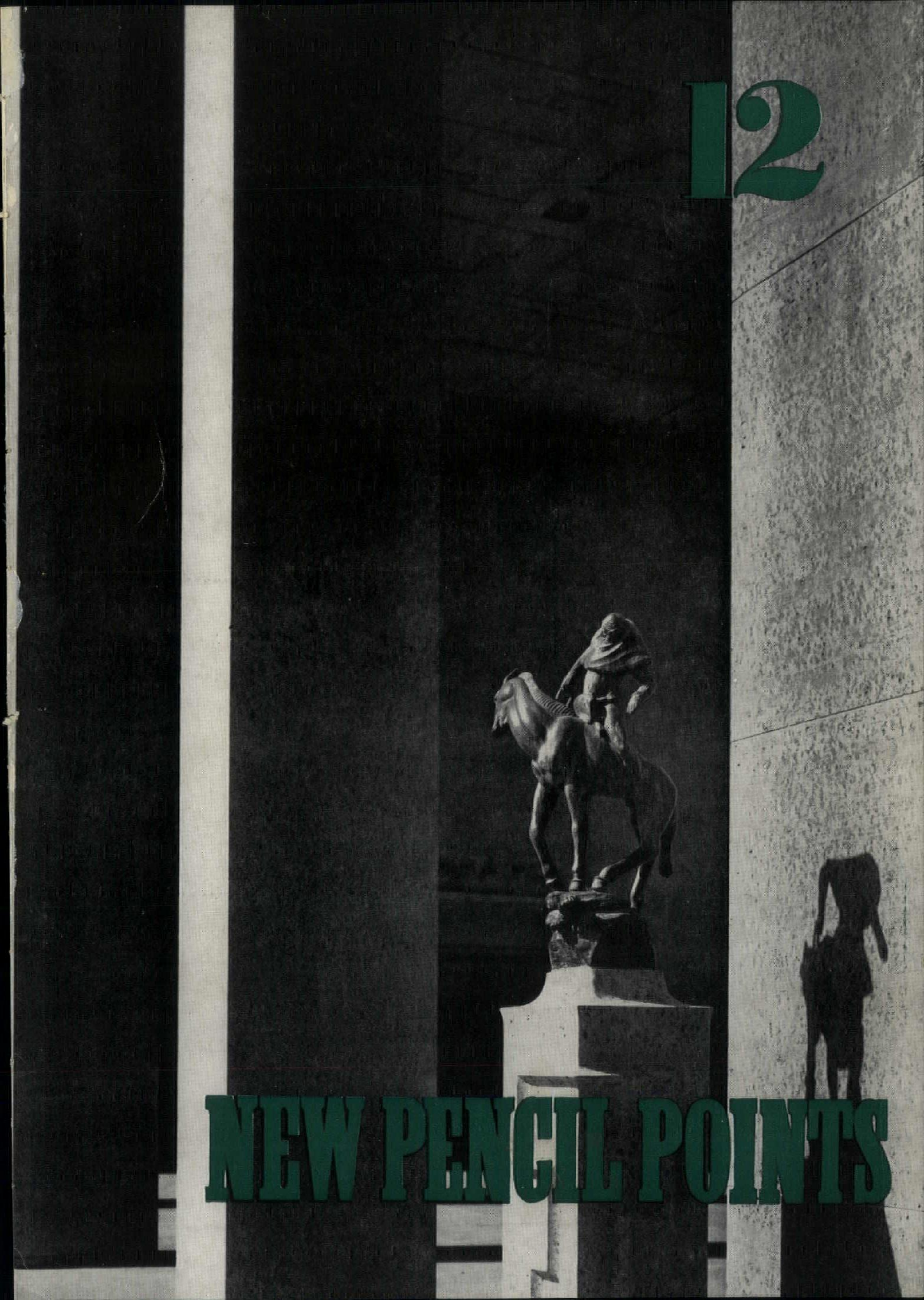
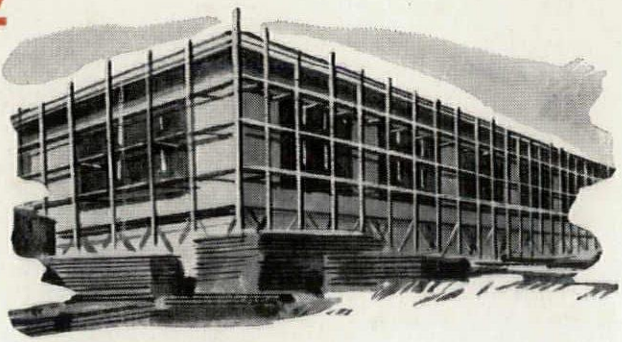

12
NEW PENCIL POINTS

Will Construction furnish the POST-WAR "CUSHION"?

1

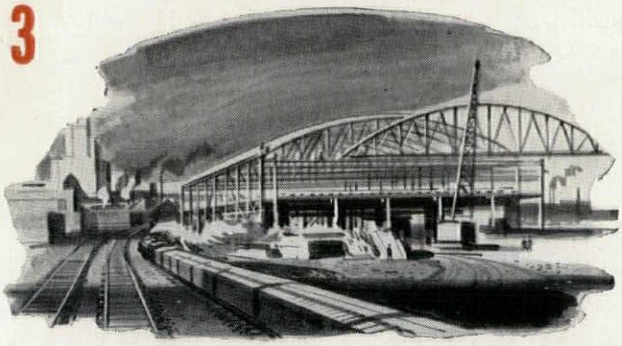
It is estimated that the people who will be engaged directly and indirectly in construction and building may be two millions *more* in the post-war period than there are right now.

2



Total new construction of all kinds may run as high as ten billion dollars.

3

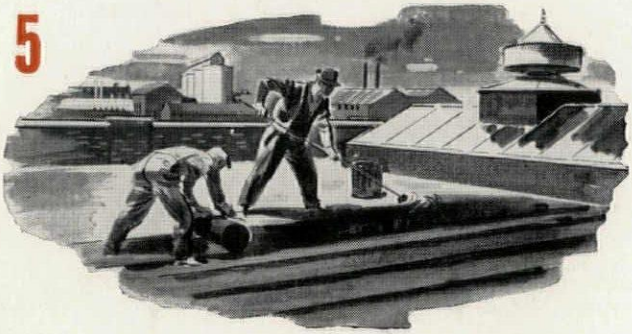


New industrial construction of around three-quarters of a billion dollars has been predicted.

4

Commercial construction may be as much as five times as great as it was in 1933.

5



In planning for all this activity, remember that nothing in peace or war has produced any roofing or waterproofing that exceeds coal tar pitch and felt for durability, effectiveness and low maintenance.

Coal Tar Roofing
Coal Tar Waterproofing

Koppers Company and Affiliates, Pittsburgh, Pa.

KOPPERS

THE INDUSTRY THAT SERVES ALL INDUSTRY

To Architectural Men In The Service

You architects, designers, and draftsmen who now wear the uniform of the military and naval forces of the United States constitute, for the time being, a group apart from the rest of the profession. Whether you are out of the country on the active battle fronts or serving in some technical capacity within our borders, your only business now is to concentrate directly on the job of winning the war. To be sure, many men who are still rated as civilians are also devoting their full energies to this end, but you are more completely removed from the affairs of civil life than they. It is all too easy under these circumstances to lose, or at least to weaken, your contacts with the professional life you have left behind.

One day, God willing, you will return to take your places in a postwar world of peace and constructive effort. It is important that you should not, through the exigencies of war, be deprived of a voice in the shaping of that world. You must have many ideas, both general and specific, about what you would like to find when you return home, and about the things you would like to accomplish when you resume the practice of architecture. This is to ask you to express those ideas to us and to your fellow architects who may be entrusted with the responsibility of seeing that they are given full attention while you are still absent during the preliminary stages of planning for peace.

What about reemployment? The period of readjustment will be unprecedented. After the last war the problem of demobilization was relatively simple. Then, we had only about 25% of our manpower to reemploy, including both the military and war industry. This time we will have at least 70% of our nation's productive workers to take care of. Millions will have to be absorbed as rapidly as possible into manufacturing, transportation, and general business; millions more must look to the building industry with its broad programs of construction of all types. So great will be the demand for jobs that all the planning of both public and private building projects that can be done by all the architects and engineers available will not be too much to satisfy the need. Government and business agree that *the need must be satisfied* and that *"full employment" must be the goal.*

Under these conditions, none of you need worry lest there might not be enough architectural activity to go around. It is true that a great deal of work must be laid out before you can return home, but when you get here there will still be plenty for you to do. The rapidity with which you can get into it will depend on how well the machinery is set up to establish opportunities for employment or new association in practice with the least loss of time. This is something for your professional societies to tackle and we are glad to report to you that first steps are now being taken in this direction. Any suggestions you may make as to methods for doing this highly necessary job will, however, fall upon receptive ears.

What about the profession itself? You can look at it now with a perspective impossible when you were intimately an active part of it. You have had a chance to observe how its capacities as well as its deficiencies have shown up in the process of meeting the national emergency. Would you like to see it changed in any way or would you be satisfied to see it drop back into its prewar ways of doing things? Many questions will occur to you relating to the effectiveness of professional organization, the education of young architects, the matter of cooperation between architects and engineers, the balance between large and small offices, the entrance of architects more actively into the field of community planning. Each of these points involves problems that must be solved, and you should have something to say about the solutions.

And, finally, what about Architecture? The war has given us all a chance to look back over the things that were done in recent years and to decide whether or not we are satisfied with the trends. We sense an increasing perception of the follies of stylism, whether old or new. We have followed with interest the growth in America of a more fundamental approach to architectural design in which the three eternal attributes of fitness, strength, and beauty were to be gained by thorough planning, sound knowledge of construction methods and materials, and a true feeling for basic form, color, texture, proportion, rhythm, contrast, and other esthetic elements, rather than by leaning lazily upon what better men devised in the past. Are you going to be happy to return after the war to the old eclectic method of imitation and secondhand creation, or are you going to insist upon a resurgence of the art of building into an Architecture worthy of the brave new world we all want to make for our children?

The old year is almost gone. The new year will bring, we dare to hope, the reality of victory in Europe and the promise of victory in the Orient. With this victory will come the real challenge of our times—Can we all work together to build a world better than we had before?

We on the home front look to you, who are earning the victory, for your views on what is to be done with it. So speak up now, while there is yet time for your ideas to be heard.

Kenneth Reid

Photos of Cranbrook Museum & Library by Hedrich-Blessing

The large open loggia which shelters the entrances to the Museum and Library forms the central architectural feature of the building, tying it to the axis defined by the fountains and pools extending to the north and south. It provides a spacious outdoor room of noble proportions from which to contemplate the formal gardens with their rich display of sculptures by Carl Milles and others. The paving is of hard limestone, the walls and columns of Mankato stone, and the ceiling of cement with incised pattern. The central pedestal supports a concealed lighting fixture.

Museum and Library, Cranbrook Academy of Art, Bloomfield Hills, Mich.

Eliel Saarinen, Architect

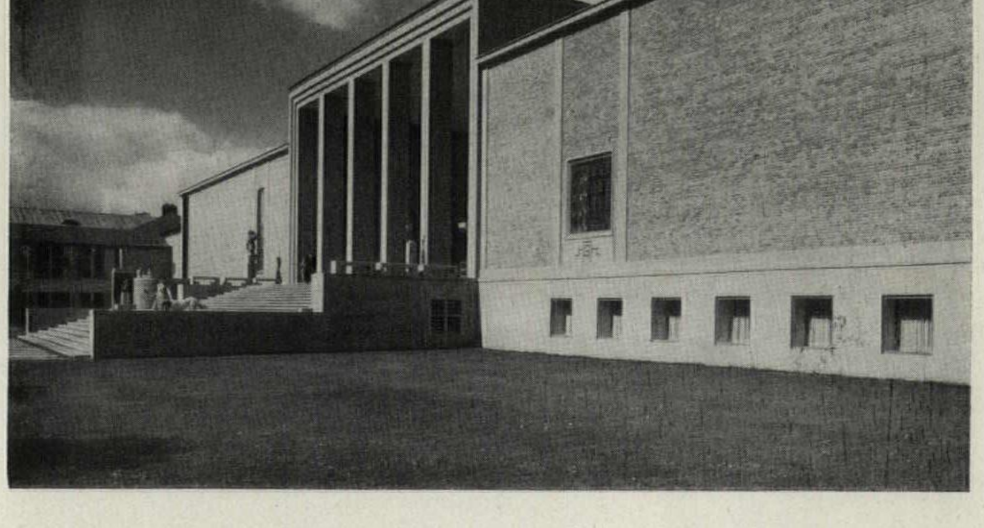
We are proud to present on the following pages the most recent architectural addition to the great educational center known as Cranbrook; namely, the Museum and Library of the Cranbrook Academy of Art. This building, completed in 1941, was designed by Eliel Saarinen. It houses a remarkable collection of antique and modern works of art, collected over a period of years by George G. Booth, founder of Cranbrook, and also a library of over six thousand volumes chosen to serve the needs of the architects, artists, craftsmen, and students of the school. Both the Museum and Library are open to the public.

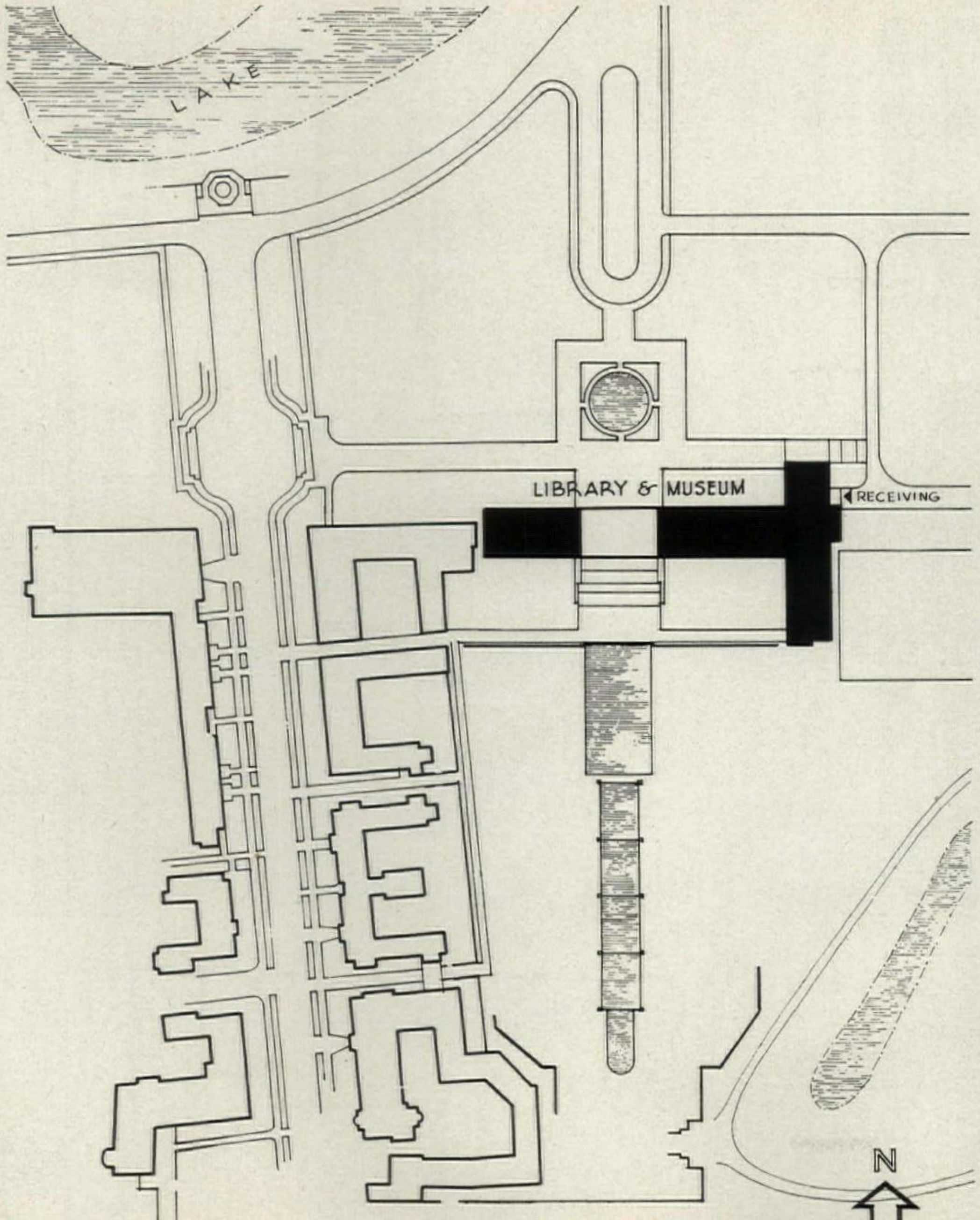
Mr. Booth's three hundred acre estate at Bloomfield Hills, Michigan, has been developed gradually over the last twenty years into a world-famous educational institution. It now includes the Cranbrook School for boys, the Kingswood School for girls, the Brookside School for young children, the Cranbrook Institute of Science, Christ Church of Cranbrook, and the Cranbrook Academy of Art.

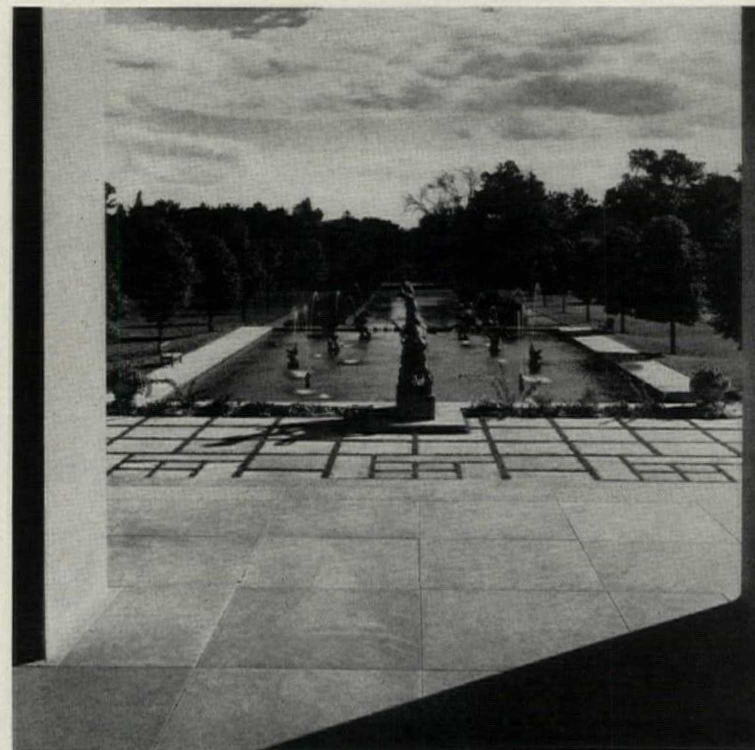
To visit Cranbrook is like coming upon an oasis of order and beauty set apart from the confusion and ugliness that surround so much of urban life. Here in a restful, serene atmosphere, presided over by some of the most distinguished artistic spirits of these times, the boys and girls and young men and women who attend the several schools pursue their studies.

The new building suggests formality, yet it is subtly composed as a part of an informal scheme. Its rather severe quasi-classic lines make it an appropriate background against which to display a number of strong and vital sculptures, principally the work of the great sculptor, Carl Milles, who has been in residence at Cranbrook since 1931.

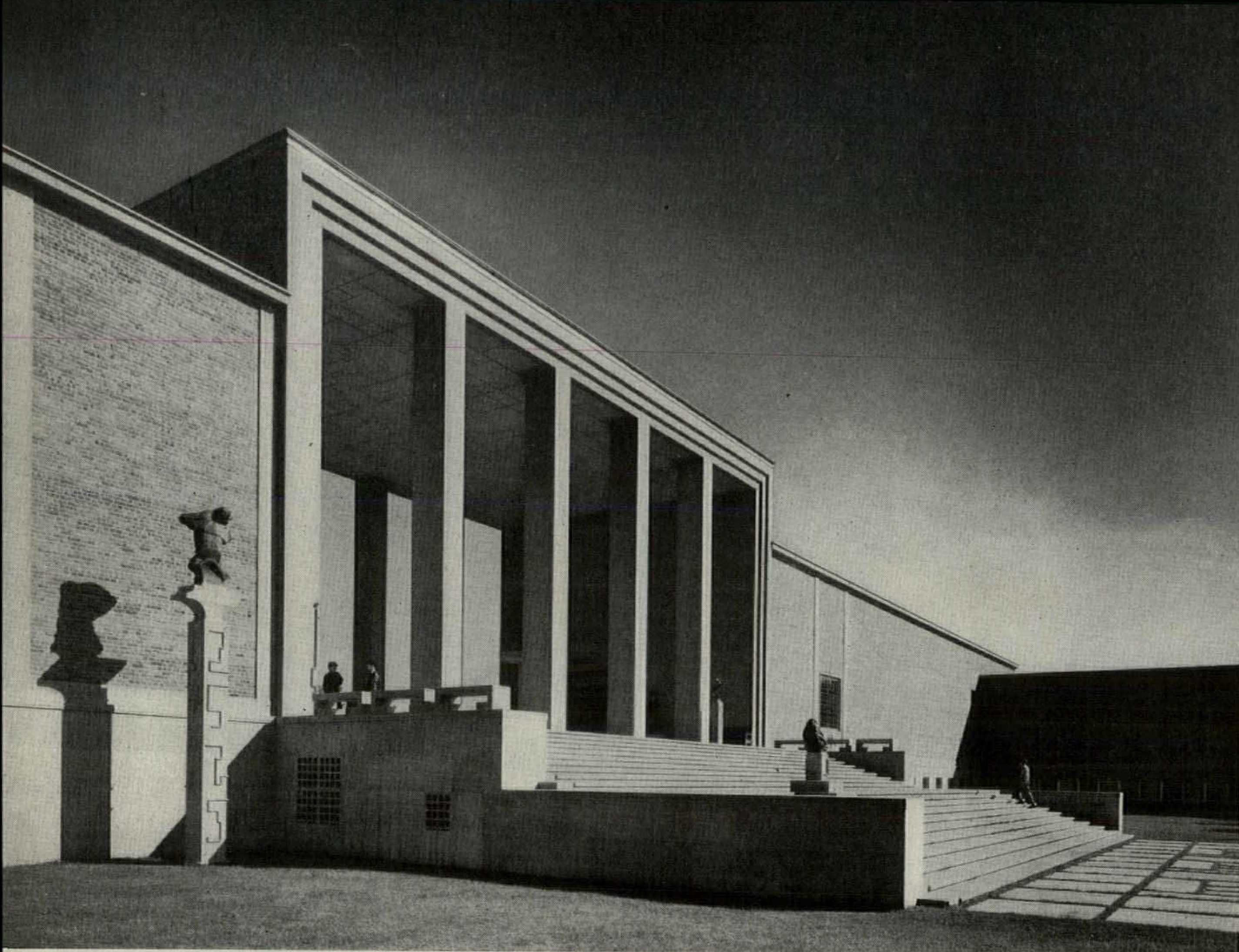
Saarinen's fine sense of space and form and of the relationship of building masses to the areas in which they are set is felt by the visitor and is even conveyed, though somewhat imperfectly, by this photographic presentation. The building is thoroughly functional, yet there is more to it than mere functionalism. It has also a quality of external monumentality achieved principally by simple basic architectural means, disturbed only occasionally by bits of playful decoration.



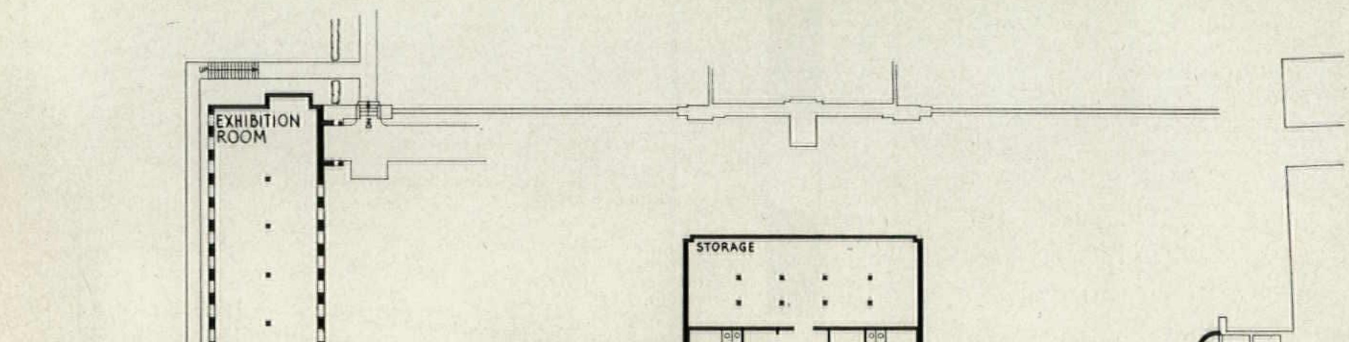


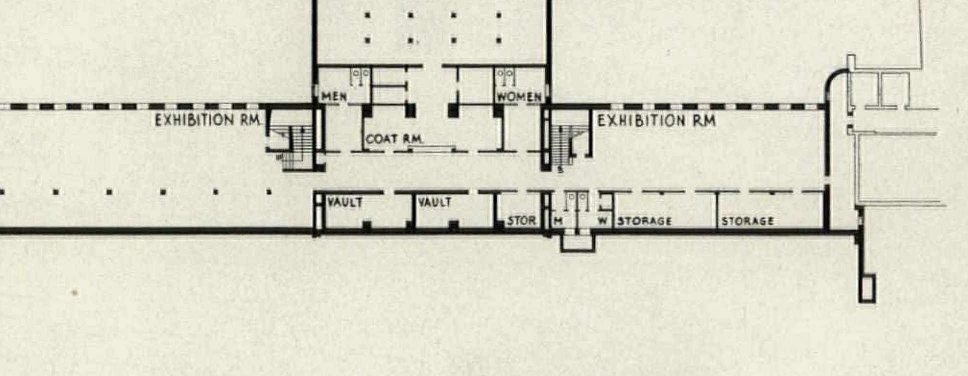


The building, as seen from the terrace of Mr. Saarinen's residence, throws a protecting arm around the "formal" garden with its succession of pools and fountains. When the young trees flanking the pools attain their full growth the effect of organic unity of building and grounds will be increased. From the loggia, looking south along the axis, a replica of Milles' tremendous "Europa and the Bull" appears in the foreground with the tritons of the original Halmstad fountain regrouped in the first pool.

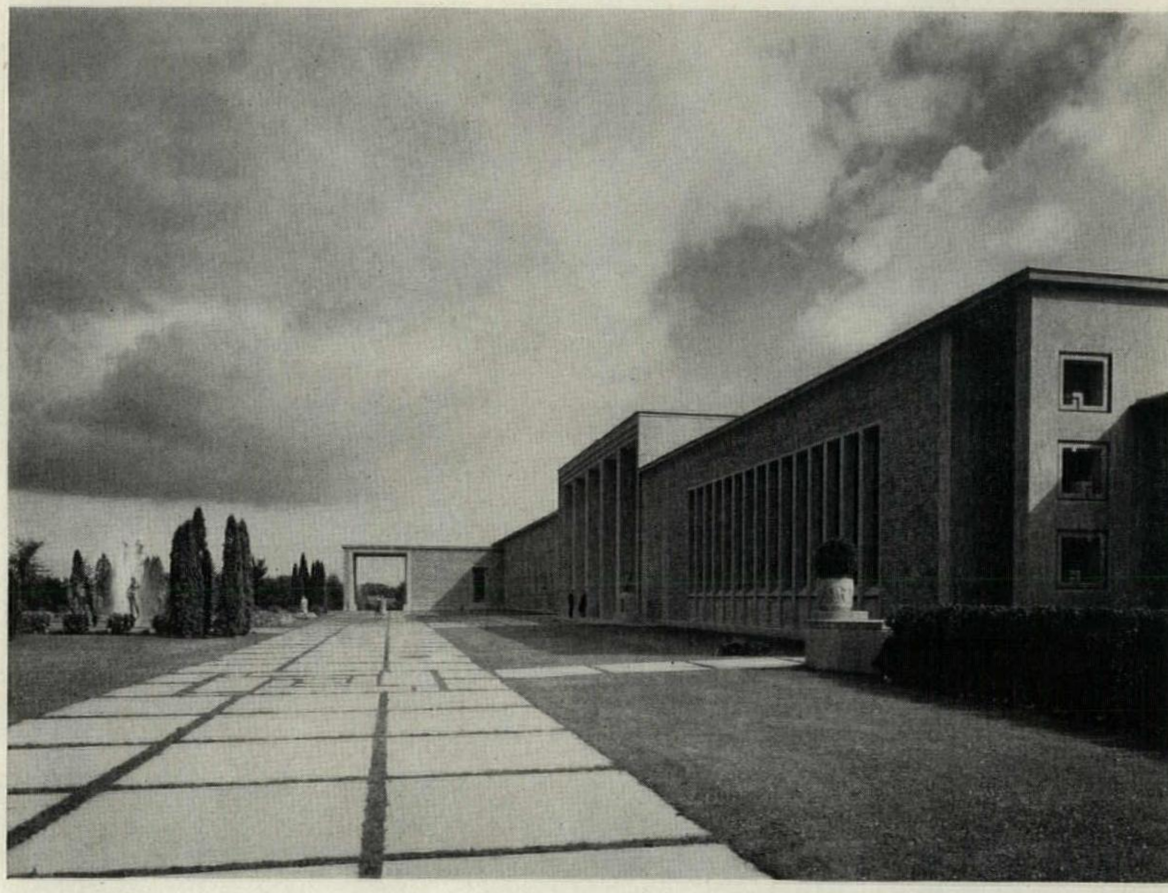


Detail of the Loggia and steps from the south.

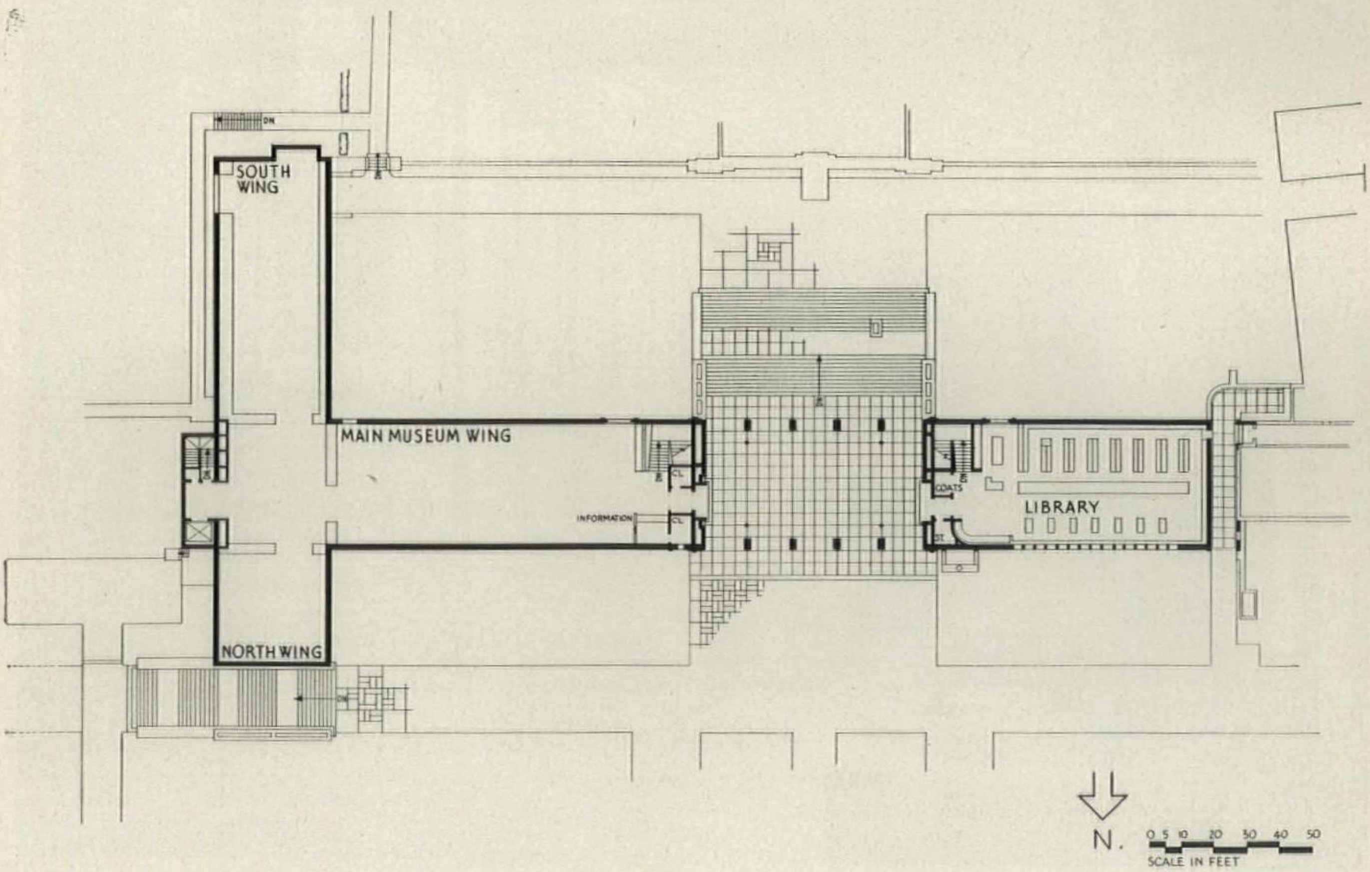


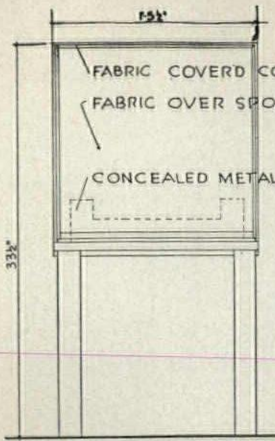


To the north of the Museum and Library there will eventually be additional buildings enclosing a quadrangle with a rearranged version of Milles' "Orpheus" fountain (seen to the left, below) as its central feature. The scale of the paved walk, with its massive cement slabs, is beautifully related to the quadrangle itself and to the building.

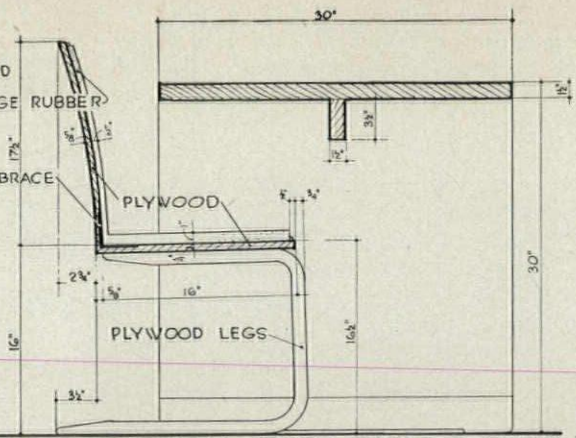


Academy Quadrangle on north side of Museum and Library.

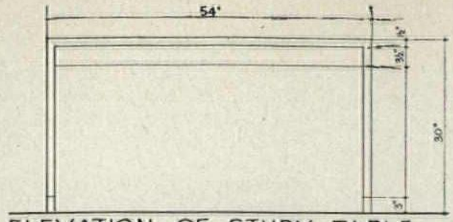




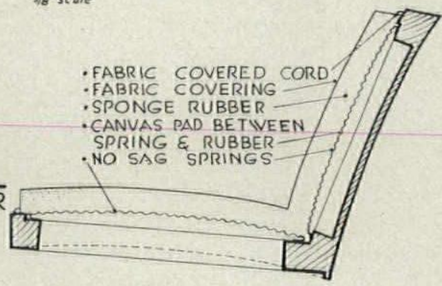
FRONT ELEV. CHAIR



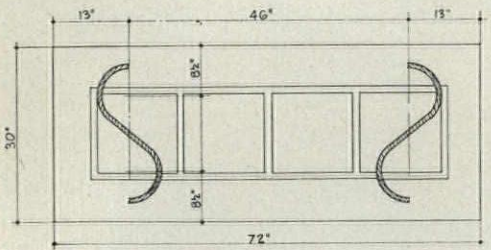
SECTION THRU TABLE & CHAIR
¾" scale



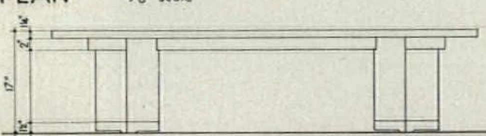
ELEVATION OF STUDY TABLE
⅜" scale



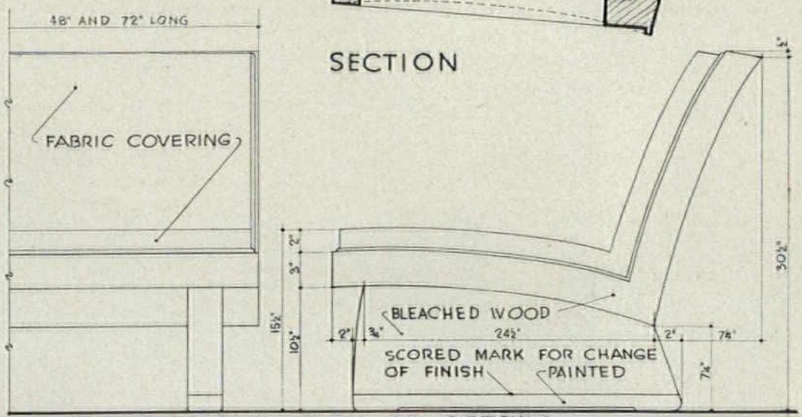
SECTION



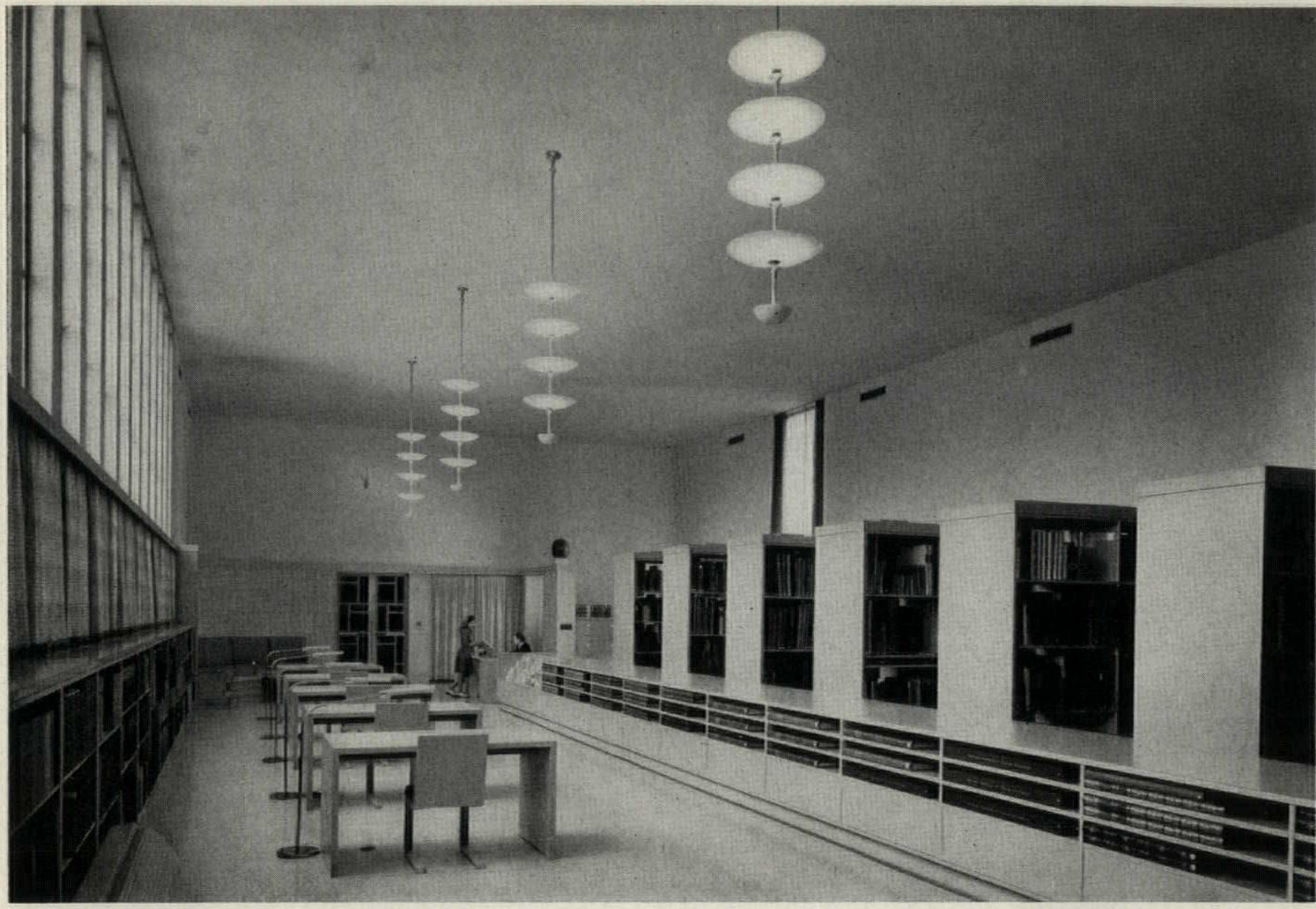
PLAN ⅜" scale

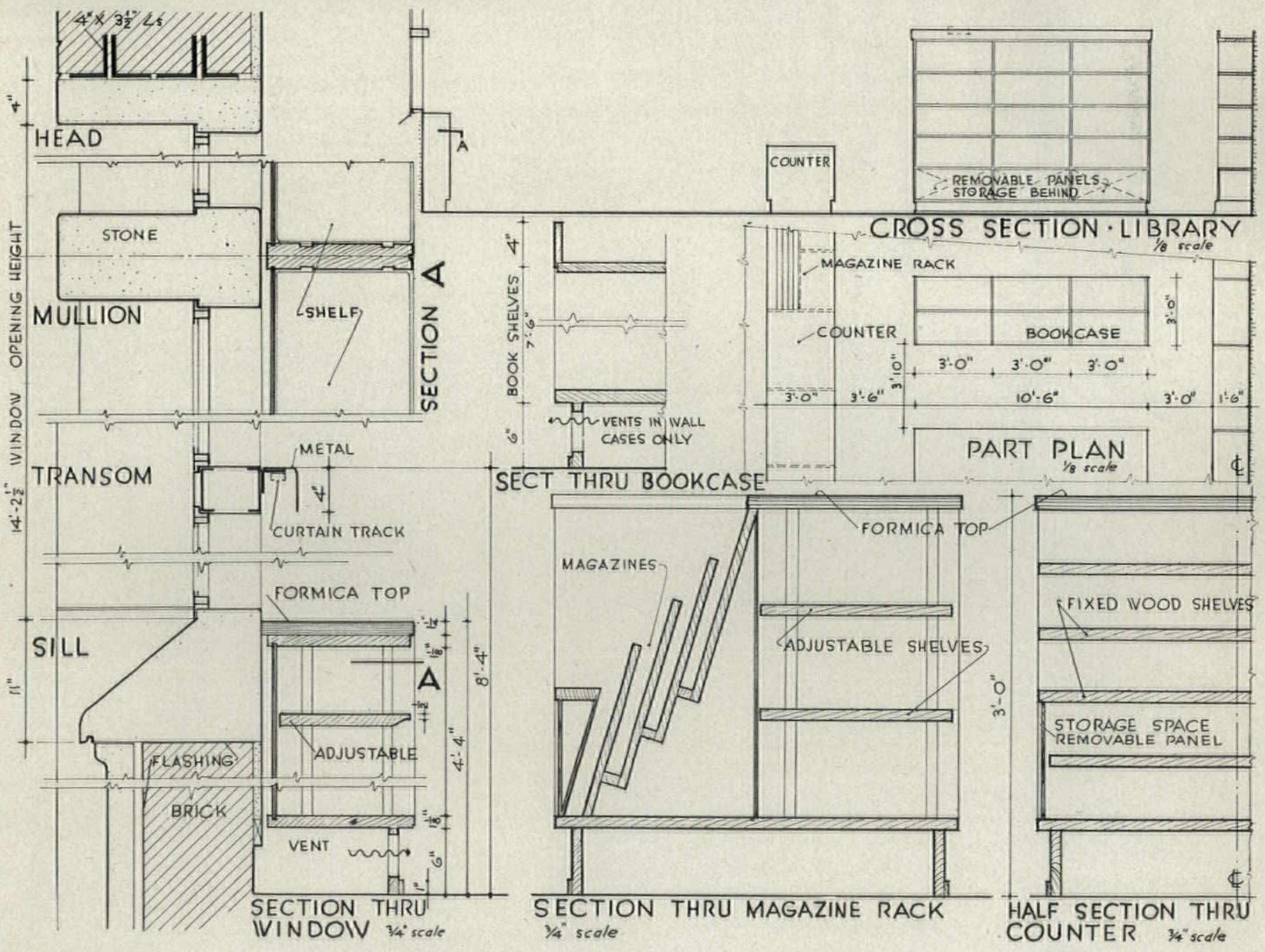


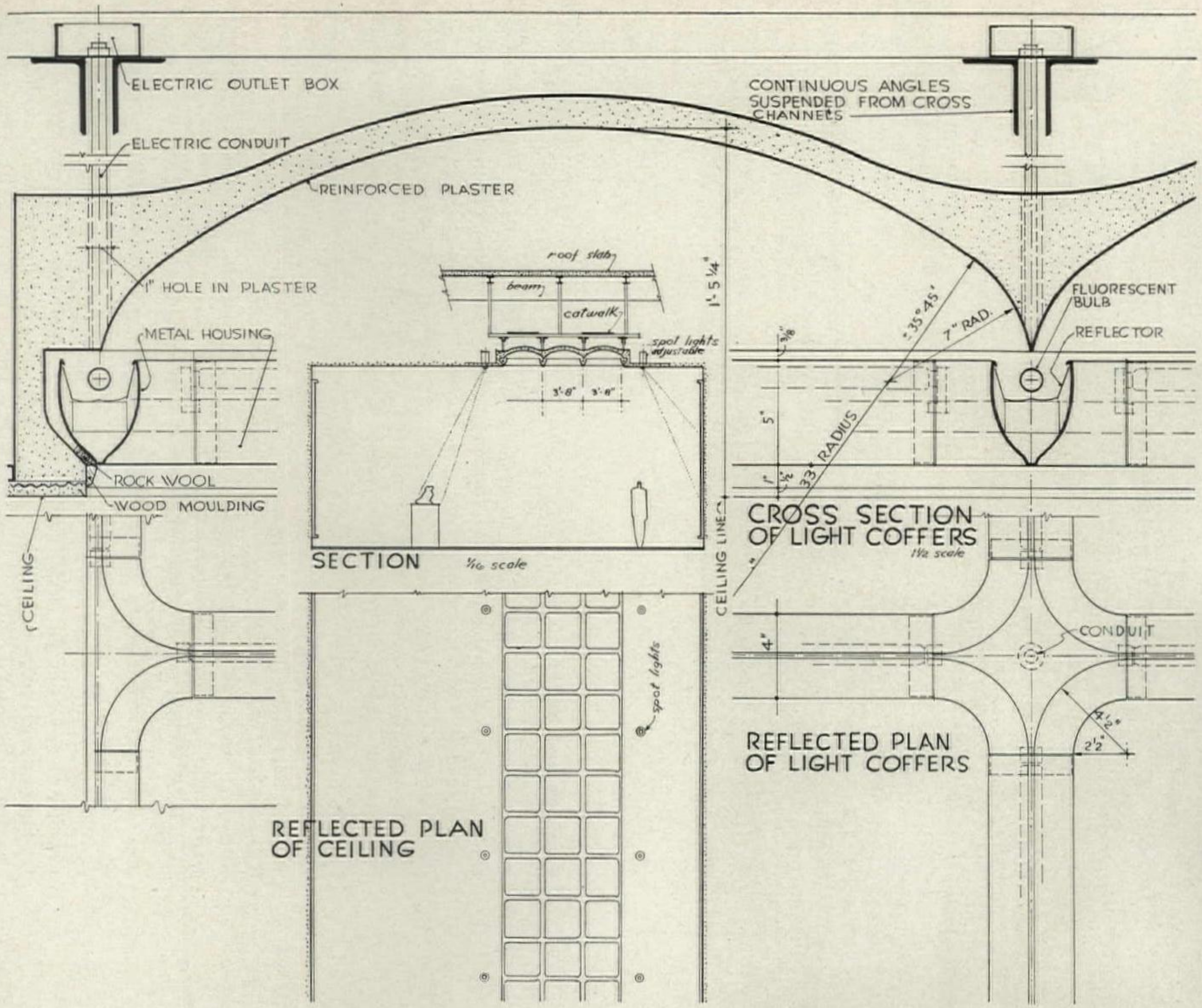
ELEVATION LOW TYPE TABLE



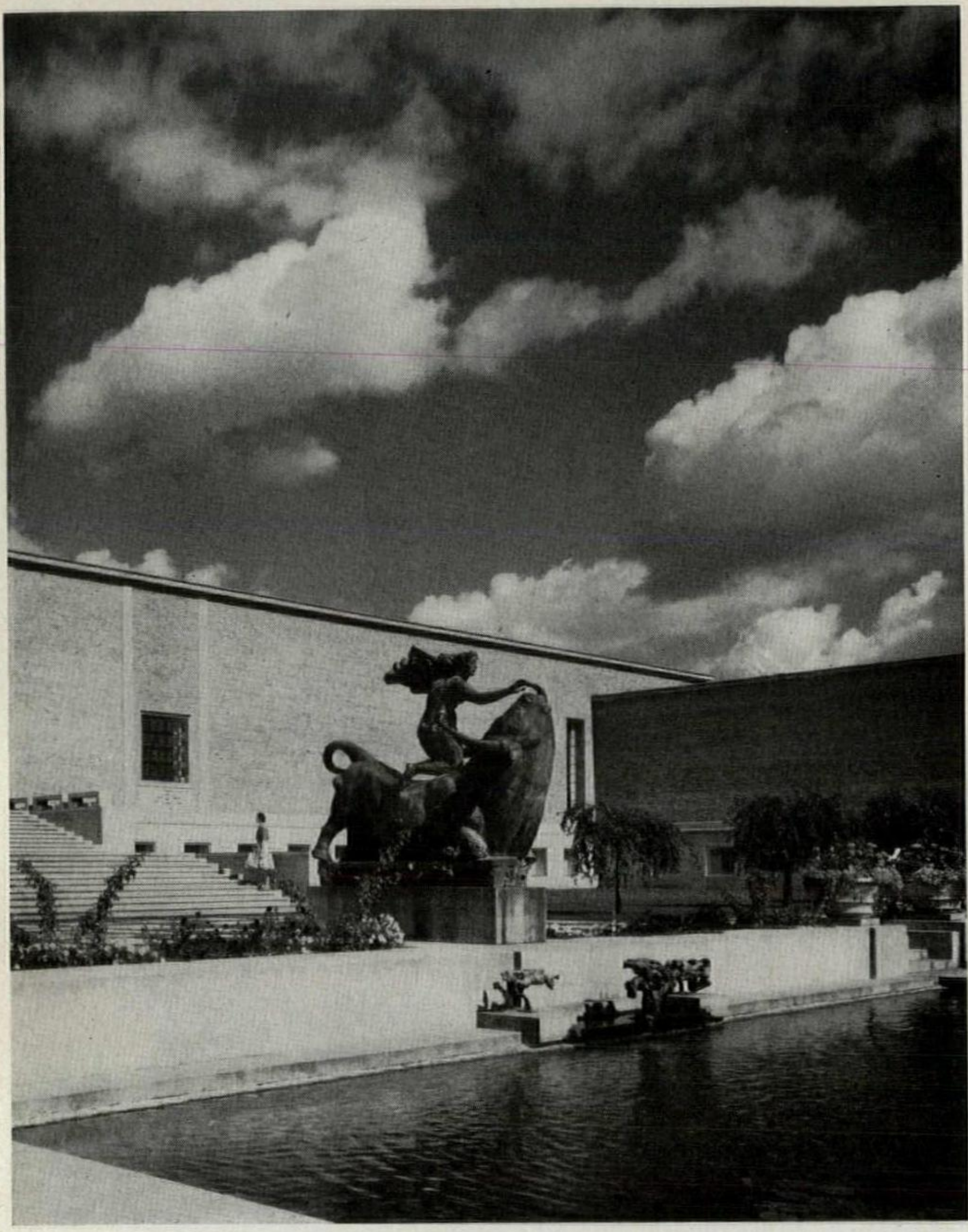
FRONT & SIDE ELEVATION OF SETTEE ¾" scale




4"x 3½" Ls
HEAD
STONE
MULLION
WINDOW OPENING HEIGHT
14'-2½"
SHELF
SECTION A
A
METAL
TRANSOM
CURTAIN TRACK
FORMICA TOP
SILL
11"
A
8'-4"
4'-4"
ADJUSTABLE
FLASHING
BRICK
VENT
SECTION THRU WINDOW ¾" scale
BOOK SHELVES 7'-6"
VENTS IN WALL CASES ONLY
SECT THRU BOOKCASE
COUNTER
REMOVABLE PANELS STORAGE BEHIND
CROSS SECTION · LIBRARY ⅛ scale
MAGAZINE RACK
COUNTER
BOOKCASE
3'-0"
3'-10"
3'-6"
10'-6"
1'-6"
PART PLAN ⅛ scale
MAGAZINES
FORMICA TOP
ADJUSTABLE SHELVES
SECTION THRU MAGAZINE RACK ¾" scale
FIXED WOOD SHELVES
STORAGE SPACE REMOVABLE PANEL
HALF SECTION THRU COUNTER ¾" scale



The finely proportioned Museum interior is arranged for artificial lighting which can be controlled accurately to give each item of the collection its own special conditions. General illumination comes from the grid and reflecting coffers above, while adjustable spotlights throw warm rays on the individual pieces. The various cases and blocks are portable so that there is complete flexibility in rearranging the exhibits. Great care has been exercised to eliminate conflict between the various objects so that the visitor may give each piece his full attention without being distracted by its neighbors. The main museum wing appears above in a view looking toward the transverse north and south wings. Below is a view back towards the entrance with the information desk at the right. Floor is Roman Travertine Marble; walls are cloth covered plywood; ceilings are painted plaster. Colors are warm grey.



Saarinen and Milles

One of the remarkably fine things about the Cranbrook development is the collaborative association it has fostered between the two internationally renowned artists—Eliel Saarinen, architect, and Carl Milles, sculptor. These men, generally acknowledged as world leaders in their respective fields, have worked closely and sympathetically together at Cranbrook since 1931, not only as teachers of talented and ambitious youth but as sensitive, creative spirits who have designed and built the physical environment of the school—in itself a potent educational influence.

In 1934, through the farsighted generosity of George G. Booth, the Cranbrook foundation acquired from Milles the most complete collection of his later works ever brought together. The nucleus of the collection was the Jonah fountain, completed by Milles in 1932 for the Kingswood School, as his first American commission. Subsequently, replicas of several of his larger works have been recomposed under his direction and given, in collaboration with Saarinen, an outdoor setting where they enhance the architectural beauty of Cranbrook.

The Cranbrook version of the great Europa fountain—the original of which was erected in the market square of Halmstad, Sweden, in 1926—appears above and on the facing page. Here, the principal feature, Europa and the Bull, stands on the terrace facing south, while the four tritons, accompanied by the playful dolphins and other water creatures, disport themselves in the first of a series of pools. The whole group conveys a sense of forever moving rhythmically

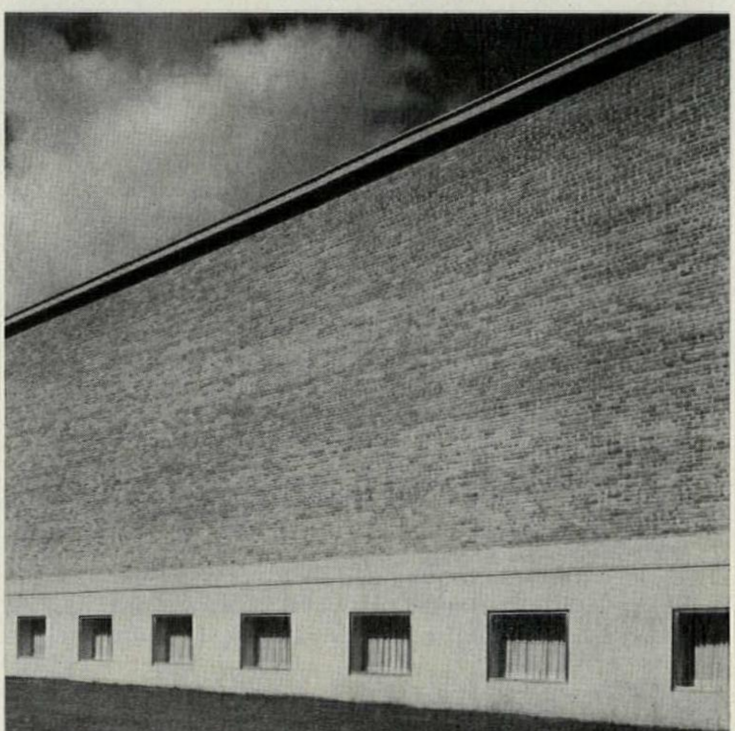
down the axis of the garden. This dynamic quality is of course heightened by the carefully designed jets of water and the flow of the pool itself—factors which Milles loves and repeatedly employs most skilfully.

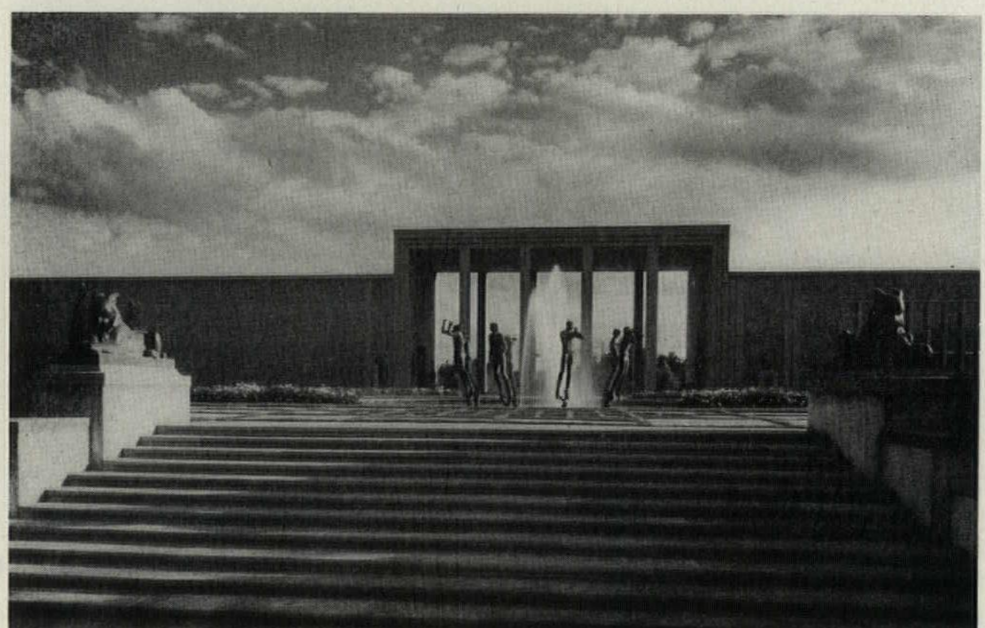
On the other side of the loggia, to the north, another magnificent regrouping of figures from one of Milles' major works—the Orpheus fountain in Stockholm—becomes, minus its heroic Orpheus, a fresh and sublimely poetic composition in vitalized stone and upward-striving water. It is illustrated on page 49.

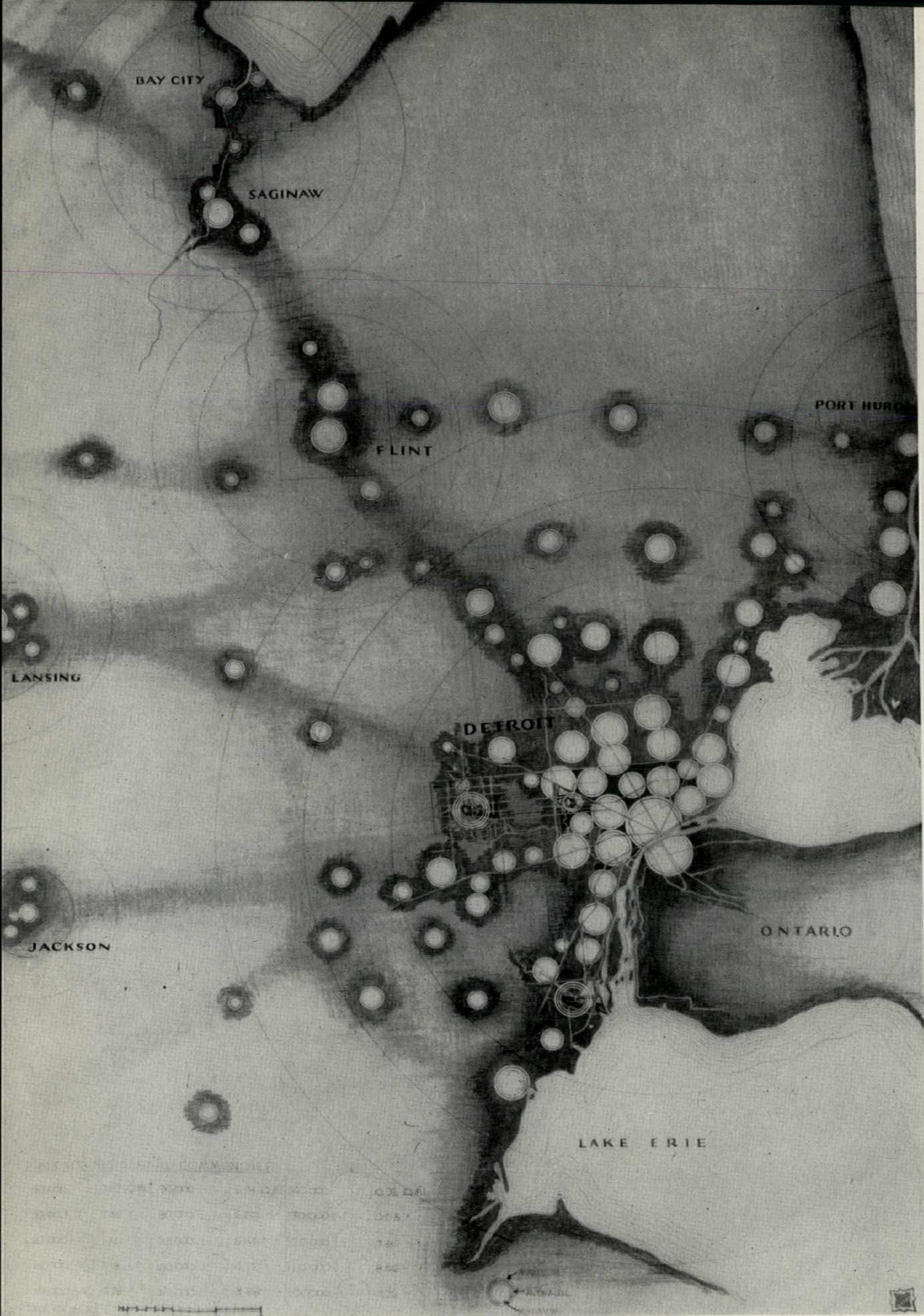
A number of other works by Milles are to be found in complementary juxtaposition with the Cranbrook buildings. A bronze replica of his famous Folke Filbyter, at smaller scale than the original which forms the central figure of the Folkunga fountain in Linköping, stands on a pedestal in front of one of the stone columns on the southern side of the loggia, as shown on the cover of this issue.

That Saarinen and Milles, kindred souls from the northern countries, share a love of the principles of organic beauty to be found in nature is evident to the most casual observer of these products of their joyful association. Both men have a strong sense of the rightness of life itself and of living things in the universal scheme. Both take a sly but unmalicious delight in tincturing their work with a cosmic but very human sort of humor. These qualities emerge differently in the creations of the two, yet they are there for the discerning eye to discover.

The Library entrance with its geometrically patterned bronze doors contrasts interestingly with the masterly handling by Saarinen of large, simple, textured surfaces of brick and stone. On the facing page, a rearrangement of the subsidiary figures of Carl Milles' "Orpheus" fountain makes at Cranbrook a fresh and inspiring composition.







The Detroit Sphere of Influence: Southeastern Michigan; Organic Decentralization 1990; Urban Population 5,000,000

Detroit Planning Studies

Introduction

The town-designer must not be a prophet.

But the town-designer must have the vision to free himself from the petty things of today and tomorrow so as to be able to see things in a broader scope and longer time perspective.

And the town-designer must have the three-dimensional imagination to visualize his cities —and the individual community-units within these cities—as they may gradually evolve toward proper architectural formation and unity.

The town-designer must have two main objectives, which are both imperative:

First, he must have the sociological objective: so to design his cities that life there can be and remain humanly livable in the best sense of the word and that a good correlation between living and working can be both attained and maintained.

And second, he must have the technically practical objective: so to design his cities that he, so to speak, keeps the doors open for future possibilities of arranging things in accordance with future demands.

In the designing of a home, there are two particular things which must be considered from the very start: first, the people who are going to occupy this home; and second, the land-area on which this home is going to be erected.

In the designing of a city the same holds true, for here, also, are two prime things to be considered: first, the people who are going to inhabit the city; and second, the land-areas on which this city is going to be developed.

The former problem — that of the home — is a "closed" problem inasmuch as the home, once erected, is a complete fact.

The latter problem—that of the city—is an "open" problem inasmuch as the development of a city means a gradual evolution during a long period of time.

Consequently, in the case of the city, there must be made at the very beginning a carefully calculated study of these two mentioned elements — the "human element" and the "geographical element"— through which to foresee what the changes, fluctuations, and possibilities might be within a certain period of time of the city's development.

In his studies of the "Detroit Sphere of Influence"— and under the leadership of the Cranbrook Academy of Art — Mr. J. Davidson Stephen has approached the problem in the above mentioned manner.

In the case of any urban development, I think, this same approach is most essential.

Eliel Saarinen

Cranbrook Academy of Art. November, 1943

The Detroit Sphere of Influence

This map was made after study of geographical and social factors and U. S. Census Bureau statistics of 1870 to 1940. Estimates of minimum, average and maximum increases, shown by concentric circles for each community, were made of probable growth and distribution of the population up to 1990. The inter-relation of manufacturers of automobiles and automotive equipment located here was also considered. "Urban Population of 5,000,000 in 1990" is based on the average increase estimate of population growth and on increase in area of the urban districts by 1990. "Urban Population" includes residents of metropolitan areas of the cities shown, as extended in 1990 and as indicated by the larger concentric circles.

Small white circles indicate living areas required for each community. Spaces between communities would protect living areas and provide sufficient room for main highways, airports, and industries—principally small industries to employ residents of adjacent communities. The design pattern formed by the distribution of these communities indicates a planning method whereby the individuality of each community can be retained or restored, as contrasted with the present contiguous growth of our metropolitan areas. In the event of future aerial bombardment, such planning would provide a "dispersion" factor.

DESIGN PATTERNS;
THE CITY OF DETROIT. 1942

SHOWING
1 THE RECTILINEAR STREET PATTERNS
2 THE MAIN DIAGONAL STREETS
3 THE DOWNTOWN AREA (L'ENFANT PLAN
4 THE RAILROAD PATTERN

Detroit and the Detroit Area

by J. Davidson Stephen

The studies of Detroit and the Detroit Area represent the work of about one year at the Cranbrook Academy of Art, Bloomfield Hills, Michigan, under the direction of Eliel Saarinen. This work is separated into progressive stages, as follows:

1. *DETROIT; A Preliminary Study of the City, 1942.*
2. *THE REGION; Studies for "The Detroit Sphere of Influence, 1990."*
3. *LIVING AREAS; The Development of the "Area Scale."*
4. *INDUSTRIAL AREAS; Relation to Living Areas.*
5. *COMMUNITY PLANNING; Plymouth, Michigan, 1990.*
6. *NEIGHBORHOOD PLANNING; The New Center of Plymouth, 1990.*
7. *DETROIT; A "Master Plan" for Community Development, 1990.*

Each of these stages will be discussed in the following. Some of them are more important than others and will receive more attention in the text and will have more illustrations. This article contains only the first portion; the remainder will appear in subsequent issues.

DETROIT: A Preliminary Study of the City, 1942

In his book, "The City," Saarinen states that city planning may be divided into two parts with reference to the actual work of planning, i. e., "Data Research" and "Design Research," and likens Design Research to the experimental or research laboratory of a large industry. In Design Research or "Civic Design," Saarinen feels that the architect can contribute a great deal to the city planning picture, and by the addition of creative imagination, supplement the Data Research that has already been done by many city planning commissions and project the work forward to provide for better living conditions in well-planned communities that are properly related to each other and to the surrounding area. Such relationship is described as "Organic Decentralization."

Data Research:

Availability of data is an important consideration at the start of a planning study. It was for this reason that Saarinen suggested Detroit, Cranbrook being about 20 miles from the city. In point of fact not much material was available; the Detroit City Planning Commission was beginning its studies for a Master Plan for Detroit, and there was no regional planning body, although the Tri-County Regional Planning Council was initiated in June, 1943. The principal sources were:

The Burton Collection at the Detroit Public Library (historical maps),
Maps of the City prepared by Walker Outdoor Advertising Company,
Regional Map of the Huron, Clinton Metropolitan Authority, and the
Booklets: "A Region in Turmoil," by Harry F. Grayson, Detroit Edison Co., and
"Proposals for Down-Town Detroit," by the Urban Land Institute.

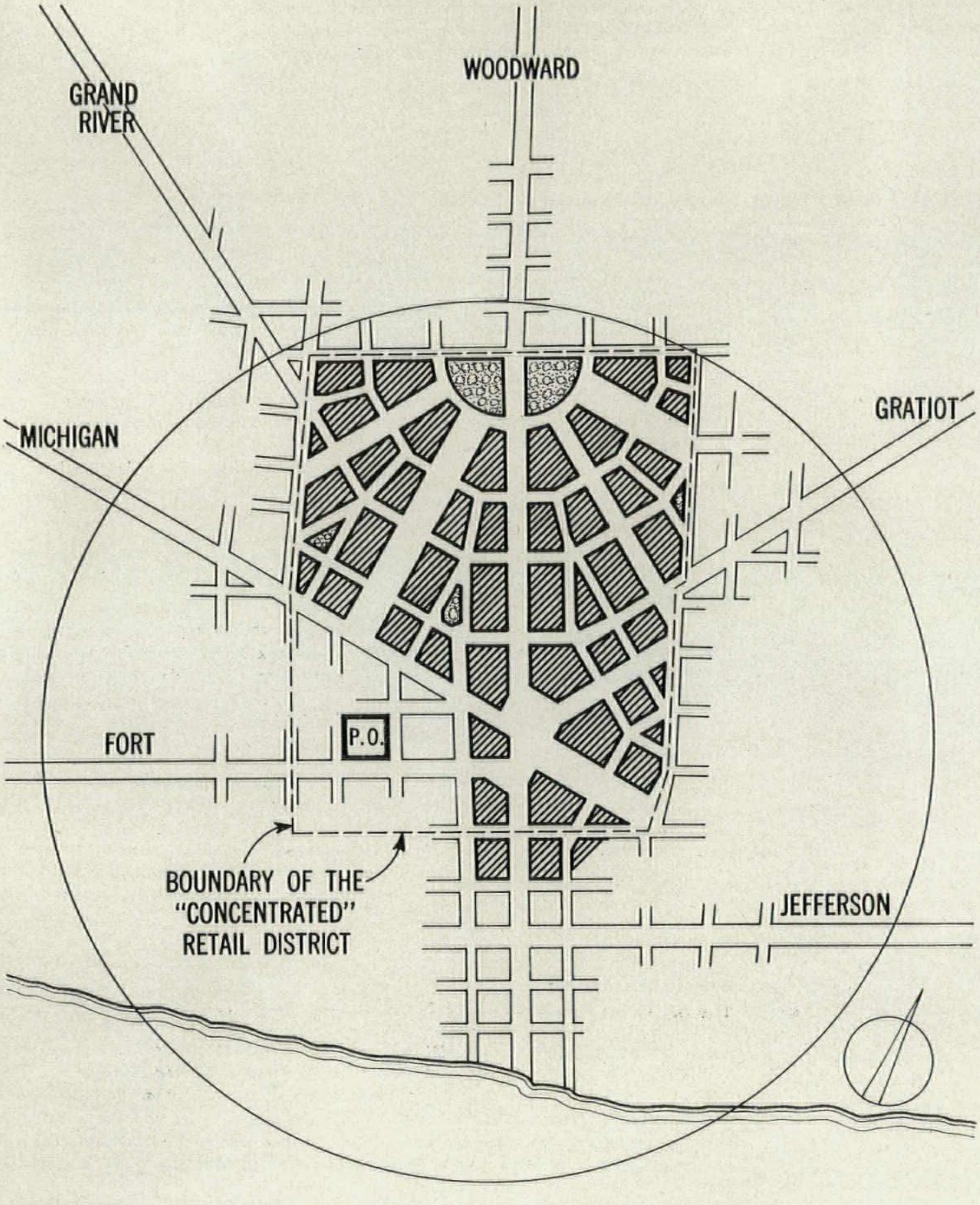
Design Research:

The design pattern or patterns of Detroit, on opposite page, shows the following:

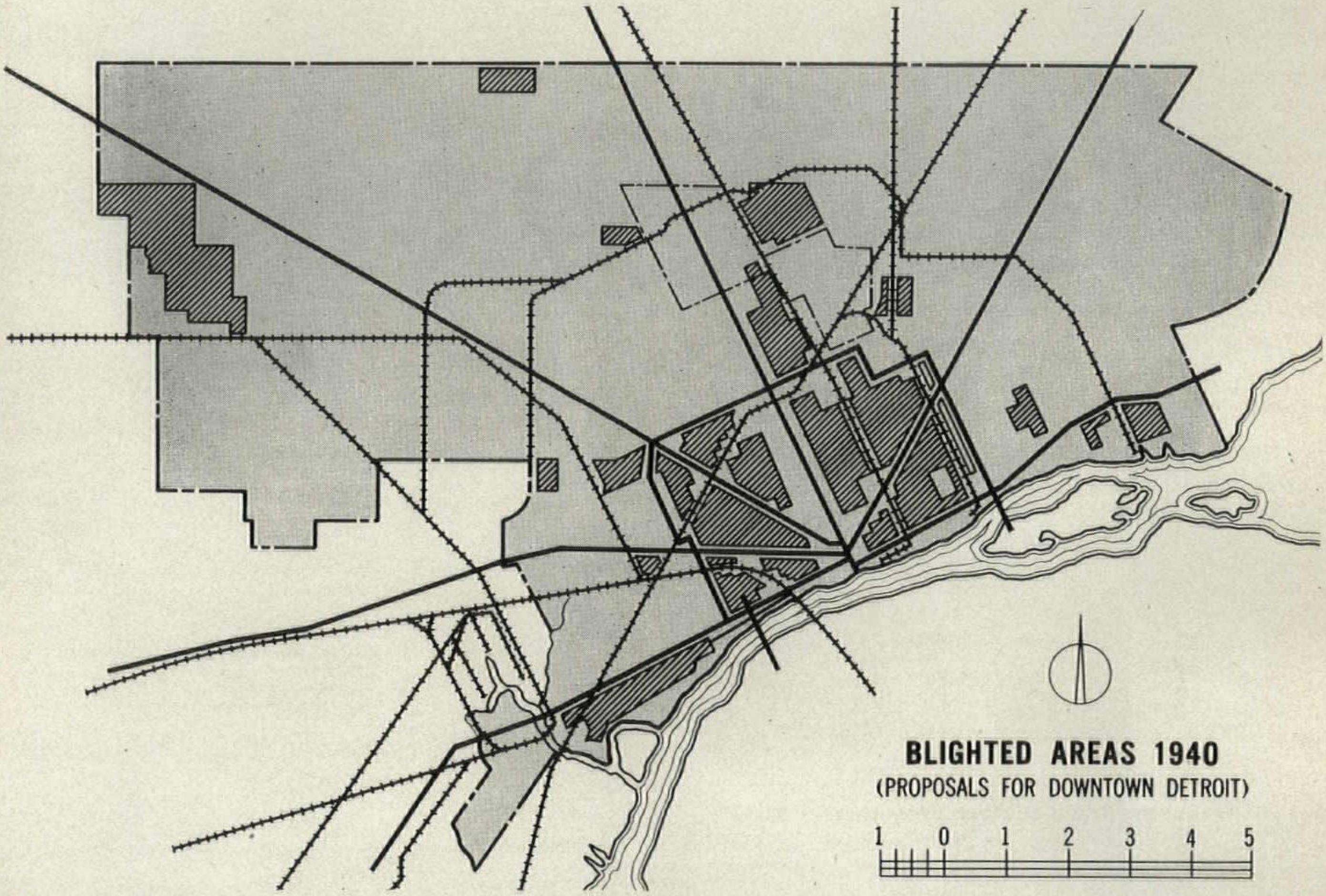
1. The Rectilinear Street Patterns: There are two distinct patterns: the earlier street pattern running at right angles and parallel to the Detroit River, following more or less the lines of the French Land Grants that were described as so much river frontage and thence running back varying distances from the river measured at right angles to it; and the second or later street pattern that can be seen at the outskirts of the city that follows the system of mile-square sections having the State East-West Section Base-line along Eight Mile Road, the northern boundary of Detroit.

2. The Main Diagonal Streets: This diagonal pattern now overlays the rectilinear street patterns mentioned above. The diagonal streets, Michigan, Grand River and Gratiot, were laid out by Military Engineers about 1830-1840, as were Fort Street (west), Woodward Avenue (north), and Jefferson Avenue (east); the last three are continuations of the earlier rectilinear street pattern.

3. The Down-Town Area; the L'Enfant Plan: The L'Enfant Plan, better known as the Governor and Judges' Plan, was conceived by Woodward about 1807, following Woodward's stay in Washington, where he came in contact with L'Enfant and his plans for Washington, D. C. The Detroit version, fortunately or unfortunately, was never completed in its entirety. The executed portion of Woodward's plan occupies a fairly large portion of the present down-town business area; it presents a third street pattern in the plan of Detroit and represents, incidentally, a fairly large portion of the total assessed valuation of the city. The L'Enfant Plan is shown below.



THE DOWNTOWN AREA (L'ENFANT PLAN)



4. The Railroad Pattern: In addition to the rectilinear street patterns, the diagonal streets, and the pattern of the L'Enfant Plan, the railroad engineers have added the "railroad pattern," cutting across rectilinear streets and diagonal streets in several instances, i. e., the railroad lines of the N.Y.C. and the D.&T.S.L. running from the River Rouge Area across the city toward the northeast and through one corner of the City of Hamtramck to connect with the M.C. (north and the G.T. (Port Huron Line). Later the Detroit Terminal Railroad was planned and it ran around the then periphery of the city, passing through the northern part of the City of Highland Park (Ford Plant), and connecting via an extension of the M.C. (north) line with the industrial area in the eastern part of Detroit, known as Connor's Creek Area, and with the industrial area within Grand Boulevard, East, and east of Hamtramck and the Milwaukee Junction industrial area on the Grand Trunk Railroad that runs parallel to and east of Woodward.

Design Research; Blighted Areas:

Almost every city in the country will admit having some "Blighted Areas" and with the possibility of Federal money being available under the Wagner Bill, now under consideration, some of these cities almost seem to be eager to show the largest blighted area possible. The blighted area or areas, agreed upon by most of the civic bodies, real estate men, et al, is usually indicated on the maps prepared by the city planning commissions in red. It might be indicated in green inasmuch as these blighted areas could be considered as potentially "open areas." Figure above shows blighted areas in Detroit, 1940.

The "Blighted Area" shown in this illustration refers to blighted residential area for the most part. In time, blighted areas might also refer to blighted commercial areas and to blighted industrial areas. In connection with this illustration, and with reference to later illustrations showing the growth of Detroit from 1910 to 1940, it is interesting to note that a large portion of Detroit in 1910 is considered to be "blighted area" in 1940. Almost the entire area of the section known as "The Area within the Boulevards" is blighted, except for the narrow strip along both sides of Woodward Avenue and other portions adjacent to the railroad lines occupied by industry. A large portion of the blight has occurred within the 30 year period, 1910 to 1940; by inference, Detroit might be said to have the youngest blighted areas of almost any city in the country.

It is interesting to note that the various segments of the "blighted area" within the Boulevards almost completely fills the spaces between the diagonal streets and the railroads except for the commercial and residential areas along both sides of Woodward and the industrial areas along the railroads. This again refers to the Design Pattern and to the illustration on page 52, and raises the question as to whether the railroads and the industries are wholly responsible for the spreading of the blight, or whether the design pattern is partly responsible in that the spaces between the diagonal streets and the railroads are too small to permit of proper residential developments surrounded by green protective areas. Certainly modern industrial plants are in many cases an asset to a community and a challenge to surrounding living accommodations and to commercial areas serving the residents. Perhaps some of the railroad lines, particularly those serving the older industrial plants, can be removed when these industries re-locate their plants in more open areas in accordance with present day tendencies. Perhaps the diagonal streets, designed to serve the concentrated city, will lose their importance as main arteries, and other highways or super-highways will be needed to serve the newer industrial areas.

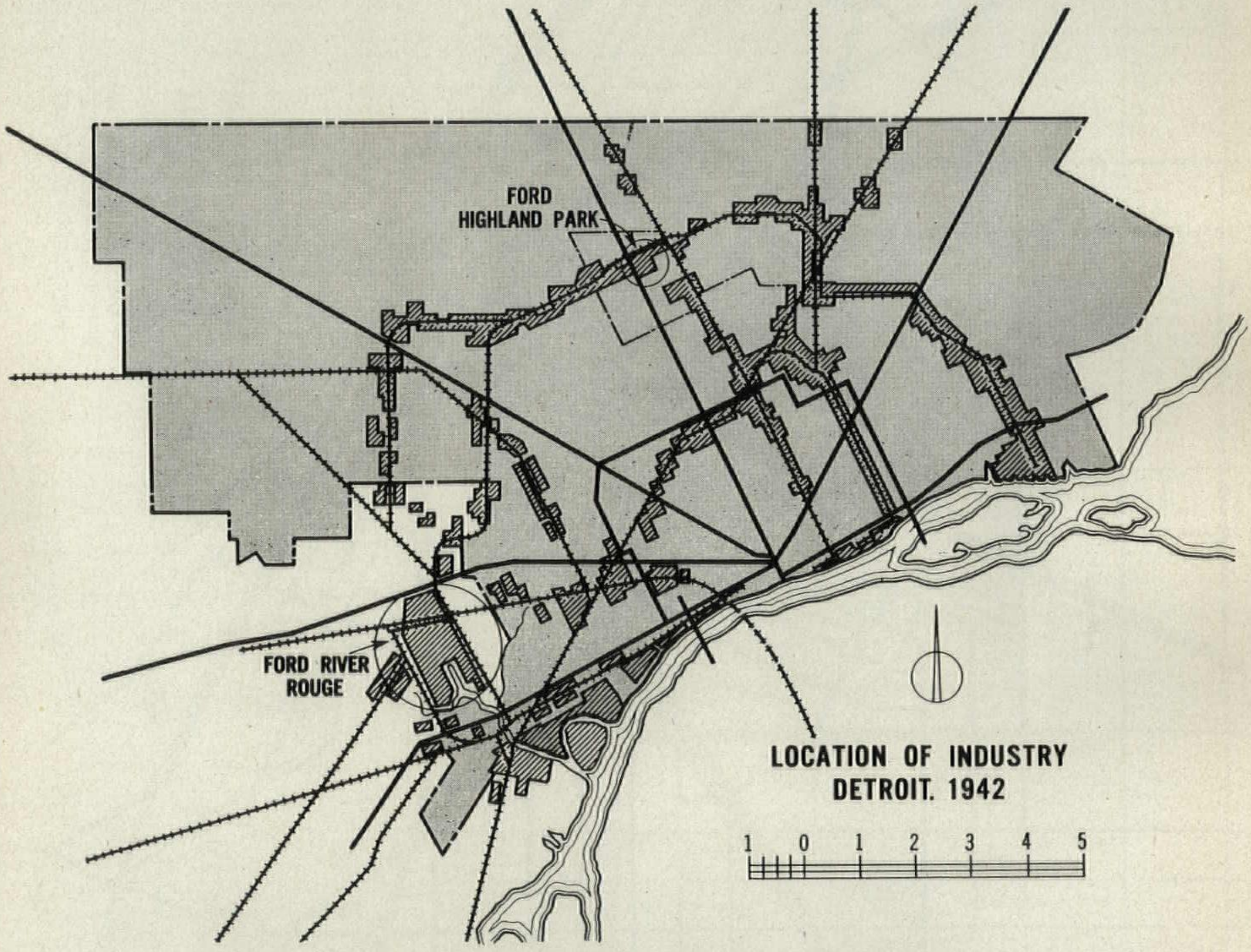
In the initial studies for Detroit these blighted areas were considered as potential "open areas"—the problem being to use these areas properly in the planning for Detroit. This raised the question as to *what* should be the proper purpose of the future planning of Detroit, and required that study be given to other phases of planning before making any decision with respect to the blighted areas and their use as "open areas."

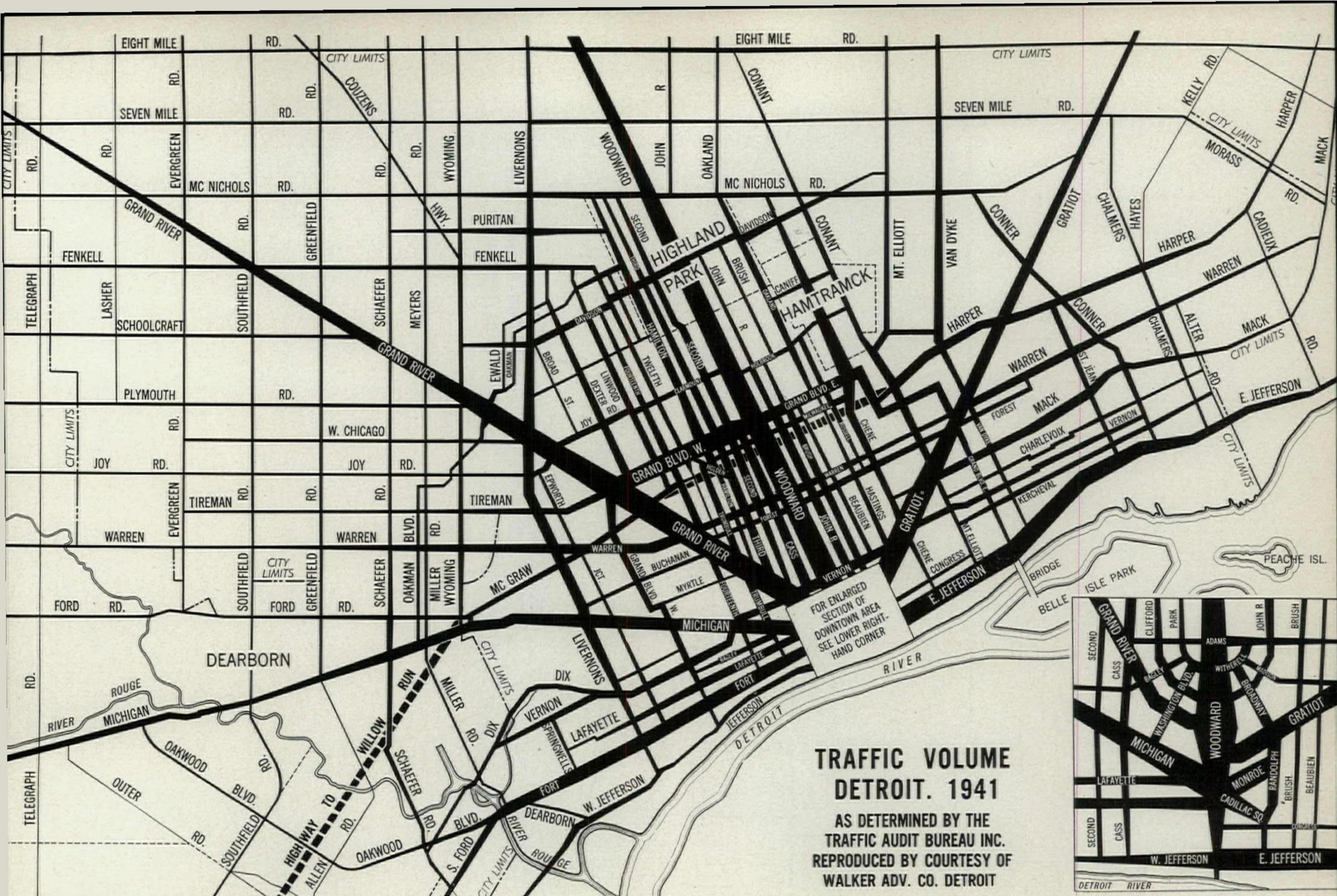
Design Research; The Location of Industry, 1942:

Detroit's position as the country's foremost mass-production center is well known. The location of industry, industrial land use or "industrial pattern," is important in the first stages of a planning study of Detroit, and is shown on opposite page.

With reference to this illustration, a comparison might be made between the area required for the Highland Park Plant and the River Rouge Plant of the Ford Motor Company. Such a comparison reflects the land area required for a multi-story manufacturing operation versus the land area required for single floor manufacturing space; the latter represents an improved, more efficient manufacturing operation, but requires far more land area. This sort of industrial planning, patterned after the Ford Rouge Plant, is now in general use and has been utilized by many of the other automobile manufacturers in the Detroit Area where land was available adjacent to their present plants or where a plant or a portion of a plant could be relocated to a more open area. The policy of the Reconstruction Finance Corporation and the Defense Plant Corporation seems, in many instances, to be in the general direction of approving the location of new plants in open areas, possibly with the view of obtaining a factor of dispersion as a defense against aerial attack.

The question is raised as to whether the older, multi-story, plants will tend to become obsolete in the near future and fall into the category of "industrial blight," and whether the newer, war-time, industrial plants will be continued because of their greater efficiency. If such changes were to occur, the "design pattern" of the city, and particularly the traffic volume pattern would be considerably altered. In this connection, a recent survey indicated that most of the manufacturers in the Detroit Area utilize trucks for the transportation of their products and receive a good part of their materials in the same way.


FORD
HIGHLAND PARK
FORD RIVER
ROUGE
LOCATION OF INDUSTRY
DETROIT. 1942
1 0 1 2 3 4 5

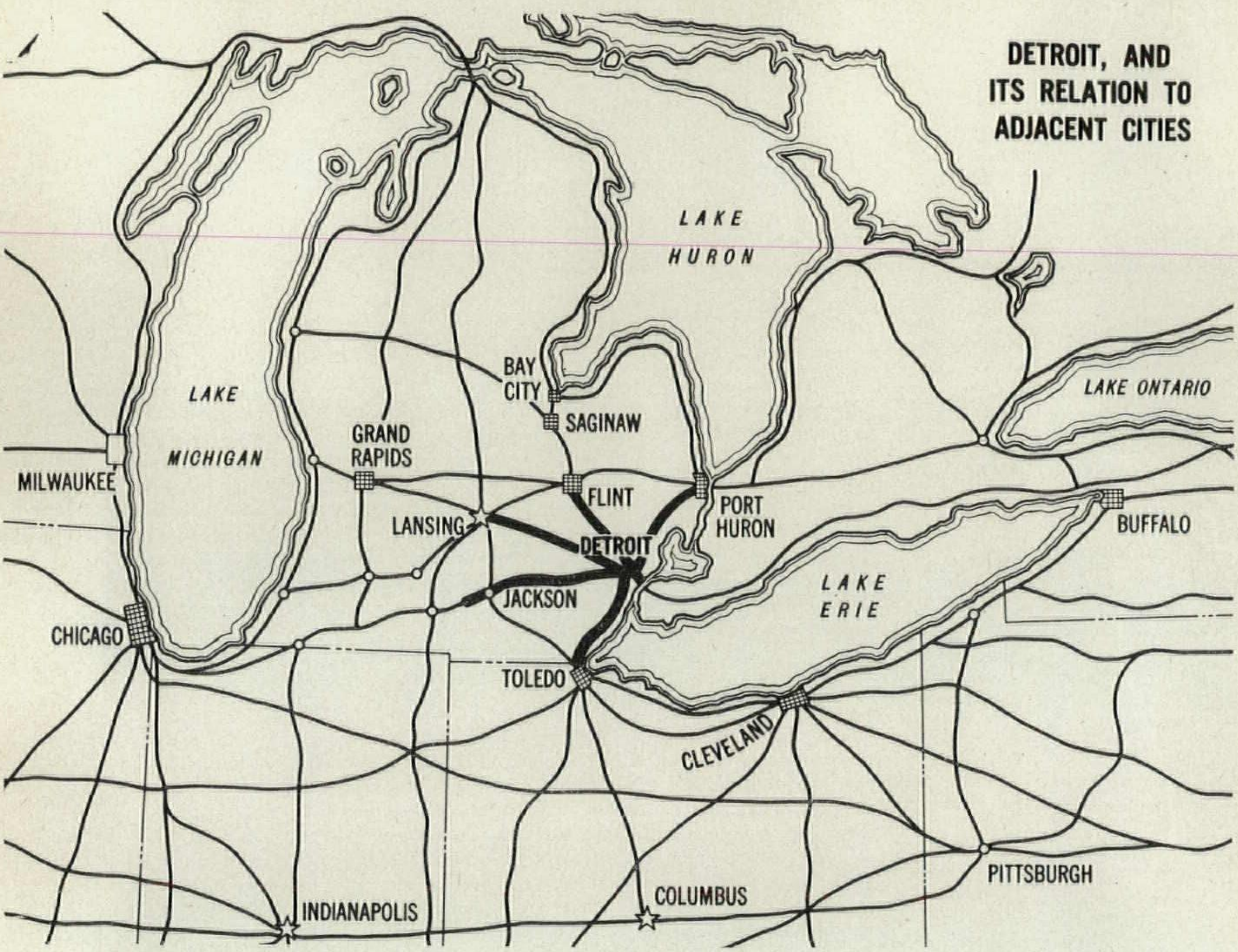

TRAFFIC VOLUME
DETROIT. 1941
AS DETERMINED BY THE
TRAFFIC AUDIT BUREAU INC.
REPRODUCED BY COURTESY OF
WALKER ADV. CO. DETROIT
FOR ENLARGED SECTION OF DOWNTOWN AREA SEE LOWER RIGHT-HAND CORNER
EIGHT MILE RD.
SEVEN MILE RD.
MC NICHOLS RD.
CITY LIMITS
GRAND RIVER
FENKELL
PURITAN
SCHOOLCRAFT
PLYMOUTH RD.
W. CHICAGO
JOY RD.
TIREMAN
WARREN
FORD RD.
MICHIGAN
DEARBORN
TELEGRAPH RD.
LASHER RD.
EVERGREEN RD.
SOUTHFIELD RD.
GREENFIELD RD.
SCHAEFER RD.
MEYERS RD.
WYOMING
LIVERNONS
OAKMAN BLVD.
MILLER RD.
COUZENS
HWY.
WOODWARD
JOHN R
OAKLAND
CONANT
MT. ELLIOTT
VAN DYKE
GRATIOT
CHALMERS
HAYES
CONNER
HARPER
KELLY RD.
MORASS
MACK
CADIEUX
ALTER RD.
E. JEFFERSON
HIGHLAND PARK
HAMTRAMCK
GRAND BLVD. W.
GRAND BLVD. E.
EWALD
BROAD
ST.
DEXTER RD.
LINWOOD
TWELFTH
HAMILTON
SECOND
THIRD
CASS
BEAUBIEN
HASTINGS
CHENE
FOREST
ST. JEAN
CHARLEVOIX
KERCHEVAL
VERNON
CONGRESS
MT. ELLIOTT
EPWORTH
MC GRAW
BUCHANAN
MYRTLE
GRAND BLVD. JCT.
DIX
VERNON
LAFAYETTE
SPRINGWELLS
FORT
JEFFERSON
W. JEFFERSON
DEARBORN
S. FORD
ROUGE RIVER
WILLOW RUN
HIGH WAY TO
ALLEN RD.
OAKWOOD BLVD.
OUTER RD.
DETROIT RIVER
BELLE ISLE PARK
BRIDGE
PEACHE ISL.
GRAND RIVER
CLIFFORD
PARK
ADAMS
WITHERELL
BROADWAY
BAGLEY
WASHINGTON BLVD.
MICHIGAN
MONROE
RANDOLPH
BRUSH
BEAUBIEN
CADILLAC SQ.
LAFAYETTE
W. JEFFERSON
E. JEFFERSON
DETROIT RIVER

Design Research; Traffic Volume Pattern:

Traffic volume data is available for most cities; the research is usually done by the State Highway Departments or by the Traffic Audit Bureau, Incorporated. Other studies show origin and destination of traffic. In the case of Detroit, a very interesting survey was made by the Detroit Street Railways and tabulated by the State Highway Department to show the residence of workers employed in the Connor's Creek, Milwaukee Junction and River Rouge industrial areas. In the preliminary study of Detroit, the traffic volume diagram was considered as a "design pattern." In addition, traffic volume, i. e., transportation in the Detroit Area (inasmuch as Detroit has no rapid transit system), may be considered a result of and some indication as to present land use in Detroit, and the vicinity. Some study of the geography of the area was required to evaluate the use of certain streets and roads by traffic originating in other cities. Traffic volume in the City of Detroit is shown on opposite page.

Traffic volume diagrams are often given too much prominence in a study of city planning. Traffic congestion is a result of bad planning. Everyone knows where these points occur in his own city, knows the reasons for it, and in many cases, if asked, would have a suggestion to offer. In the preliminary study of Detroit, traffic volume was studied as a "design pattern." At first glance, the traffic on the main diagonal streets and Fort, Woodward and Jefferson, stands out as a large volume, particularly on Grand Rapids, Woodward, Gratiot and Jefferson; these traffic arteries together with Michigan and Fort extend well out of the city. The cross-town main traffic route is shown on Grand Boulevard; other cross-town routes are Warren and Forest, located south of Grand Boulevard, and Davison (under-pass) north of Grand Boulevard at Highland Park. With the exception of Warren, none of these routes provides for continuous travel east and west. For this reason traffic often finds it advantageous to use the diagonal streets to reach an east-west route; this often takes traffic well into the down-town area. The lack of direct east-west routes is due to the fact that the original roads were laid out in accordance with the idea of a concentrated city.

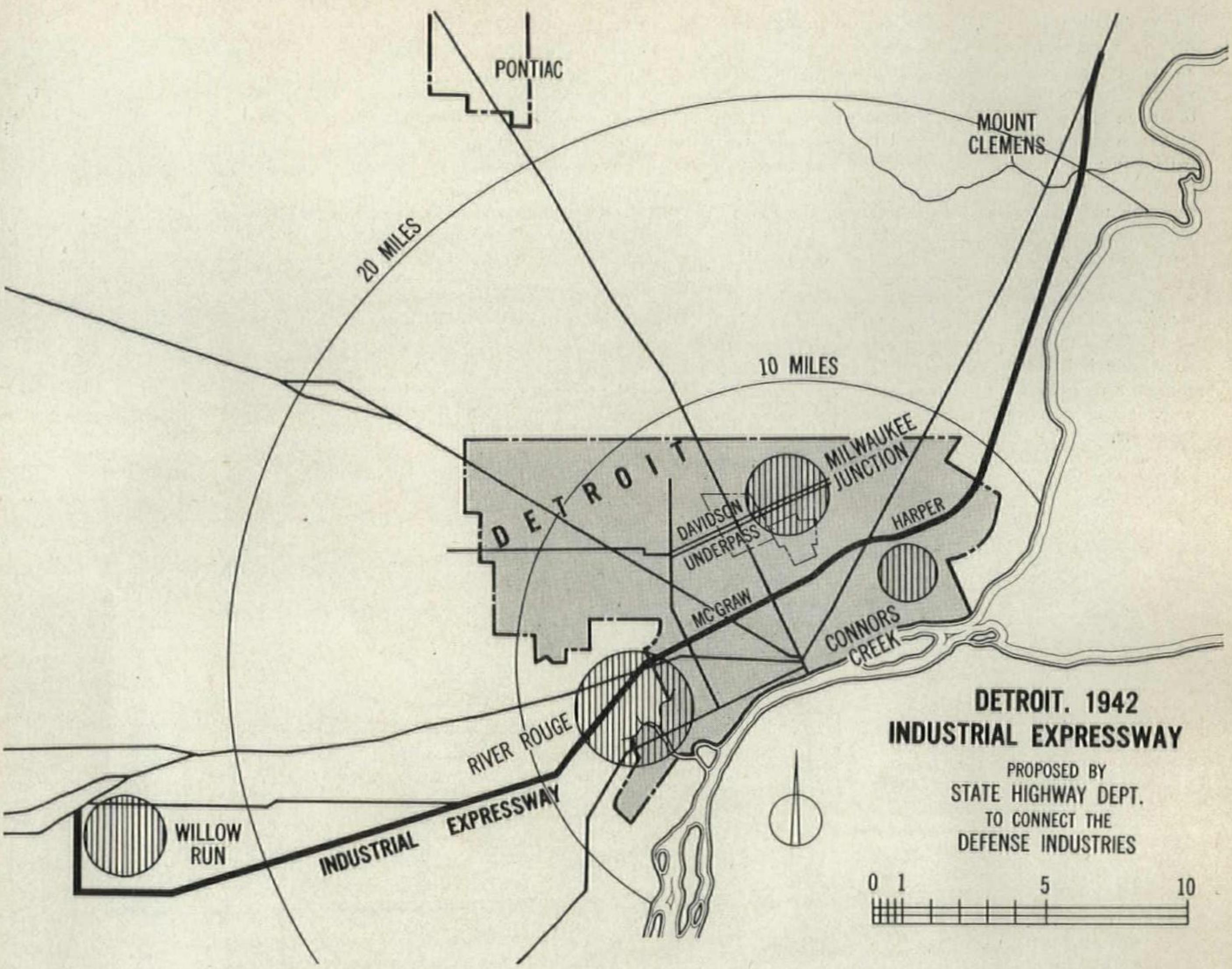
It is interesting to note the number of traffic arteries running north and south, parallel with Woodward, which was widened for almost its entire length some years ago. Notice too, that these north-south traffic routes, particularly south of Grand Boulevard, pass through the heart of the blighted areas within the Boulevards and notice that Warren and Forest east-west routes also pass through the same blighted areas. It is obvious that the constant shuttling of traffic, back and forth, day and night, is a contributing cause of the blight in this area.



Heavy Traffic on Roads to Adjacent Cities

With reference to Fort, Michigan, Grand River, Woodward, and Gratiot, it has been mentioned above that these traffic routes extend well out of the city. In this connection, the relation of Detroit to the adjacent cities of Toledo, Flint, etc., was given consideration, as well as the relation of Detroit to the main cross-country travel-routes. This is shown in the illustration above.

Traffic on the above-mentioned roads is partly due to the fact that they connect with adjacent cities, as follows: Fort to Toledo and the east-west travel-routes along the southern shore of Lake Erie; Michigan to Chicago and the West; Grand River to Lansing and Grand Rapids; Woodward to Flint, Saginaw and Bay City, etc.; and Gratiot to Port Huron and the Canadian travel-routes. This illustration also indicates the position of Detroit with respect to the other cities in the Middle West. It does not have the same through-traffic problems that are found in Cleveland, for example. Detroit's position is unique. It is rather off the beaten track. Detroit's position as the fourth city in the United States is not due to its geographical position or location but rather in spite of it.



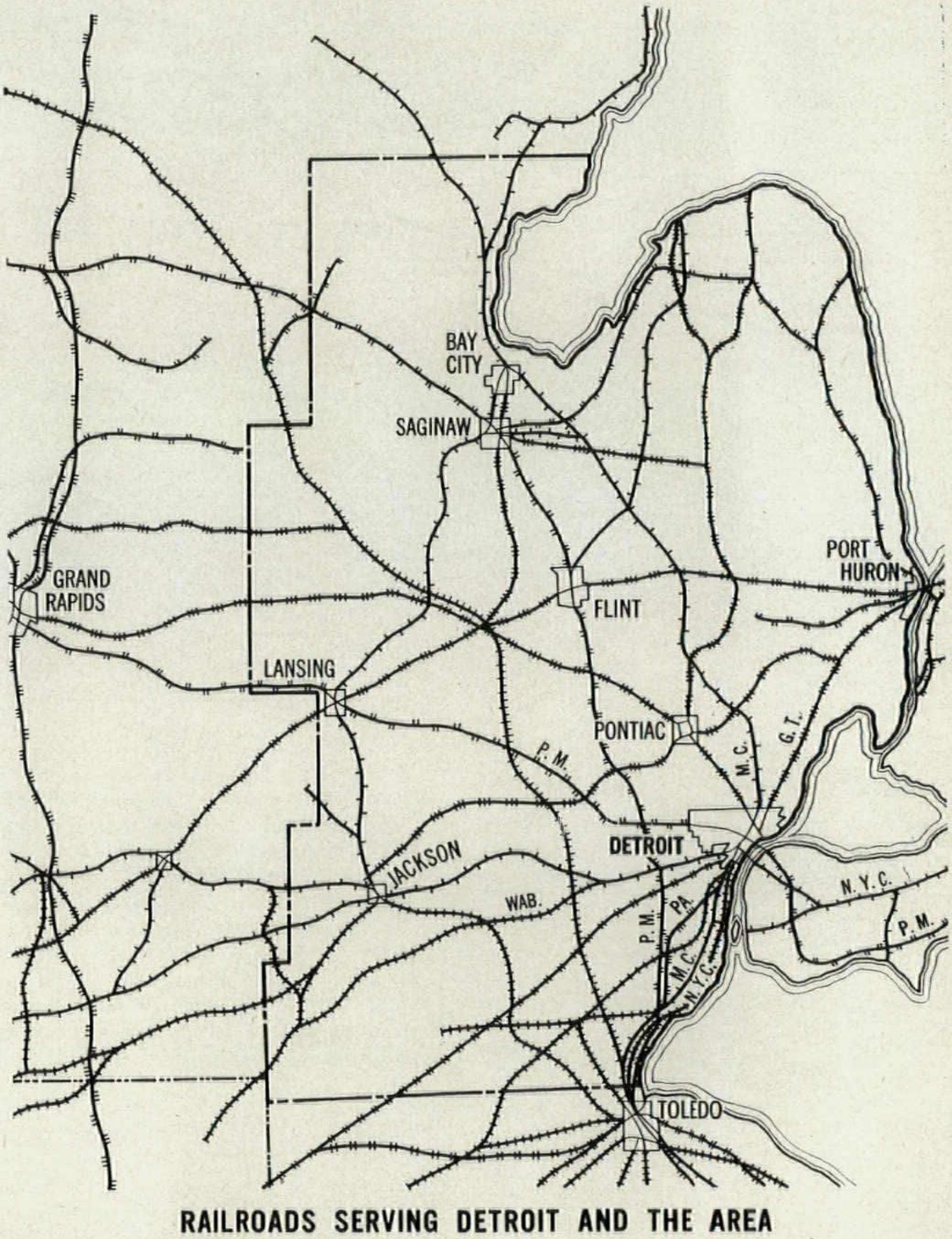
A Solution for the Cross-town Traffic Problem

Cross-town traffic is mentioned above and reference is made to the main cross-town traffic routes shown on page 58, "Traffic Volume, Detroit 1941." In the same illustration, the McGraw-Harper cross-town highway, now under consideration, is indicated by dotted lines showing the route through the mid-town area between Grand River and Grand Boulevard East, and the extension, running southwest from Dearborn from the intersection of Michigan and McGraw, to the Willow Run Industrial Area. The full extent of this cross-town expressway is shown above. It is about 50 miles long, extending from Willow Run to a point beyond Mount Clemens in the direction of Port Huron. Its purpose is to provide a through-way for traffic to the industrial areas; it would connect with or be adjacent to Willow Run, River Rouge, Milwaukee Junction and Connor's Creek Industrial Areas. The solution of cross-town traffic has, in this case, involved the design of a 50 mile expressway to serve the industrial region. Keep in mind the fact that manufacturing in the Detroit Area utilizes trucking for the delivery of its materials and the shipping of its finished products, and remember also the present tendency of industry to relocate in the open areas. This industrial expressway indicates that highway design in the Detroit Area has already taken on a "regional" complexion, and future highway design will probably be required to follow this regional trend.

Design Research; Suggestions for Revised Railroad Pattern in Detroit:

Under "Design Patterns," page 52, and under "Blighted Areas," page 55, it was mentioned that the railroad lines had added a fourth pattern to the street pattern of Detroit, and that this added railroad pattern had created many small segments in the "Area within the Boulevards," which segments are now almost completely filled with blighted areas. Assuming the relative size of these segments is partially responsible for the "blight" and that it was not due to the adjacency of the railroads and industry, and knowing that the industries in the Detroit area use motor-trucks by preference, it was considered advisable to make studies for the removal of some of the present railroad lines. Many of these railroad lines serve the older industries which have shown a marked tendency to re-locate in the more open areas. To make such suggestions, it was necessary to examine the present railroad lines serving Detroit and the Detroit Area. These lines are shown below.

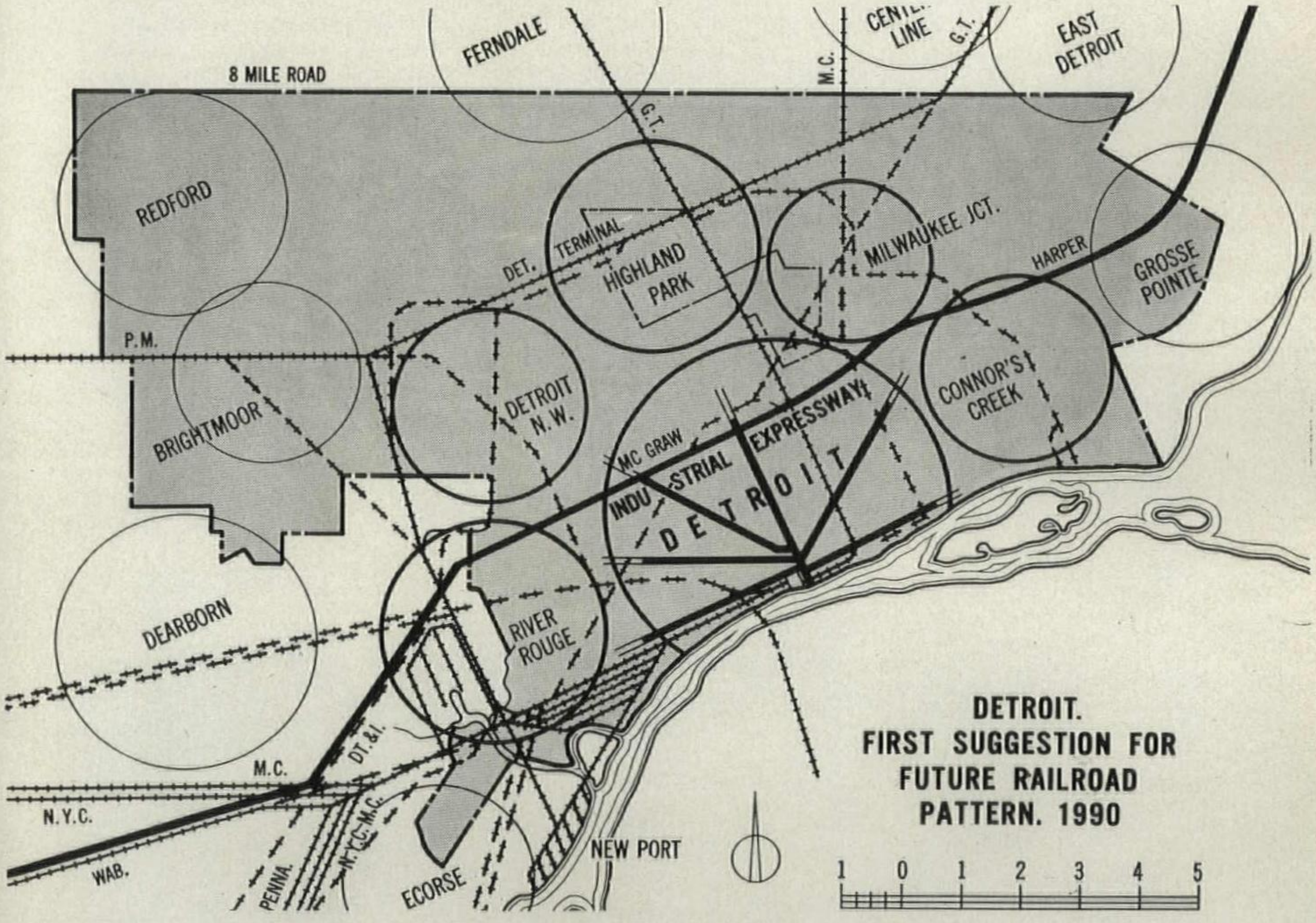
This illustration indicates the relation of Detroit to the adjacent cities of Toledo, Lansing, Flint, etc., its position with respect to the main railroutes is indicated by its relation to Toledo which is on several of the east-west railroads. As in the case of the highway map, the position of Detroit is unique; it is off the beaten-track, etc., except perhaps for the Michigan Central Line from Buffalo across Canada to Detroit and thence to Chicago. Several railroads terminate their passenger service at Detroit; i. e., the Wabash, Pennsylvania, Baltimore and Ohio, Chesapeake and Ohio, etc.



RAILROADS SERVING DETROIT AND THE AREA

Earlier studies for the Detroit Waterfront Development resulted in a plan for a single passenger terminal that was to be located at the foot of Woodward Avenue. By comparison with Chicago, for example, the number of railroads having their passenger terminals or passenger facilities in Detroit is rather small. It is entirely feasible to have all the railroads use one station, and a plan for one passenger station is now under consideration by Detroit. In the preliminary study of Detroit it was decided to tentatively hold to the idea of a single station near the foot of Woodward. According to this plan the Grand Trunk Line, parallel to Woodward, could serve as a possible inter-urban or suburban service in the future, inasmuch as this line is located in an under-pass for a good distance, thus permitting the streets, east and west, to pass over the line. The Detroit Terminal Railroad was to be revised to provide for connections to all of the principal railroads and would be located approximately in the same location, passing through Highland Park, etc. These changes would permit many of the railroad lines south of the Detroit Terminal Railroad line to be eliminated. The industrial areas of River Rouge, Milwaukee Junction and Connor's Creek might be served by the McGraw-Harper Cross-town Expressway. These suggestions are shown below.

The railroad lines that have been eliminated in this scheme are shown by dotted lines. The main diagonal streets, and Fort, Jefferson and Woodward are shown as they would appear at the center of the City. By referring to the figure showing blighted areas on page 55 it can be seen that the number of small segments in the "Area within the Boulevards" would be considerably reduced thereby permitting better development of this area.



DETROIT.
FIRST SUGGESTION FOR FUTURE RAILROAD PATTERN. 1990

In the preliminary study of Detroit, several factors indicated that the scope of the study should be broadened and should include a study of the Detroit Region. For example, the study of the "Blighted Areas" raised the question as to the proper use of the blighted areas when they are considered as potentially "open areas" in the future planning of the city; the study of industry brings up the matter of the present tendency of Detroit's industry to seek new locations in more open areas; traffic volume studies involved an examination of Detroit's relation to the surrounding cities; etc.

At the time of making the preliminary study of Detroit, there was no regional planning body. In fact, the question might be asked as to what area might constitute the Detroit Area or Region.

The second stage of these planning studies is concerned with data research and design research leading to the establishment of the Detroit Area or Region, "The Detroit Sphere of Influence."

House for Mr. and Mrs. William Moorhouse, Lancaster, Pa.

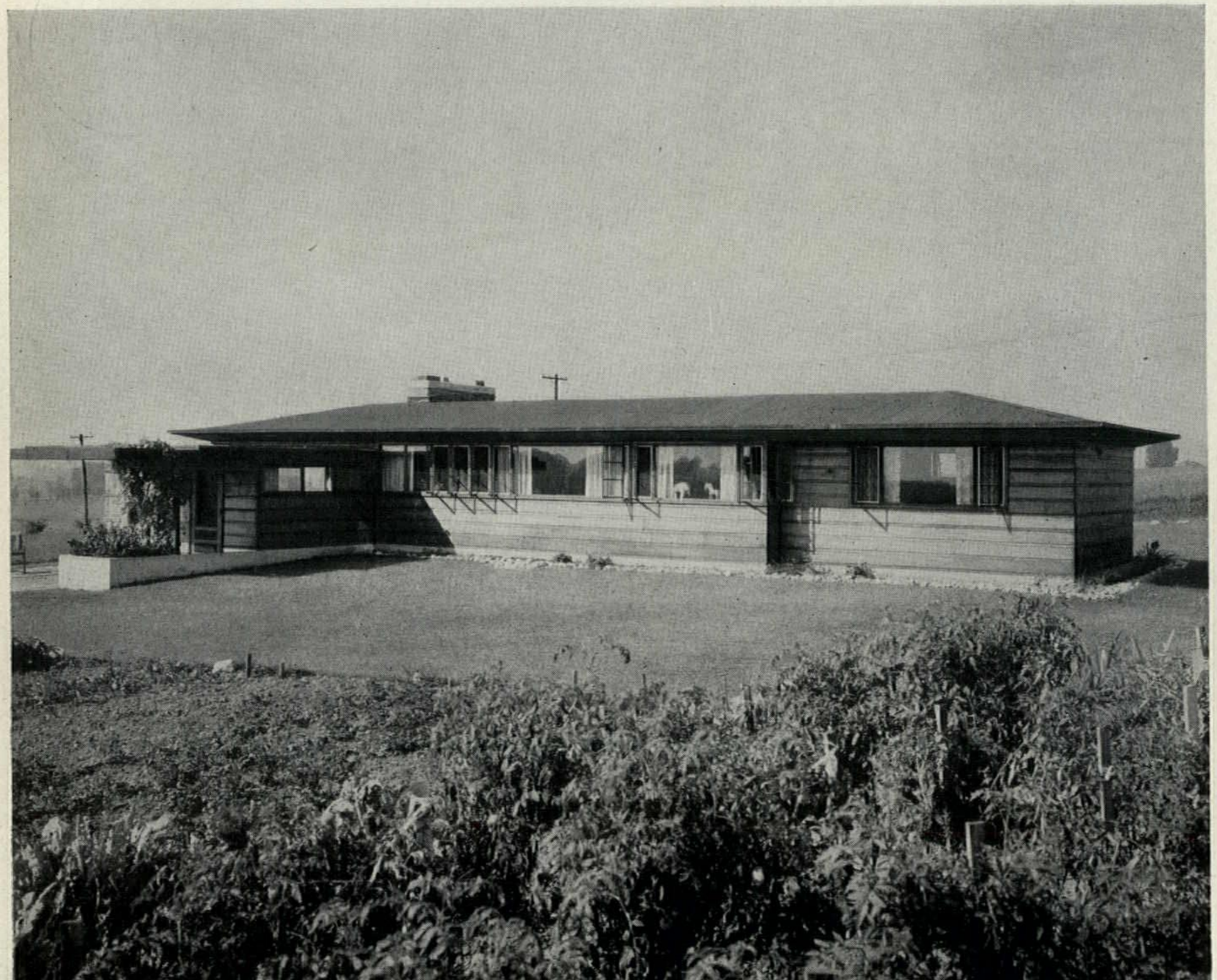
Philip F. Hallock, Architect, R. V. Hall, Associate

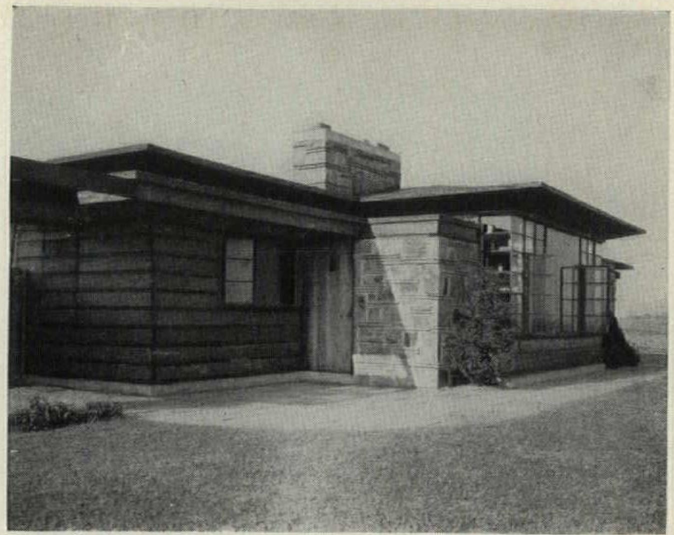
Although this house is located in the center of the Pennsylvania Dutch district and the owners had collected some antiques, as do most of these people, a traditional home would not fit their needs. The owners are young, and they wanted a young house with much glass area and with interrelationship and freedom in the living areas. More suitable furnishings, in keeping with the house, are contemplated in the future.

The house is located on a gentle slope overlooking the City of Lancaster some two miles distant to the south. The natural slope of the site was utilized in the design by dropping the floors in the utility, entry and living areas. This, together with the divan, bookshelves and table grouping in the living area conceal the dining table from view although the two areas are otherwise completely open. The dining area balcony effect also gains the view of the city sky line through the living area bay.

The design was based upon a 4-foot square module with all service areas located on the west, facing the highway. Further privacy was gained by using high windows in these areas. Sleeping and dining areas were opened to the east into the future garden. The stone corner in the living area was designed especially for the grand piano. The piano was shielded from sun, yet was lighted sufficiently from the high windows on the north wall.

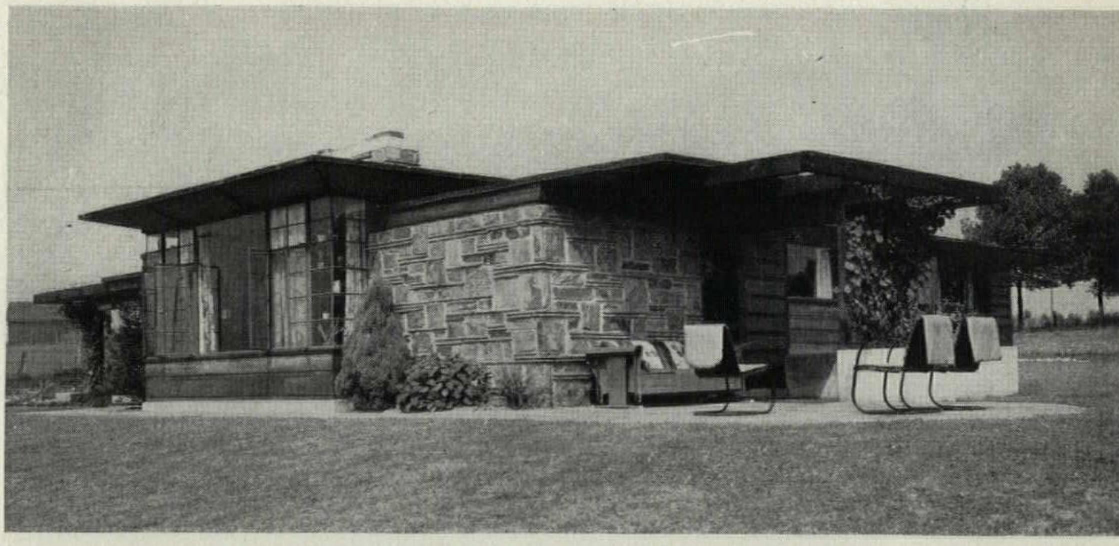
The house is heated by radiant floor panels. Since heating by radiation involves the control of the absorbed as well as the reflected heat by and from all surfaces within the building, it is more important to control the textures and finishes of interior floor, wall and ceiling materials than in a building heated by other methods. The low-temperature radiant floor panel coils of black wrought iron pipe (diameters ¾″, 1″ and 1½″) were welded in place at the site on gravel fill. Balancing valves on each main supply in the utility room, and

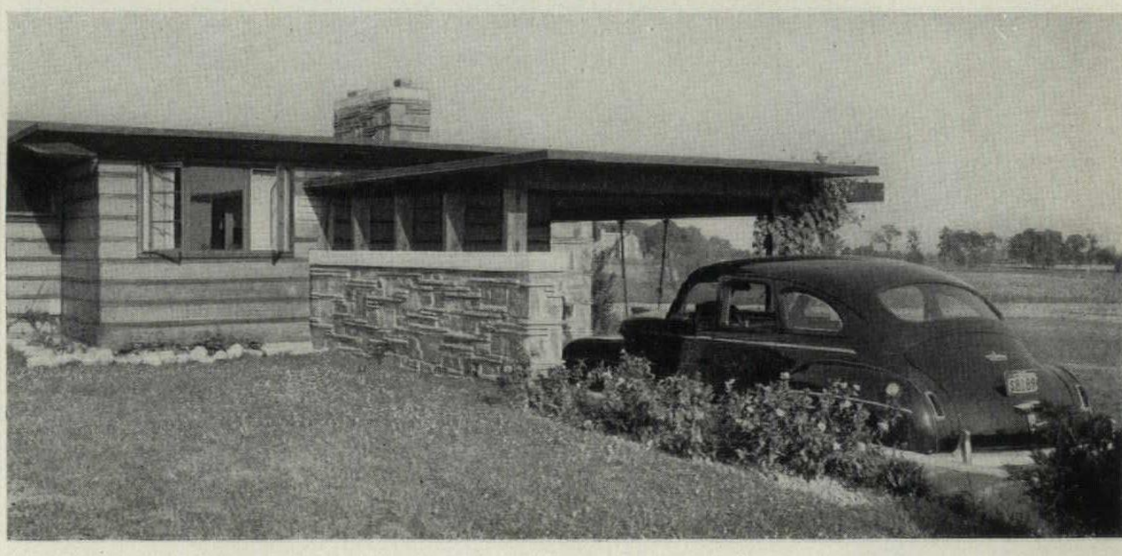


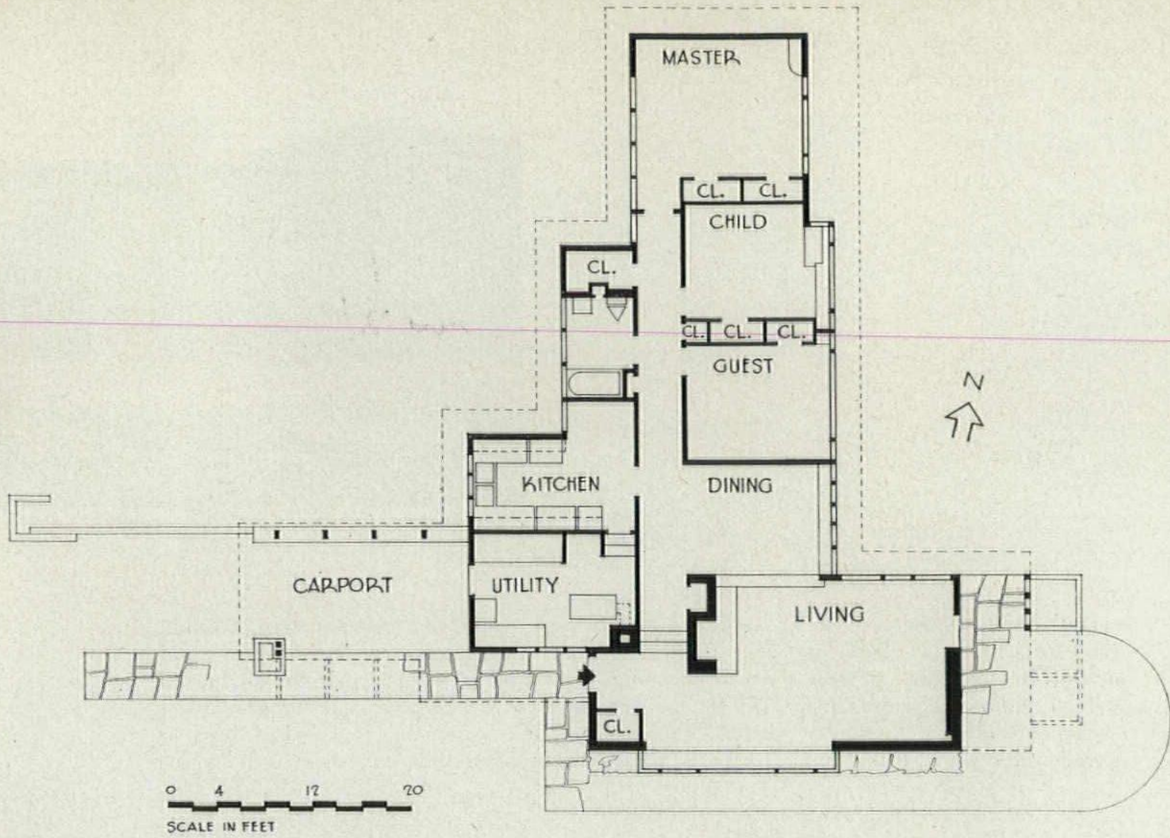


Photos by John A. Fritz

separate local control valves for each living area, were installed. After testing, concrete was placed over the entire floor area. The thermostat was connected with the water pump in order to maintain an even water temperature and to lower the load on the oil burner. A high limit control was placed in the concrete floor as a safety measure to protect the system in case the thermostat should cease to function. After the system had been in operation for about two months, in order to drive out excess moisture, the wood flooring






MASTER
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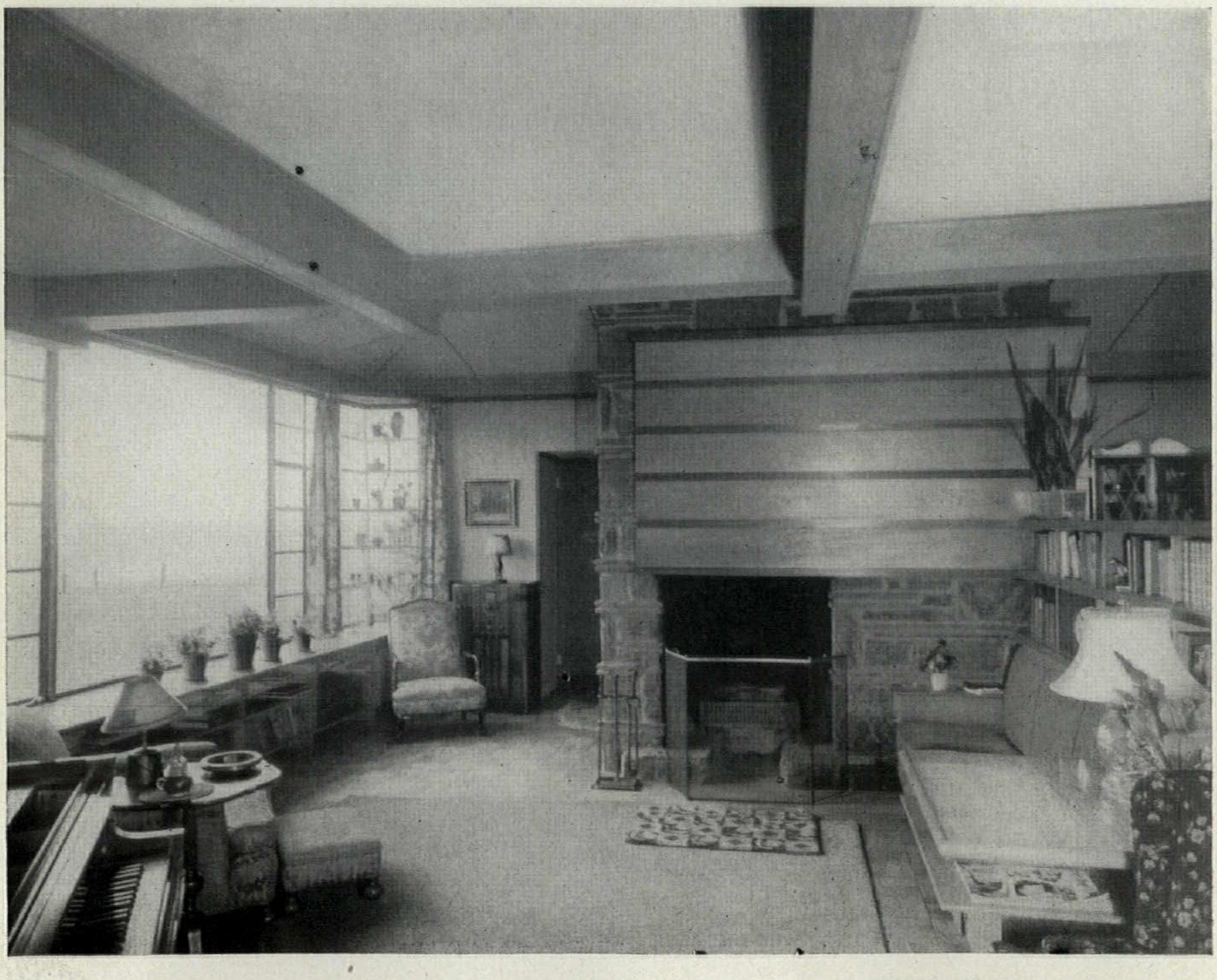
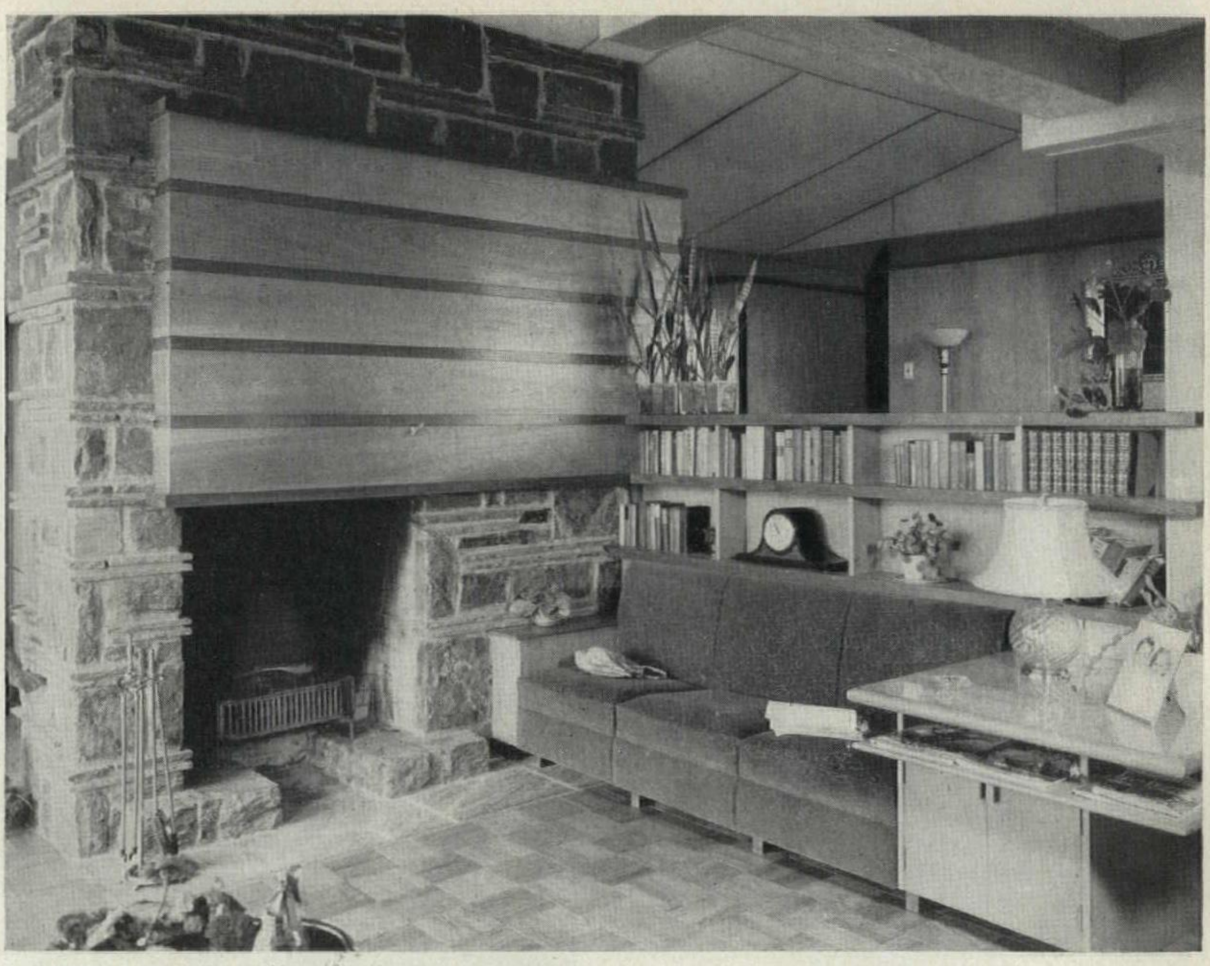
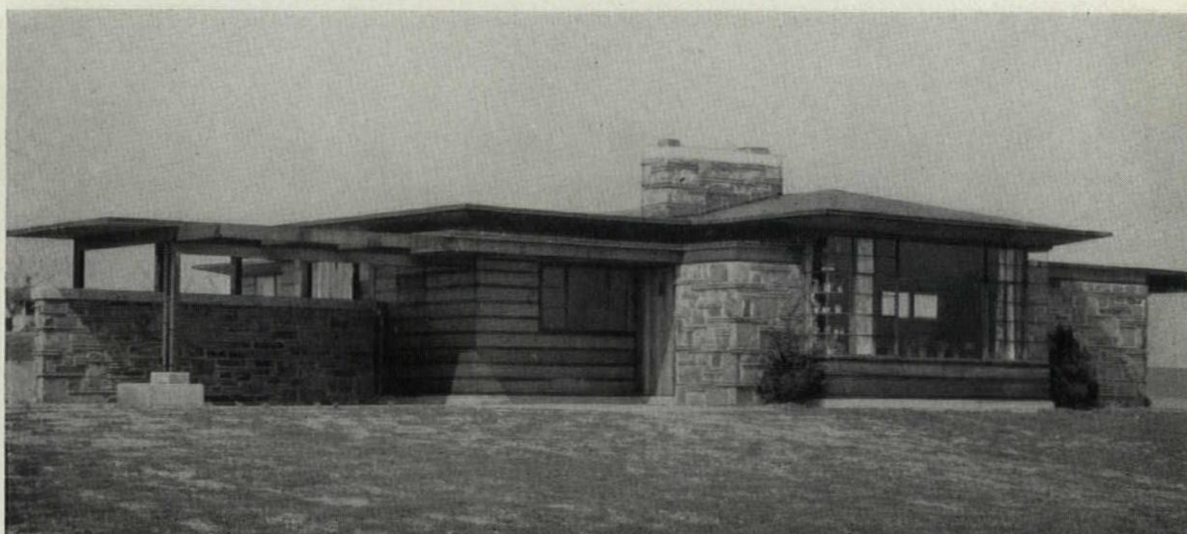




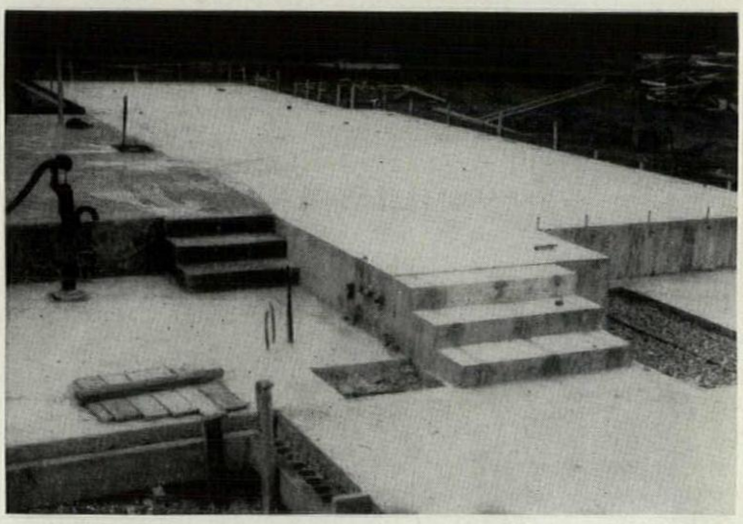
was applied with mastic. The wood acts as a distributor. Although the system was designed for a water temperature between 120°-140° F. and a maximum floor surface temperature of 85° F., the floor has not reached this temperature in the severest winter weather.

Some specific advantages of the radiant system of heating in this house, as reported by the owners, are:

1. More body comfort and uniform air moisture content winter and summer.
2. Miraculously little dusting and cleaning required because the system of heating does not circulate dust.
3. Lower installation and operating costs.
4. Since the floor is not noticeably warm, there is no cold stratification and the air is not burned.
5. Although there is no apparent air movement, ventilation is automatic.
6. The house is cool in summer because the floor is in contact with the ground and absorbs heat. Circulating cold water in the coil as a cooling medium is not necessary.
7. Plant life thrives as it does in hot-houses.
8. Respiratory illness is reduced.

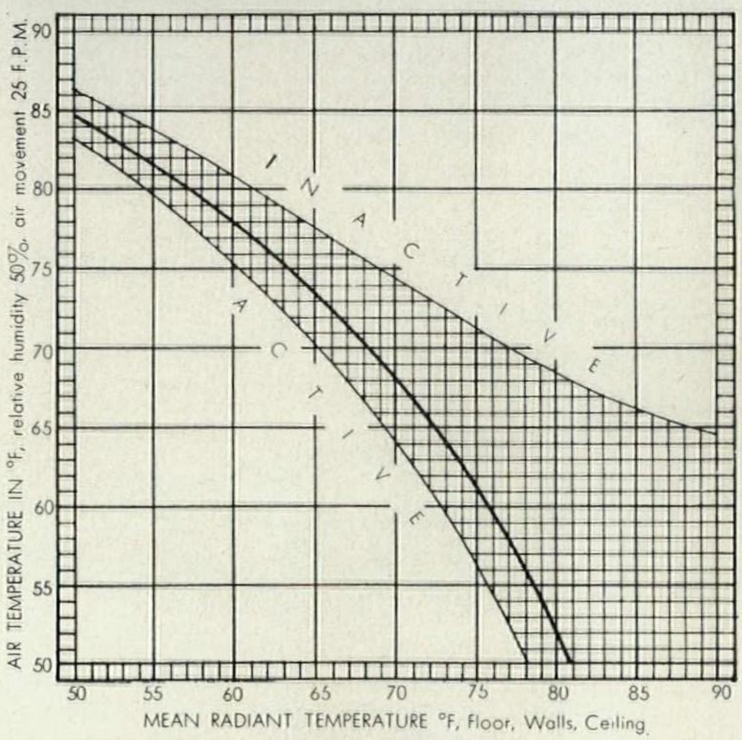


Above is the gravel fill, with radiant heating piping installed; at right, concrete floor poured. The house has concrete footings, concrete block foundations, and exterior walls which are partly Avondale sandstone and green flagstone, partly solid-core 2 x 6-inch T. & G pine surfaced with cypress and redwood, oiled. Aluminum foil insulation is used. Interior wall surfaces are ¼-inch fir plywood, specially stained and waxed; stone portions are exposed on the inside. Hipped roof is finished with mineral-surfaced roll roofing. Flat roof is built up. Flashings are 16-oz. copper. Floors are factory-finished red oak block set in mastic; linoleum is used in kitchen and bath, concrete in utility room.



Comfort Zone Chart

The hatched area indicates the approximate comfort zone. The heavy curve within this comfort zone indicates the ideal design relationship between air temperature and mean radiant temperature. The curve marked "inactive" represents the zone at which the body becomes too warm while at rest. The curve marked "active" represents the zone at which the body becomes too cold while exercising mildly, without additional clothing.



COMFORT ZONE CHART

Design and Practice of Radiant Heating

by Philip Hallock, Architect

Certain fundamentals determine the general characteristics of heating by radiation. Conditions for human comfort are determined by the amounts and proportions of body heat released by conduction, evaporation, respiration, convection, and radiation under varying heating conditions. By carefully scrutinizing these fundamentals, it is possible to explain some of the reasons for the gain in human comfort experienced by the owners of radiant-heated homes.

In our consideration of body heat losses indoors, the temperature range of all surfaces is so limited that conducted heat loss is negligible. Heat loss by evaporation and respiration increases as temperature and humidity decrease. Heating by radiation aids this loss by lowering the air temperature and increasing the comfort range of humidity percentage. Since evaporation and respiration are automatically aided by this system, and the greater amount of body heat (about 80 percent) is dissipated by convection and radiation, the latter become the main subjects of our concern.

More comfort is experienced in proportion to (1) the increase in body heat lost by convection to that lost by radiation; and conversely, in proportion to (2) the increase in the radiation heat source to the convection heat source. As these changes take place, room air temperature decreases and heat is more rapidly convected from the body to the air. In design, it is necessary to provide, as nearly as possible, a uniform heat source as well as a uniform heat loss from the body surface.

An example to illustrate lack of uniformity is the central wood stove of the past. Such a heat source is of small area and requires a high surface temperature for adequate space heating. Human comfort is lowered by this method of heating, although such a method is highly radiating, because the point source of heat causes unequal heating (greater difference between various surface temperatures within the room) with resulting strong convection currents. Human comfort was increased, over this system, by introducing other heat sources of larger surface areas, with reduced surface temperatures, involving the use of the indirect heat produced by radiators. Although such systems heat more uniformly, most of the heating effect is due to convection. The result is higher air temperature, lower humidity, and less convected and more radiated body heat loss, all of which bring about less comfort—as explained above. Since the surface temperatures of both heating sources are high, the air is burned and dust particles are precipitated on the walls and ceiling. Both systems set up pronounced convection currents. The introduction of air conditioning corrected the humidity percentage, but convection currents and high air temperatures remained in the usual systems of heating.

In radiant heating systems, these convection currents and air temperatures are reduced by increasing the surface area of the heating source and reducing the surface temperature proportionately. The amount of radiated heat is increased as heat by convection is decreased. The more the percentage is increased, the less necessary is air conditioning. The air moisture remains more constant and the humidity comfort range is increased, permitting a greater range of bodily activity within the room. The body is, therefore, comfortable within a larger range of air temperature and humidity percentages. Comfort has been reported with 80% humidity. Since air temperatures may be more varied for comfort, the lag in heating-up when the air temperature thermostat calls for heat is not so important. Radiant heat rays effect body comfort more quickly than air temperatures.

It is not practical to heat all the surfaces within a room because of the physical complications as well as the exhorbitant cost. It is practical, however, to accomplish a large measure of the increase in body comfort by using the floor, ceiling, one or more of the walls, or combinations of these as a radiant panel. While most of the experimental work in radiant heating in this country has been done on small houses, radiant heating is equally, if not more, adaptable to the largest buildings.

Worksheet and Calculations

(Worksheet shown on following page)

The following points outline the methods of calculating the radiant floor panel used by the author. Numbers from one to twelve on the work sheet are indices used for convenience in carrying computations forward. For ease of explanation, the numbers starting with twenty have been added to correspond with the following text:

A. 21: Figure the resistance of the various interior and exterior walls, roofs, and floors in the usual manner.

B. 22: The transmission coefficient of each surface is determined. The coefficient for single and double glass area may be revised from the usual practice, depending upon the average amount of surface covered by drapes. Calculate (23) the temperature difference between the lowest exterior winter temperature and the interior design temperature. The interior design temperature for each room is selected from the comfort zone on the chart. 24 is the product of the temperature difference, the transmission coefficient for infiltration and the required number of air changes per hour resulting in the BTU loss for one cubic foot of space.

C. 25-26: Calculate the BTU loss per foot of crack for windows and doors in a similar manner, substituting the air leakage in cubic feet per hour per lineal foot for the number of air changes in figuring cubic infiltration losses.

D. The product of the previously determined transmission coefficients and the temperature difference is entered under 27 for each item. The surface areas of each type of roof, wall, and floor construction are entered under 28 for the respective rooms. The BTU loss for each material is the product of 27 (the unit BTU loss) and 28 (the area) and is entered under 29 for each room.

A trial BTU loss for cubic infiltration (30) is compared with the sum of the BTU losses for the window infiltration (31), and the door infiltration (32) figured as described above. The largest BTU loss is used in the table, but in no case are both used. This is a safety measure used in modern houses to guard against errors due to unusually large glass areas and unusually high ceilings.

The above BTU losses are totaled for each room under 33. The floor BTU (34) and wall BTU (35), if required, are calculated to balance the BTU losses for each room in column 33. Provided that no wall coil be used or required in the room, the floor BTU required will be the same as 33. The floor area for each room is noted in each box 36. The floor BTU required (34) is divided by the floor area (36) to find the BTU heat release up from the floor panel (37) for each room.

The unit heat release of the floor down in BTU per sq. ft. per hour is calculated and entered in box 38; the product of each

RADIANT HEATING WORK SHEET

BUILDING COM. NO. DATE

B. T. U. LOSS DATA

1 ROOF		2 ROOF		3 WALL		4 WALL		5 WALL		6 FLOOR	
ITEM	RES	ITEM	RES	ITEM	RES	ITEM	RES	ITEM	RES	ITEM	RES
TOT RES	21	TOT RES		TOT RES		TOT RES		TOT RES		TOT RES	
TC=1÷RES	22	TC=1÷RES		TC=1÷RES		TC=1÷RES		TC=1÷RES		TC=1÷RES	

10. CUBIC INFILTRATION

ROOM	L. R.	D.R.	KIT.	UTIL.	GUEST B.R.	B.R. 2		
TEMP.DIFF.	23							
B.T.U.								
AIR CH.								
UNIT LOSS	24							

11. WINDOW INFILTRATION

T.D.	B.T.U.	A.L.	UNIT L.
			25

12. DOOR INFILTRATION

T.D.	B.T.U.	A.L.	UNIT L.
			26

B.T.U. LOSS PER ROOM

	ITEM	UNIT BTU LOSS	A	L.R. BTUL	A	D.R. BTUL	A	KIT BTUL	A	UTIL BTUL	A	BR#1 BTUL	A	BR#2 BTUL	A	BR#3 BTUL	A	BTUL	A	BTUL
1	ROOF	27	28	29																
2	ROOF																			
3	WALL																			
4	WALL																			
5	WALL																			
6	FLOO																			
7																				
8	DBL G																			
9	SGL G																			
10	INF C			30																
11	INF W			31																
12	INF D			32																
13																				
B.T.U. LOSS SUB TOTAL				33																
FL BTU REQD				34																
WALL BTU RQ				35																
BTU SQ ' UP			36	37																
FL BTU DOWN H.= 38			36	39																
BTU LOSS TOTAL				40																

BUILDING COM. NO. DATE

MEAN RADIANT TEMPERATURE

	ITEM	W.T.	A	L.R. WTxA	A	D.R. WTxA	A	KIT WTxA	A	UTIL WTxA	A	BR#1 WTxA	A	BR#2 WTxA	A	BR#3 WTxA	A	WTxA	A	WTxA
1	ROOF	41	42	43																
2	ROOF																			
3	WALL																			
4	WALL																			
5	WALL																			
6																				
7																				
8	DBL G																			
9	SGL G																			
SUB TOTAL			44	45																
MRT UNHEAT				46																
FLOOR TEMP				47																
FLOOR AxT			48	49																
TOTAL AxT			50	51																
M.R.T.				52																

PIPE INSTALLED 53

	L.R.	D.R.	KIT.	UTIL.	BR.#1	BR.#2	BR.#3		
LOCATION	SQ FT	SQ FT	SQ FT	SQ FT	SQ FT	SQ FT	SQ FT	SQ FT	SQ FT
FLOOR									
WALL									
GAL.PER HR.									

TOTAL GAL. PER HOUR = ______
HEAD = ______
PUMP SIZE = ______
TOTAL B.T.U. FOR SYSTEM = ______
BOILER CAPACITY = ______

WATER TEMPERATURE = ______
AVERAGE TEMP. DROP = ______
LONGEST WATER TRAVEL = ______
SIZE MAIN #1 = ______
SIZE MAIN #2 = ______
SIZE MAIN #3 = ______

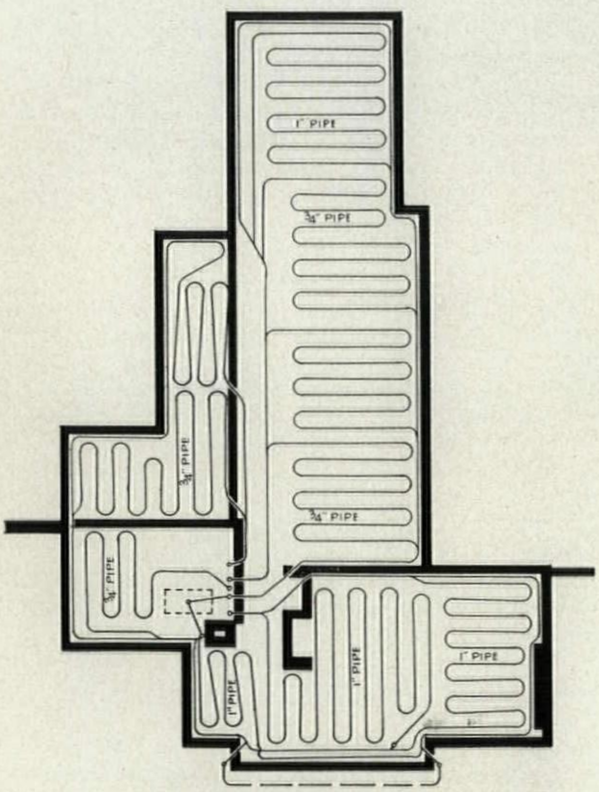
ESTIMATED INSTALLATION COST ______ ESTIMATED OPERATION COST ______

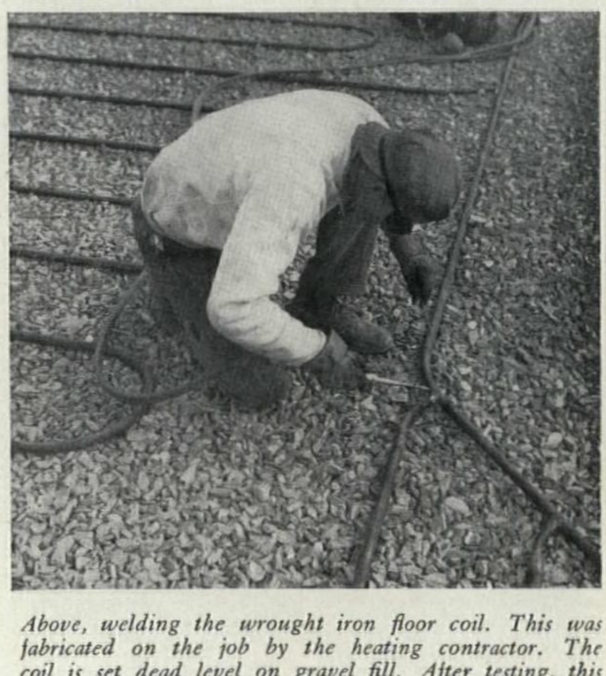
ACTUAL COSTS

INSTALLATION COST
TOTAL COST ______
COST PER B.T.U. ______
COST PER SQ. FT. FL. AREA ______

OPERATION COST
COST PER YEAR ______
COST PER B.T.U. ______
COST PER SQ.FT.AREA/YEAR ______

Above are work sheets developed by Philip Hallock for use as described in his article. Below is the radiant panel layout for the Moorhouse residence. Main supply lines run along outside walls to offset cold down drafts.





Above, welding the wrought iron floor coil. This was fabricated on the job by the heating contractor. The coil is set dead level on gravel fill. After testing, this was covered with the concrete subfloor. Several months were allowed for the floor to dry out before the prefinished wood surfacing was applied.

floor area and the unit BTU heat release down is entered for each room under 39. The total BTU loss (40) is the sum of the BTU losses by unheated areas (33) and the floor BTU loss down (39).

E. The next step is the mean radiant temperature calculations for each room. Item 41 is the temperature difference between the interior and exterior of the walls, floor, and ceiling less the temperature difference of the room air to the inside wall temperature, 42, as before, is the area of the surface. 43 is the product of temperature difference (41) and the area (42). Room columns 42 and 43 are added and entered under 44 and 45 respectively. The mean radiant temperature of the above unheated surfaces (46) is obtained by dividing 45 by 44. The floor surface temperature (47) is calculated from the mean radiant temperature of the unheated surfaces, the assumed air temperature and the floor BTU release previously calculated; should this temperature be above 85° F. an additional area of radiant panel must be used in order to prevent noticeable hot spots. The surface temperature of the floor is then refigured with the increased area. This floor temperature (47) is multiplied by the floor area (48) to obtain 49. 50 is the sum of 48 (the heated floor area) and 44 (the unheated surfaces in each room). 51 is the sum of 45 and 49.

The mean radiant temperature of heated and unheated surfaces in each room (52) is obtained by dividing 51 by 50. Check the comfort zone chart to determine if this mean radiant temperature falls within the comfort zone at the assumed air temperature. If this is not the case, the calculations must be repeated with a different assumed air temperature, or an increased or decreased floor release.

F. The final step in the panel design is the calculation of the size, spacing, and length of pipe required to produce the total BTU required for each room (53). The additional information, namely, gallons of water per hour, water head, pump size, boiler capacity, water temperature, water temperature drop, and the sizing of the mains are calculated in the usual method. If the heat release up from the floor is more than 85° F., it may be necessary to add more insulation in the ceiling and walls, increase the size of the heating panel, or change the surface material on the floor. If the floor surface is wood, larger pipe sizes may be used without causing hot spots because of the low conductivity.

Additional radiant panels are seldom required when the floor is used as the heat source if the windows are double glazed. Although there is a high percentage of glass area in the Moorhouse project, only one small wall coil was used. This coil was located under the large living room window which is not double glazed. If additional humidification and fresh air are required (as in public buildings) they are provided in the conventional manner.

Construction

The above method of calculation has been described for a heating medium of piped hot water in floor coils. Other mediums which have been used are piped steam, hot air, and electricity. Steam and hot water are used more frequently in this country. Gas, oil, coal hand fired, and coal stoker boilers have been used successfully for this type of heating.

In laying out the system, the main supply lines are usually valved separately at the boiler for balancing the system and draining, if the house is to be vacant for a protracted length of time in cold weather. The main supply lines are run around the outside walls to offset the cold down draft and thus be in the proper location for branches to additional walls or window coils as required. A small coil is often concealed under larger single glazed windows by a case. This coil is valved in order to prevent short circuiting the room coil. The heat from such a coil balances the window infiltration and removes condensation in severe weather, by raising a higher temperature curtain in front of the glass resulting in equal heat loss by the body to all surfaces. Discomfort may be caused by a surface at an appreciably lower radiant temperature because the surface of the body turned toward it loses heat at a more rapid rate than other body surface areas. Each room coil is valved at the junction with the main supply or the main return which continues back to the boiler from the center of the house floor area. The whole system may be laid level or pitched slightly toward the boiler for ease in draining. Air vents are located at all high points. All local valves should be drilled with a small diameter hole to prevent complete stoppage of flow when the valve is closed, and thus prevent a possible freezing in cold weather. Before covering, the coil system is tested with a pressure of 200-300 lbs. The coils are usually covered with concrete to aid conductivity in a one-story structure. Any wearing surface may be installed over the slab. Coils for a two story structure may be installed in a similar manner. If the construction is wood or metal, the coils are placed between the joists. Conductivity to the radiating surface from the coils is maintained by placing the plaster ceiling or the floor construction in contact with the coils. If, in a house of wood construction, a room has auxiliary ceiling or wall coils, it is not necessary to place the floor coils in contact with the floor construction. In this case the higher resistance of the air space allows sufficient heat passage to the floor surface.

Three types of automatic controls may be used. An exterior temperature control may be used to anticipate a lower mean radiant temperature. Wall surface temperature or air temperature thermostats may be used in the usual manner. Since radiant heating permits a greater range of air temperature with comfort, the author prefers the more economical air temperature thermostat for residences. Because of the larger permissible range in air temperature, with radiant heat, the usual 2° F. thermostat setting calls for heat before the body feels cool and the time lag of the floor system loses its significance.

The thermostat is connected to operate the circulating pump. This not only reduces fuel consumption, but permits easier control of the domestic hot water temperature when the boiler coil is used. A modulating system is recommended for large buildings. A three-way valve connected with the boiler supply, coil supply, and coil return by-pass is used in this type of hook-up, and is controlled by an exterior temperature bulb; the circulating pump remains in continuous operation. This method provides a more even water temperature.

The Advantages of the System Described Are:

1. *There is more freedom of planning in room design.*
2. *The floor panel is finished with the floor construction, and delays in later construction are prevented.*
3. *The floor, being in contact with the earth, is cool in summer and warm in winter.*
4. *The air is purer because the system does not cause the circulation of dust.*
5. *Convection currents are substantially reduced.*
6. *Less house cleaning is required.*
7. *Installation and operation costs are lower.*
8. *Air temperatures and heating medium temperatures are lower.*
9. *High rooms are heated as easily as low rooms.*
10. *The humidity remains more constant.*

Architects at War:

Contributions of the Profession to the Prosecution of the War

The architects of America have demonstrated during the past two years that they have what it takes to make a truly important contribution to the war effort. There need no longer be any feeling of inferiority based on the sort of talk that was prevalent during the early stages of the war when architects were so often told that they could not fit in advantageously and that engineers only were wanted.

Last summer we asked the Secretaries of all AIA Chapters and State Associations to furnish us with as much information as was available concerning their members in military service, those working on war contracts, those occupying positions in government bureaus, and those working for war industry. While the replies vary greatly in terms of the completeness of the information made available, we have been able to put together from them a fairly good picture of what has been taking place throughout the country.

Reports were made by the Secretaries of 39 organizations, 33 of which were Chapters of the Institute.* The total membership represented was about 2,500. 508 members of these groups were listed as being in the uniformed services, representing 20% of the membership. If we apply this percentage figure to the entire national membership of the AIA we should arrive at a figure of about 780 Institute members now in uniform, which may or may not closely approximate the actual total. It is safe to say that there must be, in addition, many non Institute members and hundreds of draftsmen and junior architects. It is probable that between ten and twenty percent of the entire profession is in uniform today.

We are listing hereafter the names of 718 architectural men who are known to us to be in the service. We know that this list is sadly incomplete and that there have been many promotions since the information was reported to us. We will appreciate hearing from anyone who can add to this list or furnish corrections which we will gladly publish later.

In the reports made by the various Secretaries, there was only a partial listing of the war projects for which architects have been responsible either completely or in close association with architect-engineer partnerships. In many of the states reporting, the Secretaries did not have the information at hand and those from other states were doubtful about whether the war-time censorship would permit them to give out the information. We have, however, definite word of architects participating on projects totaling over $1,200,000,000. Knowing the incompleteness of the list, we have no hesitation in stating that this figure should be multiplied several times over to arrive at a fair estimate of the volume of war work that has been handled by the profession. For example, the figures do not include the State of Michigan, from which no report was available, and everyone knows that such offices as those of Albert Kahn, Smith, Hinchman & Grylls, Giffels and Vallet, etc. have accounted for astronomical totals all by themselves. $700,000,000 worth of projects were headed by architects in the New York metropolitan area and over $200,000,000 worth were done by architects in the State of Texas. Even though part of these totals represent money spent for the engineering phases of the jobs, the architects share equally in the responsibility for their design and execution.

The War Department does not permit the publication of a breakdown showing the number of projects in each category or the total dollar volume in each class. Even if it did, our figures are nowhere near complete so that the facts we might print would be only indicative. The principal headings include Housing and Community Buildings; Industrial Buildings; Training Schools and Establishments for Army, Navy, and Airforce; Airfields; Shipyards and Drydocks; Camps for various branches of the service, with Dormitories and Barracks; Internment Camps; Hospitals; and USO Clubs. A number of other types of lesser importance have also been designed by architects.

When and if the final figures are compiled by the government there will remain no doubt that the architects, acting in their professional capacity, have been of tremendous service in building up our war establishments, an essential part of winning the war.

We have no figures showing exactly how many of the profession participated either as principals or as designers, draftsmen, specification writers, etc., in carrying out these projects, but we know that the numbers are substantial. As for the men who did not become involved in this sort of activity, we have records of hundreds who have worked in various capacities in shipyards, aircraft and other munition plants, or who have been employed by purely engineering concerns, doing mechanical drafting, piping layouts, estimating, inspection, etc. Many hundreds of men have worked on camouflage projects and other hundreds have been employed by the various government agencies dealing with housing and war construction.

On the evidence in hand, incomplete as it is, we can confidently say that the great majority of the men of the architectural profession have served effectively in some way to help the nation along the road to victory, and that even those who could not for one reason or another participate have been doing important things in connection with getting ready for the postwar period. We are proud of the profession's performance and the profession may well be proud of itself.

* *Reports, more or less complete, were furnished by the following AIA Chapters: Alabama; Boston; Brooklyn; Buffalo, Central Valley (Cal.); Southern California; Santa Barbara; Florida (North, Central, and South); Georgia; Central Illinois; Iowa; Kentucky; Maine; Baltimore; Detroit; Mississippi; New Orleans; Dayton; Rhode Island; St. Louis; Tennessee; Texas (South, Central, and North); Toledo; Utah; Virginia; Washington (D.C.); Washington State; West Virginia and New York. State Associations which reported include: Pennsylvania, Alabama, Virginia, Texas, and California (Northern and Southern Sections).*

Architectural Men In Uniform

Abbreviation USA indicates United States Army; USN—U. S. Navy; USCG—U. S. Coast Guard; USMC—U. S. Marine Corps; USMM—U. S. Merchant Marine; USAR—U. S. Army Reserve; USNR—U. S. Naval Reserve; USCGR—U. S. Coast Guard Reserve; USMCR—U. S. Marine Corps Reserve; USAAC—U. S. Army Air Corps; USASC—U. S. Army Specialist Corps; C.E.—Corps of Engineers; j.g.—junior grade; s.g.—senior grade.

Alabama

Robert H. Adams, Jr., Ensign (USNR)
Brendon A. Bond, Ensign (USNR)
W. N. Chambers, Capt. (USA)
Thomas L. Clemmons, Lt. (USMCR)
John James Croft, Jr., Lt. (USA)
R. J. Crowley (USA)
James N. Davidson, Lt. (USA)
Merriam A. Delahay (USA)
Collins C. Diboll, Capt. (USA), (C.E.)
F. J. Dreyfous, Major (USA), (C.E.)
John R. Farris, Capt. (USA)

John L. Feagin, Capt. (USA)
James L. Gatling, Capt. (USA), (C.E.)
Eugene H. Gray, Lt. (j.g.), (USNR)
John H. Hancock, Lt. (USNR)
D. A. Hawkins, Pvt. (USA)
Charles L. Hendricks, Capt. (USA), (C.E.)
J. L. Hibbs, Capt. (USA), (C.E.)
Tom B. Kirkland, Lt. (USA), (C.E.)
Harry Inge Johnston, Capt. (USA)
R. H. Levison, Capt. (USA)
Sidney W. Little, Capt. (USA)
Henry Sprott Long, (USA) (Eng. Replacement Center)
Wm. Frank McCall, Jr., Lt. (USA)
Earl O. Murray, 1st Lt., (USMC)
W. J. Okel, Pvt. (USA)
Frank Marion Orr, Lt. Col. (USA), (Field Art.)
Robert Kelly Posey, Lt. (USA), (C.E.)
Henry W. Randolph, (USN)
John M. Robertson, Lt. (j.g.) (USNR)
Robert R. Rowe, Lt. Comdr., (USNR)
Charles S. Rush, Capt. (USA), (C.E.)
J. R. Rutland, Jr., Capt. (USA), (C.E.)
Jesse Donald Simmons, Capt. (USAR), (Field Artillery)
Earl C. Smith, Major (USA), (C.E.)
Francis P. Smith, Capt. (USA), (C.E.)
G. E. Kidder Smith, Ensign (USNR)
Moreland Griffith Smith, Major (USA)
Paul M. Speake, Lt. (j.g.), (USNR)
H. R. Steeves, Jr., Lt. (j.g.), (USNR)
John David Sweeney, 1st Lt. (USA), (C.E.)
M. H. Tardy, Capt. (USA)
J. M. Thrasher, Lt. (USA), (C.E.)
Henry J. Toombs, Capt., (USAAC)
Lawrence S. Whitten, Lt. (USNR)
J. Streeter Wiatt, Capt. (USA)
H. Eugene Williams, Lt. (USA)
Robert K. Williams, Capt. (USA), Airborne Engr. Bn.)
Arch R. Winter, Ensign (USNR)
William Norvell Womelsdorf (USAAC), (Glider Training Detachment)
Linton H. Young (USN)
William W. Young, Major (USA), (C.E.)

California

A. J. Acland (USN)
Gerald Henry Bense, Ensign (USN)
Leon G. Bernard, Lieut. (USNR)
Mark L. Berry, Chief Petty Officer (USN)
H. J. Bissner, Lt. (USMC)
Dan C. Cherrier, Ensign (USN)
Richard L. Cook, Lt. (USA)
R. M. Crosby, Capt. (USA)
Cecil Rhodes Curtis (USA)
Erwood Eiden, Capt. (USA)
Thomas S. Elston, Jr., Capt. (USA)
Robert Field, Jr., Lt. (USA)
Clifford N. Franklin, Major (USA)
Arthur Frick, Lt. (USASC)
Charles E. Fry, Major (USA)
Herbert Goodpastor, Lt. (USN)
Harry Harmon, Ensign (USN)
LeRoy Harris (USASC)
J. Robt. Harris, Capt. (USA)
Allan S. Hartshorn, Lt. (USA)
Harold Hawes, Lt. (USN)
Samuel Heiman (USAAC)
Wayne S. Hertzka, Major (USA), (C.E.)
Howard P. Hess, Pvt. (USA)
Otto G. Hintermann (USCG)
Wm. D. Holdredge, Lt. (USA)
John R. Hollingsworth, Ensign (USN)
Lester W. Hurd, Major (USN)
Ross R. Hutchason, Ensign (USNR)
Robert Inslee, Major (USA)
Robert Johnson, Ensign (USNR)
A. Q. Jones, Pvt. (USA)
G. B. Kaufmann, Lt. Col. (USA)
Richard King, Major (USA)
Delbert F. Long, Pvt. (USA)
Gilbert T. Lord, Cpl. (USA)
Alfred John Luthi (USMC)
William S. McCay, Lt. (USNR)
Charles F. Masten, Major, (USA)
R. R. Matheu, Capt. (USA)
Tom F. Merchant, Ensign (USN)
Louis Shoall Miller, (USN) (Seabees)
Henry C. Newton, Brigadier General (USA)
Ernest L. Norberg, Capt. (USA), (C.E.)
Ben H. O'Connor, Capt. (USMC)
D. B. Parkinson, Major (USA)
Raymond F. Peppin (USNR)
C. H. Rawlins, Pvt. (USA)
Arlos R. Sedgley (USN)
H. O. Sexsmith, Major (USA)
E. Allan Sheet, Capt. (USA)
Glenn Elwood Smith, Major (USA)
H. G. Spielman, Capt. (USA)
Ernest J. Steiner (USNR)
S. M. Stochstch, Lt. (USA)
Miles Gordon Swanson, Ensign (USN)
Kenneth Swift (USA)
Dale F. Thomson, Lt. Commander (USNR)
Clyde F. Trudell (USNR)
Burnett C. Turner, Capt. (USA)
Robert M. Williams (USA)
J. W. Wright (USA)
Frank Wynkoop (USA)

Colorado

W. M. Matthews (USA)
William D. Proudfoot, Pfc. (USA)
Wesley R. Budd, Lt. (USA)

Connecticut

Flavian F. Arsenault (USA)
H. Lawrence Coggins, Lt. (USA)
Edward M. Johnson (USN)
Henry A. Judd, Pfc. (USA)
L. Bancel LaFarge, Capt. (USA)

Delaware

Samuel E. Homsey (USNR)

District of Columbia

A. Burgess (USA)
William V. Cash, Lt. Com. (USNR)
Howard L. Cheney, Major (USAAC)
A. S. Cochran, Lt. (USNR)
Merrel A. Coe, Lt. Com. (USNR)
George E. Cronin, Pfc. (USAAC)
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G. A. Downs (USA)
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Mary E. Forsberg, Lt. (j.g.) (USN), (Waves)
W. D. Foster (American Red Cross)
Arthur L. Ganung, Capt. (USAAC)
John H. Graham, Cpl. (USA)
Charles W. Griffith, Lt. (USNR)
S. W. Hahn, Major (USA)
N. E. Hansen, Capt. (USAAC)
C. M. Harlan, Lt. (USA)
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A. Jacobs (USA)
Alexander Knowlton, Capt. (USA), (C.E.)
H. E. McClure (USNR)
E. J. Muth, Lt. (USNR)
William North, Lt. (USNR)
Harry E. Ormston, Pvt. (USA) (C.E.)
Robert W. Parker, Lt. (USNR)
W. G. Peter, Jr., Lt. (USNR)
William V. Reed, Lt. (USMC)
Fred E. Robbins, Capt. (USA), (C.E.)
Gertrude E. Sawyer, Lt. (USNR), (Wave)
Lee E. Scheid, Major (USA)
Delos H. Smith, Lt. Co. (USNR)
J. Spence, Lt. (USNR)
Allan T. Squire, Lt. (USNR)
S. T. Stathes, Lt. (USA), (C. E.)
L. E. Stevens, Capt. (USAAC)
Eleanor Tierney (American Red Cross)
W. H. Van Benschoten, Lt. (USNR)
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R. A. Weppner, Jr., Lt. (USAAC)
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John J. White, Lt. Com. (USN), (C.E.)
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David N. Yerkes, Lt. (USA), (C.E.)

Florida

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Garry A. Boyle, Capt. (USA)
Joseph H. Bryson, Capt. (USA)
Frederick William Bucky, Jr., Capt. (USA)
Kemp Caler, Lt. (USRN)
Thomas L. Clemmons, Lt. (USMC)
John M. Crowell, Ensign (USN)
C. C. Crump, Capt. (USA)
Wellington W. Cummer, Lt. (j.g.), (USN)
L. M. Dixon, Capt. (USA)
J. Vance Duncan, Lt. (USA)
Eliot C. Fletcher (USN)
Clinton Gamble, Lt. (j.g.), (USNR)
Sanford W. Goin, Carpenter's Mate (USN)
John L. R. Grand, Lt. (USA), (C.E.)
Curtis E. Haley, Capt. (USA)
Robert Hansen, Ensign (USNR)
Lee Hooper, Capt. (USA)
William K. Jackson, Lt. (USA)
George Camp Keiser, Lt. (USA)
Forrest Kelley, Lt. (USA)
William D. Kemp, Capt. (USA)
Wm. E. Kittle, Lt. (USA)
Paul E. Kohler, Jr., Lt. (USA)
Jack McCandless, Lt. (USA)
Wm. A. McCarty, Major (USAAC)
James David McVoy (USN)
Kenneth W. Miller, Major (USA)
Charles Paul Nieder (USA)
Russell T. Pancoast (USSCG)
Alfred B. Parker, Ensign (USNR)
Gouverneur M. Peek, Capt. (USA), (C.E.)
Sanford H. Pendergrass, Capt. (USAAC)
Henry V. Pope, Lt. (USA)
Edwin T. Reeder, Lt. (USNR)
T. Tripp Russell, Lt. (USA) (Intelligence)
Norman A. Skeels, Lt. (USAAC)
Russell Skipton, Capt. (USA), (C.E.)
Karlvon J. G. Strasser (USA)
Thomas V. Talley (USN)
A. B. Thumel, Capt. (USA)
Henry Vanderlyn, Lt. (j.g.) (USNR)
Loyd F. Vann, Major (USA), (Coast Artillery)
Robert Law Weed, Capt. (USA)
Earle V. Wolfe, Capt. (USAAC)

Georgia

W. M. Anderson, Capt. (USMCR)
D. O. Bachler, Lt. (USNR)
S. I. Cooper, Lt. Col. (USA), (C.E.)
Harry H. Crovatt, J., Pvt. (USA)
Sidney Farber, Capt. (USA)
J. H. Harris, Capt. (USAAC)
F. C. Houpt, Capt. (USA), (C.E.)
W. N. Lamberson, Lt. (USMCR)
Alvin R. Moore, Major (USA)
J. L. Skinner, Capt. (USA)
F. P. Smith, Capt. (USA), (C.E.)
H. J. Toombs, Capt. (USA)
I. W. Williamson, Lt. (USA), (C.E.)
J. T. Woodbury, Capt. (USA)
Linton Hopkins Young, Lt. (USNR)

Illinois

C. Harold Barcus (USN)
M. R. Beckstrom, Capt. (USA)
Carl R. Blum (USA)
Chas. E. Boettcher (USA)
Howard L. Cheney (USA)
Charles R. Choat (USN)
Linza F. Coleman (USN)
Richard N. Conte, Pfc. (USA)
Bruno P. Conteroto (USA)
Thomas E. Cooke (USA)
D. D. Corrough, Lt. (j.g.) (USNR)
Fred Doyle, Jr. (USA)
John W. Hines, Lt. (j.g.) (USNR)
Sidney I. Klein, Petty Officer (USN)
Edward Loewenstein (USA)
W. R. Richardson, Capt. (USA)
Albert E. Sternkopf (USN)
Matt Sumner (USNR)
Lambert J. Soucek, Jr. (USMC)

Indiana

Paul F. Jernegan, Sgt., (USA)
Lowell G. Schweickart, Major (USA)
Laddie F. Cervenka (USA)

Iowa

C. F. Bowers, Lt. (USAAC)
Henry L. Fisk, Lt. (USNR)
Donald W. Hutton, Lt. (USA)
Leland McBroom, Major (USA)
Russell J. Prescott, Lt. (USNR)

Kansas

Henry George Hughes, Lt. (USA)

Kentucky

Stanley Arthur, Lt. (USA) (C.E.)
Charles N. Bayless, Lt. (USA), (C.E.)
William B. Brock, Lt. (USA)
Howard Churchill, Capt. (USA), (C.E.)
Henry Etter, Ensign (USN)
Stratton O. Hammon, Major (USA)
H. M. King, Lt. (USNR)
T. D. Luckett, Lt. (USA), (Quartermaster Corp)
Earle Otis, Major (USA)
Michael R. Prusack (USA)

Louisiana

William E. Bergman
Julius Dreyfous
Edward Louis Ehrensing, Jr. (USCG)
Douglass V. Freret
David Geier
L. D. Geiger, Lt. (USA)
Eugene J. Gilbert
James H. Herbert (USN)
Gerhardt Kramer
Frank Monroe Labouisse
Theodore L. Perrier, Capt. (USA)
Italo Ricciuti
Solis Seiferth
Edward B. Silverstein
Marshall H. Walker, Lt. (j.g.) (USNR)
John F. Wilson
Sam Wilson, Jr.
Albert J. Wolf

Maine

Philip M. Coffin, Jr. (USA)
John Pickering Thomas, Lt. Com. (USN) (Intelligence)

Maryland

Vincent J. Miller, Lt. (USNR)
Cary D. Tucker (USNR)

Massachusetts

John Radford Abbott, Major (USAAC)
John W. Ames, Jr., Major (USAAC), (Intelligence)
Warren H. Ashley, Lt. (j.g.) (USNR)
Merton S. Barrows, CPO, (USN), (Seabees)
Waldron Phoenix Belknap, Jr., Lt. (USAAC)
Roy S. Bent (USN)
A. W. K. Billings, Jr., Lt. Col. (USA)
C. E. Born, *Capt.* (USAAC), (Engineer)
George W. W. Brewster, Lt. (j.g.) (USN)
David M. Brown (Red Cross Rehabilitation Service)
Charles J. Buckley, Lt. (j.g.) (USNR)
Cornelius W. Buckley, Lt. (USNR)
Ray C. Bump, Jr. (USA)
Samuel V. Chamberlain, Capt. (USAAC)
John M. Chandler (USA)
Josiah H. Child, Capt. (USAAC), (Intelligence)
Edward A. Clancy
Herbert H. Coe, Lt. (USN)
Preston M. Cole, Lt. (USMCR)
Robert C. Dean, Lt. Col. (USA)
Joseph Di Stefano, Pvt. (USAAC), (Technical Training Command)
Godfrey K. Doner, Lt. (USNR)
Willard Emery, Lt. (USNR)
Conover Fitch, Jr., Lt. (USNR), (Civil Engineering Corps)
Merrill M. Green
Roger Griswold, Major (USAAC)
S. Tyson Haldeman, Lt. (USA), (C.E.)
Frank Trevor Hogg, Lt. Comdr. (USNR)
F. R. Jackson, Lt. Comdr. (USN)
Ralph T. C. Jackson, Major (USA), (C.E.)
James Lawrence, Jr., Capt. (USAAC)
John T. Lee, Major (USA)
Howard L. Lewis (USA)
Robert S. Lundberg, Lt. (j.g.), (USN)
Edwin R. McCarthy, Pfc. (USA)
Vincent N. Merrill (USA)
Sherman Morses, Lt. (USNR)
Frank S. Owen, Major (USAAC)
Philip Dana Orcutt, Capt. (USAAC)
Franklin P. Parker (USA)
Kenneth I. Parker (USA)
John W. Peirce, Ensign (USN)
Constantin A. Pertzoff (USA)
Edward A. Poszkus, Carpenter's Mate, 2nd Class, (USN)
Leonard W. Quann (USA)
Isidor Richmond, Lt. Com. (USNR)
Lawrence L. Reeves, Lt. (USNR)
J. Hampton Robb, Capt. (USA)
Bernard Murray Rosenberg (USNR)
Nathaniel Saltonstall, Lt. (USAAC)
Stanley S. Setchell, Lt. (USNR)
J. Donnell Sullivan
Raymond K. Thompson, Lt. (j.g.), (USNR)
John A. Valtz, Lt. (USNR)
Sherburne Watts, Col. (USA)
Charles G. Weatherley, Cpl. (SUA), (C.E.)
Eugene B. Weisberg, Ensign (USNR)
Harold B. Willis, Col. (USA)

Michigan

Emil Becsky, Carpenter's Mate, (USNR)
Slanley Bragg, Lt. (USA)
D. L. Braun
Paul E. Flanagan
Barry Frost
Cornelius L. T. Gabler (USMCR)
Fred Hall, Cpl. (USA)
Ralph W. Hammett (USN)
Don Hunter (USA)
Hugh T. Keyes, Maj. (USA), (C.E.)
Edgar R. Kimball, Capt. (USA), (C.E.)
Robert Knox (USNR)
Norman Krecke, Maj. (USA), (C.E.)
Leslie G. Larkin, Capt. (USA), (C.E.)
Wm. H. McCarthy, Col. (USA)
Miller E. McConnell, Capt. (USA)
Geo. Y. Masson
Arthur H. Meesing, Lt. (j.g.), (USN)
Harry Newman
C. Wm. Palmer, Lt. Com. (USN)
Leo I. Perry
J. Russell Radford
W. R. Ralston, Sgt. (USA)
R. P. Raseman (USN)
Carl Rudine, Lt. (j.g.), (USNR)
Henry W. Ruifrok (USN), (C.E.)
Cyril Edw. Schley, Capt. (USA), (C.E.)
Neil Schloz, Sgt. (USA)
Verne H. Sidnam (USA), (C.E.)
James A. Spence, Lt. (USNR)
Lt. Gordon H. Stow (USA)
Thos. S. Tanner, Lt. (USN)
G. Harold Thompson
Walter E. Thulin (USN)
A. D. Walker, Capt. (USA)
Arthur H. Zimmerman (USA), (C.E.)

Mississippi

John T. Collins (USN)
Frank Fort, Lt. (USA)
Earl Truman Gilmore, Lt. (s.g.), (USN)
T. Roscoe Hearon, Lt. (USA)
J. E. Miller (USNR)
Dudley White, Lt. (j.g.), (USN)

Missouri

Joseph R. Arena (USA), (C.E.)
Arthur E. Ball (USA), (C.E.)
J. Edw. Balston, Lt. (Submarine Fleet), (USN)
Wm. L. Balson
Wm. A. Bernoudy, Lt. (j.g.), (USN)
Donald Bishop (USA)
J. J. Bothman, Lt. (USA)
Roy Brackman (USA)
John L. Brockmeier, Lt. (USA)
Robert U. Cassilly (USSG)
G. Victor Davis, Lt. (USN)
Robert L. Fischer (USN), (Midshipman School)
John Geisel, Lt. (USA)
Alvin Governick (USA)
Lawrence Gregory (USA)
Carl Tohmsen Guth, Sgt. (USA)
Leonard G. Haeger, Lt. (USNR) (Civil Engineering Corps)
Ralph Cole Hall, Lt. Com. (USN), Procurement Div.)
Leland E. Hamel (USA)
Franklin Harrison, Lt. (USAAC)
Warren L. Henderson, Cpt. (USA)
Irvin Horowitz (USA), (Signal Corps)
Robert R. Jacobsmeyer (USA)
J. Y. Johnson (USN), (Construction Battalion)
Warren Jolley, Prob. Ensign (USN)
Thomas W. Kirk, Lt. (USN)
Clarence Kivett
Robert Lauder (USA)
Sam Lief, Lt. Com. (USN)
L. Ray Leimkuehler, Major (USA)
Dwight Ludden (USA)
Russell H. Matson, Ensign (USN)
Michael Miklas, Ensign, (USN) (Seabees)
Watson Murphy, Carpenter's Mate (USN)
Edouard Mutrux, Lt. (USA), (Quartermaster Corps)
Robert Mutrux, Lt. (USA), (C.E.)
C. Richard Nash (USN), (Air Corps)
Frank Niedner, Lt. (USA), (C.E.)
Chas. E. Peterson, Lt. (USN), (C.E.)
J. Edward Rottmann (USA), (Signal Corps)
Arthur R. Schmidt, Lt. (USA)
John Schroeter, Lt. (USA)
Wm. G. Seeger (USN)
Lawrence J. Seffens, Chief Carpenter's Mate (USN)
Frank I, Simpson (USAAC)
Sam C. Sit, Pvt. (USA)
Russell Stokes (USA)
Vernon Stone, Ensign (USNAC)
Lioney Gay Tetley, Jr. (USN)
S. Van Deusen (USA)
George F. Voss, Seaman, 1st Class (CG)
Allan Walter (USN), (Air Corps)
Wilson Weiert, Lt. (USA)
Trezvant Winfrey (USA)

New Hampshire

Walter F. Noyes, Jr., Lt.

Nevada

Edward S. Parsons (USA)

New Jersey

David W. B. Haining, Jr. (USA)
William M. Hunt (USA)
Wilbur H. Lewis, Jr., Lt. (USA)
Augustus E. Melanson (USA)

New Mexico

W. Miles Brittelle (USA)

New York

Lewis G. Adams, Lt. (USNR)
Arthur E. Allen, Lt. Co. (USA)
W. F. R. Ballard, Major (USAAC)
Le Roy Barton, Col. (USA)
Wm. Harmon Beers, Lt. Col. (USA)
Nicol Bissell, Ensign (USNR)
C. B. F. Brill, Major (USA)
Maurice A. Capobianco, Lt. (USA)
J. Hamilton Coulter, Lt. (USNR)
Charles Crane, Lt. Col. (USA)
W. D. Dickinson, Jr., Capt. (USA)
Clarence Donath, Chief Petty Officer (USN)
Charles P. Donnelly, Lt. (j.g.), (USN)
George A. Douglass, Jr., Lt. (USA)
John R. Edgar, Pvt. (USA)
Vernon C. Elmore, Lt. (USA)
Douglas K. Godspeed, Ensign (USNR)
Edgar H. Grantham (USA)
William Halbert (USA)
Daniel Paul Higgins, Jr., CPO. (USNR)
A. Hart Hopkins, Major (USA), (C.E.)
Robert I. Hoyt, Ensign (USNR)
R. Maxwell James, Major (USAAC)
Francis Kapp (USA)
Walter J. Konrady, Lt. (USMCR)
Rauni G. Lampe, Lt. (USA)
Charles A. Luckhurst, Lt. Co. (USAAC)
James Donald MacMullen, Col. (USA)

Harry W. McConnell (USA)
James C. McGinn, Jr. (USA)
Joseph E. Mack (USN)
Rufus Meadows, Sgt. (USA)
Albert Melniker, Tech. Sgt. (USAAC)
Willis N. Mills, Capt. (USMC)
Alexander P. Morgan, Lt. Com. (USNR)
Stephen P. Nolan, Lt. (USNR)
Adolph Novak, Lt. (USA)
John J. O'Connor, Lt. (j.g.), (USNR)
Earl W. Ohlinger (USNR)
Edwin B. Olsen, Lt. (USNR)
Raymond Willard Olson, Camouflage Technician (USA), (C.E.)
Burton Parnes (USA)
T. Merrill Prentice, Lt. (USNR)
Van F. Pruitt, Capt. (USA), (C.E.)
Benjamin J. Rabe, Lt. (USA), (C.E.)
Richard Roth, Lt. (USN), (Seabees)
Herbert T. Seipel
James Kellum Smith, Lt. Col. (USAAC)
Carl B. Stoye, Ensign (USNR)
D. D. Streeter, Col. (USA)
H. C. Struppmann, Lt. (USNR), (Civil Engineering Corps)
Seth Talcott, Lt. Com. (USNR)
Otto Teegen, Lt. (USNR)
W. G. Thayer, Jr., Lt. Com. (USNR)
Walter D. Toy, Jr. (USA)
Ides van der Gracht, Capt. (USAAC)
Gustave G. Vigouroux (USMM)
Lorenzo G. Voight, Major (USA)
E. W. Vollintine (USA)
Lawrence Grant White, Lt. (s.g.) (USNR)
Harold E. Williams (USA)
Frederick J. Woodbridge, Lt. (USNR)

North Carolina

T. W. Cothran, Capt. (USA)

North Dakota

Verl E. Texley (USA)

Ohio

Reeves K. Biggers, Lt. (USNR)
Emiel J. Christensen (USA)
Francis V. Cornelius, Lt. (j.g.) (USN)
A. C. Denison, Lt. (USNR)
Antonio di Nardo, Major (USAAC)
Robert P. Harsh, Col. (USA)
J. P. Hayes (USA)
Myron T. Hill, Lt. (USNR)
Walter J. Hoffrogge, Cpl. (USA)
Thomas Larrick, Lt. (USA)
Byron L. McClellan, Jr. (USA)
F. J. McFadden (USA)
John Edward Miller (USA)
Robert C. Morley (USA)
William K. Shilling, Major (USA)
Frederick W. Smith, Cajt. (USA)
George F. Sutila (USA)
Edgar D. Tyler (USA)
Howard H. Vogel, Petty Officer (USN)
Travis G. Walsh, Major (USAAC)
Thomas Wetherall, Sgt. (USA)
Thomas C. Wiggers (USA)
J. Davis Wilson (USA)

Oklahoma

G. W. Aderhold, Lt. (USA)
Roy D. Clem (USA)
C. P. Holt (USNR)

Pennsylvania

Roland T. Addis, Capt. (USA)
Walter Antrim (USA)
John S. Barber (USN)
W. Pope Barney, Major (USA)
John A. Bower, Capt. (USA)
Leon Brown (USA)
Theodore Clattenburg (USA)
Irving Coryell (USA)
Kenneth Day (USN)
John Lane Evan: (USN)
Thomas W. Ferguson, Jr. (USA)
John Hammond (USN)
James S. Hatfield (USA)
John C. Hermann, III (USN)
William E. Hoover, Jr., Lt.
James E. Jackson (USA)
H. Martin Kneedler (USA)
Paul E. Kohler (USN)
Lloyd Malkus (USNR)
Brinton Martin (USA)
Wm. David Miller (USA)
Henry D. Mirick (USA)
Frank P. Patterson, Jr., Lt. Com. (USN)
Edmund R. Purves, Capt. (USAAC)
Frank E. Sagendorph, 3d (USN)
Wm. C. Scheetz, Jr. (USN)
John N. Sill (USA)
Wm. Nicholson Taylor (USA)
W. L. Van Alen (USN)
Frederic G. Warner (USA)
Harold Webber (USN)
Theo. Ballou White (USA)
Louis M. Wolff, Major (USA)
C. Clark Zantzinger (USN)

Rhode Island

David Aldrich (USA), (902 Engrs.), (AF Hq. Co.)
Lucio E. Carlone, 201st Hospital Ship Co.
Cheslie M. Carpenter (USCG)
Paul N. Fontaine, Lt. (USA)
Oliver O. Gauvin (USA)
J. Peter Geddes, Capt. (USA), (OTS)
Alan Hibbert (USA)
Lloyd W. Kent, Lieut (j.g.) (USNR)
Claus R. Moberg, Lt. (USNR)
Joseph A. Murphy (USCG)
James E. B. Walker (USCG)
B. G. V. Zetterstrom, Major (USA)

South Carolina

J. Whitney Cunningham
Robert B. McCalley (USA)

Tennessee

Robert Taylor Anthony (USA)
Clinton E. Brush, Lieut. (j.g.), (USN)
L. K. Cardwell, Capt. (USA), (C.E.)
William Plummer Cox (USA)
Arch Y. Davis, Jr. (USA)
T. E. Eddins (USA)
T. F. Faires (USA)
Anker F. Hansen, Lt. (USCG)
W. T. Hall, Lieut (j.g.), (USN)
R. E. Harrison (USA)
John E. Harwood, (USAAC)
James Bolton McBryde, Lt. (j.g.), (USNR)
W. D. McKinnie, Jr. (USA)
Robert W. Montgomery (USA)
Marcus F. Nickerson, II, Petty Officer (USNR)
J. Clyde Seal, Capt. (USA), (C.E.)
Earl C. Smith, Major (USA)
Edw. S. Thorn, Lieut. (j.g.), (USN)

Texas

Chas. Armstrong, Lt. (USA)
Howard Barr, Ensign (USNR)
Robert Max Brooks, Lt. (j.g.), (USNR) (Seabees)
Hamilton Brown, Lt. (j.g.) (USN)
J. I. Campbell, Lt. (USA)
Leonard B. Conley (USA)
David G. Connally, Jr., Lt. (USA)
Paul Henry Coy, Ensign (USNR)
Cameron Fairchild, Capt. (USAAC)
Arthur Fehr (USA)
Lenard Gabert, Capt. (USAAC)
Delmar Gross, Lt. (j.g.), (USNR)
Louis Hamby, Major (USA)
Wm. V. Harber, Major (USA)
Walter C. Harris, Lt. (USAAC)
Henry S. Hoffman, Lt. (j.g.) (USNR)
Claude Hooton, Lt. (s.g.), (USN)
Harrold Jessen, Lt. (j.g.), (USNR)
George Johnson, Lt. (j.g.), (USNR)
C. A. Johnson, Capt. (USAAC)
Karl F. Kamrath, Lt. (USAAC)
Theo. Keller, Capt. (USAAC)
Wm. J. Lang, Major (USA)
Roy Leibsle, Col. (USA), (C.E.)
Fred J. MacKie, Jr., Major (USAAC)
W. Addison McElroy (USA), (C.E.)
Hugh L. McMath, Capt. (USAAC)
Theodore S. Maffit, Capt. (USA)
Howard R. Meyer, Capt. (USA)
Seth I. Morris, Ensign (USN)
Hal M. Moseley, Lt. (USA)
William E. Nash (USA)
Donald S. Nelson, Lt. (USA)
Stayton Nunn, Col. (USA)
George Page, Ensign (USNR)
W. L. Parker, Lt. (USA)
E4ward L. Rankin, Major (USA)
Richard Rowe, Lt. (USAAC)
John Scott, Ensign (USNR)
Louis Southerland, Lt. (j.g.), (USNR)
John F. Staub, Lt. Com. (USNR)
Herbert M. Tatum, Capt. (USA)
James Teague, Lt., (USA)
R. H. Tolson (USA)
Benjamine K. Wyatt (USA)
Talbor Wilson, Capt. (USA)

Utah

Erwood P. Eiden, Capt. (USA)
John Fetzer, Lt. (USA)
Charles E. Fry, Capt. (USA)
S. C. Hutchins (USA)
Dan A. Weggeland, Pvt. (USA)
Lorenzo S. Young, Capt. (USA)

Vermont

Frederick W. Mast, Lt. Col. (USA)
Robert P. White, Lt. (USA)

Virginia

H. Coleman Baskerville, Lt. (USA)
Henry B. Boynton, Lt. Col. (USA)
Orin M. Bullock, Jr., Lt. (USA)
E. Tucker Carlton, Lt. Com. (USNR)
Pendelton S. Clark, Lt. Com. (USNR)
Forrest W. Coile, *Captain* (USA)
Francis Drischler, Lt. Col. (USA)
John L. R. Grand, Lt. (USA)
Henderson Heywood, Ensign (USNR)
Clarence W. Huff, Jr., Capt. (USA)
Albert D. Leuders, Capt. (USA)
Fred L. Liebmann (USNR)
Robert S. Loney, Capt. (USA)
Walter R. Nexsen, Lt. (USA)
Marvin L. Parler, Jr., Major (USA)
William J. Phillips, Lt. (USA)
Truehart Poston, Lt. (j.g.), (USNR)
Raleigh C. Powell, Jr., Lt. (USA)
Walter K. Smith, Jr., Capt. (USA)
Fred C. Schaus, Ensign (USNR)
Louis P. Smithy, Lt. Col. (USA)
Richard F. Taylor, Capt. (USA)
Thomas C. Washington, Jr., Lt. (USA)
Joseph W. Wells, Lt. (USA)
L. C. Wright, Capt. (USA)
Marcellus E. Wright, Jr., Capt. (USA)

Washington

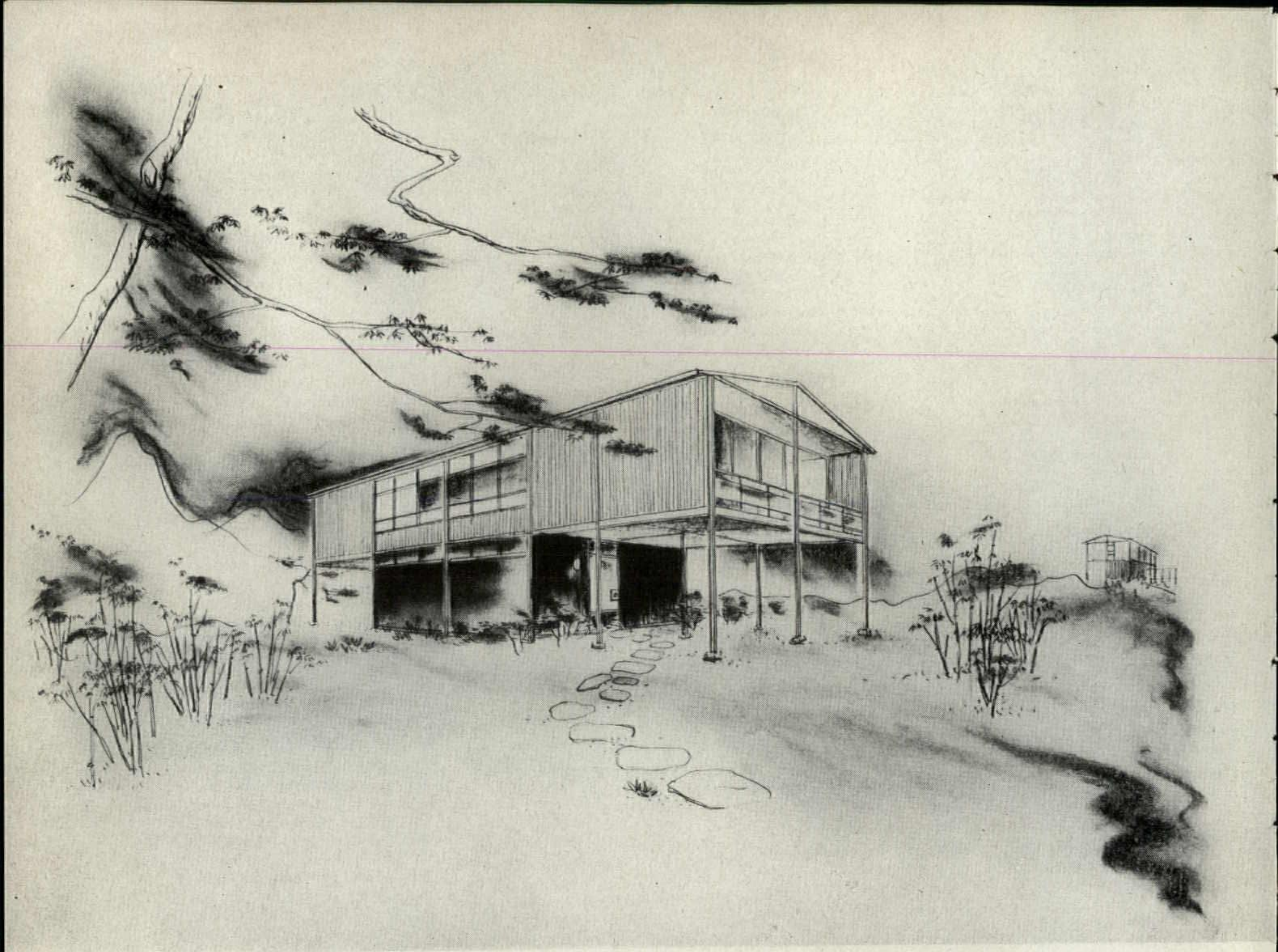
Fred K. T. Ahlson, Lt. (USA)
Bissell Alderman (USN)
Don D. Bickford (USN)
Leonard Bindon, Capt. (USA)
Harry F. Broman, Lt. (USA)
Wm. H. Carleton (USA)
Elso B. DiLuck, Major (USA)
Carl F. Gould, Jr. (USN)
Lance E. Gowen, Captain (USA)
George W. Groves, Captain (USA)
Sam Halfon, Lt. Commdr. (USN)
Palmer Koon (USA)
Harry Lockland, Major (USA)
R. E. Lytel (USN)
Harry R. Meyers, Major (USA)
Harrison J. Overturf, Captain (USA)
Victor Steinbrueck (USA)
Royal A. McClure (USA)
Edward K. Mahlum, Lt. (USN)
John O. Phillips, Jr. (USN)
Paul Richardson (USA)
James P. Savery (USA)
Lawrence G. Waldron (USN)

West Virginia

Robert E. Martens, Lt. (USA), (C.E.)

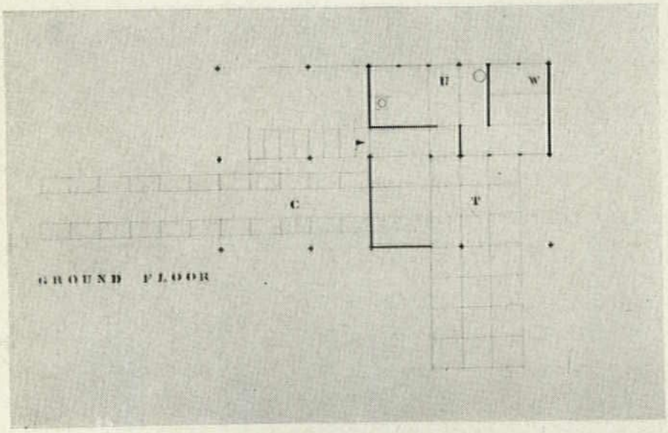
Wisconsin

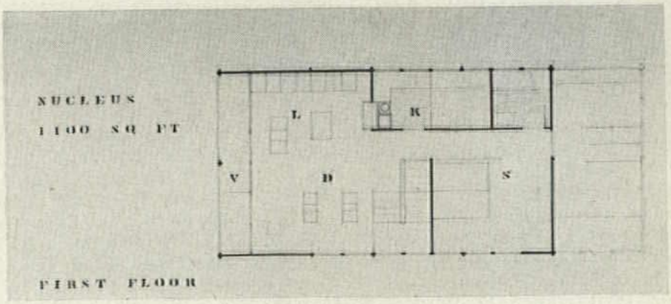
Bruce F. Lawrie (USA)
Marshall T. Munz (USCG)
Sylvester J. Stepnoski, Lt. (USA)
Fred A. Wegner (USN)
Sigmund W. Talarek (USA)



Variety of Houses from Identical Prefabricated Units

Designed by Harvard Students



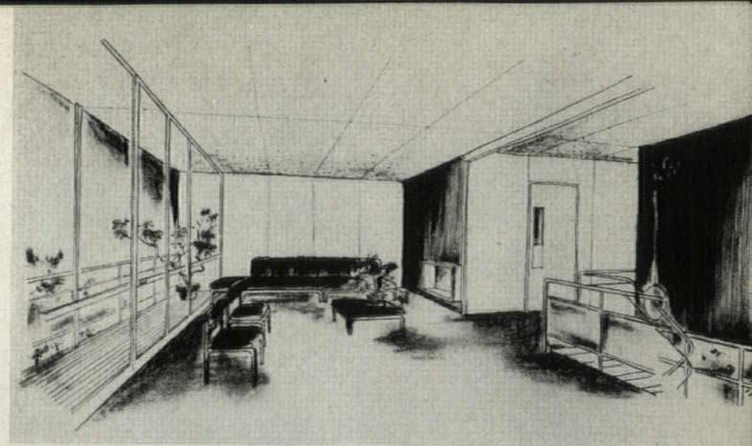


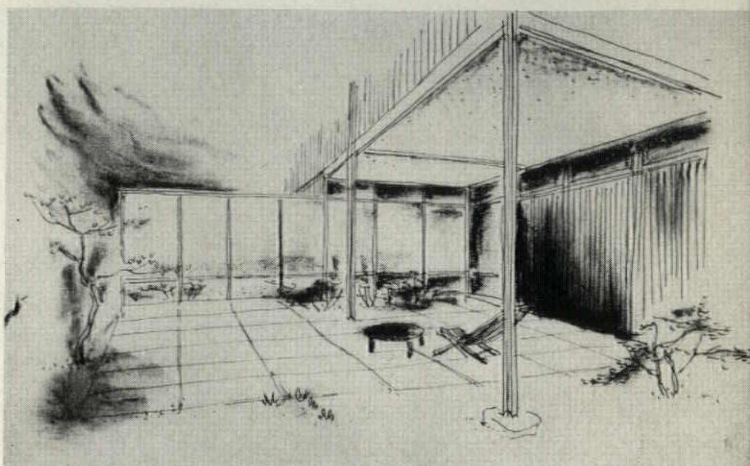
Last April, New Pencil Points reported the development of a new system of prefabrication devised by Konrad Wachsman and Walter Gropius, and marketed by the General Panel Corporation. Based on a cubical module, 3 ft. 4 in. on a side, the system makes use of wood-framed panels 10 ft. long and equal to a module in width. Horizontal panels are available in three lengths, multiples of the module, for achieving variety in plan. These are joined by a metal-clip-and-wooden-wedge connector. The standardized panel unit can be used in any position, as wall, ceiling, or any other part of a building without structural change.

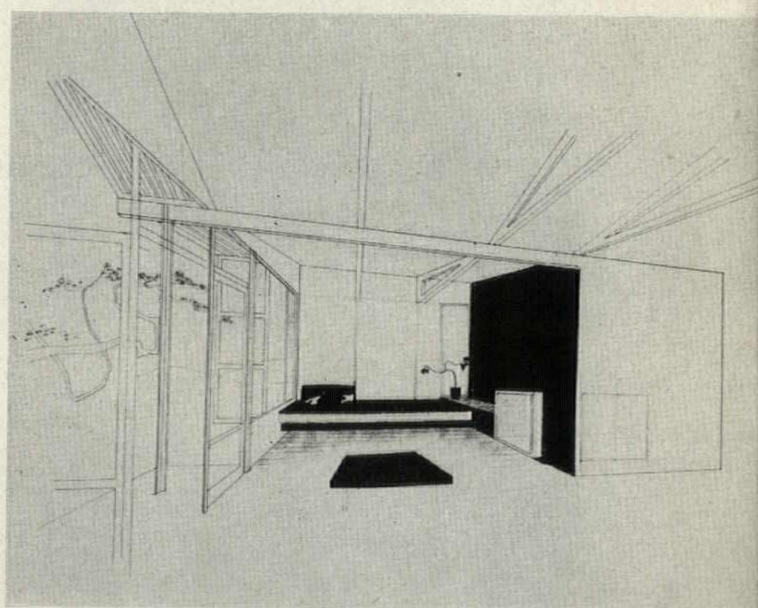
This system has a virtue which many others lack: it is possible to build with it any type, or shape, or style of building desired. At the School of Architecture, Harvard University, Professor Gropius has given his students problems in the design of houses to be built of prefabricated units. Naturally, the General Panel Corporation system was employed. In the few examples of student work shown here, there is demonstrated the great variation possible in designing for prefabrication. In one respect greater variety might have been achieved. The General Panel Corp. has stated that any material might be used to surface the panels; the vertical siding shown last April was only one of many suitable materials. Nevertheless, in spite of the fact that all these schemes show vertical siding, there is in them confirmation of a belief held by many proponents of prefabrication: that monotony of design, advanced as an argument against any form of "prefab," exists only because the designer is unable fully to exploit an unfamiliar medium.

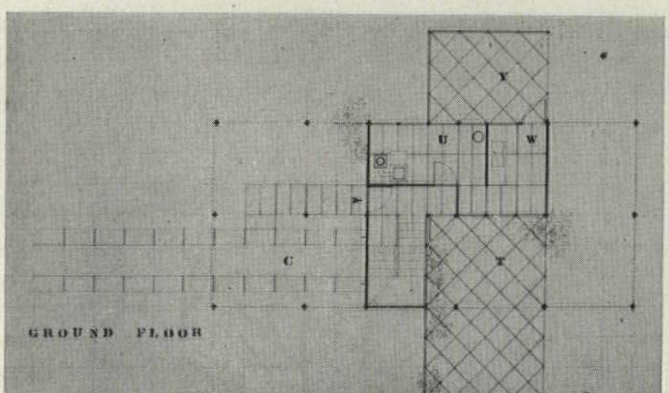
The house on these two pages was designed by Dahong Wang. At the bottom of page 76 is the plan of the nucleus, with carport, entry and stair, utility room, laundry, and terrace on the ground floor. On the first floor are living and dining space, verandah, kitchen, bath, bedroom. At bottom of this page, the plan is expanded. At right, views of indoor living areas and terrace.

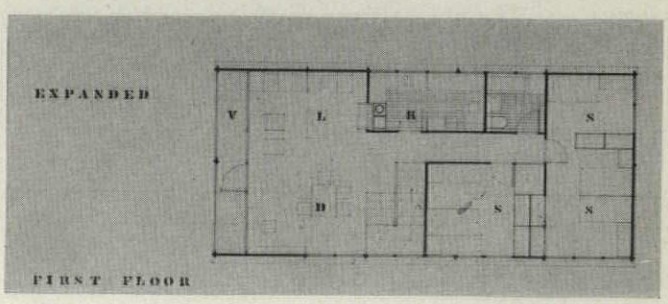
# of General Panel Corp.

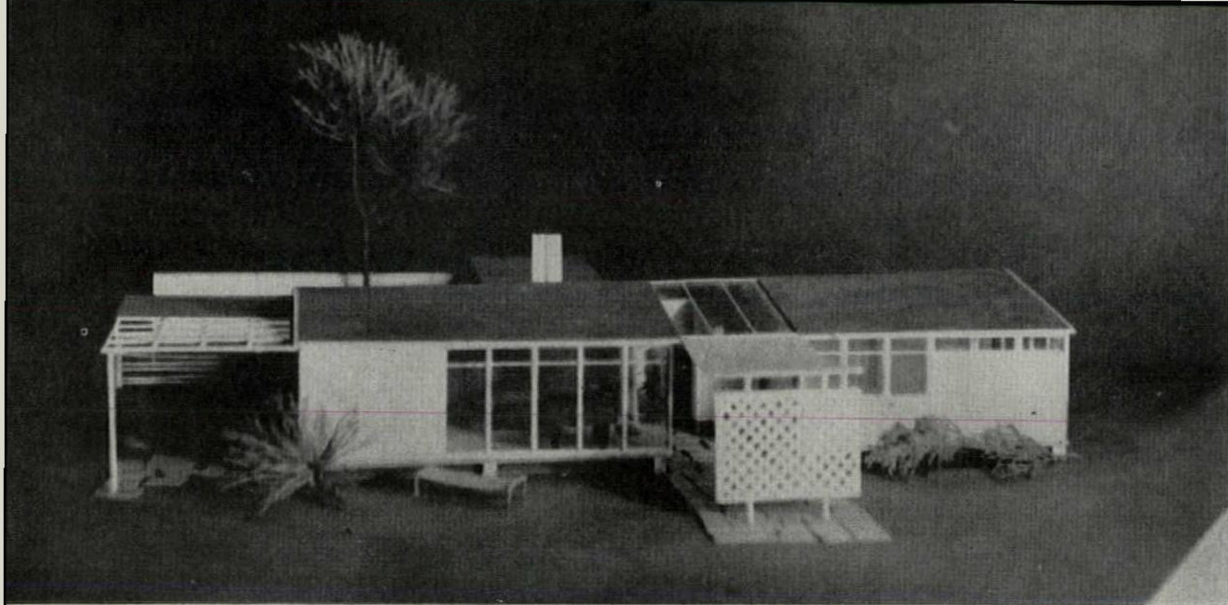




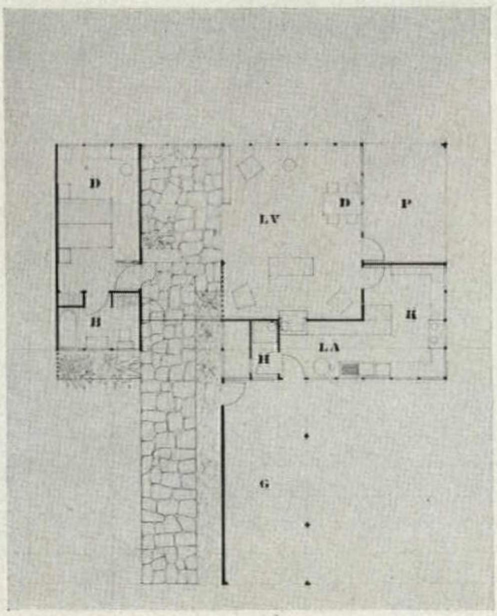


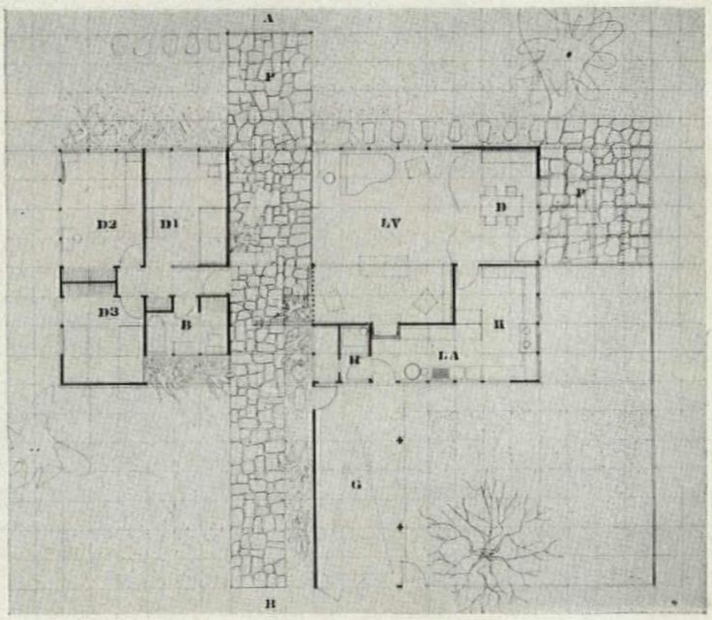




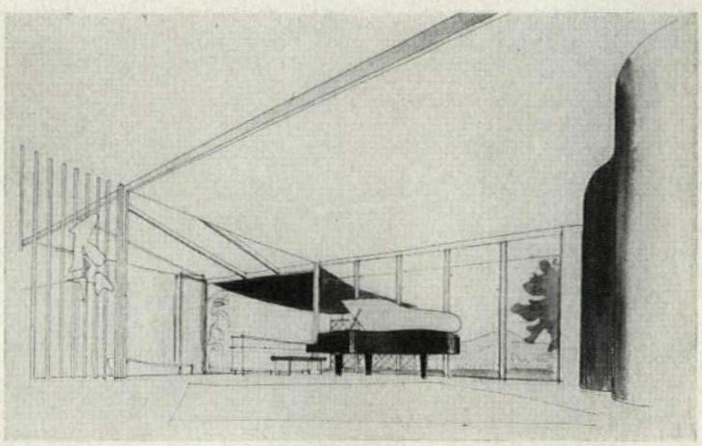


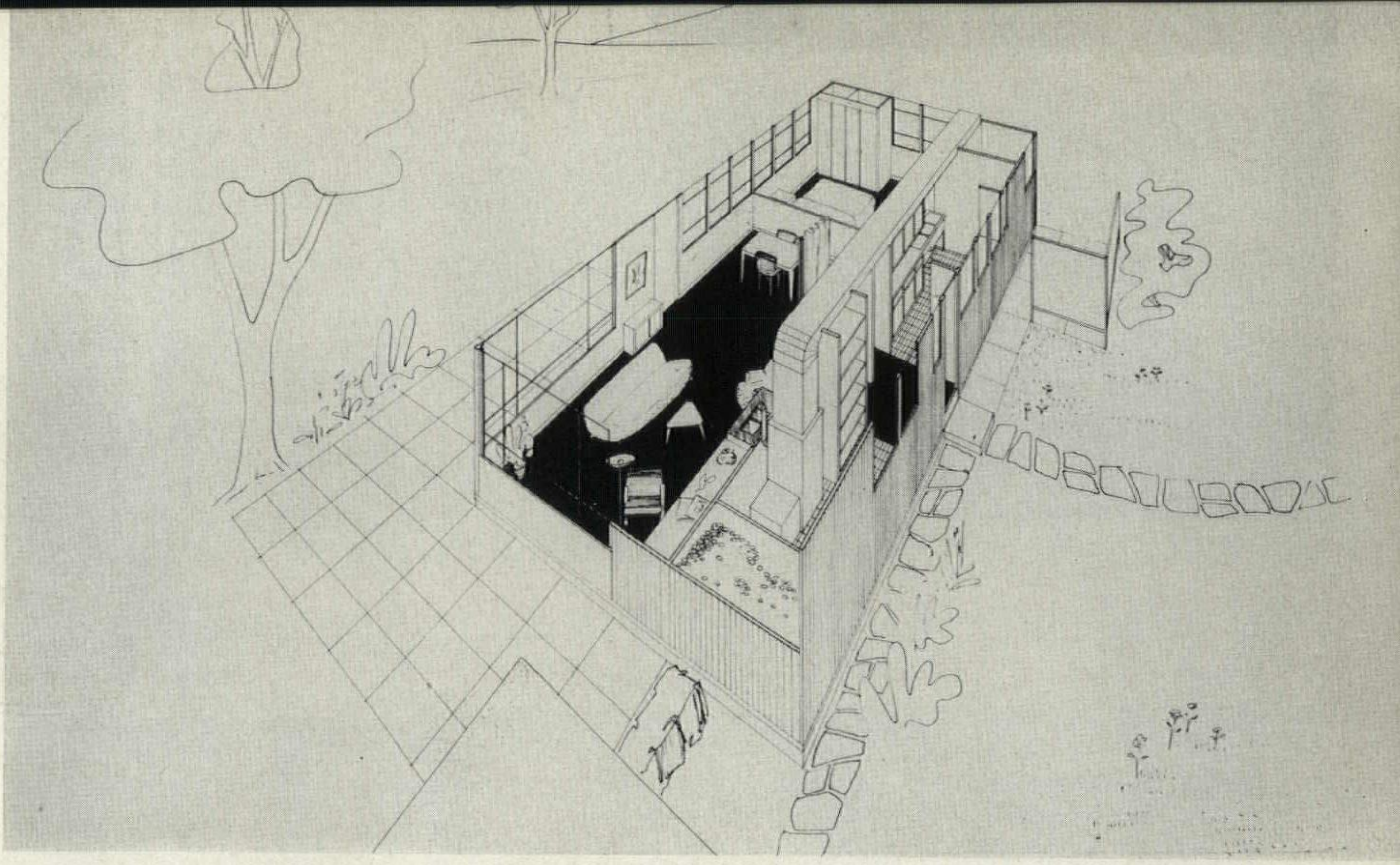
On this page is shown the house designed by Emile Duhart. It employs the identical prefabricated units used in designing the houses on preceding and following pages. Photo of model, above, shows the expanded house.

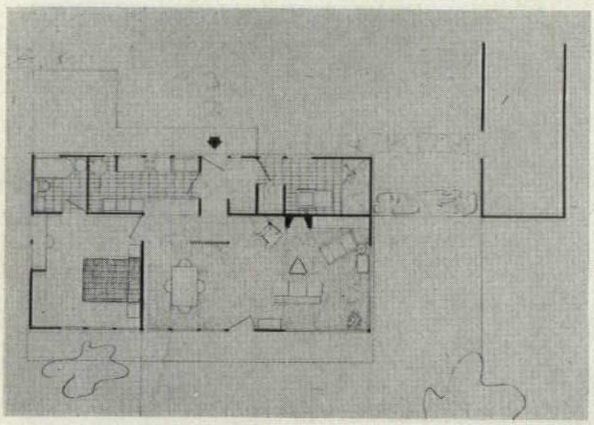


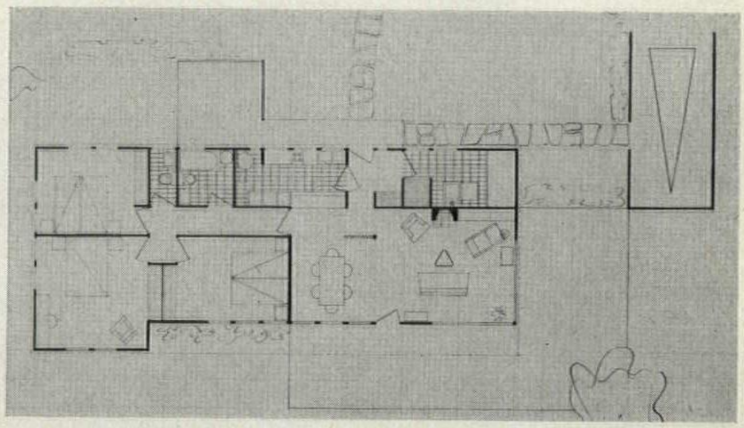


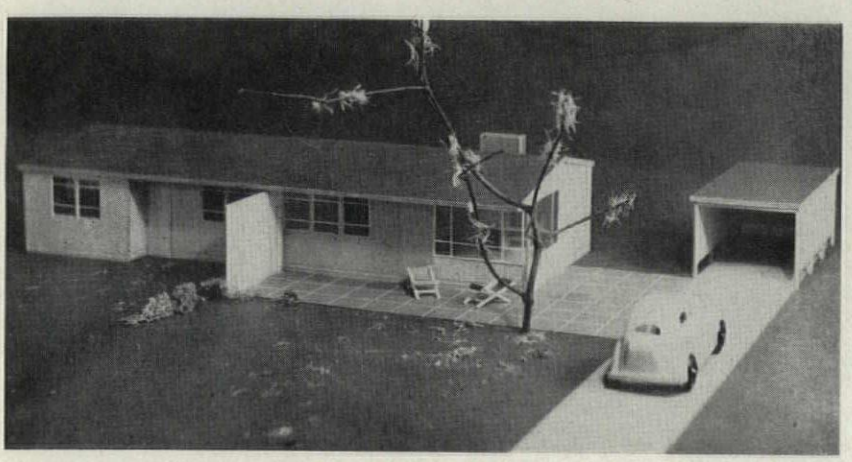
Plan above, left, is the nucleus; at right, the expanded scheme. This house is all on one floor, has at the beginning living and dining space, kitchen, laundry, bath, bedroom, porch, garage, heater room. Later, more bedrooms, indoor living area, and outdoor living space can be added. At right is a perspective of the living room interior.



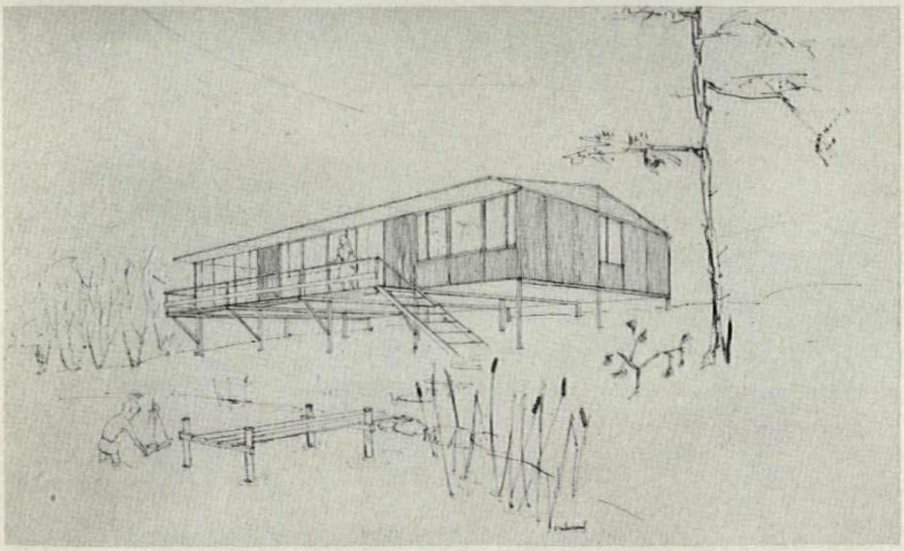




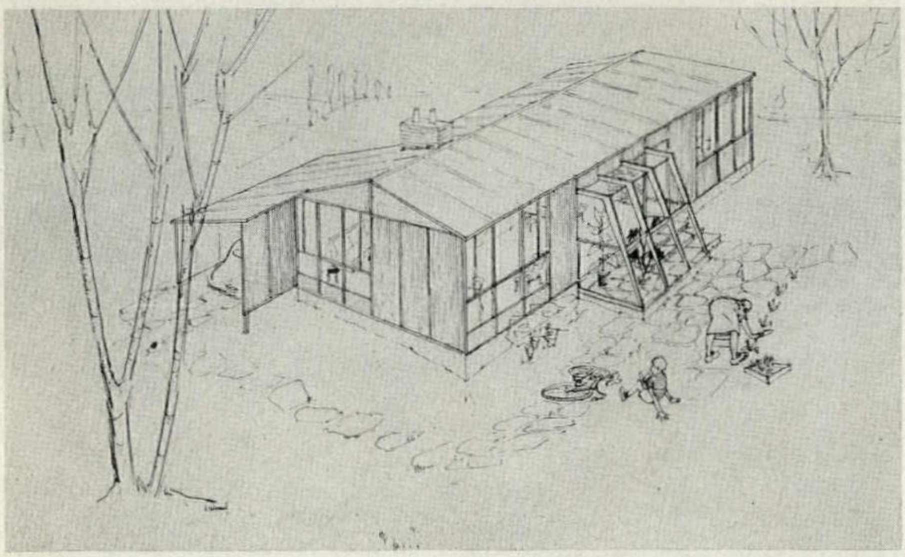


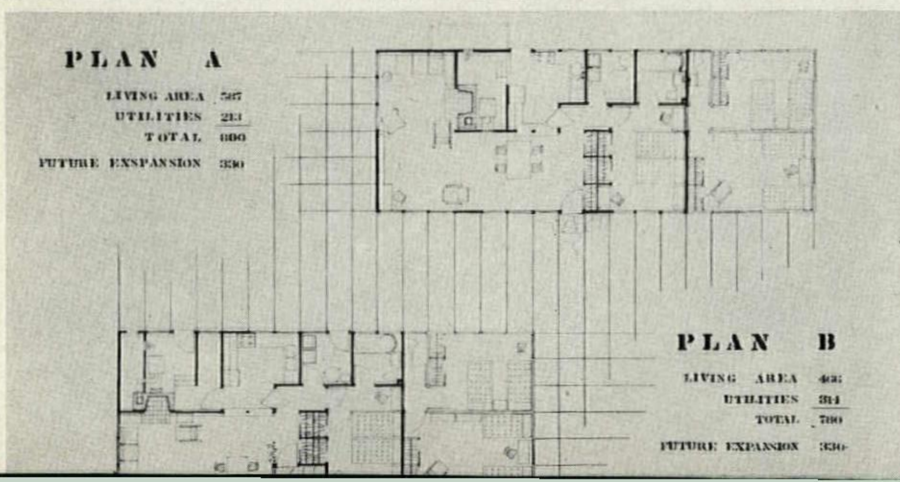


Designed by Octavis Mendez, this example appears more compact than those shown so far. Above, at left, is the basic plan; at right, an expansion scheme. Accommodations are similar to those provided in other examples. Perspective at top of page illustrates the arrangement of space; at left, photo of model.

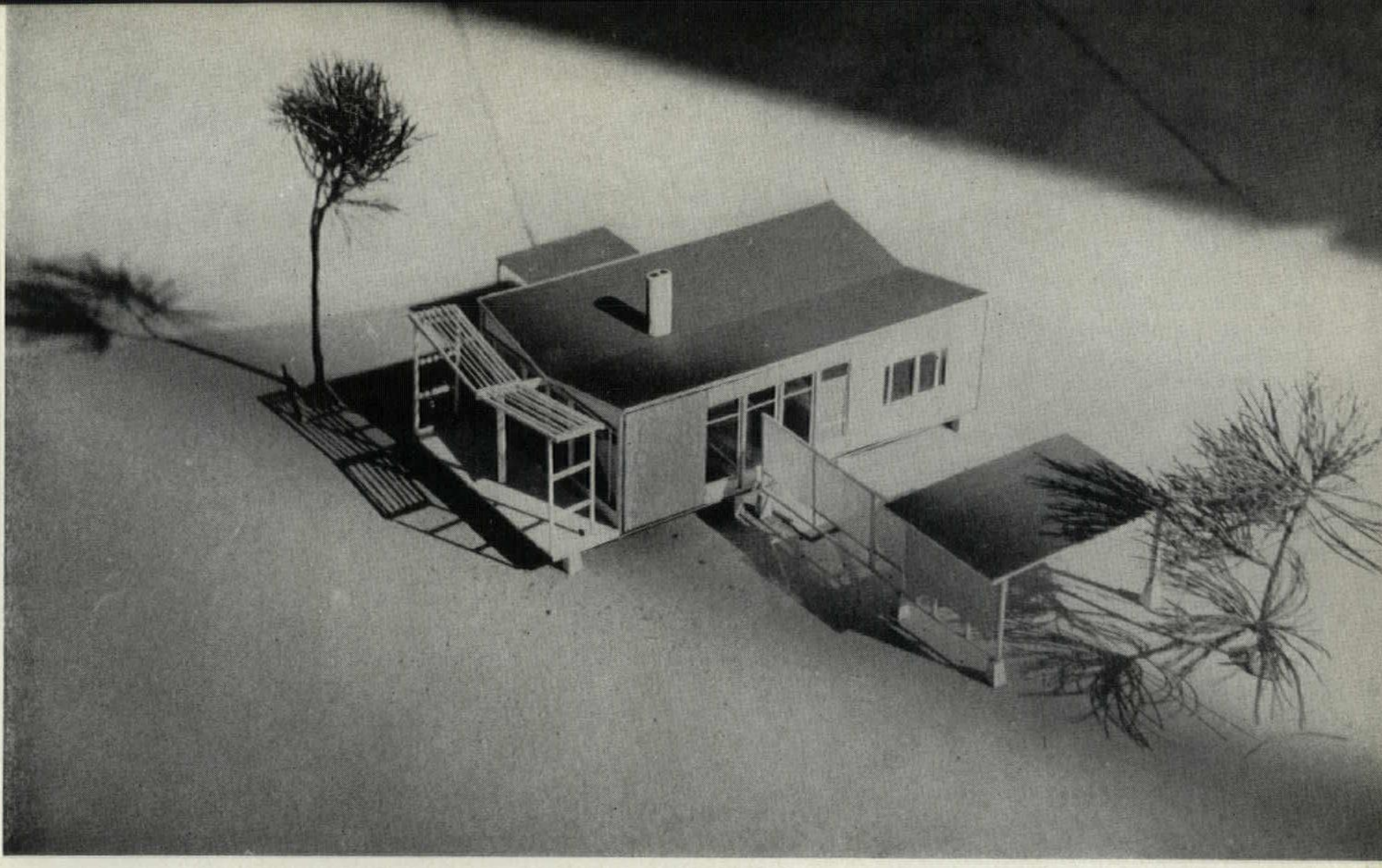


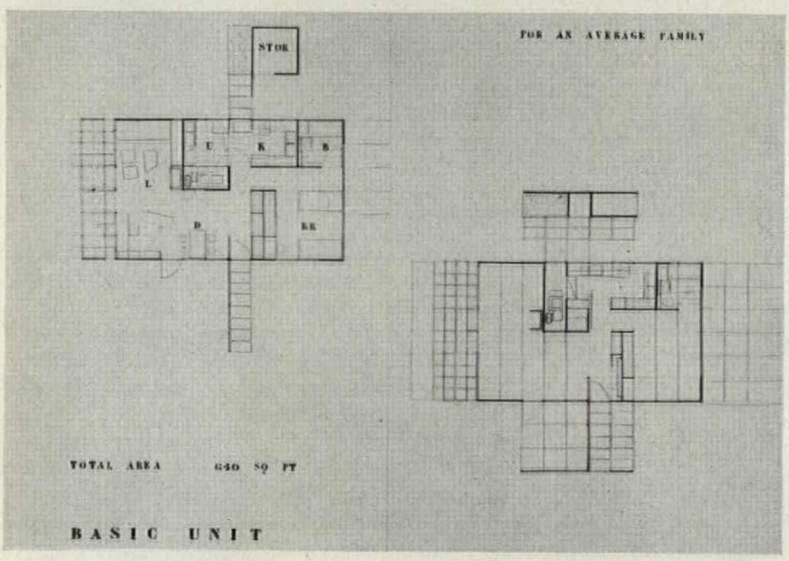
Suzanne Underwood, who designed the house on this page, has added to it a conservatory; otherwise, General Panel Corp. units are used. At left are, top to bottom, photo of model; perspective showing adaptation of house to a lakeside site; perspective showing conservatory added alongside the entry; and plans.

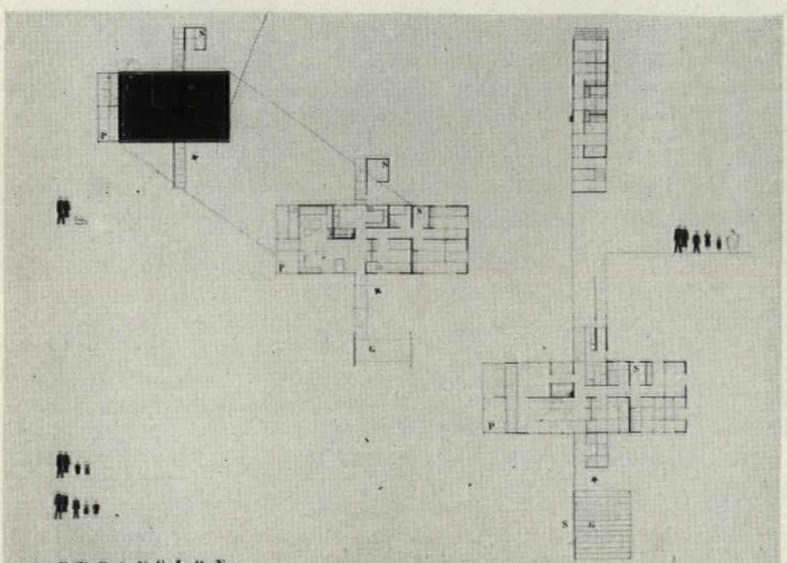




Miss Underwood developed two plans. Both contain approximately the same accommodations, although Plan A has perhaps a more cramped living area and waste space in the portion devoted to dining. In both plans, portion shown with black walls is for initial construction; lighter area is for future expansion.







Teoh Ming Pei, designer of the house on this page, has anticipated several stages of family growth and consequent enlargement of the house. The basic unit, shown above at left, is subject to some variation, principally in the utility areas of the house. Two examples of plan arrangement are shown. At bottom, the basic unit appears at upper left of the drawing as the dark rectangle; center, with some added area; right, with more on the first floor and a second floor, containing a row of sleeping rooms, a passage, and a stair, added.

It is unfortunate that space does not permit showing another drawing made for this house. In it, adaptations were made to suit various site conditions: storage space, porch, and garage were relocated to accommodate different outlooks and means of access.

Building Codes for Prefabrication

by Gerald Lynton Kaufman, A. I. A.

According to a recent trade definition "a prefabricated house is one that is designed, manufactured, and distributed through . . . the use of industrial principles of mass-production and distribution." Prefabricators estimate that out of the anticipated post-war demand for well over a million new homes per year, 750,000 will be mass-produced and distributed. As for the *design* of these homes, it may be assumed that at least a half-million will be standard types or modifications thereof, prepared either in prefabricators' drafting rooms or by architects engaged or employed directly by the producers.

Mass Production vs. Individual Needs

When homes are designed to fit patented unit or module or panel systems, or assembly-lines, the interests of the customer-client and of the community must perforce be subordinated to the exigencies of corporate machinery and processes. Mass production demands mass sales; hence disinterested professional service is almost impossible. Prefabricators must compete not only with each other, but with independent local architects whose reputations demand that they consider client and community needs over everything else.

Dangers of Wildcat Prefabrication Boom

The dangers of an uncontrolled building boom are well known. The remedy is not to arrest nor restrict technological progress, but rather to provide for *disinterested* professional control over mass-production housing, similar to that formerly exercised by residential architects—under building code requirements—over "custom-built" housing. A properly *controlled* building boom is healthy. It might be the means for prefabricators and independent architects to get together, not only for their own ultimate benefit, but for the good of everyone concerned . . . even including the home-owner! But to get together without combining or conspiring, and without mutual commitments, they must recognize the community itself as their common employer and they must realize that its continuing prosperity and good will is their joint concern.

The community has a vital interest in the houses erected within its borders, as evidenced by building codes and zoning laws, written to protect life, limb, and property rights . . . but not to protect investment! No code has yet been devised to guard against the hazards of over-building or uneconomic building; against the causes of foreclosure and bankruptcy with the resulting loss of taxpayers, industries and home-owners. No such code is possible under a democracy (in which each of us has the right to lose his fortune in whatever way he chooses). But it is possible, and increasingly necessary, for communities to have greater control over the location, type and quantity of speculative mass-production housing within their borders. It is desirable to have jurisdiction and limitation (other than that established by trade unions) over the type and quantity of imported labor and materials used in competition with local industries, lest an uncontrolled influx of mail-order houses ruin the building trades, or lest over-built or over-sold colonies of jerry-prefabricated houses ruin the community.

What Mass-Producers Themselves Can Do

The producers themselves might do well to recommend such a modernization of local codes, for their own ultimate good. They might re-define the Prefabricated House on a basis of the percentage of the finished product shipped from a single factory. They might advocate the establishment by zoning boards, of the location, type, and quantity of imported housing *required for local needs* in each community. But of greater import than any of this, they might recommend regulations to cover permits and supervision . . . not only to protect the home-owner and his township, but to protect *themselves* from the competition of irresponsible rivals; to protect themselves from those favoring unorthodox selling methods on shoestring credit, over sound construction and legitimate financing.

Disinterested Professional Control

Here is where disinterested professional control enters the picture. For one such regulation might require that plans be filed by a local architect, *under his own name* (with written authorization from the manufacturer furnishing these plans under patent or copyright) before permits are issued for prefabricated homes. Another might require this architect to certify that he has personally superintended the construction and found it in complete compliance with all code requirements, before a Certificate of Occupancy is issued.

This would oblige the owner (individual or developer) to engage a local architect to advise him, for his own benefit, as to the type, size, cost, *and manufacture* of the house of houses best answering his own and the community's requirements. It would spare the owner a deluge of brochures, salesmen, and technical talk, while assuring him of disinterested professional advice before building, and service during construction. It would oblige the architect (licensed by the state) to give his best service; and by providing his employment in either case, would leave him free to *recommend* a prefabricated home over a design of his own, if convinced this would best serve his client.

Long-Term Benefits of Control

If a group or natural association of prefabricators were to advocate such procedure, it would gain far more than mere public approbation. By enlisting perhaps 3000 architects as potential salesmen, substantial sums might be saved in advertising, maintenance of agencies, and overhead involved in direct contact with the owner, the building department, and the local sub-contractors and trades unions. Prefabricators might be spared a punitive tax such as that levied against the chain stores for encroaching upon local industry; and since the latter would be automatically favored for foundation, grading, and similar work not supplied by themselves, they might be spared hostile jurisdictional rulings by building-trades labor unions. Although as individual producers they might lose possible orders through cutting down on salesmen and agents, they would gain in other orders placed by architects in competitors' territory, based *upon merit alone*. In short, they might forego the immediate profits of a mushroom building boom, to build instead, lasting good will and continuing demand.

These suggestions for "prefabricated building codes" are most tentative and elementary and nebulous; but they are meant to be provocative as well. Although admittedly open to all kinds of criticism, perhaps some of this will be constructive. If the job is to be properly done to prevent over-expansion, cut-throat competition, housing-saturation, and bankruptcies; to avert a boom-collapse-depression cycle; everything depends upon how and when and by whom the actual revisions are made. If the prefabricators themselves take the initial steps; well and good . . . for them. If they wait action by labor-unions, legislators or government bureaus, it may prove too late. But in any case, if we are to win the Peace and avoid the Great Depression of 1950, something must be done to control the "use of industrial principles of mass-production and distribution" in home-building, lest our communities, industries, home-owners, and taxpayers all suffer together from lack of foresight in this phase of post-war planning.