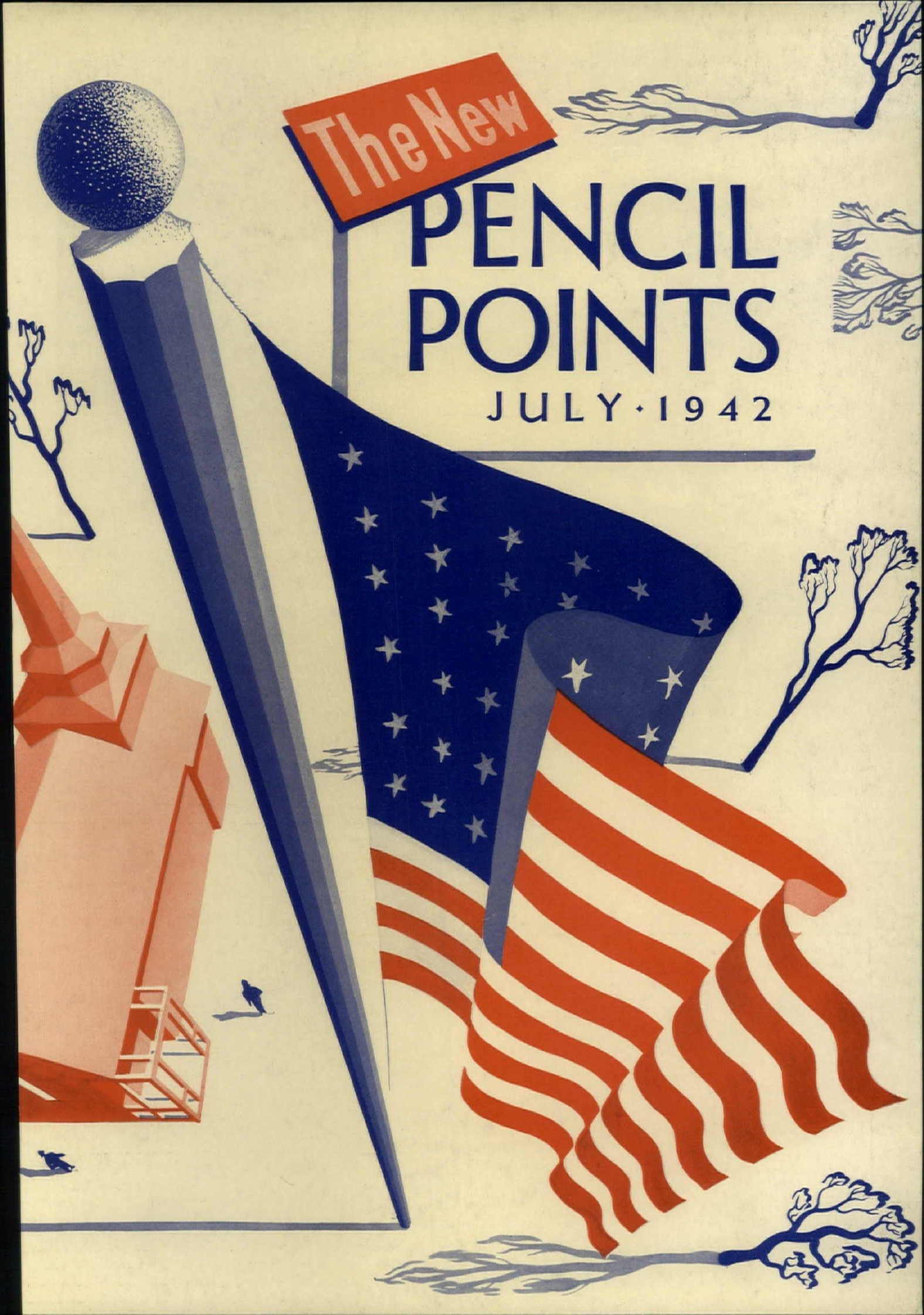
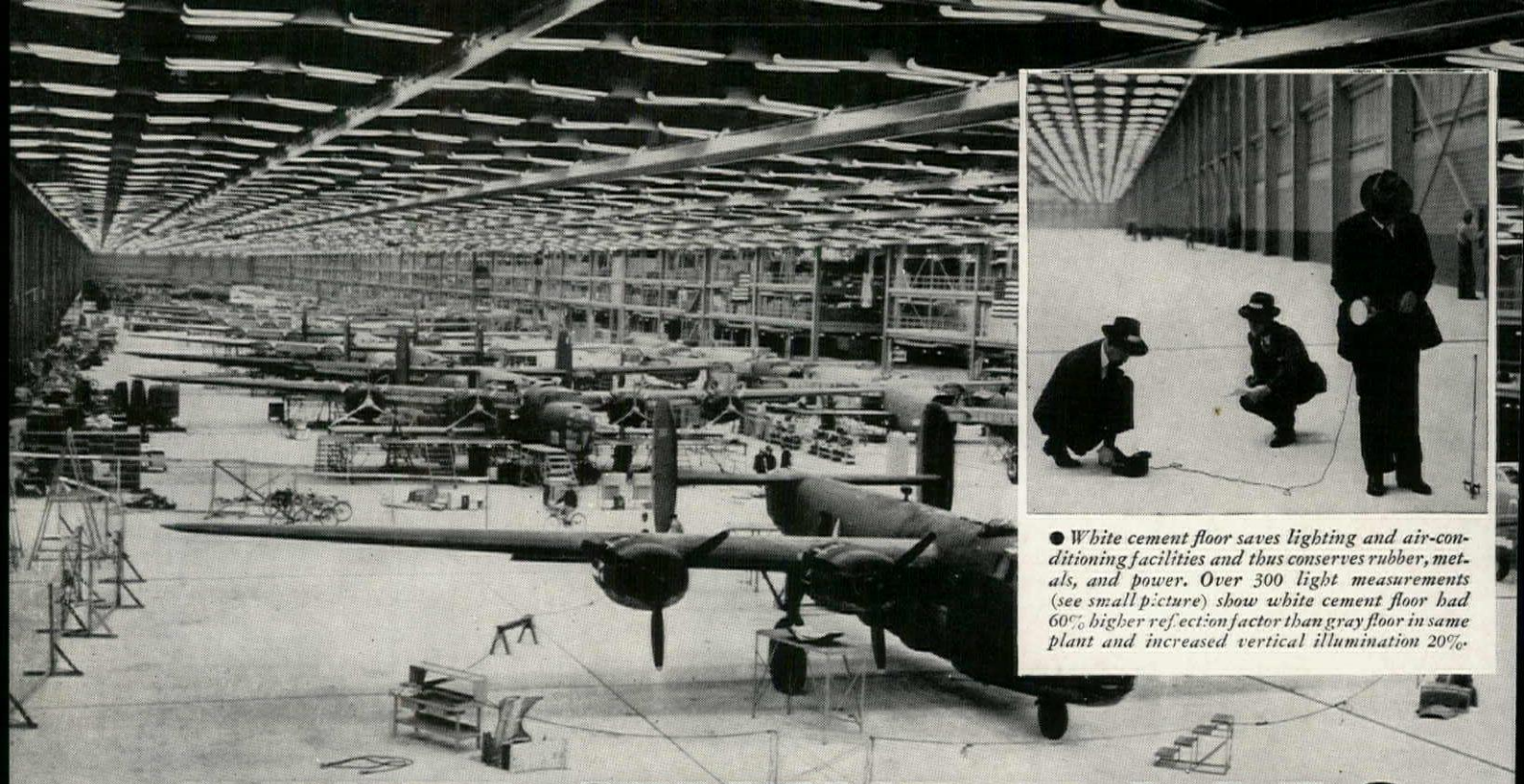

The New
PENCIL
POINTS
JULY · 1942



● *White cement floor saves lighting and air-conditioning facilities and thus conserves rubber, metals, and power. Over 300 light measurements (see small picture) show white cement floor had 60% higher reflection factor than gray floor in same plant and increased vertical illumination 20%.*

WHITE CEMENT FLOORS

INCREASE LIGHT, SPEED WAR PRODUCTION, CONSERVE RUBBER, METALS, POWER

★ Consolidated, North American, Boeing, and Douglas aircraft manufacturers installed light-reflecting white cement floors in 1941... They were so satisfactory that they and others are installing them in additional plants in 1942.

EVERYONE knows good lighting speeds production. Everyone knows light walls and ceilings conserve light by reflection. But until recently, the reflecting value of floors has been overlooked. Then came big aircraft plants, and with them came the idea of white cement floors to increase general illumination and to reflect light under the huge wings and fuselage.

Extensive Survey Shows Advantages

In Consolidated Aircraft Corporation's Texas plant constructed by The Austin Co., adjacent floors of gray concrete and of white concrete made with Atlas White cement were installed. Over 300 light measurements were made at various working levels and locations over both types of floor. The results were fivefold:

1. **The white cement floor had a 60% higher reflection factor;**
2. **This high reflection factor increased vertical illumination 20%;**
3. **To obtain the same illumination over the gray concrete floor would require a comparable increase in lighting facilities, air-conditioning and power. These involve *aluminum, copper, rubber, steel, magnesium, lead, zinc,* and *resins*—all priority materials. Hence white cement floors save up to 20% or more of critical rubber, metals, and power.**
4. **In service the loss in reflection value was less on white floor than on gray floor.**
5. **An economic study available upon request shows how the white cement floor paid for itself in less than a year.**

Light-reflecting floors, made with Atlas White cement, are of value in *any* building where production, lighting, sanitation, and safety are important. Use the coupon for more information. Universal Atlas Cement Company (United States Steel Corporation Subsidiary), Chrysler Bldg., N. Y. C.

QUICK FACTS ON LIGHT-REFLECTING WHITE CEMENT FLOORS made with non-priority materials

1. **What is Cost?**—White cement floor in aircraft plant paid for itself in less than a year.
2. **How about Maintenance?**—Typical procedure in plant with both gray and white cement floors is daily sweeping, monthly damp mopping, and quarterly scrubbing with rotary brush machine. "Before and After" tests show white floor maintained reflection value better than gray floor.
3. **How about Daylight Plants?**—Illumination studies show white cement floors are desirable for plants with or without windows, and for daylight as well as 24-hour operation.
4. **What Types of Buildings?**—White cement floors are of value not only for increasing production but also wherever sanitation and safety are important—in food plants, hospitals, offices, warehouses, laboratories, and in stair-wells, corridors, and basements.
5. **Can You Retop Old Floors?**—Concrete is commonly used for retopping old floors of concrete or other types.
6. **Are Materials Available?**—Suitable sand, stone and Atlas White cement are non-critical, non-priority materials.

LIGHT-REFLECTING FLOORS

MADE WITH ATLAS WHITE CEMENT

Universal Atlas Cement Company
Chrysler Bldg., New York City

Please send more information on how white ceme floors increase illumination, increase production, ar save critical materials.

PP-F-

Name_____

Position_____

Company_____

Address_____

City_____ State_____

BIRD OF FREEDOM

BY STOW WENGENROTH

The preliminary drawing from which the lithograph was made was drawn in dry-brush on a fairly rough illustration board. A good grade of black water color was used. The size of this drawing was about 25″ x 19″. The lithograph, drawn on stone, was considerably smaller and was done entirely with Korn's lithograph crayons, No.'s 1 and 2. Because of the difficulty of making any considerable changes or corrections in the stone, I always make a very complete preliminary drawing.

Stow Wengenroth

Breaking the Bureau Barriers

THIS month has seen the continuance of calls and conferences with various Army, Navy, and Governmental agencies. A steady follow-up for recheck has been necessary—where names and qualifications have been previously submitted. Many agencies will soon draw upon these prospects.

Every day for the past month, architects, and draftsmen seeking commissions or civilian appointments have made personal calls at this office. Each man had a particular problem. Many applications on file now will soon be absorbed. As an indication of an applicant's reaction to making a very complete and thorough round in Washington, I call attention to the following letter from Architect Charles S. Symonds, of Miami, Florida. **W.A.V.**

To Willis A. Vogel, Technical Personnel Adviser
PENCIL POINTS
1727 "K" Street, N.W., Washington, D. C.

Dear Sir:

Permit me to extend my kind appreciation for the manner in which you received me. After our conferences and your information as to where to go and whom to contact, I recite a few of my experiences. I doubt the ability of any office to render more direct and personal advice to would-be applicants than you do here in the capital.

First of all, as you informed me, it is imperative that the job seeker have Civil Service rating. As an Architect, I was presented with several applications for unassembled examinations (i.e., the unwritten type, where you are rated on the basis of your formal application alone). All applications for positions that pay out of government funds must first clear Civil Service.

There seems a hesitation on the part of many men to approach Civil Service in the fear that they will commit themselves in writing and thereby be bound by their signatures to accept the first offer that comes their way. There is nothing committal or binding about Civil Service applications or rating. They serve to facilitate the filing of qualifications and are used to check direct applications for work in specific agencies.

It is possible to get data on any position by consulting your local Civil Service District offices, by requesting application forms for currently advertised positions posted on Post Office bulletin boards or by writing to the Civil Service Commission, Washington, D. C.

Again I concur with you, Mr. Vogel, that a good bit of advice is *not to come to Washington* unless you have a pretty good idea of what branch of the government can best utilize your services. Careful study of circulars and other printed information, that can be had for the asking, will give much assistance and aid. It is easier to make an appointment with an official if preceded by some written communication, whether an inquiry or definite application for work. If a personal interview can then be had (after due assurance such is worth while), then one can successfully present, in addition to his training and experience, the all-important element—personality.

Commissions in Army and Navy

If the architect is seeking commission in either Army or Navy, there are many possibilities open for the trained man. Commissions are not as readily obtained as during "early stages" of war recruitment. Also remember in many instances stress must be laid on the engineering ability, rather than any artistic qualifications. Army and Navy are interested in administrative and co-ordinating ability and in planning and organization consciousness.

Civil Engineers Corps of Navy

The Civil Engineer Corps of the Navy, lamentably, does not consider a man as being qualified for admission unless he has a degree in engineering or the necessary substitution in practical experience backed by certain preliminary education. Architects, however, are found in Camouflage, Ordnance, Bureau of Yards & Docks, Navigation, and as photographic interpreters, map analysts, and map makers.

Civilians have been taken into the Design Department of Bureau of Yards & Docks, some of the best designers of repute and some Rome Prize winners, and honor graduates from the finest schools of architecture. Their work is the pride of the Navy. Salaries here, unfortunately, are not in tune with the created work, as they start at $2600 per annum. The experience gained in this work is, however, very valuable. The Bureau has an extensive program and affords many places.

Army Corps of Engineers

The Army is more liberal in its acquisition of men as well as its disposition of jobs. An architect with necessary training is qualified to enter the Corps of Engineers with a commission. The Quartermasters' Corps, the Procurement Division, and the Camouflage Department have taken men with architectural experience.

Some architects have been employed by the Army Engineers at $3200 to $4600, and a few by the Navy.

For information contact the Army or Navy engineers in your regional district. Civil Service rating is best obtained first before formal application to your District.

Army and Navy Intelligence

Men of architectural training are potentially splendid applicants for both the Army and Navy Intelligence Services. A man's qualifications in this service must, by the nature of his duties, be necessarily above the average and likewise be subjected to an intense and thorough investigation before acceptance. Proper contact can be made with the Military Intelligence Service of the War Department and the Naval Intelligence Department of the Navy Department, Washington.

Field of Aeronautics

Work is available to architects in the field of aeronautics. This work, like that of shipbuilding is, of course,

highly specialized, but men with architectural training, who know the rudiments of mechanics and structure, who know instinctively and by experience how to make things hold together, who know the qualities and composition of materials, who know how to use the instruments of drafting to tell the story graphically, and who have the spunk to readjust themselves, can find not only a fascinating and creative field in aeronautical designing, but an extremely lucrative and permanent one as well. Contact for this type of work should be made to Commander Old of the Bureau of Navigation, Navy Department, Washington, D. C., to Lieut. Colonel W. F. Lorence, Chief of the Civilian Personnel Branch, Corps of Engineers, War Department, Washington, D. C., and to the various aircraft plants throughout the country.

Maritime Commission

Architects, qualified in the field of reinforced concrete, are being sought after by the Maritime Commission in the stupendous program of shipbuilding in which they are now engaged and will be for many years to come. This program is well worth looking into, for its possibilities are more than meet the eye. I have learned from various sources that it is based on a long range set-up, twenty years or thereabouts, and that it is a splendid opportunity for career-minded men who are not afraid of pulling off their shirts and starting at the bottom. I know of architectural men who are actually working in the hulls of ships as fitters, riveters and welders, but who, because of their background are being shoved ahead with amazing rapidity. Others are being schooled in the departments of ship design and are making headway.

The best and most direct method of contact with this type of work is through the individual shipyards themselves. They are concerned with the employment of men as any industrial plant would be. The Maritime Commission, and in some cases the Navy Department, have supervision of the work performed, but as administrative agencies they handle the broader aspects of policy, organizational management and production, and material and financial procurement. Pay, in this type of work, is excellent, the largest being in the building end.

The Panama Canal

The Panama Canal, Office of the Chief, Washington, D. C., is only too free to admit that it is looking for all types of skilled labor, engineers and architects in the present long range program of construction that is taking place there. Salaries for architects range from $395.83 per month, plus time and half for overtime, plus fifty-four days leave of absence per annum with pay, plus seven days travel time if leave is spent outside the tropics. Maximum age limit for appointment in the Panama Canal service on the Isthmus is fifty-five years. Appointees to the service pay around fifty to sixty dollars a month for room and board and must go to the Isthmus *alone* until existing military restrictions are modified. The construction program is to last from five to six years.

In communicating with either the Army or the Navy, it is well to bear in mind that both services look upon concise, direct, and tabulated forms of correspondence with more favor than they do on the laborious and lengthy type. Refer, as a heading, to the position for which you are applying. Then list (A) your background, (B) your education, (C) your experience, and (D) your personal qualifications for handling the job for which you are applying.

It seems to be the definite opinion of many agency heads here in Washington, that the Post War planning program will open up for architects many fields of endeavor. What direction this program will take is a matter for each individual to decide. No one seems able or willing to state or define it at the present time.

The National Resources Planning Board has had its budget amputated, although it is valiantly attempting to appeal its case for restoration of funds after the recent Congressional slicing. This Board is composed of some remarkably able professional men. The work it has been doing has been advisory and research to date, but it has only scratched the surface of what it is apparently capable of doing. Of all the organized agencies of the government, I think, that so far as Post War Planning is concerned, this one holds forth more possibilities for the architect than any other. It is doing research study in Urbanism under the direction of Mr. Asher. Mr. Robert Mitchell, an architect, heads a division experimenting in city planning research. Mr. Harold Merrill, administrative officer, and Mr. Frank Herring are among the able officials interested in the subject of Architecture and Planning in the Post War Planning program. Since the work of the Board is so comprehensive, touching as it does upon all phases of sociology, economics, science, organizational and physical planning, it is almost impossible to advise any individual architect as to which division of the Board he could best serve. Application should mention specific qualifications.

June 17, 1942 CHARLES S. SYMONDS

GOOD sources estimate that about 50,000 new employees of many classes will clear in this fiscal year through U. S. Civil Service—also that through the Army Specialist Corps roster, and the new draft questionnaires, the Roster of Scientific and Specialized Personnel, many men will be placed to take good advantage of their skills. The Man Power Commission will also be a factor in assigning labor and skills of all kinds.

There are opportunities for architects to work at many jobs that are a complete change from their natural peace-time habits. The list is so varied that any actual tabulation is impossible, but many will better themselves by doing actual manual labor in skilled crafts. This statement is made after studying the many men personally calling here and study of the cards—as each one is adaptable according to his varied training and background and personality. With encouragement to the architects who so sincerely listed with PENCIL POINTS and who are ably qualified, when finally located, I have sincerely given my best efforts to place our profession to the front for the benefit of all. Time will prove that this program was of real value.

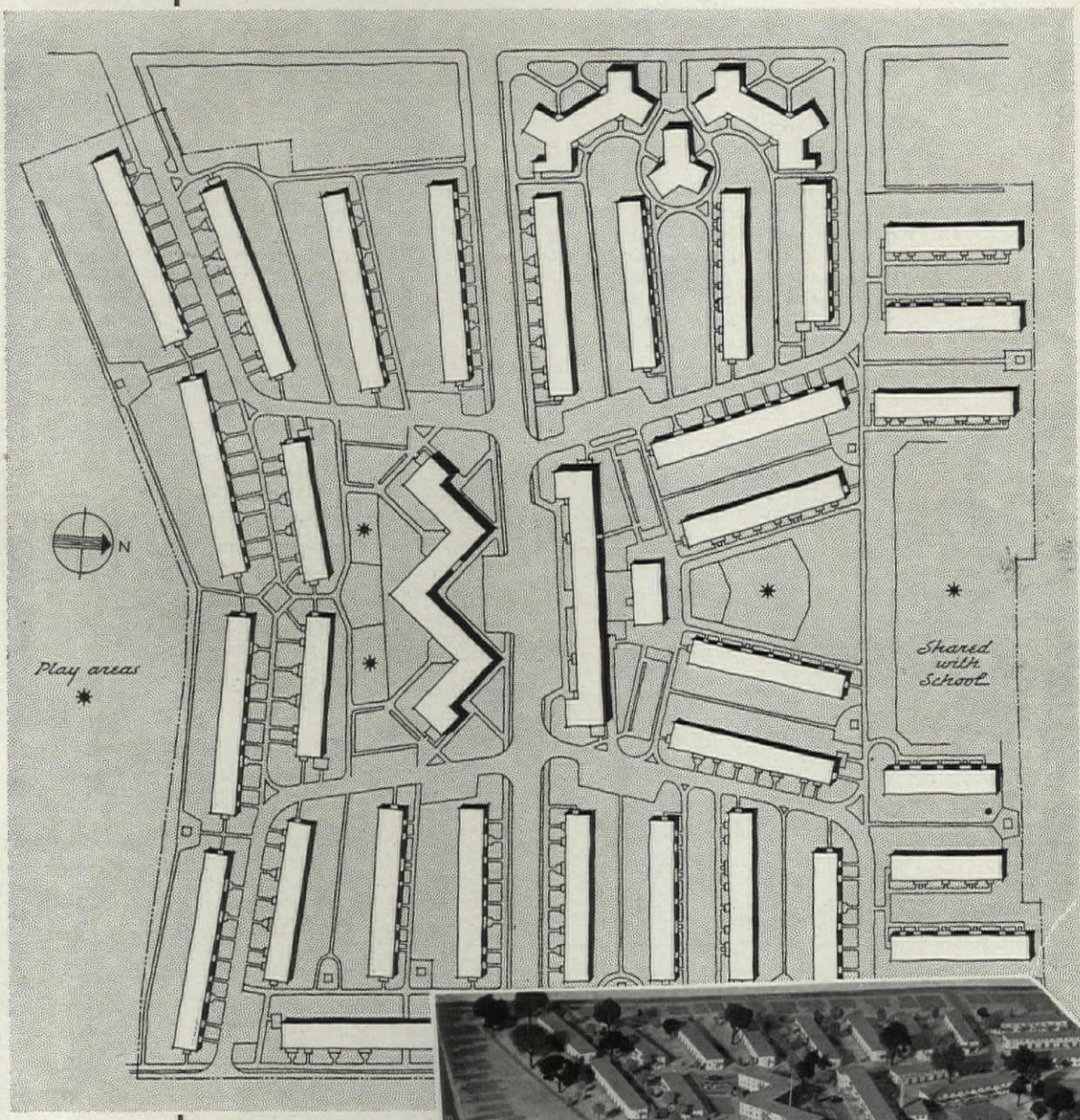
June 17, 1942 **WILLIS A. VOGEL**

War Workers are now finding homes in . . .

ELM HAVEN

Low-rent Housing in New Haven

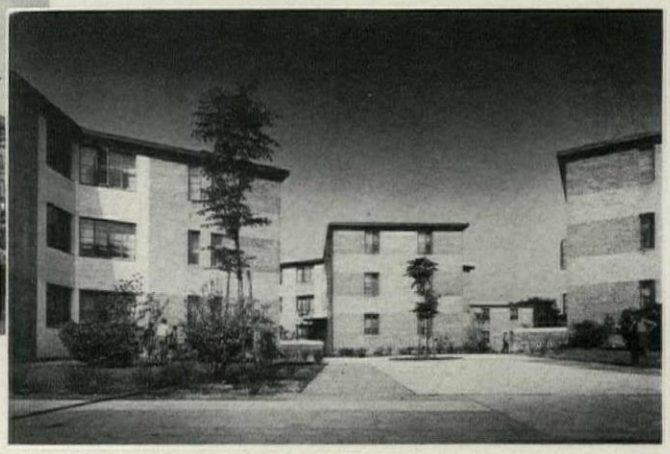
BY DOUGLAS ORR AND R. W. FOOTE,
Associated Architects



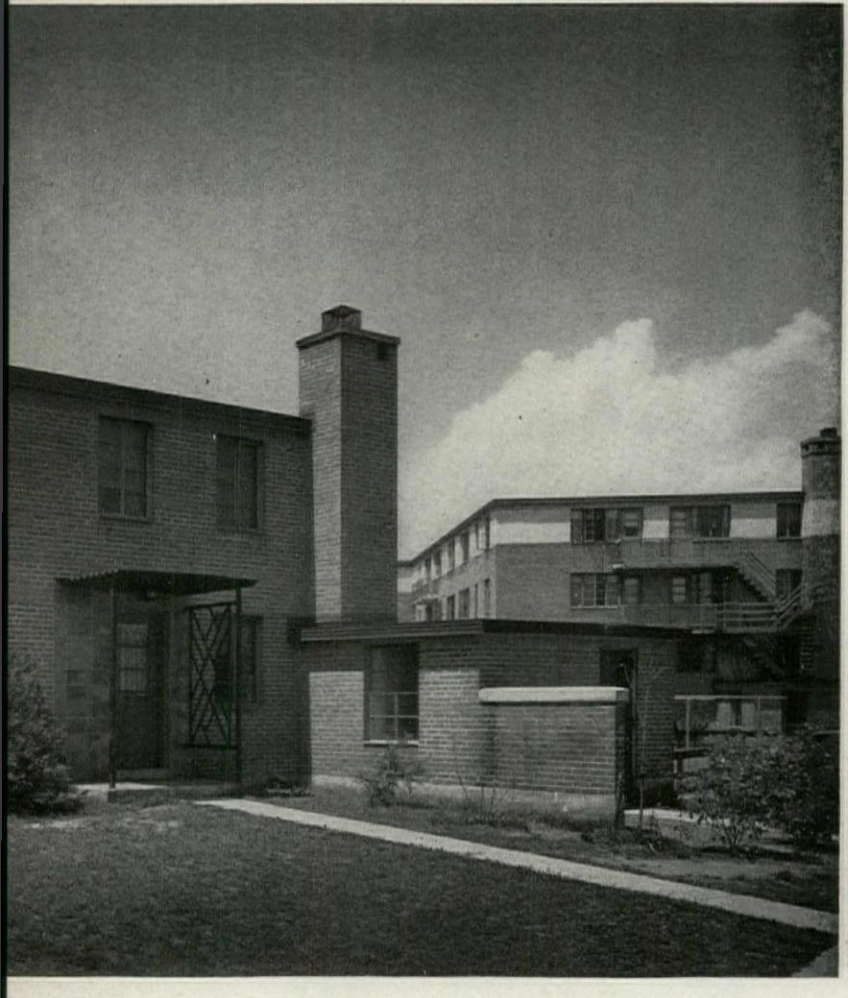
STUDY MODEL

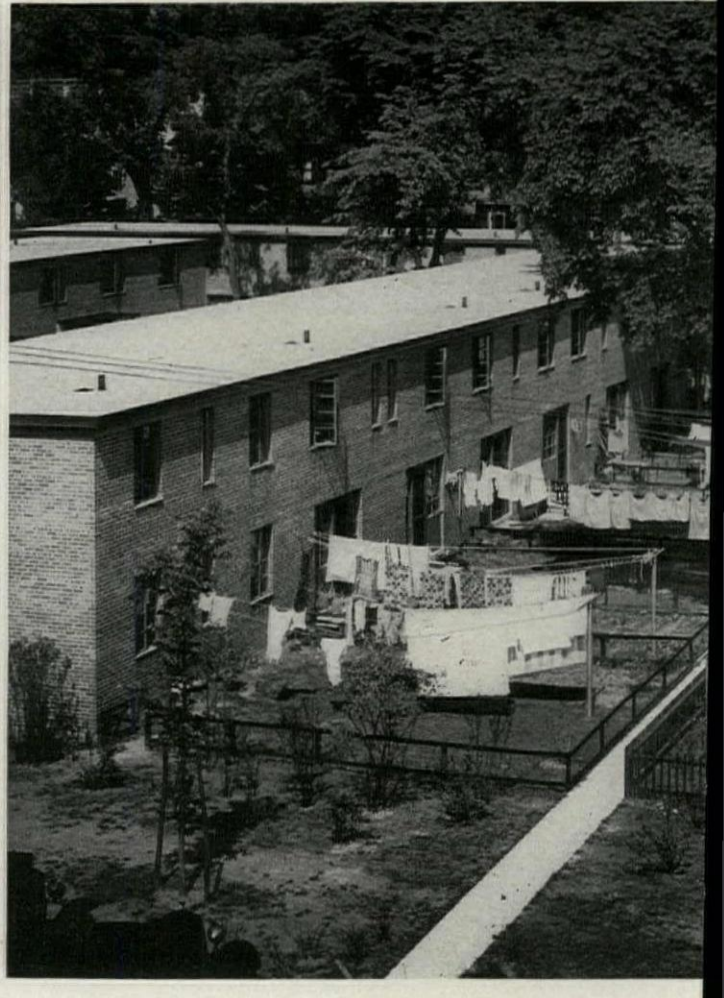
THEN

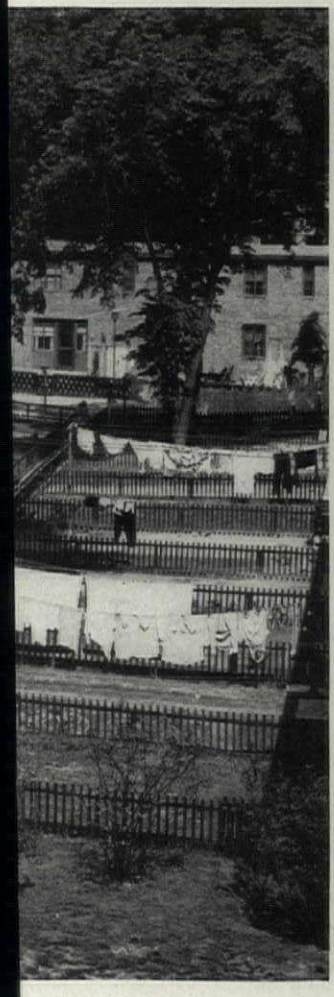
NOW

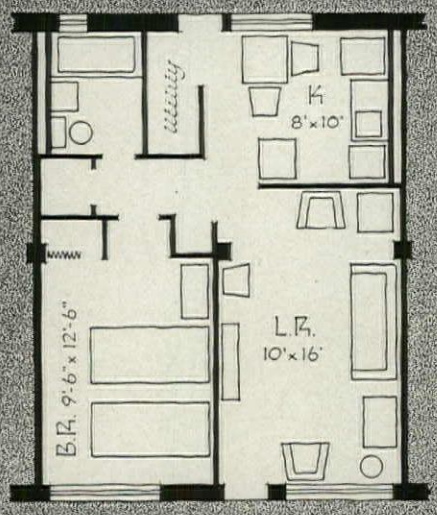


Project of the month on two counts is Elm Haven because (1) it has become virtually a war workers' community, with employees of New Haven's materiel plants finding homes there; and (2) because it is the project chosen for commendation in a Case Study of low-rent housing that will be handed to FPHA in a week or so from the Committee on Revision of Standards and Design, headed by Howard Myers, Editor of "The Architectural Forum." The study has just been completed by George Nelson and Talbot F. Hamlin, under supervision of Don Hatch, Sub-Committee Chairman. Originally undertaken for USHA, this is described by Hatch as a "critique of the project from the outsider's point of view." It will be supplemented by a more detailed review prepared by the Architects and Albert Mayer (who served as Consultant), B. M. Pettit, and Ernest Bohn. Richard Garrison's photos show the pleasant unaffected character of the community: also the practical services, such as the spacious drying yards and one of the 13 refuse incinerator units (below) conveniently located

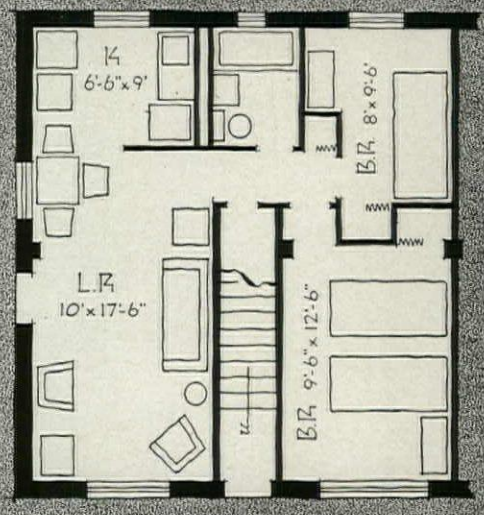




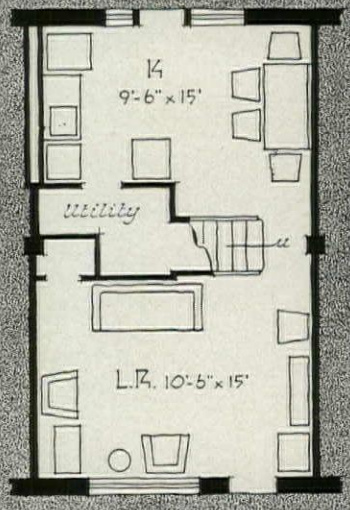




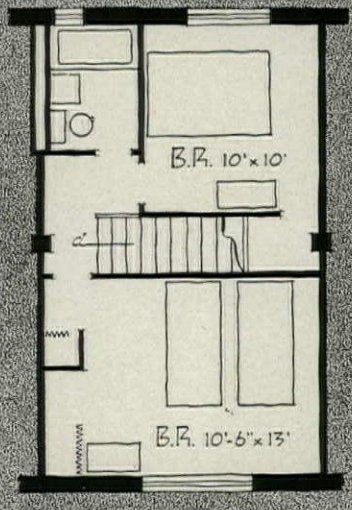
One Floor Only
3 ROOM FLAT



One Floor Only
4 ROOM FLAT

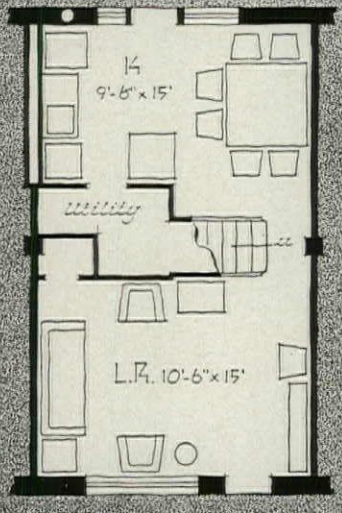


First Floor Plan

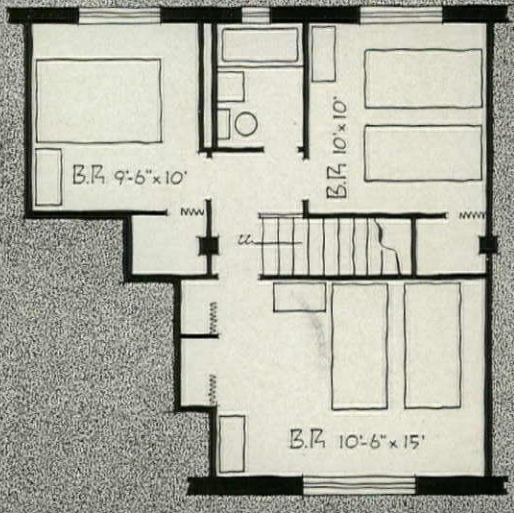


Second Floor Plan

4 ½ ROOM UNIT

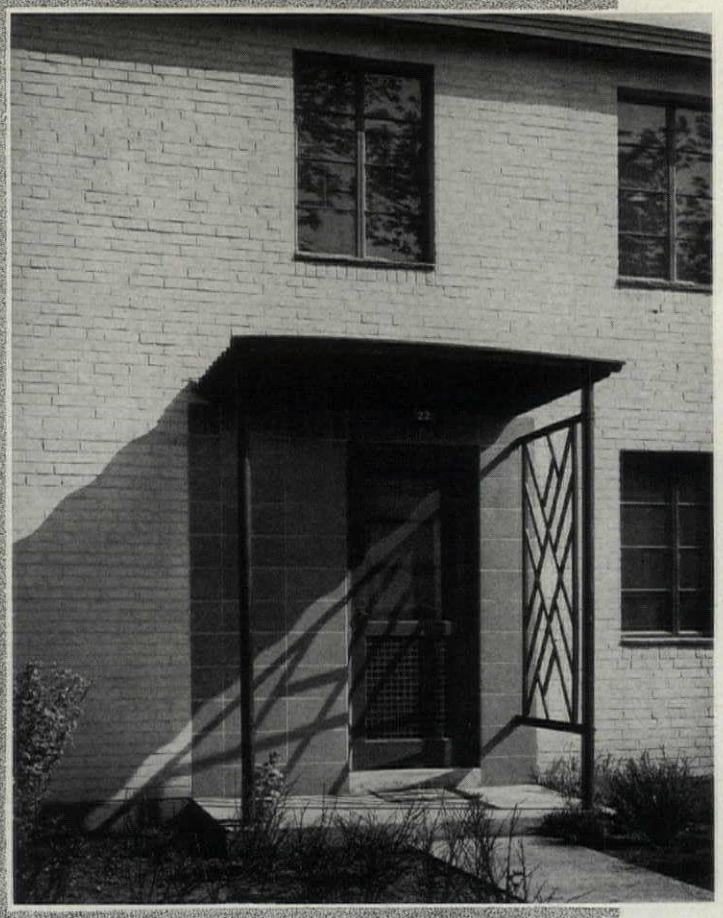


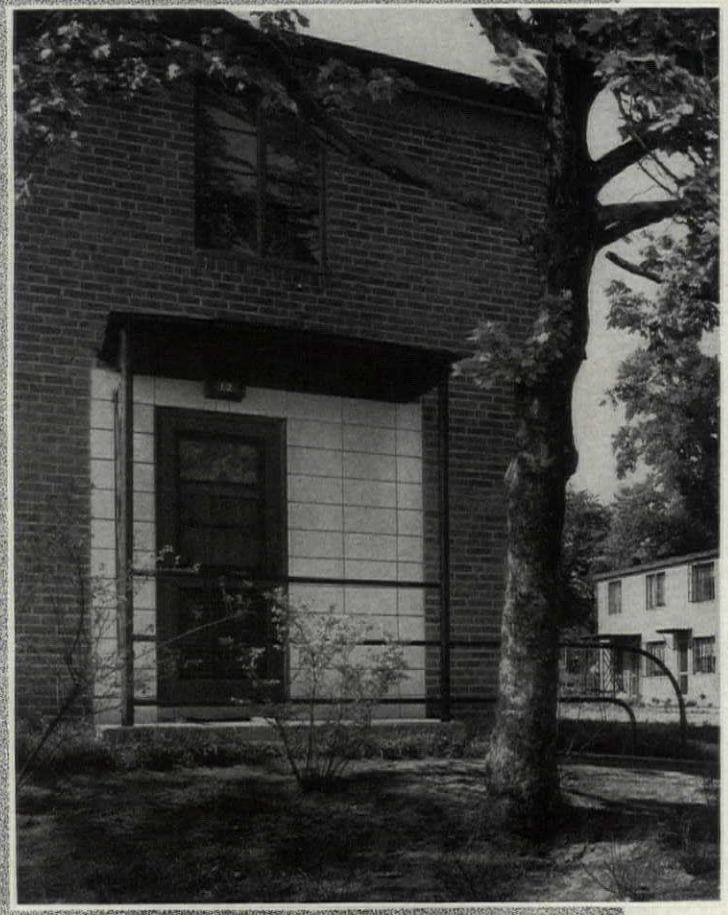
First Floor Plan



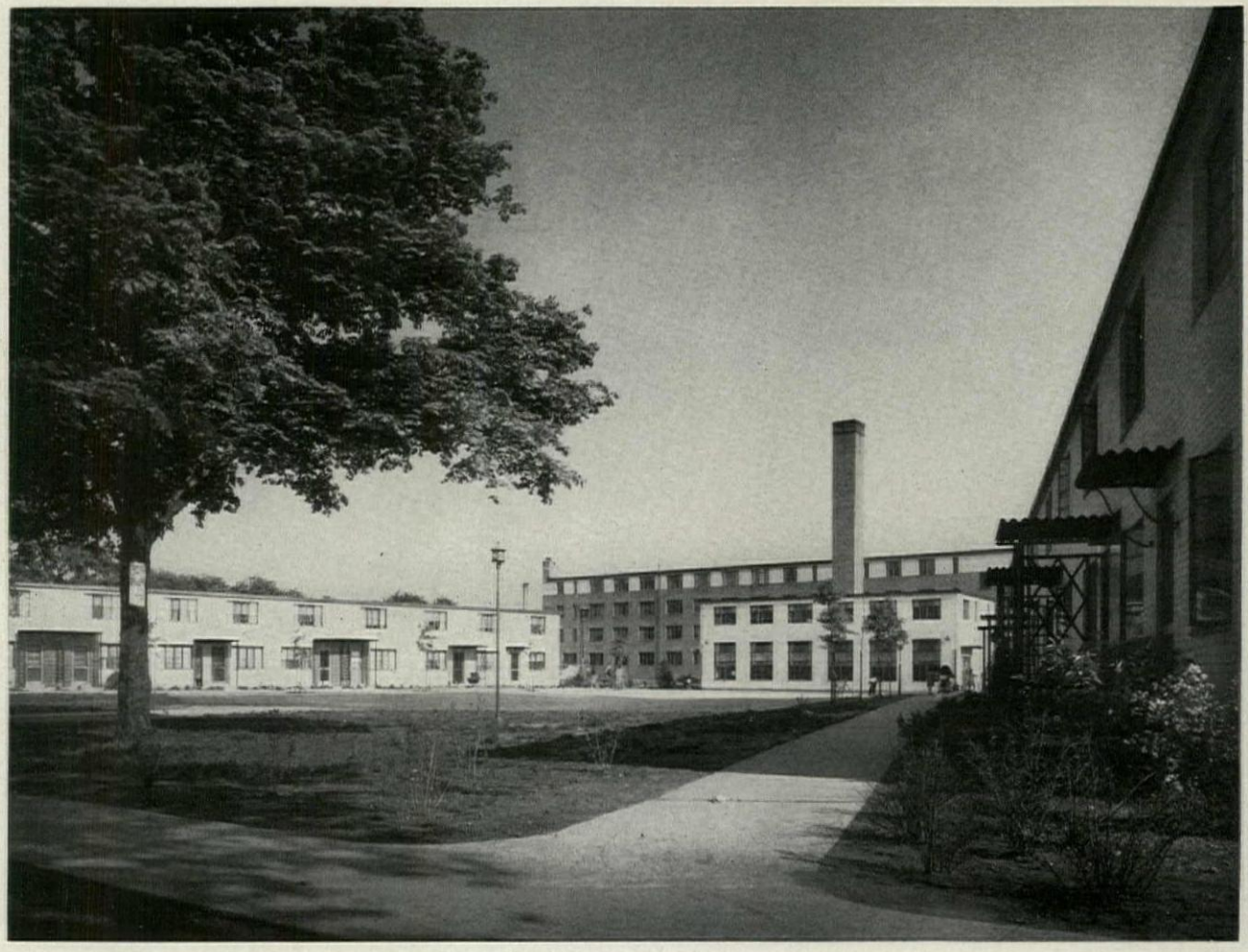
Second Floor Plan

5 ½ ROOM UNIT





Simplest means were employed to lend variety to these buildings. Cast iron grilles in several related patterns adorn the ENTRANCES, which are roofed with corrugated protected metal, and the terra-cotta panels framing the doors are green, Indian red, and bright yellow. The exposed concrete beam at the roof line is painted brick red and accents the copper fascia. The tenants, expected to keep their own dooryards, take pride in planting shrubs and flowers. Some have made Victory Gardens—all are encouraged by Manager George Binen to contribute to attractiveness of the community. There is liberal planting space and most of the site's fine old elms were saved when the new community was planned

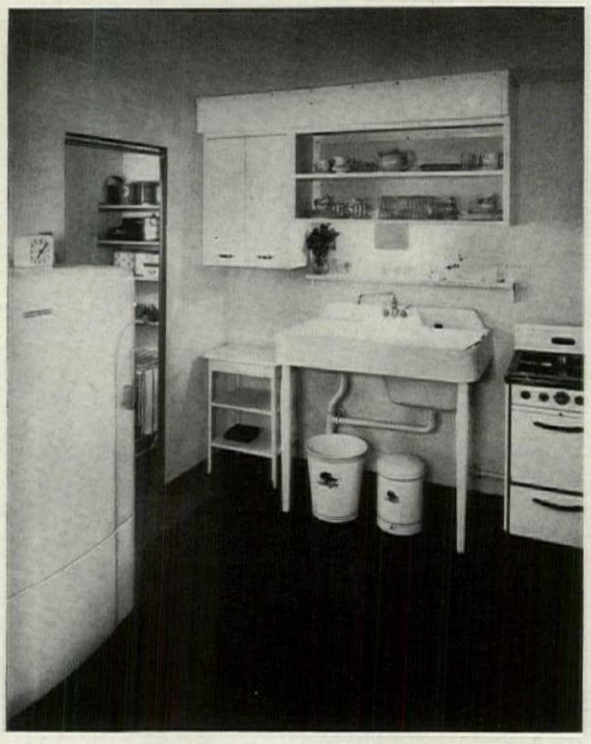


MATERIALS AND EQUIPMENT

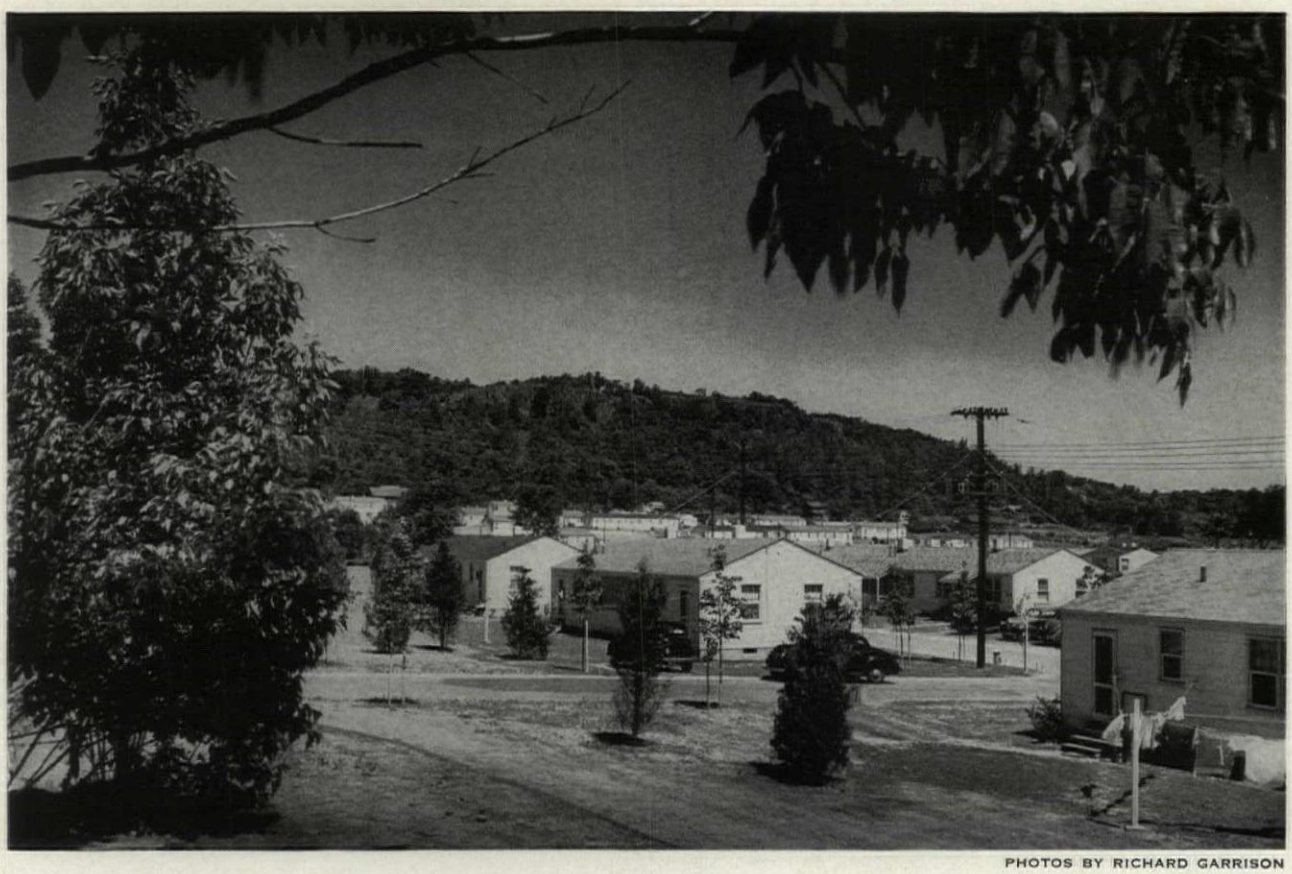
Footings	CONCRETE
Foundation walls	CONCRETE; local RUBBLE STONE used where excessive footings required
Terraces	CEMENT, MEMBRANE WATERPROOFED, 2″ walking surface on top
Waterproofing	Two coats of PITCH in basements below grade; SPANDREL WATERPROOFING every floor level; FABRIC FLASHING trowelled in mastic
Wall construction	8″ BRICK WALLS for row houses; 12″ and 8″ walls for apartment buildings
Wall insulation	Aluminum foil gypsum wallboard
Floor construction	REINFORCED CONCRETE
Roof	TAR AND GRAVEL with copper fascia on all buildings
Roof insulation	1 ½ "fiber board
Sheet metal	Protected corrugated door-hoods
Windows	STEEL CASEMENTS and SCREENS, housing-type
Doors	Wood, stained to match interior trim
Floor finish	ASPHALT TILE in three colors: brown, Indian-red, and mahogany with black border varying with four color schemes used throughout; metal base trim
Interior wall finishes	Sand-finished buff-tinted PLASTER with trim of gray-green, gray-blue, blue-gray or Indian-red to complement terra-cotta door entrance panels
Plumbing	BRASS pipe, CAST IRON fixtures, combination sinks and laundry tubs
Heating	CENTRAL VAPOR SYSTEM, also supplying hot water to all apartments and houses
Other equipment	Metal cabinets in kitchens; 13 incinerator units each equipped with double set of hotel size garbage cans and reserved racks
Electric wiring	CONDUIT type; with plastic reflectors in principal rooms
Ceilings	CONCRETE painted with rosin emulsion

PROJECT PHOTOS BY RICHARD GARRISON

Although basic patterns of old street lines had to be considered (see site plan page 27) the project buildings are freely disposed. The community building—social hall, offices, and heating plant — (view across-page) is behind the apartment building shown below. The building at left, largest in the community, has a "W" form. Some tenants say they would prefer several smaller play areas rather than the large one back of the community building and more walks throughout—but all respond more enthusiastically in praise of the community and its facilities. Within 200 feet of every dwelling there is a parking bay off the paved street; schools, stores, churches, and clubs are in the surrounding neighborhood. Just across Dixwell Avenue is a closed Police Station that was one of New Haven's busiest when this was a crowded, crime-breeding area. Requirements of New Haven Building Code were observed in this U.S.H.A. project. The architects enjoyed collaboration of Bertholf M. Pettit, Director, New Haven Housing Authority; Frederick A. Davis, Jr., Landscape Architect; and Hubbard, Rickerd & Blakeley, Engineers. It was built by William L. Crow Construction Co., of New York



Neighbors have formed homemaking clubs in Elm Haven and are encouraged to furnish their dwellings at minimum cost. The kitchens (above and left) are provided with combination tub and sink, stoves, metal wall cabinets, large storage closets. On upper floors the kitchen doors open on metal balconies which connect adjoining apartments (serving as fire escapes). The living room (below) is comfortable for the small family typical of this community of 487 white and Negro families



PHOTOS BY RICHARD GARRISON

ACQUACKANONK

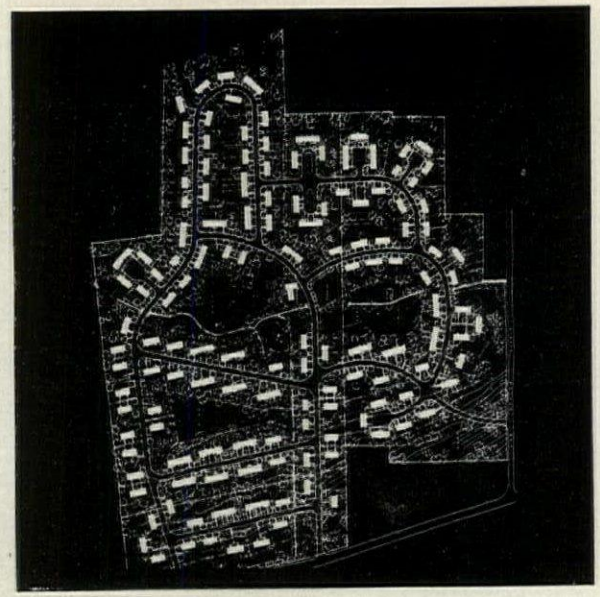
Henry S. Churchill, New York, Architect

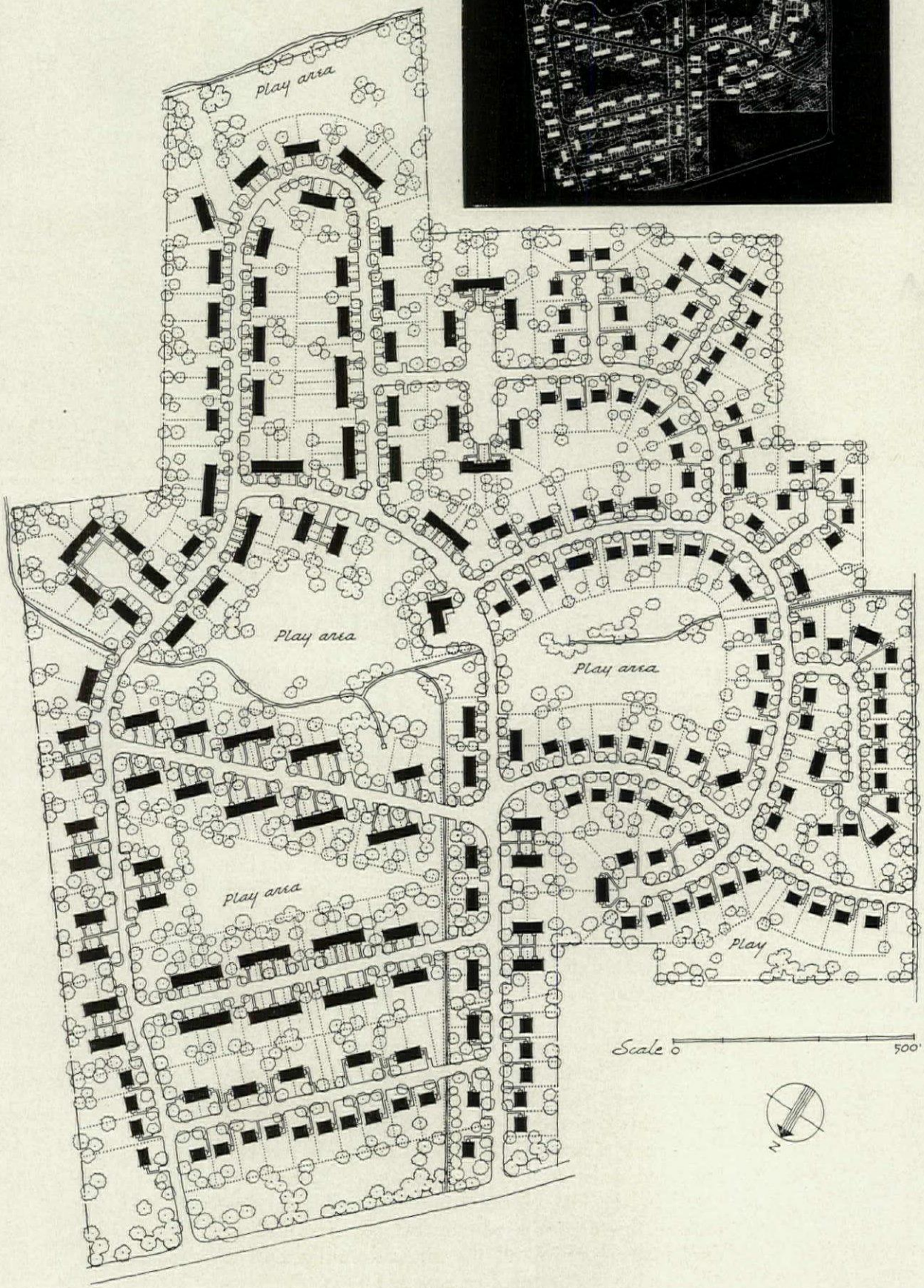
IN developing an 80-acre tract at Clifton, New Jersey, as a home community for war workers employed by airplane and materiel factories in a radius of 10 miles, the Architect's problem was to provide at minimum cost the shelter and conveniences required for 350 families. Existing public utilities were tapped, the site planning made the most of the sloping contours of the property, and the houses were located to afford as much privacy as possible without actual division barriers. Then the pleased management and tenants fell heir to the stock of a large landscaping nursery that had used this site and it was possible to have shrubs and flowers in every dooryard, as well as in the communal areas.

To the asbestos-shingled buildings of Acquackanonk, variety in texture and color is introduced in brightly-painted panels of siding on several of the house fronts—lattice in simple patterns being used only on the PBA designed houses located in the last blocks completed. These tenants all have rooms of comfortable size, individual heating units, all the air and sunlight of a

(Continued on page 37)

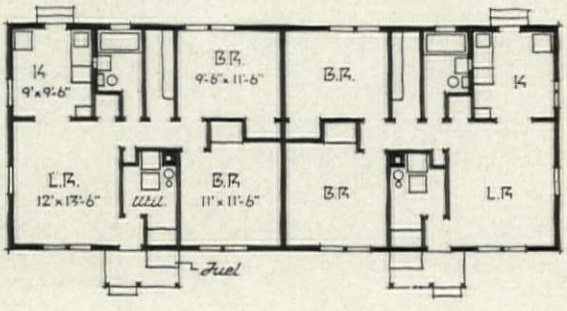
The original site plan (right) was not realized because PBA houses of standard design line the roads on the southwest half, intended by Churchill, to receive the larger units. General contractor for the project was James E. Mitchell, Inc., Jersey City, N. J.

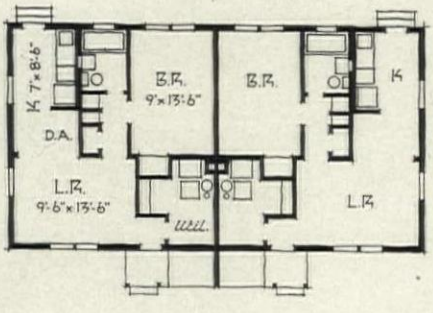




New Jersey hillside with an eastward view of the horizon and Manhattan's skyline. In the interest of economy, sidewalks, basements, garages, and a community hall were omitted in this war workers' community, which was designed under PBA regulations, then completed and now being operated under FPHA of NHA, with Joseph B. Belay as Manager.

Churchill, who received his M. Arch. in 1916 from Cornell University, has practiced since 1923 and studied housing in this country and abroad. He has also been the Architect of residences, apartment and office buildings throughout the greater New York metropolitan area. As one of the founders and a director of the Housing Study Guild, a pioneer study group, he was instrumental in publication of numerous technical bulletins in that field. He also participated in the study of early projects, was one of the Architects for Queensbridge Houses and Fort Greene, served as Consultant to USHA, New York State Division of Housing, American Standards Association, and other bodies. He has lectured on housing and site planning at Columbia University, M.I.T., and Cooper Union. He is author of a number of technical and popular articles on housing and architecture.





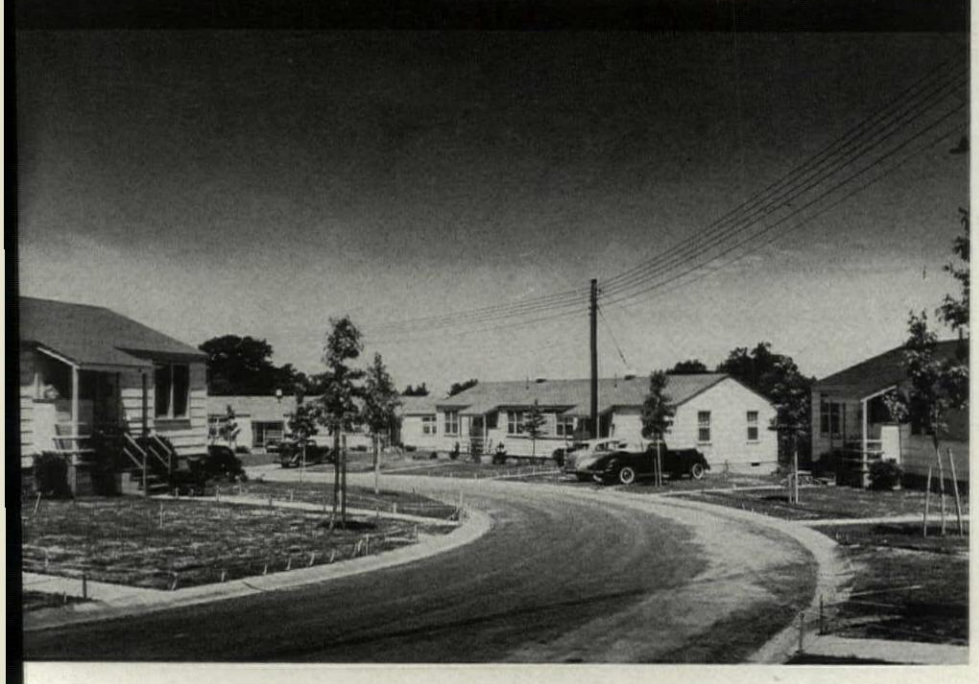
Directness and flexibility of the basic dwelling unit is revealed by the photograph and plans above showing three variations. Note coal boxes on the entrance porches. The chimneys are for individual furnaces. (Garrison photo)

PARKING BAYS are conveniently located around the project so that the tenants can leave their cars within a few steps of the dwelling entrances. These are paved with the same asphalt pavement used for the streets of the community. Houses in this street are at an angle, lending more interest to the vista and conforming to the contours

SEVERAL CUL-DE-SACS are employed (see site plan on page 36) to create small neighborhoods within the community. The one pictured at the right provides for 4 families on the end. The latter building is similar to the end building shown below

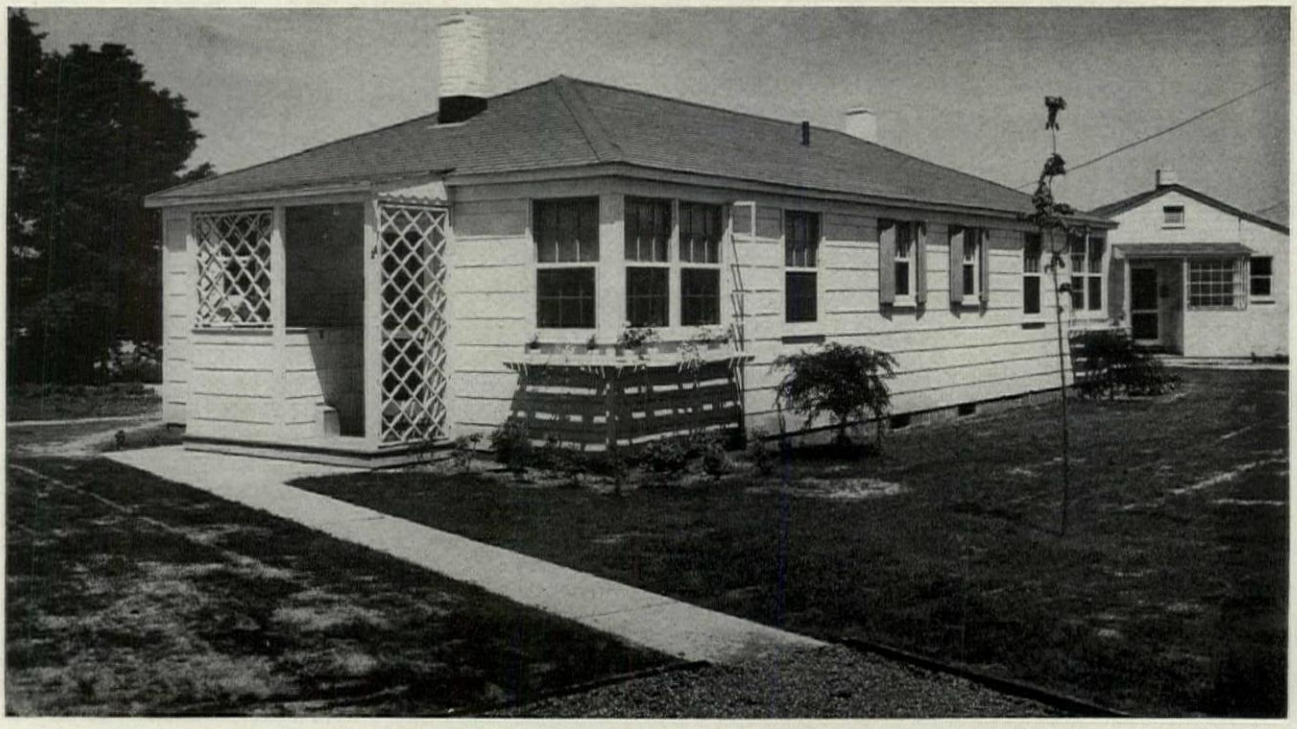
LIVING SPACE is provided outdoors for those who live in Acquackanonk. The photograph at left shows the use of shrubbery as a screen for the area back of one dwelling unit which also can be reached from the building at the end, through the opening in the hedge. Back and front, the buildings are simple

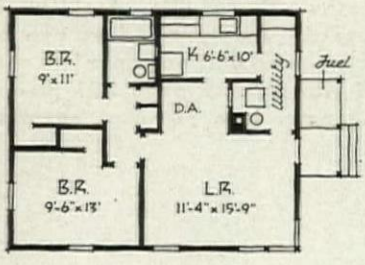
PLAY AREAS were being completed when the project was photographed by Richard Garrison, as the view at the left shows. Buildings are the same as those on the left side of the street directly across-page. They typify the openness of the project, with sun and air on all sides of every unit

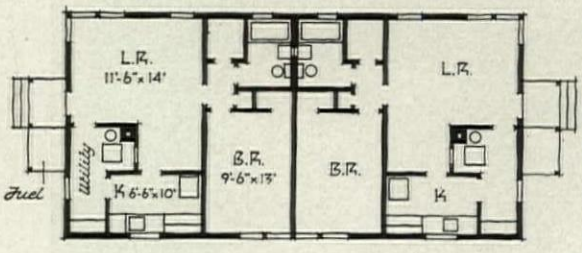


CURVING STREETS were introduced in the project to lend variety; also to facilitate placing the houses for better orientation. The photo at left illustrates Churchill's facility in locating the units—the last one on the curve (see unit on upper left corner of site plan on page 36) placed at an angle, is a pleasant surprise

VENDORS CALL in their trucks with bakery products, meats, dairy products, and groceries to sell to housewives living in Acquackanonk. The trucks circulate through the project, the drivers making regular rounds daily. The existing trees were left to relieve the bareness typical of every new community



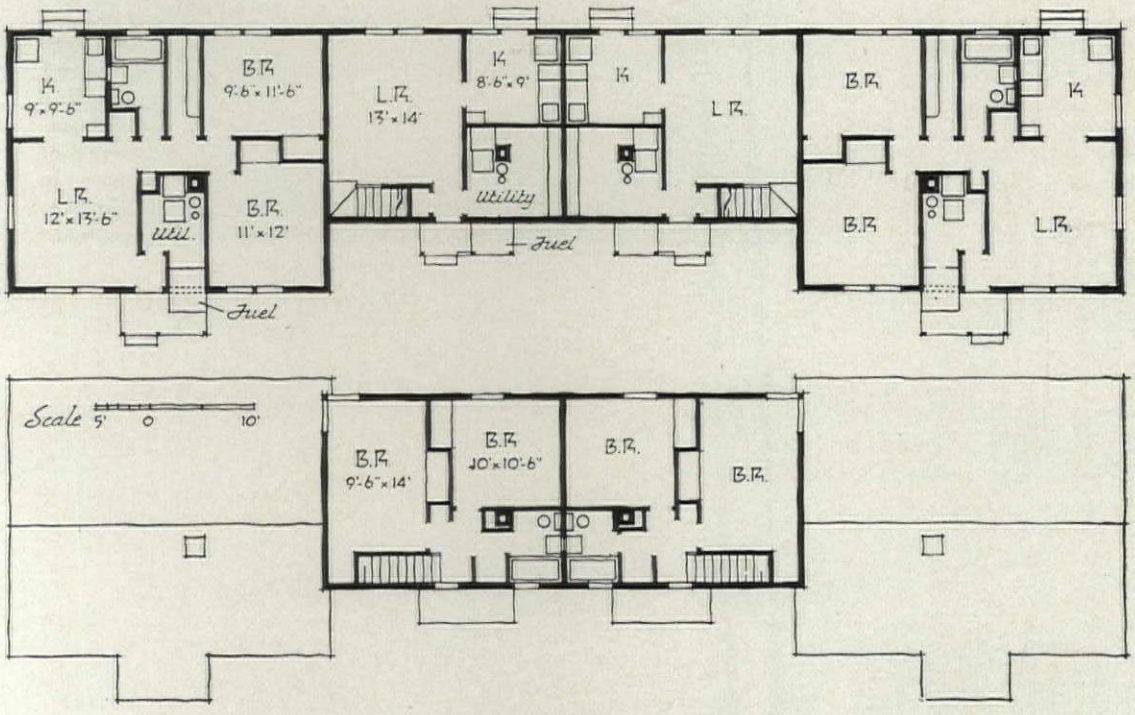




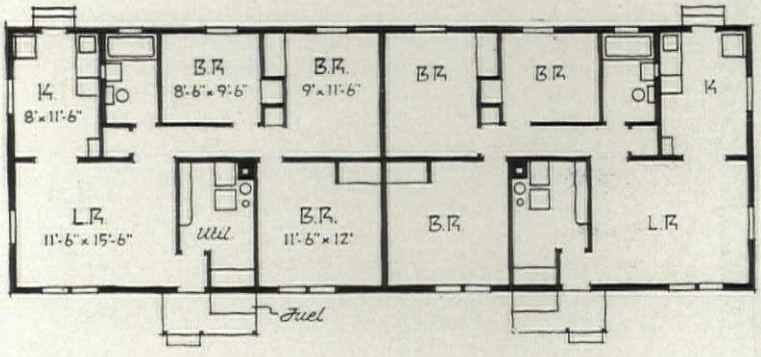
PBA units of standard design (two types shown here) were built in the last section of Acquackanonk to be completed. Note convenience of the parking bay (shown in foreground) to the house, approached by a cement walk

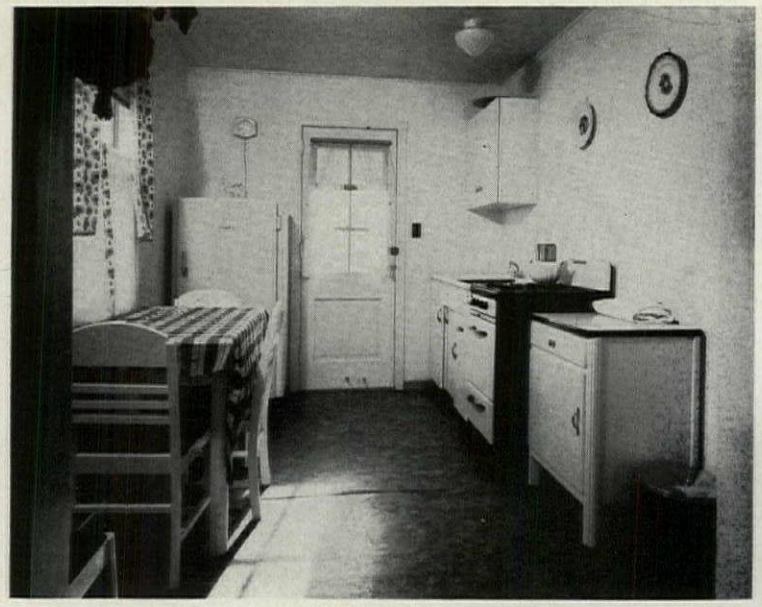
MATERIALS and EQUIPMENT

Footings	CONCRETE
Foundation walls	CONCRETE BLOCK 8" x 8" x 16"
Walls	WOOD FRAME and SIDING with white asbestos shingles
Party wall insulation	WOOL BATTING (4")
Floor construction	WOOD, double (hardwood top floors)
Roof	ASPHALT SHINGLES
Roof insulation	TARPAPER
Ceiling insulation	WOOL BLANKET (1")
Sheet metal	GALVANIZED IRON, 26 gauge, for ducts, flashings, etc.
Windows	WOOD, double sash
Doors	WOOD PANELED (faced with asbestos board in furnace rooms)
Floor finish	Sanded and sealed, some finished with commercial wax
Interior walls	PLASTER BOARD
Interior wall finish	PAINTED ivory, green, pink or blue
Plumbing	COPPER and GALVANIZED pipes (¾ ")
Other equipment	Kitchen cabinets; medicine cabinets
Heating	INDIVIDUAL COAL-FIRED FORCED-AIR UNITS
Electric wiring	BRAIDEX cable; porcelain fixtures
Ceilings	PLASTER BOARD

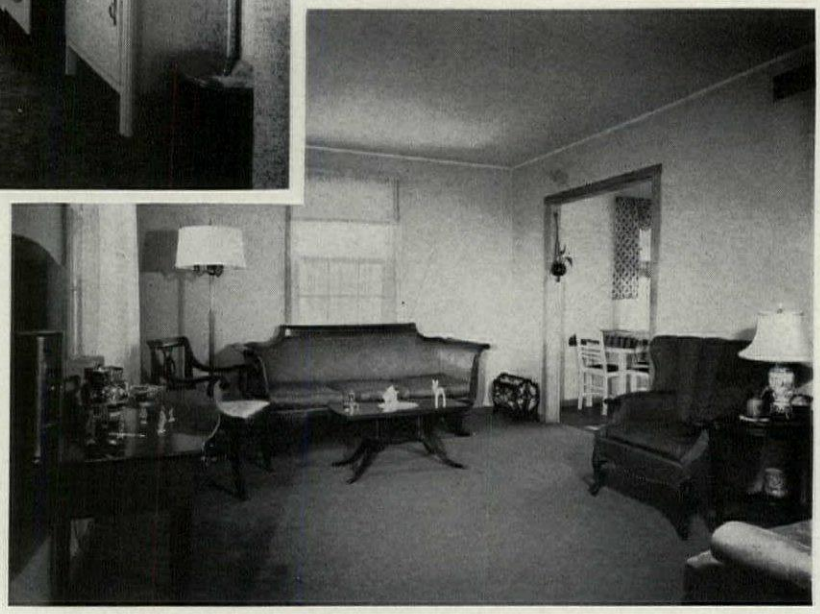


The basic units were ingeniously combined to make the larger buildings of the project without sacrificing privacy for each family. The photo above shows one of the decorative panels of painted siding



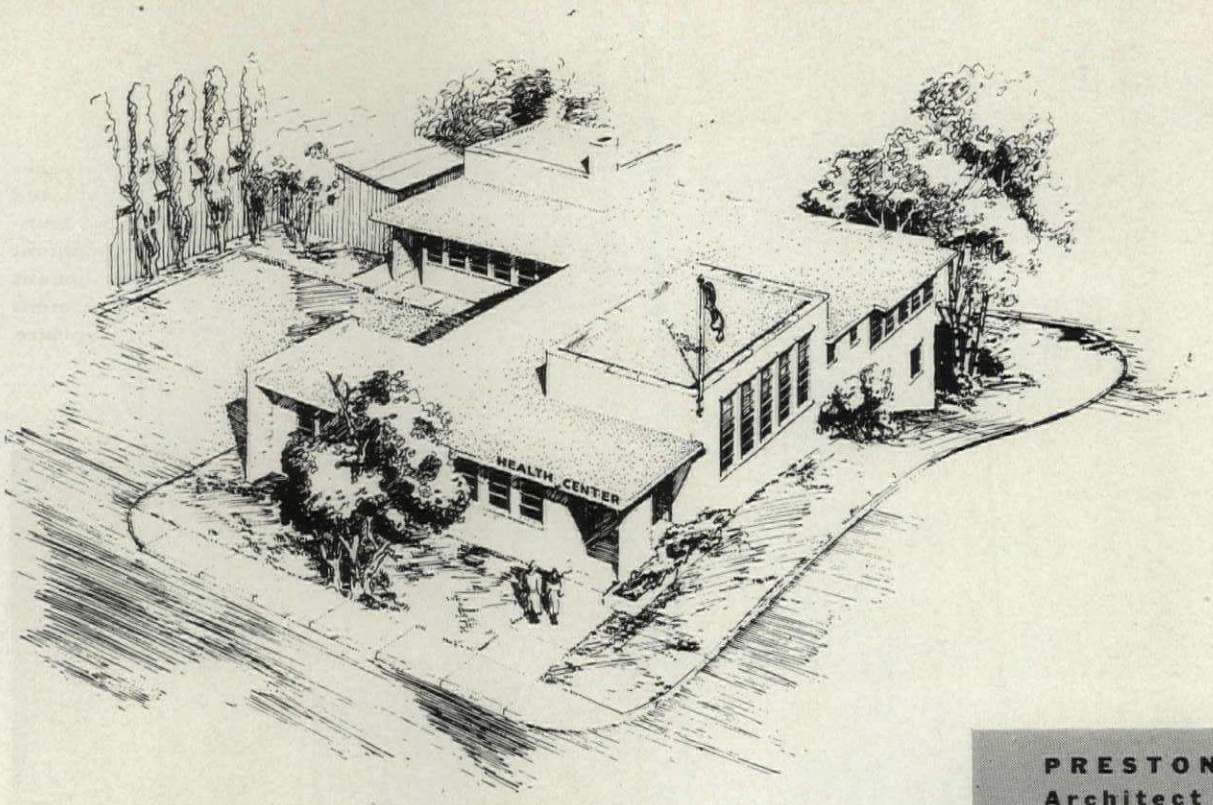


KITCHEN of each dwelling at Acquackanonk is well lighted and ventilated (left). The combination sink and laundry tub, the stove, and metal cabinet over the sink constitute the equipment provided. The tenant of the apartment photographed added the other furniture

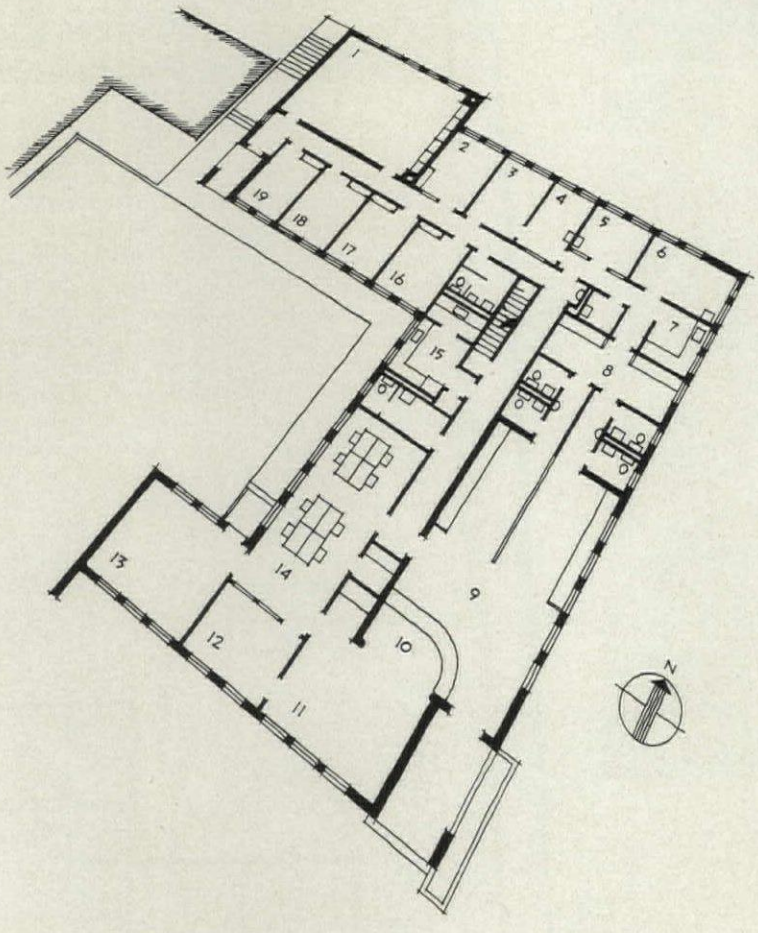


LIVING ROOM of the typical dwelling unit is large enough for the furniture required by the average family. Only 30 percent of those living at Acquackanonk have children. For these there is a grade school less than a mile away, and generous play areas are provided

TENANTS TAKE AN INTEREST IN THEIR HOMES, as shown by the planting around this entrance photographed by Richard Garrison (left). Beyond is the wooded cliff that dominates the site. The land is good and some of the men, principally those who work on the night shifts in the factories, have started Victory Gardens. All seem to like the accommodations provided, the openness of the community, and the clean new houses. Planting space is generous since there are areas maintained by the management around the community office and play fields, in addition to the yards of the dwelling units. The project is near shopping centers of both Clifton and Paterson and there is bus service on minimum schedule. The men drive to work in their own cars, usually form groups of four or six for war economy



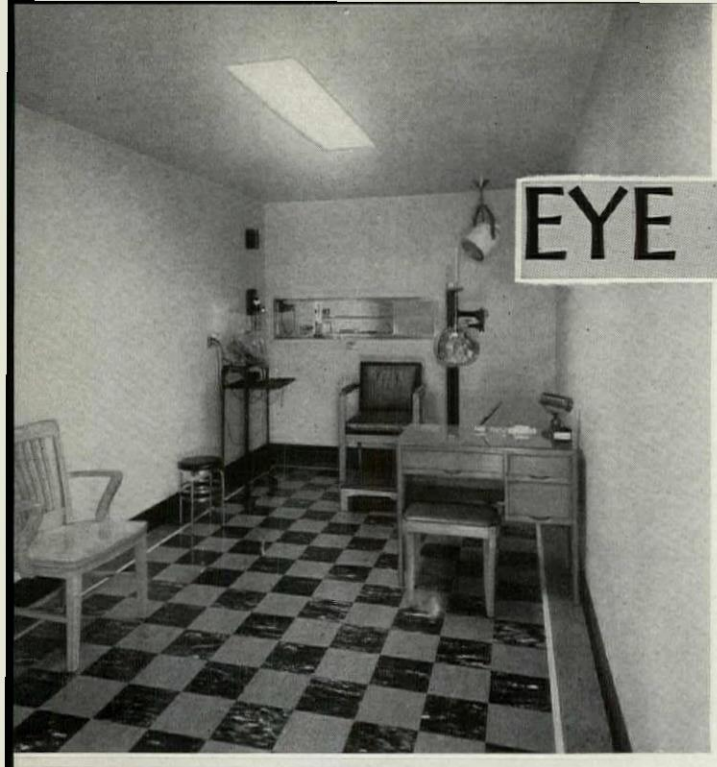
PRESTON M. GEREN
Architect & Engineer

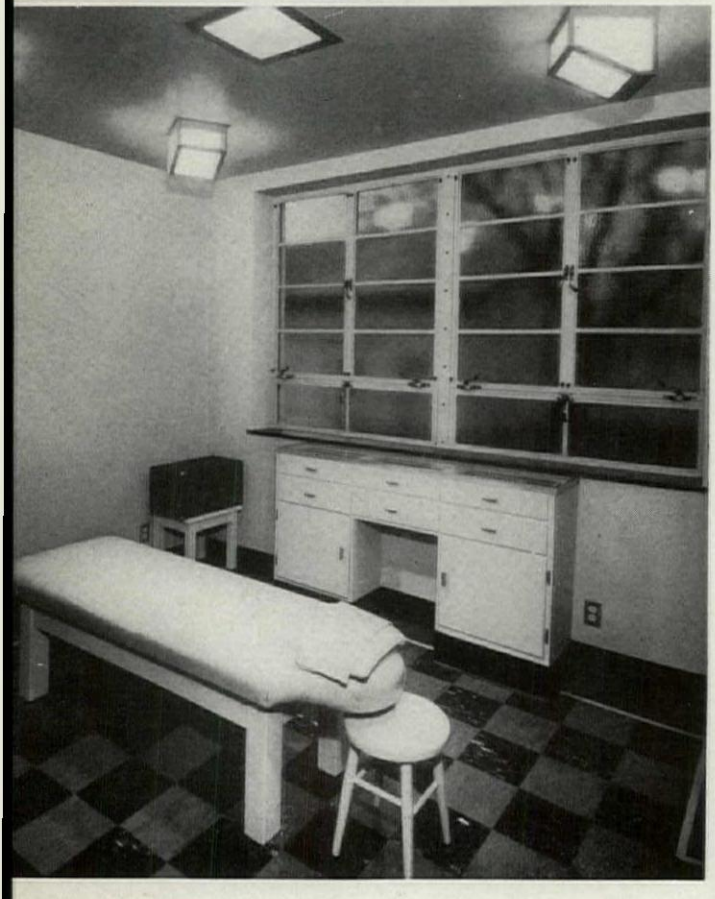


1. CONFERENCE ROOM AND LIBRARY
2. DISTRICT ENGINEER
3. DENTIST'S OFFICE
4. OPERATING ROOM
5. DOCTOR
6. CLINIC
7. UTILITY ROOM
8. WAITING ROOM
9. RECEPTION ROOM
10. INFORMATION
11. CLERK'S OFFICE
12. CHIEF NURSE
13. DEMONSTRATION
14. NURSE'S ROOM
15. LABORATORY AND DARK ROOM
16. ENGINEER
17. SANITATION
18. DIRECTOR
19. ASSISTANT DIRECTOR

TARRANT COUNTY HEALTH CENTER

"Where construction of new schools and hospitals is essential the authorization will be limited to temporary buildings, probably the one-story frame type." F.W.A. Administrator Fleming

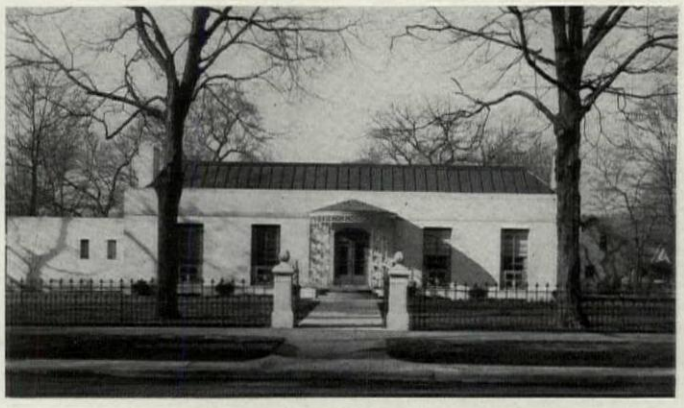




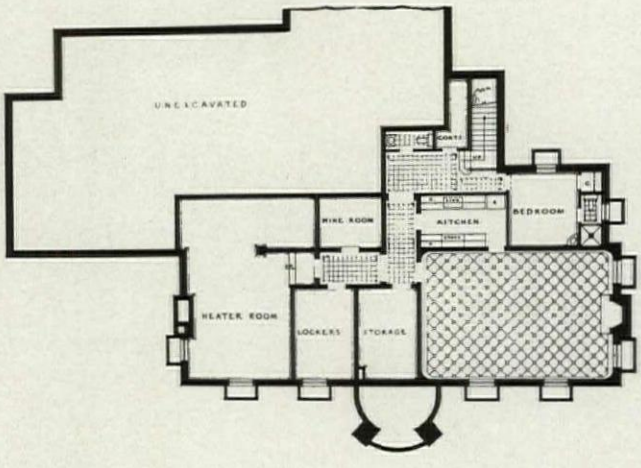
EYE CLINIC for Dr. Watson W. Gailey

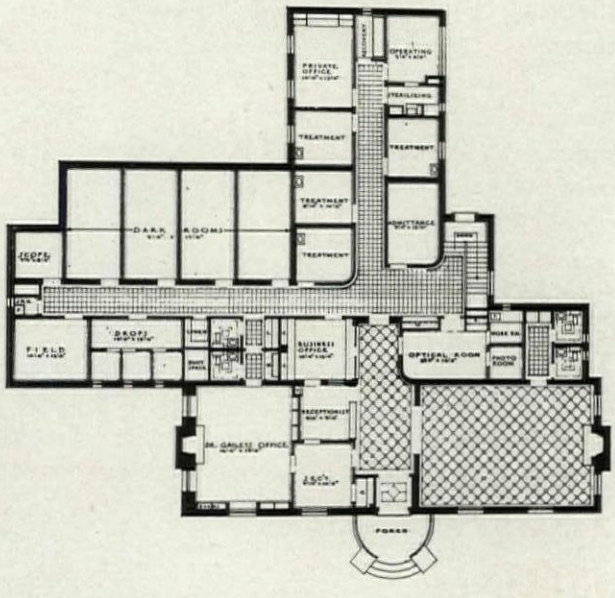
SCHAEFFER & HOOTON, Architects

Bloomington, Illinois



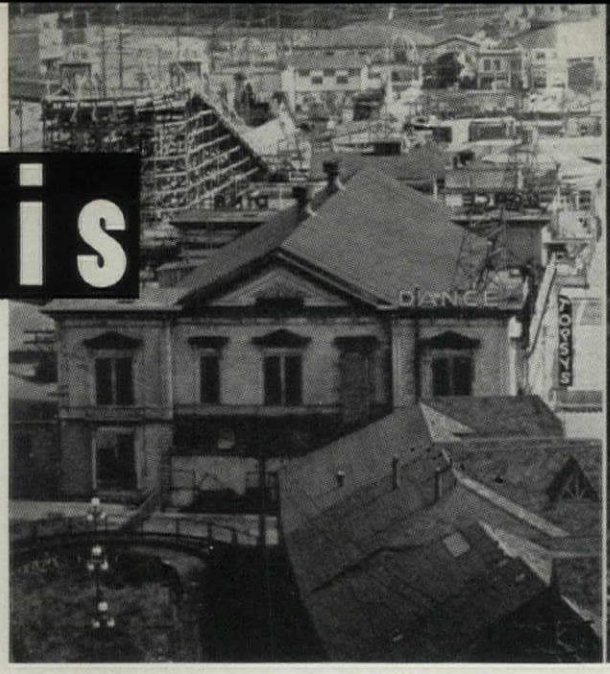
For a well-known Eye Specialist, whose very large practice suggested a private clinic near the hospital where his major operations are performed, the Architects designed the building shown above. The site, well-tended grounds of an old residence on the edge of a business district of Bloomington, suggested a modified residential character. The main floor is devoted to the clinic, with a caretaker's apartment and utility rooms in the basement, adjacent to a reception room where Dr. Gailey entertains and also delivers lectures to visiting Doctors. The requirements were: an entrance lobby and waiting room to accommodate 30 people at a time; a business office controlling the entrance and exit of the work space; offices off the lobby for Dr. Gailey and a receptionist; examination rooms, 4 treatment rooms, 4 dark rooms (photo at left, above), a field room, scope room, operating room for minor operations (photo at left, below), recovery and sterilizing room, and an office and library for Dr. Gailey's assistant.

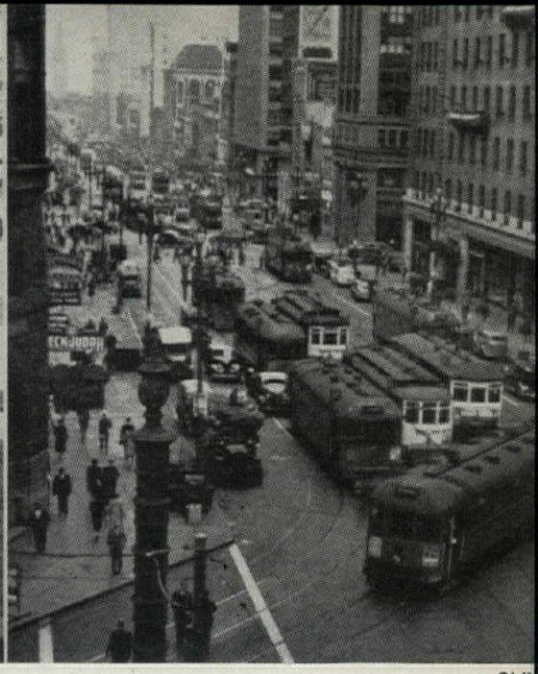




telesis

telesis: progress intelligently planned and directed; the attainment of desired ends by the application of intelligent human effort to the means. (Webster)





CORBETT OLI

My dear Reid:

I am very grateful to be able to accept your invitation to help present the work of Telesis and only regret that the assistance is limited just as is the available space and time at our disposal. I am grateful for two reasons: First, because I believe that Telesis is making an important contribution to the establishment of the very base from which the New Architecture must spring; and second, because your invitation has given me a long-desired opportunity to repay, in however small a measure, a great personal debt I owe as a foreign architect to the members of Telesis — good friends in the West, without whose understanding, encouragement, loyalty, and help in the last year or so, the transition period would have been immeasurably harder, and the belief that modern architects everywhere speak the same language unrealized.

Yours sincerely,

Serge Chermayeff.

THE BIRTH OF A GROUP

ONE would think that to define one's aims, to say what the work was for, to state the problem, was an essential preliminary to the rolling up of sleeves anywhere away from the moving belt.

The statement of the problem confronting Planners and Architects, granted that contemporary needs differed from those of an ancient Greek, was one of these obvious necessities. This obviousness, however, managed to escape the majority of the very people whom it most affected.

The story of the statement of the contemporary problem is really the story of Modern Planning, Architecture, and Design generally. In it, Telesis is an important chapter. This tale, or thesis, or whatever, is a sort of an Architectural Declaration of Independence to which had to be appended a Bill of Rights to be consulted wherever problems of physical environment might arise.

All those who persisted in this apparently thankless task were frequently geographically separated—most for many years had no direct contacts or opportunities for exchange of ideas on general or specific issues. Neither Authorities nor Industry nor the Press gave them the hearing or the facilities which were obtained by Science and Technology. In spite of these handicaps, their separate findings have added up to what is now revealed as essential processes to meet fundamental needs. Today we have the product of this immense and widely disseminated work by Americans, English, Germans, French, Rumanians, Poles, Swiss, Dutch, Spaniards, Scandinavians, in the form of an international philosophy, transcending political and other boundaries.

This philosophy is the essence of Henry Wright, Geddes, Gropius, Mumford, Corbusier, Unwin. For the majority of the

younger Planners and Architects, there are among these men superficial differences but no fundamental disagreement.

Telesis is one of the many signs of promise of new things which will preserve and enrich decent human values in spite of civilization's temporary abberations.

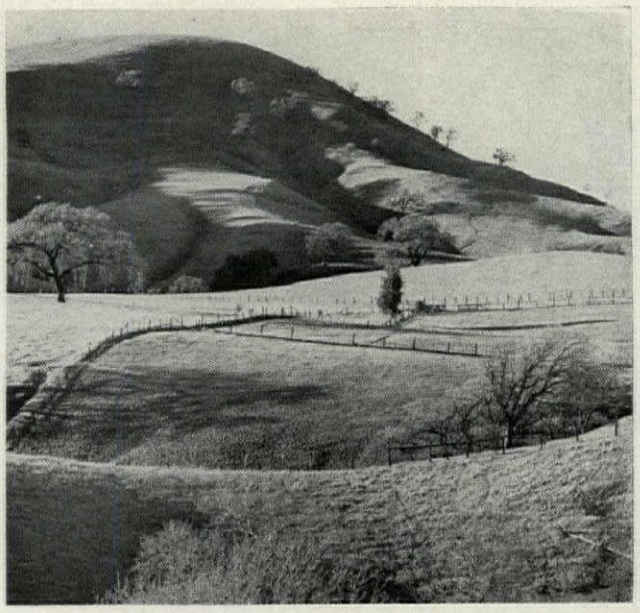
Its story is to be more clearly seen in true perspective if it is read as part of the history of the whole movement toward architectural cooperation and away from professional competition. Regarding it thus does not in any way detract from Telesis' achievement but throws a light on its particular value. The earlier chapters of this history were written by C. I. A. M. (Congres Internationaux d'Architecture Moderne), out of which grew C. I. R. P. A. C. (Comite International pour la Realisation des Problemes Architecturaux Contemporains) and national organizations like M. A. R. S. (Modern Architectural Research Group) in England. The significance of Telesis will be better understood through the reading of the book of the 5th Congress of C. I. A. M. about to be published by the Harvard University Press.

The exciting story of Telesis is really best told in the San Francisco Group's own words —excerpts from Reports and Publications:

"In the fall of 1939, a few architects, designers, planners, and landscape designers began meeting at frequent intervals. Each discussion became more detailed, as information was collected. The chief concern was the growing confusion of the bay area from a planning standpoint. In spite of the scale of the project, they began making plans for an exhibit that would show their fellow residents of this region why things had gone so badly in the last fifty years and what was to be done about it.

"First of all, in order to consolidate the group, a credo was drawn up in which the aims and beliefs of the group were made clear. This had a marked influence in also clarifying their ideas on the proposed exhibit and also produced the name 'Telesis.'

"It is interesting how enthusiastic people become when a plan is made that is based on a real need. Help for the exhibit came from the San Francisco Museum of Art. It was felt that past architectural shows had not hit the spot with the general public, and that something of much more general interest than how to build a home charmingly for the



LAND

Land and people . . . these are the basis of an environment. For all human activity is on or for the land—by or for people • To build a rich environment of these elements, man must act, to reach the desired end by intelligent purpose. Thus far, concerted effort to this end has been nil—our present environments result rather from haphazard or ineffectual planning, and as often from unintelligent exploration • There is the problem

Doing Something About It

November and December 1939. Two independent groups, one in San Francisco the other at University of California, joined together.

August 1940 to December 1940. Research groups are appointed to investigate "Recreation," "The Speculative House," "Industrial Design and the Interior," and "The Physical Factors of the Bay Region and their Relation to an Indigenous Architecture." A lack of adequate working space for the group is mulled over along with the ever present spectre of the diminishing budget.

A series of panels based on research of the Bay Region were prepared by the group for the hearings held by the State Planning Board, to establish the San Francisco Bay Regional Planning Commission. These panels were later transferred to the San Francisco Museum as a follow up of the previous exhibit and were later exhibited throughout the region.

The usefulness of the San Francisco exhibit was not ended with its brief month at the Museum of Art there. The following March, it was reassembled in the Seattle Museum of Art where it attracted as much attention as it had in San Francisco.

PEOPLE

—and the challenge to human effort • What makes up our environment . . . that we may better it? SPACE for LIVING . . . SPACE for WORK . . . SPACE for PLAY . . . and for the SERVICES that which integrate these and make them work. These must be coordinated by conscious planning • What can be done? What is being done now? Who are actively working? Not enough are working . . . but some. They need your help

January 1941 to March 1941. The Architectural Association of Chicago requests that the TELESIS EXHIBIT be sent to them but no funds were available for that purpose.

The Women's Center of San Francisco requests TELESIS to conduct classes on city planning.

The California Federation of Arts asks that TELESIS affiliate with them.

More newspaper articles concern themselves with the importance of the group.

TELESIS composes a letter to the City Planning Commission concerning the imminent appointment of the new regional architect.

May 1941 to December 1941. A traveling exhibit is designed by Sydney Williams and Walter Landor for California Housing and Planning Association.

The San Joaquin Valley Resources Planning Board proposes that TELESIS lay out a traveling exhibit for them that will familiarize all the inhabitants of that region with their more acute planning problems along with proposed solutions for them—much in the same manner as the previous TELESIS exhibits. Tentative budget is planned, and discussion as to the technics involved follows.

retired business man was in order. Dr. Morely, Director of the San Francisco Museum of Art, offered Telesis the big south gallery of the Museum in the heart of San Francisco where 'the man in the street' could just walk in and have something to look at and maybe compare intelligently to what he saw on his return into the street.

"The exhibit was a great success—that is, if bitter and complimentary comments of all kinds in the newspaper mean anything—and there were a lot of them. Every member of the group was assigned a number of days, during the month that the exhibit was on, to sit in the lounge area of the exhibit and answer questions as well as to draw out ideas from 'the man in the street.' What seemed most apparent was that this 'man in the street' had a great enthusiasm for sunshine, light, space, and easily attained recreations—the very things that the congestion of their city was denying them.

"The following months brought many responses from all over the country. People who had seen the exhibit had told others about it and what it had tried to bring out about the way they were living. A Telesis group formed in Los Angeles and has recently held an exhibit, embodying their ideas about the city of Los Angeles. Letters came from Seattle and various cities on the east coast as well. Wherever people had been worrying about the inadequate planning of their cities, because they had heard that someone in San Francisco had been worrying too, they felt encouraged and asked either themselves or their associates what could be done.

"In the meantime Telesis was busy with its second publication on planning. (The first one was the catalogue for the Exhibit.) Publication #2, 'The Next Step Toward a Regional Plan for the San Francisco Bay Area,' received an immediate response from planning bodies all over the country.

"It would be unrealistic in the extreme to say here that recent world events have not had their effect on the activities of Telesis. Some of its members have been enlisted in the various government planning agencies that are concentrating on the immediacies of defense. This has slowed down the plans of the group but the idea is well established and when these emergencies have been served, there will be a working basis for the equally urgent reconstruction period."

THINGS TELESIS HAS FOUND IMPORTANT

Introduction: The following is a statement of the conclusions arrived at in the discussions so far. It is intended to represent in organized form the beliefs discovered to exist in common among the members of the group. It is meant to be used for purposes of reference and study; it is not to be considered final, but rather open to criticism by new members, either in general form or specific content, and to change as the need arises.

BELIEFS (Who) We, as designers of the new environment cannot be effectively designed by isolated individual efforts, have organized in the spirit of cooperation and personal anonymity so that by collaboration in our efforts we may encourage scientifically significant work.

(Why) We recognize that there are basic social and economic forces at work bringing about a new environment and believe that it is our duty to thoroughly understand these forces that we may intelligently interpret their significance in planning man's environment.

AIMS (What) Recognizing that in former periods arbitrary esthetic patterns have been imposed upon man's social life, we believe in that environment in which the local social, economic, and physical characteristics are recognized, and from these significant forces the esthetic considerations are derived.

We believe in a state of society:

(a) in which the individual is the module,

(b) in which the most favorable environment exists for the development of all the arts and especially for those most closely related to human life,

(c) in which the creation of the physical environment is consciously related.

PROGRAM (How) Since the social costs of unplanned development are becoming ever greater, it is the duty of the designers of the new environment to demand scientific, comprehensive planning and to acknowledge that the scientific method is the dominant attitude or force in the creation of the new era.

(What) We propose, in orienting ourselves within existing forces, to make actual contact with them in order to understand them and their directions and to use them to influence the designing of the new environment. Therefore, we propose to sponsor research, advertise our beliefs and the results of our research, lend support to organizations whose ideals and programs are allied to our own, and to extend our awareness to other groups. Anyone will find, who has gone into a large scale analysis of a community problem, that he is constantly faced with the spectre of suspicion from the outsider. There is a violent prejudice against group thinking because it might be the next step to "mass" thinking. This is generally conceded to be un-American. This suspicion has scared many a worthy public-spirited body into inaction. Telesis has experienced it, but the results have belied the spectre. It's the jobs accomplished that have made new project easier. The need is there and if group effort will meet it, then let there be group effort.

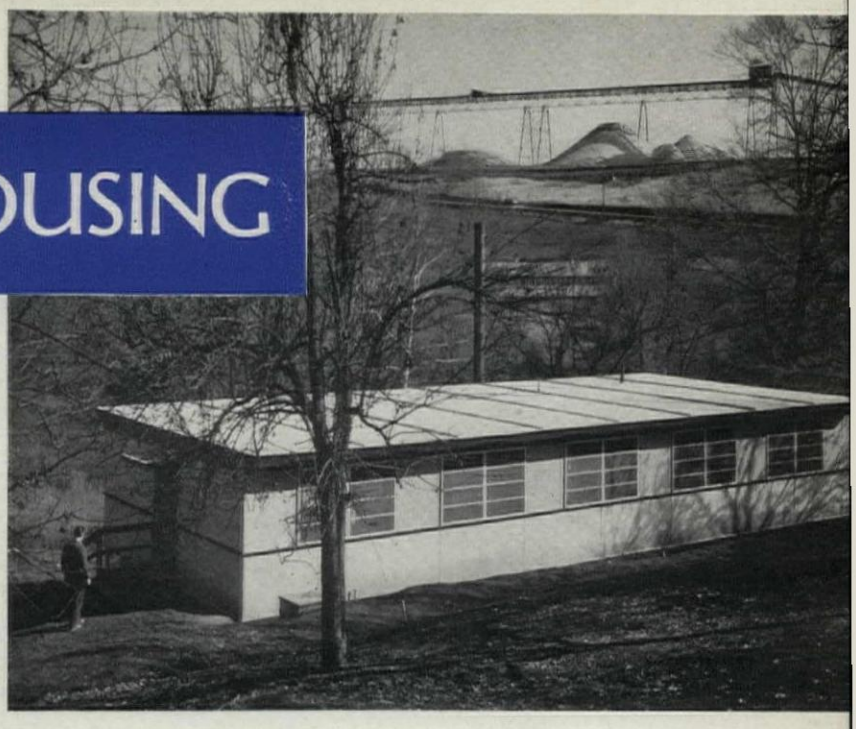
There is nothing mysterious or totalitarian about this planning. It is in essence foresight based on study and experience. Most of our cities and counties today have planning commissions of public-minded citizens who work for orderly and economical development of our communities using such means as Zoning, Official Plan Lines and Master Plans for Highways and Recreation as their tools. Regional Planning is a logical method of coordinating the work of these individual agencies and of solving the problems that cut across city and county boundaries.

Telesis is not interested in utopias, but is vitally interested in the improvement of the living environment here and now, under existing social and economic conditions, and with the present legislative machinery.

People and the Land make up the environment which has four distinct parts—a place to Live, Work, Play, and the Services which integrate these and make them operate. These components must be integrated in the community and urban region through rational planning, and through the use of modern building technology.

PORTABLE HOUSING

TVA EXPERIENCE LEADS TO TRAILER-HOUSES



by CARROLL A. TOWNE

Chief, Division of Recreation and Public Grounds, Department of Regional Studies, TVA. Mr. Towne has directed development of TVA truckable and trailer construction and, with the assistance of WOODRUFF H. PURNELL, devised most of the features or processes required for demountability. S. HARRISON GURNEE designed the two-cell homes, MAURICE ABRAMOWITZ the dormitories and recreation building, and ABRAHAM W. GELLER the trailer houses, under supervision of ROLAND A. WANK, Head Architect for TVA. Mr. Towne warns: "If this article seems historic rather than prophetic, remember it was written a month before publication." In summing up TVA experience, he observes:

"Producing THE solution to the low cost housing problem, like producing a rabbit out of a hat, is a trick for magicians, not technicians. There are lots of ways to build low-cost houses, all good for the purposes they were designed to serve. The trailer house, shown on pages 53 to 56, can serve a purpose for TVA, and that's the reason it was designed.

"Coincidentally, it may serve a larger purpose. Housing shortages block war production all over the country; the trailer house, built cheaply and quickly, highly mobile, may offer one means of relief. It is strictly temporary shelter, offering performance at the expense of permanence, but that, like it or not, is what the average American looks for — and gets — in nearly everything he uses. To the manufacturer looking for a market sustained by quick turnover of a product with a short life but high sales appeal, the trailer house, or something like it, may look good. That's what made the automobile industry."

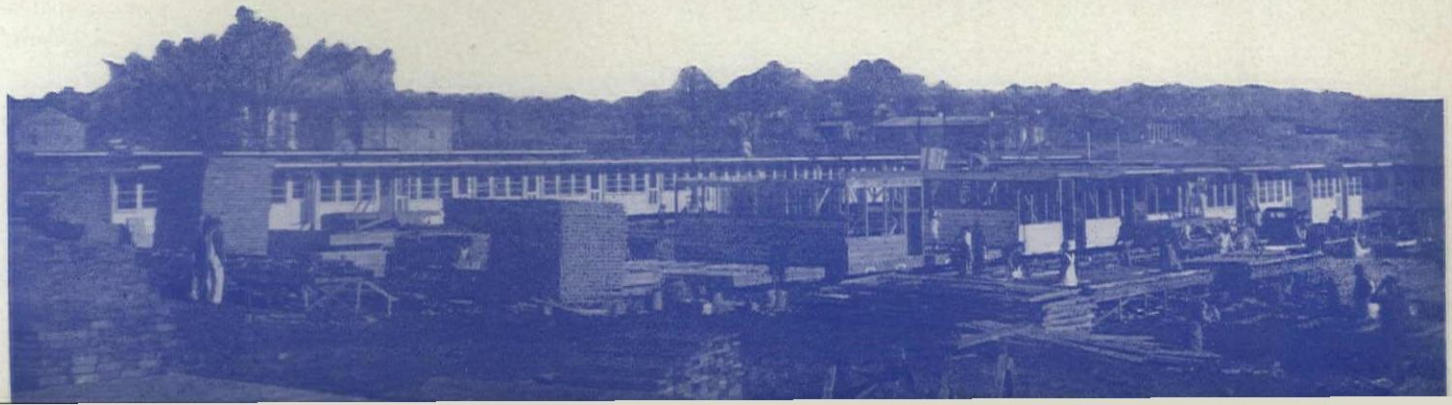
EIGHTEEN major hydro-electric plants have been built or are now under construction by the Tennessee Valley Authority on the Tennessee River and its tributaries. All but a few are in sparsely settled areas; to accommodate employees, the Authority had to build housing. Depending on relative distance from existing communities, duration of construction and number of men on each job, TVA housing has ranged from dormitory camps to complete residential communities with dwellings, schools, hospitals, stores, and community centers.

When the current program is completed, TVA will have provided more than 800 dwellings and dormitories for more than 6,000 persons. In addition, over 1,000 war workers' houses, now completed or under way in the Tennessee Valley, were designed (and in part built and operated) by TVA as agent for FPHA and its predecessor, FWA.

THE NATION IN MINIATURE

In many respects, routine housing problems faced by TVA for eight years resemble, on a small scale, those

Open-air assembly lines at Sheffield, Alabama, with 2-section houses in progress. Same principles were used for dormitories like the one shown above.



Moving Costs Reduced

1938: Seventy-two conventionally-built cottages floated 200 miles downstream, from Pickwick Landing to Kentucky Dam. Not built for transport, these were racked en route, but were relatively easily rehabilitated. Moving cost, including repairs, was about $1280 per house—not cheap, but still less than the cost of a comparable house built in place.

now facing the nation at war. Today those problems change almost daily, as one essential building material after another becomes "critical." Again, the Authority's employee housing problem has always been one of balancing **costs** commensurate with short-term occupancy against the occupants' **comfort** and **health.** However, because nearly all housing built by TVA has been for its own use, the Authority has been free to experiment; whereas a national emergency housing program is necessarily somewhat restricted by the standardization required.

TVA has given much thought to costs. It takes three or four years to build a dam. What kind of homes should be provided for workers? In the first several years numerous schemes were tried, all aimed at reducing construction costs without unduly shrinking standards of space and amenities. The successful Hiwassee house provided about two-thirds the floor space required by current war housing standards, and achieved an absolute minimum of equipment: walls of insulating board, galvanized metal roof and flue, inexpensive plumbing equipment and fixtures. Remarkably low costs resulted, and TVA is now building houses of similar size, but using fewer critical materials, at Fontana Dam in North Carolina.

PORTABLE: CONVENTIONALLY BUILT

The idea of moving houses from one construction project to another has always been a favorite topic of discussion in TVA. In 1938 the discussions bore fruit. Seventy-two houses originally built and used at Pickwick Landing Dam were moved from their foundations to barges, floated 200 miles downstream to the mouth of the Tennessee River to the construction village being built to house workers on Kentucky Dam.

This method was slow and clumsy, and would have been impracticable without river transportation. However, the basic idea was sound, and this demonstration gave impetus to the Authority's entry into the field of "demountable" housing.

PREFABRICATION FOR PORTABILITY

The original concept of the TVA "demountable" house was developed in 1934 by Louis Grandgent (then with TVA, now with FPHA), who prepared a detailed, illustrated description of a scheme for building a house so it could be separated into four or five sections, each of such dimensions that it could travel safely by truck and trailer over public highways.

In 1940, shortly after the Pickwick houses had been moved, an opportunity arose to test

from $1280 to $280 per House

his theory. Several cottages were needed quickly at a TVA dam. Principles developed by Mr. Grandgent, slightly modified, were incorporated in their design and they were built at Sheffield, Alabama, sixty miles from their destination. The whole project was highly successful.

FWA, observing the success of this experiment, requested TVA to build 150 demountable houses for defense workers in northern Alabama. Plans for one-, two-, and three-bedroom houses conformed to prevailing standards for defense houses built under the Lanham Act, had "demountable" features identical with those in the previous cottages, and were built on outdoor production lines at Sheffield and distributed to various sites in surrounding communities. All are now occupied by war workers.

Shortly after this project was completed, FWA awarded a contract for 300 "demountable" defense houses for western Tennessee to a contractor who used plans developed by TVA. Two hundred similar houses are now under construction in the same vicinity.

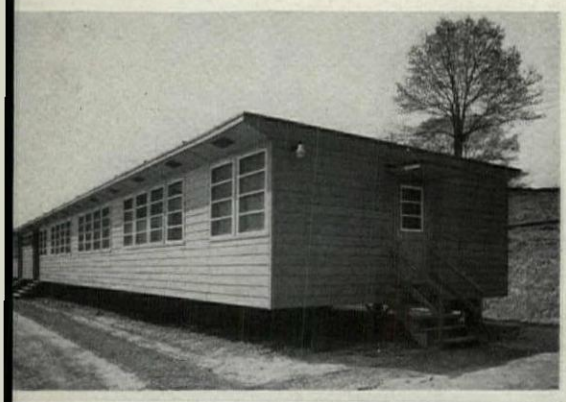
PROGRAMS ACCELERATED, PROBLEMS ACCENTUATED

The perennially delicate question of proper balance between cost and space was recently accentuated when TVA construction schedules went on emergency time rations, and building materials and labor became scarce. The two-section demountable house, developed for TVA use only, demonstrates the Authority's most recently completed effort to achieve both demountability and a mini-

1940: The first sectional houses built for truck transport. Prefabricated in units 7½ feet wide, 22 feet long, 9½ feet high, each weighing about 3 tons, these can move over highways in most states on 2- or 4-wheeled trailers hauled by light trucks. Techniques developed on this project have been applied to all subsequent "demountable" houses built by TVA.

1941: FWA requests a "demountable" for defense workers. To meet nationally standardized requirements, a pitched roof, hinged to let down flat in transit, was added. Otherwise construction and erection were similar, sections were trucked from assembly line to foundations, rolled onto foundations on 4½-inch wheels mounted in the floor framing.

1941: Same construction-for-portability principles for TVA's own housing, but more economical plans. As in all TVA portable houses, electric, heating, plumbing equipment is pre-installed; almost no loose building material is needed for assembly. Six men can unload and assemble a two-section house in 2 hours. Original cost per house, $1900. Trucking costs: 30c per mile per section; total moving cost for 34 miles, $280 per house including all site work except extending utilities.



Principles of construction—and in many cases identical sections—used in 2-section houses have been adapted to several types of buildings. At lower left 4-section houses as well as 2-section units grouped in a community. Larger units were assembled by uniting 2-section units and cutting a door between. Kitchen fixtures of 1 unit were removed. The result is not ideal, but serves in the emergency.
Upper left, a 24-section dormitory built similarly to the house units. Upper right a 6-section recreation building (interior below) shows not only adaptability of the basic structural system to many types of buildings but also illustrates the Authority's policy of providing more than bare essentials.

mum of floor space which can be organized to permit normal family life. The result is, of course, approximate. But reports indicate that it appeals to families of all sizes, and is competing successfully with two-bedroom houses one third larger, apparently because it has superior equipment and more striking appearance. Other structures, built in the same pattern, illustrate the adaptability of the basic system.

Recent cost comparisons indicate that this type of demountable construction can be disassembled, moved to a new site and re-assembled on a new foundation at lower cost than can panel structures of comparable size, provided the distance moved is less than three hundred miles. On longer hauls panel buildings gain an advantage, because they can be packed in fewer truckloads. One hundred two-section houses, built on the same Sheffield production line, were trucked three hundred miles to Murphy in North Carolina. A private contractor hauled them for thirty cents a mile per section.

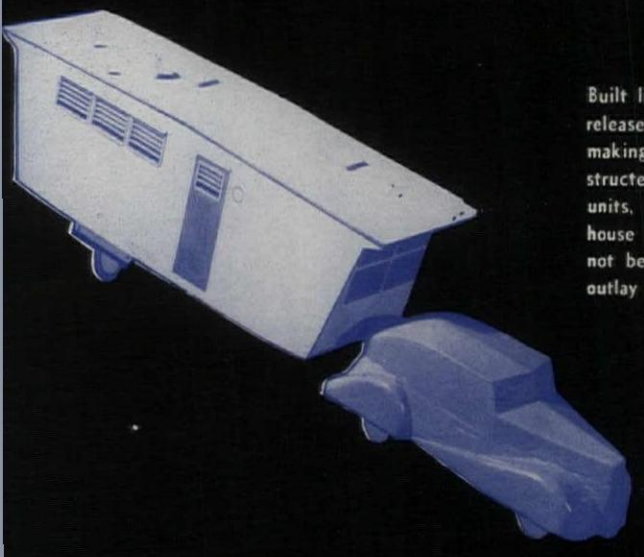
Thirty of these houses were recently removed from Murphy to Hiwassee Dam, thirty-four miles distant. The whole operation, including preparation of a new site and new foundations, took four weeks, about twenty-five men, and two trucks and trailers. Moving costs approximate $280 a house, including everything except charges for extending sewer, water, and electric services. The houses originally cost about $1900 each at the plant, including electric stoves, hot water heaters, refrigerators, and oil burning space heaters. Some time within the next year they will be moved to still another project. With each succeeding use housing costs are materially reduced.

TRAILER CONSTRUCTION for TRAILER-HOUSES

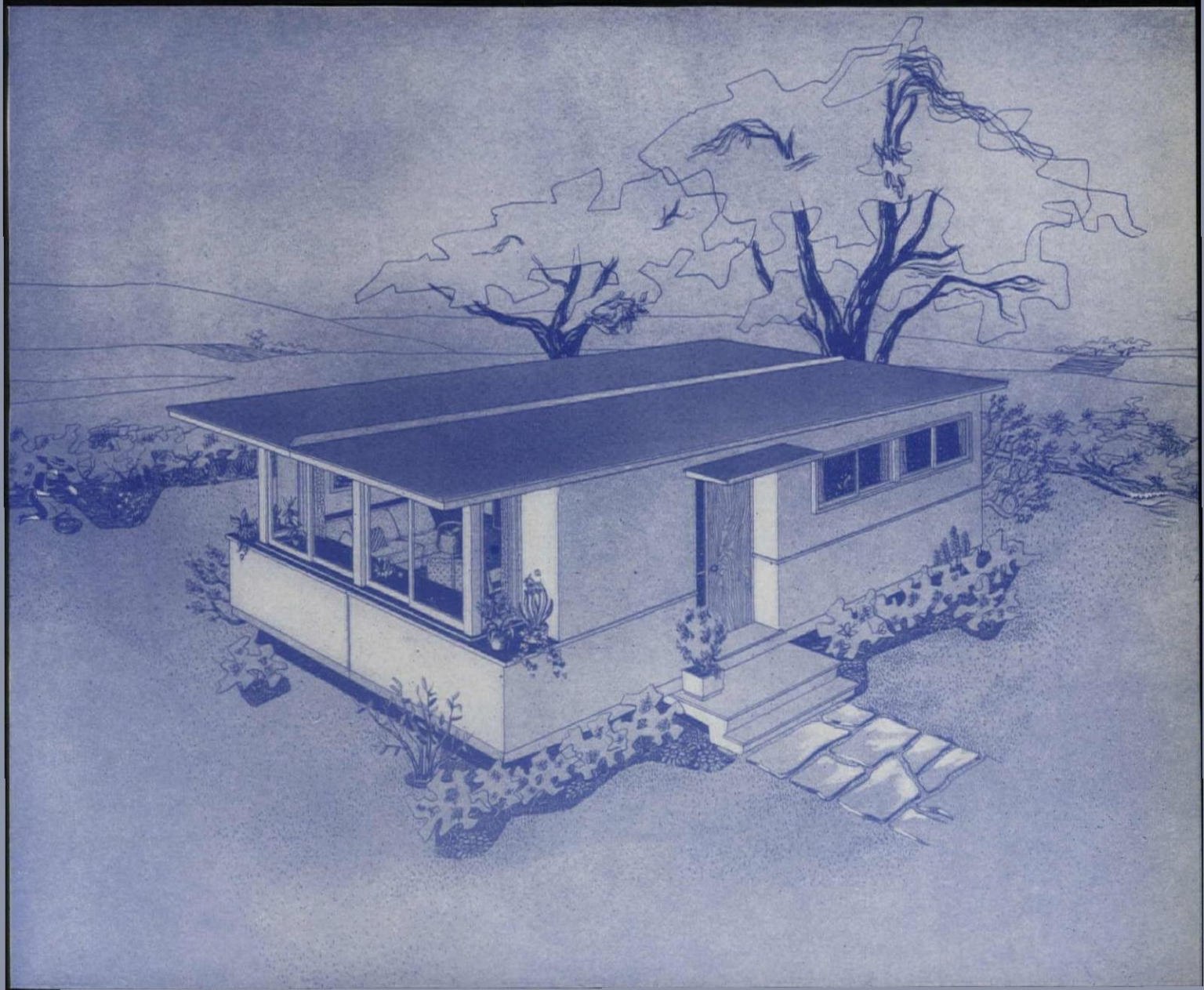
Encouraged by the success of this attempt to bridge the gap between the trailer and the conventional house, TVA is now embarked on another housing experiment. Observing the rapidity with which trailers appeared at construction projects, and noting the marked similarity between a trailer and a section of its "demountable" houses, the Authority decided to explore the feasibility of buying houses manufactured like trailers.

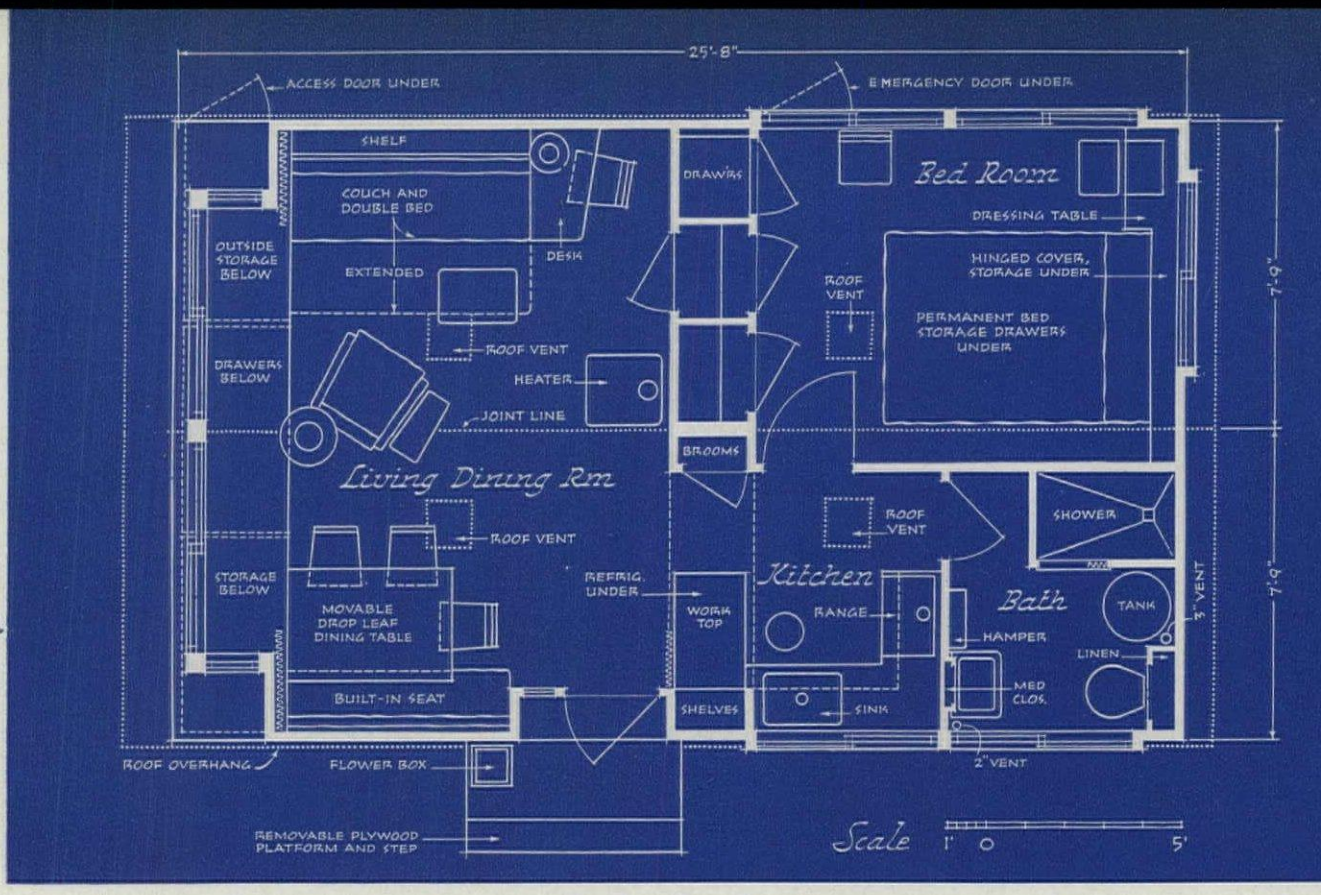
There were several reasons: The practice would release construction personnel; it would test another method of applying industrial techniques to producing houses; it

and now . . . TRAILER HOUSES



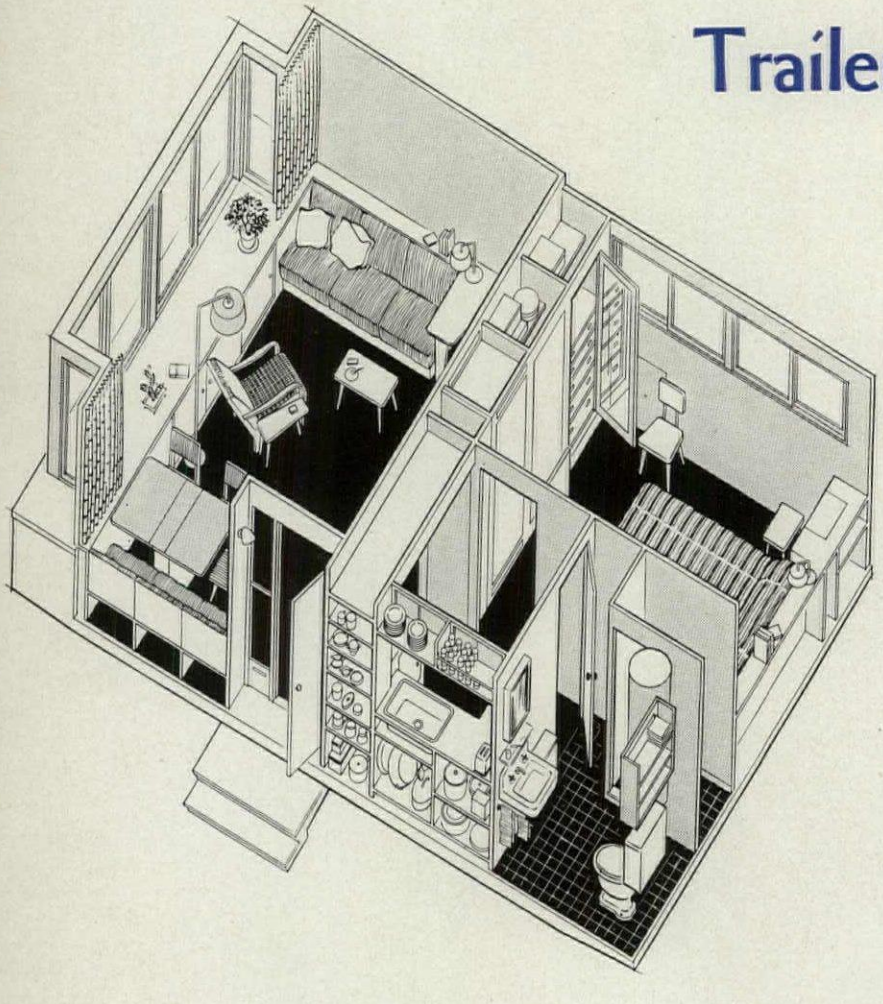
Built like a trailer, designed as a 2-section house, TVA's new Trailer-House releases construction personnel urgently needed for actual war work by making use of industrial techniques in house production. Each section, constructed of stressed plywood and so lighter in weight than preceding TVA units, costs about 15c per mile to transport. Costs for a complete trailer house are not now accurately determinable because mass production has not been begun; but contract price on four test units indicates that total outlay may be less than for comparable units conventionally framed.

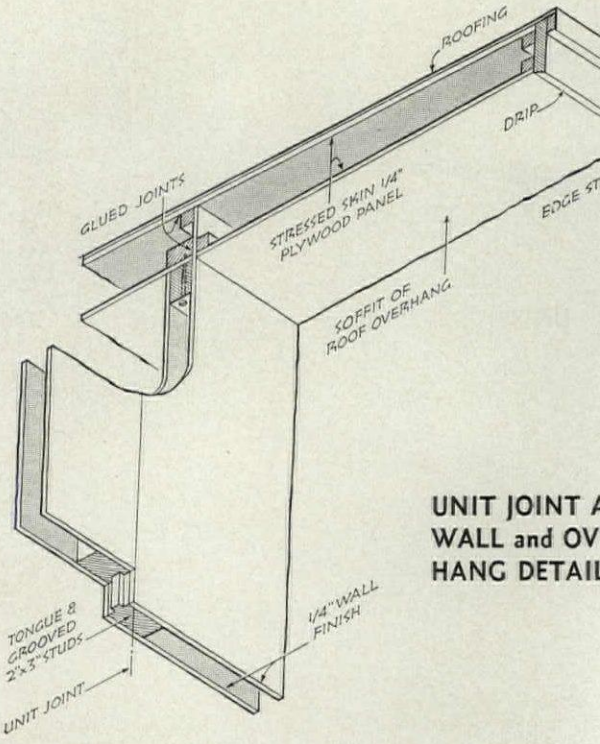




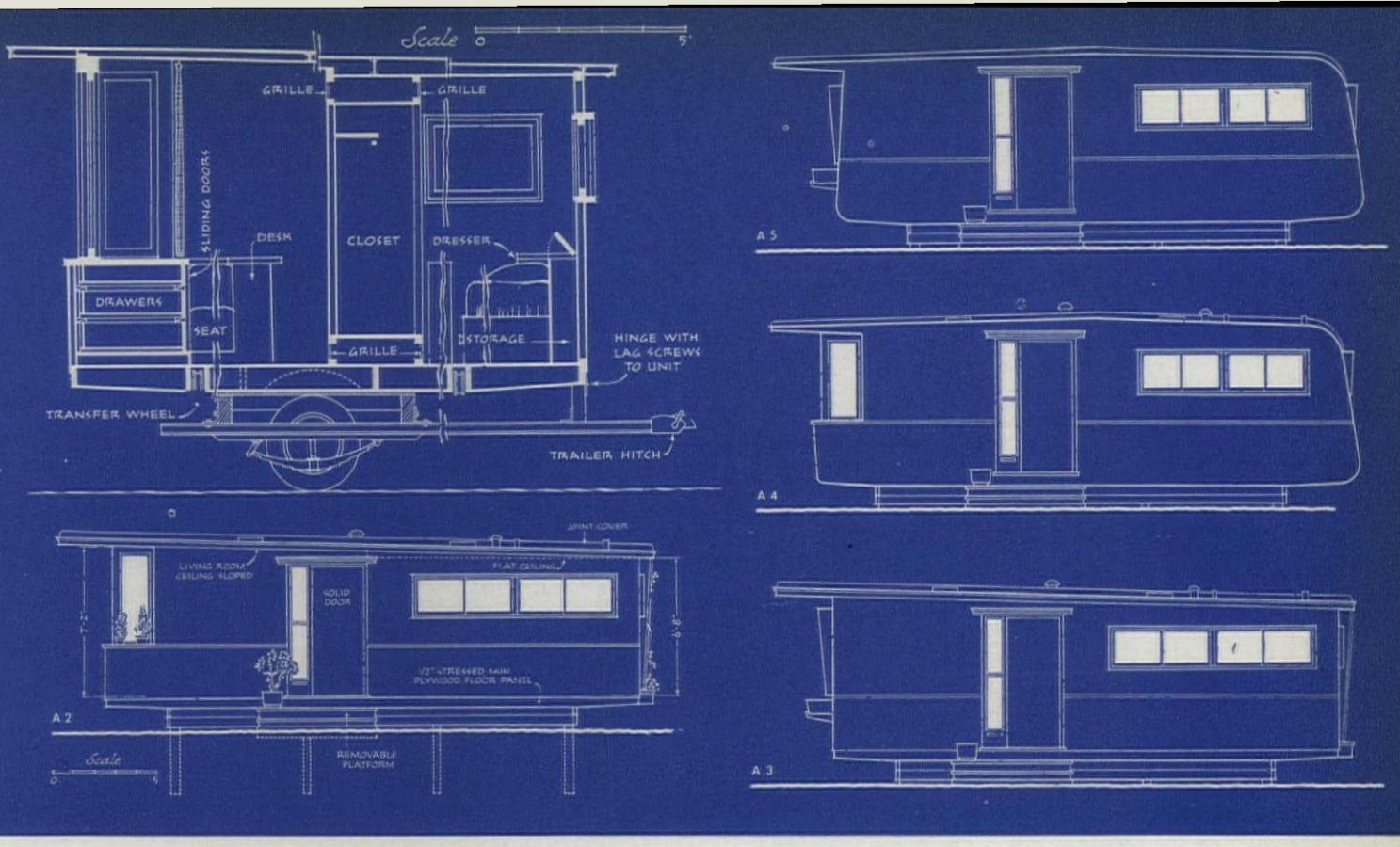
Plan is similar to the 2-cell house plan. Furniture, except for chairs, tables and a lamp or two, is built in; only by pre-planning the furniture can such a compact organism provide enough space for reasonable comfort. The isometric view shows how much space is really afforded—a surprising amount.

Trailer-House PLAN and





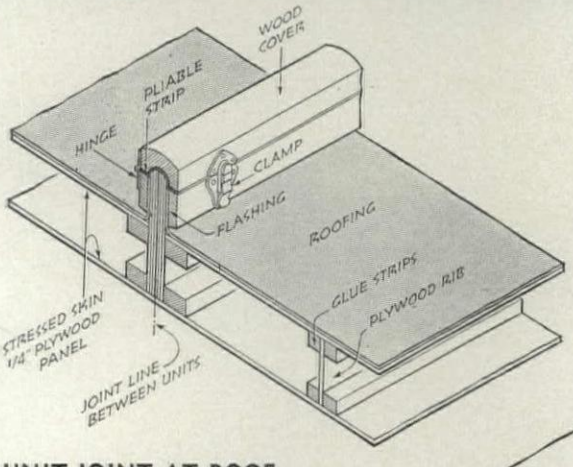
UNIT JOINT A
WALL and OV
HANG DETAIL



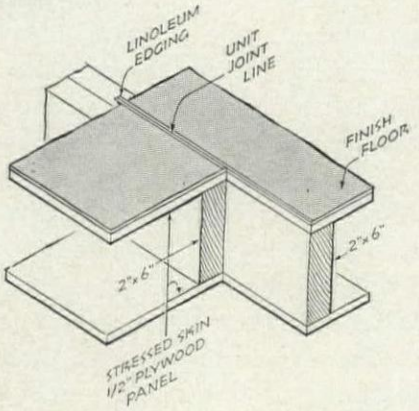
Section shows trailer-house construction, with lightweight plywood skins carrying the loads. Such construction has proved satisfactory for trailers, which have to withstand shock as well as normal loading. Comparing this method with conventional construction, even as modified for the 2-cell house, indicates potentially lower transport costs.

Not willing to decide without benefit of public reaction whether the trailer-house should look like a house or a trailer, TVA has let pilot contracts for two "house" models to one trailer manufacturer, and for two "trailer" models to another. A2 and A3 above are house models; A4 and A5, trailers. Plan, equipment, and construction are identical.

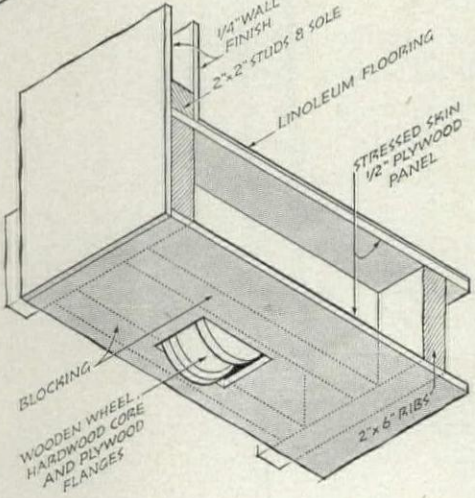
STRUCTURE are Integrated



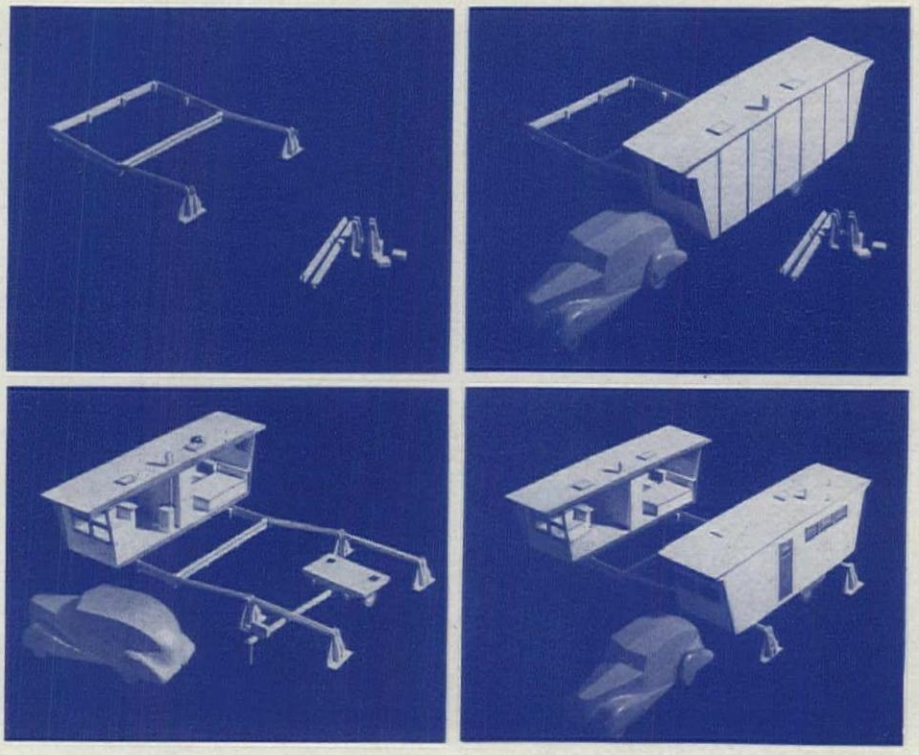
UNIT JOINT AT ROOF



UNIT JOINT AT FLOOR



TRANSFER WHEEL IN FLOOR

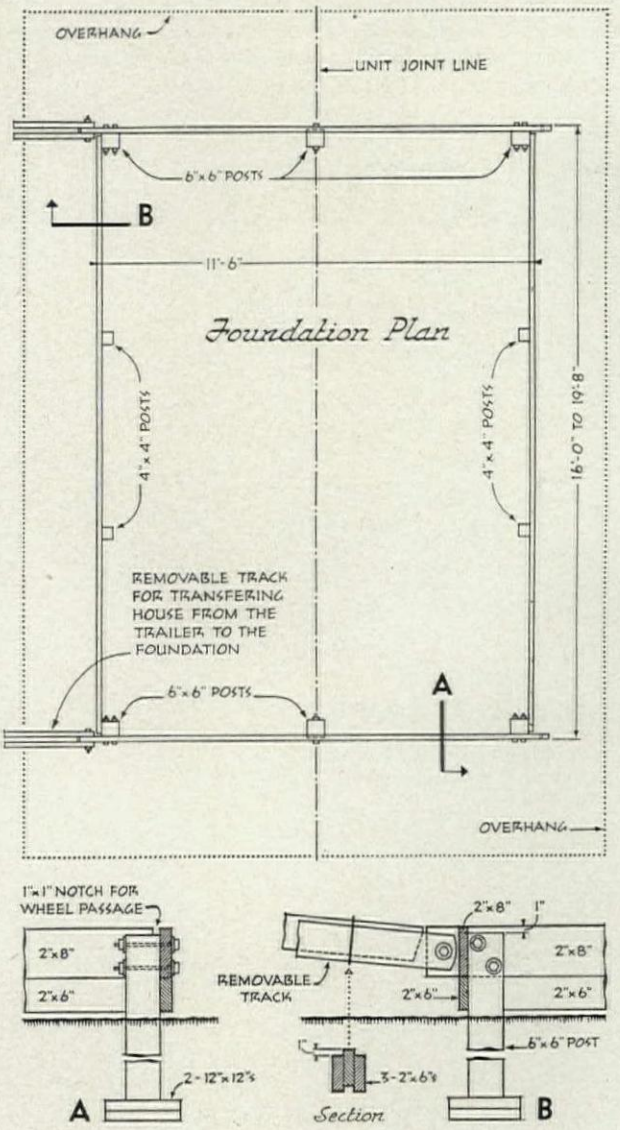


As photos of models (of the first scheme, which was later modified in accord with manufacturers' suggestions) show, first trailer-house section is driven up to a prepared foundation, jacked into position, moved over temporary rails onto foundation tracks. Same procedure is followed with second section, which is bolted to first. Roof-joint is capped, steps and entrance canopy are attached, and the housewife can move in her pots and pans. Open sides of section are temporarily covered while on the road. Assembly is expected to take driver and helper less than half a day.

appeared to meet the increasing national need to keep workers and a rapidly changing pattern of industrial activity together. Trailer construction would reduce weight (the critical economic factor in this design problem: fifteen cents a mile for transporting each house section, if built like a trailer in size and weight, versus thirty cents a mile for transporting each "demountable" house section). Such a trailer-house was designed with floor and roof of stressed-skin plywood panels and side walls two inches thick.

Preliminary plans went to nine trailer manufacturers for comment. Four replied in detail. The idea appeared practical; potential plant capacities were remarkable, and costs promised to be lower than for comparable units of standard frame construction.

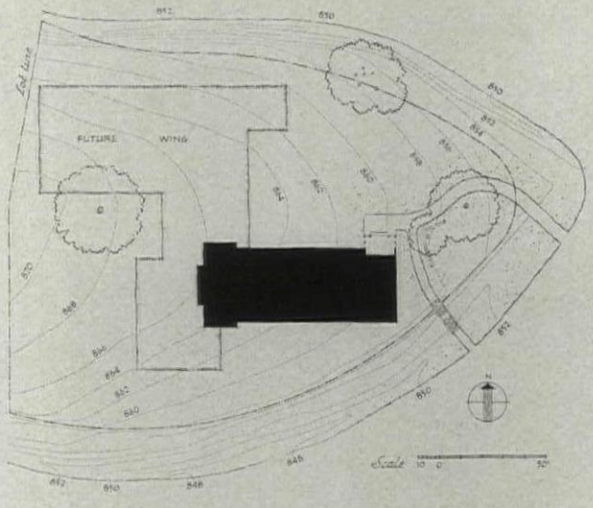
On the strength of these replies, plans were restudied, and two new designs, each with two variations, resulted. To introduce a novel architectural form is always a hazardous undertaking. Once established, however, the form becomes a normal feature of the landscape, accepted by the public as reasonable and understandable. It therefore seemed wise to make a thorough test of the most promising alternatives before resolving a basic question of design. These experimental units are now under construction, and are scheduled for delivery in July.



designed by PIETRO BELLUSCHI

of A. E. Doyle & Associate, Architects, Portland, Oregon

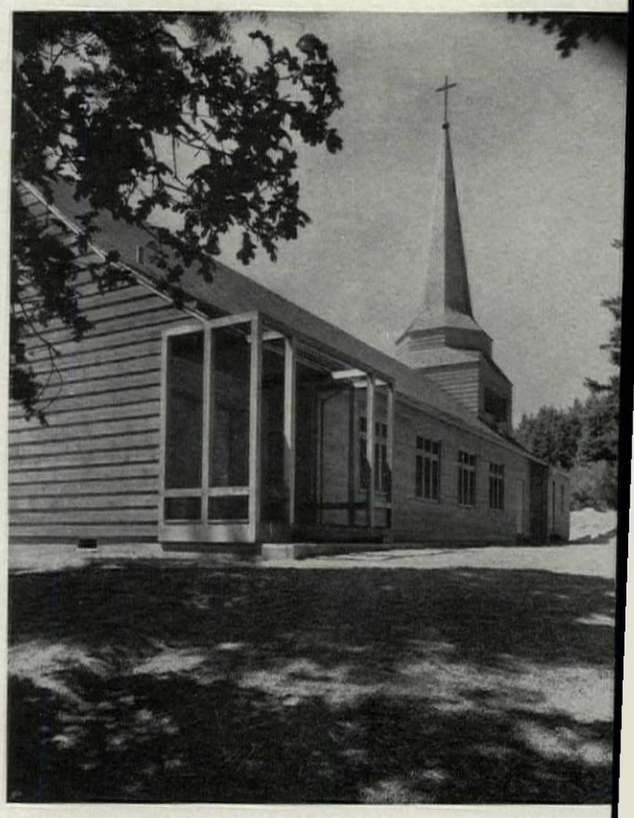
"An Architect's finished work speaks more forcibly and with less charity than his most ingeniously expressed theories. The tremendous impact of war may have changed what in our mind appeared to be a trend toward a more human architecture—almost toward a new romanticism —into an architecture whose aspects will be only of a social and economic order. It may be hoped that the two will eventually go hand in hand." **P.B.**



ST. THOMAS MORE CHAPEL, PORTLAND, OREGON

SINCE the death of A. E. Doyle in 1928, the firm he founded in 1905 has continued as a partnership of three men: W. H. Crowell, F.A.I.A., D. M. Jack, business manager, who were early associates of Mr. Doyle, and Pietro Belluschi, who has been chief designer since 1927. During this time, the design character of the work coming out of the office has changed decisively. Maintaining former standards of sound construction, a number of residences and institutional buildings have appeared in Portland and in the Oregon region, designed in the Doyle office, which are important and distinguished examples of modern architecture.

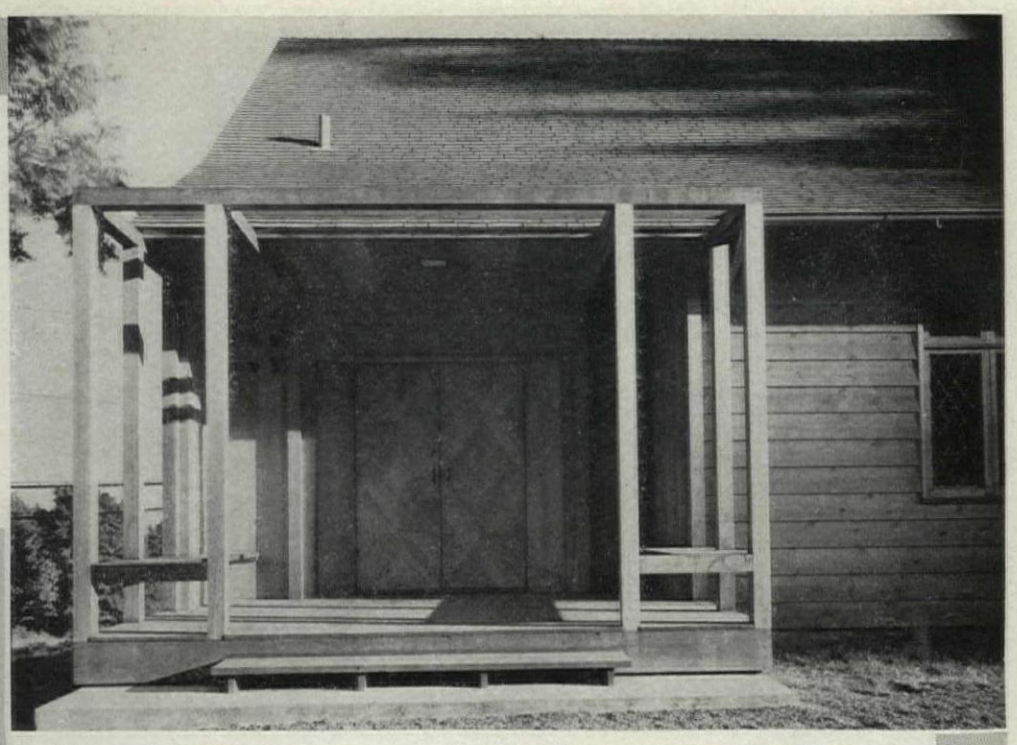
Chiefly responsible for this design quality is Pietro Belluschi, partner in the Doyle firm since 1933. Belluschi, born in Ancona, Italy, in 1899, received most of his education in Italy. He received his degree of Doctor of Architectural Engineering from the School of Application for Engineers in Rome in 1922, after completing the general courses at the University of Rome. He came to this country to study engineering at Cornell on an exchange fellowship, and, after graduating in Civil Engineering, decided to remain in America. He entered the Doyle firm in 1925, at the age of 26, where his abilities as a designer were quickly recognized. While in the West his natural artistic interests and talents were enlarged by further study and travel. Today, mature at 43, Belluschi is one of those rare architects with engineering training, who at the same time has a strongly developed artistic sensibility. Belluschi passionately loves **architecture as an art form,** as a part of his interest in all the plastic arts, and feels vividly the need for endowing material structures with the qualities of grace and imagination.

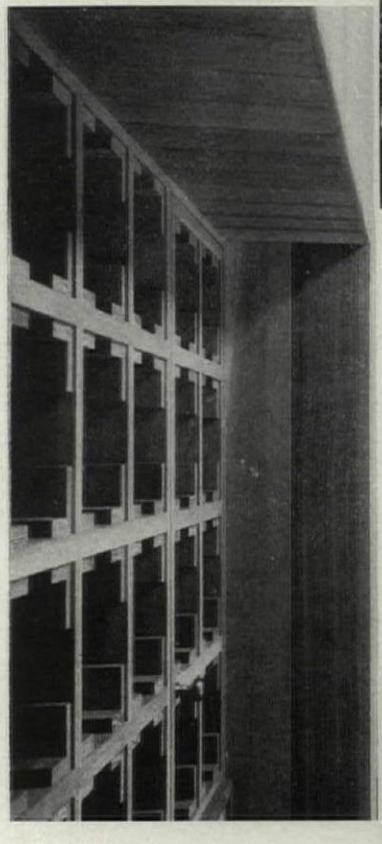


The money available and the particular purposes and uses of the building determine the starting point of the design process. From elementary functional considerations come the decisions made about space relationships and the materials to be employed. Beyond this there is a concern about subtler matters of expression—how to arrive at the form most satisfactorily revealing the meaning of the structure in terms of line, color, texture, shape.

The effect of simple directness achieved in a number of these recent buildings illustrates the meaning of **simplicity** as Belluschi conceives this important quality. It is a positive thing—a harmony of many elements richly unified—not the mere negative elimination of elements. Withal there is an impatience with the banal, and with lazy fuzziness of detail; in their place is a positive delight in clean lines and fresh smooth planes. Penetrations of one line or plane into others are frequently found in this work—contributing to the effect of tying-together, of organic simplicity.

Variety and masterly handling of materials are other qualities encountered in this recent work. In commercial and institutional buildings, frequent use is made of stone in large slabs (especially marble) for which Belluschi has retained the Italian's traditional fondness. Most of the residences show the designer's appreciation for the beauty of the woods available in such abundance in the Northwest region. Fir, spruce, birch,

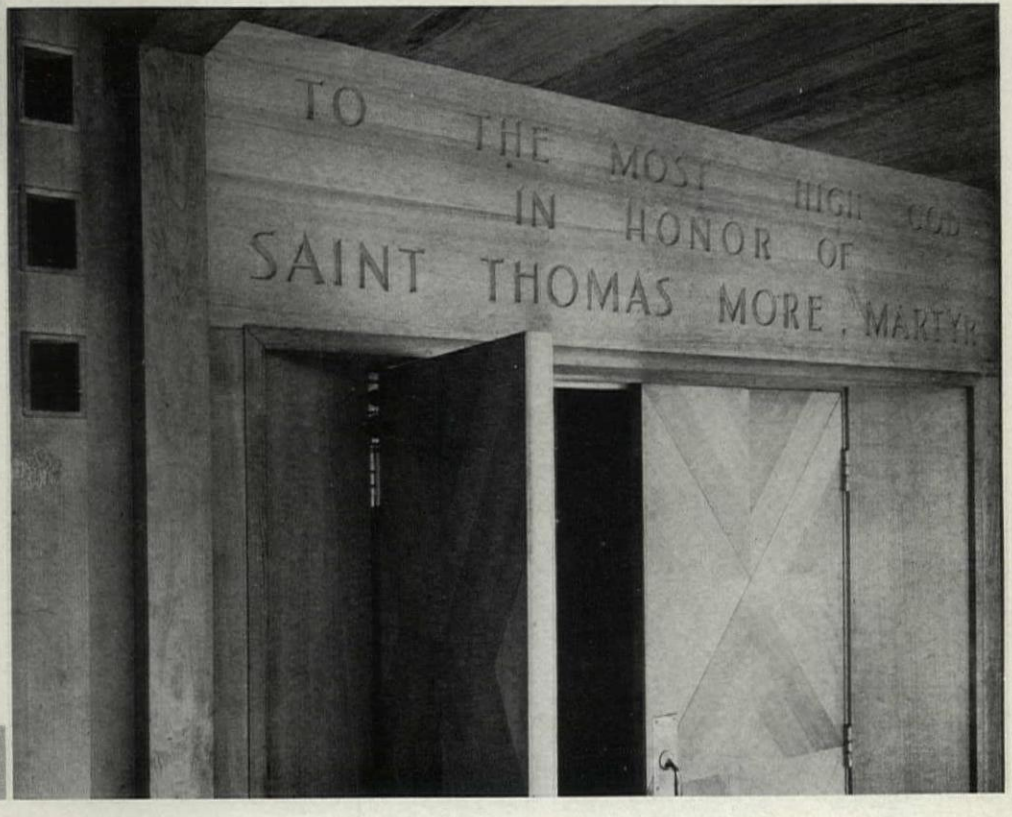


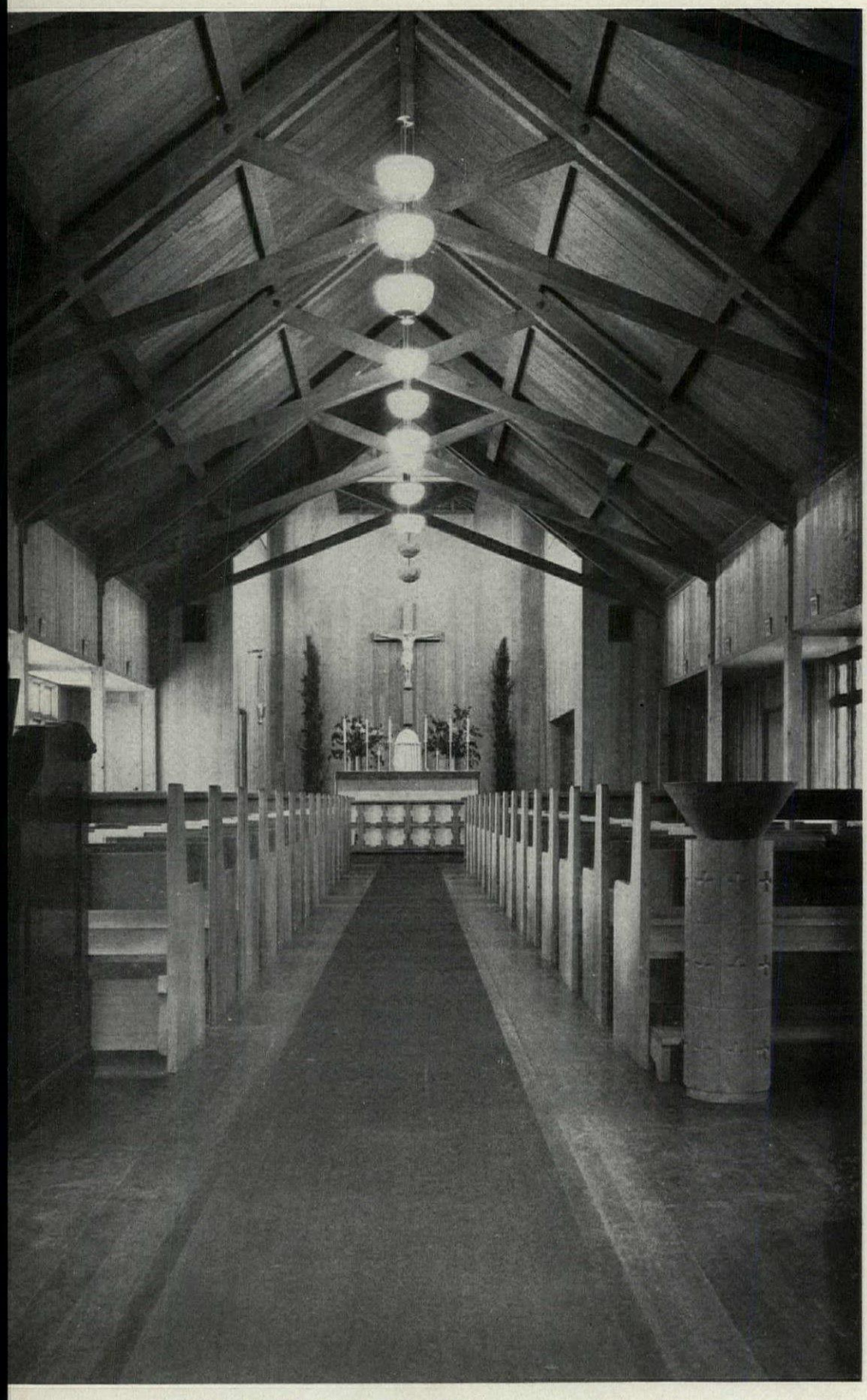


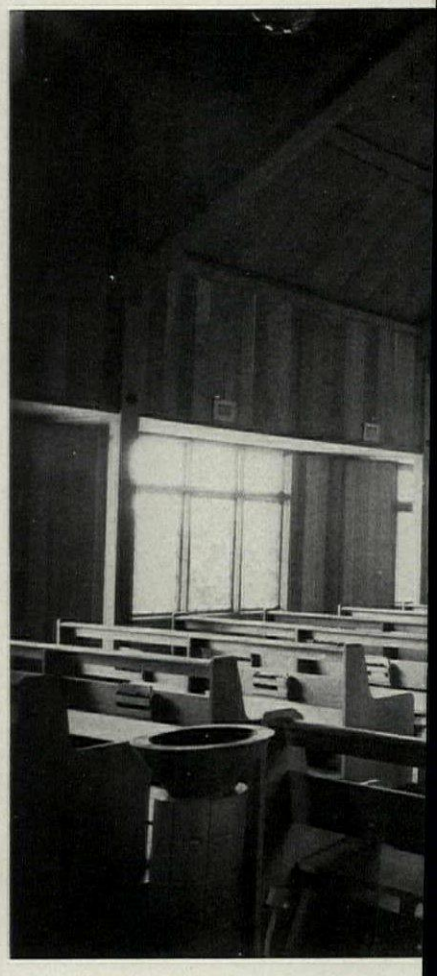
and hemlock, left natural or simply treated with preservative, attain an often surprising elegance as finish materials for walls and ceilings. At the same time these wooden houses with their low sloping roofs come into satisfying harmony with the Oregon setting of tall trees and rolling hills. They weather and blend in color with the environment with the same charm as do the vernacular wooden barns of Oregon.

Only recently has the quality of this work begun to get considerable national recognition, but for the past several years it has been a source of stimulation for a new generation of young Northwest architects.

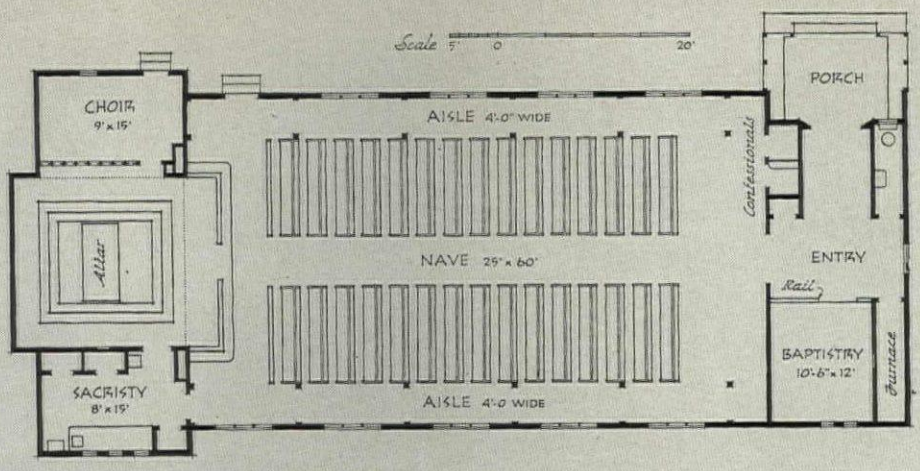
WALTER GORDON

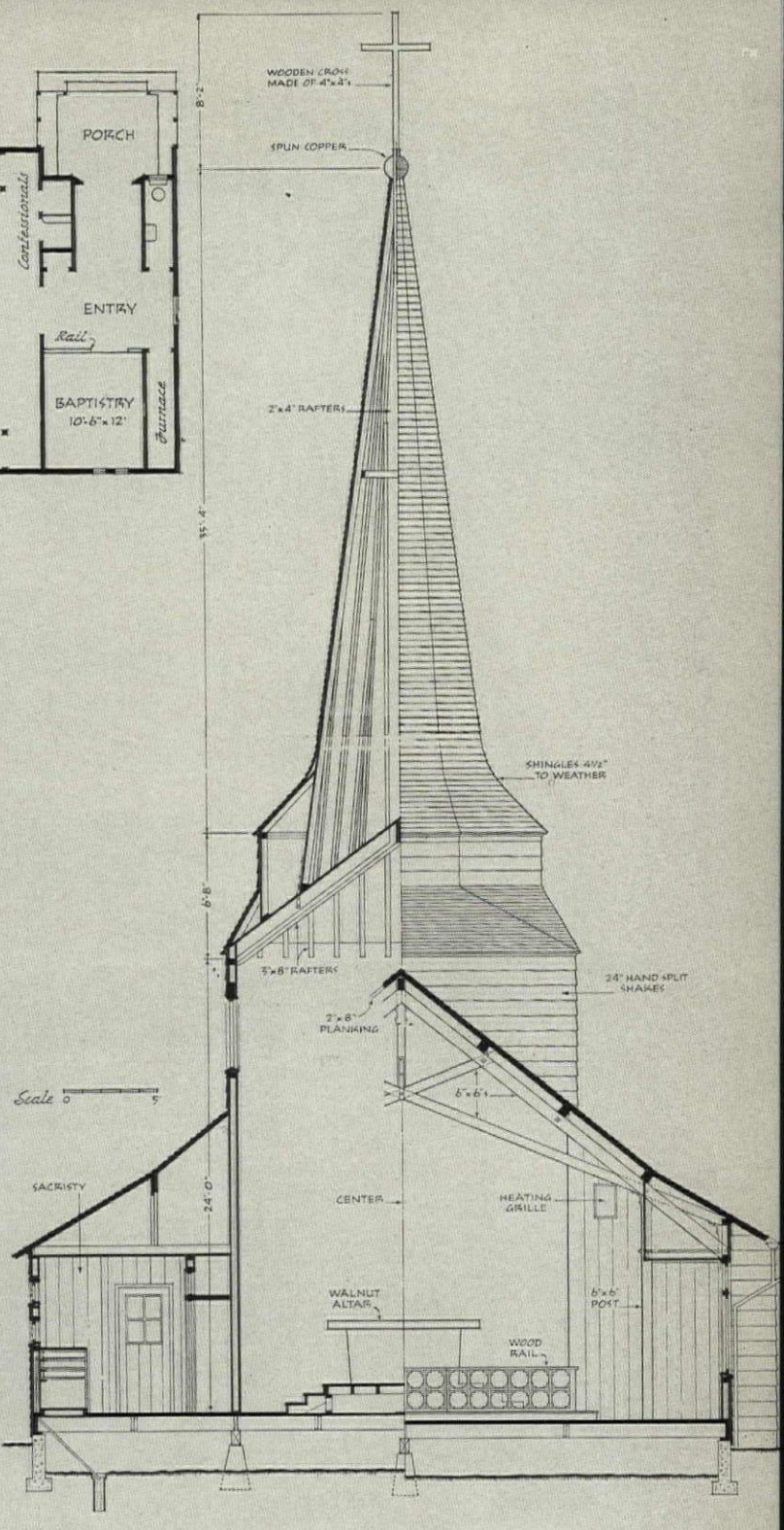


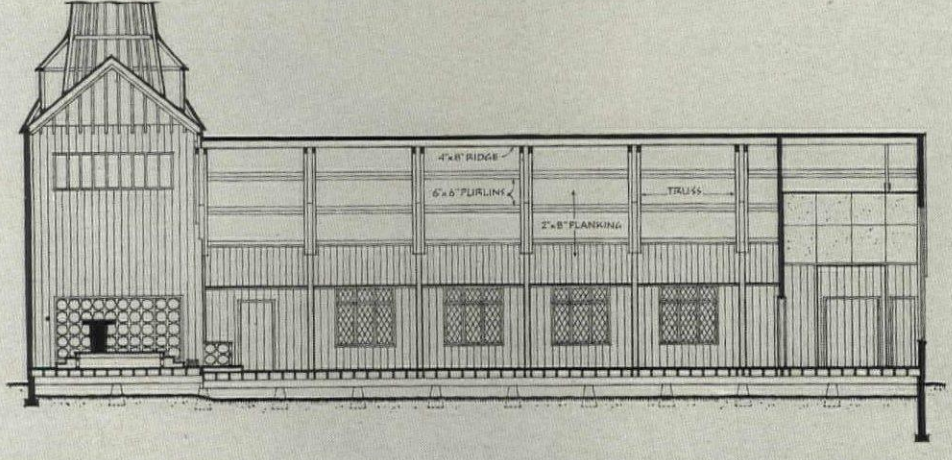




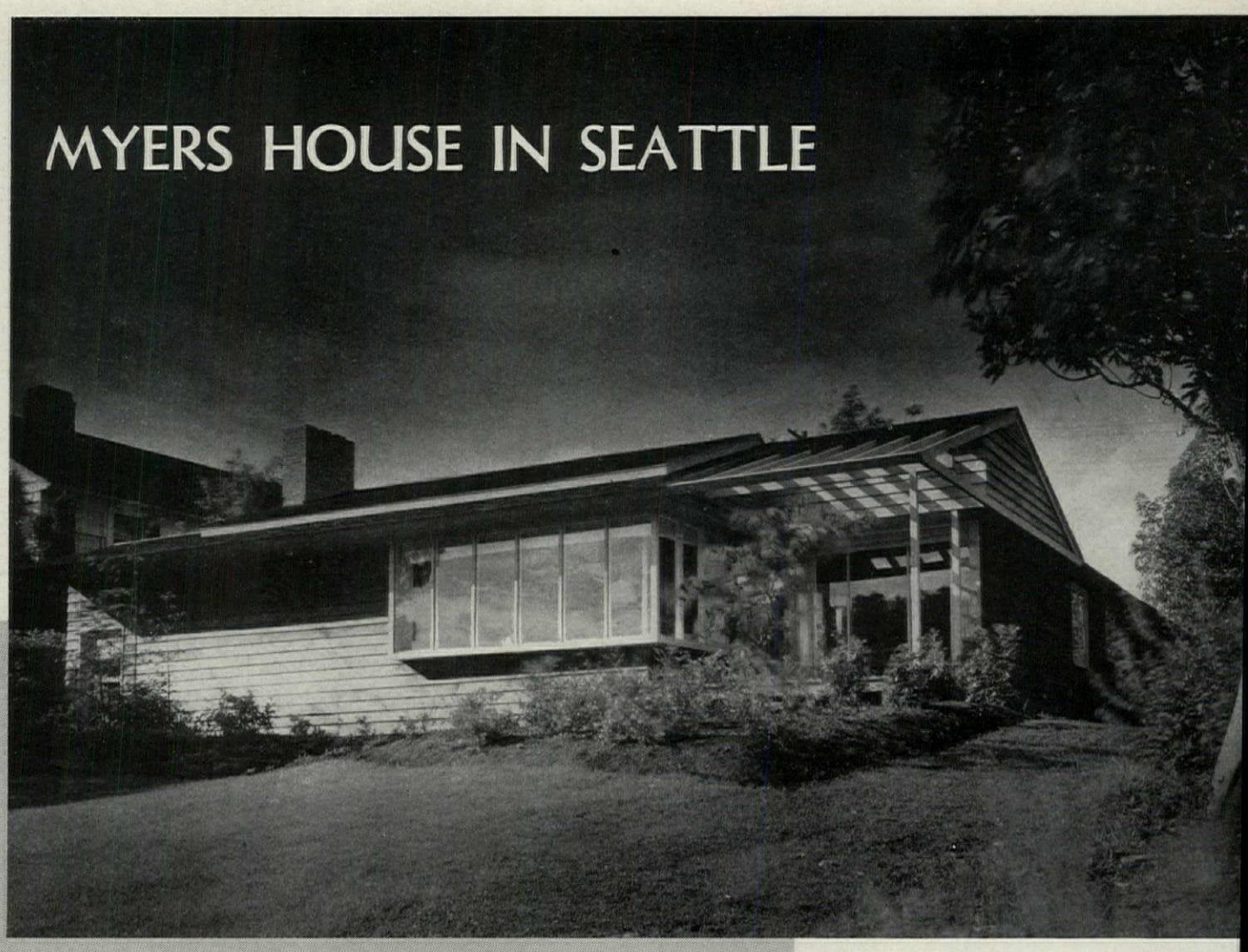
The ST. THOMAS MORE CHAPEL is an example of the economical and straightforward use of local materials, the handling of which is probably the outstanding characteristic of Belluschi's design ability. The sources of natural lighting were carefully studied to give dramatic emphasis to the SANCTUARY (above). All interior cedar walls were left unfinished. The rough knotty pine boards used on the exterior (see photographs on pages 60 and 61) were given one thin coat of pigmented lead and oil

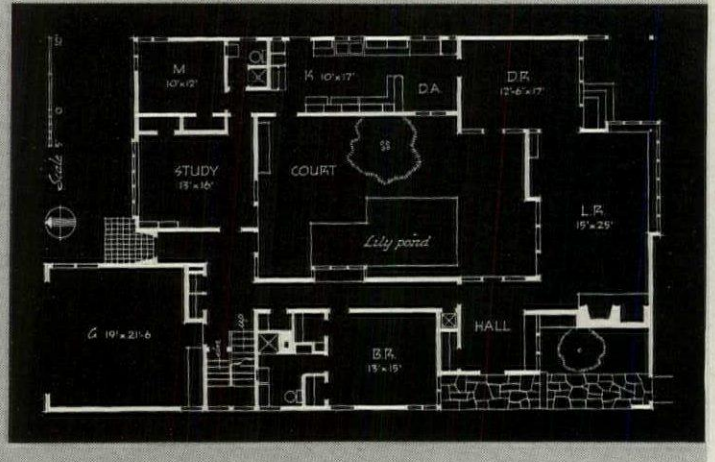

Scale 5' 0 20'
CHOIR
9'x15'
AISLE 4'-0" WIDE
PORCH
Confessionals
Altar
NAVE 29'x60'
ENTRY
Rail
BAPTISTRY
10'-6"x12'
Furnace
SACRISTY
8'x15'
AISLE 4'-0 WIDE


WOODEN CROSS MADE OF 4"x4"s
SPUN COPPER
8'-2"
2"x4" RAFTERS
55'-4"
SHINGLES 4½" TO WEATHER
6'-8"
5"x8" RAFTERS
24" HAND-SPLIT SHAKES
2"x8" PLANKING
Scale 0 5'
6"x6"s
SACRISTY
24'-0"
CENTER
HEATING GRILLE
WALNUT ALTAR
6"x6" POST
WOOD RAIL

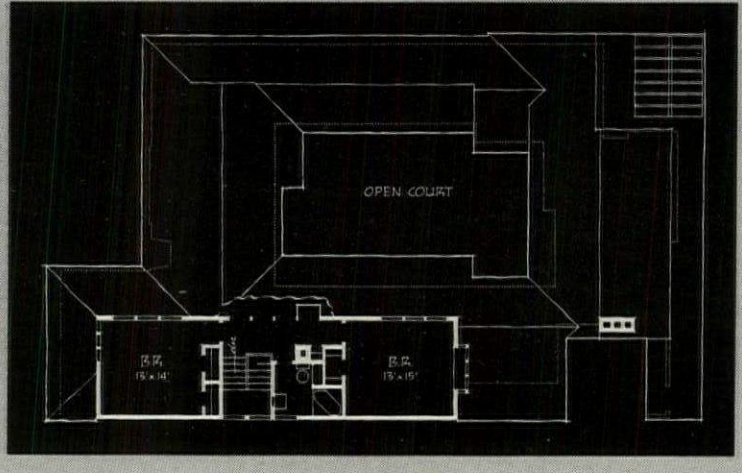

4"x8" RIDGE
6"x6" PURLINS
TRUSS
2"x8" PLANKING

MYERS HOUSE IN SEATTLE

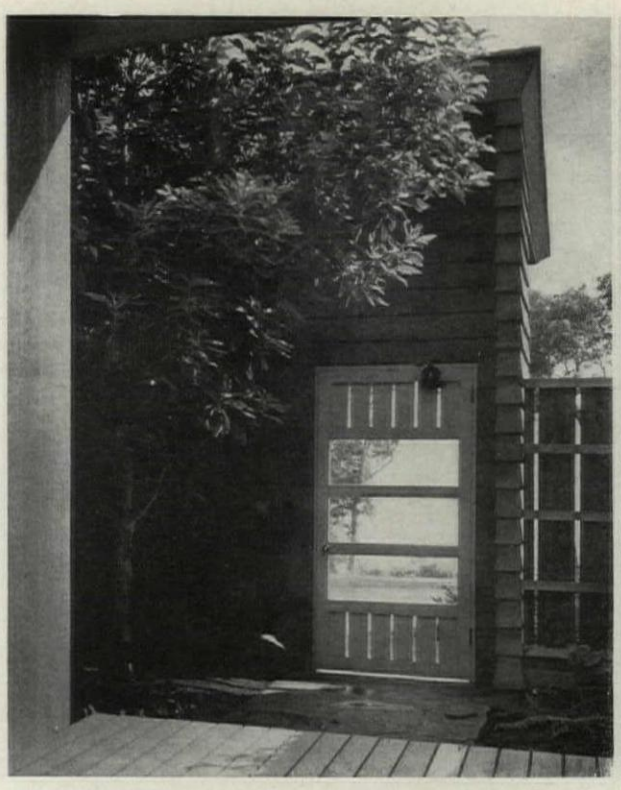


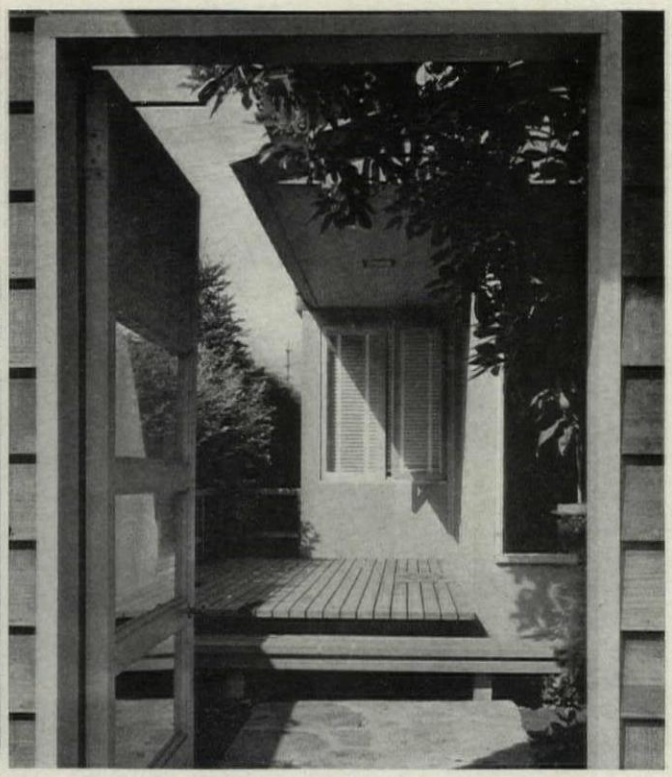


In designing the Myers residence, Belluschi was faced with the problem of fitting a fairly large home in a 60-foot wide lot without destroying too many of the beautiful Madrona trees on the lot. (Photographs by Erven Jourdan)

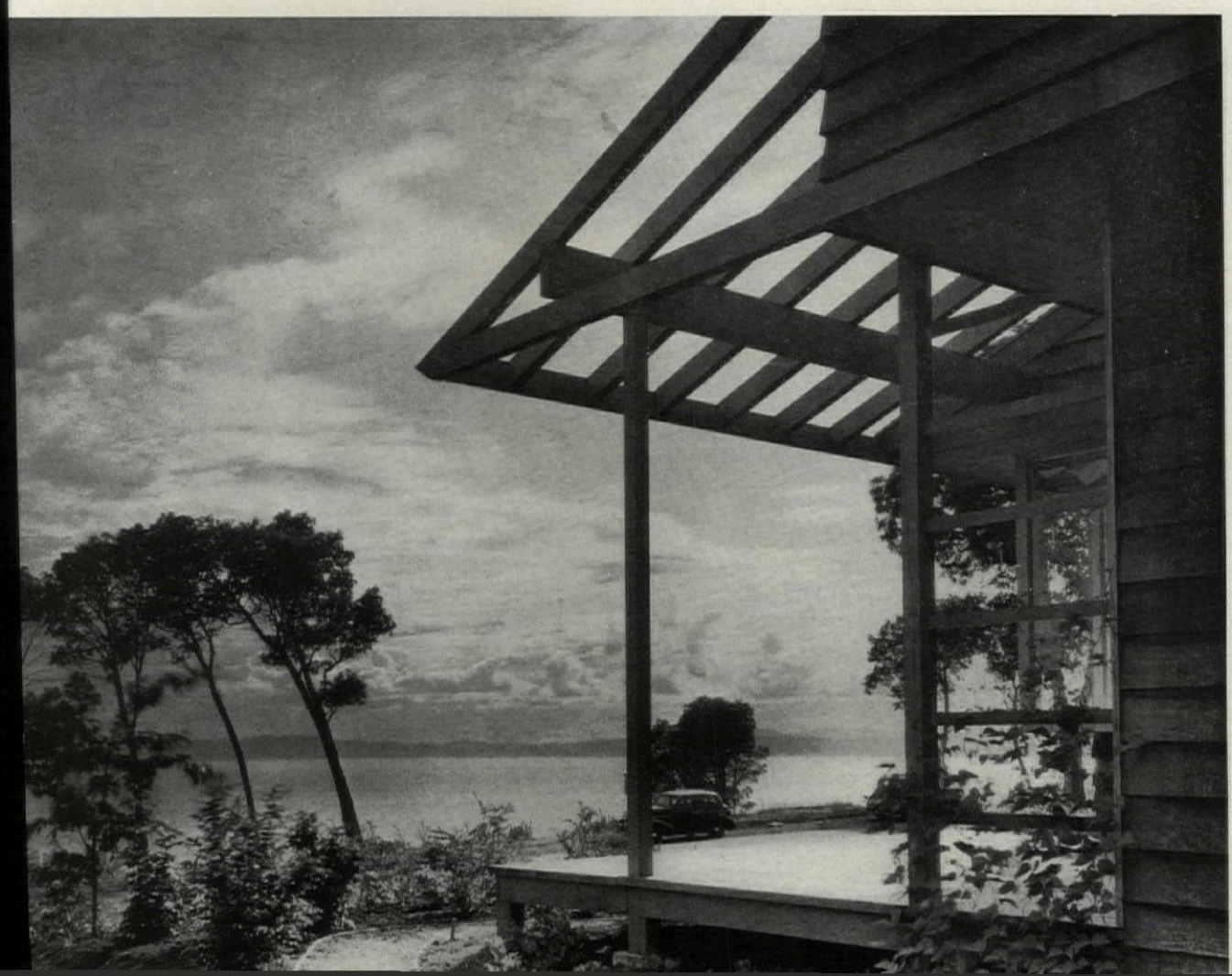


The Myers house was designed around an open court and lily pond

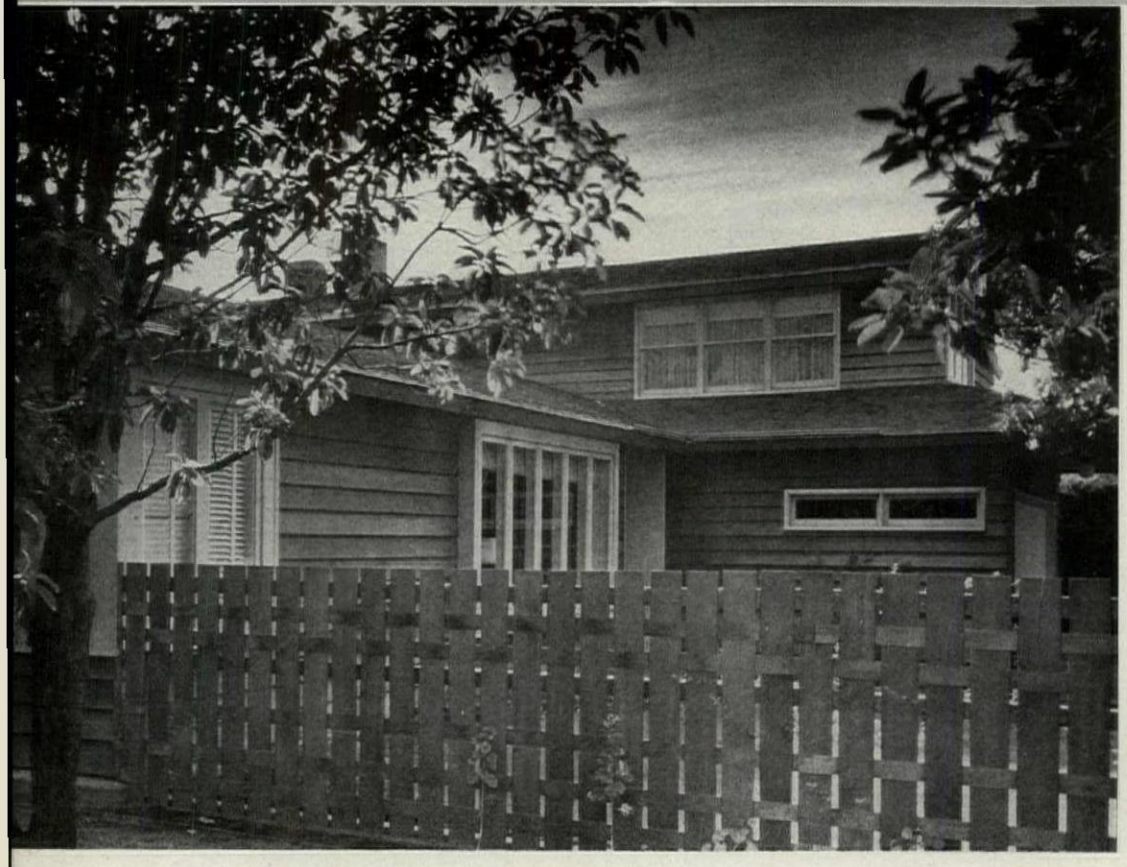




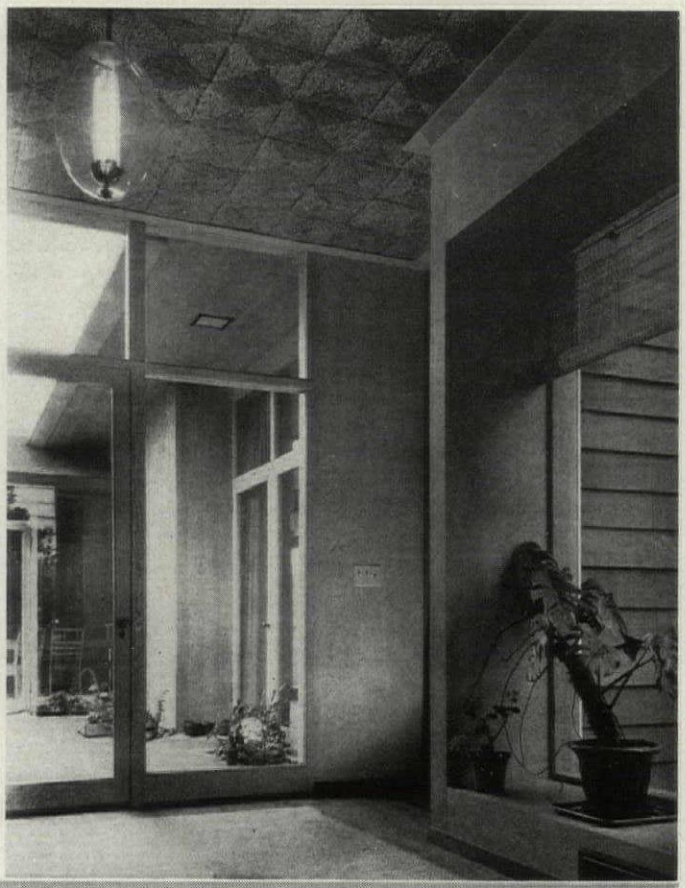
From the Corner Porch (photograph below) there is a spectacular view of the far away Olympic Mountains and Puget Sound. The two photographs above show a detail of the gate and protected dooryard leading to the Entrance Hall

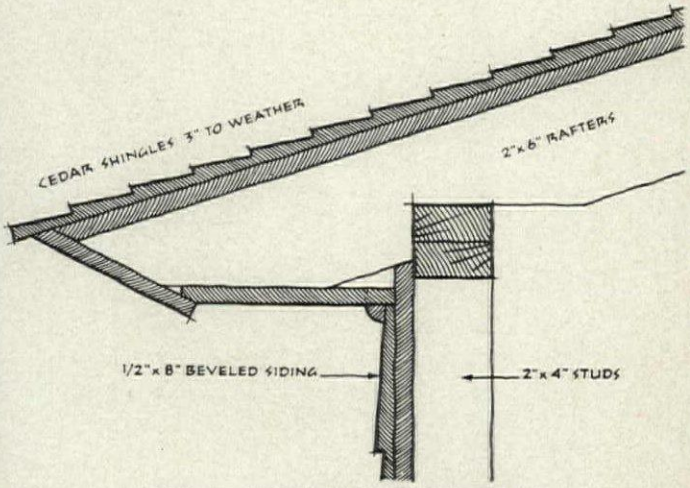


The COURT (photograph at left and below across-page) is sheltered from the ocean winds and is, in reality, an extension of the Living Room. Together with the Lily Pond, the court offers a peaceful relief from the dramatic view seen through the main window (see photograph on page 64)

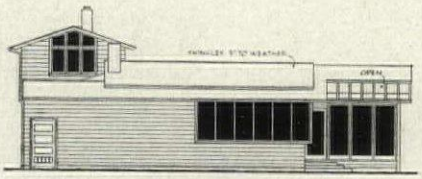


Belluschi's appreciation for the beauty of the woods available in such abundance in the Northwest region is reflected in the Myers house. Note his handling of the overhanging roof, and the basketweave pattern of the fence (at left). Wood is left natural or treated only with a preservative

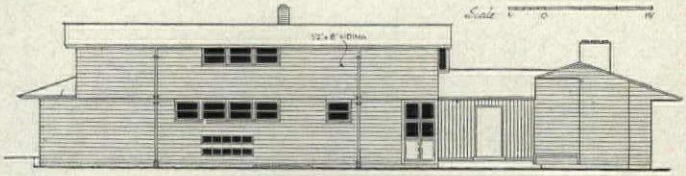




CROSS SECTION AT ROOF OVERHANG



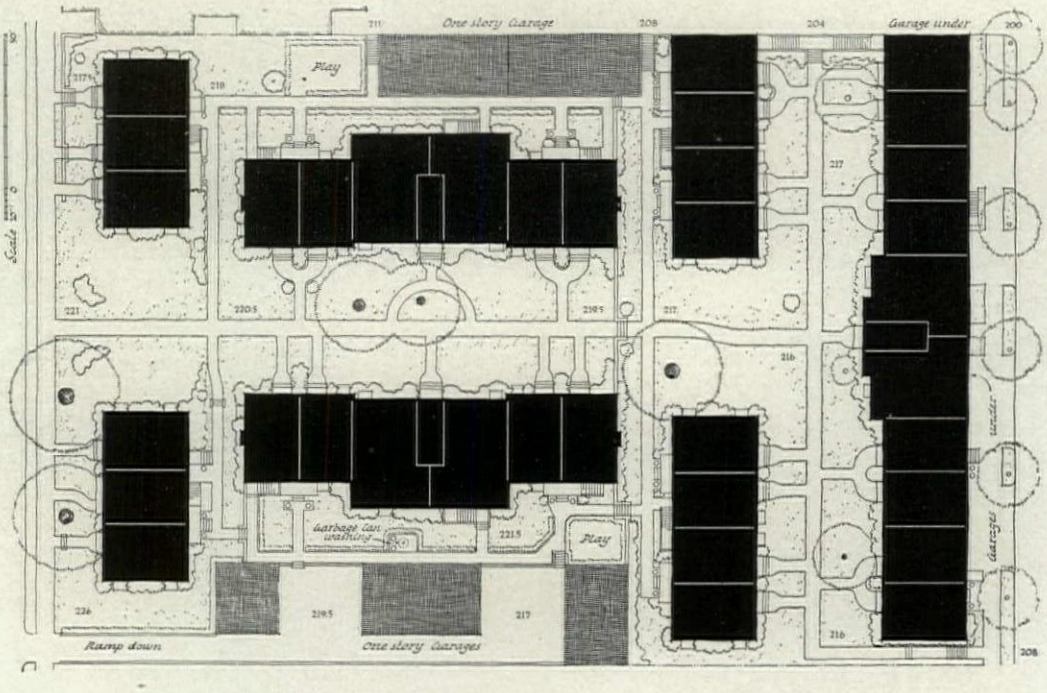
SOUTH ELEVATION

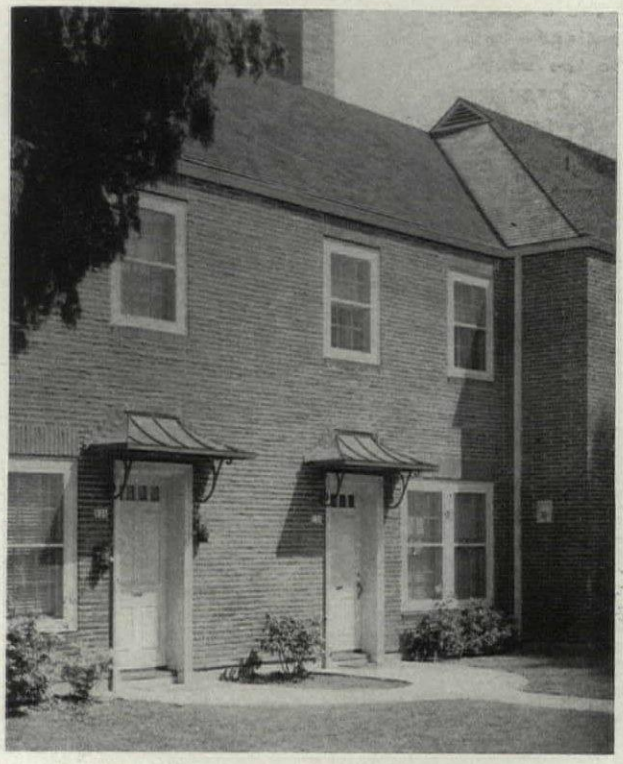


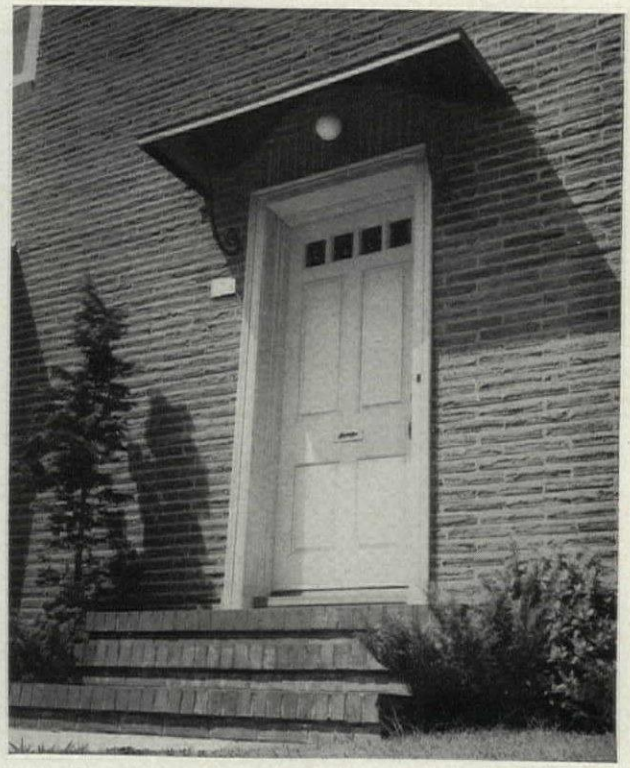
WEST ELEVATION

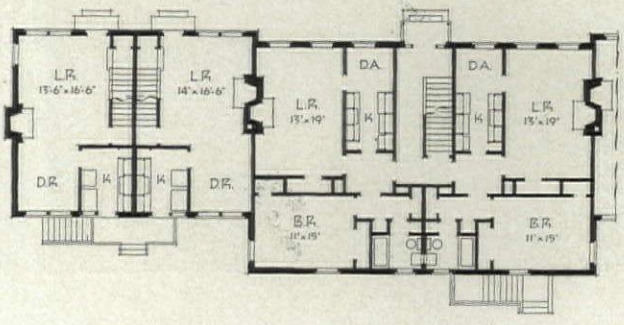
APARTMENT HOUSING

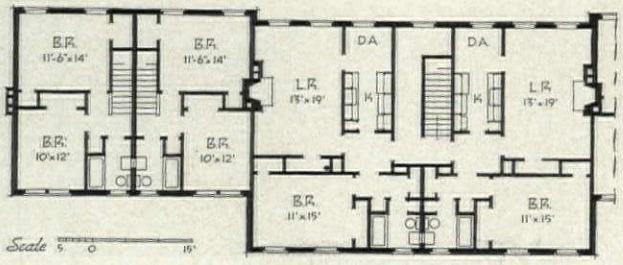
Principal design problem in the VISTA AVENUE HOUSING PROJECT (an FHA project) was the coordination of the endless rules and regulations promulgated and interpreted by different government agencies. The plans and layout were developed as a result of government suggestions. The exterior reflects the influence of Belluschi's subtle attention to matters of expression—how he arrived at the form most satisfactorily revealing the meaning of the structure in terms of line, color, texture, and shape. The owner was interested in having a development which would endure for the next several years and was willing to spend enough additional money to have a brick exterior. The "brick" used on the exterior is actually hollow tile, scored and broken into four pieces. Porch detail across-page. (Photographs by ErvenJourdan)





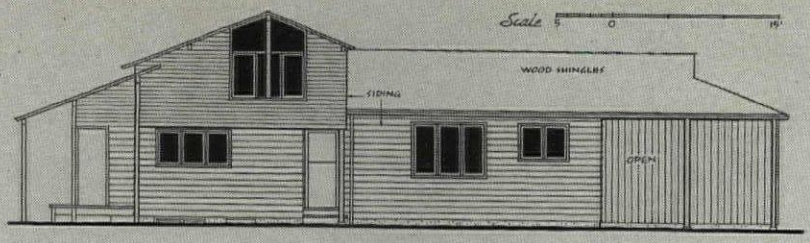


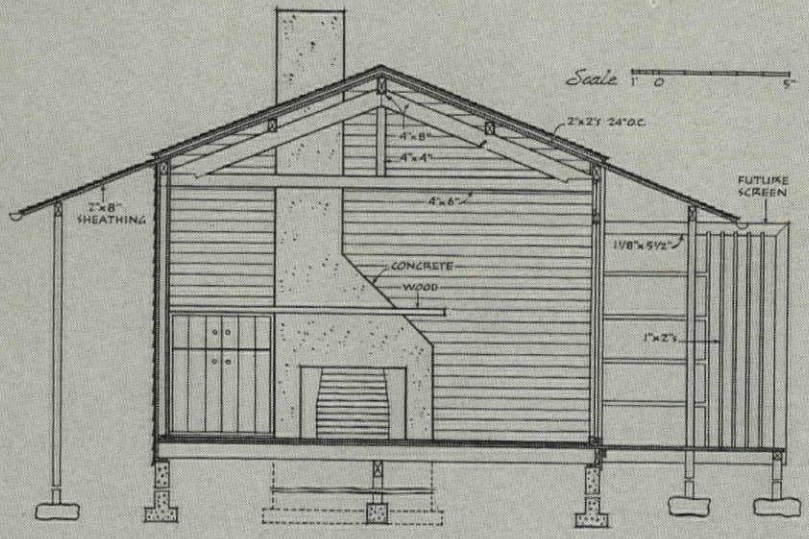

L.R.
13'-6" x 16'-6"
L.R.
14' x 16'-6"
D.R.
K
K
D.R.
B.R.
11' x 15'
D.A.
D.A.
L.R.
13' x 19'
K
K
L.R.
13' x 19'
B.R.
11' x 15'


B.R.
11'-6" x 14'
B.R.
11'-6" x 14'
B.R.
10' x 12'
B.R.
10' x 12'
D.A.
D.A.
L.R.
13' x 19'
K
K
L.R.
13' x 19'
B.R.
11' x 15'
B.R.
11' x 15'
Scale 5' 0 15'

THE JOSS

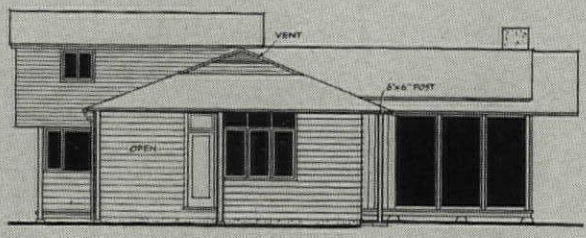
The plan was determined by the owners' desire to enjoy to the fullest extent the views located in opposite directions—one, the great mountains to the north; the other, the beautiful valleys to the south. Belluschi made an interesting composition with an existing clump of large maple trees. The exterior walls were built

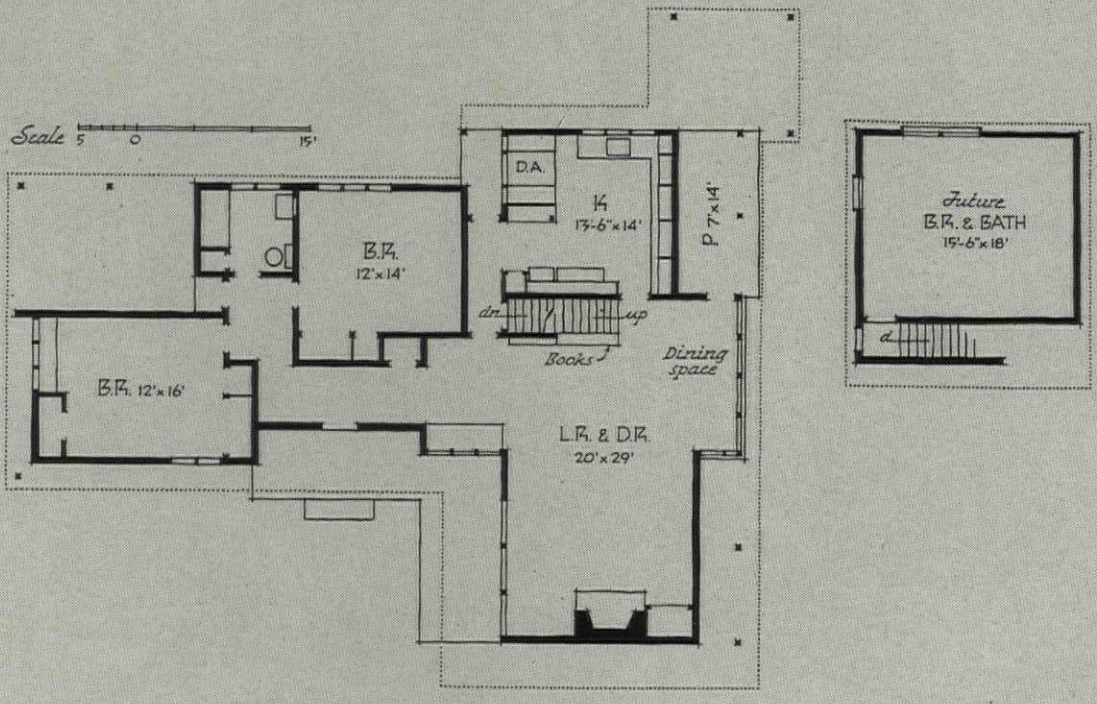




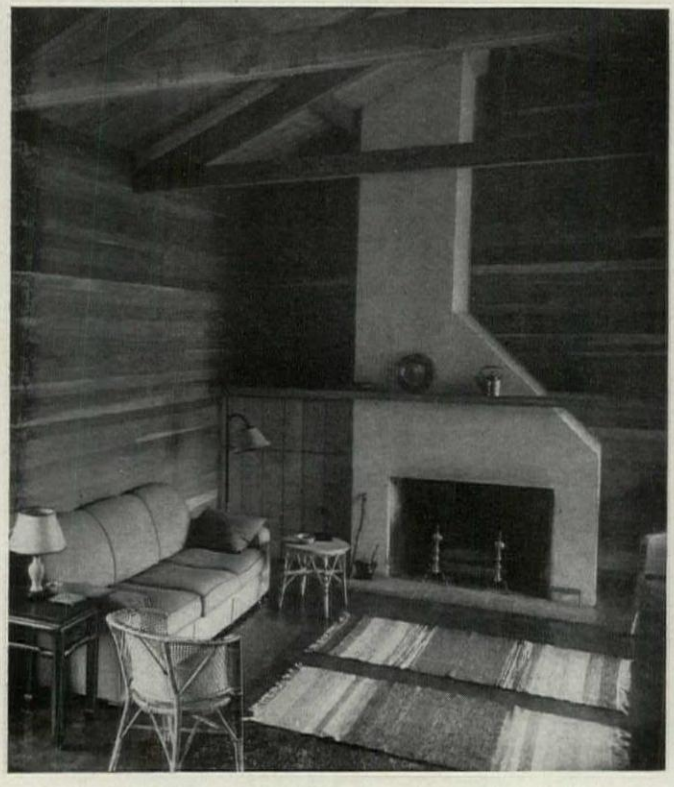
HOUSE

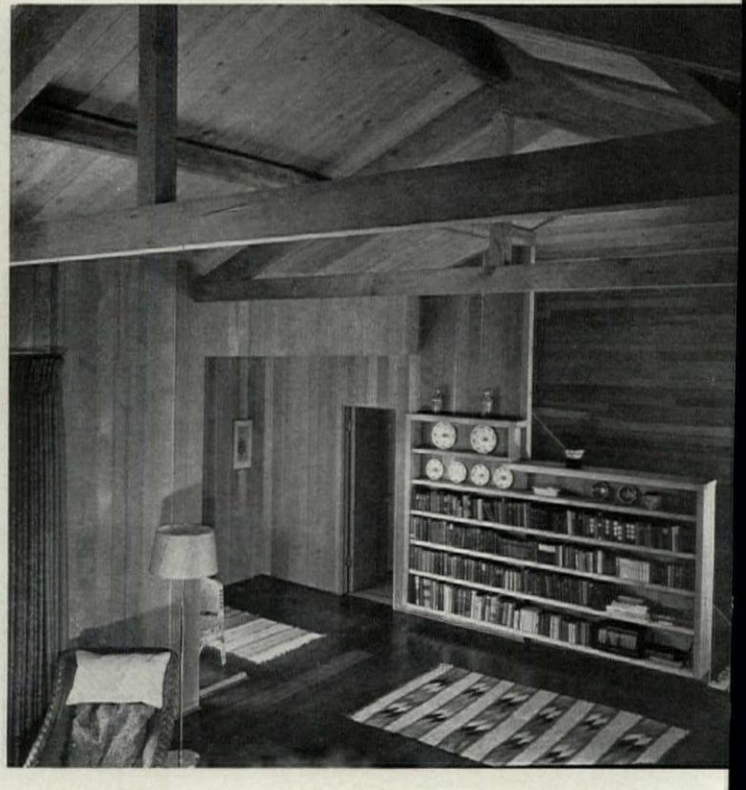
of rough spruce siding to which was applied one coat of a very weak solution of iron chloride and one coat of preservative





All of the interior materials in the JOSS RESIDENCE, including the white sand plaster in the Bed Rooms, the cedar walls in the Living Room (photographs on this page), and the hemlock ceiling were left unpainted or unfinished, with the exception of the Kitchen and Bath Room. (Photos by Erven Jourdan)





FOR BETTER SIGHT: WHITE FACTORY FLOORS

By DON GRAF

ADAPTING American mass-production methods to airplane manufacture has introduced many problems. Among these, the difficulty of providing constant, high intensity, glareless light during continuous day-and-night operations has several ramifications. First, much work is done on vertical surfaces, and it has been ascertained that the average lighting system may not light vertical surfaces satisfactorily.

Second, work has to be done on the underside of assemblies, which are in constant shadow. Third, work is done at levels up to 18 feet or more, not at bench level only. Fourth, the objects worked on are often brilliantly reflective. Portable lights solve some difficulties, but also have drawbacks.

The conversion of aircraft factories after the war to other types of processes will, in many cases, have identical requirements for underneath or vertical illumination.

THE FLOOR A REFLECTOR

Some recent bomber plants designed by the Austin Company† have all interior surfaces as white as possible—ceilings, walls, and *floors*. In large working areas the end-walls may be 2,000 feet away from a worker and the side-walls 150 feet away, but reflecting floor and working plane are everywhere the same distance apart. These help to reflect and diffuse light. In one which has been studied by competent lighting engineers, the general level of illumination provided by the fluorescent lighting system was designed for 36.5 footcandles (horizontal) in the white-floored assembly area. Their tests showed an average of 36.4 footcandles after lamps had burned more than 1500 hours. There was no significant variation at working levels up to 18 feet above the floor. Furthermore, the vertical light level was 20.5 footcandles—a high average.

In another portion of the same plant, where the only difference in design was use of a gray cement floor, the horizontal level was 36.2 footcandles—almost the designed quantity—but vertical footcandles were reduced to 17.4. To quote the engineers. "The extremely high vertical illumination level in the assembly section is

† Credit for this new technique is due not only to the manufacturers of the material but also to The Austin Company who pioneered its use.

Section of the white-cement-floored assembly line of a huge new bomber plant. Note the absence of portable lighting equipment; elimination of most shadows; high-level, diffused lighting

In this bomber plant, neat white cement was rubbed into the surface. Because of the diffused lighting, specular reflection from such units as the highly polished wing in the foreground is reduced

partially due to the white cement used on the floor. The reflection factor of this cement . . . is 44 percent." In another part of their report, they state that the gray floor factor is 27.4.

These figures, attained under practical working conditions, are somewhat lower than laboratory test results found by C. W. Muhlenbruch at Carnegie Institute of Technology.* Here, however, there was laboratory control of mixing, placing and finishing the material, and of the tests. Professor Muhlenbruch's tests were made in connection with the use of white cement curbs for highways; but certain conclusions which he reached seem important.

PROPORTIONS AND FINISH

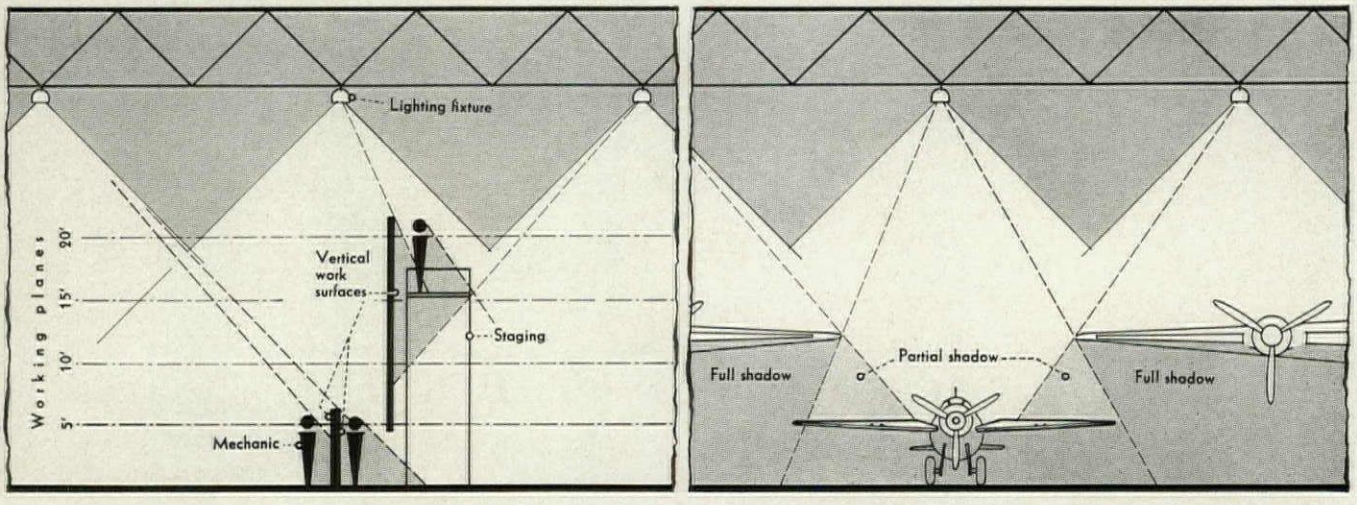
In the first white-floored aircraft plants, neat white cement was merely rubbed into the slab surface before the concrete had set. In more recent examples, a 3/8-inch surface of 1:2½ white cement and white silica sand, plus a hardener, was bonded to the slab by placing the topping before the base course had taken final set, but when it was hard enough to walk on without showing appreciable marks. Mortar was deposited from wheelbarrows, spread by hand shovels, and struck off with a wood templet. After initial set, the surface was machine-troweled and finished with celluloid trowels.

The surface was immediately sprayed with two coats of 1:4 sodium-silicate water solution, low in calcium to prevent staining. During curing, the floor is protected with weatherproof paper, sealed at the laps with non-staining latex cement, and covered with 1 inch of clean dry sand. These were removed when construction was complete, and the surface was swept and machine-polished.

This procedure bears out in practice the most important conclusions derived from the Carnegie tests. As they affect floor construction, these were: **1**, Water-cement ratio influences reflectivity; 7 to 7½ gal. per sack of white cement produces the "whitest" con-

*"Progress Report on Reflectivity of White Portland Cement Concretes," by C. W. Muhlenbruch, Carnegie Institute of Technology; "Concrete," Jan. 1942. Also data presented to the American Society for Testing Materials, June, 1942.

Diagrams indicate the way workmen's bodies and the objects on which they work cast shadows which interfere with production. This is true to some extent no matter what the type and location of lighting fixtures. White cement floors help to reduce shadows by reflecting light upward



A portion of a mechanized sub-assembly line demonstrates need for glareless, high-intensity illumination. Top, bottom, and vertical surfaces are worked on. Skilled hand labor can compensate for poor lighting; but for mass production, with high labor turnover and less dependable labor due to lack of time for training, near-perfect lighting is absolutely essential if hand-produced results are to be equalled at low cost

crete. **2**, White sand produces concrete averaging 12 per cent higher reflectivity than river (light brown) sand (but concrete tested contained coarse aggregate as well as sand). **3**, Trowel finishing raises reflectivity 20 per cent on the average. **4**, Moist-curing reduces reflectivity from 10 to 20 per cent. **5**, Adding dispersing agents seems to have little value although by increasing workability they might be expected to increase reflectivity. It is possible, also, that the slightly increased reflectivity attained by using white sand might be offset by high local cost of white sand. Most important is use of clean sand, free from matter which might discolor the concrete. Professor Muhlenbruch believes, with cements available today, there is little possibility of producing objectionable glare unless the floor is kept ground and highly polished.

(Continued on page 80)

FOOTCANDLES OF ILLUMINATION IN A TYPICAL PLANT

Measured at 3 ft. above floor[1]

CONDITION	Downward Illumination	Upward Illumination
Design requirements	35	10 (estimated)
Results:		
white cement floor, new	45	12
gray cement floor, new	40	8
white cement floor, after use[2]	37	10
gray cement floor, after use	31	6
white cement floor, under airplane wing 12 feet high, 10 feet wide	15	7

[1]—Light source 40 ft. above floor

[2]—Reduction for floors in use is apparently partly due to loss of efficiency at the source of light. Data from Portland Cement Association and Frank Clayton, Plant Engineer

REFLECTIVITY OF WHITE AND GRAY CEMENT FLOORS

(% of original light reflected)

I —PRACTICAL EXPERIENCE
(actual installations)

White cement and white silica sand	44%
Gray Portland cement concrete	27.4%

II—LABORATORY TESTS
(Carnegie Institute of Technology)[1]

Neat white cement	82%
White cement sprinkled on gray concrete	78%
White cement concrete, white sand	70-73%
White cement concrete, light brown sand	62-65%
Gray Portland cement, white sand	33%
Gray Portland cement, light brown sand	20%

[1]—C. W. Muhlenbruch

(Continued from page 79)

USE, MAINTENANCE, AND COSTS

Assembly lines, where operations are complex—involving work on vertical surfaces and bottoms of objects—and yet "clean," can benefit greatly from use of white cement floors. In stock aisles, where bin faces are vertical and consequently vertical illumination is important, white cement floors would seem logical. All six inside surfaces of motor test cells, in which aviation motors are operated on test blocks while inspectors watch through ports, might well be as highly light-reflective as possible; the problem here is to illuminate evenly every part of the motor being tested. White cement floors have also been used for areas where precision tooling is done.

Ease of seeing is improved in many operations because the white floor provides a better background against which the visual task is performed. Dropped tools are more easily found on a white floor than on a darker floor.

Where "dirty" operations such as motor repair are carried on, white floors are of course not advisable. But the principle of the white cement floor remains applicable to many kinds of plants, for many "clean" operations.

Specific figures on maintenance costs are not available. Floors are swept daily, mopped weekly, scrubbed monthly. Staining from tobacco juice, a problem at first, has been "controlled by more liberal and judicious use of spittoons." Stains may also be caused by improper type or use of curing paper; and stains from truck tires seem to burn into the surface and are difficult to remove with present methods. Maintenance is not difficult, and one plant superintendent claims the white cement floors are easier to keep in a sanitary condition than darker floors. If the increase amounted to even ½ cent* per square foot per year—a generous figure—maintenance cost has little significance in relation to total savings.

These savings are in lighting fixtures, equipment, installation charges and electric current costs necessary to gain comparable lighting levels without white cement floors. In one aircraft plant it was calculated that white cement floors saved a connected electrical load of 277 kw, with a large decrease in the number of fixtures required as well as a very substantial reduction in the air conditioning installation and its maintenance—not to mention the saving on extension cords and outlets for portable working lights. Also to be considered is increased plant capacity due to a decrease in poor workmanship, rejections, etc. The savings alone are sufficient to offset in a year or less any greater cement costs involved in white floors. U. S. Army Engineers state that white cement floors, installed as an integral topping, cost 5 cents per square foot more than gray cement floors installed in the same plant at the same time. This includes cost of the floor hardener used on the gray cement; but exactly how much of the cost of paper and sand protection is included is not certain.

*Maintenance and cost data courtesy Portland Cement Association.

Above, light meter readings taken on adjoining areas of white and gray cement showed that the white floor reflected 44 per cent of the overhead light, the gray floor 27.4 percent. Below, workmen stripping the sand and paper protective layer from the white floor when construction of the plant was complete