should and can express its fitness for a full domestic life. Therefore it follows that a house of any size, from the largest to the smallest should be planned to provide for all aspects of living.

We are all familiar with the small house whose smallness has been over-emphasized. This need not, and should not be the case. Let us consider now how this fault may be easily remedied.

Since most of our leisure hours are spent in the living room, it should be large enough for comfortable living and pleasurable relaxation. This can be accomplished by conserving space in rooms of lesser importance. Why, at the expense of the living room, should we build a large dining room, which probably would be used to its fullest capacity only once or twice a year? Let us be content with a room just large enough to meet every day needs. With present day cupboard arrangements and labour-saving devices the kitchen may be much smaller than formerly.

The well planned small house provides easy circulation through the different rooms, but there is no waste in large and often unsightly halls and useless corners. Well considered closets and built-in equipment fill in these one-time disregarded spaces.

The feeling of added space may be increased by the use of delicate colours in decorating walls and woodwork, with preferably a predominant light colour repeated in several rooms. Incidentally, a wall pattern of hectic design has no place in a good small house.

Another important consideration is the size and arrangement of windows. They should be large enough to flood the rooms with light and where possible should be placed to take advantage of sun and outlook.

It is not necessary to make a dungeon of the living room by building a verandah across the front of the house. A garden, no matter how small, is more beautiful and restful than a busy street. Therefore, let us arrange to have the verandah or terrace overlooking the garden.

Now let us consider the exterior of the house. Here again let simplicity prevail. A small person is conspicuous in loud checks or too many frills and furbelows. The same is true of the house. It is much better not to have fussy ornament, heavy woodwork which is out of scale with the rest of the house, or strong contrasts in either paint or materials. Let us form the habit of using one material only in the exposed faces of the whole house, except the roof. Almost any recognized building material which will withstand the weather, be it stone, brick, wood or stucco, has a charm all its own and need not be embellished with other materials. All sides of the house should present a uniformly pleasing appearance and the so-called back door need never be an eye-sore.

It is well, too, to consider the house in relation to its surroundings and its neighbours. This is essential if we are to have beautiful streets in our residential districts. All too often we see newly developed streets where each house has been conceived with the idea of attracting to itself more attention than those near it.

### LANDSCAPE AND ARCHITECTURE

By Gordon S. Adamson, m.r.a.i.c.

There is nothing new in the idea of combining landscape with architecture. Ever since the hanging gardens of Babylon were at the height of their glory, six hundred years before the birth of Christ, architecture and landscape treatments have come hand in hand down through the ages.

Landscape and architecture embraces all phases of the subject from the broader study of civic art or town planning in which we, as citizens, should be vitally interested, to the tiny cottage garden which has, I think, a distinct appeal to all of us.

Many people think that flowers are the be-all and end-all of the garden and that if the individual plants are beautiful, it follows that the whole garden will be. They fail to take into consideration the necessity for a proper arrangement of plants against a suitable background, and they forget that some very restful gardens haven't a single flower in them.

Too many of our gardens are without design, and without boundaries—just masses of planting which have nothing in common with the house, and no unity with the character of the ground, or even between the different elements that go to make them up. Such problems as the exact colours of blooms, time and duration of blooms, ultimate height and shape of plants and so on in many cases do not concern the amateur gardener at all, but are always given most careful consideration by the professional. The idea is not to gather together a lot of plants and flowers and then set about to find a suitable place to put them, but to plan the garden scheme and then look for the material which will best serve our purpose. It is a great disappointment to enter a garden which has been a riot of colour when at the height of its period of bloom only to find that it has become just a sea of foliage. Realizing that it is not possible to have flowers all year round in this climate, we should pay particular attention to the skeleton layout of the garden, using evergreens and architectural treatment which may include garden walls, benches, pools, sun dials and walks, to provide permanent beauty and interest in off-seasons.

As the building is the important element in the composition, the landscape development must be in harmony with it. The city house demands a garden of architectural treatment, while the large country estate is usually best served by a formal garden near the house with informal planting on a large scale at some distance from the buildings. It is also important to remember that before a house is built, its size should be carefully considered in relation to the lot on which it is to be placed.

GORDON S. ADAMSON, M.R.A.I.C.

# COMPETITIONS

## ARCHITECTURAL COMPETITION SPONSORED BY THE T. EATON CO. LIMITED

## 15 PRIZES TOTALLING $5,500.00

### PROGRAMME

**Scope:** The T. Eaton Co., Limited, competition for the design of—

(a) A small house—and

(b) A medium sized house

**Promoter:** The promoter of this competition is The T. Eaton Co. Limited, of Toronto.

**Object:** The object of this competition is to awaken an interest in good architecture, particularly in the building of small and medium sized houses, thereby stimulating an interest in the construction industries in Canada, and the accessories incident thereto.

**Competitors:** This competition is open to all registered architects in good standing resident in Canada, and also to graduates of the following recognized schools of architecture—University of Toronto, McGill University, University of Manitoba, University of Alberta, The Ecole des Beaux Arts of Montreal, and The Ecole des Beaux Arts of Quebec.

No registered architects or graduates of universities employed in the offices of the Jury of Architects, or of The T. Eaton Co., Limited, will be eligible to compete.

**Questions:** As the terms of the competition set forth in this programme are considered complete, no further questions will be answered.

**General Notes:** It is the intention of the promoter to make small scale models of the interiors of selected designs, which they will decorate and furnish.

As certain of these houses may be built on sites similar to those set forth in the problems, it is important that the designer give serious consideration to such practical points as would be involved in the use of duct work for air-conditioning, etc.

As an interesting departure, it is the intention of the promoter, after the awards have been made, to hold an exhibition of selected designs at which the public will be invited to vote as to their preference.

### SMALL HOUSE

**Problem "A":** The lot on which the house is to be built is an inside one and is assumed to be level, with a frontage of 50′ and a depth of 150′.

The problem is to design a house which shall not contain more than 25,000 cubic feet, including a one car garage, covered porches or other appendages. It is estimated that a house of this type could be built in Toronto for approximately $7,500.

**Minimum Requirements:** Living room, dining room or combined living and dining room, kitchen, four bedrooms, one bathroom, recreation room. One car garage attached to the house.

Minimum ceiling heights—Basement 7′ to bottom of joists
1st floor 8′ 6″ in the clear
Other floors 8′ in the clear

**Orientation:** The competitor may make his own assumption as to the direction in which the lot faces. The placing of the house on the lot is optional with the designer but he must indicate the points of the compass on his block plan.

### MEDIUM SIZED HOUSE

**Problem "B":** The lot on which the house is to be built is an inside one and is assumed to be level with a frontage of 75′ and a depth of 150′.

The problem is to design a house which shall not contain more than 40,000 cubic feet, including garage accommodation for two cars, covered porches or other appendages. It is estimated that a house of this type can be built in Toronto for approximately $12,000.

**Minimum Requirements:** Dining room, living room, kitchen, pantry, and washroom, four bedrooms, two bathrooms, one maid's room, one maid's bathroom, recreation room, provision for garage accommodation for two cars attached to the house.

Minimum ceiling heights—Basement 8′ to bottom of joists
Main Floor 9′ in the clear
Other floors 8′ in the clear

**Computation of Cubage:** The following method of computing the cubage is obligatory. The cubage is to be the cubic space enclosed within the outer surfaces of outside or enclosing walls and from 6″ below the lowest floor to the top of the parapet, or in the case of sloping roofs, to a point midway between the upper ceiling level and the highest point of the roof. In unexcavated portions the cube should be taken from a level 2′ 0″ below the grade.

**Drawings:** Drawings will be presented on one sheet—size 30″ wide x 40″ high, St. Louis illustration board or equal. The following drawings are required:

Block plan with landscaping indicated at 1/16″ scale
All floor plans at 1/8″ scale
The two most important elevations at 1/8″ scale
One perspective—10″ x 15″.

The sheet is to be arranged as follows: elevations at the bottom of the sheet, plans in the middle and perspective at the top.

Name and dimensions of all rooms must be distinctly printed on the plans, and the title—
"The T. Eaton Co. Limited, Small House Competition" or "The T. Eaton Co. Limited, Medium House Competition" in simple block letters 5/8″ high across the bottom of the sheet.

The floor plans with walls and partitions shall be blocked in solid with black ink.

The elevations to be in line, black ink without rendering.

The perspective to be a rendered free hand black pen and ink drawing.

Border to be a single line 1/2″ in from edge of sheet.

A typewritten description on plain paper not exceeding 200 words may be attached to the sheet if desired.

**Anonymity of Drawings:** No mark or identification shall appear on the drawing or on the wrapper enclosing the drawing, but a sealed opaque envelope shall be securely attached to the back of each drawing containing the designer's name and address, and a statement as to whether or not he wishes his name to appear in the event of his design being selected for exhibition.

Competitors may submit one design only in each class.

A drawing will be excluded from the competition for the following reasons:

1. If received after June 15th, 1936.

2. If the cubage limits of 25,000 and 40,000 cubic feet respectively are exceeded.

**Delivery of Drawings:** All drawings must be addressed as follows:

The T. Eaton Co. Limited, Toronto
Architectural Competition Department.

and received on or before Monday June 15th, 1936, at 5 p.m.

**Ownership of Drawings:** The designs awarded prizes and honourable mentions are to become the property of the promoter. The right is reserved by the promoter to exhibit or to publish any or all of the designs not placed. In every case where a competitor's design is shown, it will be clearly and plainly identified as his or her work, and in the event of a house being built from one of the designs, the schedule of fees for professional services as authorized by the Ontario Association of Architects will govern.

**Jury:** The judges, whose decision will be final and binding, will be as follows:

John M. Lyle, F.R.I.B.A., R.C.A.
Mackenzie Waters, B.A.SC., M.R.A.I.C.
Bruce H. Wright, B.A.SC., M.R.A.I.C.

**Return of Drawings:** All drawings not placed will be returned within a reasonable time, at the expense of the promoter but at the risk of the owner.

**Awards:** The awards will be as follows:

Class "A"—2 awards of $1,000 each
Class "A"—5 awards of $ 100 each
Class "B"—2 awards of $1,000 each
Class "B"—5 awards of $ 100 each

In addition to the above a Grand Prize of $500 will be awarded to the design which, in the opinion of the jury, is the outstanding one of the competition.

The announcement of the winning designs will be made on or immediately after the 1st of July.

# ACTIVITIES OF THE INSTITUTE

A meeting of the executive committee of the 1936 council of The Royal Architectural Institute of Canada was held in room 306, 74 King Street East, Toronto, on Monday, February 24th, 1936, at 10.00 a.m.

*Present:* Messrs. W. L. Somerville, president; Mackenzie Waters, A. J. Hazelgrove, L. Gordon Bridgman, Burwell R. Coon, R. E. McDonnell, Eric W. Haldenby, and I. Markus, secretary.

*Appointment of Standing Committees:* The following members were appointed to the various standing committees for the ensuing year:

COMMITTEE ON ARCHITECTURAL TRAINING

Mackenzie Waters, chairman; L. Gordon Bridgman, Charles David (*F*), H. L. Fetherstonhaugh, W. W. Alward, Herbert H. G. Moody, and one representative from each of the following schools of architecture: School of Architecture, University of Toronto—Prof. H. H. Madill (*F*); School of Architecture, McGill University—Prof. Ramsay Traquair; Dept. of Architecture, University of Manitoba—Prof. M. S. Osborne (*F*); Dept. of Architecture, University of Alberta—Prof. C. S. Burgess (*F*); Ecole des Beaux-Arts, Montreal and Quebec—Prof. Jules Poivert (*F*).

COMMITTEE ON SCHOLARSHIPS AND PRIZES

H. L. Fetherstonhaugh, chairman; E. R. Rolph (*F*), E. I. Barott (*F*), H. H. Madill (*F*), Murray Brown (*F*), Geo, A. Ross (*F*), and W. S. Maxwell (*F*).

COMMITTEE ON PROFESSIONAL USAGES

W. L. Somerville (*F*), P.R.A.I.C., chairman; R. F. Blakey, president, A.A.A.; Henry Whittaker, president, A.I.B.C.; Milton S. Osborne (*F*), president, M.A.A.; W. M. Brown, president, N.S.A.A.; H. S. Brenan, president, A.A. of N.B.; Murray Brown (*F*), president, O.A.A.; Ludger Venne, president, P.Q.A.A.; David Webster (*F*), president, S.A.A.

COMMITTEE ON ART, SCIENCE AND RESEARCH

B. Evan Parry (*F*), chairman; Philip J. Turner (*F*), Andrew R. Cobb (*F*), Prof. A. R. Greig, and D. G. McKinstry.

COMMITTEE ON PUBLIC RELATIONS

Eric W. Haldenby, chairman; A. J. Hazelgrove, Philip J. Turner (*F*), James H. Craig, B. Evan Parry (*F*), Gordon M. West (*F*), Robert H. Macdonald (*F*), Ludger Venne, R. E. McDonnell, Henry Whittaker, Milton S. Osborne (*F*), W. M. Brown, H. S. Brenan, Murray Brown (*F*), David Webster (*F*), Gordon McL. Pitts, and R. P. Blakey.

EDITORIAL BOARD—JOURNAL, R.A.I.C.

Burwell R. Coon, chairman; E. R. Arthur, A. S. Mathers, Gordon S. Adamson, Richard A. Fisher, Mackenzie Waters, John Y. McCarter, H. Claire Mott (*F*), E. J. Gilbert, Milton S. Osborne (*F*), Edward Underwood, W. M. Brown, A. T. Galt Durnford, Philip J. Turner (*F*), Emile Venne and Edgar S. Marrotte.

An executive committee of the editorial board was also appointed consisting of Burwell R. Coon, chairman; E. R. Arthur, A. S. Mathers, Gordon S. Adamson, Richard A. Fisher and Mackenzie Waters.

COMMITTEE ON EXHIBITIONS AND AWARDS

Eric W. Haldenby, chairman; F. Hilton Wilkes, R. E. McDonnell, Henry Whittaker, Milton S. Osborne (*F*), W. M. Brown, H. S. Brenan, Murray Brown (*F*), Ludger Venne, David Webster (*F*), and R. P. Blakey.

JOINT COMMITTEE OF THE R.A.I.C. AND C.C.A.

A. J. Hazelgrove, Chairman; J. Cecil McDougall (*F*), and Gordon M. West (*F*), representing the Royal Architectural Institute of Canada, and three representatives to be appointed by the Canadian Construction Association.

*Appointment of Special Committees:* The following members were appointed to the various Special Committees for the ensuing year:

DUTY ON PLANS

Alcide Chaussé (*F*), chairman.

STANDARDIZATION OF STRUCTURAL TIMBER

Herbert E. Moore, chairman.

HOUSING

F. H. Marani, chairman; E. R. Arthur, G. Roper Gouinlock, R. W. Catto, A. J. Hazelgrove, Bruce H. Wright, R. H. Macdonald (*F*), Herbert H. G. Moody, Henri S. Labelle (*F*), Ludger Venne, and Wm. Bow.

*Appointment of R.I.B.A. Representatives:* Philip J. Turner (*F*) of Montreal, and Sir Raymond Unwin (*Hon. F*) of London, England, were re-appointed as representatives of the R.A.I.C. on the council of the R.I.B.A.

R.A.I.C. STUDENT COMPETITIONS

The report of the jury of award was submitted to the meeting and the secretary was instructed to have the necessary medals made for the winners of the competition.

The secretary was also instructed to send a copy of the March issue of THE JOURNAL containing the report of the jury

and reproductions of the medal designs to the successful students.

*Employment of Private Architects on Public Works:* A letter was read from the Ontario Association of Architects requesting the Institute to make strong representations to the Minister of Public Works requesting that architects employed on work in Ontario be remunerated on the basis of the O.A.A. schedule of fees, irrespective of what fees are paid to architects in other provinces of the Dominion; also that architects employed by the Government should be relieved of some of the heavy expenses involved in supplying sixty sets of plans and specifications, the services of a clerk of works, and inspection and testing of materials—The matter was referred to the committee on public relations, for consideration and recommended action.

*Establishment of a Bureau for Research on Building Materials:* The meeting was informed that the president of the National Research Council had offered to co-operate with the Institute in having the council undertake research on building materials. The secretary reported that this matter was now the subject of negotiations between the National Construction Council and the National Research Council and that some definite action would likely be taken very soon.

*Appointment of a Representative to the Main Committee of the C.E.S.A.:* A letter was read from the Canadian Engineering Standards Association under date of January 29th informing the Institute that the main committee of the association was in the process of re-organization and that they would like to have the R.A.I.C. represented thereon. The appointment of a representative from the R.A.I.C. was left to the president.

*Proposed Small House Competition:* The secretary informed the meeting that the government was considering the holding of an architectural competition for small house designs and that they were desirous of securing the co-operation of the Institute in conducting this competition—Following a very lengthy discussion, it was decided to advise the government that the Institute is willing to co-operate with the Department of Finance in conducting a small house competition, provided the R.A.I.C. is permitted to assist in the preparation of the conditions and that the Institute is also fully represented on the jury of award.

*Dominion Housing Act:* The meeting was advised that the Department of Finance at Ottawa desired the opinion of the Institute as to the feasibility of employing architects to supervise the construction of houses under the Dominion Housing Act for a stipulated fee—Following some discussion, the secretary was instructed to advise the Department of Finance that while the Institute desires to co-operate with the government in every way possible, it does not consider it practicable for an architect to properly supervise the construction of a building unless proper plans and specifications have been prepared.

*Miscellaneous:* Arising out of some correspondence from the A.I.B.C., it was the considered opinion of the executive committee that whenever possible members of their Association, when contemplating a visit to Eastern Canada, should be asked to meet with the officers of the Institute to discuss matters of mutual interest. The secretary was instructed to so advise the A.I.B.C., and to write to other Provincial Associations in the east and west to the same effect.

*Adjournment:* The meeting adjourned at 4.30 p.m.

# ACTIVITIES OF PROVINCIAL ASSOCIATIONS

## ONTARIO ASSOCIATION OF ARCHITECTS

The adjourned annual meeting of the Ontario Association of Architects was held at Hart House, University of Toronto, on February 20th, 1936, with the president, Mr. Murray Brown, in the chair. About eighty members attended the meeting.

The president, in his address, reviewed the enactment of the Architects Act 1935, and welcomed to the Association the two hundred and fifty new members who had joined under its provisions. He also pointed out that already one successful prosecution had been taken against a party who attempted to practise without complying with the provisions of the Act.

The president's address was followed by reports of the council and the registration board and the Hamilton, Ottawa, Toronto and Windsor chapters.

The principal discussion of the morning session developed out of the report of the publicity committee. The effectiveness and future possibilities of the radio talks, given through the courtesy of the University Extension Department of Toronto University, and the publication of carefully selected architectural subjects in fourteen Canadian journals of varying character was particularly appreciated by the meeting. The afternoon session was principally occupied by a discussion on the By-laws and Regulations and their administration by the council and registration board.

The auditors report, presented by the honorary treasurer, Mr. A. S. Mathers, showed a deficit of $1,102.72 on the work of the current year, and a funded balance in the reserve account of over $14,000.

# NOTES

The last of the present series of O.A.A. broadcasts was given by B. Evan Parry, F.R.A.I.C., on March 28th, 1936, over the Toronto station CRCT. These radio broadcasts on architectural subjects will be continued in the Fall.

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A. T. Galt Durnford, M.R.A.I.C., of Montreal, has been elected president of the Quebec Provincial Branch of the Canadian Handicrafts Guild.

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Huntly Ward Davis, M.R.A.I.C., of Montreal, returned recently from a visit to England.

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The annual conference of British architects will take place this year at Southampton from June 24th to June 27th, inclusive. Members of the Royal Architectural Institute of Canada who expect to be in England at that time are invited to attend.

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B. Evan Parry, F.R.A.I.C., addressed a meeting of the Toronto Kiwanis Boys' Club on March 20th on the subject of slum clearance and low cost housing.

* * * *

According to an announcement recently made by Messrs. Dun and Bradstreet, the value of building permits issued in the United States for the first three months of 1936 totalled $184,637,909, as compared with $99,526,487 for the same period last year, or an increase of 85.5%. The total construction contracts awarded in Canada during the first three months of 1936 totalled $32,127,200, as compared with $29,391,300 for the same period of 1935.

## COMPETITION ADVOCATED FOR PROPOSED BANK OF CANADA BUILDING

*Editor's Note: Prior to the recent annual meeting of the Institute, the following communication was sent by the president to the Prime Minister, the Rt. Hon. Mackenzie King.*

"The Royal Architectural Institute of Canada has been informed that the government of Canada may erect in Ottawa a building to house the activities of the Bank of Canada.

If in the future such a decision is arrived at, our Institute is of the opinion that the building should in its appearance, plan and equipment, achieve, without undue extravagance, a beauty and appropriateness in keeping with its important function.

We are of the opinion that the appropriate method of obtaining a suitable design is to hold a competition limited to Canadian architects. This procedure is frequently carried out for important government buildings in Great Britain and the United States with successful results.

If it is decided to hold a competition, our Institute will be pleased to offer its assistance in drawing up conditions for the competition and in the appointment of a professional advisor. Such a service requires technical experience and a full knowledge of ethics governing professional practice. As the central body representing all Canadian architects, our Institute is in a position to act disinterestedly and co-operate with your representatives.

We feel sure that the response on the part of our profession to a competition will be a generous one and result in a design which will in all respects be worthy of the important position the Bank occupies in the financial life of our country.

The extent to which Canadian architects in private practice have had experience in this type of building is well known to you, and many of our bank buildings are recognized in other countries as achievements of a very high order."

## OBITUARY

WILLIAM R. REILLY, F.R.A.I.C.

William R. Reilly, F.R.A.I.C., D.L.S., Architect, Surveyor and Engineer, died suddenly in Regina on March 21st., 1936.

Mr. Reilly was born in Wardsville, Ontario, 78 years ago and located in Regina in 1883 where he has resided ever since. Although devoting most of his time to land surveying on which he was a recognized authority, Mr. Reilly was connected with the architectural profession most of his life. He headed the firm of Reilly and Clemesha, Architects, in the early days and later organized the firms of Reilly, Dawson and Reilly, and Reilly, Warburton and Reilly with branches in several cities. He was an active member of the firm of Reilly, Warburton and Reilly at the time of his death.

Mr. Reilly was present at the organization meeting of the Saskatchewan Association of Architects held in Regina on April 8th., 1911, and was one of the charter members of the Association. He was also one of the original body of Fellows of the Royal Architectural Institute of Canada.

## MANUFACTURERS PUBLICATIONS AND ANNOUNCEMENTS

An important Canadian development was announced at the recent annual meeting of the Dominion Bridge Company, Limited, when the shareholders were advised that all the plants of the company had been equipped for Class 3 welding, which covers the largest proportion of the welding work now being carried on, including as it does ordinary structural framework, and most of the steel pipes and tanks for carrying liquids.

* * * *

A demonstration of electrically lighted clerestory windows for the illumination of public buildings was given recently under the auspices of the Northern Electric Engineering Society before an audience consisting of representatives of the Engineering Institute of Canada and the Illuminating Engineering Society. This method of illumination is made possible by the invention of a new series of powerful prismatic lenses which increase the illumination from a standard Mazda lamp as much as twelve times in any desired direction. The demonstration was explained by Mr. Frank T. Croome of Toronto and carried out by Mr. John Ward, illumination specialist of Montreal.

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According to a recent announcement, the Algoma Steel Corporation Limited have produced at their mill in Sault Ste. Marie, Ontario, the first 12″ structural channels ever made in Canada. The channels range from seventy to eighty feet in length.

* * * *

An announcement has recently been made by the Mellon Institute of Industrial Research of Pittsburgh and the Vermont Marble Company that a scientifically developed translucent marble has been developed that reveals subsurface beauties of colour and texture in new and striking forms. The new marble has been given the trade name of "Lumar".

Gypsum, Lime and Alabastine (Canada) Limited, have prepared a series of bulletins of educational interest on lime, insulation, lathing and plastering, stucco, masonry mortar, wallboard, sound control, and decorative products. Copies of these bulletins, together with a binder may be obtained by any architect upon request to the Company at Paris, Ontario.

* * * *

A new catalogue has just been issued by Messrs. Jenkins Brothers, Limited, Valve Manufacturers of Montreal, which describes and illustrates the complete line of Jenkins Valves and Mechanical Rubber Goods. It contains all the essential information about types, patterns, sizes and weights, and also includes a section giving information of value to architects and engineers.

* * * *

The English Electric Co. of Canada, Limited, of St. Catharines, Ont., announce that their Toronto office has moved from 330 Bay St., to 50 King St. East.

The Barlux Lighting Division of the Company will be located at 991 Bay St., Toronto.

* * * *

Suggested layouts for modern kitchens and bathrooms are contained in a series of Brochures recently issued by the Crane Company. The Crane Kitchen Guide is particularly recommended to Architects as it illustrates by scale drawings and plans various arrangements adaptable to the Modern Kitchen. Copies of the Brochures may be obtained from any of the Company's offices in Canada.

* * * *

A well prepared brochure describing Zone Heating has recently been issued by the Johnson Service Company. Its purpose is to indicate the use of Johnson Duo-Stat for primary automatic control of heating mains and branches. Copies of the Brochure may be obtained from the Johnson Temperature Regulating Co. Limited at Toronto, Montreal, Winnipeg, Calgary and Vancouver.

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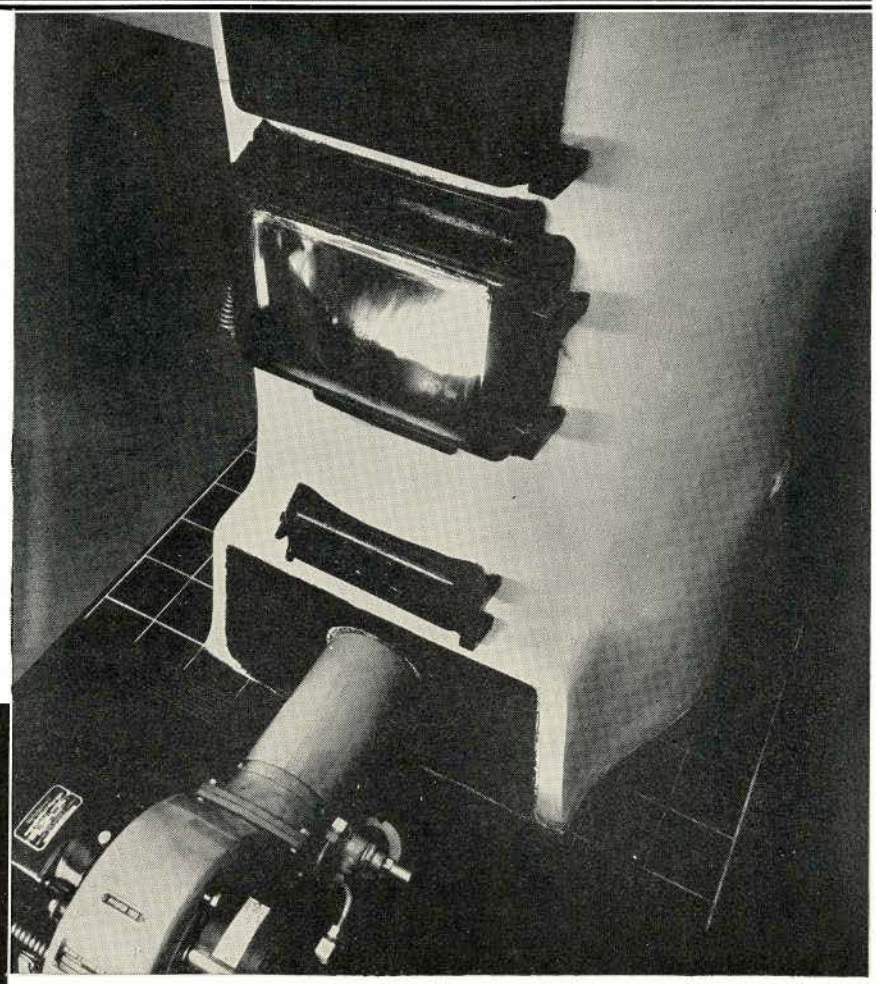

Right—Imperial G & B Oil Burners will fit any furnace, heat any home. The famous "Flexible Flame" is adjustable to both size and shape of any fire-box and thus assures most heat per dollar.

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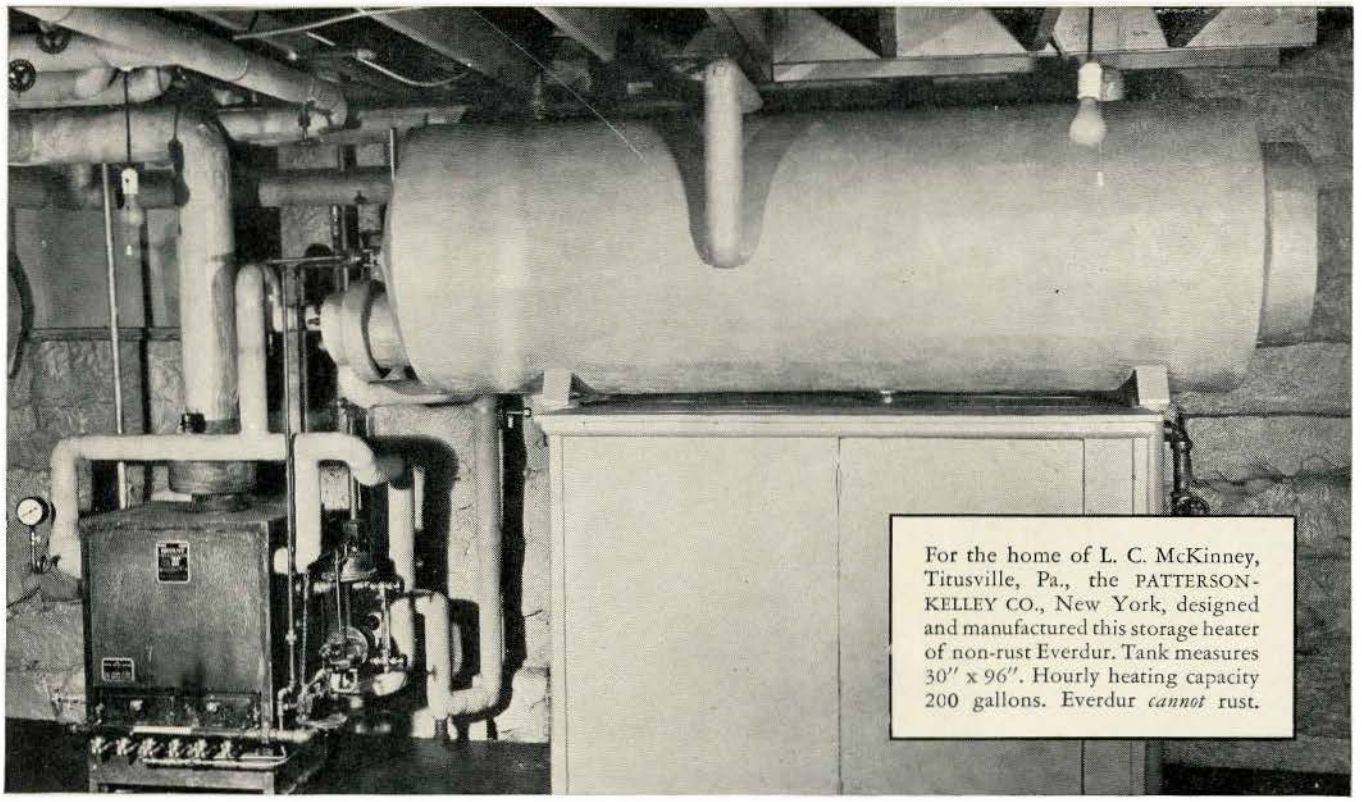

For the home of L. C. McKinney, Titusville, Pa., the PATTERSON-KELLEY CO., New York, designed and manufactured this storage heater of non-rust Everdur. Tank measures 30" x 96". Hourly heating capacity 200 gallons. Everdur *cannot* rust.

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