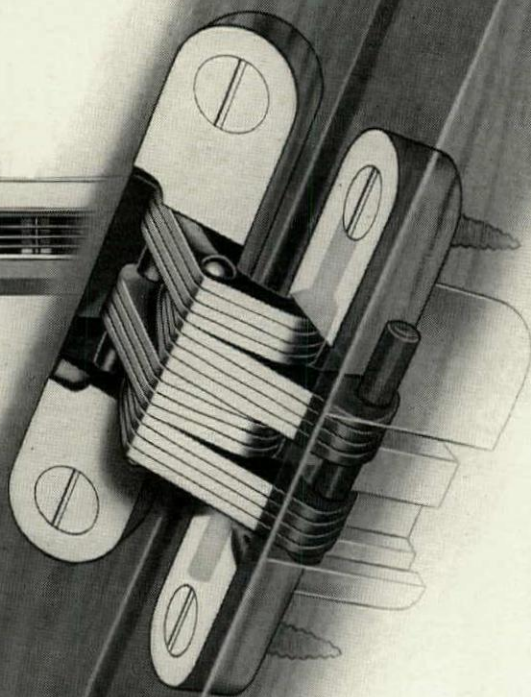
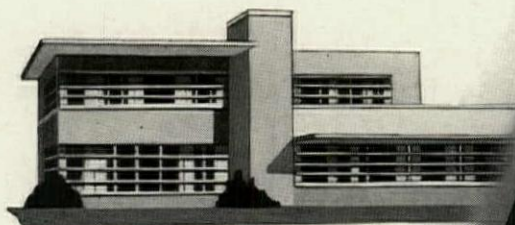


Pencil Points

THE MAGAZINE OF ARCHITECTURE



May, 1944



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The Hallmark
OF TOMORROW'S HOME

Memorials? Yes—But No Monuments!

Blood! Sweat! Tears! These we were promised and these we will get—more and more from now on.

Invasion day is imminent as we write. For millions the moment is taut with anxiety. Yet the wholly natural fears for the safety of individuals are outweighed by general understanding that the job must be done and determination that victory and eventual peace must be the outcome.

This precise instant in history may seem, at first thought, no time to discuss war memorials. But is it not just now, when we are especially conscious of the greater meanings of impending sacrifices, that we can best consider appropriate ways of reminding future generations about the common men who died in the cause of human freedom? Can it be done by "monuments"? We think not.

We have been frequently told, of late, that the young men of our army and navy have no clear idea of what they are fighting for; that their chief motive in wanting to get the war over with is simply a desire to get back home to "Mom" and the girl friend, to movies and ball games, to the old familiar enjoyments of life in peaceful America.

Somehow we cannot accept this literally, even though many soldiers say it themselves. It seems to us more than possible that these expressed objectives are but symbols of nobler yearnings which are not easily put into words by the average American, but which are, nevertheless, deeply embedded in his being.

These men of our army and navy are not a race apart from the rest of us. They come from American homes and have gone to American schools. No matter how callous they may have subsequently been made by rubbing against the realities of experience, there must be, deep in the subconscious of every one of them, a basic belief in the ideals upon which this country was founded.

Though they be inarticulate, they know in their hearts that it is human liberty that has been attacked and beaten down in Axis-occupied areas and that has been and still is threatened over here. They know that they are fighting for this principle of liberty and all that it stands for in the future lives of themselves, their families, their friends, and their fellow human beings everywhere. They even know, we suspect, that the battle will go on long after the shooting ceases and the veterans have returned to their homes to fight with other weapons than guns for that same human emancipation. Can the spirit that makes them fight be suitably memorialized by otherwise purposeless piles of stone or images of metal?

No! If Life, Liberty, and the Pursuit of Happiness be the ideals at stake in this war, let our appreciation of the fact be evident in the things we create to celebrate its winning. Let there be memorial parks and playgrounds and schools and community buildings. Let gardens and groves and forests be planted for the delight and benefit of the people. Let memorial scholarships be founded to give opportunity to the worthy to pursue studies directed in the interests of the general welfare. Let even Memorial Plans be made for neighborhoods, for communities, and for whole cities—to affect beneficently the lives of all who may live therein. Let whatever we do have a truly social purpose and a practical social result.

But let us not again clutter up our villages and towns and cities with the sort of mediocre or even tawdry "monumental" monstrosities that have been left in the wake of all our earlier wars. The Nazis would, if they prevailed, build plenty of monuments. Their thinking runs in such vainglorious channels. Since we, however, are going to win, let us build instead a better world.

Kenneth Rice



2 Small Houses In Berkeley, Calif.—



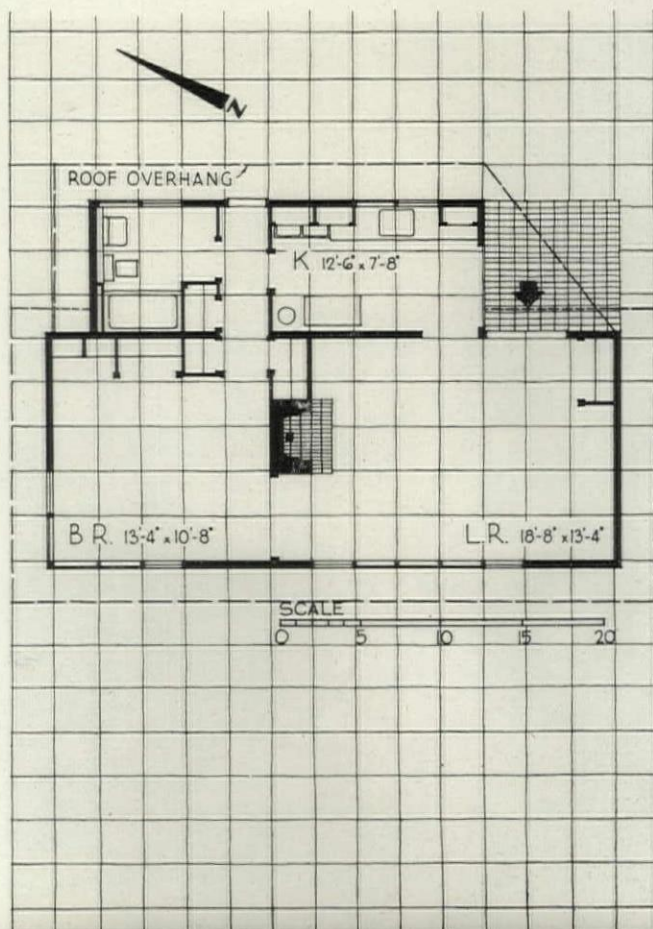
Mr. Charles W. Mier at 73 had Architect F. J. McCarthy design this modern home for himself and his wife. When FHA found reasons for disallowing loan insurance on the two small McCarthy-designed houses presented herewith, this same gentleman stepped forward to finance the projects.



F. J. McCarthy, Architect

Photos and Text by Roger Sturtevant

WITH COMPLETE COLLABORATION OF CLIENTS, ARCHITECT, AND FINANCIER



There is more in common between these two houses than the fact that they were both designed by the same architect. That they had an architect at all was accidental.

Both houses were originally conceived by owners up to the point of floor plans and FHA loan application. Both houses have owners with unusual faculties of self-evaluation, financially and personally. Both houses were finally financed by an individual who dares to recognize that individuality can be a sound investment. And finally (and this is nearly universally true in the San Francisco area and could be the secret of why so many good small houses are found there), both owners ended up calling their architect by his first name.

1. HOUSE FOR MRS. GRACE STEARNS DILLEY AND MISS MARGUERITE GAVETTE DILLEY

Mrs. Dilley acquired her property three years before building. The lot is on the thousand-foot level of the Berkeley hills among eucalyptus groves. This site was chosen not only because it was within price range but because the altitude and eucalyptus were beneficial to the chronic sinusitis suffered by Mrs. Dilley and her daughter. Also, the site was fairly near the campus of the University of California where Miss Dilley would soon be a student.

For three years the Dilleys spent many a Sunday picnicking on their lot, studying sun and wind and making word pictures of their house. It was to be a one-room rustic cabin with a fireplace and a lean-to kitchen and bath. The main room had to have exposed rafters of a gabled roof. It was to be oriented to the sun. It was to be rough enough to accommodate cheerfully cats and dogs that are always a part of the Dilley menage. It was to be simple in materials to reflect the simplicity of the family's life and possessions, and simple to maintain so that Mrs. Dilley could work at a full day job and be housekeeper as well, and so that her daughter could devote long hours to study. The house was to be an unaffected, open background for hospitality.

Financially, the picture was even clearer. Investment in the house was not to exceed an amount which could be covered by monthly payments from a small private income received by Mrs. Dilley and still (with the depression in her mind) leave her enough of that income to live a minimum existence in the house, come anything but revolution. Payments were to be small enough to be covered by rental under nearly any general economic conditions so that the Dilleys would not feel tied to a house. The maximum price set was \$2,000.

FHA informed Mrs. Dilley that a licensed architect must draw a set of plans for submission before they could pass on a loan. A mutual friend recommended F. J. McCarthy. A plus mark on the score of FHA is in order at this point.

Mrs. Dilley's outline of her requirements to McCarthy was punctuated by a blunt admonition: whatever he did, the house was *not* to be modern. To conform with FHA, it was agreed that a definite bedroom area should modify the original one-room conception. The general form of the house as built is exactly that of the first sketch submitted by McCarthy—obviously a violation of Mrs. Dilley's admonition. The Dilleys quickly saw that a shed roof pitched to the grade "sat" the house on the topography, that the clear-stories thus afforded would give them more light as well as a living background fresco of tree tops, and that they could still have exposed rafters in the living room. General floor arrangement and orientation are close to the owner's original conception.

Rapport of client and architect was rudely jolted by FHA which earned itself a large minus mark by flatly refusing to insure a loan. The grounds were that the house was too small for the neighborhood. This refusal was despite the fact that the property is in a restricted district and the district committee had already approved the proposed structure. The refusal is still more inexplicable when it is realized that the property is within that area of Berkeley where small, inexpensive, easily maintained houses have for years been at a premium for teaching or student couples of the University.

The financial impasse was broken by a most extraordinary gentleman—would for the sake of architecture and the humanities there were many more just like him—one Charles W. Mier. Mr. Mier, at 73 years of age, and Mrs. Mier (who was 68) decided they had lived long enough in the usual abode and it was time they had something they really liked. They commissioned McCarthy to design a house for them and joyously accepted



The bedroom is heated by an open-grate stove. Built-in plywood beds and corner storage box are architect-designed.

Door to bedroom opens wide to form a single daytime living area.

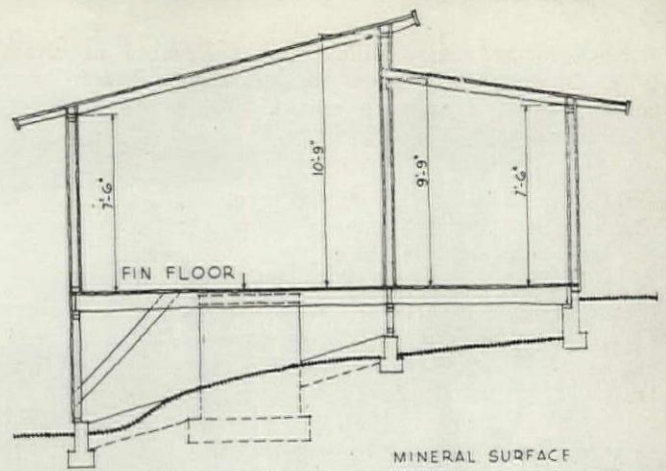


a blank wall facing a street backed up by eight hundred and fifty square feet of glass, much of it sliding glass panel walls that open the rooms to a magnificent panorama of San Francisco Bay.

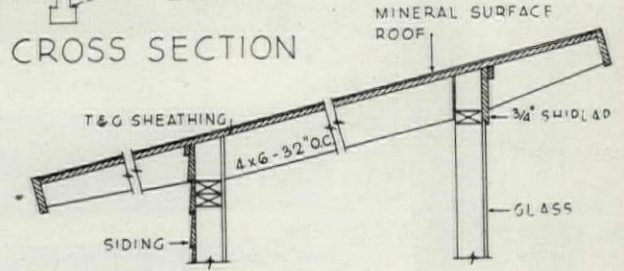
To such an adventurous spirit, the conception of the Dilley house would seem commonplace and a safe investment. The thought Mrs. Dilley had given to her financial ability plus Mr. Mier's own faith in McCarthy's work quickly made him decide to finance the project.

As usual, bids were high. Had the fireplace been abandoned, the cost could have been reduced to the specified \$2,000. Mrs. Dilley said she would rather live on dirt floors than be without a fireplace. Specifications were gone over with a fine-tooth comb. The major saving derived from abandonment of a sub-floor. The present floor will eventually serve as a sub-floor to hardwood. Twenty-five-cent items in specifications were reduced to ten-cent items. For example, hardware on doors was discarded, and stock wood knobs and snuggers were used. Even so, the final cost was \$2,640. Mrs. Dilley was willing to invest this extra amount. Fortunately, lumber was purchased just before the first major rise in price caused by the Defense Housing program, else the house would never have been built.

Construction began in October 1940 and the house was occupied in January 1941. Speaking for herself and her daughter, who feels exactly as she does, Mrs. Dilley states that their three years of occupancy have proven the house is just right for them. She puts it this way: "Margie and I just love beautiful things and beautiful houses. Yet when we come home from a visit in a beautiful house with beautiful things, we look around and say to each other, 'This is just what we are and what we need.'" If Mrs. Dilley (and Mr. Mier as well) needed any further proof that flying in the face of FHA was a wise investment, many unsolicited offers to buy or rent constitute final evidence.



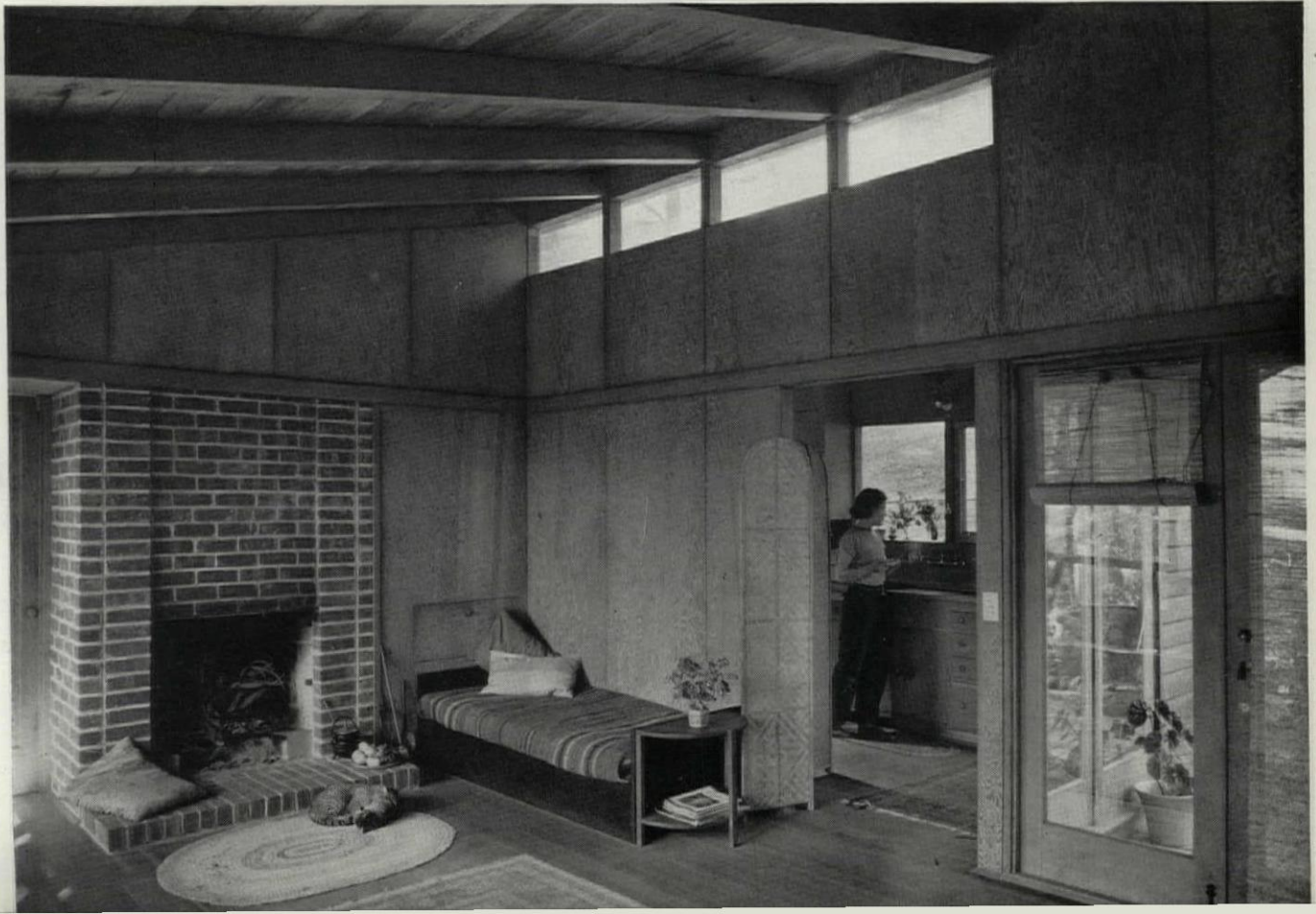
CROSS SECTION



DETAIL OF ROOF

F. J. McCarthy, Architect

The photographer points out that the object on the hearth rug is two cats.



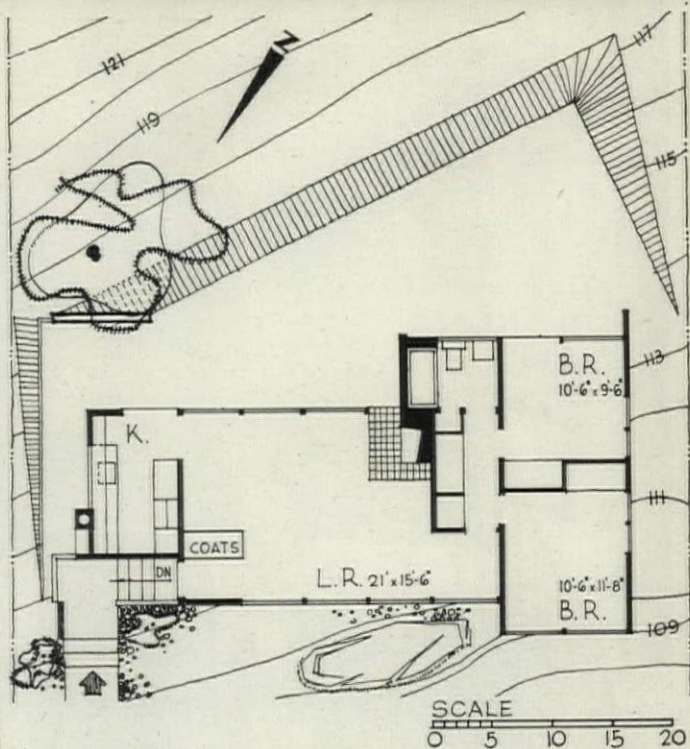


2 Houses in Berkeley, Calif.

2. HOUSE FOR MR. & MRS. G. A. McCORMACK

The McCormacks are a young couple definitely planning a future. Much of their planned future is to be lived on a boat. There was some debate whether immediate purchase of a boat or building this house would be the wiser course. With one small child and another on the way, they finally decided on the house.

Mrs. McCormack is by nature preoccupied with houses and plans. When property was acquired, she immediately set out to meet all her requirements and those of Mr. McCormack. For herself, she wanted a house that would be easy to maintain, one that would be in key with their meager possessions, and that would include a wide sweep of windows so that she could oversee the children at play while she did her work. The children's room was to be a combination bedroom and playroom opening to the back garden, and was to be so situated that when the children became older they would have access through their room to the bathroom, rather than through the main part of the house. For Mr. McCormack, who is an artist by avocation, there should be plenty of north



At left: street front; a garage will be built later at the sidewalk level, on a line with the bedroom bay.

Below: The architect suggested windows to the floor on the garden wall of the living room. The owners considered their two small boys and made a practical compromise.

light in the living room, and a corner where he could have his easel, and space for a desk on which to draw.

Like Mrs. Dilley, the McCormacks had to give very careful thought to ways and means of financing. They were young enough, yet old enough, to remember what the depression had done. They decided to base what they could pay on the present family income.

Mrs. McCormack's carefully drawn floor plans, including all the requirements that she had made for herself, were reinterpreted by the staff architect of a building-materials firm, submitted to FHA, and turned down. No explanation was given, but the assumption was that the house was too modern for the conventional neighborhood in which it was to be built. This will have to be a question mark on FHA's score card.

The case looked hopeless until an "architect wise" friend suggested the McCarthy-Mier combination. Mr. Mier again approved and made available the needed funds.



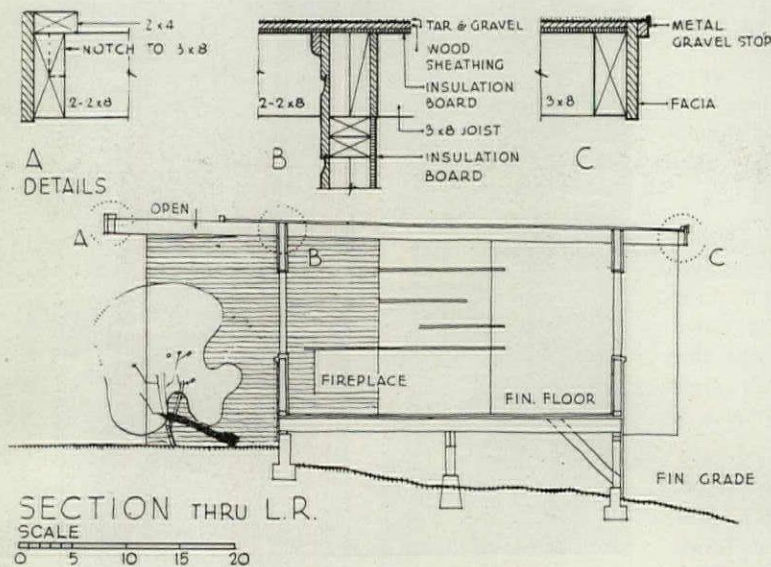


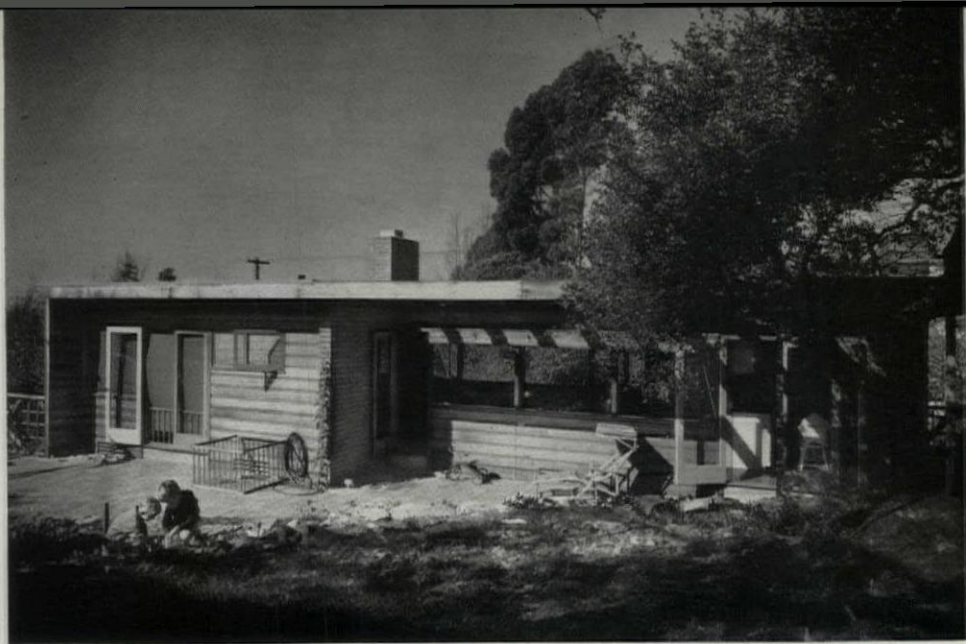
Mrs. McCormack indicates the space for a built-in desk that will greet Lt. McCormack when he returns from the war.

Again bids were high, which was not surprising considering the time. The house was wired just one day before priorities went into effect. The whole job could have been done for \$4,000 had the McCormacks been willing to abandon some of the niceties, such as the brick veneer extending the fireplace wall into the garden. The house was built with practically no changes in specifications. Mrs. McCormack sums up her attitude towards the house, now that she has been in it long enough for retrospection, with appreciation and cool dispassion. The form and texture of the house satisfy both Mr. and Mrs. McCormack completely. The plan functions just as smoothly as they hoped it would, which is a godsend, for, as in the case of so many young couples, soon after their occupancy of the house Mr. McCormack became Lt. (s.g.) G. A. McCormack and was off to the seven seas. Mrs. McCormack, sharply self-critical and admitting to criteria so high that she is never entirely satis-



The front door





F. J. McCarthy, Architect

Garden front of the house



Mrs. McCormack laid the brick paving and built the barricade to the children's room herself.



The kitchen door

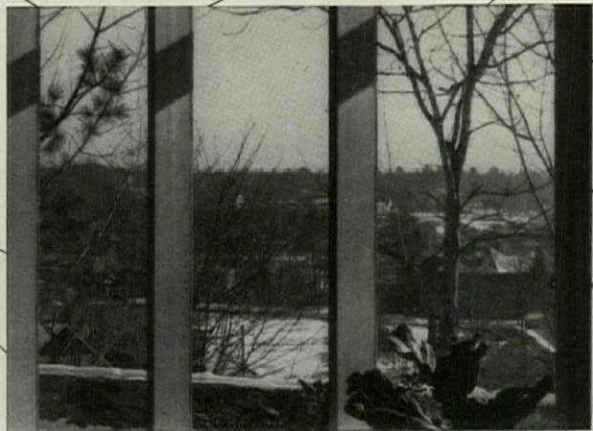
fied, blames herself rather than McCarthy for certain shortcomings. For one thing, the house does not lend itself easily to expansion. She already sees the future need of a large workroom to house the hobbies and crafts of the two boys, herself, and her husband. Also, an extra bedroom and bath will probably be needed eventually. These and other lesser items she philosophically regards as things to be learned by experience.

The fact that these two houses—sound, sincere expressions that they are—could not be financed by Government guaranteed loans, can be taken as an indictment against FHA. However, the story behind them is, perhaps, a greater indictment against the architectural profession in general. Why should people so generally well informed, with such an honest approach, ever think of building without first consulting an architect?

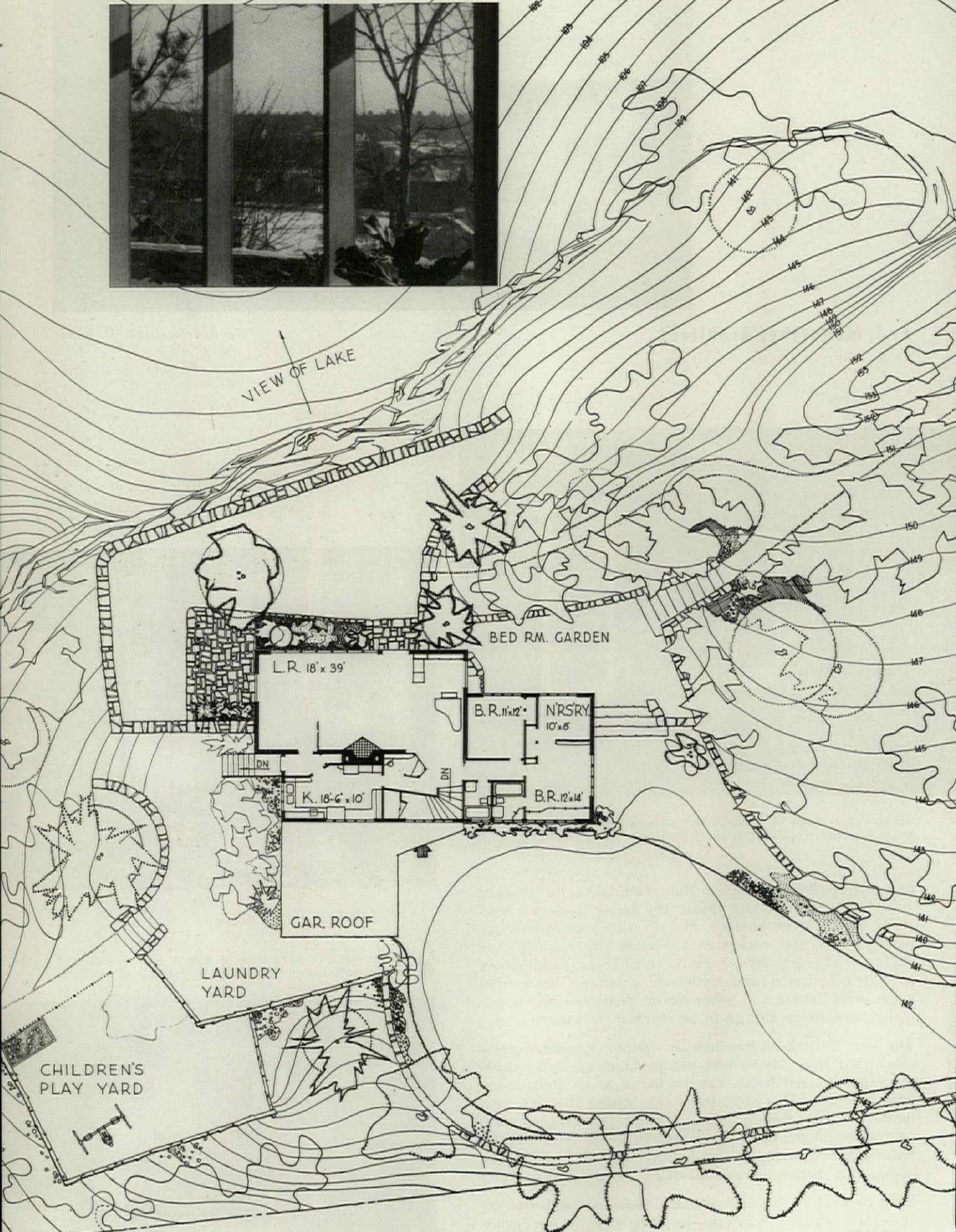
Both owners freely acknowledge that the skill and cooperation of an architect—in particular, *their* architect—gave them a better house.

The bedroom has green walls and a white ceiling; draperies and lampshades are a red plaid material.





VIEW OF LAKE



SCALE
0 5 10 15 20



Photos by R. W. St. Clair

A New England House

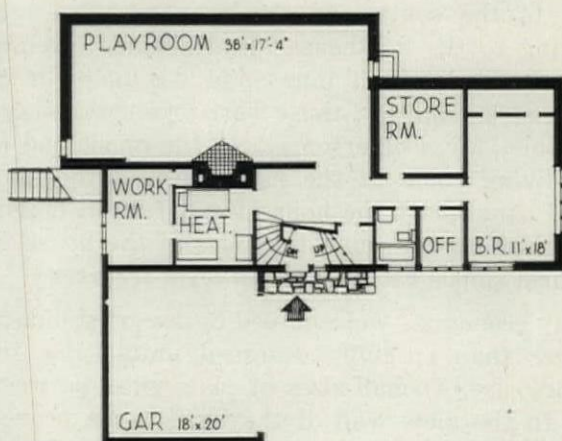
LOCATION: WINCHESTER, MASS.

Architect: Carol Fulkerson

In its quiet simplicity, its freedom from stylistic mannerisms, its graceful and honest accommodation of the life that goes on within and around it, and its success in fitting naturally with an unusual and in some respects difficult site, this house reflects the real New England tradition. As such, it is encouraging, for it suggests that the spirit which made New England great is still very much alive, even though many have tried to embalm it in the undeniably charming but outworn ceremonies of the past.

This unusual house, built on an extraordinary site, was, as the architect tells us, "built on the run"—just at the time when all private, non-war construction was coming to a halt.

Dr. and Mrs. Samuel Kirkwood, the owners, stated their needs in a remarkably sensible way: they wanted a "modern" house but specifically ruled out anything that could be termed the "international style." Thus, from the outset, they and their architect were free of the limitations which the "stylish" approach—whether "Romanesque" or "International"—inevitably presents. And it isn't surprising that from this intelligent point of view a house was developed



GROUND FLOOR



Carol Fulkerson, Architect

The music end of the living room is placed at the ridge of the steep site.

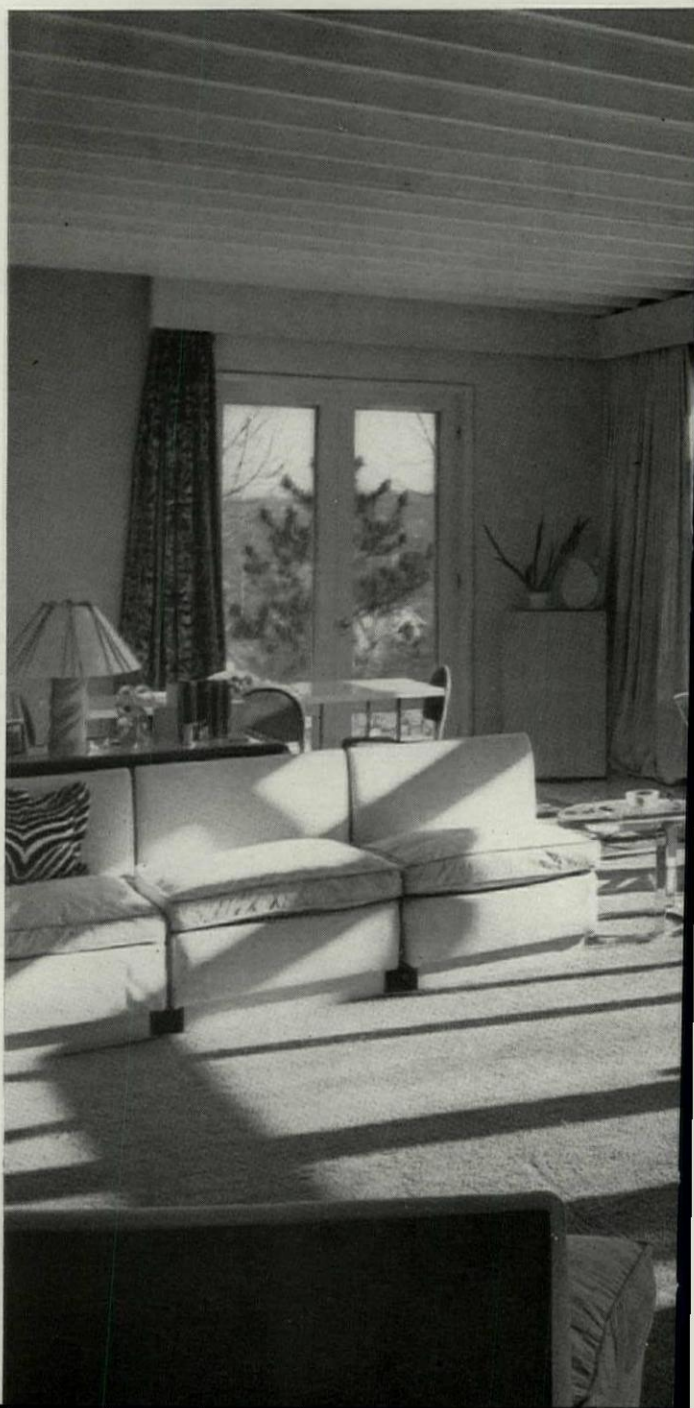
that not only meets the owners' needs admirably, but is uncluttered with mannerisms or finicky details that have no place in their lives—"New England" architecture in the best sense and tradition.

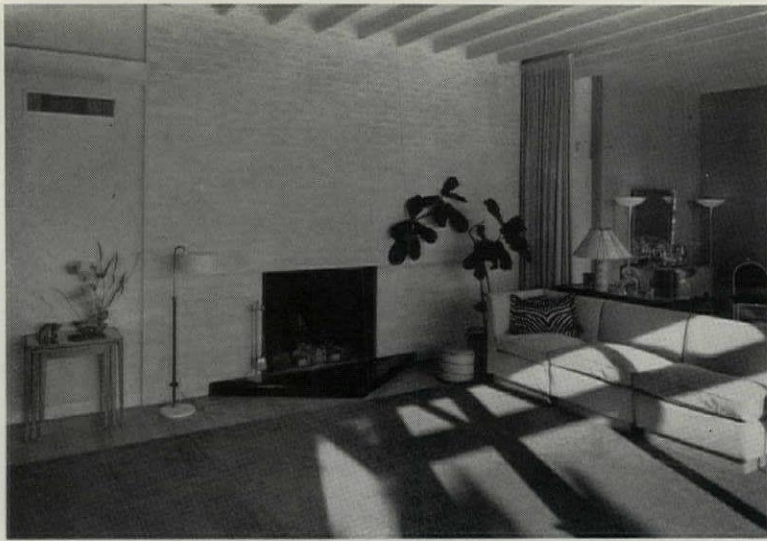
To meet budget requirements, the Kirkwoods were willing to sacrifice much to obtain a huge living area to be used by all the family and their many friends as an informal gathering place, a room for serious enjoyment of music, and a space large enough to accommodate dancing. In the design, this major requirement was integrated with the most dramatic point of the steep site to produce a large, unaffected room with a wall of great windows facing the 30-foot cliff with its view of the lake below.

The flattest land was a 30 percent grade, with the cliff to the south and the property generally sloping to the northeast. Unnecessary leveling was avoided; small pines and deciduous trees covered the hill, and these were preserved where possible. Mr. Fulkerson placed the music end of the living room at the ridge, letting the land build up against the house for 3 feet in height and grading it around the sides of the house in natural slopes rather than in level terraces.

Many economies were gained by use of standard rather than specially designed units. For instance, use of small sizes of plate glass between fins in the view wall of the living area proved far less costly than an all-glass wall. Room widths were determined by stock lengths of framing lumber. Further reducing installation and construction-time costs, the architect specified 2 by 8 rafters, placed on 32-inch centers, which keyed in automatically with the 8-inch steam-cured concrete blocks of the wall.

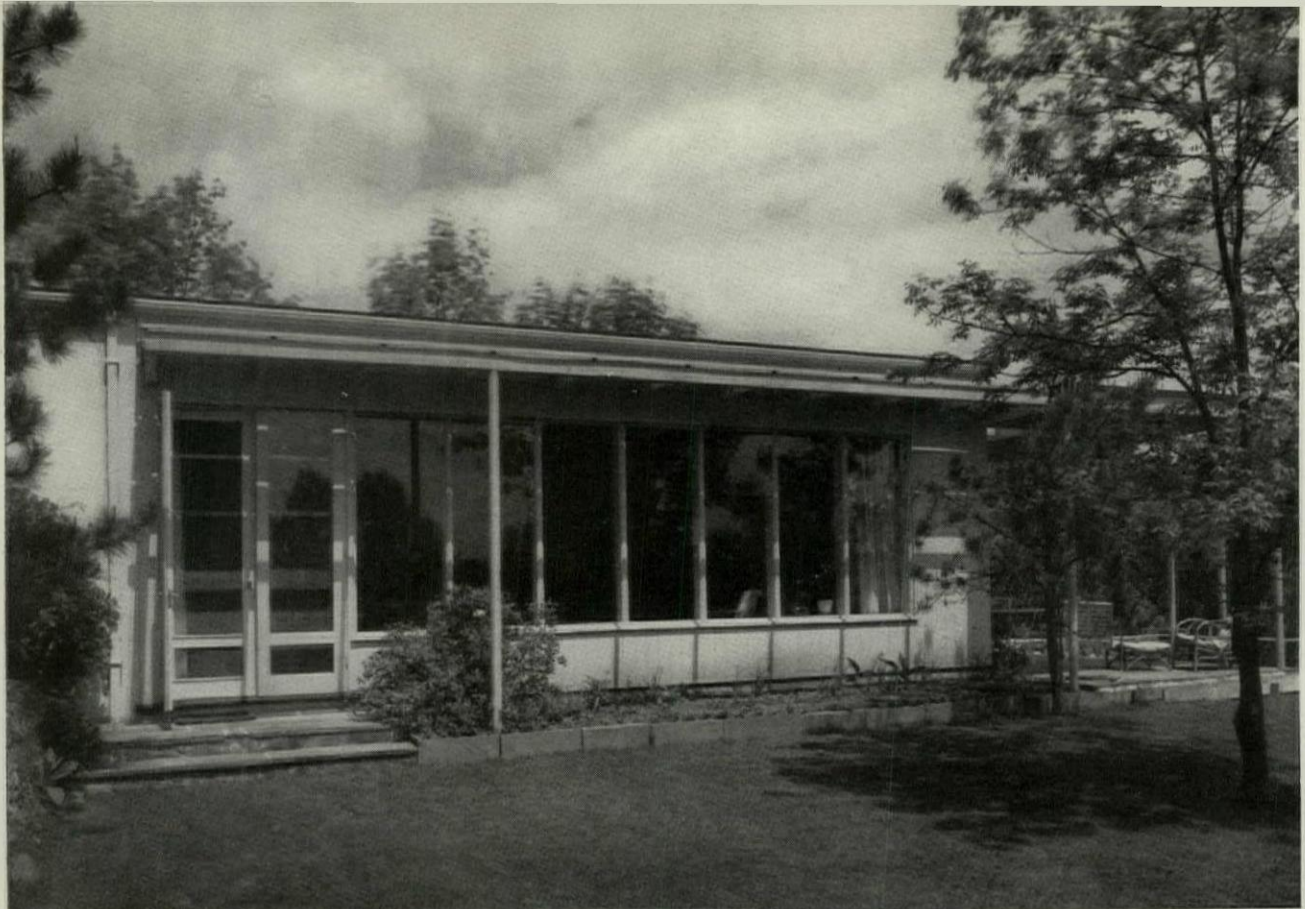
The 18-by-39 living room. Details of the window wall are shown on Page 48.





A curtain mounted at the ceiling separates the living and dining areas.

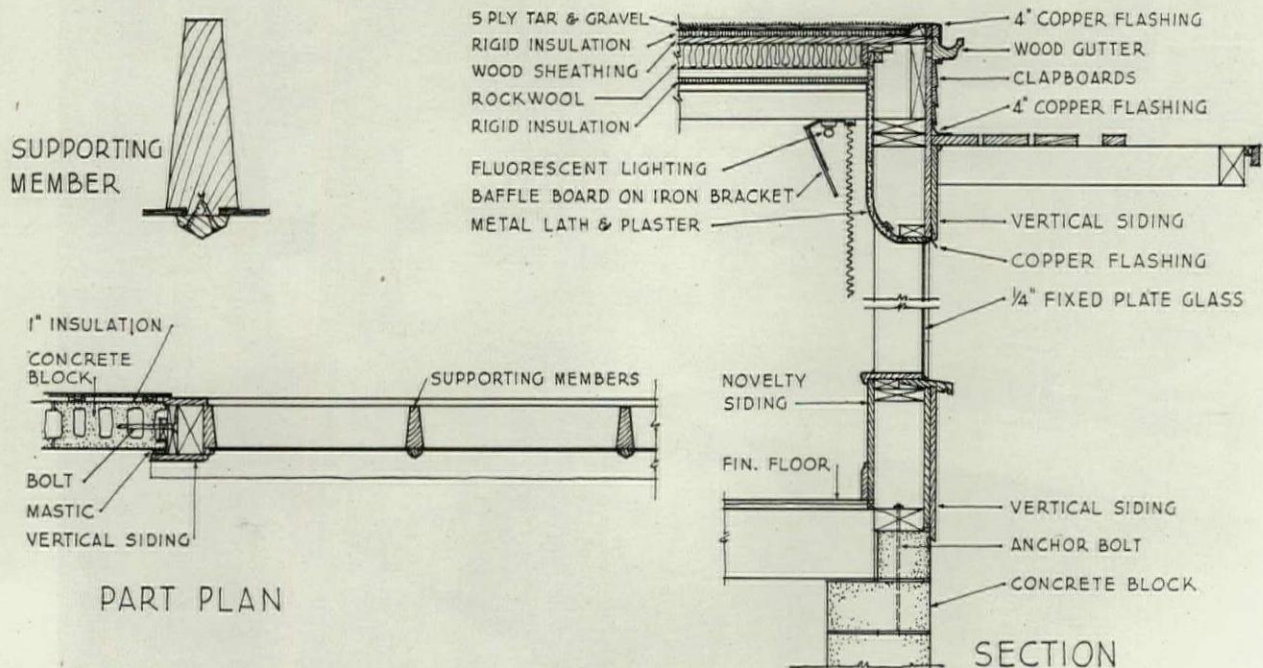




Living room window wall and terrace

The window wall of the living area: splayed-fin dividing strips between the glass areas provide support for the glazing and a minimum obstruction to the view. Concealed lighting installed behind a baffle produces artificial night illumination in the same area where the maximum natural daylight occurs.

Carol Fulkerson, Architect





Architect's Home and Studio

LOCATION: KENILWORTH, ILL.

Architect: L. Morgan Yost, A.I.A.

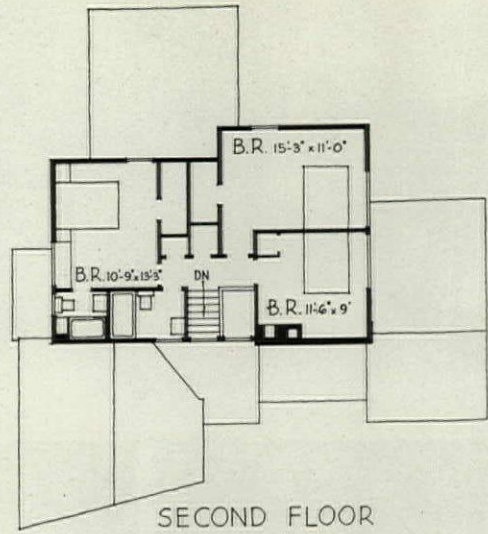
The architect reports that his professional practice benefits materially by the combination of his workshop with his home in a suburban community. Clients who come here feel more at ease than they do in a city office, better able to detail their personal requirements. Important advantages result: better satisfied clients; better architectural service; better architecture.

Another advantage Mr. Yost finds in his home-office combination is the distinct sense it gives him of an existence that is nicely balanced between his work and family life—minus commuting routine, minus enervating night work in a distant office.

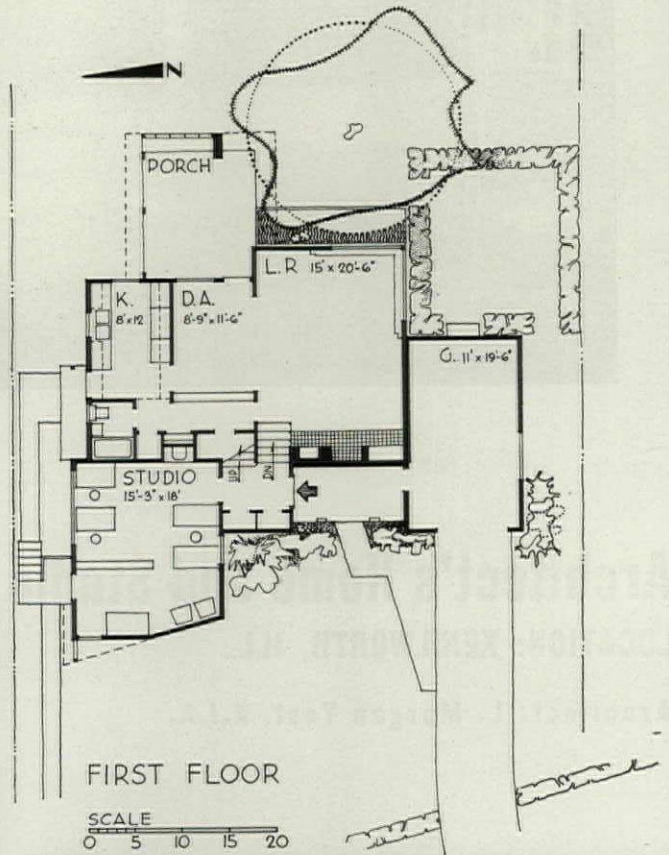
Choice of the particular site had much to do with the success of the venture. A slope made it possible to locate the studio at an in-between level, integrated with the rest of the house, but sufficiently apart so that either phase of the balanced existence can go forward without interruption of the other. The studio may be entered directly from the outside; or the main house entrance, also at the half-flight level, may be used.

Professional reasons as well as convenience dictated selection of a site bordering a busy street. Location of main living quarters at the rear of the house shields them effectively from traffic noises; the first floor is further sound-insulated by placement at the lower level, plus a barrier formed by

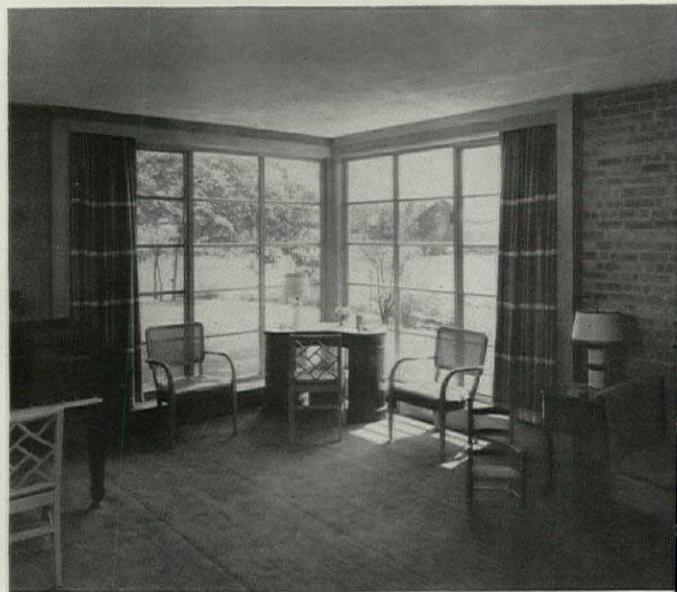
L. Morgan Yost, A.I.A. Architect



Clients may enter the architect's studio either directly from the outside or through the main entrance hall of the house.



Room-height windows overlooking the lawn and garden form a corner of the living room.





The three-level organization of the house is apparent in this rear view. Planting will soften the severity of the garage foundation wall.

fireplace wall, closets, entrance hall, and garage. Only the studio, stair hall, and second-floor bath have windows facing the street.

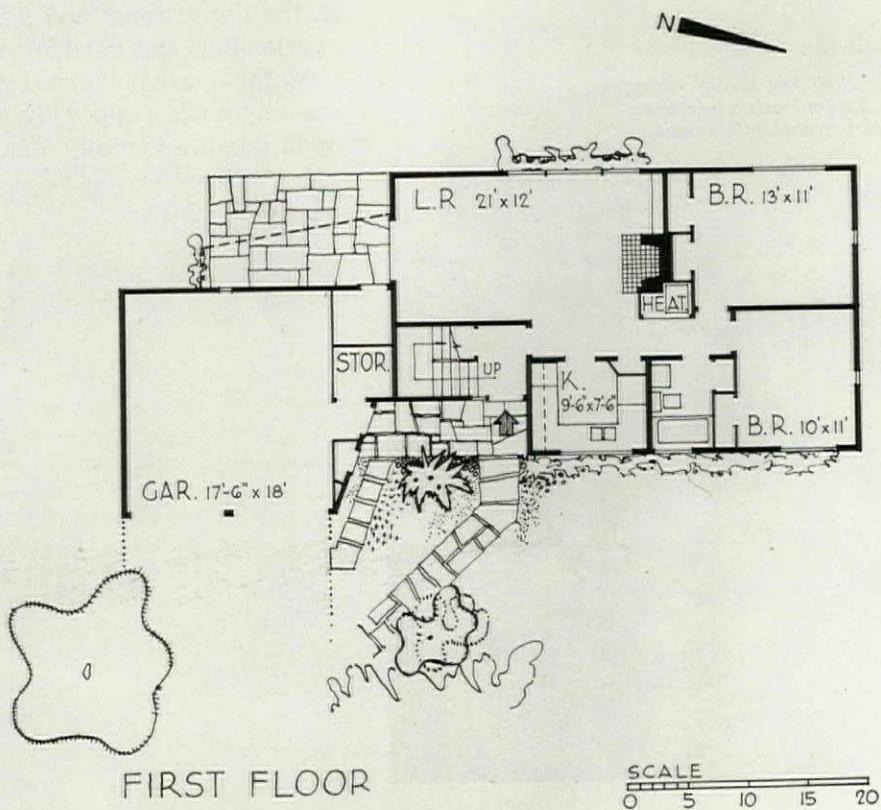
Beneath the studio, there are a laundry and a maid's room, reached by a few steps down from the main living floor. The lawn and garden at the rear of the house are developed around old apple trees. The architect has provided a broad corner window in the living room and a large living-dining porch overlooking the garden area. Of frame construction, the house is painted red with white trim. Out-opening sash, capped by a roof overhang, permits open windows in any weather.

The fireplace wall of the living room; a half flight of stairs leads up to the entrance hall and architect's studio.





Photos by Rodney McCay Morgan

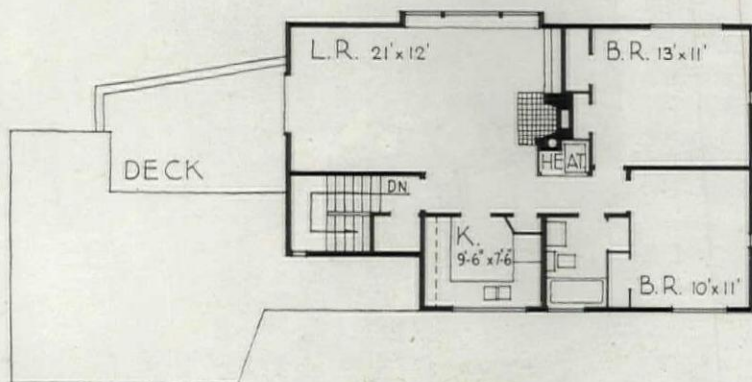




Two-Family House

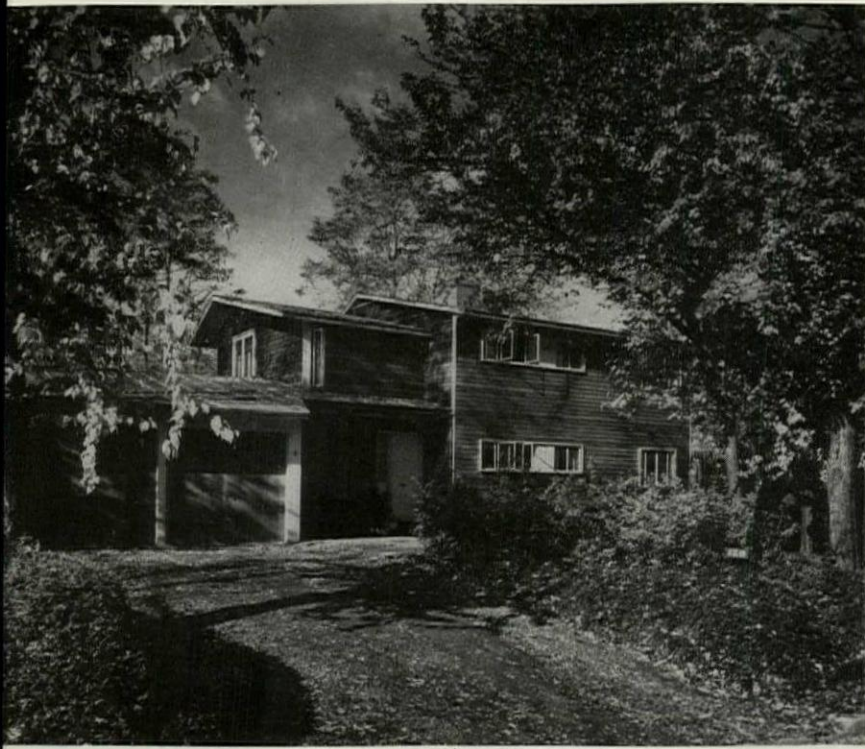
LOCATION: PRINCETON, N. J.

Architect: Rudolf Mock



SECOND FLOOR

More often than not, the two-family house in America has little architectural merit other than the bare fact that it protects two families from wind and weather. On these and succeeding pages, we present a house in this category that does much more than merely shelter two families: it provides each of the two units with amenities and a gracious home setting of a standard comparable to that of the carefully designed single house; it organizes the two units into a well-knit whole that takes its place proudly in a neighborhood of substantial single houses, and it employs materials in both conventional and contemporary forms to produce what we consider modern American architecture of a high order.



The design problem was to provide a suitable home environment for a widow who wished to live by herself, but not in isolation. The solution was a dwelling in which she should have her own home and a rental unit combined. As it happened, her needs were for a two-bedroom apartment of a size that is readily rented; so, the two units are essentially identical.

In each unit, the generous living-dining room is equipped with built-in bookshelves, a fireplace, and a bank of windows looking out on the lawn and garden. On the second floor (where the owner lives), these windows are contrived as a projecting bay, which, in combination with the high, asymmetrically sloping ceiling of the room, appreciably increases the apparent spaciousness of the room. Outdoor living space is provided for each apartment—a flagstone terrace for the ground floor and an open deck for the owner's home. A notable provision for the latter is a storage closet for outdoor furniture that occurs in the upper portion of the garage structure and is accessible from the deck.

Rudolf Mock, Architect





The house has no basement, but is built on concrete-block foundations and piers with appropriate venting to the outside between floor joists. Ground excavation extends to 2'-6" below the joists. Between joists, batt-type insulation is installed. Heating units occur in fireproofed closets in each apartment.

Structurally, the house is of frame, with bevel siding applied over board-type insulation-sheathing. Sash are steel, of both fixed and casement type. The roofing is tin, painted red. Members of the family tell us that from the outside, especially in Summer, the house presents a rather gay appearance when from the street one sees the red roof, the rich wood tones of the siding, white trim, a beach umbrella, and pink geraniums on the deck, and the heads of people sitting there.

It is instructive to focus on a few of the smaller details which provide considerably greater living amenity at very little added cost. Beside the entrance door, for instance, is a pair of built-in package receivers, one for each home, where things

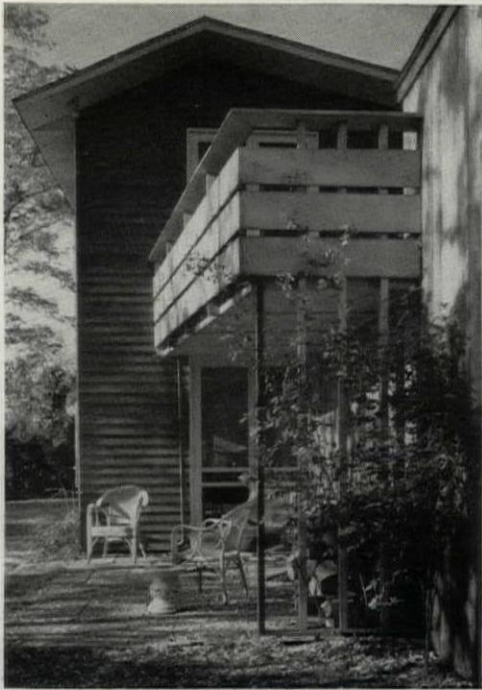




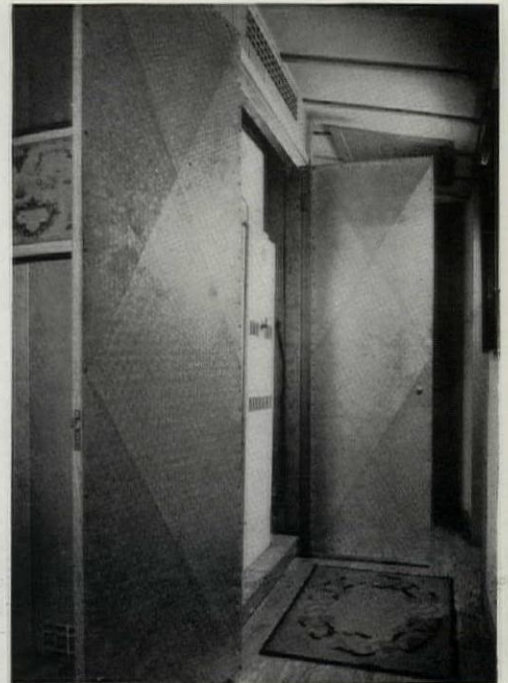
Rudolf Mock, Architect

A wall ventilator supplements the kitchen casement windows.

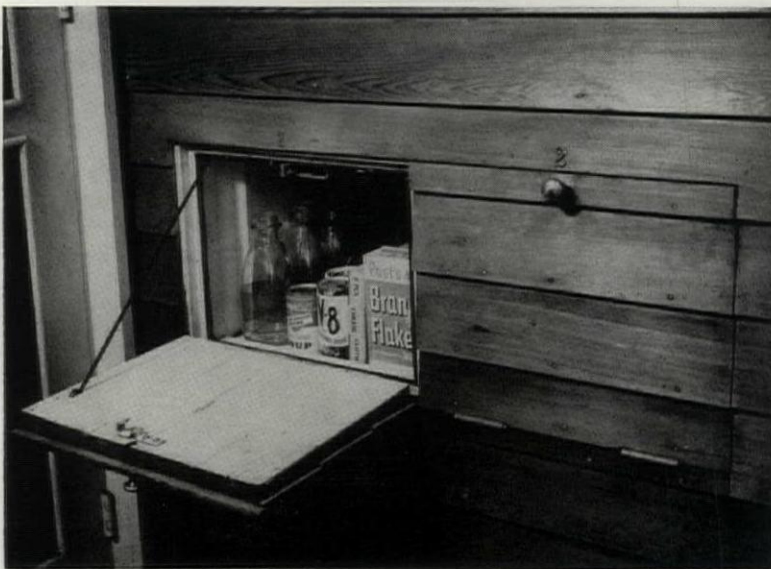




The tier of outdoor living rooms

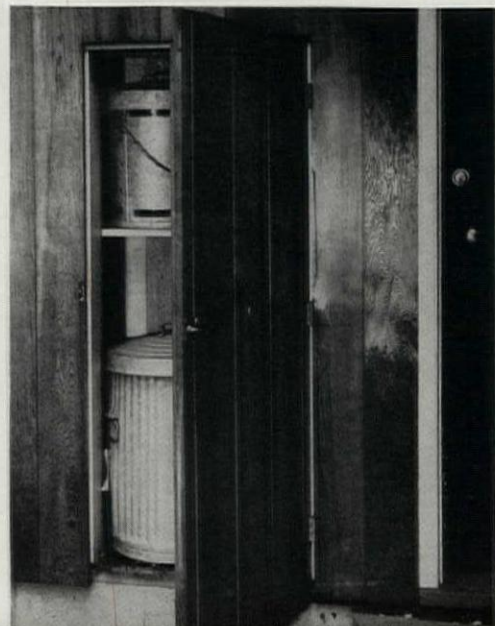


A metal-sheathed closet holds the heating equipment.



Drop-front package delivery units

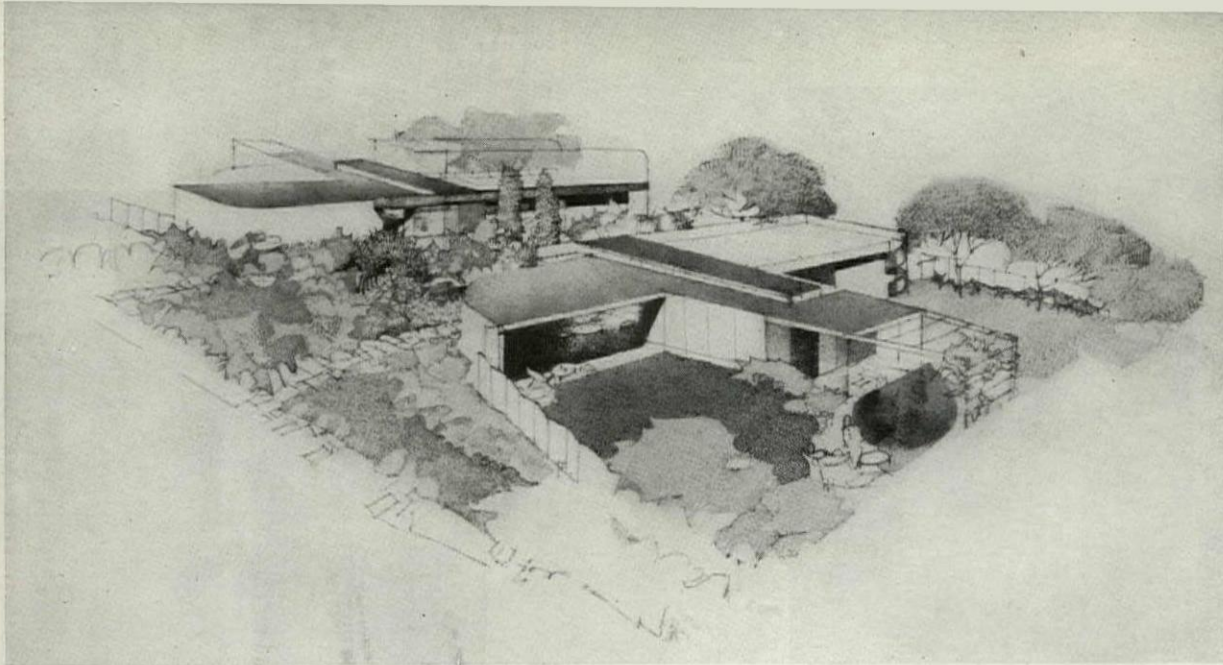
Convenient, out-of-sight refuse and garbage container



can be left when families are not at home. Then there is a neat closet conveniently located under the canted garage roof, which contains rubbish boxes and garbage cans and keeps them out of sight. In each of the bathrooms there is a large linen closet with seven shelves; each apartment has a broom closet with a shelf overhead, and in each of the kitchens a built-in drop-leaf table is provided.

Throughout, in fact, the house is a highly practical example of forthright, contemporary residential architecture. There was no effort to do anything startling.

Neighbors, it appears, like the house; but some seem rather surprised that "anything so inconspicuous should be considered a 'modern' house."

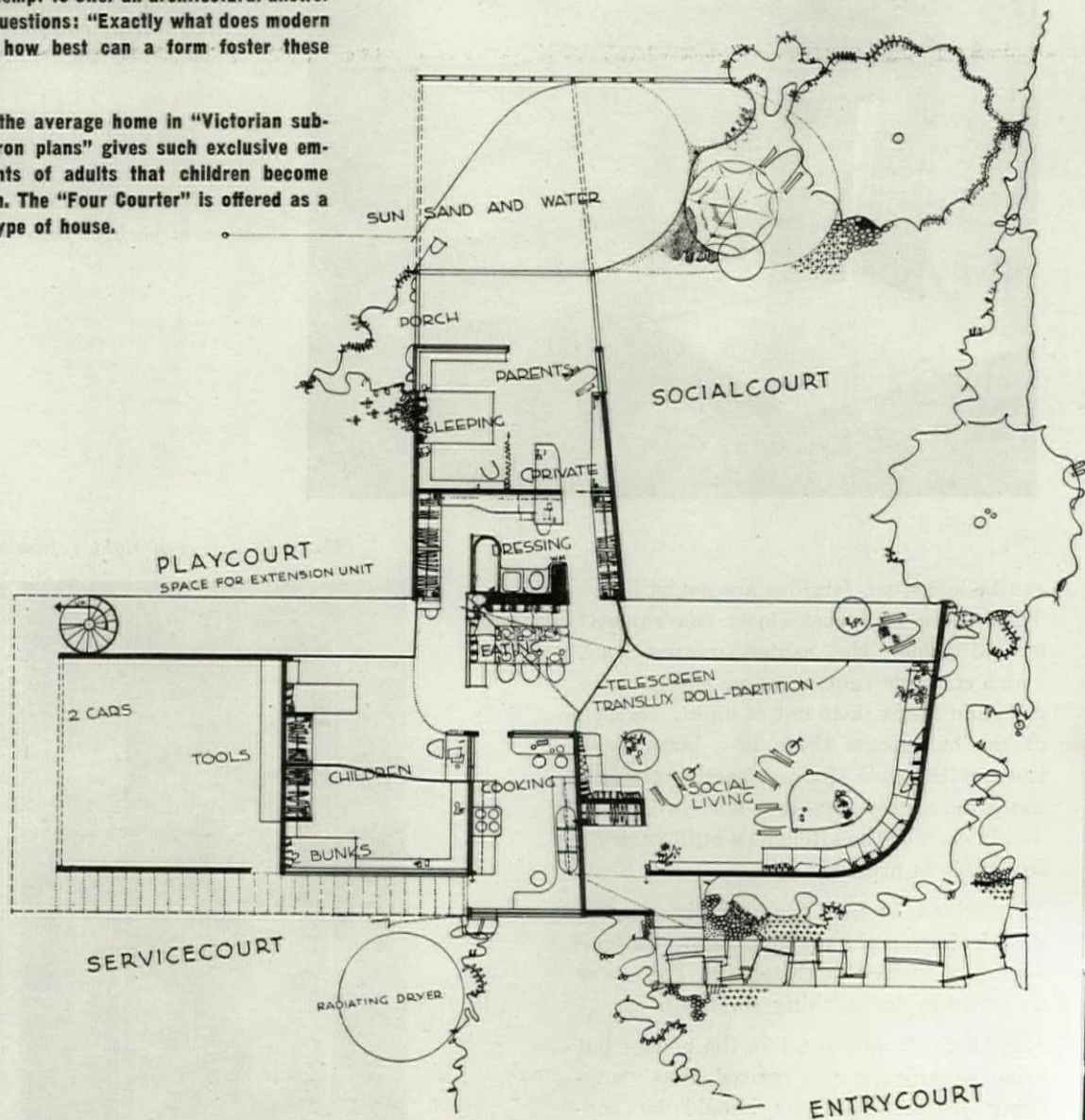


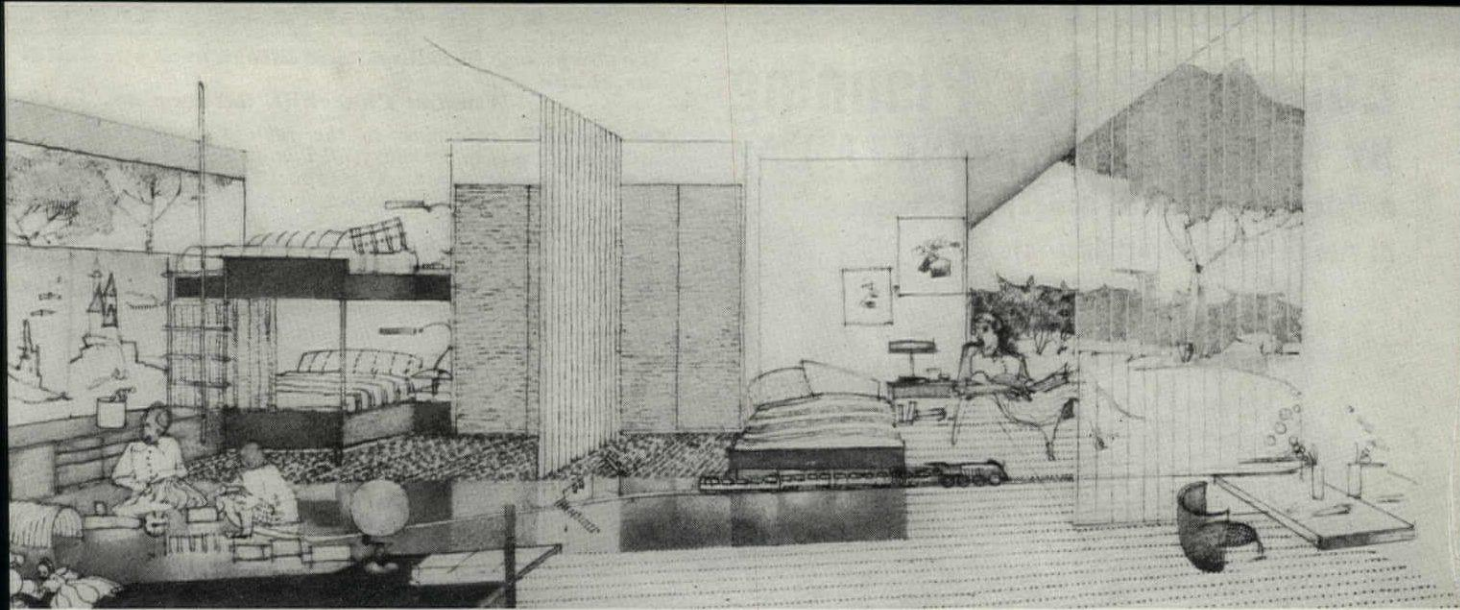
Richard J. Neutra Designs a "Four Courter" House for Tomorrow

DION NEUTRA, COLLABORATOR

Like the community scheme of which it is planned as a part, this house is an honest attempt to offer an architectural answer to the too-seldom asked questions: "Exactly what does modern family life require, and how best can a form foster these functions?"

Too often, Neutra notes, the average home in "Victorian subdivisions with their gridiron plans" gives such exclusive emphasis to the requirements of adults that children become practically misfits in them. The "Four Courter" is offered as a direct challenge to this type of house.





A roll-partition divides the children's room into separate sleeping quarters; playcourt, at right.

Mr. Neutra suggests that one possible way to unbuild and rebuild a block or development that some speculator has foisted on a community might be communal acquisition of the property in bulk by several congenial families and rebuilding in human scale and proportion, eliminating the deadly rectangular geometry of rows of lots and blocks.

In the unit plan proposed for such a renaissance, the following family-life factors were considered: provision for the individual: sleeping, bathing, dressing, reading, etc.; provision for family activity with or without friends; children and adults dining, conversing, sharing common interests, playing music, etc. In addition, to promote good neighborhood life, the architect suggests a common swimming pool, tennis courts, and, perhaps, even a jointly owned guest house.

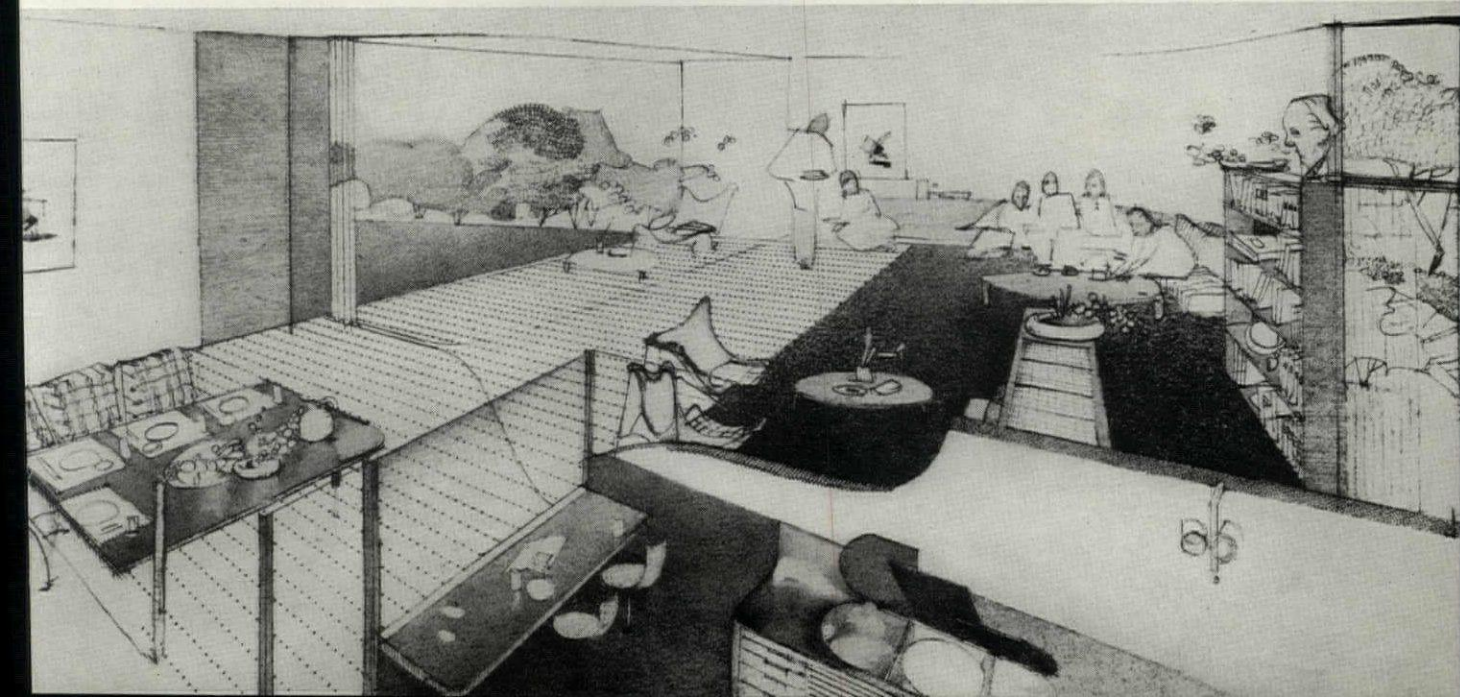
A few of these highlights which the particular plan reflects: the house faces a park, not a street; the access street is alongside. Windows view only the house's own grounds, leading to the "Four Court" idea—in effect, four special-use outdoor rooms developed behind prefabricated screen fences. One is for visitors and main entrance; the second is a service yard; the third, a social

room for adult relaxation, eating, or entertaining without being disturbed by children; and fourth, a place where the children can yell and jump about without being disturbed by adults. Linking the latter two areas is a neutral "island" for the enjoyment of all, with a sand "sunning beach" and some sort of spray or pool.

The architect figured his plan areas on the basis of "square-foot hours" of living, eliminating whatever space added nothing but a cleaning chore. From this study arose the basic scheme of a "flexible arrangement of usable spaces around a service core and center." A typical modern provision is the suggested scheme for movie entertainment: a projector installed in the corner of the eating space throws the image onto a telescreen drawn across a corner of the living room; spectators can lounge on seats bordering the far corner of the room.

The kitchen is thought of mainly as a built-in mechanical unit. A spy glass over the sink enables the hostess to view front-door visitors. A microphone welcomes the guest, and a push-button opens the door. In the opposite wall, a one-way transparent window allows supervision of the children in their own room or court. For heating, the architect specifies radiant floor and ceiling panels.

Cutaway view from the kitchen, showing the dining-living-social court areas; floor lines indicate location of drawn partitions.



Education for Planning

BY KONRAD F. WITTMANN, A. I. A.

Assistant Professor of Design, Department of Architecture, Pratt Institute

"We shape our buildings, and afterwards our buildings shape us."

—Winston Churchill, October 28, 1943.

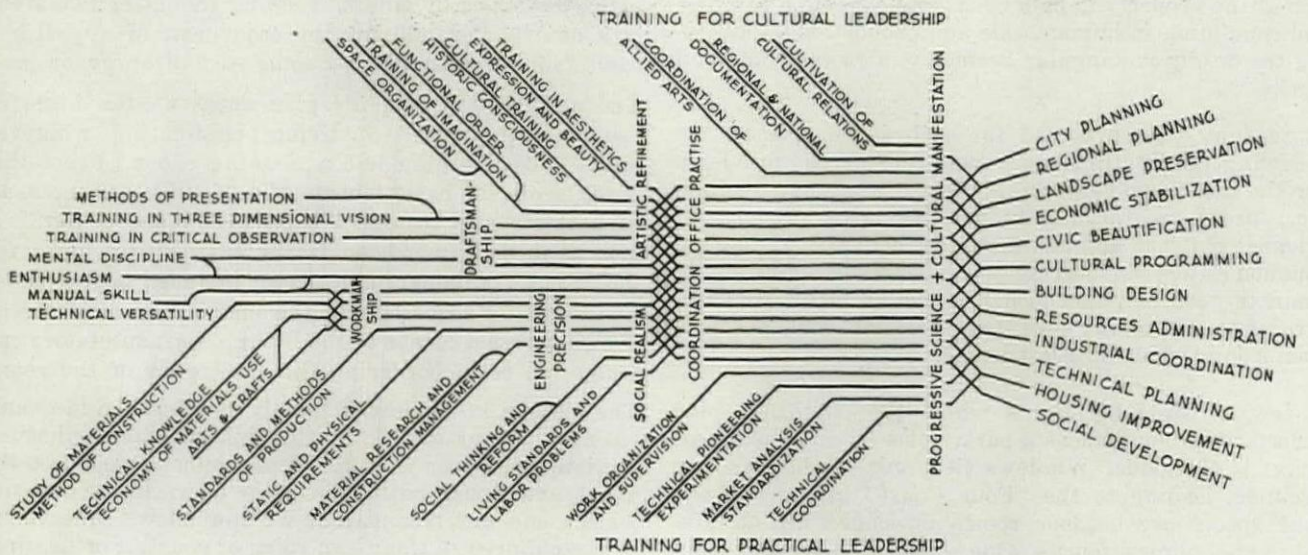
Mr. Churchill, referring to the rebuilding of the bomb-shattered Houses of Parliament, has given the architectural profession a most significant slogan: The architect, through his work, becomes an educator, a former of the nation's thoughts. Buildings are seen as books, or speeches, or political or philosophical dogmas: compelling forces which act deeply upon our lives. Houses and streets known in childhood leave their marks on much of our thinking; places where we work influence our mood; and places of worship or fame, several hundred years old, carry still a message to our most secret emotions.

Few architects seem to realize that through their work they reach far beyond mere necessity, that the sincerity or superficiality of their buildings creates in turn sincerity or superficiality in those who live in them. When these reactions, unconscious or subconscious yet nevertheless active, these infiltrations, are thoughtfully husbanded, we may draw the line between building with character and building as an artless exigency.

That Esthete, The Architect

It has been quite a sport recently to paste up in notebooks pictures of dirt, dreariness, and distress in slum areas, to show the somber background of our society, the result of a

The Making of An Architect



don't-care attitude of commercial exploitation that has produced blighted spots on our economic happiness. Nobody can really put the blame on any particular group or profession, but only on the pressure of time, and on neglect of foresight and planning. It would be unfair to blame the architect, although buildings and all the sheltered spaces which house mankind are his particular domain. He was not asked when the profitable tenements were rushed up, and had neither political nor cultural power to make his opinion clear. Even now, the architect is godfather to only a small percentage of buildings in large towns, and in smaller towns, even in farm and village country, his influence is altogether insufficient. Houses form streets and streets form towns, and we know that many towns grow up and bite their pattern like acid into the landscape without any architect's help or blessing. How can we blame him for what he did not control?

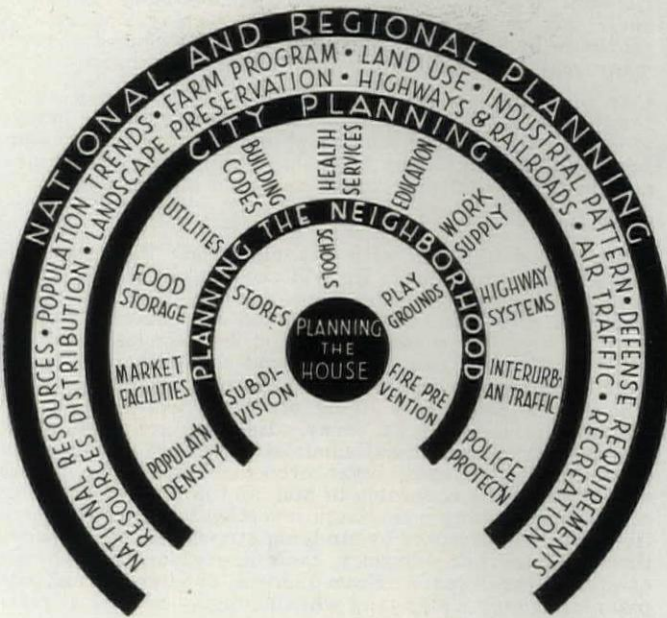
There has been much talk recently, and many disappointed comments, in architectural circles on the architect's lack of public recognition. The profession as a whole complains that architects do not get their rightful share of available construction. They certainly did not get it out of the building boom of defense construction. Things are so disheartening that many are almost willing to drop their professional designation, because while the public willingly pays an engineer, architect-engineer, or industrial designer, it haggles with the architect about his fee. Some observers point out, to soften the pinch, that architects for the last 50 or 70 years have been too much the "experts in esthetics," neglect-

ing the more profane side of their work, subcontracting heating, steel construction, lighting, and so forth, to their rising engineering competitors. If the first part of the sentence be true, and true for, say, two generations, we should certainly be able to congratulate ourselves on a high accomplishment of beauty, visible all over the country. But apparently no such thing was accomplished. Our streets have a thousand faces but no real face. Our towns may have a hundred masterpieces, but the towns as ensembles are no masterpieces at all. The second part of the above sentence reveals a tragic neglect. The unity of architectural work has been split up into specialized occupations, and no part—nor any other organization or governmental agency—can be held responsible for the interrelation of all building activities and the representation of a national standard.

Cities Without Purpose

Our towns reflect that disunity, under which the architect became too tied-up with business interests and competitions, too ready to heed fading fashions. In Europe, by comparison, architectural supremacy was firmly established before the industrial era could break off bits and pieces, and even the mistakes of detrimental decades have left enough in towns like Paris, Florence, Munich, or Copenhagen to display their impressive character. Here, however, in our rapidly growing cities it would have been necessary to establish beforehand, with vision and discipline, such an architectural goal.

That process of shaping and countershaping, through archi-



ture, went on in Europe for centuries. We call it tradition. It was a slow process, a process of selection, to be sure, implying the survival of the fittest. The relative simplicity of European private industrial systems and strong national and social cohesions favored its success. Our time is much more confused, our society is much more complex, our industry is impersonal, our beliefs are out of balance. Architecture, however, is a true mirror. American towns reflect that inconsistency and vagueness, as do European towns since about 1850. The problems are the same all over the world.

For a hundred years we went through a period of experimentation, not unlike, in trends and results, the confusing political struggles between nationalism and internationalism which brought our world near to catastrophe. Out of distress evolves and is shaped now a clearer statement of policies, ideals formulated and brought to the fore. Why don't we in our architectural field of battle accept a similar challenge, state a definite policy—and assume the responsibility to carry it through? Or will we spend another century in experimentation?

Are We Ready for a Building Spree?

Many committees, agencies, and city councils are working on postwar plans. They compile lists of buildings to be started immediately after cessation of hostilities. Some are already in the blueprint stage. Plans are well guarded, to avoid too much public interest and controversy; but all in all it looks like an impressive accumulation of figures, of

building costs, man-hours, dwelling units, tons of steel and cement, of bathtubs and refrigerators.

It is an orgy in numbers, under pressure of the economic necessity of keeping as many people on payrolls as possible. Artistic or spiritual issues are hardly permitted to enter the picture. Are we prepared to make such a tremendous building program an architectural success? Have we stated our policy, have we clarified our issues? One to two million dwelling units every year, with an adequate number of public buildings, business and office buildings, churches, schools; with new communication systems, relocated factory areas, and rehabilitated downtown sections, present a staggering problem, never before faced in architectural history.

But how are we prepared? Can we marshal all those connected with the building industry (and those who will jump into it) to live up to their great opportunity? Have we enough young men trained in sound principles to step into the job? What types of buildings shall we take as models, or, if we refuse to look for models, have we a philosophy settled enough to start overnight something new? Shall we build the same type of buildings in Virginia as in Maine or Arkansas? If not, how shall we build in Virginia, how in Maine? Shall we build schools, for instance, similar to those finished in 1941, with pseudo-colonial pilasters on pseudo-brick walls? And churches? And wayside restaurants? How are we to place these countless houses if no agreement exists on the basic requirements of a city plan—and if in many cases there is not even a city plan?

Burnham said: *Let us make no little plans. Economic pressure will make the big plans; but to see that the big plans are good plans, that is the task of the architect of 1944. What constitutes a good plan?*

For a long time a plan was considered good if it served its owner well. That was functionalism from the inside to the outside. But strangely enough, many such good plans together became a burden on the community. It was *individualism*, wherein everybody saw only his selfish interests.

To Discover GOOD Plans

The city planning idea, with all that it implies, is a true expression of democratic principles. It is foresight instead of hindsight, it represents economy instead of reluctantly accepted waste, and order instead of confusion. It professes the principle, now so firmly established in medicine and social life, that an ounce of prevention is more valuable than a ton of doctored repairs.

We shall never discover the good plans if we are reluctant to criticize bad ones. Every town should have, by this time, a group of independent people surveying the town for good and bad features: congested streets, dangerous corners, ugly buildings, big signs, billboards, incongruous association of the profane and the monumental, industries in the wrong place, smoke and noise, extravagant facades, bulky alterations, neglected landscaping, the pest of gasoline stations, depraved housing, spoil historic spots, etc.

We do not have to eliminate the word *beauty* from our vocabulary, as so many architects suggest when they talk about the "city beautiful" with embarrassment. The architectural character of a town is a public asset, even if it is hard to define, and building codes never mention it.

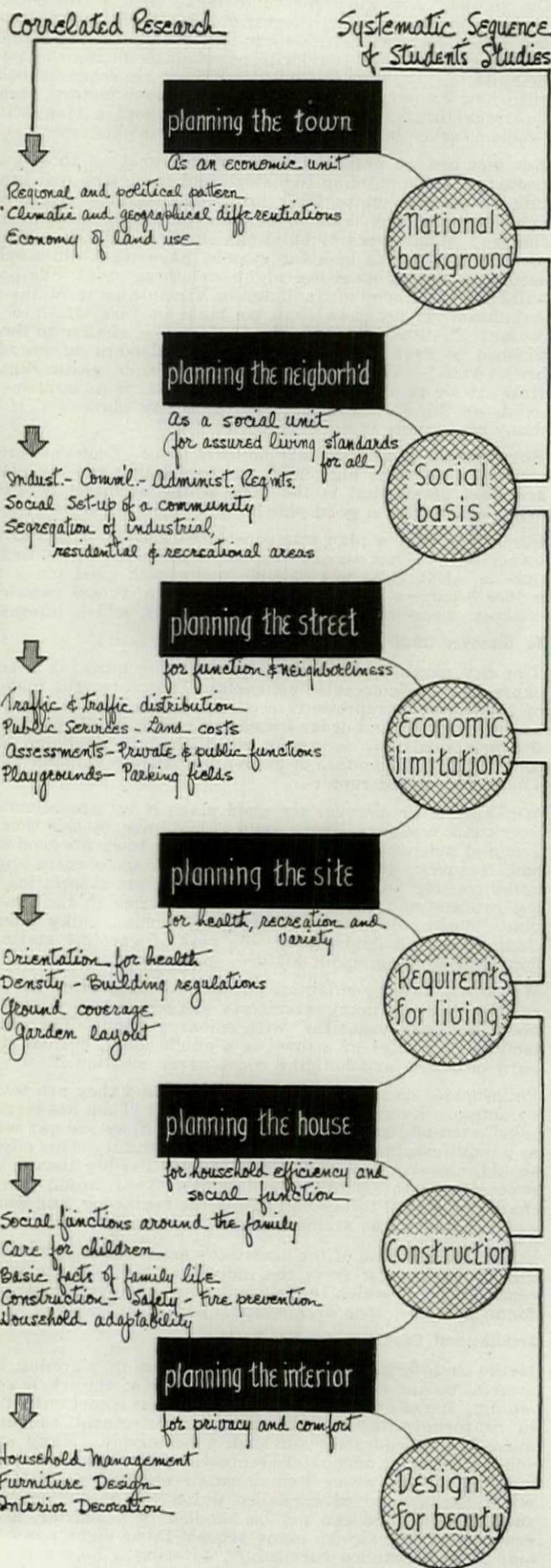
Philosophies do not drop as ripe fruits, and they are tested by action. Everything will be lost by an "I-am-not-responsible" attitude, and much will be gained if we see our work as a manifestation of the democratic community. Our efforts should, however, not only circle around the big towns, but penetrate to the smallest community. That would give a chance to control things right from the beginning, and would at last bring to the architect the widest possible recognition.

Such a wider vision of the architect's activities and the shifting of his interest from the individual home to the whole community (of which the house is a part) have a most profound influence upon architectural education.

Architectural Education for Leadership

If the architectural profession is to lead in planning and correlating the needs for site and shelter of the whole community, and of every individual within that community, both in conformity to national ideas, architectural education must become education for such a leadership. Many more subjects must be adequately represented in the architectural curriculum, and every item must be checked against that wider background of expanded duties. It is obvious that such a wider field can not be handled in a shorter, accelerated program (which many schools favor right now) but only in an expanded curriculum, covering a longer period, or through intensification of present courses of study. If advertising artists or fashion designers are scheduled to study three years for a certificate, it would be nothing less than a miracle for young architects to rush in four years

planning from the frame to the center



through such a complex combination of arts and sciences.

Design Instruction

Most architectural schools begin their design instruction with small buildings, proceeding step by step to larger, more complicated structures. Finally, in their last year, with hardly enough time left, the students take up city planning, a nice lineament of curved streets, playgrounds, and parking fields in the currently prevailing fashion. At this point in the course of his studies some deeper convictions and philosophies should take root in the student. At this time he should grasp his place as a planner in practical things for a spiritual ideal. But he has hardly time, between theses and tests, to consolidate such ideas; he is already being pushed into earning money and getting along in an office.

Would it not be logical to take just the opposite sequence, starting with city planning right at the beginning, and filling in, through the school terms, the mosaic of the well planned city, with streets, parks, playgrounds, private and public buildings. Let the student see, even in his first term, the larger framework of his calling, and let him realize early enough that, although he is fulfilling the requests of his individual client, his work, his building is eventually to become part of a public, a national, performance. Let him find his philosophical basis first, and give him time to discuss, to broaden, to mature his ideas—which will make every design, even for the simplest house, a much more exciting valuable enterprise, because it is seen as part of a larger national pattern.

We want to train idealists at heart and realists in performance. Let us not produce experts in display who are yet poorlings in social and human matters. We need a great many realistic idealists for the tasks ahead.

City planning, in the following text, is used as a short, familiar term for all planning on a wider scale, not limited to cities, but including country planning, regional planning, farmland planning. The English, at a loss for a more precise term, have called it "town and country planning."

City Planning

Let the student begin with city planning. That will give him a good foundation. He will see the climatic and geographic conditions which shape regional differentiations. This will give him time to make his own observations on trips through the country. Let him see population trends, shifting of industries, national and domestic resources—which account for many ills and beauties of the past. He will see the town as a living organism where neglect in planning is followed by decay. He may go on studying the industrial-commercial-administrative requirements of smaller units, villages, neighborhoods, farmsteads. These things are easily accessible to him, and he may sharpen his criticism in making a thorough investigation in his own native town. He proceeds by studying streets and open spaces, their function and adequacy, their importance as elements of architectural space. From there to subdivision and site planning is only a step, and when he finally arrives at *planning the house*, he has a good stock of observations and social judgment which will prevent him from designing fantastic dreamhouses for a never-never world. This is planning from the frame to the center.

Planning from Inside the Ivory Tower

It is a custom in many architectural schools to give students a great variety of design problems—a week-end house, a fire house, a school, an office building—all on hypothetical sites and with no restrictions imposed by neighbors or landscape features. The student in such cases prefers to design his building for Southern Arizona, which delivers him from the intricacies of roof design, and because he likes to use the cantilevering slabs which he finds so interesting in architectural magazines. At the end he has a series of design studies, all developed "from the inside out," portraying all the vagaries of unrestricted imagination, but with no correlation between them, and with none seen as a part of a greater whole. However, architectural practice on actual jobs is much different. Neighbors to the left and right are a painful, often difficult, problem. Let the young student design streets instead of houses, and architectural spaces instead of buildings, and we shall at length come to that concordance and mutual conformity in an ensemble which we call character in city planning. It is the chronic defect of all our towns and villages that every architect who built in them saw only his own job, that one house, that one cherished vanity, and did not care a bit for the greater whole. The slogan that we should plan from the inside out has been very convenient for those who thought only of their own selfish interests. And it is a splendid excuse for those who lack versatility and imagination to respond to specific re-

quirements which influence house design from the outside.

The young architectural student who labors for the first time to design a small house (6 rooms, kitchen, garage, or so) is a pitiful sight. He discovers suddenly that he has not seen anything, never looked at anything intelligently. He has seen only a few such houses from the inside in all his life, and perhaps never a good one. Space requirements, furniture arrangement, dimensions, construction—there are so many things to consider. He really has a hard time.

Memory Training

Most students when they leave high school, or even after some years of college, have no training in observation and a very limited stock of definite impressions. It is amazing how little they have seen; that is, analytically perceived. The building-up of a storehouse of precise observations, of likes, dislikes and intelligent criticism, is one of the first, basic tasks of architectural policy. It would certainly not be wrong to use the first two or three terms of study explicitly for just that purpose: not to supply information, but to direct and sharpen observation and to cultivate critical faculties. Observation can be trained systematically, so that he may pick out essentials. A well stocked memory of reactions and impressions is a great asset to the designer, just about as important as a rich vocabulary to a writer. Memory training supplies the raw materials for imagination, materials to be shaped afterwards by discriminating taste and deductions from experience. Field trips, twice or three times a week, on which the student sees apartments and houses in use, shops, restaurants, public buildings in operation, ugly and good examples alike, would give him a sounder understanding of the requirements of use and living than any "research" in the library. Let him make measured drawings, not of columns or ornaments, but of room sizes, floor plans, staircases, street sections, equipment, and he will finally acquire a sense for space, a feeling for the three-dimensional qualities which he can never get second-hand.

Practical Instruction

One word in passing about the teaching of building construction: This is usually a very dry subject, at its least imaginative level, consisting of tracings from Graphic Standards. Here again experience through the eyes, and through actually doing things, exceeds in value all paper science. Regular visits to buildings under construction, and at least one vacation spent in actual work in a carpenter's or contractor's shop, should be a required part of the curriculum. Builders should be invited to collaborate with schools in establishing some kind of apprenticeship in the interest of a more balanced education.

The deficiency which disturbs the graduate most when he enters the profession is his lack of knowledge of construction details, prices, and material specifications. Many schools are so busy producing pictures for display or intercollegiate competition that they hardly find time to go very deeply into construction and working drawings. It should be a matter of routine discipline, however, that no design is considered finished which does not contain at least one detailed, dimensioned section. This would keep the student's feet on the ground even if he finds the requirement pedantic. Engineers are much more exact to the last angle and rivet, and engineering construction has therefore become a model of precision and homogeneity, whilst architectural construction deteriorates more and more to a makeshift assembly of panels and substitute boards kept together by paste and screws.

Some schools require, before admission to final examinations, several months of work in an architectural office. The wisdom of such a requirement can hardly be underestimated. It is advisable, however, that this office interlude come neither too early (in which case the student would be used only as a pencil sharpener) nor too late, in which case practical experience is acquired long after it could have the desired effect on his design studies. Such office work is an eye-opener; the student finds work in an architectural office is not all just pleasant "design." Halfway through school would be a good intermission; the student might return to school a bit more serious-minded, and with a more realistic approach. It is easy for the instructor to push the student into fantastic experimentation, but it is more valuable to harden him for the complexities of his profession.

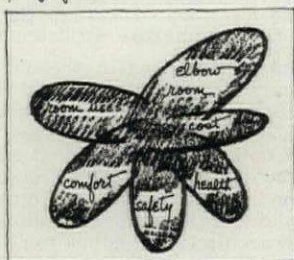
Complaints are frequent that the graduate, after leaving school cuts a disappointing figure in an architectural office. He wants to do some of the design on which he spent some 40 or 50 percent of his time in school, and he discovers that construction drawings, contract documents, and supervision take most of the architect's time. Whatever hours are left for design are so few that the designer works under pressure and with innumerable interruptions. The student is not trained for that, and so disappointment creeps in. Too great a part of his real training is left to the hazards of office practice. He grasps bits of information here and there, opin-

ions, tricks, business practices, but the ideal coherence is likely to get lost in such an after-education.

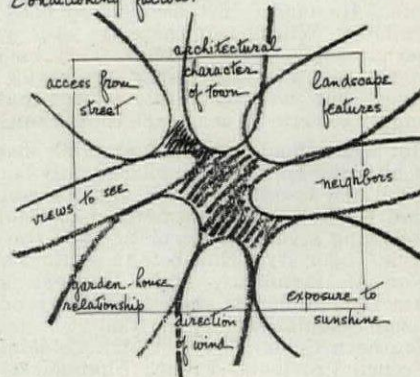
Office practice is a hard struggle with the banalities of life; with clients' fancy wishes and small pockets; with unstable building prices, technical difficulties, timetables and contracts; with open and hidden dishonesty, neglect and stupidity of workmen, restrictions of red tape, and reactions from friendly and unfriendly neighbors. It is easy to make a brilliant drawing, hard to finish a good building. It needs enthusiasm and persistence to carry the 10 percent of architectural idea through the 90 percent of bureaucratic and technical obstruction. It is always worth while to go through all the trouble if we are obsessed by our idea. If that spark of enthusiasm and interest gets lost in the drudgery of design and execution we get a dry, cold, impersonal edifice, as are most buildings on every street. Every architect, if he can not learn it from Michelangelo, will learn by personal experience that very seldom is an idea allowed to ripen in purity, and that most buildings, even good ones, are the result of an uninterrupted chain of compromises. It needs a lot of courage and fighting spirit to emerge from all such concessions without defeat.

We may deduce, however, from such experience that there are two things which we must strengthen in ourselves and cultivate in our students; the one is enthusiasm; the other, flexible, adaptable, fighting spirit.

Planning from inside - out
Conditioning factors:

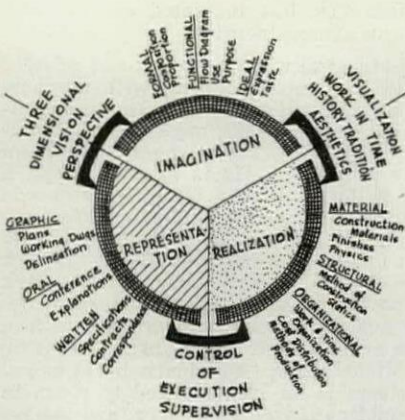


Planning from outside - in
Conditioning factors:



A whole curriculum may be written around these programmatic requirements. How little enthusiasm have those students who endure their studies as a routine "must," eager to find out how to get their credits with as little effort as possible! If the school does not give them that enthusiasm and that backbone of character and persistence, they may never get it in office practice. To arouse such enthusiasm, well understood, we need teachers who have it themselves—and plenty of it. Not booklearning and literary achievement, but practical experience, enthusiasm, and perseverance (which includes a good deal of patience) make the good architectural teacher.

The intermediate place of architecture between art and science has led to a more free approach in architectural education, without the systematic exactness of engineering and without the methodical, perpetual exercise which is the premise of success in music. The student is started in design "with cold feet." He needs manual ability, vision, memory, imagination. All these must be systematically trained. Imagination can be enriched considerably by proper exercise. It is an axiom that the first design is seldom the best, the second usually better, and that sometimes we can penetrate to the heart of the problem only after half a dozen carefully studied efforts. Let the student prepare a second and third variation, not sketchy, but well considered; let him



THE TRIPARTITION
OF ARCHITECTURAL
EDUCATION

argue the merits of one design against the other's, and he will in the end gain flexibility and a conscious imagination. To build up three-dimensional imagination is one of the first duties for the organization of space, if easy-going decorative schemes are to lose their validity.

History Stupidly Applied

There is, for instance, study of architectural history which, after overemphasis for many years on certain periods, encounters an almost defiant attitude from the progressive student. It is a good sign that a fresher wind blows, just in time, though almost too late for the coming boom. We shall still see, I am afraid, a great many classicistic and eclectic adaptations. We hardly have time to clarify the issues, and we shall endure many ugly, immature experiments.

There are still schools firmly entrenched in the old *Beaux Arts* method. Some ten years ago the majority of colleges held to that system. Architecture was pyrotechnics on large sheets of illustration board. It was an easy-going method with a *Beaux Arts* prize rather than professional efficiency as the coveted goal, while the engineer took over most of the building. If today we remodel our pretentious, impractical public buildings and complain of non-existent public relations, we pay the price of an architectural education divorced from reality.

The student is right if he is suspicious of "the historical approach." He looks for books to guide him. There are only a few on architectural design, and these are stuffy and obsolete. He might just as well go back to old Vignola and Palladio. What books there are were written by people who, perhaps, never ran an office. They may, in a chapter added to the last reprinting, pay lip-service to the "modernistic style," but you can hardly expect that one who was thoroughly eclectic 20 years ago could change much in a lifetime.

But what should the student think about honesty in design if he picks up a book published only last year? He wants to learn how to build a house, and discovers in the first chapter that the house of his American contemporary may have the following styles: Modernistic style Old English or Cotswold style Tudor style Elizabethan or English half-timbered style Norman farmhouse style Jacobean style Georgian style American Colonial style New England Colonial style Garrison Colonial style Cape Cod style modified Colonial style Southern Colonial style Dutch Colonial style Regency style French Provincial French Chateau style French Canadian style Italian style Spanish type Monterey style California Ranch style Modern style and Ultra-Modern style. Poor student! No wonder he becomes desperate! No criticism is appended to the nonsensical labels and historical prostitutions. If he finally overcomes his dizziness and looks for honest merit in design, he notices that at least 20 of the 30 illustrations are of extremely poor quality.

There is still a very big gap between progressive, sincere architecture and public preference. Real estate interests dictate public taste. It is a sign of good courage on the part of the student if he gets through the flood of advertising unharmed. He may tour the big department stores to find that the last cry in interior design is Victorian revival, the distorted revival of a distorted stuffiness, with curved legs and dust-collecting draperies, baroque mirrors, rose garlands pasted on walls and furniture, Chinese lamps to house electricity, and chimes to bring the sweet melody of Easter bells into the home. The advertising writer, that squash, has no respect for structural sincerity; he stirs up a vogue for Chippendale today, "Modern" tomorrow, and French Provincial the day after.

At the same time, whilst interior decoration sometimes goes wild, new houses are built and called developments, block after block of them, "housing for the masses," which are depressing in their graceless repetition, where elbow-room is reduced to the minimum standard, where apparently no

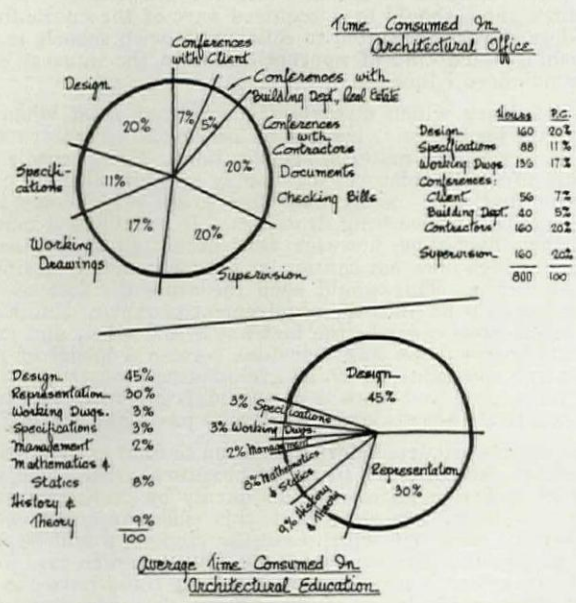
architect cared to inject some human touch. The student may have difficulty in finding the common denominator.

—and History Soundedly Taught

However, we cannot dismiss historical studies too readily. On the contrary, we must deepen their meaning and give them a new mission. So many Americans are now in far-flung countries that new ties, new interests, and cultural exchange will persist for a long time. Greece and Egypt are nearer to us now than ever before, but in a very different way. We may foresee quite an influx of ideas. European architectural history is interesting as a continuous exposition of internationalism and nationalism, or regionalism, a brilliant play of attraction and repulsion. We have similar tasks to perform in our immediate future. One nation, welded together out of various hyphenated elements, must find—and will find—one national architectural expression, and at the same time that one crystallization must display the facets of regional differentiation, if we want to avoid wishy-washy, commercialized internationalism. Historical studies must furnish the quarries, not for finials and Corinthian capitals, but for the meaning of forms, the significance of evolutions, the racial and geographical inclinations which form that intriguing pattern of genius and beauty. It seems advisable that architectural history should not be a detached lecture course, but a tie-up with analysis of design, developed simultaneously with design problems. Analytical esthetics might be a better name for it.

Arts and Sciences Interwoven

The education of the architect must be put on the broadest possible foundation. It must contain, at least as electives, many subjects which help the young man to understand the complex pattern of our society. The close affiliation of architectural schools with fine arts schools (which is almost a rule) may have advantages if every opportunity is offered to introduce the architect to the creative problems of other arts, of industrial design, garden design, theater, and music. The tie-up may have the disadvantage, obvious in many cases, that the nonbalance of the artistic atmosphere produces an imaginative renderer, whereas clearness of draftsmanship and technical exactness are prime architectural requirements. Close ties to the engineering and socio-economic departments are necessary to acquaint the student with the



harder facts of statics and mechanics, steel construction, shop management, building maintenance, population and social background studies. The layout of most European universities with many departments under one vast roof makes it easy for the student to pick up some information and scientific interest by just "dropping in" on lectures in other departments; but the pavilion system of most American institutions easily produces a "closed shop" aloofness. Announcement on the school bulletin board of specific lectures in other departments may arouse some spontaneous curiosity. Conversely, it would be good for the engineer, agronomist, or sociologist to cultivate a more comprehending interest in architectural planning problems. City planning, as said before, is an eminently democratic affair which needs the active interest of every citizen. It should be a true representation of our democratic ideals, stressing not the independence but the interdependence of all concerned.

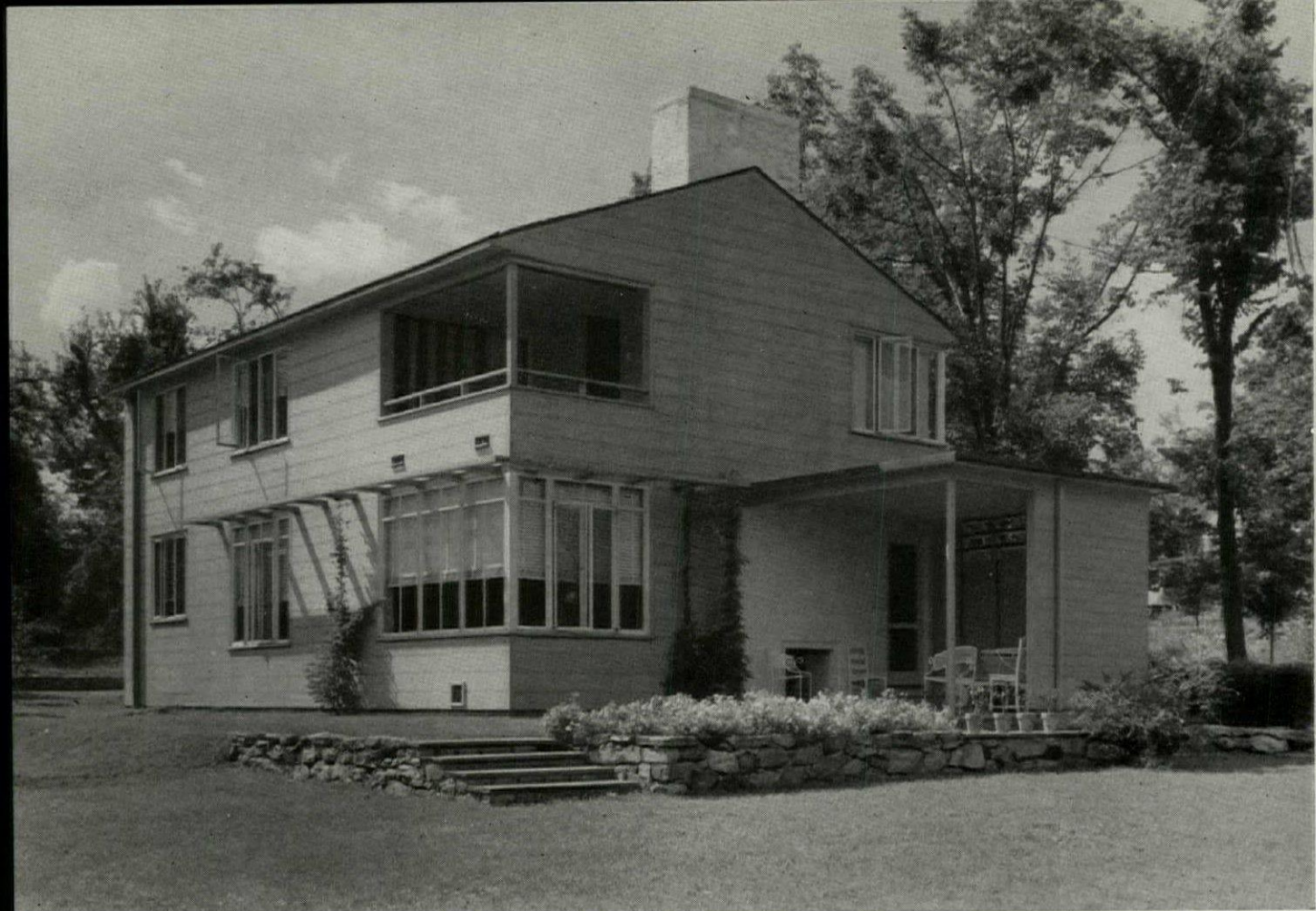


Country Home in Connecticut

LOCATION:
NEW CANAAN, CONN.

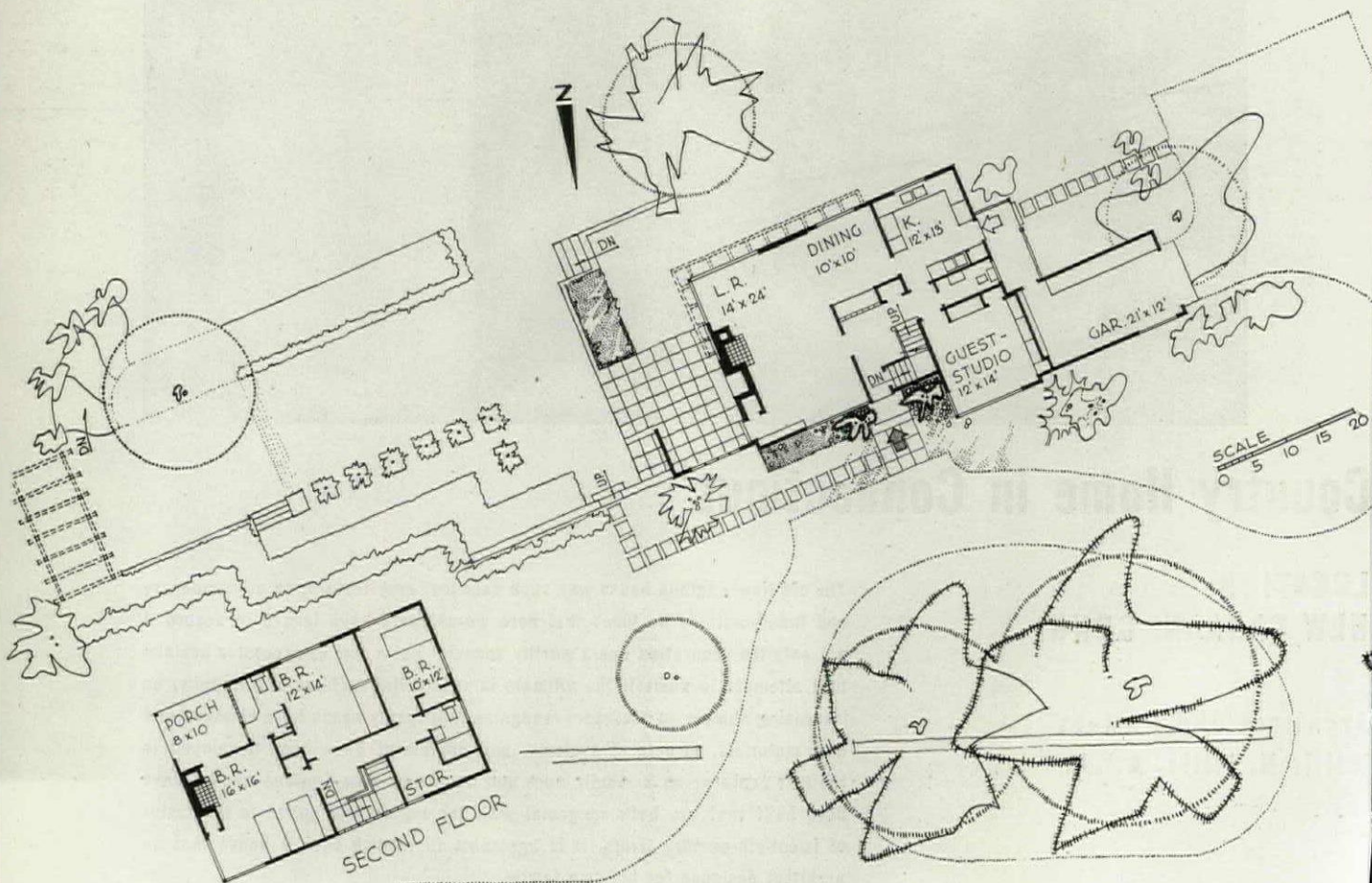
Architect and Owner:
Willis N. Mills, A.I.A.

The old New England house was such excellent architecture, so contemporary and functional (of its time) that hero worshippers have tended to accord it not only the veneration due a worthy ancestor but a sort of excessive acclaim that attempts to name it the ultimate in residential architecture. Happily, an increasing number of designers recognize that family needs have changed and new materials, structural systems, and equipment have been developed in the last century; as a result, more and more new New England houses have been built that are both congenial with the region and suited to the tastes of twentieth-century lovers. It is agreeable to publish such a house that an architect designed for his own family.



The garden front of the house

Willis Nathaniel Mills, A.I.A., Architect





Steel sash open up a corner

The living porch is enclosed on the north and northeast sides



The architect's studio has a place for everything



The architect (at present with the Marines) planned this country home for himself, his wife, and two children. Located southwest of a bordering road, the property was well aged with fine old trees and stone walls. A somewhat conventional floor plan achieves distinction through free organization of the principal living areas and the introduction of fresh details.

Though the house has a basement, additional storage space is provided on each floor—along one wall of the garage (for tools and garden equipment) and in a separate room on the second floor. The living porch, screened from the road by a partial partition, has a fireplace that is used on cool evenings.

Between the front hall and dining room, a glass-block partition brings light to interior walls of both rooms. In the architect's study, fitted with specially designed cabinets and file space, is a folding couch-bed. As the room is placed immediately beside the downstairs lavatory, it is readily converted for use as a guest chamber.

Throughout the planning of this house, unusual attention has been given to improved arrangement and location of familiar facilities. A good instance is the placement of laundry equipment on the ground floor at one end of the kitchen alongside a door out to the drying yard—a convenient arrangement of utilities that are too often relegated to the basement for no obvious reason.

Another is the flexible organization of the two bath rooms on the second floor. One, opening off the hall, is accessible from any of the rooms; the other, placed between two bedrooms, may serve as a private bath for one of these rooms or for joint use of both as conditions and convenience suggest.

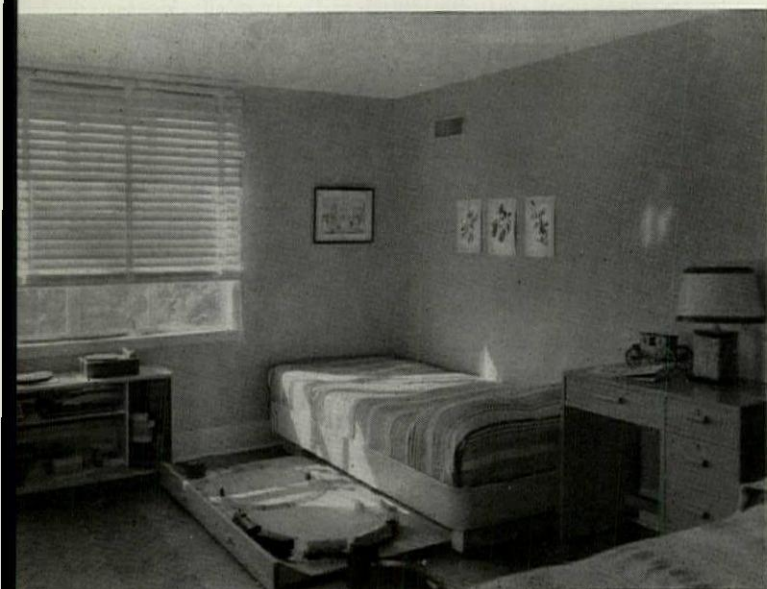


**Willis Nathaniel Mills, A.I.A.,
Architect**

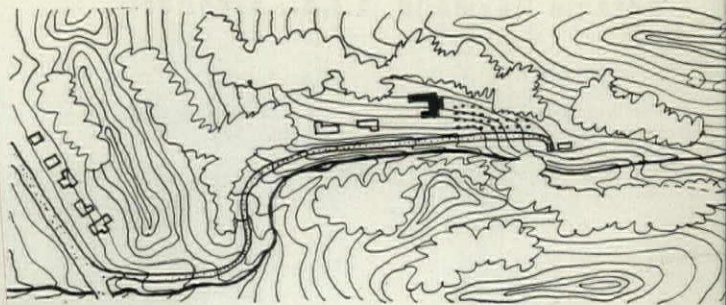


The living room has a southeastern garden outlook.

A child's bed and playroom



The house is of frame construction, finished with flush and beaded redwood boarding, painted gray and laid over $\frac{1}{4}$ -in. plywood sheathing. Trim and the steel sash are painted white. Individual black mastic shingles are the roof surfacing. In the main, interior walls are plastered and painted; floors are of oak, except in kitchen and baths, where rubber tile is used. The living porch is surfaced with flagstone.



Plot Plan

Three Levels on a New Jersey Hillside

LOCATION: LAMBERTVILLE, N. J.

Architect: Antonin Raymond, A.I.A.

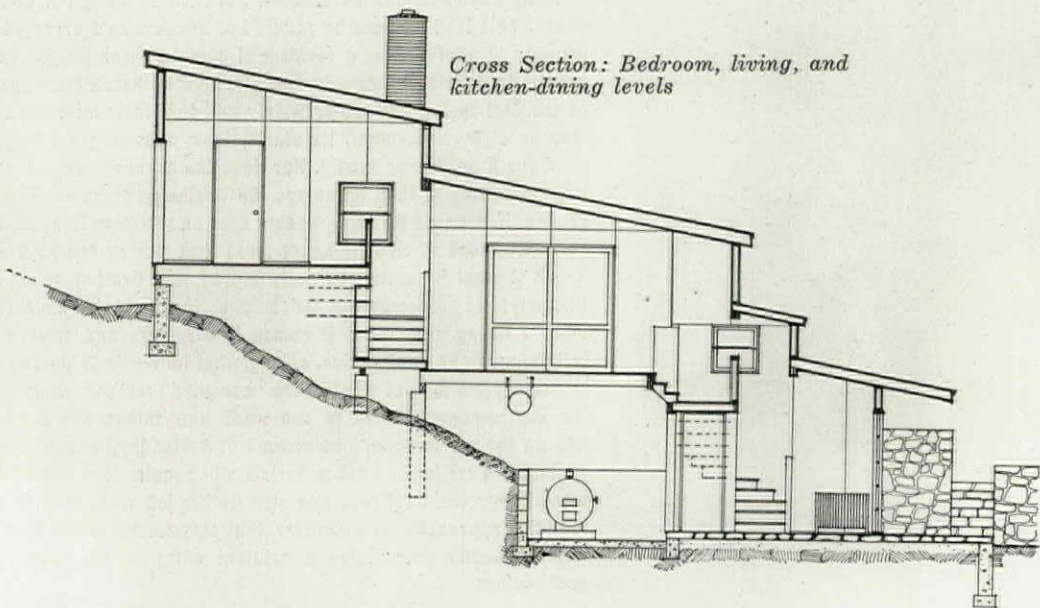
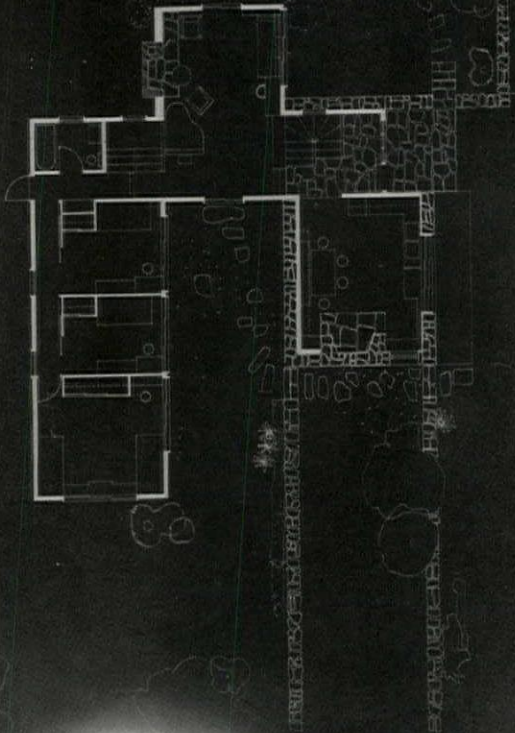
Photos by C. V. D. Hubbard



Son Mother Daughter Friends Owner

Antonin Raymond has never been satisfied to design a conventional house. This isn't because he couldn't or because he's ornery, but rather because in approaching a residential planning problem, his prime concern is to develop a home for people; and he has a keen appreciation of the fact that people differ widely and that their interests and needs may be highly individual. He starts, then, scheming a fitting environment for a particular family. Nor does the architect expect or demand a typical site; in fact, he enjoys the challenge of an unusual piece of ground, if it would be an agreeable spot on which to live. So, free from preconceptions of what a house must look like or the kind of site on which it must be built, and unlimited by any fixation on an architectural style or contemporary fad, he goes to work to fit his fitting house upon a fitting site. When it comes to structure and selection of materials, again he is objective, asking what he wants to do and how best to accomplish it—not what is the "accepted" method. He looks around the contemporary world to see what new things are available that will do the old familiar jobs as well or better than could be done with yesterday's methods, what materials will require less installation time, what things will cost less and still do the job well. With this type of realistic approach, little wonder that Raymond's work is never trite and frequently constitutes a brilliant entry in the record of good architecture.

*Future extensions can be added
at any level.*

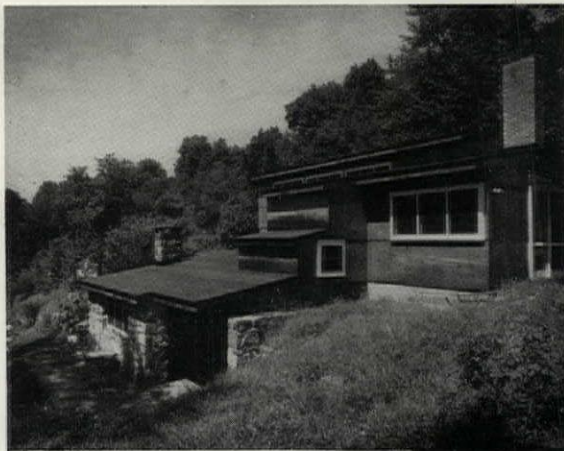


*Cross Section: Bedroom, living, and
kitchen-dining levels*

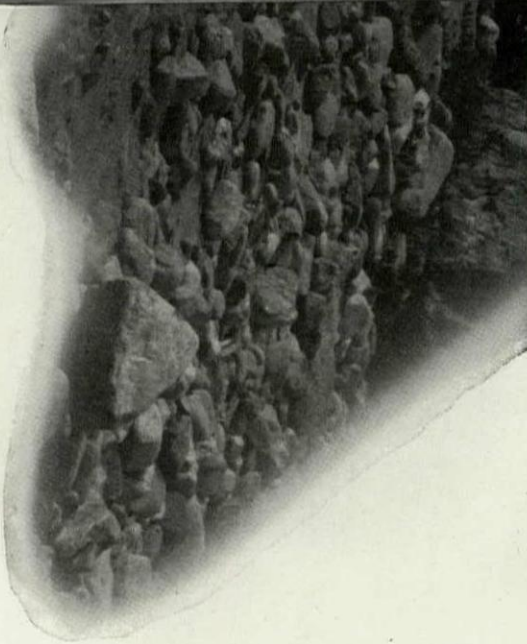


Masonry from an old house built the walls of the first level.

General view and (below) the kitchen-dining room



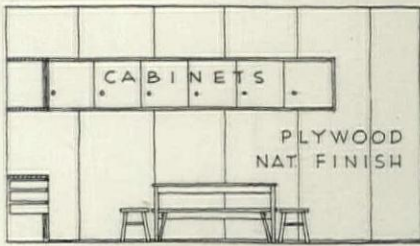
Plywood is the finish material inside and out



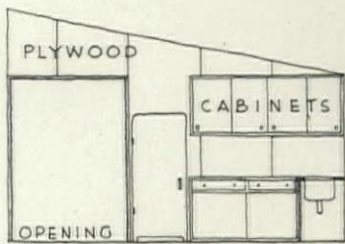
The house shown here, built for Lewis Stone, a painter of abstractions, his wife, and two children, looks exactly like what it is—a plain country home, inexpensively built of simple materials. Since, in addition, it seems to be an excellent fit for the family for which it was made, it appeals to us as first-rate architecture. Furthermore, it has genuine style, with today's imprint.

Mr. Stone does his painting in a studio up at the head of a little valley leading away from the Delaware River. The house is on the hillside a few hundred feet below. An old, one-room house existed on the site, and the Stones hoped to preserve this. Ultimately little more than the foundations were usable, but it determined the location of the kitchen-dining room unit by the side of the road. From this, the house rises up the hill.

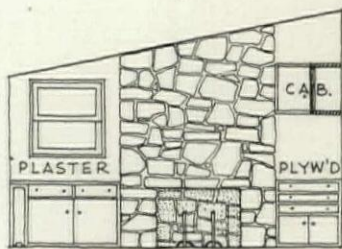
The main features of the house are the maximum sunshine, cross ventilation, and view from every room. A sense of great spaciousness derives from the possibility of walking out into a garden from each level. Construction of frame and use of plywood contributed to the low cost. The home is heated by a hot-water system, with the furnace room located under the living room.



WALL 1



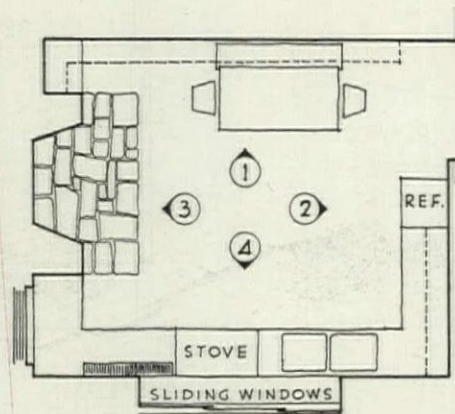
WALL 2



WALL 3

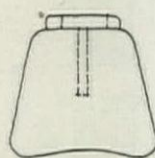


WALL 4 SCALE $\frac{1}{8}'' = 1'-0''$

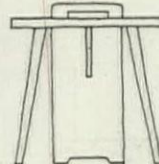


PLAN SCALE $\frac{1}{8}'' = 1'-0''$

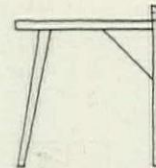
FLOOR • PRESSED COMPOSITION BOARD TILE • 12" SQ.
 CEILING • $\frac{3}{4}''$ INSULATION BOARD AND 4" LOOSE WOOL



PLAN

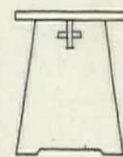
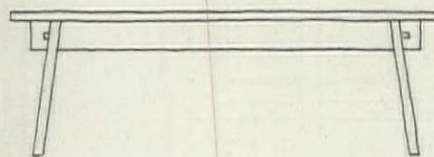


FRONT

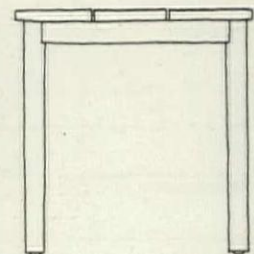
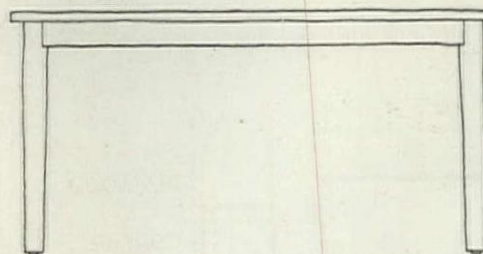


SIDE

STOOL



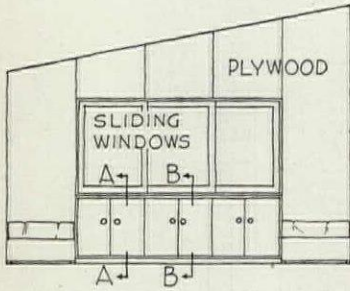
BENCH



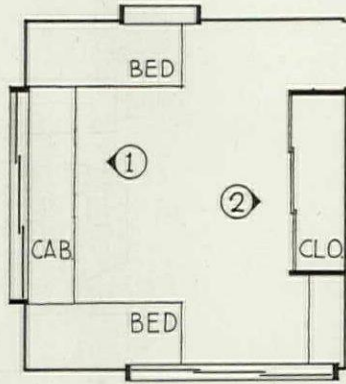
SCALE $\frac{1}{2}'' = 1'-0''$

TABLE

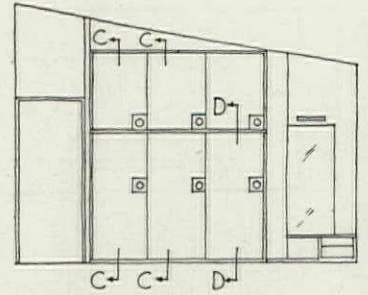
FURNITURE • WHITE OAK TOPS • RED OAK LEGS



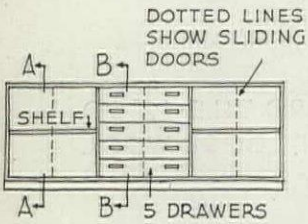
WALL 1



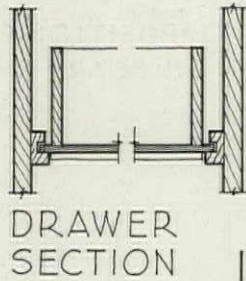
PLAN
SCALE · 1/8" = 1'-0"



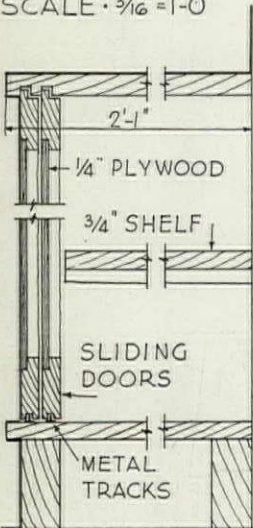
WALL 2



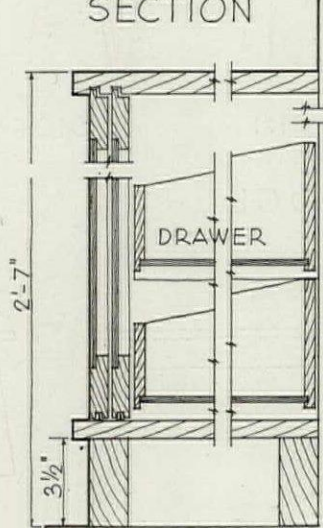
ELEV. OF
CABINETS
SCALE · 3/16" = 1'-0"



DRAWER
SECTION



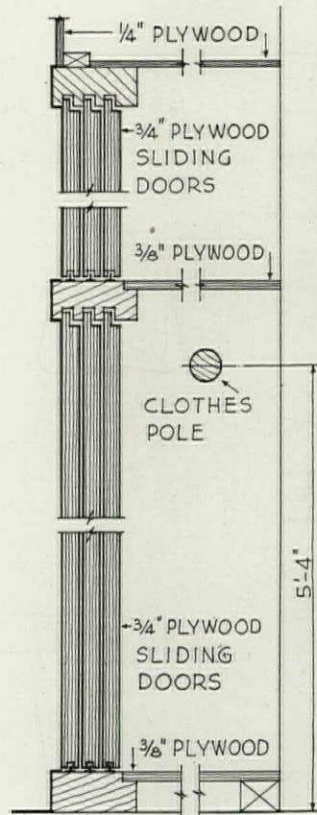
A-A



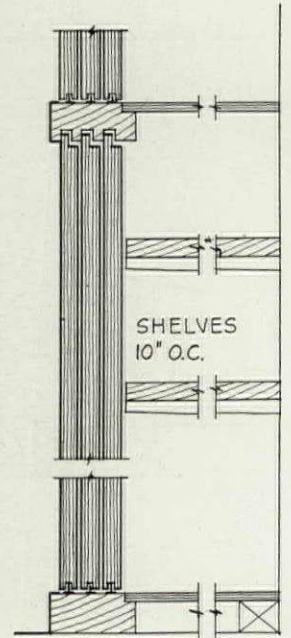
B-B

CABINET DETAILS

SCALE · 1/2" = 1'-0"



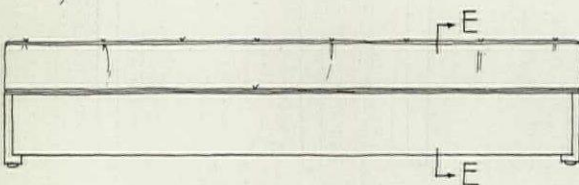
C-C



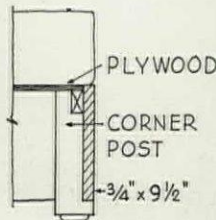
D-D

CLOSET DETAILS

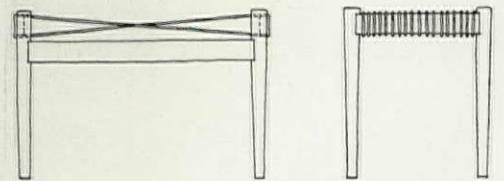
SCALE · 1/2" = 1'-0"



BED SCALE · 3/8" = 1'-0"
FURNITURE



SECT. E-E
SCALE · 3/4" = 1'-0"



STOOL
SCALE · 3/8" = 1'-0"

An Architect's Home

LOCATION: NORMAN, OKLA.

Architect: Henry L. Kamphoefner, A.I.A.

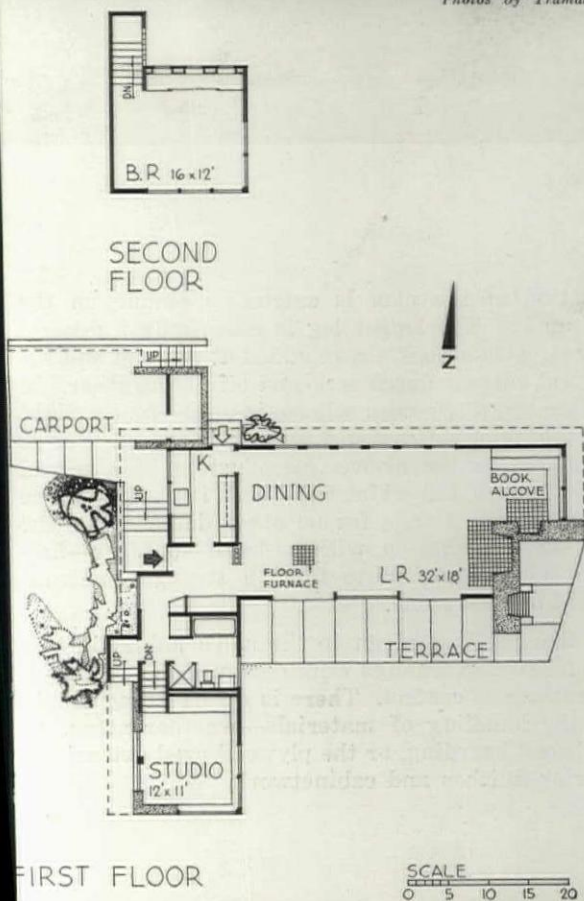


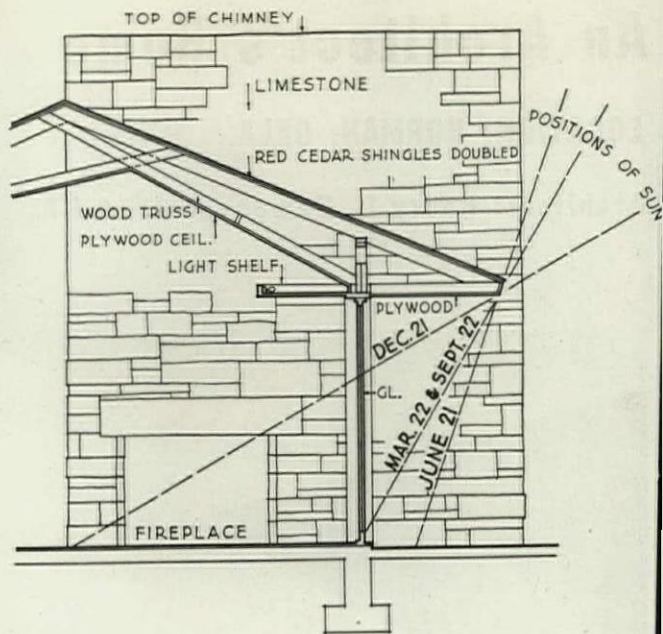
Photos by Truman Pouncey

It is encouraging to publish an example of contemporary residential architecture from a State so infrequently represented in the architectural press. That the architect and owner is also Professor of Architecture at the State University is reason to hope for more frequent opportunities in the future.

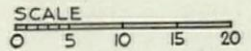
Are Oklahoma clients more than others fond of "stylish" architecture? Or are Oklahoma architects less interested than their brethren elsewhere in regional architectural development of a contemporary character? Frankly, we don't know why the situation seems to exist—but we're willing to be told.

Sun control is handled by broad roof projections.





SECTION



Composite of plywood, native stone, and a window wall

Henry L. Kamphoefner, A.I.A., Architect

A screen of ivy containers shields the front door.

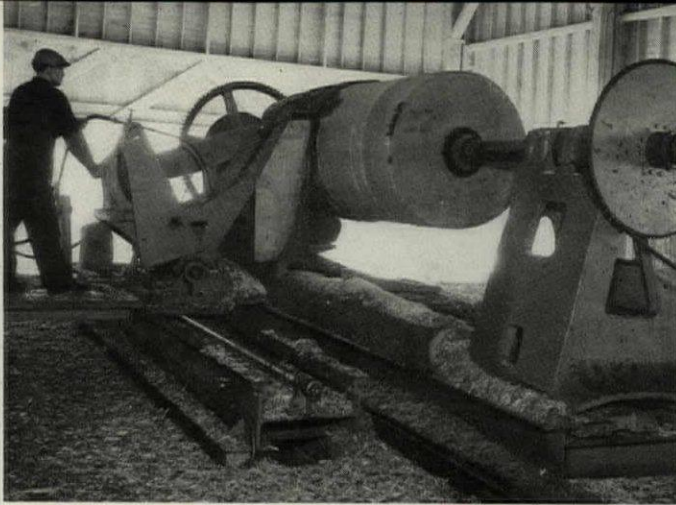


The carport



Organization of the plan is extremely simple, in the form of an L. The longer leg is essentially a general living area, with a book alcove added at one end and the kitchen and entrance area screened off at the other. In the shorter leg, a two-floor scheme is used—half a flight down to a studio, half a flight up to a bedroom. For so small an area as the alcove, introduction of a second fireplace seems a bit whimsical. But if it serves the owner's pleasure, it calls for no other defense. On the exterior, in combination with a third—outdoor—fireplace, the chimneys join to form a strong re-entrant angle built of local stone.

Careful thought was given to the sun's habits in this region, and roof overhangs were designed to keep it under advantageous control. There is a refreshing frankness in the handling of materials—whether stone, V-joint redwood boarding, or the plywood used extensively for interior finishes and cabinetwork.



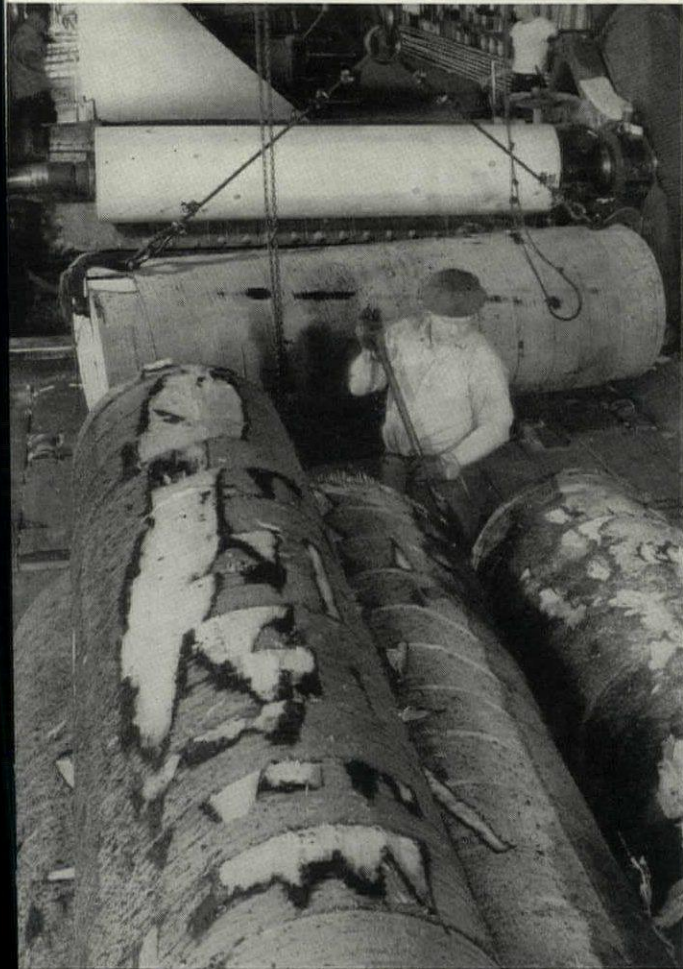
Basic processing begins with removal of bark from log sections . . .

Plywood's Future Has Just Begun

BY LAWRENCE OTTINGER

President, United States Plywood Corporation

. . . peeling veneers from the log by one of several lathe methods . . .



We started out to design a powder box and ended by building a barrack.

That experience, one of the many little jokes hurry-up research has played on us during the past two years, epitomizes to me the scope of opportunity spreading before plastic plywood in the postwar era. Fully recognizing the rapid strides it has made in recent years, its quick response to the emergency summons of war, and the developments now forming in the hands of technicians, I am convinced that plastic plywood is yet an unexplored field; that it is not yet approaching the threshold of its ultimate usefulness.

We hear about plywood bath tubs; one-piece, feather-light, molded automobile bodies, propelled by new, higher-test fuel and smaller motors at a third of our present cost per mile; low-cost, private flivver 'planes of plastic plywood; indestructible furniture, and factory-built homes with movable walls. These things are belittled by some, called surrealist nightmares by others, and scoffed by many professional technicians. My war industry experiences leave me ingenious enough to believe that these glowing advertisements merely hint at what lies ahead.

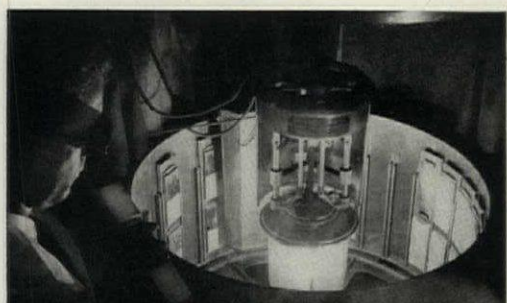
Plywood in its simplest terms is man's method of developing the full strength of wood as it grows in the living tree. Again in simple terms, that is accomplished by crossing the grain of adjacent laminations of various types of wood—three-ply, five-ply, seven, nine, eleven, and up, thus combining the characteristics of the long grain with those of the short grain. These laminations are irrevocably welded under high pressure by a bonding agent.

The heart of plywood is, of course, the bonding agent. I call it a bonding agent rather than an adhesive, because plastic binders really are not adhesives; they do not work as adhesives. When plywood was first made (and that goes back at least to the days of Tutankh-Amen, as a great many pieces of furniture taken from Tut's tomb were of laminated wood) the bonding agent was what is known as hide or animal glue.

Animal or hide glue was used for quite a while until a man by the name of Perkins developed, through the use of cassava flour, and a small amount of caustic soda, an excellent adhesive called a vegetable glue; and that was used and still is being used on millions of feet of plywood. Silicate of soda, which is the cheapest thing, is employed on box plywood. During the last war, we went into caseins and blood—slaughterhouse blood—for adhesives. Both make highly water-resistant plywood, but both are subject to bacterial deterioration, and, therefore, neither will make a plywood that can be used indefinitely out-of-doors, or on boats or airplanes, because, no matter how well they are protected with a coating, condensation occurs inside and causes rotting. They do not stand up.

There followed the discovery of phenol and formaldehyde, which, under pressure, became Bakelite. Then we

. . . . and exacting tests against performance standards.



began to make plywood in hot plate presses, using phenol formaldehyde as a binder; and when we did that we had a combination of plastics and veneers which could not be separated under any circumstances short of complete destruction under fire. And even in the case of fire the phenol formaldehyde plywood burns as a whole; it doesn't separate into its various veneers.

Lignin is a very promising plastic, being plentiful and cheap, but it cannot be used as a binding agent between veneers, because it requires too high a temperature. It can, however, be used as an extender for the phenolics up to 35 percent even without increase of heat, and the result seems to be pretty much the same as when phenolics are used alone. At present, lignin may not be used beyond that point, but it will ultimately be modified and will be much more useful.

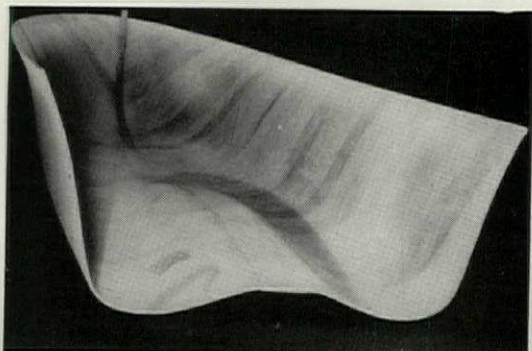
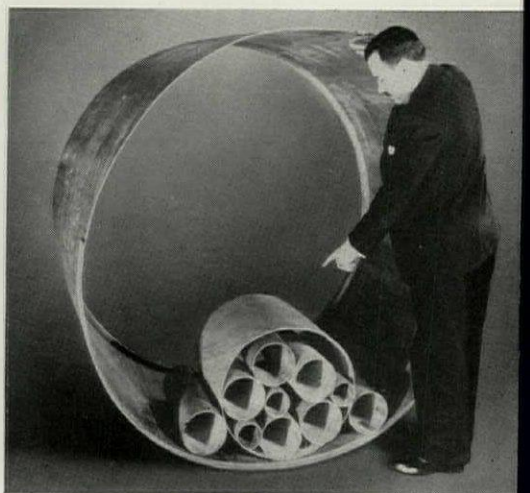
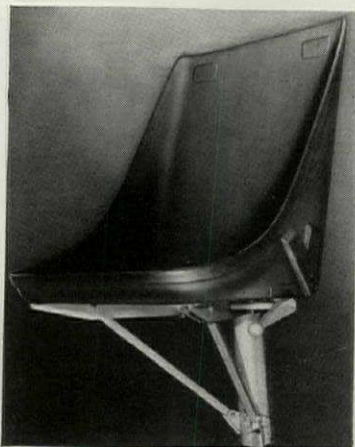
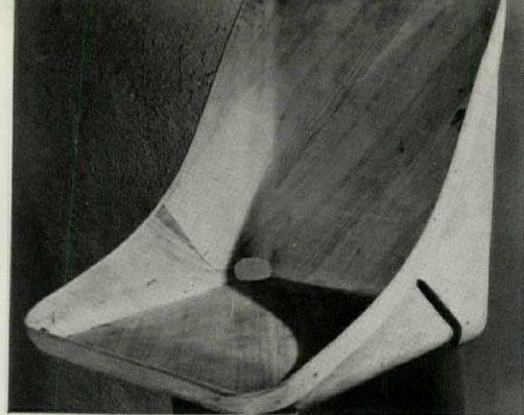
The plastics are not used only as bonding agents for plywood; they are used as impregnants for various purposes and reasons. One purpose is to increase the hardness of the wood so that it will stand abrasion. That is nicely illustrated in the pontons used by the Army. The outer two layers are birch impregnated with phenol formaldehyde and molded in one piece. These boats are 18 feet long, 6½ feet in beam, and 3½ feet deep.

Another function performed by plastics of a certain kind is that they serve as a plasticizer. A plasticizer is something that makes a material soft enough to be shoved into a mold or bent around a compound curvature. That usually applies to the plastics when they are heated; then they harden. That has enabled us to make things of wood that couldn't be made without a plastic that would also act as a plasticizer. When we refer to a plasticizer of wood, what we mean is that the substance softens the lignin which holds the cellulose fibers together, thus making it possible to do things with the wood which otherwise could not be done. When the heat is removed from the wood, and possibly some chemical treatment applied, the wood is brought back to all its former strength, and very often that strength is greatly increased.

Another use for plastics is in binding metal to wood and that has developed very importantly. One of our engineers developed a powder box using .008 stainless steel bonded to plywood. Thus he produced a box that was a third smaller, a third lighter, and about ten times as strong as the box that had previously been in use. We make the parts and the box makers make the boxes. Our first order for parts amounted to five-and-a-half millions of dollars. That order saved 17,500,000 pounds of copper, 750,000 pounds of tin, and it is saving, monthly, some four or five hundred thousands of dollars for the government in transportation alone, to say nothing of storage space.

Now we have found a plastic to do the job of bonding metal to wood. Of course, it may not sound like much of a trick but, when you bear in mind that those boxes are used out-of-doors where they may be hit by the sun (and in the tropics the sun may raise the temperature to 140 or 150 degrees Fahrenheit), and when you keep in mind further that metal expands under heat while wood contracts, you can appreciate that the bonding agent has to be elastic. Nothing will stand that stress but a bonding agent that will expand and contract enough to take up the differential coefficient of expansion between the metal and the wood.

We did use a combination of latex and casein, but we have developed a thermoplastic of the Vinyl and Butyl types, which has elasticity, for this sort of job. This type of plastic is not like a phenol formaldehyde or urea formaldehyde, because those, when polymerized, are very hard and very stiff.

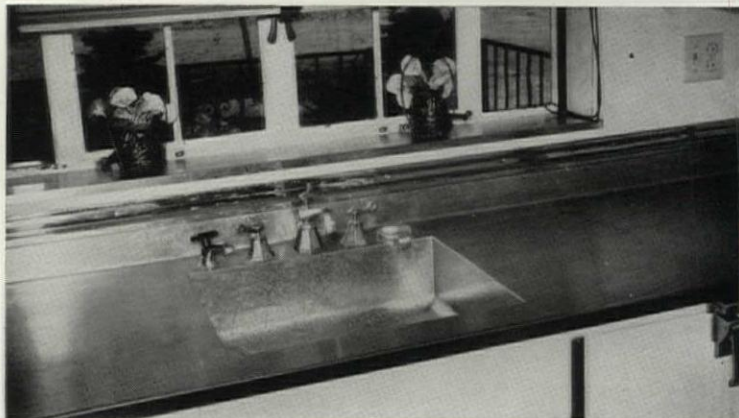


Implicit in the molded wood shapes shown above—already in use in other fields—is a whole array of potential new architectural applications and forms. Seamless tubings in a wide range of diameters suggest log, column, or pipe forms, perhaps revolving closet units, or even circular room enclosures. The gunner's and crewman's seats (at top), formed of compound shapes and reinforced where needed, have obvious implications for furniture, cabinetwork, etc.; with compound shapes such as the single-piece boat hull, the designer employing free forms may enjoy yet further freedom.

As a result of the work on that powder box, we made a stainless steel sink of conventional size by superimposing stainless steel of about 28 gauge on birch plywood. The resultant product is something that will stand impact, which is free from denting, and much lighter than the heavy utensil heretofore made. And the cost difference is enormous! This sink can be made for 40 percent or less of the cost of a conventional stainless steel sink.

We can go even further with a drainboard. We can make a drainboard at 20 to 30 percent of the cost of one made of heavy gauge stainless steel.

This development would seem to bring stainless steel

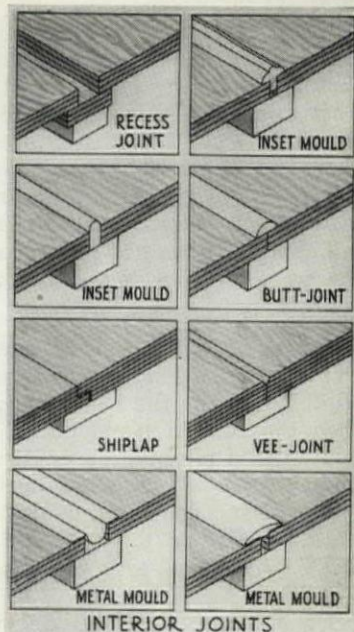


within the reach of the lower and moderate priced homes.

Then we went a little further, this time into the field of prefabrication. We built a two-car garage, 20 feet square with a peaked roof, and we can ship that garage in a space 2x2x10 feet. The wood is routed out in back. When the building is put up, the sections join and the metal is folded over. We have new ways of doing that and the sections are rapidly assembled. We can prefinish and make a house section or a section that is all prefinished, either prefabricated in a factory or fabricated on the job.

Then we built a barrack. That is the interesting thing to me: we started out by building a powder box and we end by building a barrack!

Paper has tremendous possibilities in combination with plastics. Paper has a great affinity for resins and many things can be done with it. The increase of strength of a single piece of veneer with paper on both sides is tremendous. I rather feel that the automobile body of the future is likely to have a lot of impregnated paper

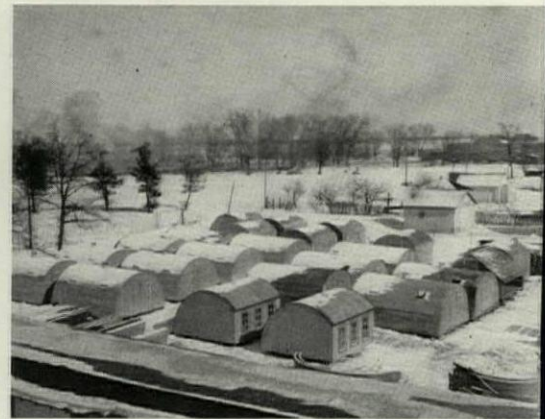
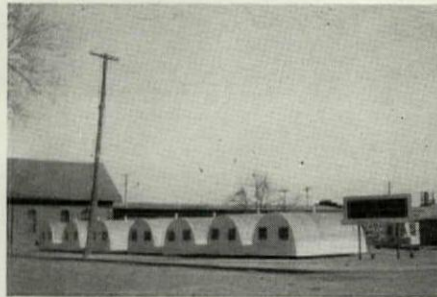
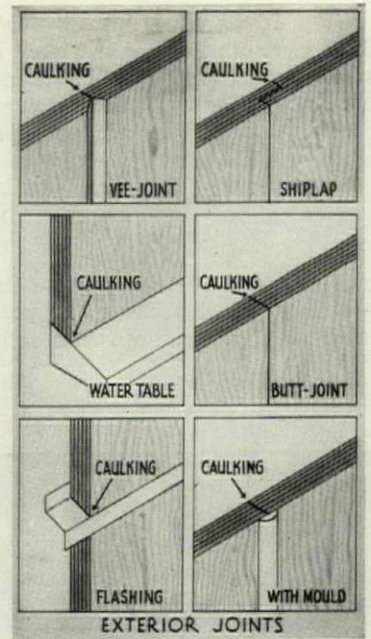


Plywood already occupies an important place in the vocabulary of today's architectural usage. These and the following pages indicate a still more impressive future. Thoroughly familiar is the use of sheet plywood as a wall-surfacing material (see typical interior joint details above). Increasingly important and widely used in house prefabrication systems is its use, shown in the two photos directly above, in panel construction, stressed-skin or otherwise. At top left is one of its more recent architectural applications—as a drainboard material, composed of a ply base to which a light-gauge stainless steel surface has been joined by means of an elastic bonding agent; a possible problem of denting may be eliminated through use of a heavier gauge metal or harder wood. In the photograph of the prefabricated trailer-type house, walls, cabinetwork, and furniture are all of plywood.

in it. It is cheap, easy to handle, easy to mold, and it stays put when made.

The application of short wave induction to the manufacture of plywood is a most important development. This compares to the use of diathermy in medicine; a short wave induction machine is nothing more than a short wave diathermy machine. As diathermy sends electric impulses through your body and agitates your molecules to create heat, so the current, oscillating at millions of times per second, agitates the molecules in the wood or in the bonding agent between the wood veneers and heats them.

If a pack of laminations as thick as a book, for instance, were put in a hot plate press, it might take seven or eight hours for the heat to penetrate throughout. And then the results would be in doubt, because the outer laminations might be over-cured, while the inner were under-cured. Short wave heating, on the other hand, is simultaneous throughout the whole mass, and the



same unit of laminations could be heated through in five minutes. The thickness of the package makes no difference as long as enough kilowatts are applied to penetrate it.

What is the practical application of this method? Well, we made boats in pre-war times; we made about 1,500 little boats, and they were marvelous. They were light and they were seamless. Twelve feet long, they made 30 miles per hour with a 16 horsepower outboard motor, carrying one man. But the neoprene bags we used for molding it cost us \$6 per boat. They cost \$125 to \$150 apiece and they were good for 25 "cooks" and the forms were good for about the same. So between the bags and the molds we had an expense of about \$12 per boat. Twelve dollars on a little boat is a lot of money, enough to take it out of the large, low-priced market.

Now, by the short wave method, instead of having to "cook" one of these boats for 30 to 40 minutes, it can be done in five. There will be no heat at all on the rubber bag, because the electrode will be inside it. There will be no heat on the form, because the heat will be

The well known use of sheets of plywood for interiors and exteriors (see recommended joints at top) is just the end of the beginning of plywood's architectural use. Laminated wood structural shapes extend wood's framing potential enormously. The picture above at left shows a laminated round-arch frame construction, to which a variety of surfaces may be applied; the smaller pictures indicate a few of the treatments developed for speedy provision of war-time shelter, prefabricated chicken houses, and other farm buildings, etc. The architectural possibilities implied in the use of such laminated frame members, in whatever shape may be required, are practically unlimited. The following pages suggest some of the exciting beginnings of plywood's future.



Prefabricated house construction—whose value many question—is about the most we have found practicable in plywood, but—



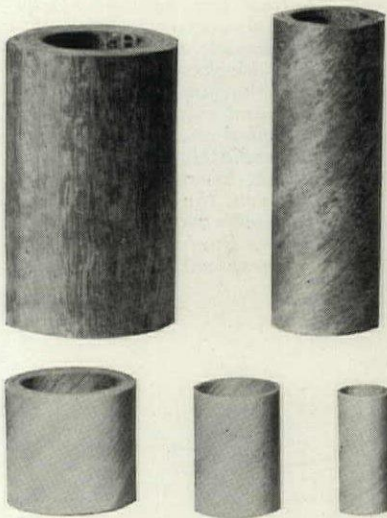
1. The basic material, layers of wood bonded with various types of resins under heat and pressure. . . .



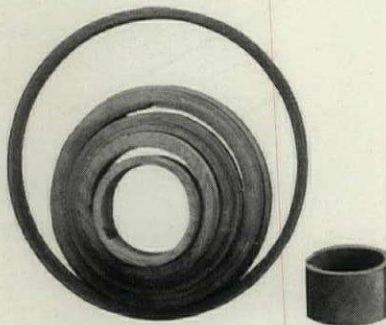
2. The basic material molded when it is created; on edge, this might be a completely self-supporting partition. . . .



3. Bomber flooring of hollow-cored plywood in three layers, the center one corrugated; approximately an inch thick . . . Implications for building construction?



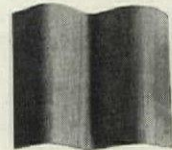
5. Plywood tubing, one of the most difficult forms to make under today's manufacturing limitations, may eventually become cheap enough to replace the iron column for certain structural purposes. . . .



6. Plywood tubing in various diameters and thicknesses—will tanks, drums, telephone booths, etc., come prefabricated of this material?



7. Combination of flat and tubular plywood: a cabinet maker's hinge, leaves $\frac{7}{8}$ -in.-wide, $\frac{1}{8}$ -in.-thick, with steel pin . . .



4. Accordion-pleated plywood, bent at right angles around an eighth-inch (or less) radius at re-entrant angles. . . .



8. Plywood angle—in truth, simply a section of the accordion section above . . .



9. Curved plywood angle . . . these photos indicate possibility of standardized series of structural shapes, enormously strong for their weight, nailable, capable of taking a good finish directly on the structural member. . . .

outside. The pressure will be compressed air. With short wave, then, it should be possible to use the neoprene or rubber bag and the form indefinitely. The cost, instead of \$12 per boat, might come down to a few cents, plus very much speedier production.

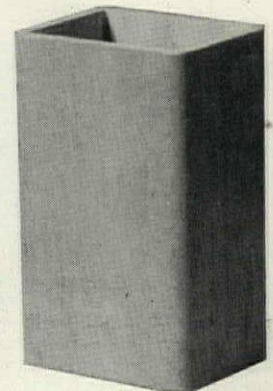
The same applies to plywood tubing, which is very hard to make. The walls are sometimes as much as $1\frac{5}{8}$ inches thick and we have to "cook" and "re-cook" them. Some get eight "cookings." With short wave induction it can all be done with one "cooking" in about five minutes. We are developing machines to do the whole operation at one time. Plywood tubing ought to be quite inexpensive after the war. It is costly now.

Steinway & Sons, the piano people, make gliders, and they do it exceedingly well. They have a leading edge that is about 16 feet long with all sorts of gradations, which they make by short wave as they do the wing ribs.

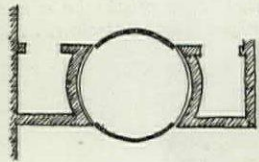
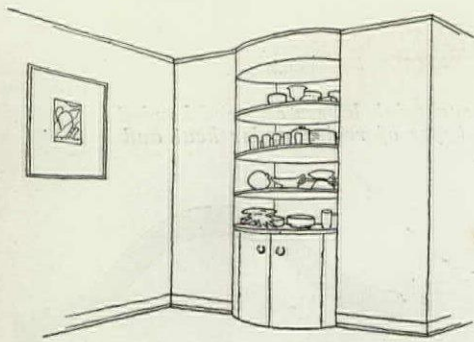
Short wave will revolutionize the use of plastics in wood, as plastics are revolutionizing the use of plywood, which in turn is revolutionizing our entire conception of the usefulness of our greatest natural resource, our forests.



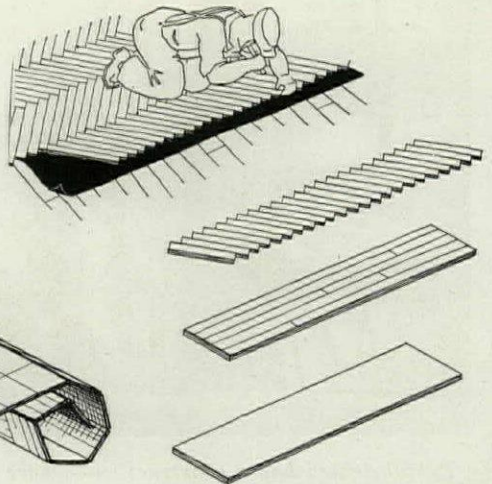
10. Plywood angle with closed end, formed when fabricated.



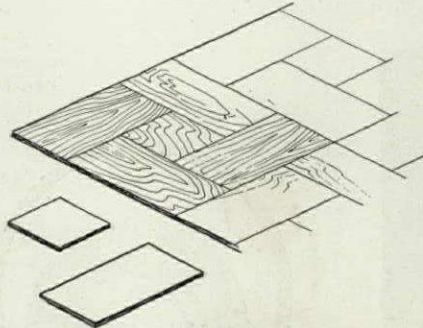
11. Square plywood tube (sample approximately $1\frac{1}{2}$ by 2 inches in cross-section)—saw it in half longitudinally and you have two structural channels. . . . (Continued on page 84)



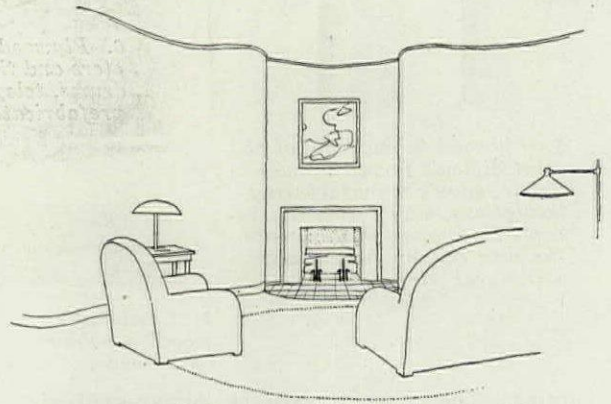
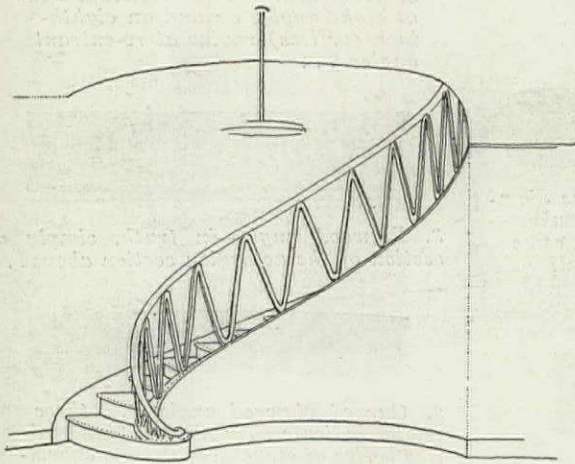
It would not be too great a step to make closets of premolded plywood. Here, for instance, is a revolving circular serving closet opening into two rooms: dining room and kitchen. A quarter turn closes the opening with a plywood panel surfaced in any wood desired. . . .



Left and above, possible types of plywood finish flooring: bottom left, squared blocks of plywood surfaced with hardwood; above that, parquet blocks secured to a backing, and rolled for storage and shipment, could be unrolled and glued to floor. Immediately above, plywood plank, board, herringbone pattern, the last two secured to backing and laid in one piece. Surfacing overhangs to mesh with next unit. . . .

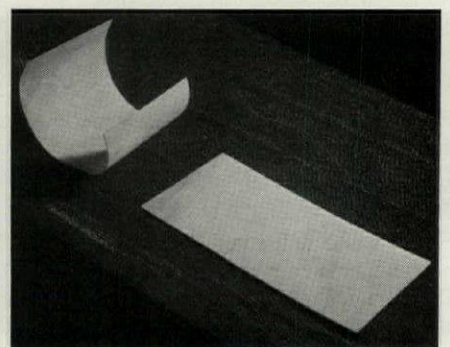
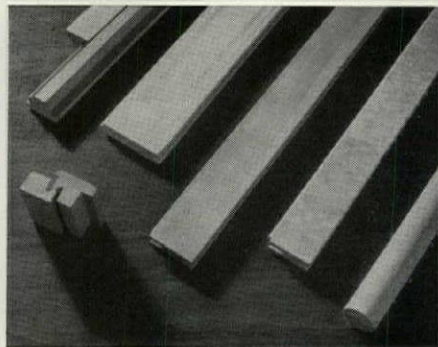


Plywood's Future....



Similar processes applied to wood and other materials bring astonishing results; above, curved, movable walls of paper laminated and bonded as plywood is. Paper may be made translucent or opaque, used as diffusing light baffle, etc. Below, two more properties of Du Pont's new "transmuted wood" (see page 15 this issue). Left, chemical treatment makes thin yet extremely strong molds, undercuts, etc., possible, machining easy; right, untreated piece at left absorbs moisture from damp towel, treated piece does not.

Stair rail of molded plywood tubing, with curved supports of urea-treated wood (treatment makes wood flexible until it hardens, making possible bent, curved, twisted forms). . . . Photo shows a plywood tube at more than half full size; original is diameter of pencil. . . .



Illustrations courtesy Louis H. Dreyer, William M. Rittase, Julius Shulman, E. I. du Pont de Nemours & Co., and American Forest Products Industries, Inc. Goodyear Aircraft Corp. and U. S. Plywood fabricated most of the items shown on page 83.