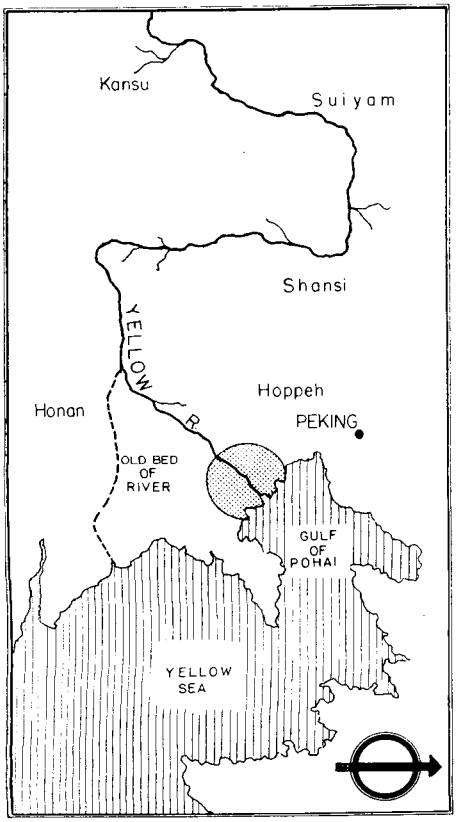
BUILDING NEWS

Ewing Galloway

RHYTHM DOES IT! The earth is packed down on the levee by means of an eight-man stone flapper, weighing 80 pounds. Chanting all the while, each man holds one of the ropes which extend from the shank of the flapper, lifts the heavy weight and then lets it drop to earth.



THE DRAGON LASHES ITS TAIL

CHINA: COOLIE LABOR HALTS OLD MAN RIVER

Men, not machines, labored night and day for six months to end the peril caused almost annually by the swollen yellow tide of the Hwang ho River. The methods employed are as old as China's culture, as primitive as stone-age implements. Although C. J. Todd, an American consulting engineer for the Yellow River Flood Control Commission, was in charge of operations, the native system of dike building was used. It took 25,000 men to mend the broken levees, crushed by the spring flood of 1935, when 6,000 square miles of territory on both sides of the river were flooded. Four million natives were made homeless and about 600 villages were destroyed. Property damage amounted to $100,000,000.

For 3,000 years the land along the Yellow River has been protected by dikes all along its length, but floods still take their toll.* For this reason, and because of the river's small value for navigation, there are no important cities along its lower course. Nine times during 2,500 years, according to Chinese records, the river has changed its course, by as much as 4° latitude. The last change took place from 1851-1853.

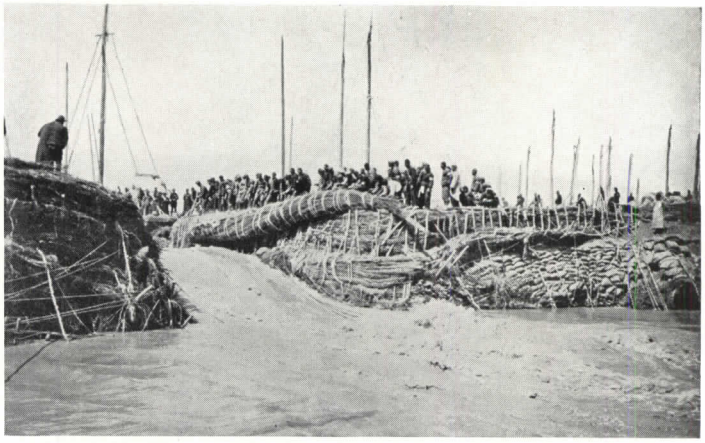
*Prior to the foreign influx in the 18th century such floods were rare. Maintenance of roads, levees and canals was in the hands of local governments. These bodies rose or fell according to their ability to keep transportation facilities in good repair.

CHINA: COOLIE LABOR HALTS OLD MAN RIVER

EVERYTHING ON THIS JOB WAS HOME-MADE. Hemp from nearby farms is hand-twisted into three-strand rope in a method almost as old as the river itself.

Photographs by Ewing Galloway

MORE THAN 5,000 TONS OF HEMP and tens of thousands of willow branches were used in making fascines to build a 600-mile dike. The branches are laid out in straight rows 50 feet long along the ground, twisted together and then tied with hemp rope.



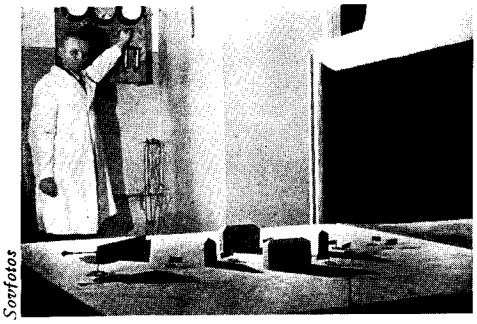
WHERE MODERN MACHINES COST MORE THAN COOLIE LABOR men push and roll the willow "sausage" to its final resting place as their ancestors did thousands of yars ago. As the gap is narrowed, the rush of the water is greater, but the "sausages" are firmly fixed by rope and sticks.

IT TAKES ONE HUNDRED MEN to roll the "sausage" to the gap. When the fascines are set in place one above the other, they are spiked and tied together with rope, and then covered over with earth and rocks.

WHEELBARROWS WOVEN FROM WILLOW BRANCHES and manned by coolies, carried supplies to danger points on levees. Wheels and framework are hand hewn, and fastened with hemp rope.

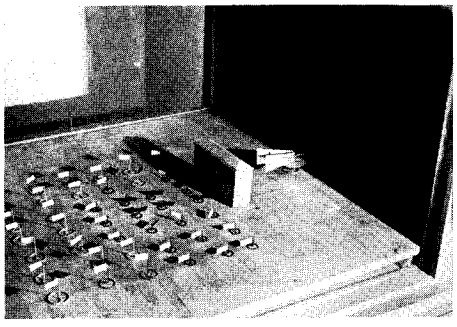
U. S. S. R.

MODERN AEOLUS UNBAGS THE WIND

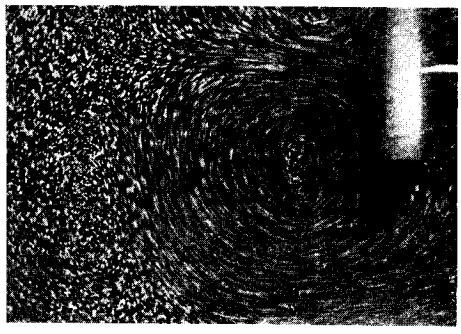


Sovfotos

Senior scientific worker at Research Institute makes observations on wind movements around a group of buildings.



Model of apartment house in front of aero-dynamic tube.



Underwater photograph of a miniature whirlwind forming around a barrier protruding from the water.

Wind movements along city streets and building layouts are studied by means of tiny flag-shaped vanes placed at points beside models of apartments. Wind is "manufactured" in an aerodynamic tube, which is controlled by an electric switch. This research is being carried on at the Research Institute of Communal Sanitation and Hygiene in Moscow. Miniature blocks of apartments, dwellings, even whole cities, are set up for study.

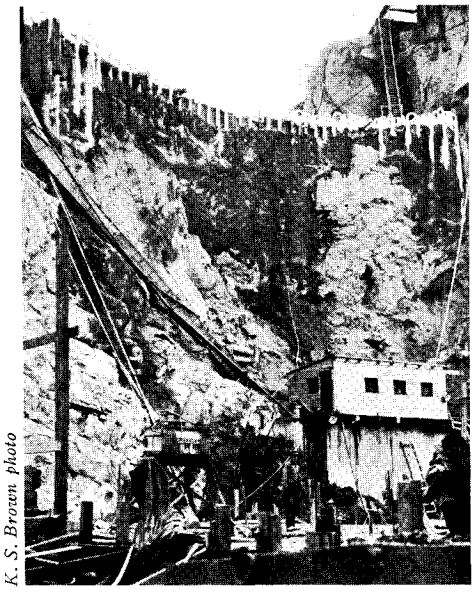
Principles worked out on models can, by the aerodynamic law of similarity, be applied to the practice and planning of residential centers. Air current movements and whirlwind formation are determined by photographing the shadows of air currents, by thermoanomometers, celluloid flag-shaped vanes, streams of smoke and gas, and floating powders. The values are black on one side, white on the other, to facilitate the observation of their movements. In the study of whirlwind formations, magnesium powder is thrown on the surface of water.

U. S. A.

ICE DAMS A MUDDY AVALANCHE

Photos courtesy Engineering News Record

1. General view of east excavation showing position of ice dam in relation to the gully.



K. S. Brown photo

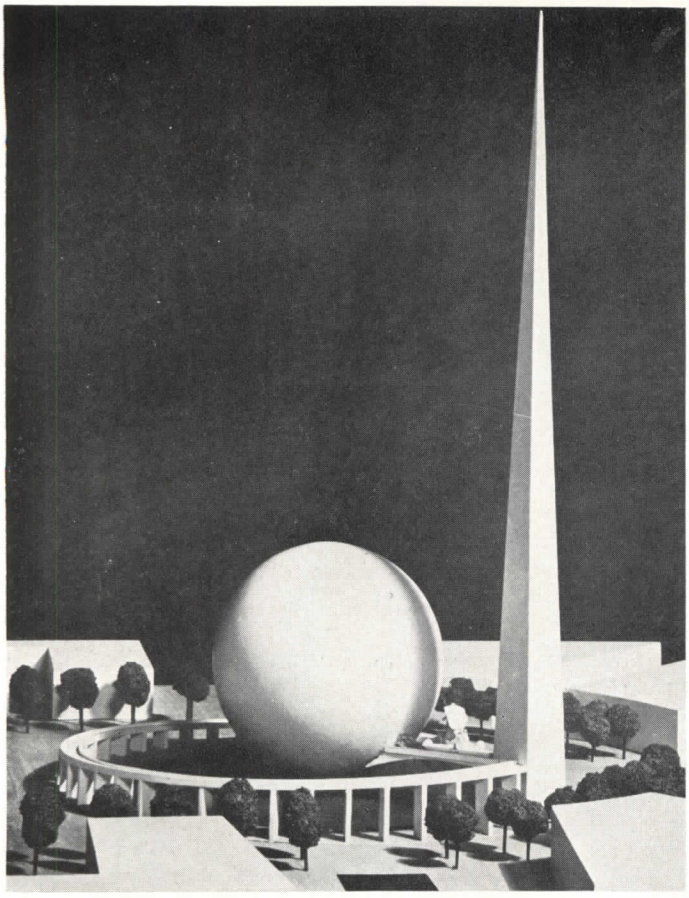
2. View from gully, showing depth of freezing points.

3. Close-up of the eight parallel rows of 377 points through which brine was circulated to freeze the material.

Man-frozen earth stopped a slide of 200,000 cubic yards of glacial silt which threatened the east side of operations at Grand Coulee Dam. Slides both ancient and recent have occurred at this place as a result of the cutting back of its channel by the Columbia River. During the building of Grand Coulee Dam, slides have been treated by various methods, but the most novel was used when an arch of earth was temporarily frozen by means of freezing points sunk about 25 feet deep in the ground. The dam's foundation is on solid granite of a very fine quality, but just above is a glacial silt of exceptionally fine rock flour containing colloidal material. This material will remain stable so long as its face is perfectly vertical, but on more than a 1 in 4 slope it is unstable. The material is like axle grease when wet, and is a very fine dust when dry. The total cost of the arch was $30,000, and was covered by the saving in excavation, and in time and money to the contractor.

OUT OF THE DUST: (NEW) FORMS

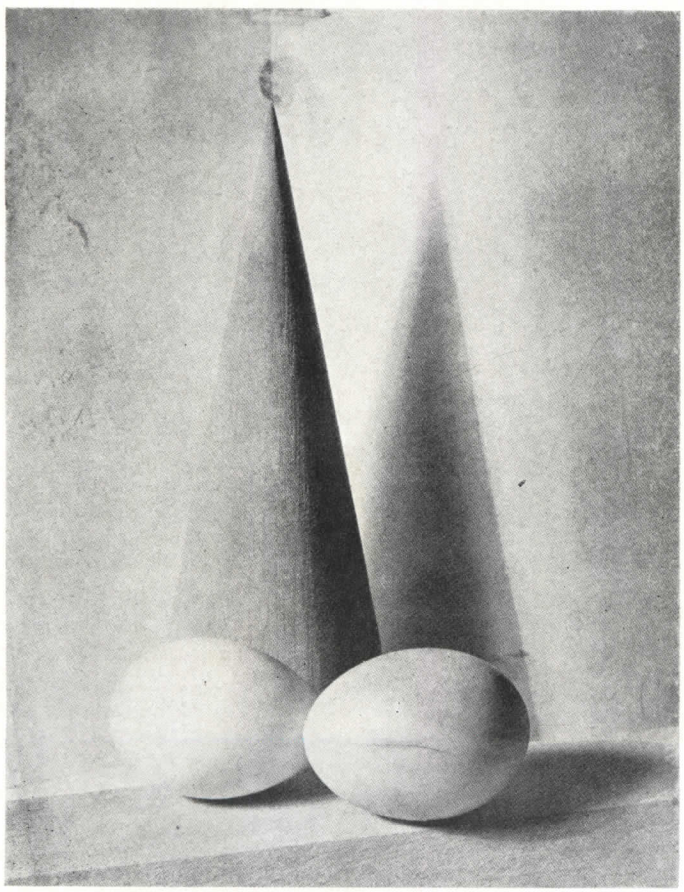
"The most carping critic can see why it is desirable to have at a fair some great dominating structure to which the eye will be drawn, which will constantly orient the visitor, and which can serve as a symbol of the whole. The most carping critic must also admit that these two structures are striking in appearance, that they are novel, that they are, indeed, virtually unique."—N. Y. Times, April 3, 1937.



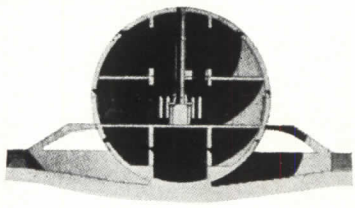
1937: Harrison and Fouilhoux use sphere and obelisk in their design for Fair Theme Center.

The sphere again takes prominence, this time as theme center for the World's Fair of 1939. Ledoux's sphere had three floors, and was divided into various rooms. Harrison and Fouilhoux's sphere will contain a single vast auditorium, with a moving platform from which visitors will view the floor exhibits and celestial bodies which will decorate the dome. There will be only one entrance 50 feet above the surrounding pool, reached by glass-inclosed escalators. The sphere, 200 feet in diameter, will weigh about 5,760,000 pounds and will be of articulated steel frame construction. The supporting steel columns will be glass-inclosed, and will be hidden from sight by fountains. This will cause the sphere to seem balanced in the air by columns of water.

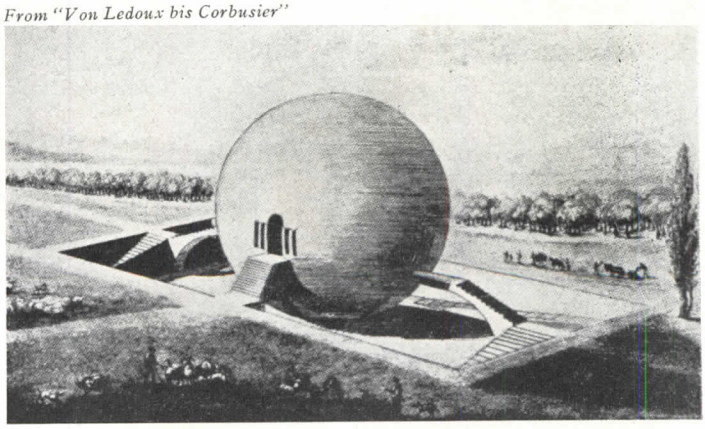
The obelisk or "trylon" will be 700 feet high, and will serve as the "Voice of the Fair" for the broadcasting of announcements. The estimated cost of the Theme Center is $1,200,000.



1921: European photographer used eggs and cone for a study in forms.

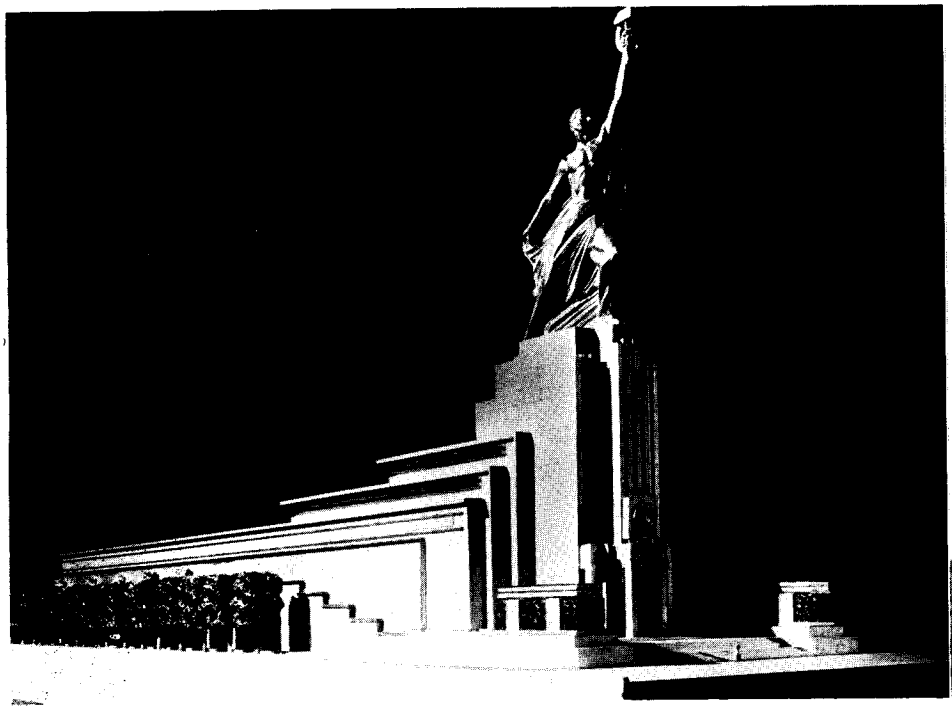


From "Von Ledoux bis Corbusier"



1781: Claude Nicholas Ledoux, surrealist-romantic, used the sphere as the basis for his design for an overseer's lodge.

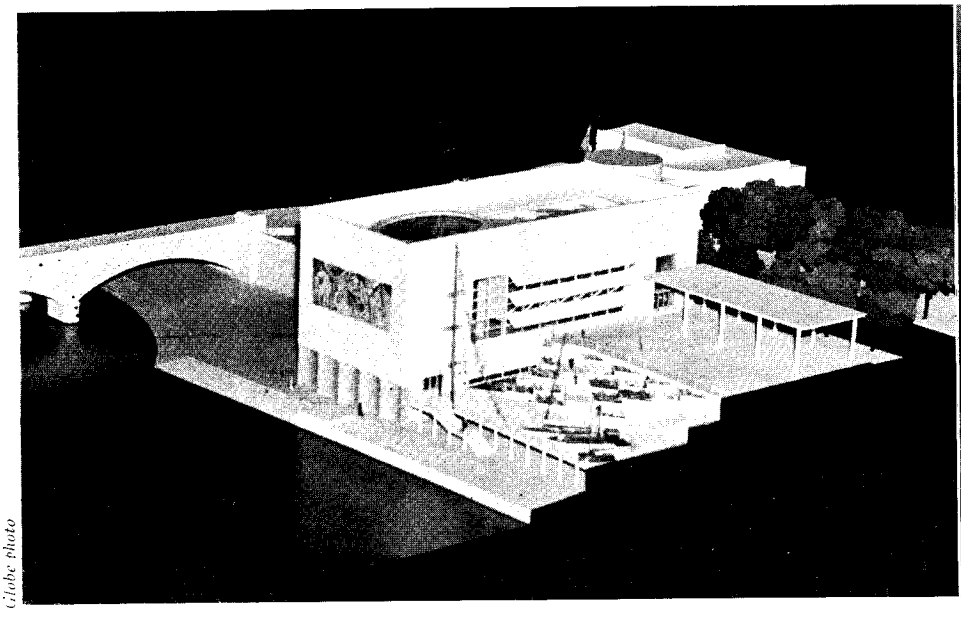
PARIS RUSHES FAIR TO ATTRACT CORONATION GUESTS



1. Hammer and Sickle Aloft

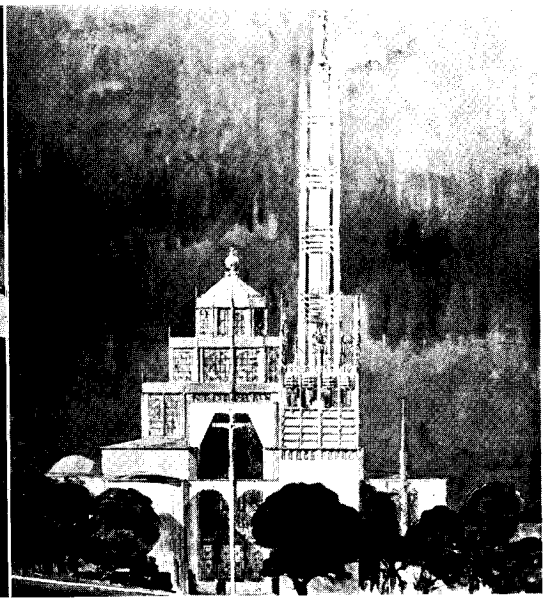
2. Where the Nazi Money Goes

1. Cast in stainless steel, these two mammoth figures top the U.S.S.R. pavilion. The interior will contain exhibits of industrial products of the country. As part of Russia's contribution to the fair, the Ballet Russe will perform, and a special puppet show will be presented.
2. German eagle and swastika face directly the figures on the Soviet pavilion. The total cost of the Nazi monument is $2,000,000 one of the most expensive buildings at the exposition. The central hall will contain industrial and governmental exhibits of the German nation.



Globe photo

3. Britain Takes a Bow



4. Pope's Pavilion at Paris

3. Located on the Place d'Honneur, the British Exposition Building will feature a painted frieze, 170 feet long. The exhibit will show various phases of the country's industries. This model is being shown at the Imperial Institute, South Kensington.
4. The triple tiara and crossed keys of St. Peter, official banner of His Holiness, will fly for the first time in history at an exposition. "Artisans of Art and Faith" is the theme of the Vatican exhibit. Mass will be celebrated daily at the main altar of the chapel. Twelve chapels dedicated to various nation's surround the pavilion chapel.

Robert McLean Glasnow

Glass House—Throw No Stones. In the annual exhibition of the Architectural League, photographs of the "Mapparium" were shown. Designed by Chester Lindsay Churchill for the Christian Science Publishing Society in Boston, Massachusetts, it is a sphere three stories high and thirty feet in diameter. Although the surface of the globe is concave, the perspective is the same as that on the usual convex form. The framework of bronze forms 10-degree longitudinal and latitudinal divisions in which are set 608 sections of ¼-inch painted translucent glass. Three hundred electric lights flood the globe from without. A glass platform extends from the Indian Ocean to the American continent. Twenty-two clocks placed at 15-degree intervals along the equatorial line tell the time in all parts of the world at a glance.

Ewing Galloway

GAS! (Scene from the next war?) Bomb-proof shelters, subways, cellars—all the European precautions against enemy invasion—avail nothing when gas attacks occur suddenly in the street. This is a demonstration in Paris of what will happen in such a crisis. Most fortunate will be those citizens who carry their gas masks wherever they go. (Paris department stores now carry gas masks as part of their regular stock, sell them for as little as $3.) The Continental countries have gone in heavily for anti-aerial gas measures; high buildings are installing gas alarms, and many apartments already have gas-proof cellars.

Hobart Bros.

Little Steel Home in the West. Second in a building program of ten, this prefabricated house is all steel arc welded construction. The dwelling has no basement, but storage room is provided in the attic. This house, economical in layout and cost, is being built by Hobart Brothers, Troy, Ohio.

"Guilty as Charged"

Six men, charged with second degree manslaughter in the collapse of a Bronx apartment house last July, were found guilty last month. Convicted were architect; builder-owner and son; masonry contractor; plan examiner, and masonry inspector of Bronx Bureau of Buildings. The collapse of the center wing of the seven-floor building on Mosholu Parkway last June caused the death of eighteen men. (news, ARCHITECTURAL RECORD, August 1936.) Witnesses at the trial testified that materials used were either second-hand or poor quality. Faulty reinforcement of an ornamental tower, and improper installation of horizontal steel beams were direct causes of the collapse. Supervision of construction was assumed by the owner-builder, and not delegated to experienced inspectors. Report of building code violation and of faulty plans was not made to the Bronx Bureau of Buildings by the inspectors of masonry and plans although they knew these facts. In the trial, the models exhibited were so numerous that jury and models had to move to a larger room.

Practical and Social

Trade secrets of the architectural profession will be openly discussed with members of F. A. E. C. T.'s Creative Architectural Workshop, newest addition to the Federation's New York City school. Unlike most classes, this one will have no teachers, no students. Instead of teachers there will be advisers; instead of students, collaborating architects. The form of organization is that of the architect's office, but the draftsmen are also designing architects. Informal discussions will expound theory; solution of problems will increase practical experience. The Workshop divides group problem solution into three stages: first, preliminary research study of problem; second, individual competition between members of group, and selection of best solution; third, group study, development and execution of selected design. In addition to two programs assigned by the advisory staff, students will write their own programs for two problems. If the solutions of the CAW programs meet with the approval of the school's executive board, they will be presented to the Federation with the intention of starting a movement for their construction.

CALENDAR OF EXHIBITIONS AND EVENTS

- **May 8-16**—National House and Garden Exposition, Chicago Coliseum, Chicago, Illinois.
- **May 15**—Closing date of exhibition, Architectural League, New York.
- **May 15**—Closing date, applications for entrance to competition for Joseph V. Horn Fellowship, University of Pennsylvania.
- **May 29-September 6**—Great Lakes Exposition, Cleveland, Ohio.
- **June 1**—69th meeting, American Institute of Architects, Boston, Massachusetts.
- **June 1**—Closing date, applications for Kate Neal Finley Memorial Fellowship, for graduates of University of Illinois College of Fine and Applied Arts.
- **June 10-14**—Registration for summer session in Housing-Community Planning and Low Rental Management, New York University, Bryant Park Center, New York.
- **June 10-14**—Competition for Horn Fellowship in architecture, University of Pennsylvania.
- **June 11-13**—Princeton University Architecural Round Table, Princeton, New Jersey.
- **June 12**—Opening Greater Texas and Pan American Exposition, Dallas, Texas.
- **June 21**—Summer Convention, American Institute of Electrical Engineers, Milwaukee, Wisconsin.
- **June 22**—Closing date, applications for entrance to competitions for fellowships, Syracuse University, Syracuse, New York.
- **July 5**—Summer session courses in architecture, Syracuse University, Syracuse, New York.
- **July 17**—Opening, XIV International Congress of Architects, Paris, France.

Ewing Galloway

Building for health. Fifteen hundred chronic aches and pains will be cared for in New York City's new Hospital for Chronic Patients on Welfare Island. Chronics, when treated with acute patients, are often neglected. Now there will be provision for better nursing care for chronics, and progress in medical knowledge for treatment of these diseases. Because most of these patients are ambulatory, and fresh air and sunlight is of therapeutic importance, the buildings are only four stories high, with easy access to grounds. Buildings face south, and chevron-shaped plans allow a maximum of sunlight, and better view of the East River. Continuous open balconies are provided along all wards, and terraces on the first floor will accommodate most of the ambulatory patients in each ward building. In addition to built-in ceiling fixtures for general lighting, each bed has a fixed hooded reflector, individually controlled, which illuminates the whole bed. Under construction at present are the hospital proper, central nurses' residence, and power plant.

NEXT MONTH

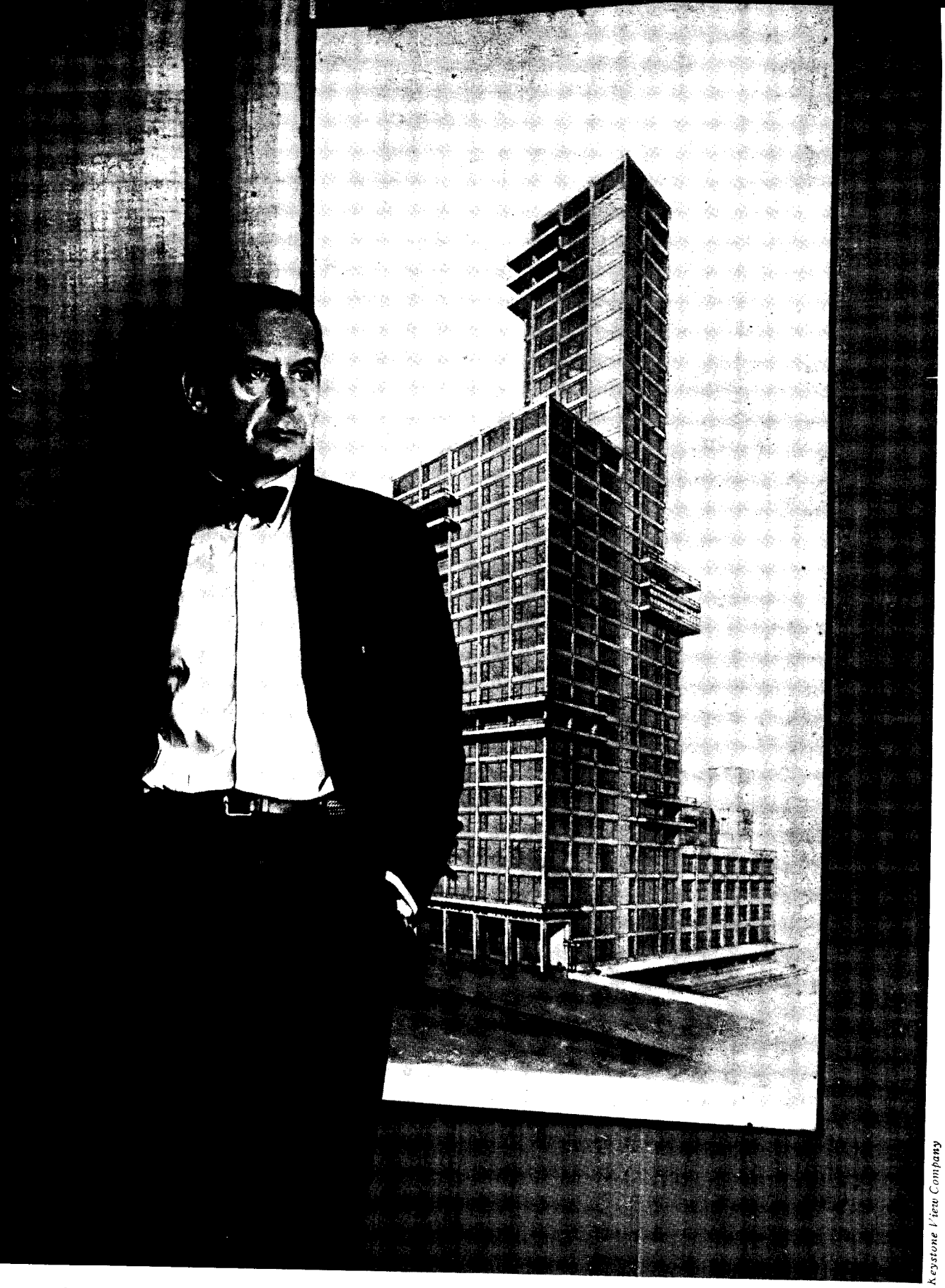
BUILDING NEWS . . . CURRENT EVENTS IN THE BUILDING WORLD . . . NEW BUILDINGS, NEW ART, NEW LITERATURE, NEW PRODUCTS.

DESIGN TRENDS . . . GROWING PAINS OF RECOVERY . . . NEW METHODS OF PROCEDURE IN ARCHITECTURAL DESIGN. By Paul Nelson . . . EXHIBITION DISPLAY. By Herbert Matter . . . A PICTORIAL RECORD OF THE MONTH.

BUILDING TYPES — COMMUNITY RECREATION — THE ARCHITECTURE OF LEISURE.

INDEX . . . JANUARY-JUNE 1937

ARC



Keystone View Company

W A L T E R G R O P I U S

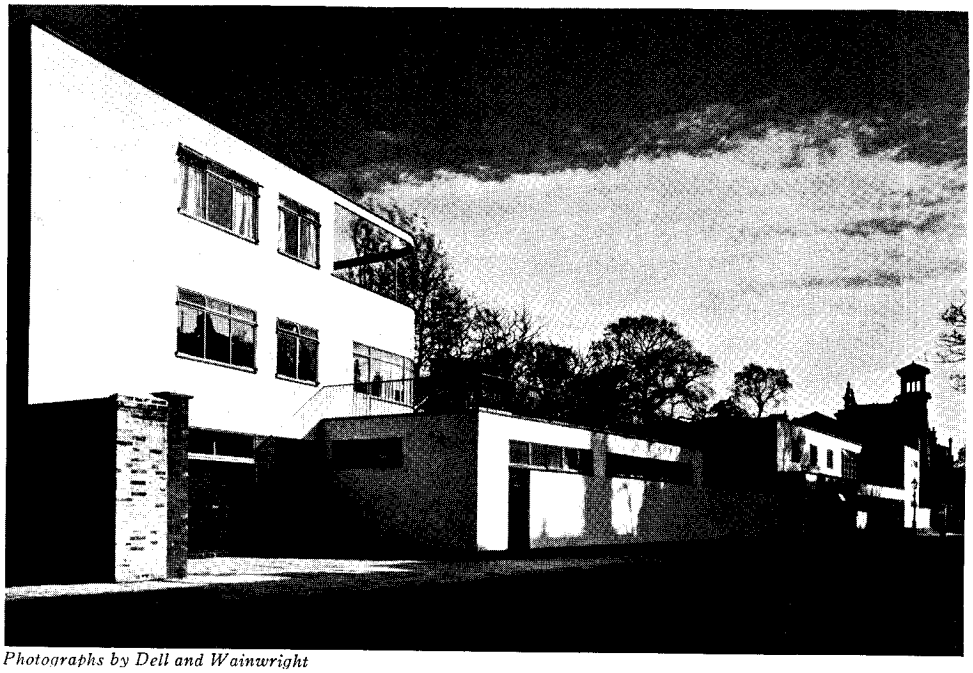
ECTURE AT HARVARD UNIVERSITY·

By WALTER GROPIUS

I have been asked by The Architectural Record to write a few words about my new task as professor in the Harvard University Graduate School of Design. I feel rather at a loss to talk much about my academic duties before I have found my bearings in this country and I should like therefore to confine myself only to a few remarks about my general intentions.

I have been in America only once, in 1928. I came here to study the extraordinary building organization, which is at present unsurpassed in the world. It has provided an instrument of such wonderful perfection, that I think any architect would feel inspired and eager to take part in the task of developing the American architecture of the future. I am again deeply impressed by the enormous scale of American architecture. Whatever the criticisms may be—the ingenuous fearlessness and broadmindedness of its creators cannot fail to affect everybody. It may seem rather a daring enterprise that I as a European architect venture to add my experiences to the bold planning and amazing technical perfection which you have achieved. I hope my appointment will be a further proof of the American ability to reconcile and amalgamate the most diverse types of people to create a new form of life of typically American stamp.

You may want to hear from me what sort of contribution I wish to make to the development of American architecture, and it may seem rather odd to you that I turn up here to teach Americans what American architecture should be like. I assure you, I feel pretty certain that I shall be a pupil here as well as a teacher, and I am very keen on taking over this double function. My intention is not to introduce a so to speak cut and dried "Modern Style" from Europe, but



Photographs by Dell and Wainwright

rather to introduce a method of approach which allows one to tackle a problem according to its peculiar conditions. I want a young architect to be able to find his way in whatever circumstances; I want him independently to create true, genuine forms out of the technical, economic and social conditions in which he finds himself instead of imposing a learned formula onto surroundings which may call for an entirely different solution. It is not so much a ready-made dogma that I want to teach, but an attitude towards the problems of our generation which is unbiased, original and elastic. It would be an absolute horror for me if my appointment would result in the multiplication of a fixed idea of "Gropius architecture." What I do want is to make young people realize how inexhaustible the means of creation are if they make use of the innumerable modern products of our age, and to encourage these young people in finding their own solutions.

I have sometimes felt a certain disappointment at being asked only for the facts and tricks in my work when my interest was in handing on my basic experiences and underlying methods. In learning the facts and tricks, some can obtain sure results in a comparatively short time, of course; but

Above: HOUSE FOR BENN LEVY, CHELSEA, LONDON

WALTER GROPIUS AND MAXWELL FRY, ARCHITECTS

these results are superficial and unsatisfactory because they still leave the student helpless if he is faced with a new and unexpected situation. If he has not been trained to get an insight into organic development no skillful addition of modern motives, however elaborate, will enable him to do *creative* work.

My ideas have often been interpreted as the peak of rationalization and mechanization. This gives quite a wrong picture of my endeavors. I have always emphasized that the other aspect, the satisfaction of the human soul, is just as important as the material, and that the intellectual achievement of a new spatial vision means more than structural economy and functional perfection. The slogan "fitness for purpose equals beauty" is only half true. When do we call a human face beautiful? Every face is fit for purpose in its parts, but only perfect proportions and colors in a well-balanced harmony deserve that title of honor: beautiful. Just the same is true in architecture. Only perfect harmony in its technical functions as well as in its proportions can result in beauty. That makes our task so manifold and complex.

More than ever before is it in the hands of us architects to help our contemporaries to lead a natural and sensible life instead of paying a heavy tribute to the false gods of make-believe. We can respond to this demand only if we are not afraid to approach our work from the broadest possible angle. Good architecture should be a projection of life itself and that implies an intimate knowledge of biological, social, technical and artistic problems. But then—even that is not enough. To make a unity out of all these different branches of human activity, a strong character is required and that is where the means of education partly come to an end. Still, it should be our highest aim to produce this type of men who are able to visualize an entity rather than let themselves get absorbed too early into the narrow channels of specialization. Our century has produced the expert type in millions, let us make way now for the men of vision.

FEDERAL VS. LOCAL PUBLIC WORKS

By WILLIAM STANLEY PARKER, F.A.I.A.

1. Normal Relationship

It would be highly gratifying if it were possible to determine just what a normal condition of public works construction is, but unfortunately construction statistics compiled by the Federal Government for the country as a whole are so inadequate, at the present time, that any such designation is impossible.

According to what appears to be authoritative information, the best available statistics on the construction industry are those contained in the Department of Commerce Bulletin on the Construction Industry, of April 1936. The inadequacy of such statistics is evidenced by the fact that this bulletin goes back only to 1925. Since 1931 to 1935 are clearly abnormal years we are led to refer to the statistics of 1925 to 1930 as normal, although their abnormal characteristics are obvious. For lack of further statistics, however, we can only compare the depression years with those few preceding years of substantial activity in order to appraise what has happened during the past five years and make a start at appraising what it would be desirable to have happen in the next five.

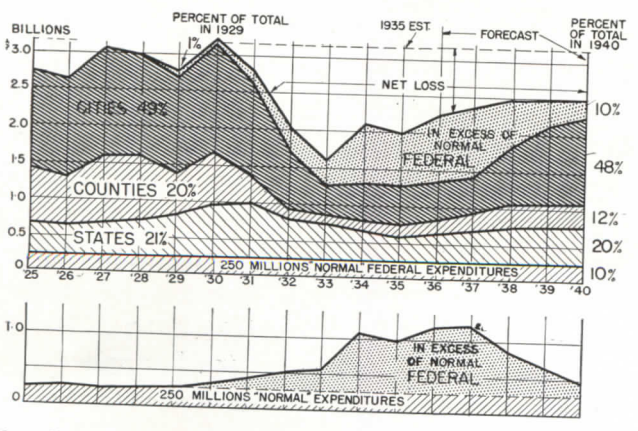
The chart on this page records the statistics as given for the four categories of public works, viz., Federal, States, Counties and Cities. For purposes of clear comparison the Federal expenditures are charted separately, a second chart showing in accumulative form the three categories of local expenditures with Federal expenditures added thereto. Comparing these and generalizing as to totals in round figures the following appears to represent the "normal" conditions for 1925 to 1930 inclusive:

Federal expenditures (annually) . . . $ 250,000,000
All local expenditures (annually) . . 2,750,000,000
Total public works $3,000,000,000

In local expenditures the cities represent half the total.

PUBLIC WORKS EXPENDITURES 1925-1935

with ESTIMATES FOR 1936-1940 below



Massachusetts State Planning Board—February 1937

2. Depression Relationship

The commitments of 1929 built up the top peak in 1930, the beginning of the slump showing in 1931, the decline in local expenditures continuing sharply to a low point in 1933. By contrast Federal expenditures started to increase in 1929, mounting steadily until they had doubled in 1932 and somewhat more still in 1933. These increases represent the effort of the Hoover administration to offset the mounting unemployment in the construction industry. Compared to the declines in local public works during 1931, '32, and '33 the efforts of the Federal government are seen to be relatively ineffective. The comparison of the cumulative *totals* for this three-year period is as follows:

Decrease in local expenditures $3,800,000,000
(below the peak of 1930)
Increase in Federal expenditures . . . 860,000,000
(including 1929 and 1930 increases)

These show an accumulated shortage in 1933 of about 3 billion, the equivalent of an entire "normal" year's work.

In 1933 the new Federal relief program was initiated and developed in subsequent years. The expenditures of the Federal government on Federal projects were increased, grants were made to local and state authorities and loans at low interest rates sought further to stimulate local expenditures.

During these years, the Federal government was also spending large sums for relief in various ways.

A substantial amount of these relief funds was used on minor construction projects. These figures are not included, however, in the statistics now under consideration, but in general the generous aid being given to local governments in this way should be kept in mind in considering the following analysis of what was happening in public works.

Federal expenditures on public works, including grants, mounted to $1,100,000,000 in 1934 and to an estimated billion in 1935, four times their "normal" amount. What happened to local expenditures in these two years? The expenditures of states dropped steadily, from the 1933 total of 500 million to 400 million in 1934 and 350 million in 1935. County expenditures increased about 30 million and cities increased theirs about 150 million, the net result being that in 1934 and 1935, in spite of the urgent need of employment, especially in the construction industry, in spite of the efforts of the Federal government to incite local governments to develop their programs, and in spite of the local help through Federal relief expenditures, the combined expenditures of states, counties and cities for public works remained practically the same through 1934 and '35 as they were in the low peak year of 1933, being only little more than one-third of their "normal" amount.

It seems pertinent to add that apparently dependable statistics show that in 1935 the total bonded indebtedness of states, counties, cities and towns was 350 million less than in 1932. If this is true it indicates a strange failure of local governments to cooperate with the Federal program which had come to their rescue.

To repeat for 1934 and '35 the comparison given above for the preceding years we get the following cumulative totals estimated as in the previous case:

Decrease in local expenditures ('34 and '35)	$3,780,000,000
Increase in Federal expenditures ('34 and '35)	1,600,000,000

Comparing now the new annual totals in these two categories of public works we get the following:

Federal expenditures	$1,000,000,000
All local expenditures	1,000,000,000

In the "normal" preceding period Federal expenditures had been about 1/12 of the total. Now it is found to be ½.

Finally, to sum up the general results of the decrease in local expenditures and the increase in Federal expenditures since 1930 we find:

Cumulative decrease in local expenditures	$7,580,000,000
Cumulative increase in Federal expenditures	2,460,000,000

In other words, for every dollar the Federal government increased its expenditures in order to prime the pump the local governments reduced their expenditures by three dollars, and even after the 1933 relief program developed the local reduction was more than twice the Federal increase.

3. Future Relationship

What is the future total annual expenditure to be in public works? Should a normal future year be of the magnitude shown for the late twenties, that is about 3 billion? Or should it be somewhat less, say 2½ billion, which could be increased to 3 billion if private employment in construction sagged? How much of the future total should be Federal expenditure—one-half or one-twelfth or somewhere in between the two?

In considering this question it will be well to have in mind the present volume of construction in all categories. Private construction in 1935 had dropped to about 15% of "normal." Public utilities were less than 40% of "normal." As noted above public works were about 66% of "normal." At present there are no complete dependable statistics for either 1935 or 1936, the figures given herein for 1935 being stated as "estimated" in the April 1936 Bulletin of the Department of Commerce. The newly developed division of construction industry statistics in the Department of Commerce as yet is not in a position to give final figures even for 1935.

This lag between the end of the calendar year and availability of its statistics is an obviously serious difficulty in any planning program. The President's budget statement gives definite figures under public works and other headings indicating expenditures in 1936 and 1937 fiscal years. These should permit reassembling to indicate the expenditures by calendar years provided the classifications are clearly in accord with those used in the Department of Commerce estimates.

Figures for local expenditures, however, are difficult to assemble. It seems clear that if we are to embark on a long-range planning program for public works, which is certainly to be desired, the gov-

ernment should provide adequate funds to permit the collection of statistics in the construction industry as effectively as has long been the case in agriculture.

Assuming private construction to be now about 25% to 30% of "normal" and public utility expenditures to be 50% of "normal," we cannot look with satisfaction on any decrease in public works below the present total which in 1935 was still at its three-year low peak of 2 billions. The President's budget indicates that Federal expenditures will have increased another 500 million in 1937 to a total of 1½ billion, but of course this is an appropriation total as the year has still several months to go. He indicates 1936 expenditures as $1,200,000,000, no substantial increase over the $1,100,000,000 noted above for 1934. It is probable that actual expenditures for the calendar year of 1937 will be less than the budget provisions and therefore in any event not greatly in excess of 1936.

What should we anticipate the figures will show for local public works in these two years and what should we establish as their desirable totals for the calendar years of '37, '38, '39 and '40? To be conservative, let us assume the hectic twenties were abnormal, a peak we may need to climb to in case of a decline in private expenditures, and let us set 2½ billion as a goal for future normal expenditures which should be reached during 1938 and maintained through 1940. These totals are indicated on the chart, and gradual adjustments made for '36 and '37 to indicate what is needed in local expenditures in view of probable Federal expenditures as outlined above.

The subordinate elements of local expenditures have been devised with the following thoughts in mind. States, as a group, are financially better able than cities, at the present time, to increase their expenditures for public works. This was true during 1934 and '35 and yet the states actually reduced their expenditures while the cities increased theirs, as already noted. The chart therefore indicates a desirable rise in state expenditures from the 350 millions of 1935 to 500 millions in 1938. This is only two-thirds of what they were spending in '29 and '30 and about the average from '25 to '35 and seems conservative. Cities are held at the same amount as in 1935 through '36 and '37 then increasing substantially until in 1940 they have regained nearly their "normal" percentage of the total. Counties are gradually increased to double their 1935 amount, but half their "normal" average. Federal excess expenditures are shown conforming in general to the indications of the President's budget message, maintaining for '37 the same as estimated for '36, and dropping sharply by 350 million in '38 and then dropping steadily to a gross Federal expenditure of 500 million in 1940. This is double the "normal" Federal expenditures of the twenties and equal to the Hoover expenditures of 1932.

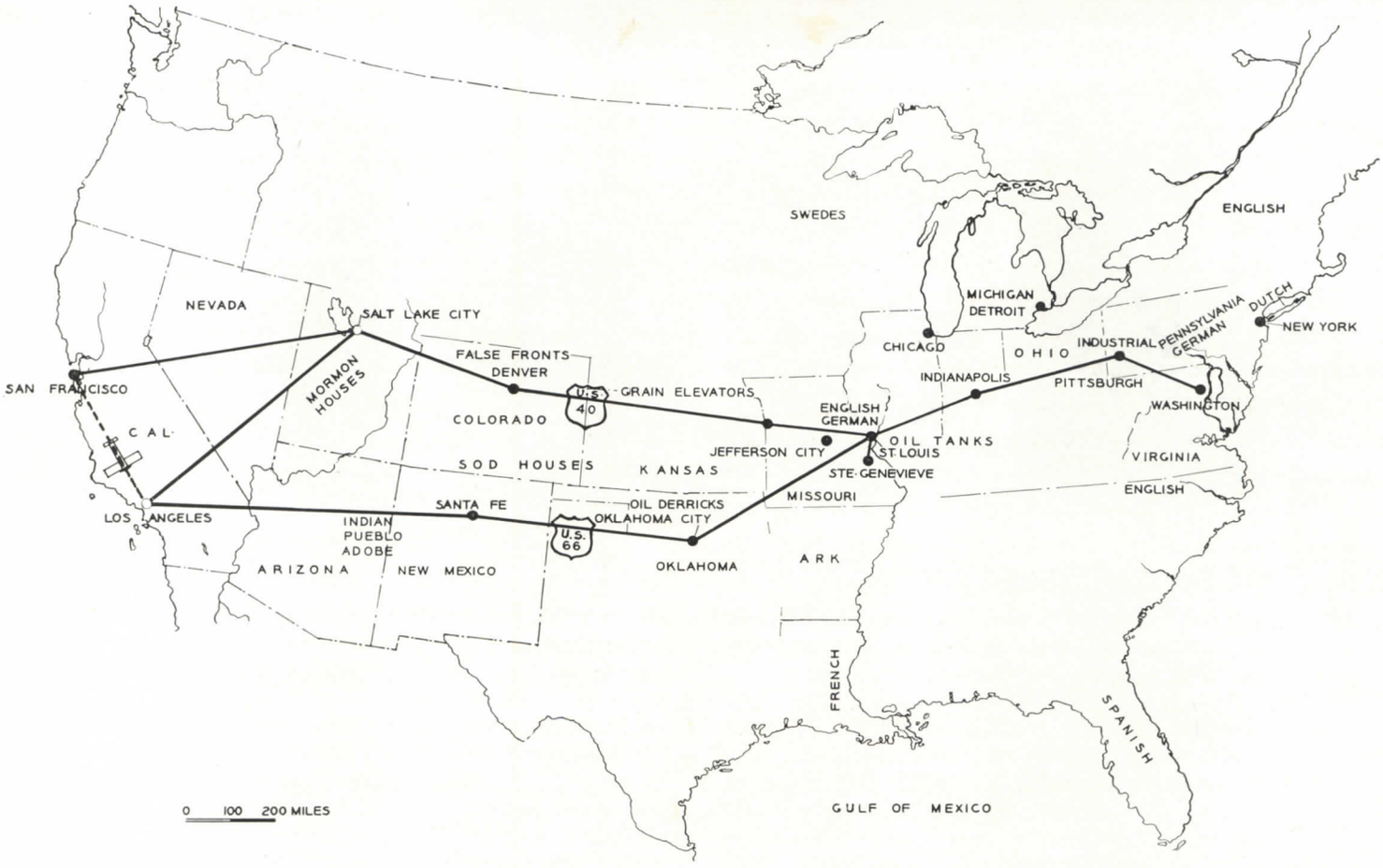
These suggested expenditures do not take account of any major increase in public expenditures for flood control or other programs which may well develop and which may substantially revise these estimates.

4. Control of Local Expenditures

The main purpose of this chart and exposition is to disclose the apparent lack of coordination and cooperation of local government programs with the Federal relief program during the past few years and the need of such coordination if a long-range program on a national basis is to be effectively developed. It is clear that any increased effort by the Federal government can be completely nullified by a decrease in state and local expenditures which normally should be several times as great as those of the Federal government. Any planned program must therefore involve the cooperation of all levels of government if it is to achieve its purpose.

How can this be accomplished? I will not venture a complete answer. Doubtless an extended period of cooperation will be needed to develop a desirable and effective procedure. The diagram indicates, however, the need of an immediate *study* and suggests that the administration of any grants in aid provided for by Congress in the 1938 budget may be an effective means of initiating a future program. It is therefore suggested that a broad program for the increase of state, county and municipal expenditures be devised and allocated reasonably to each group and elements thereof in the light of their known financial conditions, and that grants in aid be extended only to such units as agree to carry their share of the program.

There can be no doubt about the difficulties involved in such a procedure. The purpose of this statement is to indicate that no national program of public works planning can be carried forward effectively unless some such conscious direction of and influence upon local expenditures is exercised by the Federal government.



ARCHITECTURE
ON ROUTES U. S. 40 AND 66

By DOUGLAS HASKELL

There are times when the American wants to pack his grip and take a trip, and the urge is likely to be stronger after he has been exposed to enough New York exhibitions and enough books dealing with modern architecture. New York and Boston look too consistently across the Atlantic. We took our trip—10,000 miles, mostly west of the Mississippi—in a station wagon. It was handier and faster than a trailer and amply spacious for two. Our regret was that special conditions prevented sleeping in the car on air mattresses which neatly fit inside the station-wagon body. All the way from West Virginia to Boulder Dam such crates as ours were scarce. This permitted us to risk picking up hitchhikers even on the lonely stretches, telling them it was a government car. That settled them. From our hitchhikers we got miscellaneous information, sometimes a needed muscle, and diverse entertainment. There were the two boys on their way, so they said, to catch wild horses in Arizona, expecting with luck to get at least a couple of those Spanish Arabians; their plans seemed highly informal. Anyway the weather nose of these boys was accurate and the snow they predicted on our route as they left us soon began coming down plenty. Pulling into Salt Lake that November Sunday was a business that involved shovel, chains, and towcable; not on our own car, of course, but on those of misguided Californians.

We were looking to see what architecture the United States might be carrying in its own pocket. This was not to deny the high value of intercourse with Europe. But this is beginning to proceed quite automatically. Meanwhile it is something of a joke that we were looking so intently at Italian palaces and Greek temples while our own factories and suspension bridges were rounding into shape. It was the Europeans who discovered these for us; but of course as raw materials only; we were told that we must go to school to learn how to work it all up in the acceptable "international style." And there is certainly much to be learned from these new masters; but if the American still has something in his other pocket, maybe he had better put his hand there quickly.

As you drive across the United States it is astonishing how much you find that has been standing for quite a while but has not yet entered into architectural literature. It all ought to form our coherent body of experiment in building—our tradition; yet a lot of it seems to have been seen only by photographers and painters. Least of all did we encounter a

square which even in the desert looks watered and tended. Orderville itself derived its name from adherence to the "United Order" which practiced a form of religious communism under the direction of the able church statesmen, and the original town layout was a continuous hollow square around the dining hall. Indeed, throughout the region only the most strenuous community effort, for which religion served as a bond, could have achieved what the Mormons did as pioneers in the irrigation of the intermountain country and as defenders of civilization. The thoughtful Washington Irving had predicted for the entire territory a lawless future under the domination of wild Tartar-like tribes.

The evolution of the early Mormon house and town forms a chapter in American architecture that has been neglected. The elements were no different than elsewhere but the combination was. Good proportions and sound building united with a decorative craftsmanship that separates this work from any such religion-dominated plainness as that of the Quakers. Prevalent names such as Christensen and Jensen indicate where some of this good craftsmanship came from; apart from Eastern Americans the immigrants were chiefly English, Scandinavian, German, and Swiss. Brigham Young in his own Beehive House at Salt Lake set a precedent of multitudinous dormers, and these occur on a smaller scale in combination with semi-octagonal bays and well-managed porches in the outlying towns. Young's own later house was just an anomalous turreted monstrosity.

Salt Lake, with its vast avenues and overlarge city blocks, occupies a regal position in the plain that suddenly opens from the canyons. Its religious structures are both strange and harsh. As a curiosity there reappears suddenly at Salt Lake for the first time west of Chicago the full-blown "prairie" house copied from the early Frank Lloyd Wright. Not any fitness to the terrain but the individuality of the type and its four-square ruggedness must have recommended it to the Mormons as to the Dutch.

The chief Mormon valley runs south from Salt Lake along the Wasatch Mountains; still continuing southward, through St. George and into a corner of Nevada, we come within reach of the Boulder Dam, a chapter to itself; in the neighboring Arizona and New Mexico country is the Indian adobe pueblo region, already well enough known as American background. Again, the influence on California of a Spanish occupation that had reached a settled civilization while the New Englanders were still living in dugouts and building their first frame dwellings is already elaborated in the school books.

Such a bulk of indigenous or naturalized past construction, some of it as yet unstudied, should furnish enough points of reference to emancipate us from complete apprenticeship to Europe or to a "European sense of form." Of the vast continent itself, with its enormous topographical regions and its changes of climate, contour, color, and vegetation, the mere mention should suffice to indicate the unlimited nature of the architectural opportunity. In a sense different from that meant by Carlyle, "Here, if anywhere, is America."

2. THE LATEST IN ECLECTIC

No description is needed of all that we encountered as the "latest in eclectic." Houses continue to be built with greatly improved machinery in shells taken all the way from Cape Cod to Monterey. We happened across no great housing projects and our route took us to none of the new green-belt towns. In evidence was a good deal of government work,

Photographs by Laura Gilpin

Taylor Museum, Colorado Springs, John Gaw Meem, architect (1935). Showing unit system for removable display partitions.

making progress to the extent of stripping down. The new municipal auditoriums seemed to indicate a fine evolving community concept. The planning and engineering are complex; the architectural treatment tends to be simple. In the leading case, that of Kansas City, it is German mass with adornment in the shape of strip windows and occasional medallions on the outside, and inside a reworking of traditional styles up to the modern of Rockefeller Center; in parts very effective. The absence of any radical change in attitude is shown in this case by the attic or setback which sits over a void on the arms of the great trusses whose presence it disguises in the interest of a "feeling of stone." The Taylor Museum at Colorado Springs is a handsome building still in the tradition of blocky mass but carried through with greater consistency and with a tidy craftsmanship in concrete. The patio with a mural frieze of running horses is very striking.

3. THE CLIENT ON WHEELS

An American intent upon discovering and evolving the architecture that belongs to him has a far more difficult but satisfactory assignment than the eclectic's. He studies European achievement, to be sure, just as Europeans observed American engineering, and his solutions may be similar when the conditions are; but European usefulness ends exactly where the differences between the two countries begin.

Most of Europe, to take the example made most obvious by our trip, is a thickly settled continent that can be enjoyed on foot or by bicycle. It has a long tradition of building stressing the home as a permanent center if not as a fort. The United States has a population density of about 40 to the square mile against England's seven hundred; in the West many of the circles on the map were found to indicate not towns but only places to flag the train, or humanity within reach. The United States is the country of the automobile, one to every fourth inhabitant, and the main growth of many a Western city has occurred since the use of cars became widespread.

This gives significance to the astonishing growth of such institutions as the trailer and the tourist camp. These are not to be understood as having any present structural or formal distinction. They are architecture in the vernacular. Most of these camps are erected in the cheapest wood, brick, or stone construction. They are almost all laid out by the owners of service stations, i.e., by garage mechanics and their wives, and are therefore badly planned inside; sometimes they are quite shabby; on the approaches to cities such as Denver and Los Angeles they form what is almost a road-slum. When all this has been said there remains in their favor that they are growing with the people themselves and represent healthy new ways of living, at least on vacation. There has been much talk about an architecture of "li-

and air"; this puts it into action. It is not elegant but appeals to the mass of the people and grows out of their desires. From overnight affairs the cabins have developed into vacation homes and are now being improved in several localities into a new type of year-round apartment.

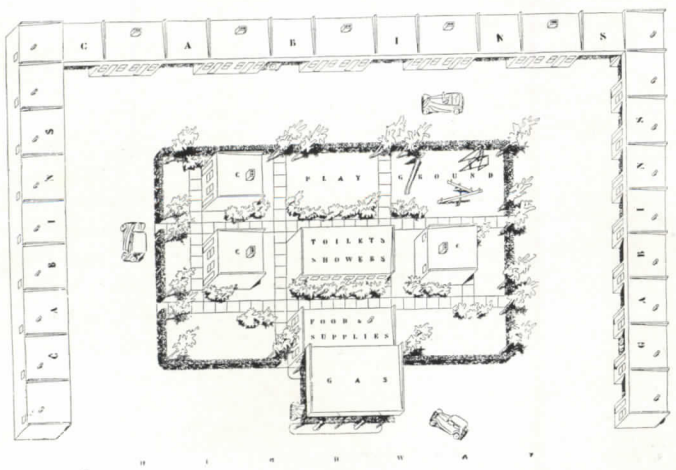
Climate and geography have divided the camps into zones. The highest development that we found was in the zone contiguous to Route 66, running southwest from St. Louis to Los Angeles through Santa Fe. Farther north a short tourist season has kept the camps more rudimentary; farther south the balmy climate has favored a later variant—the trailer camp.

All tourist cabins and all trailers are compact, but there is an all-important element of spaciousness in the concept. Those real estate men who thought themselves clever in copying the tightness of arrangement of the "land yacht" missed the necessary complement of the tightness, namely, the far-flung landscape and the wide open sky. The camp or trailer as such provides only for the sleeping and eating interval of a life in the open; it is only one element in a union composed of car, road, and land. In the camp or trailer not merely the cabins and gadgets but the landscape and the open sky are built in.

Frank Lloyd Wright was perhaps the first to project imaginatively, as "Broadacre City," the type of community that might arise out of the nucleus of the gas station and its related services. Making no use of imagination on so high a level, but merely out of the situation itself, the camps are branching into a variety of embryonic communities. Unfortunately where architects have been called on they have put more effort into adding fake dormers and chimneys than into guiding these young communities into rational development as a whole new series of at least green, if not greenbelt, towns.

4. TECHNICAL LABORATORY

We unfortunately encountered no trailer camps as such. There was plenty of evidence, however, of the importance of the trailer, which had managed to monopolize attention, at the expense of the cars, in the last New York automobile show. Unnecessary to repeat common knowledge about the wide range of purpose and of design, from closed cars such as the Nash with convertible Pullman seat for rapid travel to Corwin Willson's model, as yet unbuilt, for a two-story mobile house, intended to move slowly and rarely, providing for prolonged periods for an entire family staying in one place.



Tourist Camp layout, Raton, New Mexico.

What may not yet have been fully realized is the importance of the trailer in a field as yet untouched by the tourist cabin, namely, as laboratory for scientific and economical shelter construction. The frontal attack that was made in the field of housing as such, under the name "prefabrication," remains stymied by the combined investment of real estate interests in obsolete properties and of manufacturers in obsolete equipment. From these obstacles automobile manufacture is largely free, in part because the customers expect efficiency and progress, in part because manufacturers, unlike real estate operators, accept and provide for obsolescence as a normal incident of improvement. Such development can proceed unhampered as well by stylistic shibboleths, such as the delay being caused by the "international style" in the development of forms of roof often much more appropriate than the flat one, and the demand sometimes made in the name of "systems" of aesthetics that there be compulsory columns to bump into at regular intervals.

5. A MODERN AMERICAN CITY

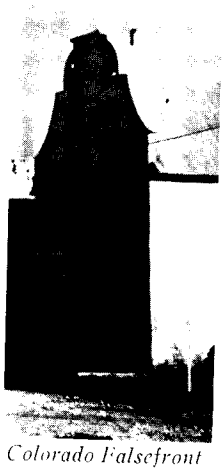
If cabin and trailer camps along the way represent a future opportunity rather than an achieved present, they also serve to prepare the traveler for the openness and modern layout of the Western cities. I select Los Angeles not wishing to be drawn into any controversies with beautiful San Francisco, which I scarcely saw beyond the big new bridges. But Los Angeles has certain objective features especially favorable to modern architecture.

Los Angeles is a city built on the automobile as Boston was built on the sailing ship. Los Angeles appears to the casual view as a series of parking lots interspersed with buildings. No large American city has so much downtown land listed as "vacant" or occupied by taxpayers—the figure is something like 20 per cent. Yet these parking lots are functionally as indispensable to the city as a car is to the citizen. Apart from a downtown office section, the "city" is a string of semi-independent communities. Jokers declare that Los Angeles City Limits signs are to be found in Alaska.

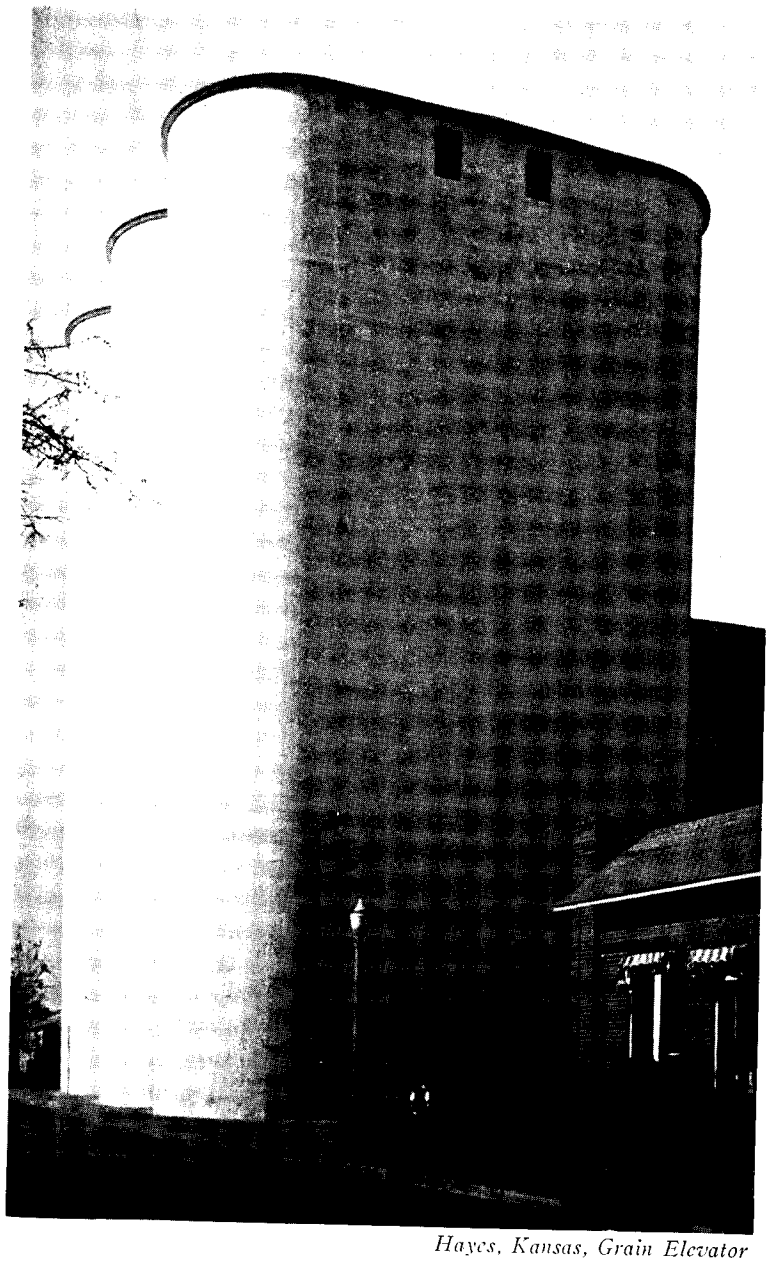
Other factors combine with the openness of plan to favor a modern architecture of movement and spaciousness. The climate is not typical of the continent as a whole, but it does favor experiments in breaking down the hard boundary between indoors and outdoors which can later, with technical improvement, be carried further north. Industry is not thought of as a large factor in Los Angeles, apart from the movies, in part because what industry exists there is so modern as to have become unnoticeable. That is, a rubber industry second only to Akron occupies plants so nearly automatic as to have created no industrial slum and therefore no awareness of its existence. In construction, Californian skill with concrete combined with the Mediterranean, or Spanish, tradition has produced generally simple, horizontal, forms under a unifying color of white. Some of Wright's mature masterpieces are there, and a number of architects who received their training under him. The inexpensive land available along hillsides and canyons assures the modern architect that the openness he achieves and his sweeping views will remain relatively undisturbed by later stupid neighbors.

The example of Los Angeles is urged because so many of our advanced town planners yield completely to standards that have grown up in bicycle-riding England or Germany. And visiting foreign planners of unquestioned skill need more than a little time to get the Western scale, which is the

VERNACULAR FORMS

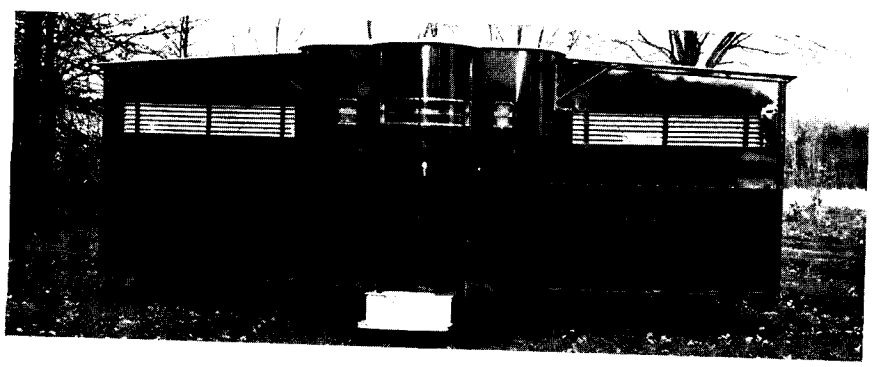


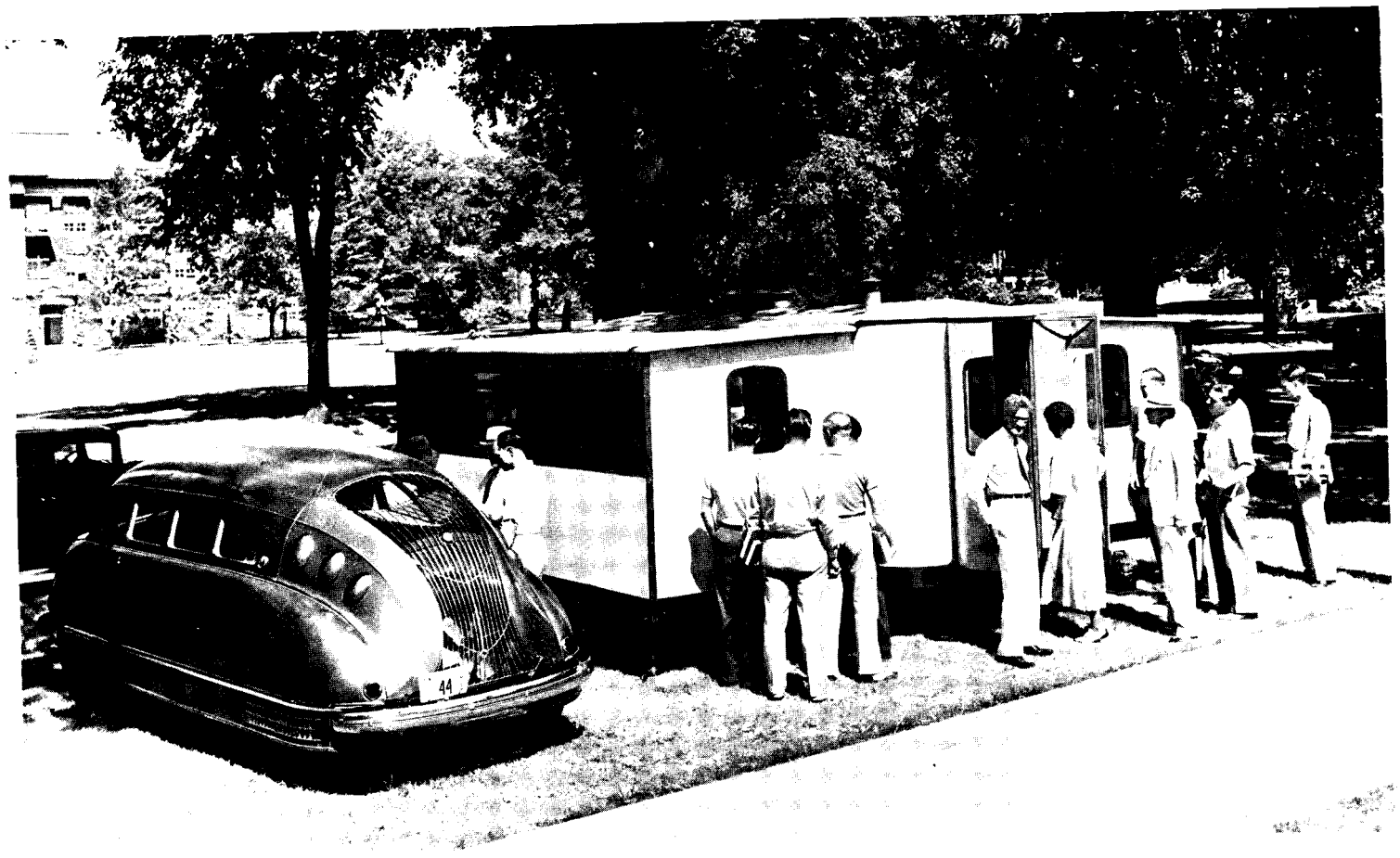
Colorado Falsefront



Hayes, Kansas, Grain Elevator

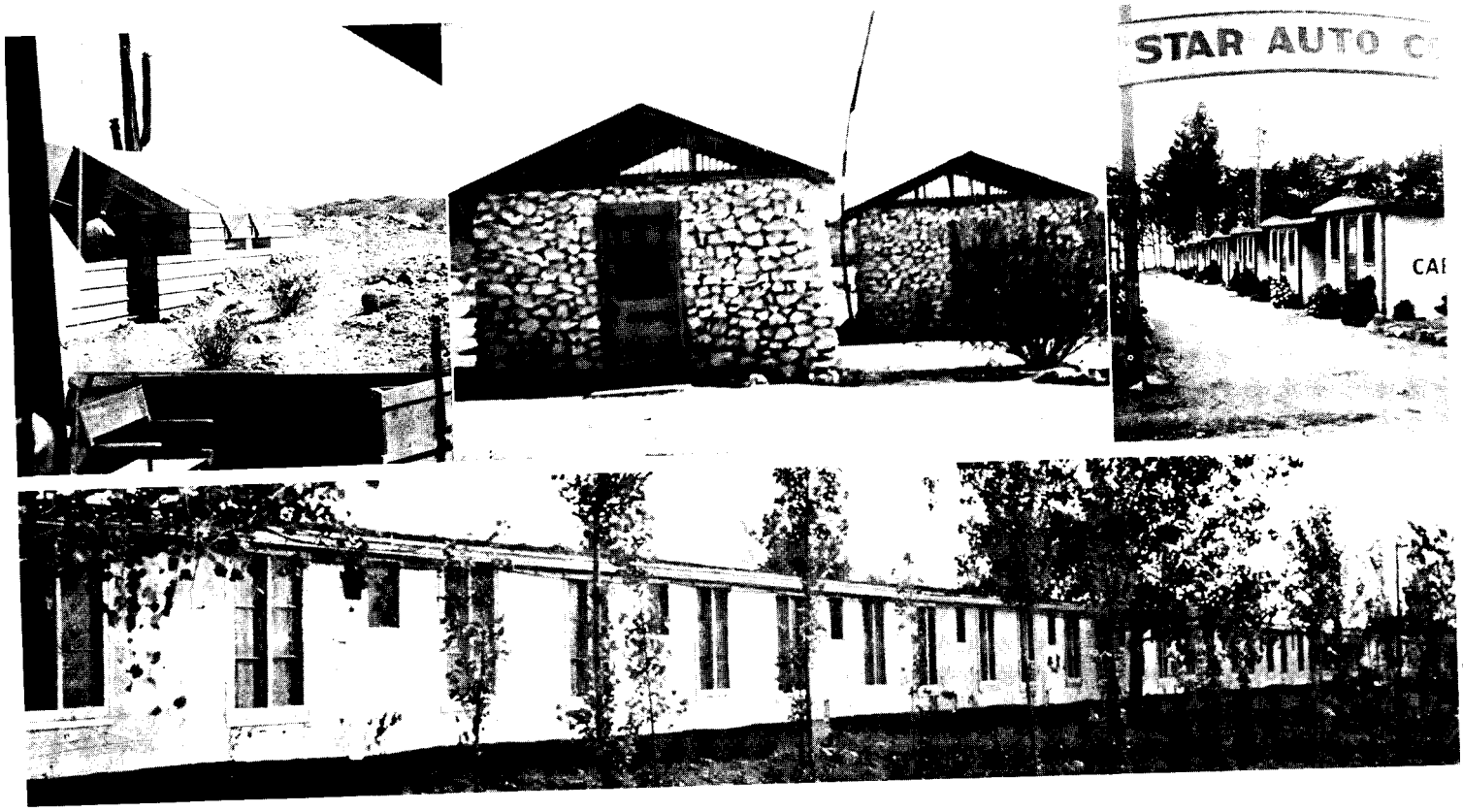
As storekeeper the Westerner felt obliged to "put up a front"—literally a false front—but his industrial structures remained clean and unadorned. Even a small town often possesses grain elevators and mills of astonishing purity of form adapted to purpose. The "mobile house," designed by William B. Stout, shown below strives with the same economy to put a living room, kitchen, bath, and twin bedrooms on wheels. The photographs show the trailer opened as a house and closed for driving.



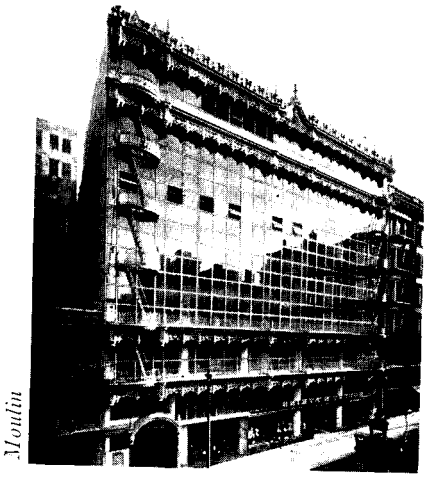


J. C. Allen and Son

***Cabins for Nomads.** "All are compact, but the concept includes the far-flung landscape and the wide open sky." Top: Trailer in camp, car and trailer designed by William B. Stout. Below: Cabin in the desert by Frank Lloyd Wright; stone cabins, Mojave Desert; sheet material and stucco camps in California and Missouri.*

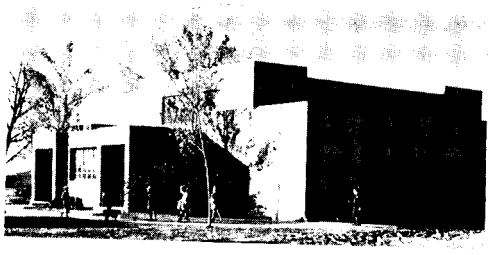


WORKING INTO "MODERN"



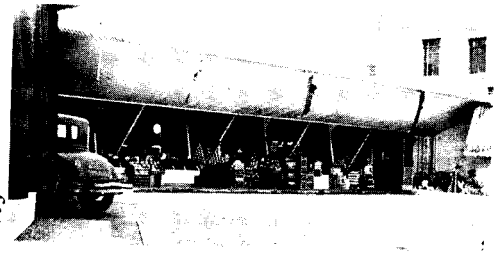
Moulin

Hallidie Building, San Francisco, 1918, Willis Polk, architect



School, Denver, Wm. E. and A. A. Fisher, architects

House, Salt Lake, Slack Winburn, architect



Frey

Drive-In Markets, Los Angeles, Lloyd Wright, architect

H. P. Woodcock

Van Patten House, Los Angeles, R. M. Schindler, architect

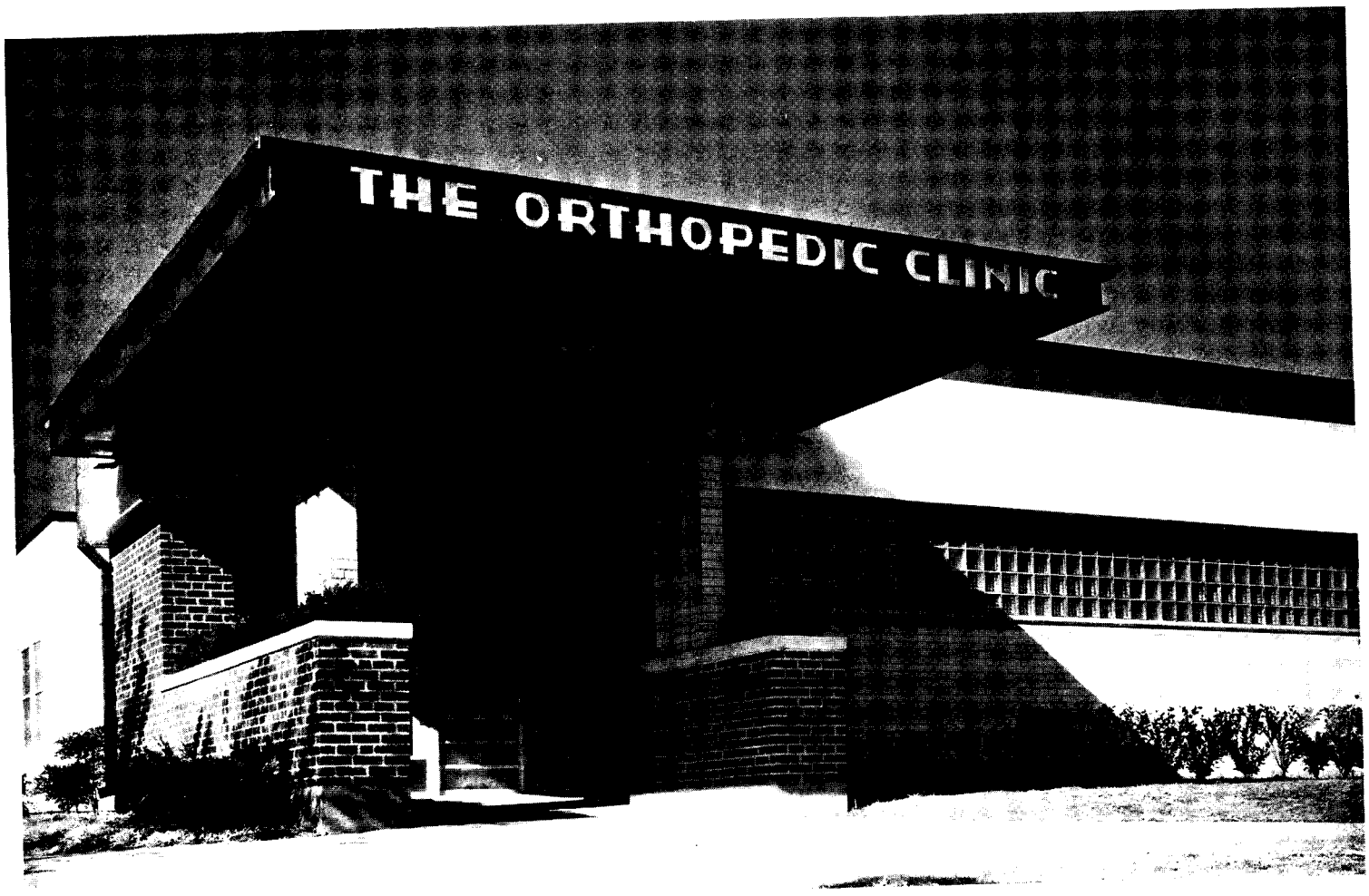
American scale, into their bones. In addition, there is implicit in the American scheme the idea of rapid improvement, and although a proposal such as that of Sir Raymond Unwin, that the financing of housing be made easier by slow amortization, went unchallenged among the housing men who listened to him, it is repugnant to the American average man and worker to think of being condemned to forego large-scale improvement for any such period as fifty years; moreover, given American resources, it is not really necessary.

On our way we met hard-working architects raising their heads above the dust cloud of eclecticism. In Denver, among others, there were the Fisher brothers with their exemplary little country school; Casper Hegner had just risked himself a modern house. In Salt Lake we were piloted by the genial Slack Winburn, who was starting modern houses for real estate developers. Among modern architects working in Los Angeles are Richard Neutra, R. M. Schindler, Lloyd Wright, Fred Monhoff. Among these Neutra, an Austrian by birth, is perhaps the best known, by virtue of having represented the United States abroad in international congresses, and through winning medals in competitions such as those of General Electric.

Neutra's strength lies in just the kind of organization needed to make standardization work: meticulous care with details and skill in creating types. Thus, for example, as a labor-saving device, he had filed with the building department the calculations for some of his standard structural panels in such form that it was necessary only to append copies for any special case. Neutra has made far-reaching structural and material studies in the belief that whatever outward similarity obtains among modern buildings great care is needed in varying materials to local needs. Schindler's gifts are quite the opposite of Neutra's, since he is interested in erecting on every site that individual and irreproducible arrangement which belongs to owner and site; the psychological rather than the structural or systematic requirements have been dominant. Lloyd Wright's latest work was unfortunately not seen on this trip at all and can not therefore be described from direct observation. Among Frank Lloyd Wright's houses it was sad to find only the Freeman and the Millard houses occupied and maintained by the original owners; the California Arts Club, given over to the artists without the necessary funds to maintain it, has become a mere ruin in a jungle surrounded by billboards advertising worthy causes.

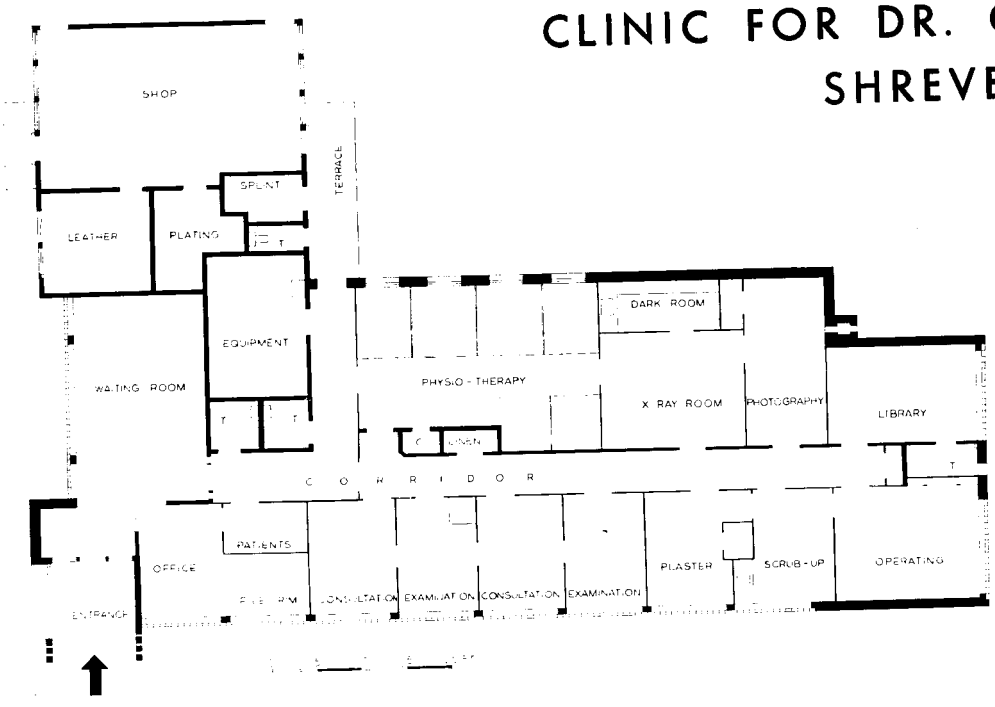
These notes are offered in consciousness of their incompleteness and partiality. There is not even mention of the Eastern modern architects, nor a description of the latest work by Frank Lloyd Wright. What we did find and wish to convey was the colossal size of the Continent and the need to rise far above European concepts of scale; the existence of a body of work some of which is completely unknown beyond its own locale; the opportunity offered by popular institutions now developing, such as the tourist and trailer camps; the existence of cities in the West already pointed toward the new openness and mobility and the presence within them of architects already doing good modern work.

In that other pocket there is also a set of resources that does not show clearly until the statistics are examined. If the industrial plant of the United States is ever compared with the plants of European countries in physical rather than merely financial terms, it becomes apparent how much larger a view we must take of the problems of building technique. We would be foolish to rest with the mere manipulation of a few chosen motifs into any frozen style.



CLINIC FOR DR. GUY A. CALDWELL SHREVEPORT, LOUISIANA

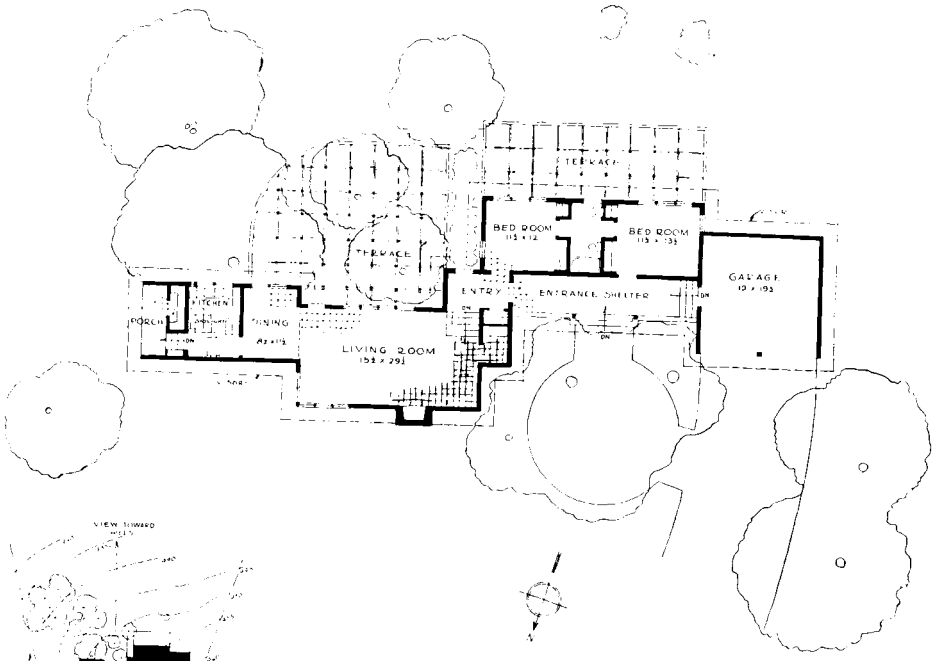
SAMUEL G. WIENER AND
WILLIAM B. WIENER
ARCHITECTS



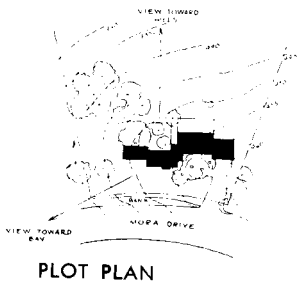
FLOOR PLAN

HOUSE OF FRANK McINTOSH

Photographs by Roger Sturtevant

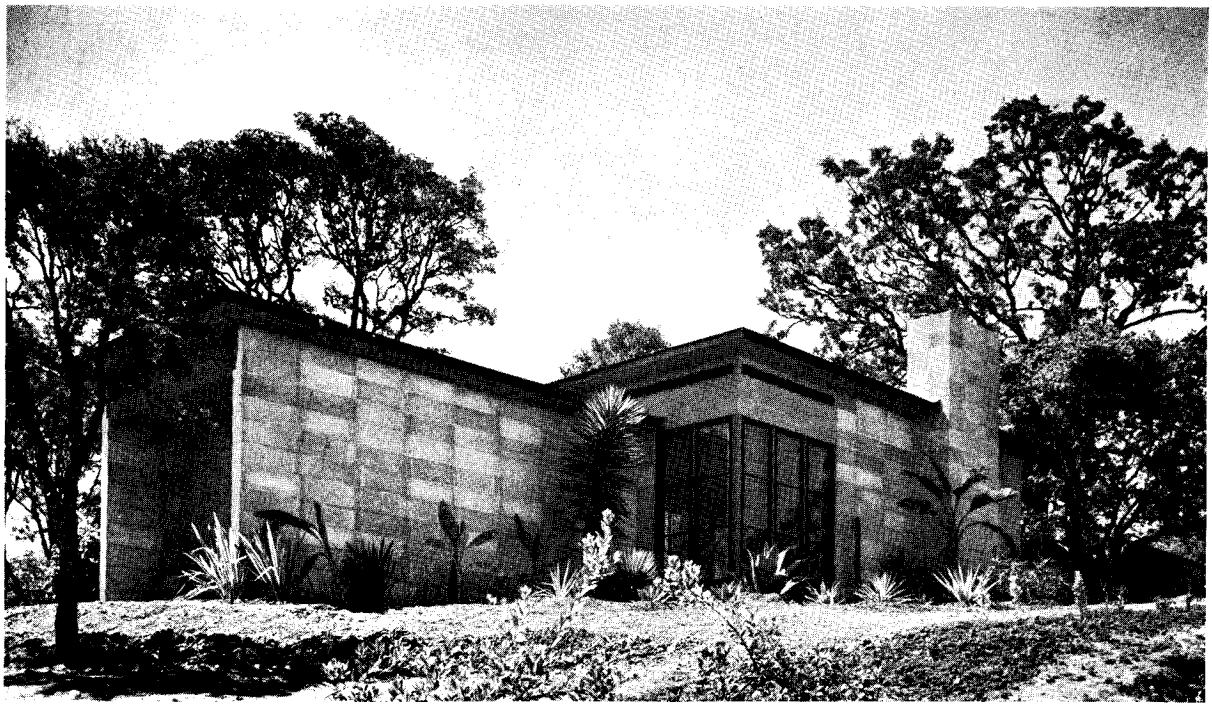


FLOOR PLAN



PLOT PLAN

LOS ALTOS, CALIFORNIA

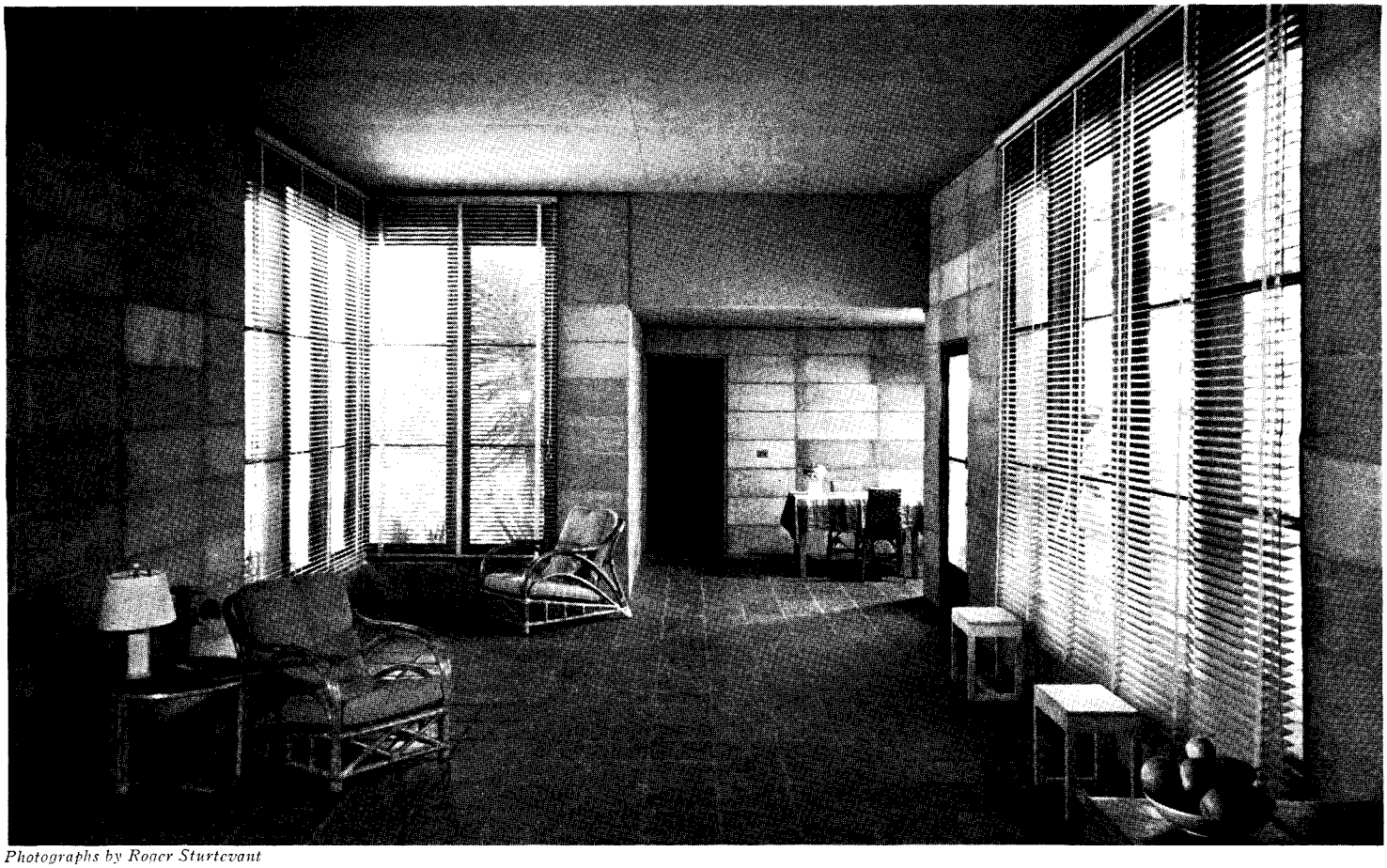


WILLIAM WILSON WURSTER
ARCHITECT

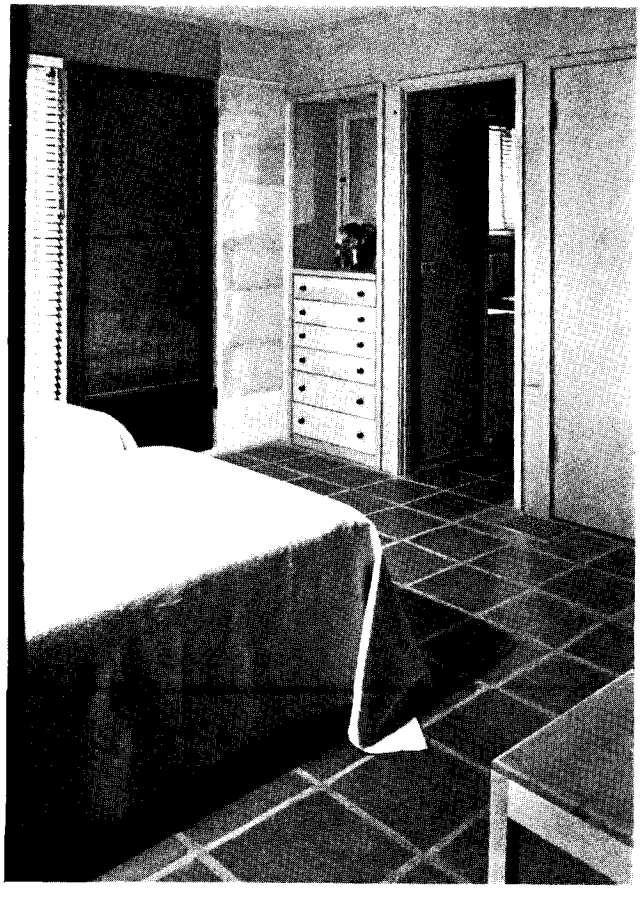
The house is intended for week-end and summer use.

FOUNDATION: concrete. STRUCTURE: concrete blocks, exterior and interior. FLOORS: hollow partition tile. WINDOWS: wood casement; Payson adjusters; standard glass; bronze screens. LIGHTING: recessed ceiling lights. BUILT-IN FEATURES: bedrooms, wardrobes; dressers. HEATING: tile ducts under floor for future warm-air system. INSULATION: Paraffin Company's Graylite on ceilings. PAINT: black stain on exterior wood sash and doors; lead and oil on cabinets and wardrobes. COLOR: exterior, natural color, concrete blocks; interior, same; black doors and windows; light gray ceiling.

HOUSE OF FRANK McINTOSH, LOS ALTOS, CALIFORNIA



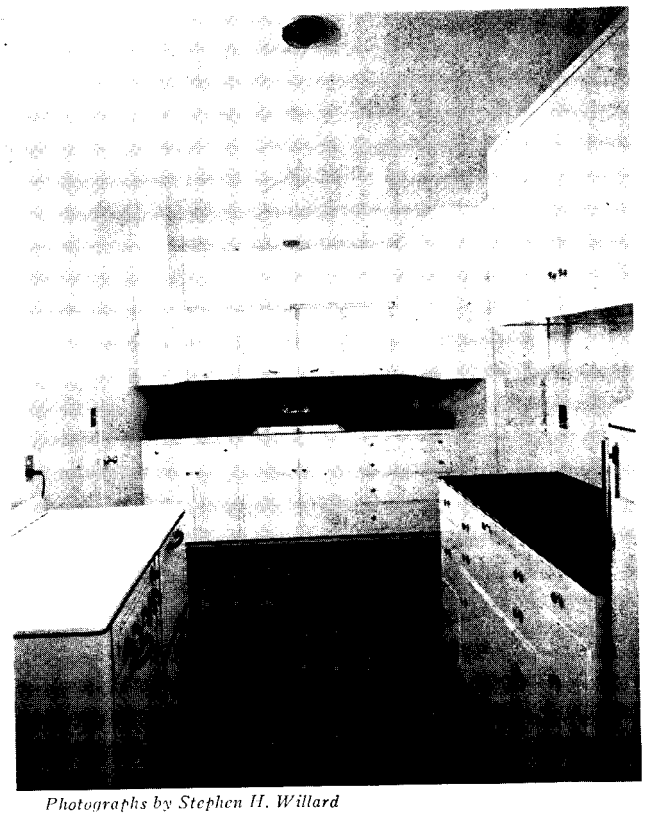
Photographs by Roger Sturtevant



WILLIAM WILSON WURSTER
ARCHITECT

INTERIORS DESIGNED BY VAN PELT AND LIND, ARCHITECTS

HOUSE OF EDWIN A. HALBERG
PALM SPRINGS, CALIFORNIA

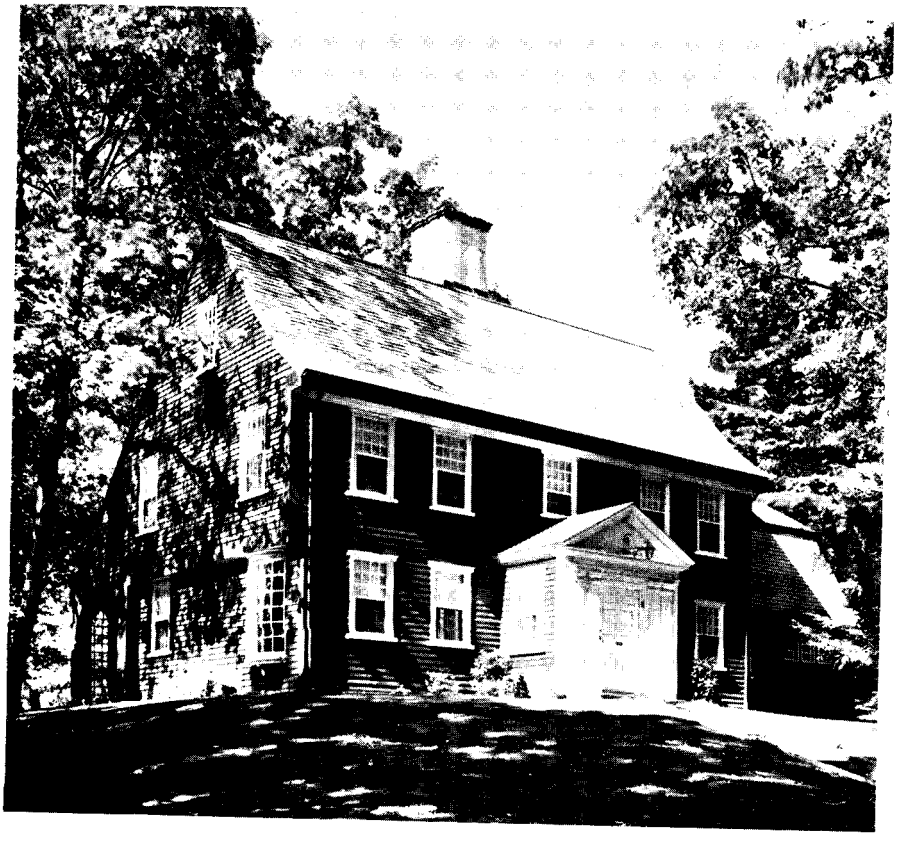


Photographs by Stephen H. Willard

Right: THE KITCHEN is finished in neutral black and white. The counters are covered with black linoleum; inside of cases painted black to offset colored or white chinaware. Below: PORCH AND LIVING ROOM. The colors are selected from shades as found in the landscape. Walls and window frames facing views are a pastel jade green; walls at sides, a neutral white and walls forming a background, coral red. All ceilings are a light airy blue. The mirror over the fireplace visually continues the windows at the sides.

TWO HOUSES BY ROBERT CHARLES DEAN, ARCHITECT

Photographs by Paul J. Weber



Above:

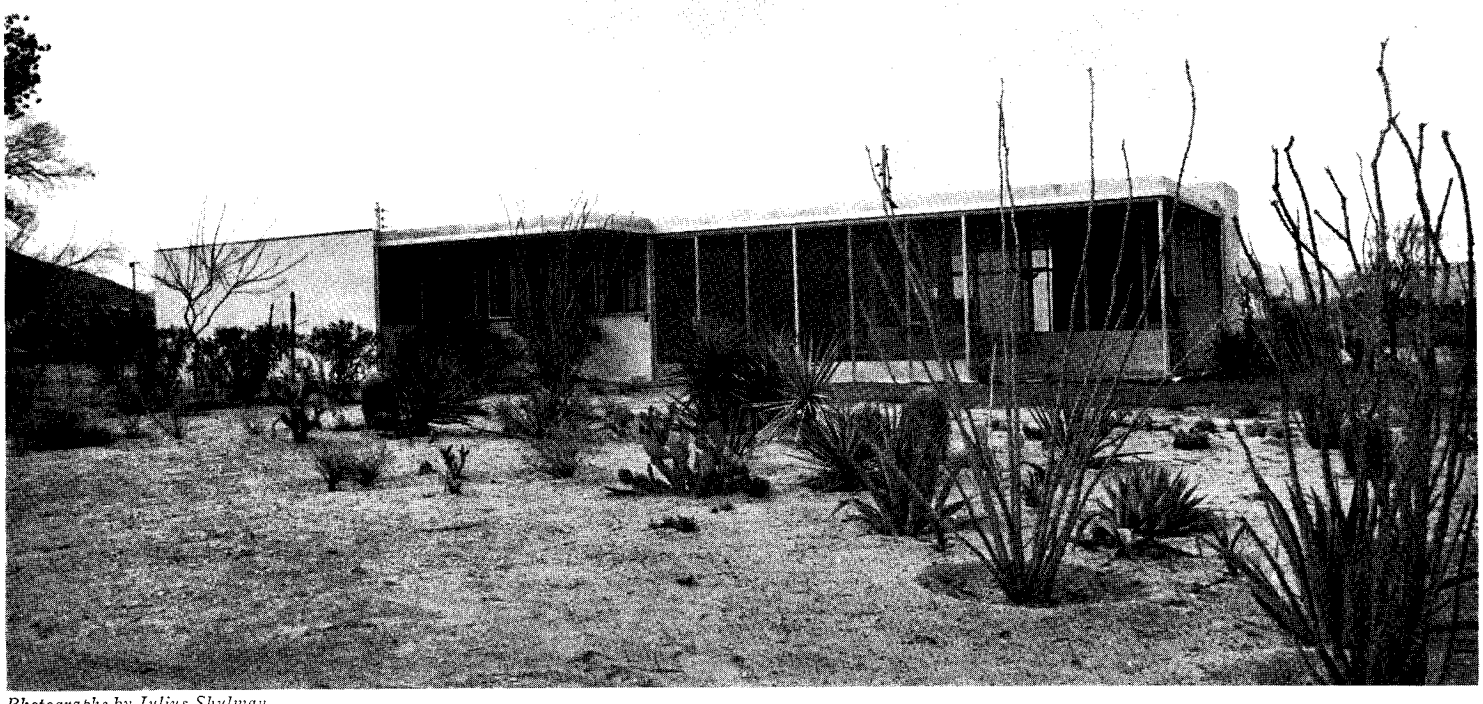
HOUSE OF WYLIE L. COLLINS, Wellesley, Mass. FOUNDATION: 10" concrete. STRUCTURE: wood framed; exterior, clapboards; interior, plaster and wallpaper; baths, tile. ROOF: shingle. FLOORS: select oak. WINDOWS: wood double-hung; standard glass; copper screens. LIGHTING: Colonial fixtures. HEATING: steam. INSULATION: Cabot quilt. PAINT: interior, Rice's Barreled Sunlight; exterior, two coats lead and oil. COLOR: exterior, white, with blue-green blinds; interior white trim to contrast with brightly colored wallpaper.

Left:

HOUSE OF J. RHYNE KILLIAN, Wellesley Hills, Mass. FOUNDATION: 10" concrete. STRUCTURE: exterior walls, clapboard; interior, living room, paneled N. C. pine; bath recess, Vitrolite; elsewhere, plaster and wallpaper. ROOF: 16" white cedar shingle. HEATING: Wintermaster Split System. INSULATION: walls 1/4" Sprayoflake; second floor ceiling, 3" Sprayofill. AIR CONDITIONING: air circulation and humidification. PAINT: interior, Rice's Barreled Sunlight; exterior, lead and oil on windows and trim (3 coats); stain on clapboards.

MENSENDIECK HOUSE

PALM SPRINGS, CALIFORNIA



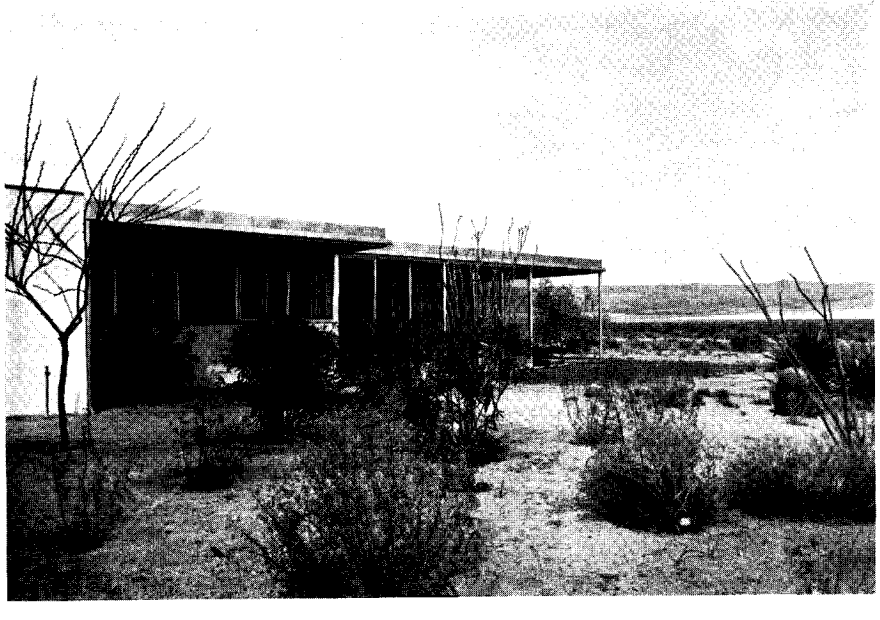
Photographs by Julius Shulman

VIEW FROM THE SOUTH

BUILT FOR GRACE LEWIS MILLER

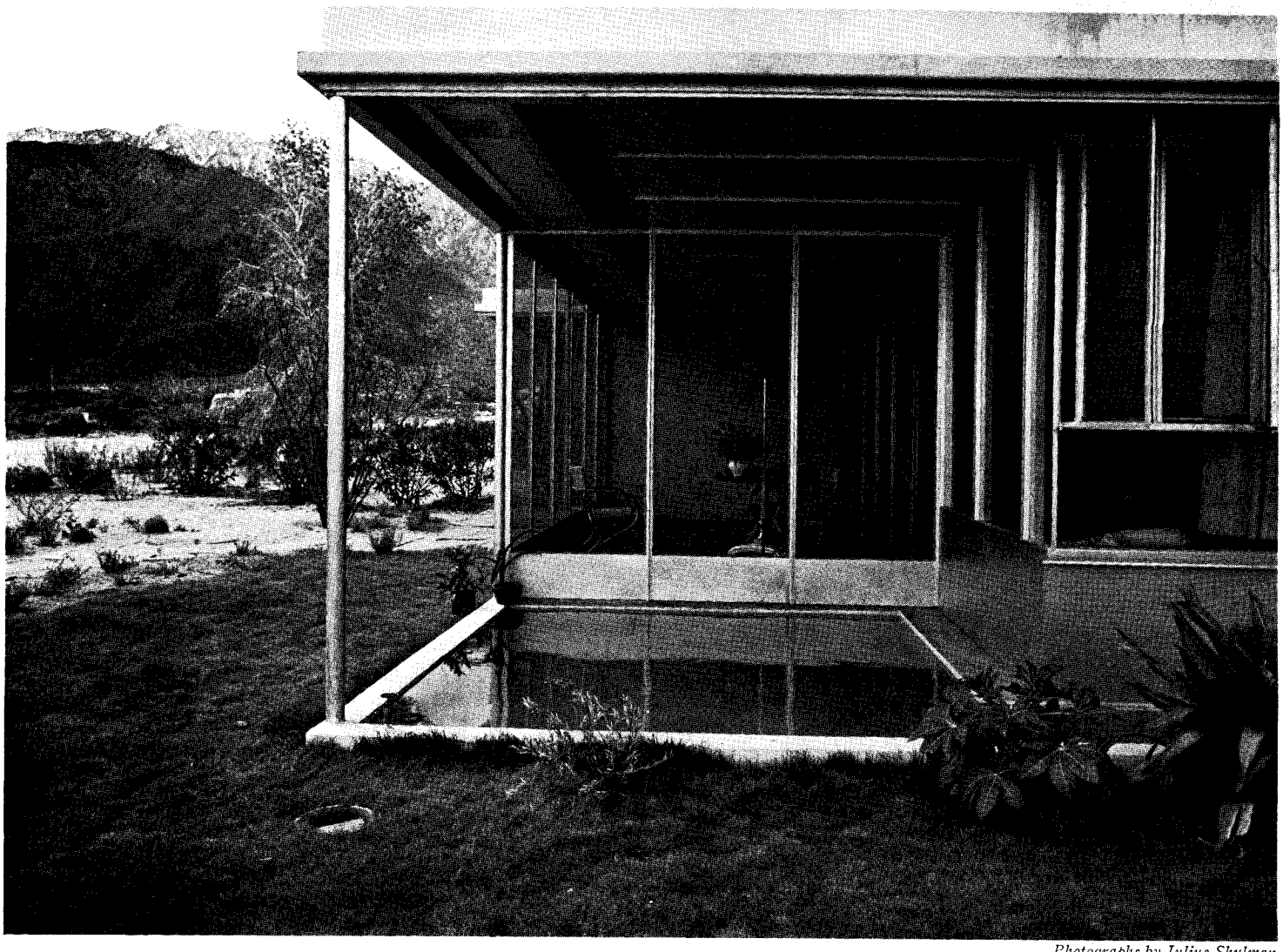
RICHARD J. NEUTRA
ARCHITECT

PETER PFISTERER
COLLABORATOR



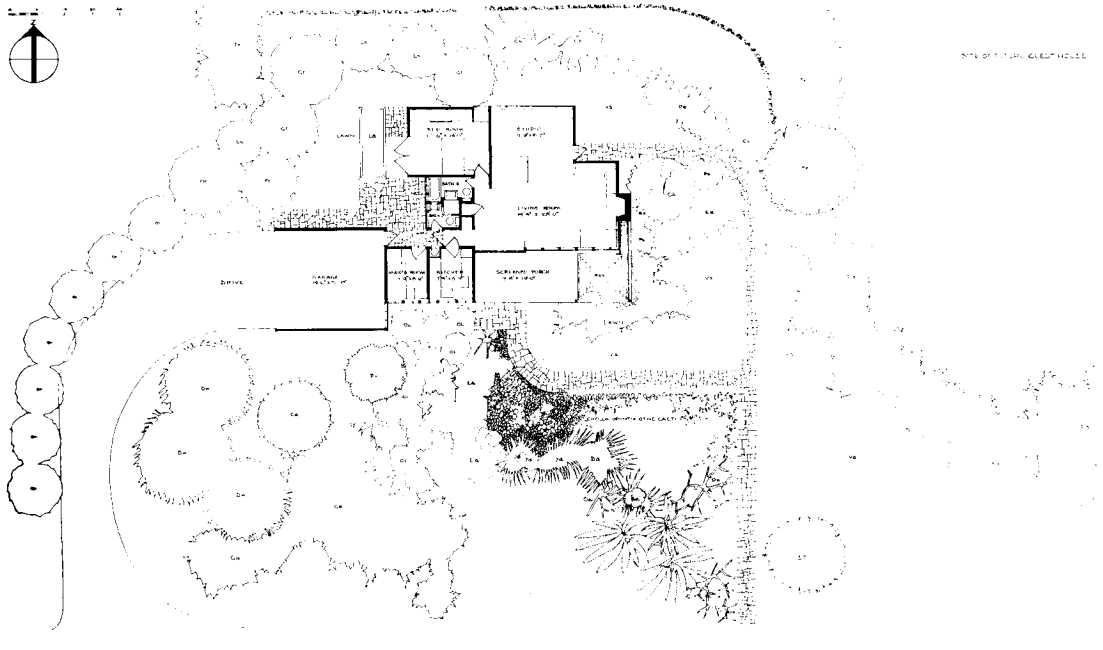
VIEW SHOWING
DESERT VEGETATION

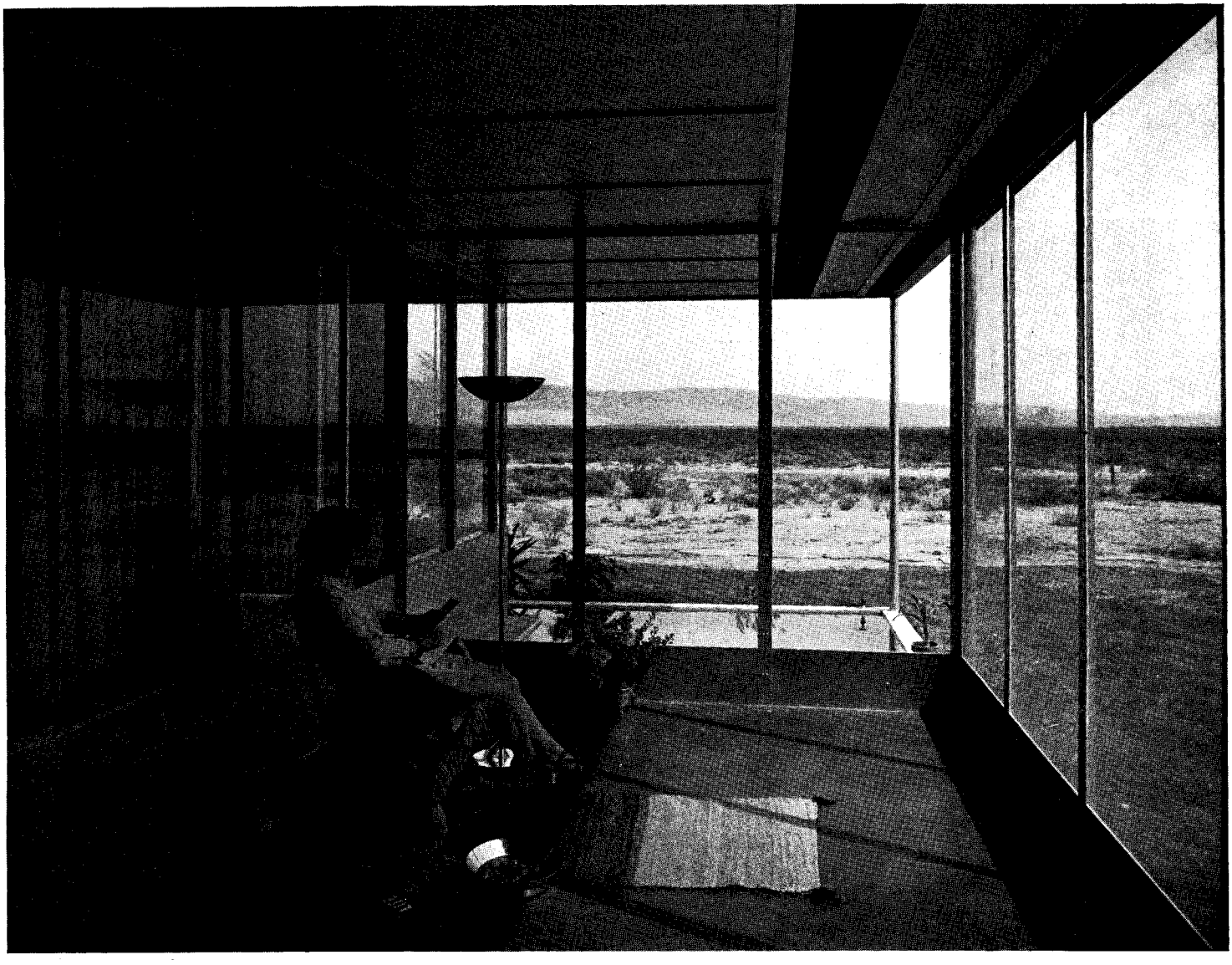
MENSENDIECK HOUSE



PORCH WITH POOL IN FOREGROUND

Photographs by Julius Shulman





PORCH SHOWING VIEW OF DESERT

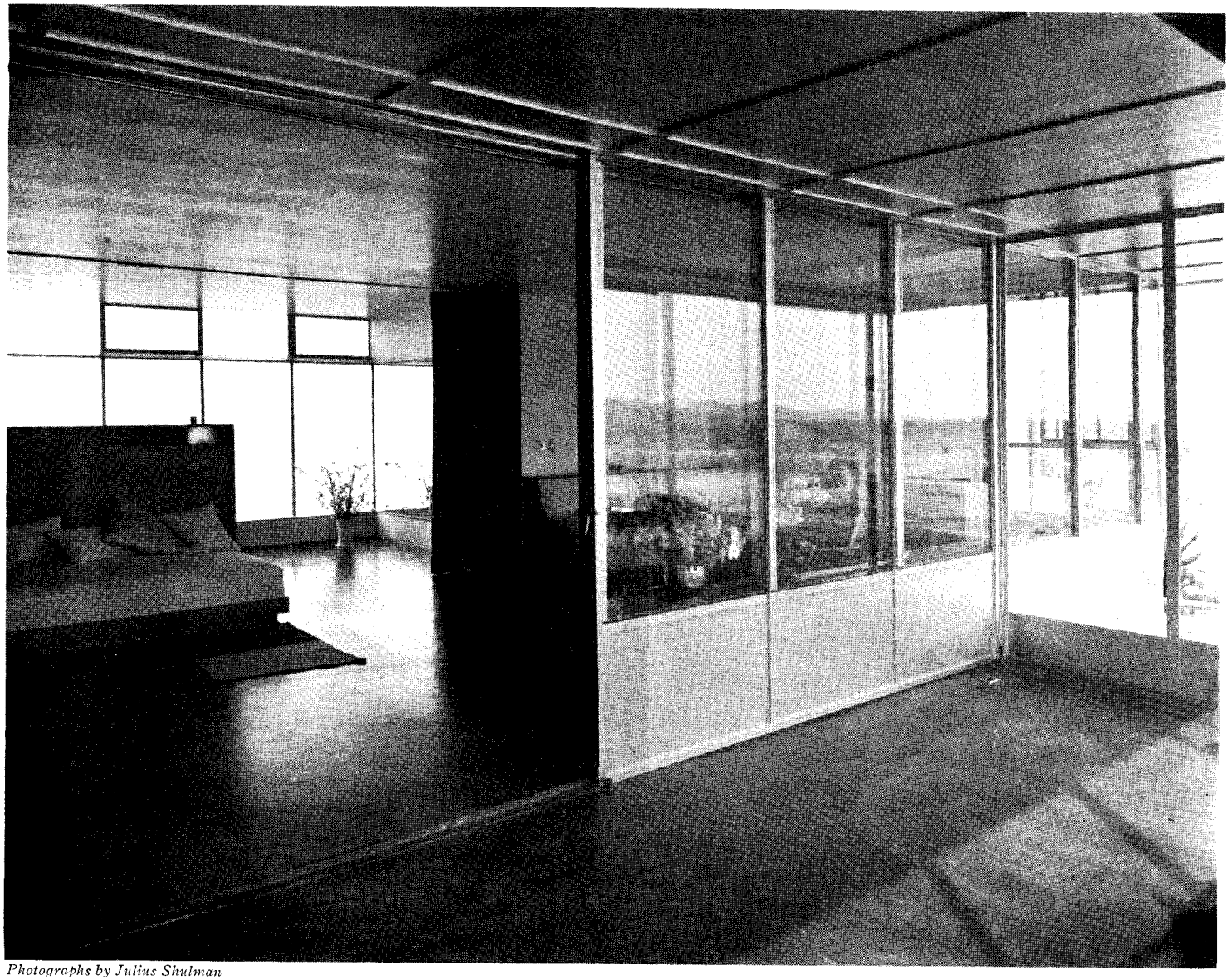
PLANT INDEX AS SHOWN ON PLAN

Ea	Encelia	Ln	Lemon tree
Pv	Palo Verde	Or	Orange tree
Pa	Parkinsonia	Tu	Texas umbrella
Gd	Grease wood	C. n.	Cassia Narbonensis
Cb	Castor bean	Ba	Bougainvilea
Tx	Tamarix	My	Maguey
Cd	Cotton wood	Cy	Century plant
Ca	Cholla cactus	M. e.	Mesquite
Bl	Barrel cactus	Pa	Poinsettia
Ol	Ocatillo	Be	Bajonette
Dw	Desert willow	Ya	Yucca
Wc	Washingtonia	P. e.	Pomegranate
Ol	White Oleander	Va	Verbena
Gf	Grape fruit	St	Smoke tree
Fi	Fig tree	L. t.	Lantana trailing purple

RICHARD J. NEUTRA
ARCHITECT

PETER PFISTERER
COLLABORATOR

MENSENDIECK HOUSE



Photographs by Julius Shulman

RICHARD J. NEUTRA
ARCHITECT

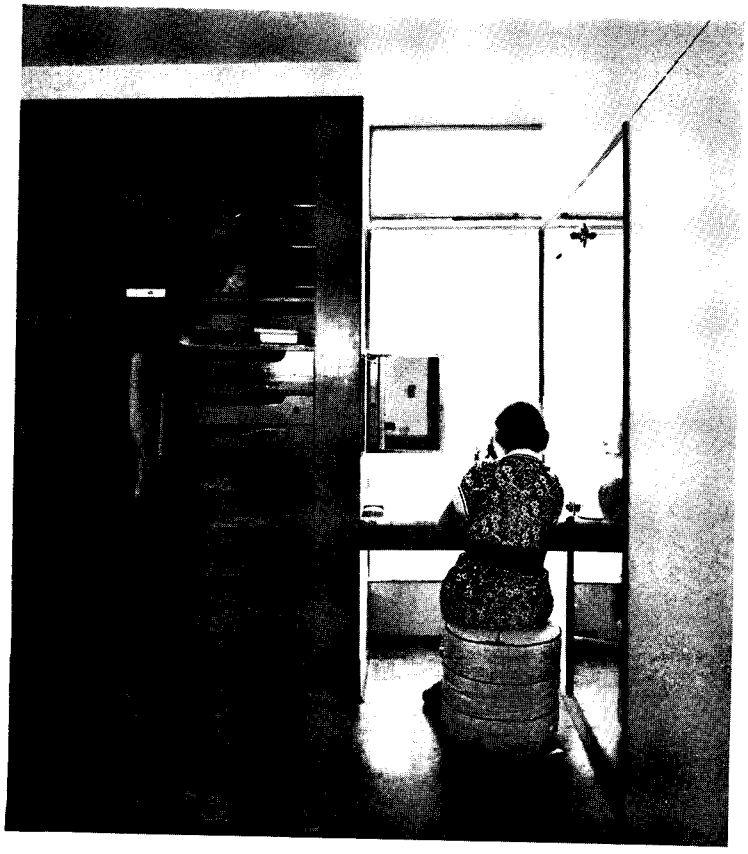
PETER PFISTERER
COLLABORATOR

Living quarters open onto porch by means of a large sliding steel plate glass door.

ABOVE: couch corner with radio.
RIGHT: fireplace corner.

MENSENDIECK HOUSE, PALM SPRINGS, CALIFORNIA

Photographs by Julius Shulman



RICHARD J. NEUTRA
ARCHITECT

PETER PFISTERER
COLLABORATOR

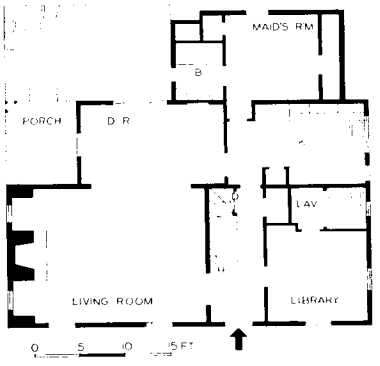
ABOVE: studio. LEFT: mirrored dressing corner with closet arrangement, hat compartment, etc.

HOUSE OF PAUL FIELD

PLANDOME, LONG ISLAND

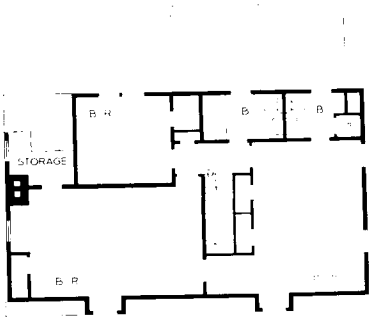
Photograph by Murray M. Peters

PORTER O. DANIEL
ARCHITECT



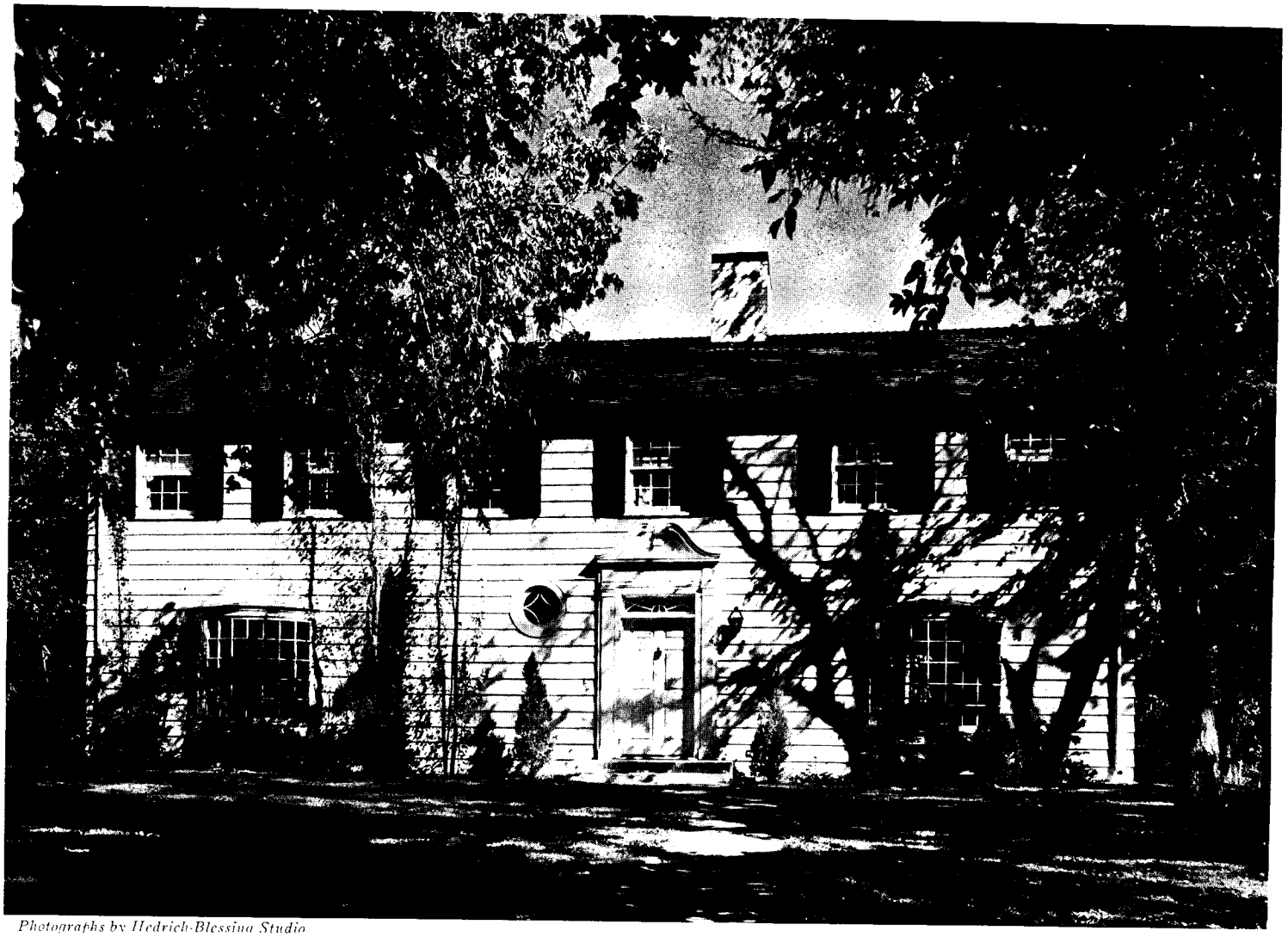
FIRST FLOOR

FOUNDATION: concrete block. STRUCTURE: wood framed; exterior walls, shingle and Portland Cement white stucco; interior, wallpaper. ROOF: Pennsylvania black slate. FLOORS: Colonial Flooring Co.'s red oak. WINDOWS: wood double-hung except large steel framed window in dining room; standard glass; bronze screens. LIGHTING: Ace Lighting Fixture Co. HEATING: steam. INSULATION: Reynolds Metallation; exterior walls, single, second floor ceiling, triple. WATERPROOFING: asphaltic. COLOR: exterior, white walls; bottle green blinds.



SECOND FLOOR

HOUSE OF P. R. BILLINGSLEY



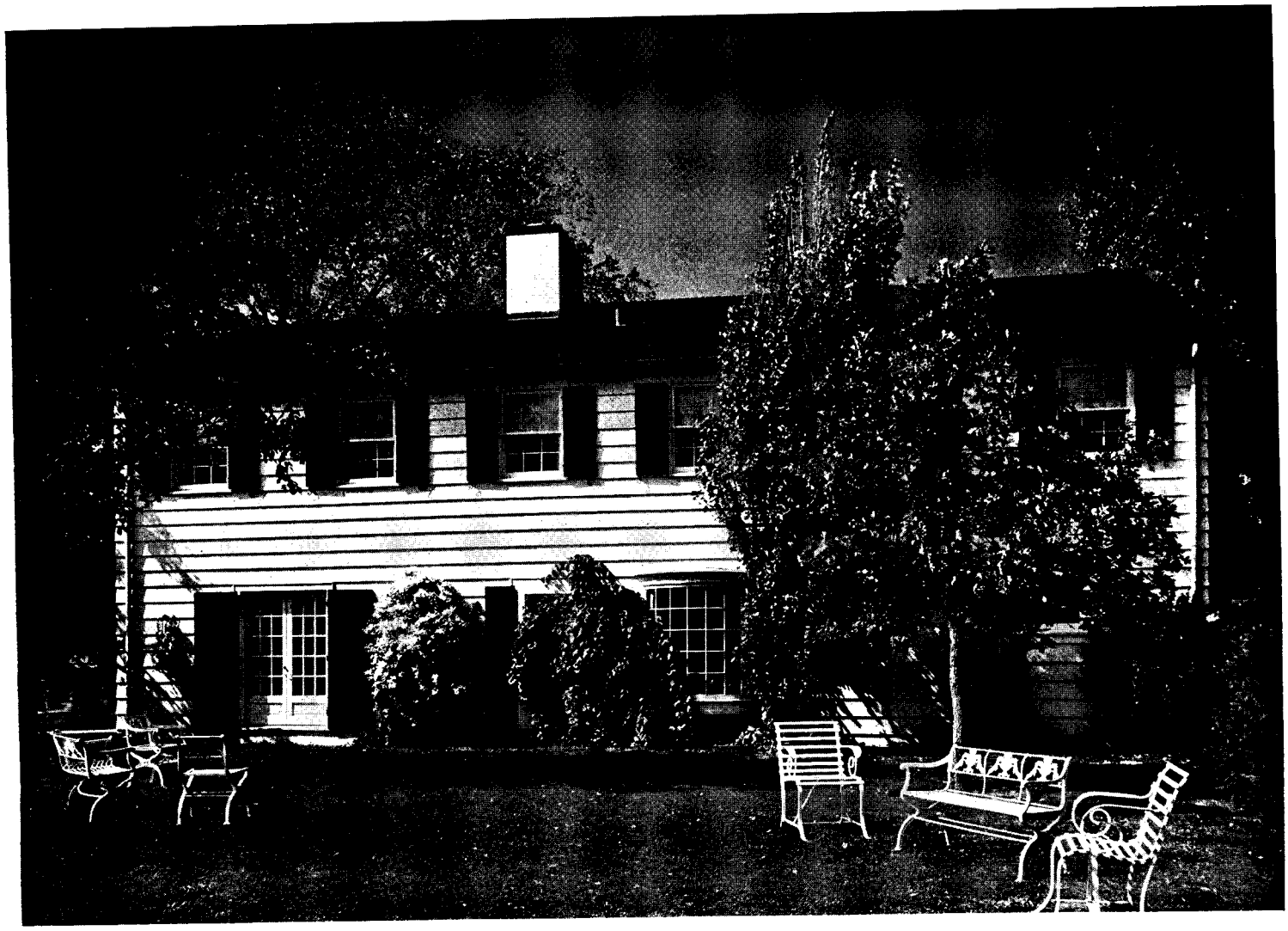
Photographs by Hedrich-Blessing Studio

FRONT

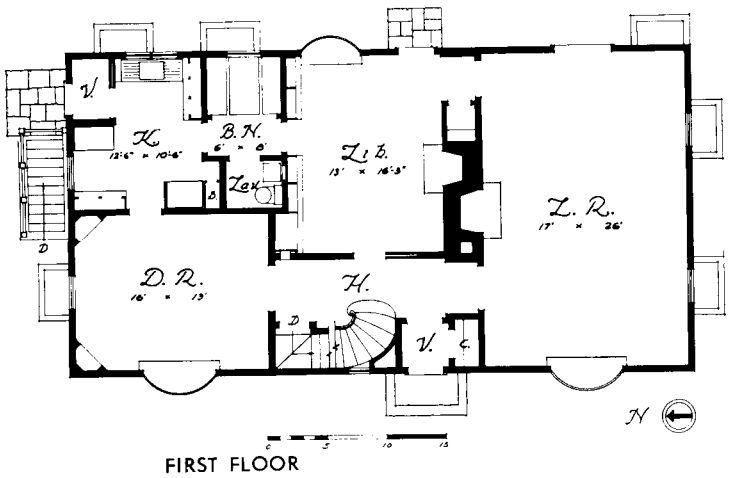
HAROLD SPITZNAGEL
ARCHITECT

FOUNDATION: concrete. STRUCTURE: exterior walls, wood siding; interior, library, knotty pine, bath, tile. ROOF: 5/8" butt shingles. FLOORS: 13/16" oak. HEATING: Mueller gas-fired blower type furnace. INSULATION: Rockwool on exposed surfaces; weather strips. COLOR: walls, white; shutters, green; roof, dark green.

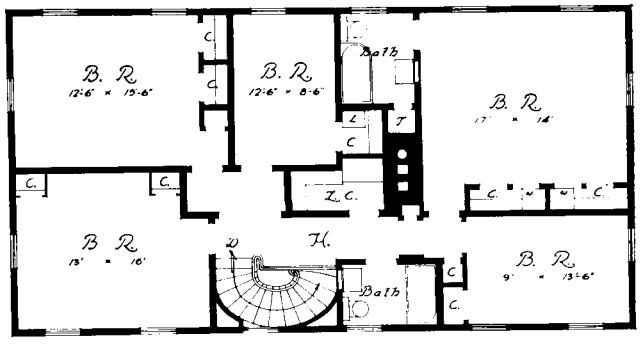
SIOUX FALLS, SOUTH DAKOTA



REAR

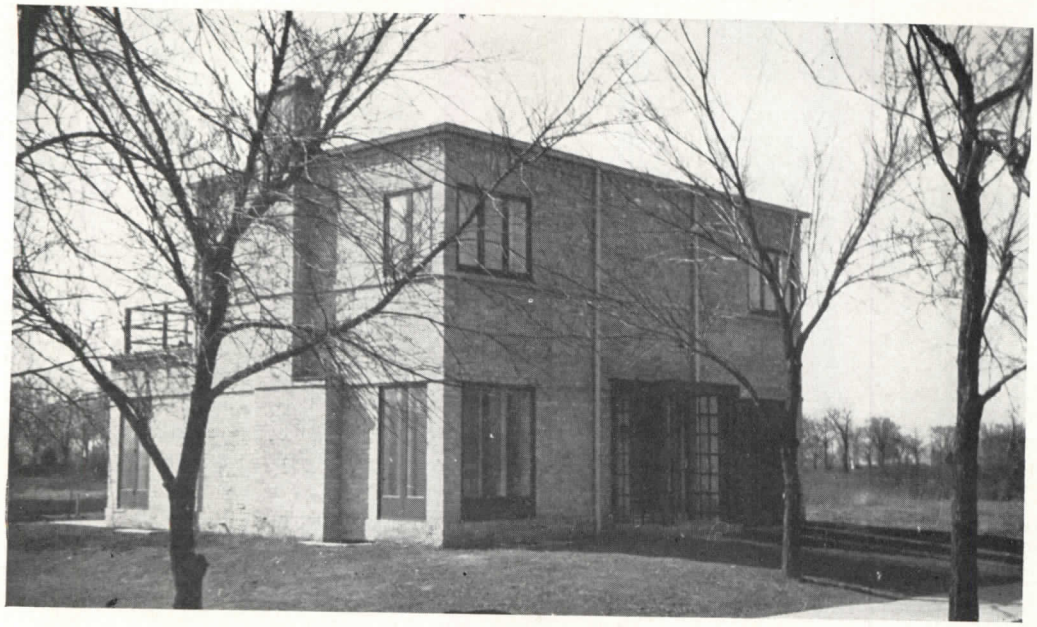


FIRST FLOOR



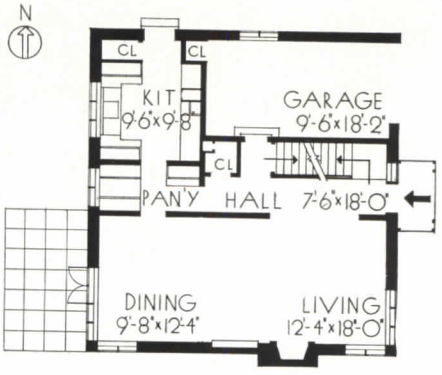
SECOND FLOOR

HOUSE OF BERYL McNABB, BEVERLY HILLS, CHICAGO, ILLINOIS

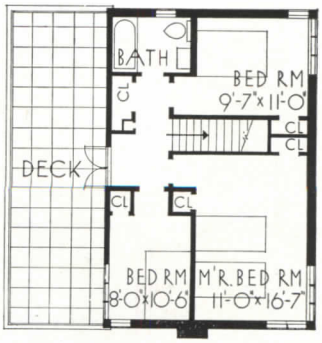


GEORGE FRED KECK
ARCHITECT

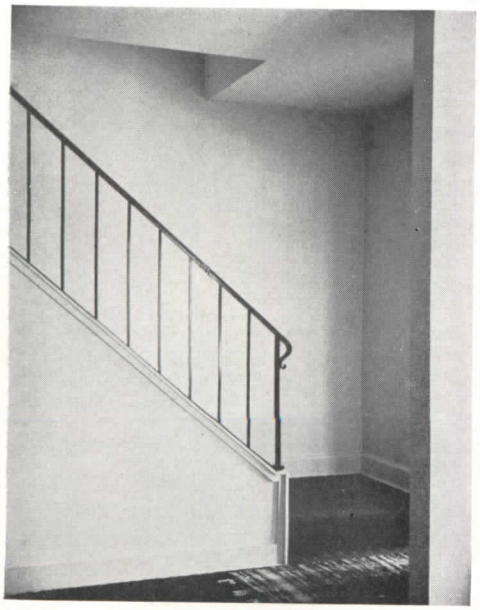
FOUNDATIONS and FOOTINGS: poured concrete. STRUCTURE: brick walls. ROOF: wood, 3-ply built-up. FLOORS: wood. WINDOWS: outswinging casement. Venetian blinds concealed in pockets at heads of windows, for gross area of glazed exposure if desired for all windows which open. HEATING and AIR CONDITIONING: winter air conditioning; gas-fired Trane unit. Air circulation in summer. INSULATION: 4" Rockwool in roof; ½" plaster base insulation board on walls.



FIRST FLOOR



SECOND FLOOR



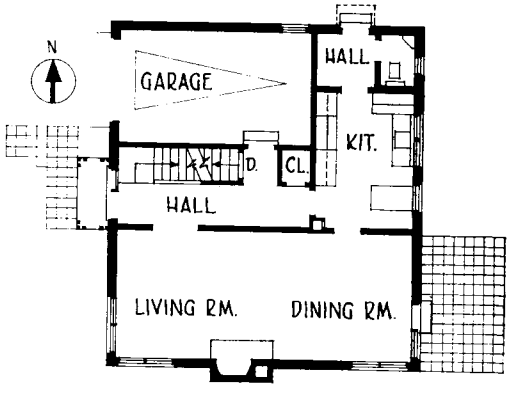
STAIR HALL

HOUSE OF A. G. CRANDALL, GRIFFITH, INDIANA

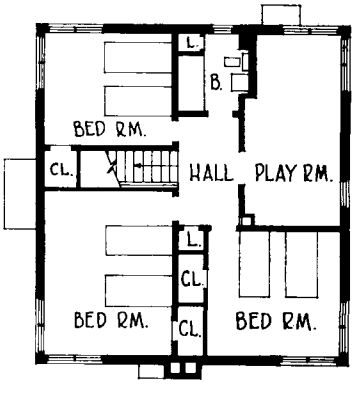
GEORGE FRED KECK
ARCHITECT

CONSTRUCTION: partial basement; poured concrete foundations and footings; wood framed, common brick veneer. ROOF: 3-ply built-up. WINDOWS: double-hung with narrow mullions; sash balances; weather-stripping. Venetian blinds throughout; no curtains used. HEATING and AIR CONDITIONING: winter air conditioning; air circulation in summer; oil-fired. INSULATION: 4" Rockwool for walls and ceilings.

Playroom may be made into bedroom if desired.

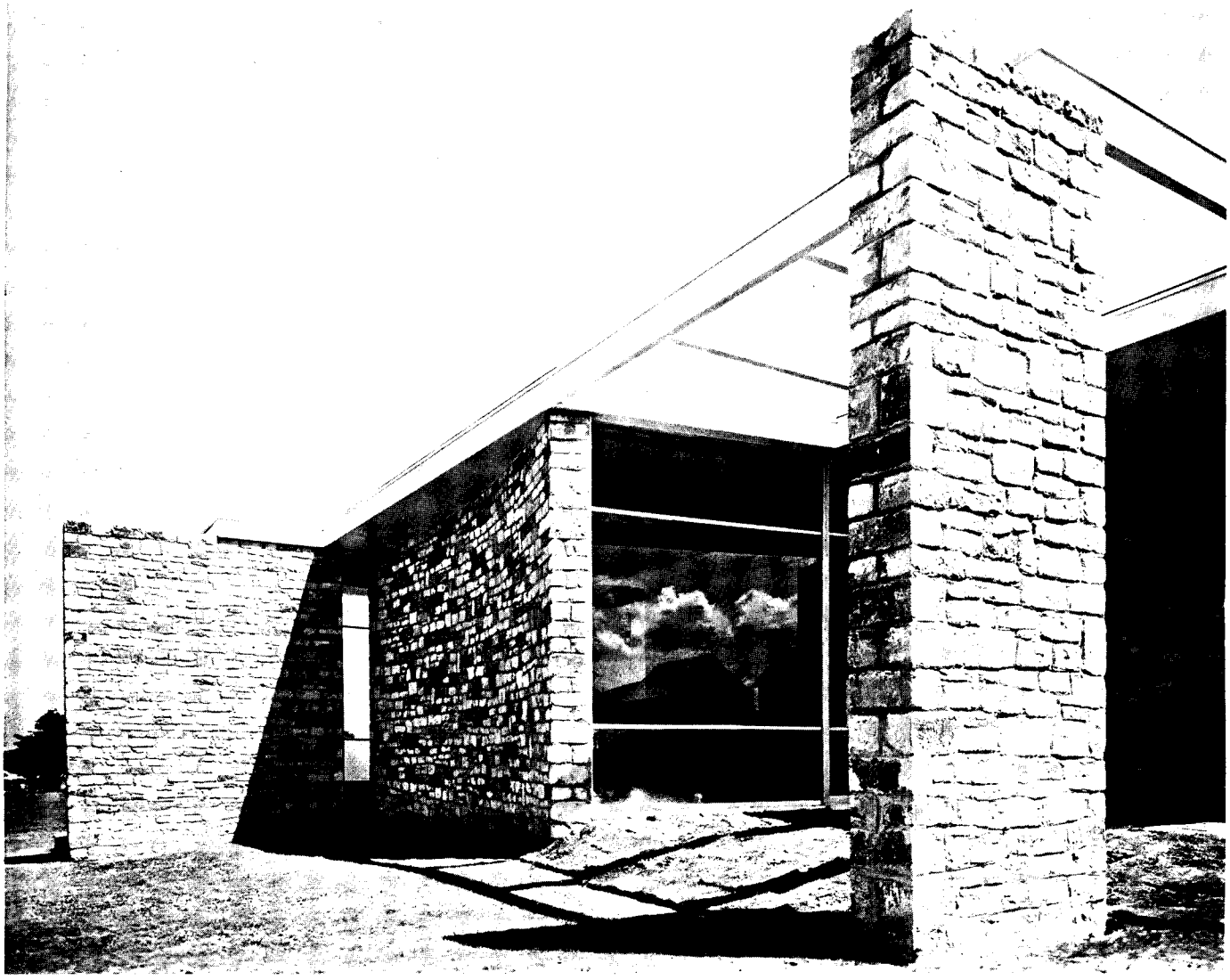


FIRST FLOOR

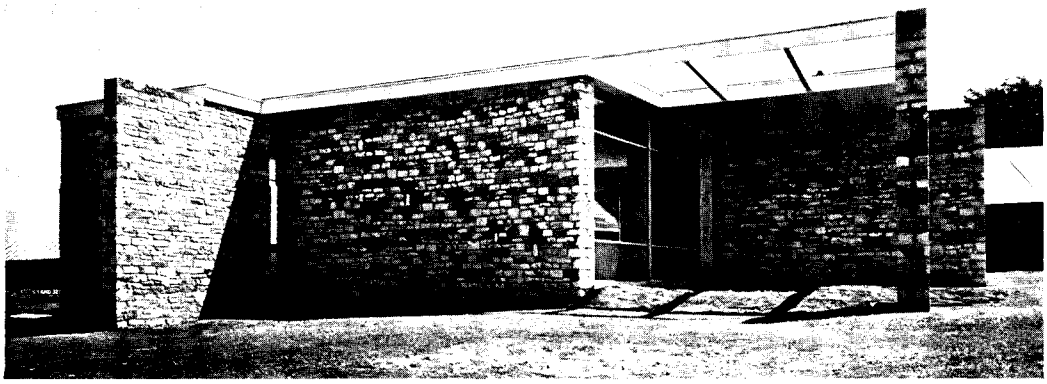


SECOND FLOOR

EXHIBITION PAVILION



Photographs by F. Bromhead



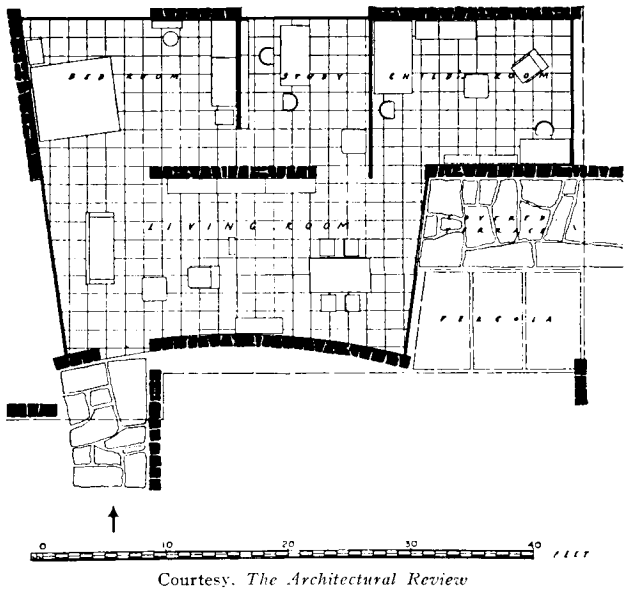
Above: view of exterior showing, on the left, the free-standing projecting wall which forms a wind-screen in the garden. Left: another view of exterior looking into the pergola.

VIEW OF LIVING ROOM showing sliding window open to the pergola. Partition walls are lined with natural birch; birch plywood floor.

MARCEL BREUER
AND F. R. S. YORKE
ARCHITECTS

This building was erected at the Royal Agricultural Show for the display of a furniture manufacturer's products.

Construction is of Cotswold stone for the exterior, glass for the large windows and screens, and wood for the interior partitions. In some of the glazed walls half the wall slides aside to throw open the room to the terrace or garden.



Courtesy, *The Architectural Review*

AN ARCHITECT'S RECEPTION OFFICE, BOSTON, MASSACHUSETTS

Photograph by Paul J. Weber

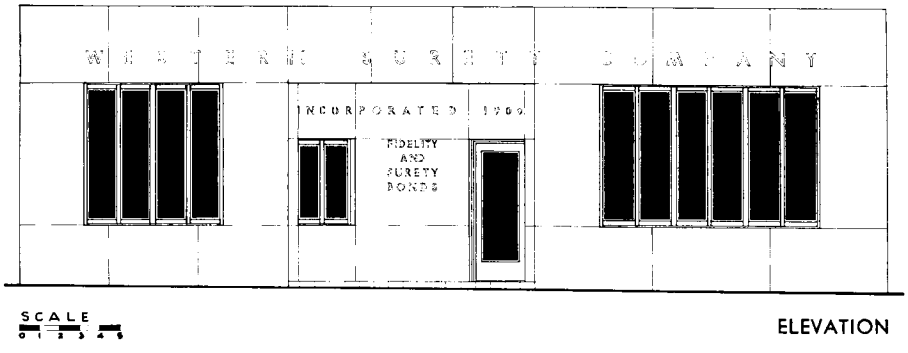
OFFICE OF ELEANOR RAYMOND, ELEANOR RAYMOND, ARCHITECT

This is the Receiving and Secretary's Room with the Conference Room beyond. Drafting rooms are to left and right. Walls of the Receiving Room are citron yellow; steel furniture is black with bright green for interiors of bookshelves; floor, dark brown linoleum. Walls of the Conference Room are light jade green; antique furniture, black and brown; geraniums, as well as flower pot in Receiving Room, vermilion.

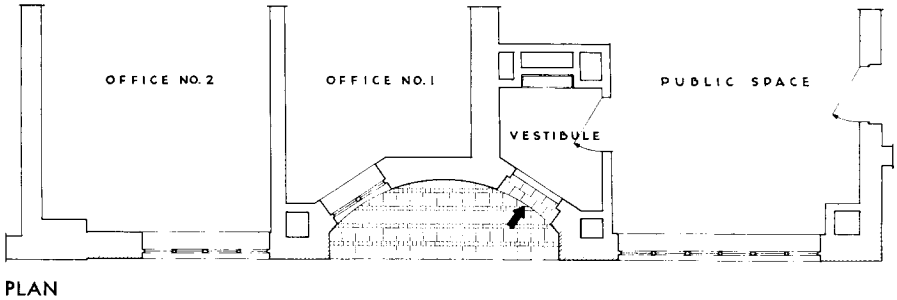
WESTERN SURETY COMPANY BUILDING, SIOUX FALLS, SOUTH DAKOTA

Photograph by Hedrich-Blessing Studio

HAROLD SPITZNAGEL
ARCHITECT



ELEVATION



PLAN

This remodeled front is constructed of gray cast stone, the recessed semi-circular portion being gray granite. This recess was necessitated by the need for an entrance protected from the weather. The letters and entrance door are of annodized aluminum. The entrance platform is of black tile. Cost of materials and installation: approximately, $3,500.

PHOTO MURALS

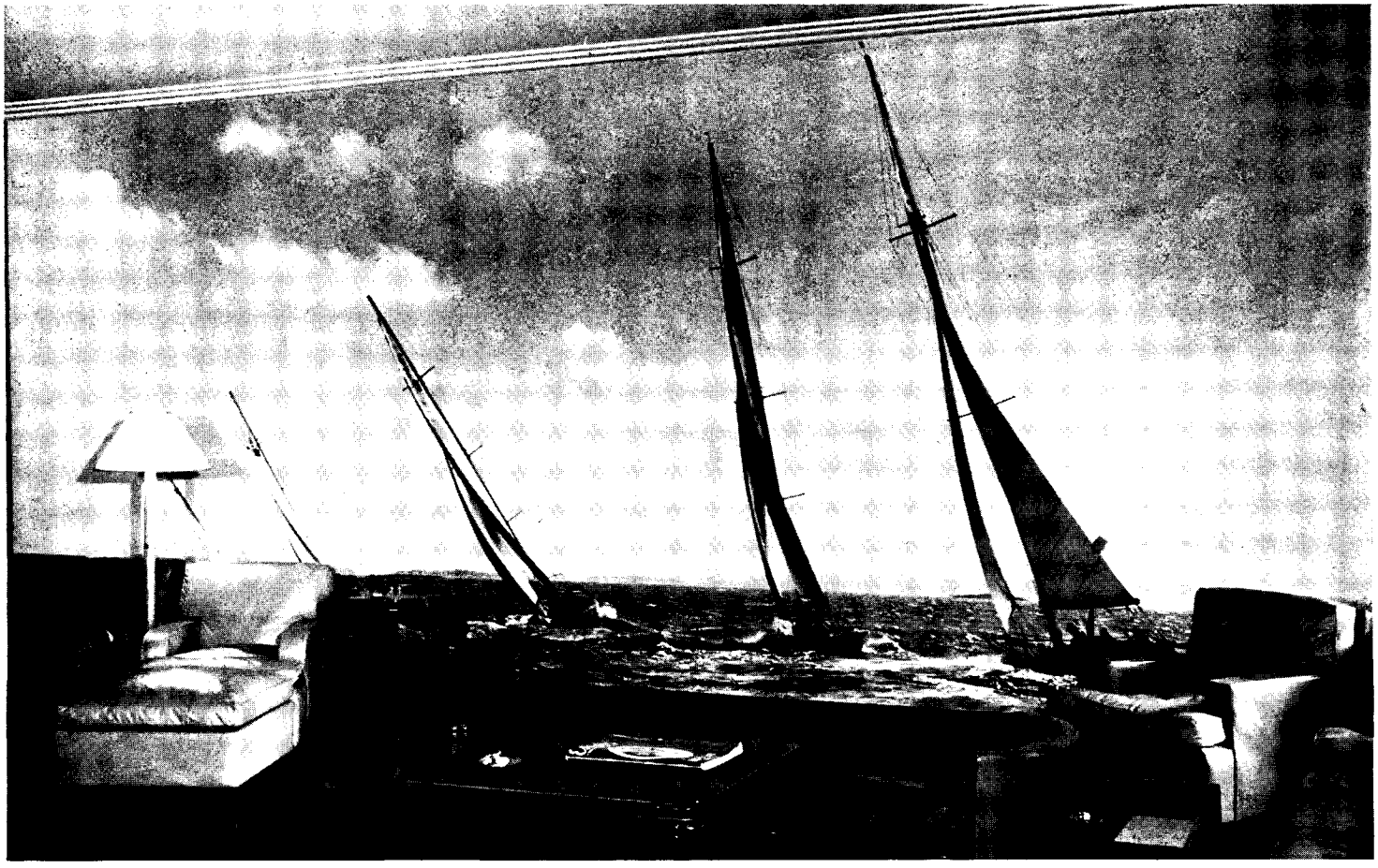
BY DRIX DURYEA

Photographs by Drix Duryea, Inc.

McGOVERN'S GYMNASIUM
NEW YORK CITY

CLINTON & RUSSELL, ARCHITECTS
HENRY DREYFUSS, CONSULTANT

Left: RECEPTION ROOM. Ceiling treatment in Duryea Murals by photography. Below: REST ROOM. Yacht Race in Duryea Murals by photography.



ALTERATION TO OFFICE BUILDING 415 LEXINGTON AVENUE

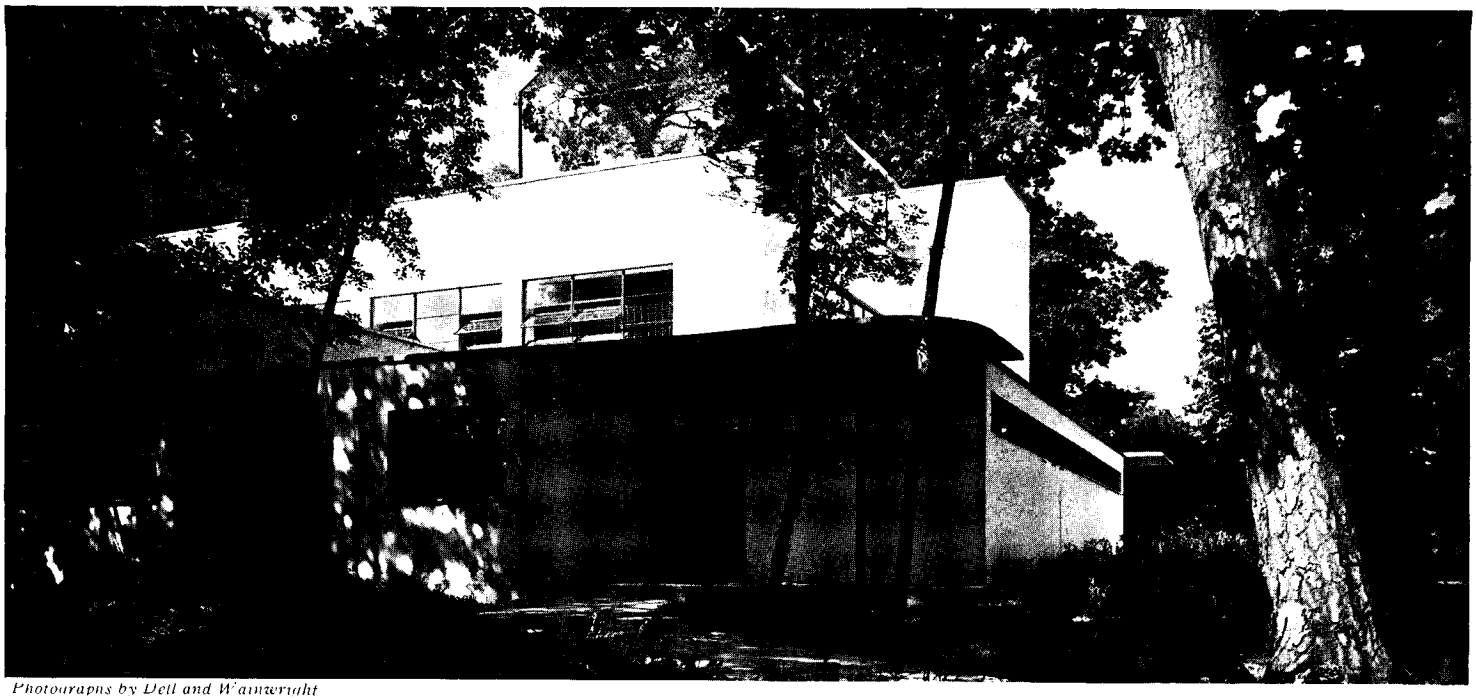
PERCIVAL GOODMAN, INC.
ARCHITECTS

Photographs by Stutti

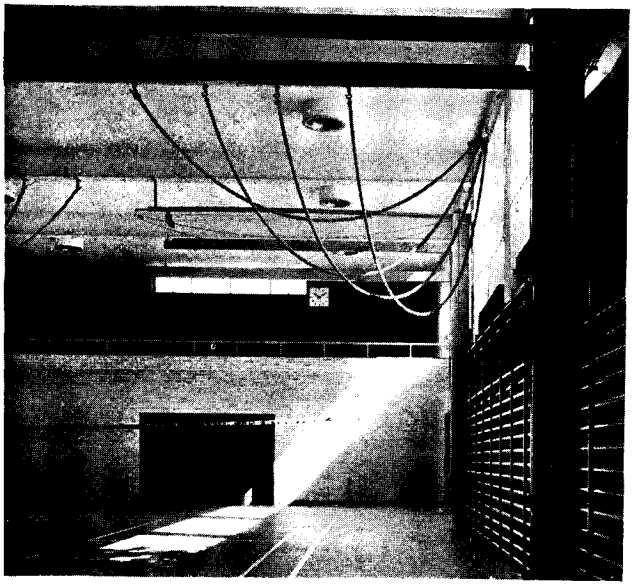
Above: MAIN ENTRANCE. Alabama white and Verde antique marble; bronze doors. Left: LOBBY. Walls, Botticini marble; floors, Alabama and Verde Antique marble; metalwork, bronze ceiling; opal flashed glass.

GYMNASIUM

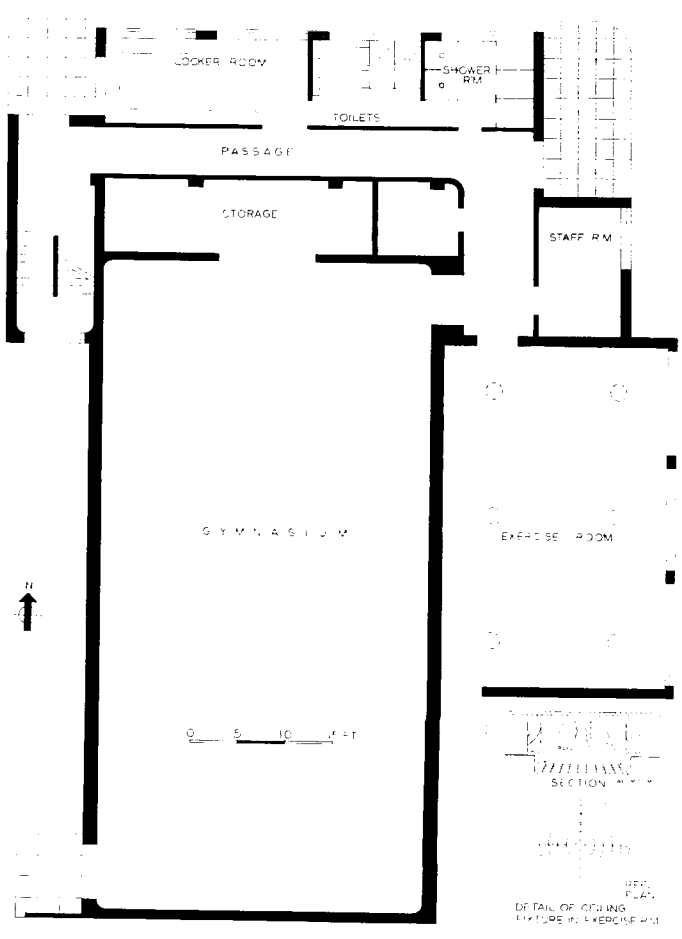
DARTINGTON SCHOOL, ENGLAND



Photographs by Dell and Wainwright

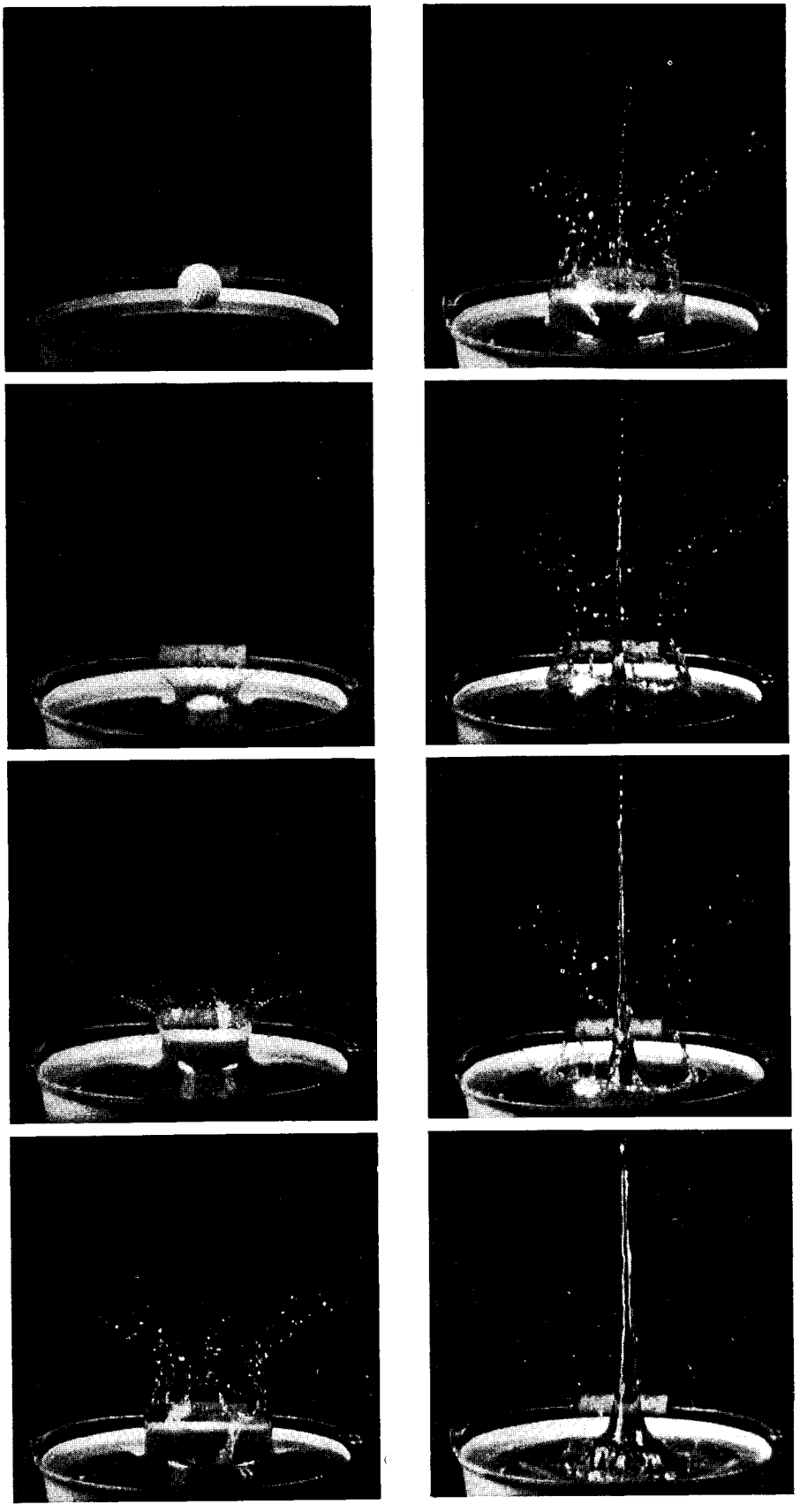


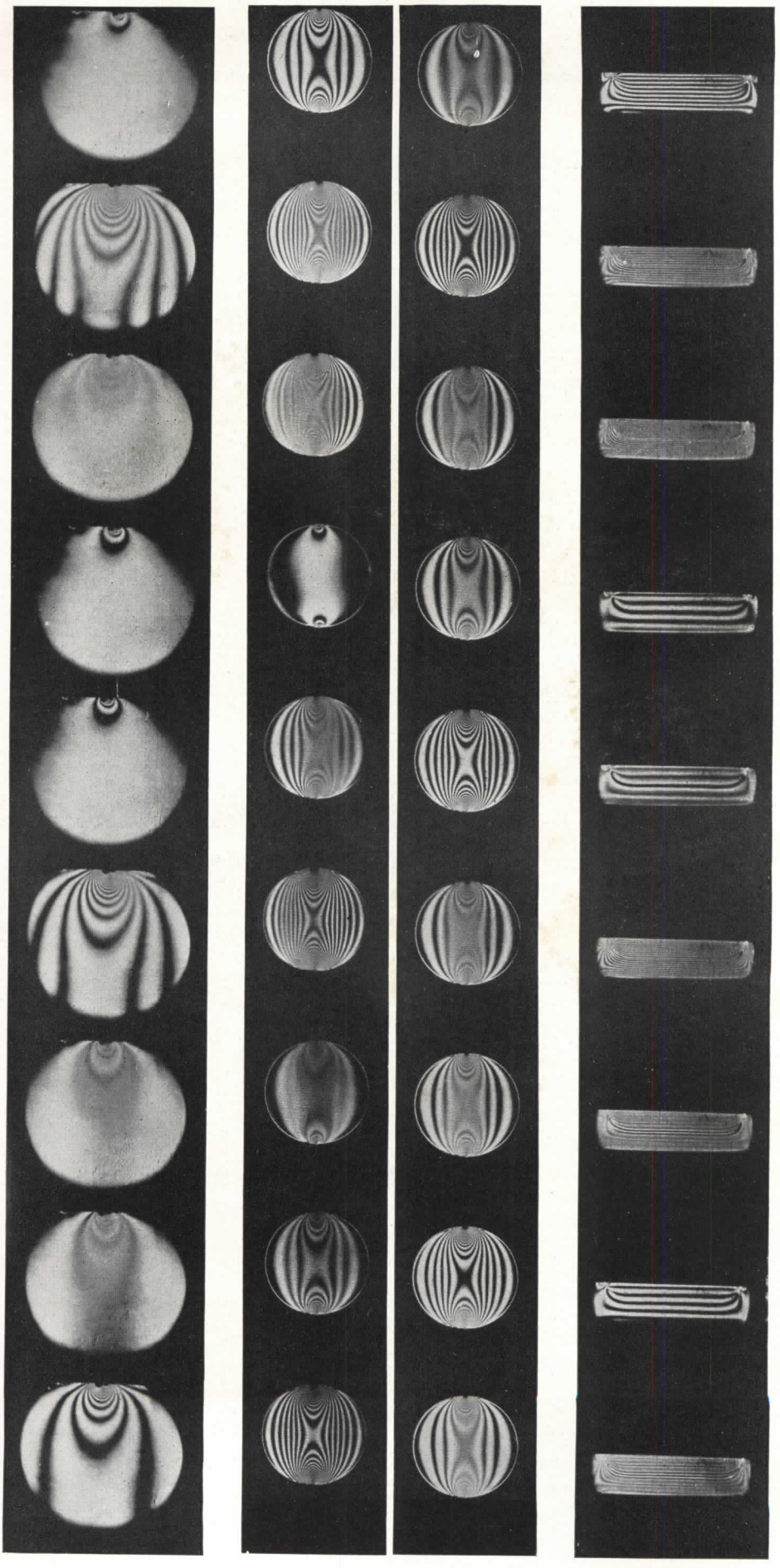
WILLIAM LESCAZE
ARCHITECT



HIGH-SPEED PHOTOGRAPHY

New fields in design are opened up with a super-candid camera devised by three electrical engineers—H. E. Edgerton, K. J. Germeshausen, H. E. Grier—at Massachusetts Institute of Technology. Pictures of fast-moving objects taken in a millionth of a second reveal unusual forms and flow patterns, otherwise not observable. They are made possible by an electrical circuit which produces extremely rapid pulses of light of great actinic intensity. Film travels through the camera at more than 60 miles an hour, while shutter remains open. Ordinary room light does not reach any part of the film sufficiently long to affect it; only the intense light from the stroboscopic mercury arcs, so synchronized that each flash occurs precisely at the instant when a fresh area of film is exposed, carries sufficient radiant energy to activate the chemical emulsion. First used in studying the whirling mechanism of an electric motor, these supermovies have since been put to many industrial uses, such as spotting defects in ventilating fans and other high-speed apparatus which never show up when mechanisms are at rest. Likewise: variation of stresses and strains in moving parts; behavior of steel when tempered in a sizzling bath of water, oil, or other liquid; cavitating effect of water on turbines; surface tensions governing the action of lubricants and dyes; paths traveled by sound waves in auditoriums as observed in spark-discharge experiments; and so on. The stroboscopic light flashes will not completely "stop" high-velocity bullets, but good pictures have been taken of such fast moving objects. Theoretically, it should be possible to design a camera that will snap pictures in 1/100,000,000 second. Even with present apparatus, when the thousands of pictures taken in a total exposure of less than a second are projected on a screen at the usual pace of 16 frames per second, time slows down its march almost to a standstill.





PHOTOELASTICITY gives a visual pattern from which shear stresses can be read directly. Models of light-sensitive material are used (see March 1936, page 241). With kinematography stress fluctuation during impact can be studied, as shown in these movies by Prof. Max M. Frocht, Carnegie Institute of Technology. Models represent (1) plate under concentrated load, (2) disk under vertical load, (3) beam in bending. Only slow impacts are recorded because of camera limitations (64 exposures per second being maximum). High-speed photography now makes *direct impacts thus* observable.

skyscrapers for television

Columbia Broadcasting System is installing a transmitter in the Chrysler Building, 865 feet above New York sidewalks. With rivals in the air—NBC has been spraying telepictures from Empire State Building (see report, December 1936, page 474)—home television will probably be speeded along.

burglar trap of black light

In a demonstration by Signaphone Corporation engineers, a zone of invisible infra-red rays was spread over 13,000 square feet on fourth floor of the General Electric Building in New York. By means of a system of tiny hidden mirrors, a single beam of light from a standard automobile headlight bulb, with all visible light rays filtered out, reflects back and forth across room, around corners and at different levels and angles, until the whole area is covered so thoroughly that any movement in any direction will disturb light beam. Interference activates a phototube or "electric eye." In addition to ringing alarms and switching on lights, the trap automatically clears telephone line and informs police, by means of phonograph records, where help is needed. Since black light is sensitive to smoke as well as human intrusion, aid could also be summoned from fire department or other quarters. Previous protectional systems using phototube have depended on visible white light for reliable transmission over any considerable distance or when reflected by more than a few mirrors; the new system responds to minute current values set up in phototube, making it possible to send an unseen "feeler" over long distances and from mirror to mirror.

self-contained phototube relay

Light source is not mounted separately but is incased with phototube itself in a device called "Teletouch Ray," produced by Teletouch Corporation (37 West 54 St., New York). A passing object reflects beam from light source back into phototube, setting off alarm. Simply plug into electric socket and aim unit in desired direction.

plug-in telephones

Ordinary light sockets are used in a portable 2-way communication system developed by American Carrier-Call Corporation (119 West 57th St., New York). The telephones, which look like midget radios, transmit conversational tones as "wired sound" over the electric light circuit. Either AC or DC.

heat-indicating paint

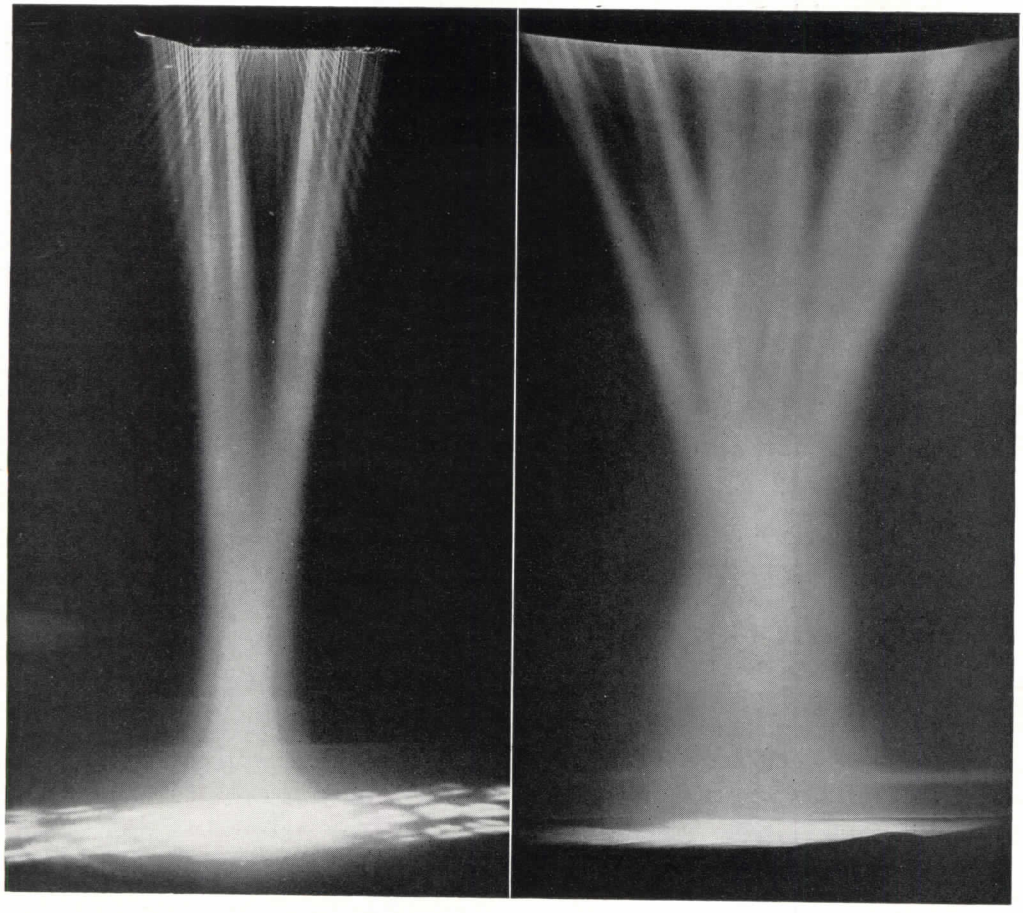
Temperature increases above certain points are signaled by marked changes of color in a paint developed by Efkalin Company (812 East 141 St., New York). Surfaces can be completely finished with this "blusher" or merely spotted in small areas to be watched for thermal conditions requiring correction. Five grades, covering range between 284° and 734° F., change color permanently. Eight others, covering range between 184 and 464° F., revert to original color after normal conditions are restored; these are good for 25 to 50 changes in color before recoating. Average life 12 months.

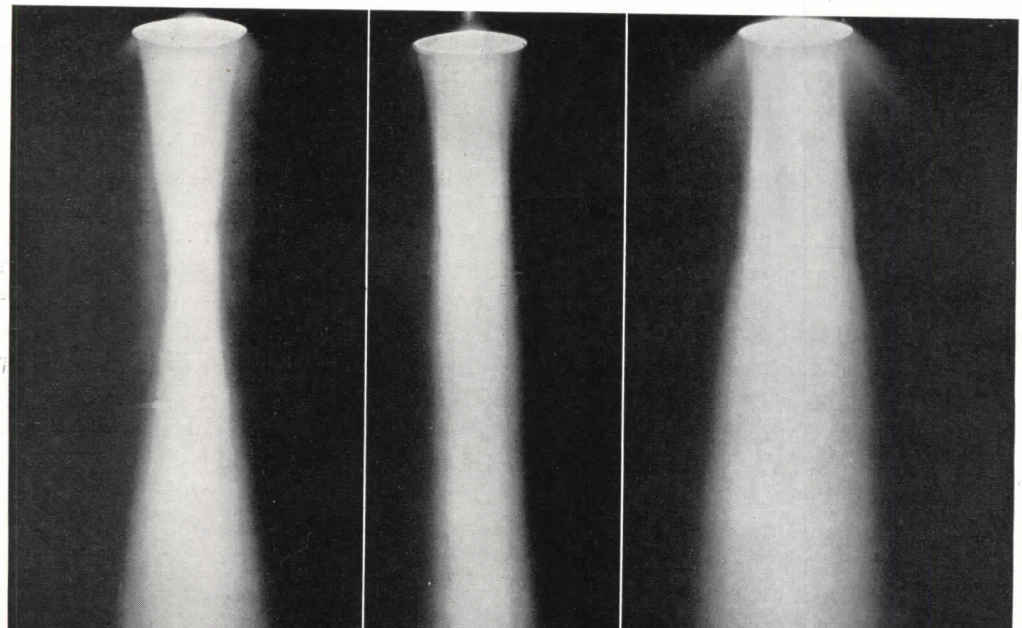
fluorescent buildings

Designers of the 1939 New York World's Fair are reported to be experimenting with fluorescent paints that will make exterior walls glow in pastel shades of color at night. Ultraviolet radiation, like that obtained from argon lamps, is used to excite the paint into fluorescence. Popular in stage sets and advertising novelties. Incidental design note: under ultraviolet light, dyed hair takes on a sickly color; true blond retains luster.

safety on highways

With auto accidents increasing, better road designs are needed. Current reports attest research in many directions. E. W. Davis, superintendent, University of Minnesota Mines Experiment Station, suggests iron paving blocks that would screech a warning at careless drivers going too far to one side; tests show different block patterns make distinctive sounds in contact with auto tires. In England experiments with colored concrete highways have shown fewer accidents per mile; there is at least 40% less sun and headlight glare with a marigold or dull orange road than with an ordinary white road, and pedestrians are far more visible at night. Poor illumination is obviously a major hazard, for more than half our highway fatalities occur after sunset, when only one-fifth of the cars are on the road. The sodium lamp—notable for its high efficiency, low intrinsic brilliancy and distinctive golden color—is being tried out in highway lighting. First used for this purpose in this country in June 1933, there are now in service or under construction for new installations approximately 3,000 sodium luminaires, totaling 150 miles. Two and three times as much light is obtained for same energy as with incandescent lamps.





Photographs courtesy Wilmot Castle Co.

CONTROL OF LIGHT mea
increasing specialization
forms for varying use, as show
in these photographs of ope
ating room lighting. Surge
demands accurate, effortle
vision. Precise standards
illumination have resulted
multiple-reflector designs whic
make possible any desire
shadow reduction or light i
tensity at any level of focu
even when light is obstructe
by the surgeon or his assistant

more facts on air pollution

Dust storms that swirl out of the Middle West continue to focus attention on the problem of atmospheric control (featured in last month's issue, pages 93-96). According to statements made at the annual Eastern Osteopathic Association convention, the billions of dust particles constitute tiny balloons on which influenza germs ride, thus spreading the epidemic. An atmospheric survey of New York City has also just been completed as a PWA project by 160 scientists and engineers working with New York Department of Health, university laboratories and other organizations. Preliminary report appearing in *American Journal of Public Health* reveals more bacteria were found in school air than in any other location. Average distribution of bacteria per cubic foot of air, according to one series of more than 1,400 bacteriological tests: schools, 29.6; subway cars, 19.2; nonventilated theater auditoriums, 13.2; ventilated theaters, in ducts, 3.1; streets, 11.2; parks, 3.0. Smoke and fumes from combustion were placed as most significant factors in air pollution. Solid matter deposited out of the air was calculated to range from a maximum rate of 243 tons per square mile per month in a Manhattan slum section to a minimum of 12 tons in Queens. A high-power dust counter gave an average of 6,500,000 particles for ordinary street air.

sound removes smoke

A new way of clearing the air of fog, smoke and soot was demonstrated at the New York meeting of the American Institute of Mining and Metallurgical Engineers by H. W. St. Clair, Bureau of Mines metallurgist. After a glass cylinder is filled with a fog of ammonium chloride, a high shrill sound is set off. The chemical "smoke" precipitates downwards and in a few seconds the cylinder is clear. Simple principle: the particles of fog are shaken into the nodes where there is no vibration of sound, collect in clusters and settle. Practical value of such acoustical precipitation limited at present to recovery of waste products in smelter fumes.

new standard in clean air

Conditioned air supplied to shops and offices on first four floors of Chicago's new Field Building will set a new par in cleanliness. Westinghouse electrostatic cleaners are used to remove dust particles as small as one-fifth micron. Efficiency is over 99%.

weather blamed for suicides

Atmospheric vagaries—particularly high and low-pressure areas with their accompanying cold and warm periods—are responsible for many bodily disturbances, according to Dr. William F. Petersen, University of Illinois, speaking before the American Association of Physical Anthropologists at Harvard. Some persons are more sensitive than others to weather changes. In extreme cases, he states, the weather produces instability leading to suicide or homicide. This view is confirmed by Dr. Clarence A. Mills, professor of experimental medicine, University of Cincinnati, who recently completed a study of mortality statistics showing that suicides and homicides are grouped with weather disturbances.

synthetic atmospheres

Natural air is a mixture of gases: approximately 79% nitrogen, 21% oxygen, plus minute quantities of helium, argon, neon, krypton, xenon. The value of oxygen is well understood, but little is known about the others, especially the rare gases. The optimum mixture of gases is an important question in view of the possibility of using chemical means in air conditioning. Significant as research in this direction are the findings of Prof. J. Willard Hershey, McPherson College, Kansas, who began 15 years ago to experiment with synthetic atmospheres, not on human beings, but on guinea pigs, cats and monkeys. These experiments show there is no single gas in which animals can live; oxygen always seems necessary as one of the gases, but with oxygen alone the animals die. In synthetic mixtures of pure oxygen and pure nitrogen, the animals also die, thus indicating a need for the rare gases. By using 21% oxygen and 79% helium instead of nitrogen, an atmosphere is formed in which white mice thrive better than in ordinary air.

roof-tops of ice

The possibility of using ice for heat-insulation on flat-roofed houses is being studied by the American Society of Heating and Ventilating Engineers research committee. Several installations have previously been made, one on a small commercial building. In winter, the 2 or 3 inches of water freezes and adds a layer of heat-insulating ice to the normal roof thickness. In summer, the water-covered roof becomes a spray system that is used in cooling the air.

glass strength in tension

Speaking before the American Society for Testing Materials in Pittsburgh, Games Slayter, glass technician, revealed results of recent laboratory tests showing that tensile strength of fibrous glass is improved as fiber diameter is reduced. Glass in rods averages about 20,000 pounds per square inch, but commercially produced glass fibers go as high as 2,000,000 pounds per square inch. The fibers vary in diameter from 0.02 inch to 0.0002 inch (less than that of human hair). Some as fine as 0.00005 inch have been produced for special purposes. In several experimental tests, strengths of 3,500,000 pounds have been reached; this is about 25% of the theoretical maximum strength of glass, calculated at 12 to 14 million pounds per square inch. (Fibrous glass is notable for its insulative and dielectric qualities. Also for its light weight: an Owens-Illinois fiberglas mat weighs only 1.5 pounds per cubic foot, whereas ordinary glass weighs 150 pounds. For additional data, see report in March 1936 issue, page 239.)

nailable glass

Nails can be driven through a new "bubble" glass developed in England; it can even be sawed like a board. Multicellular structure: many tiny bubbles, separated by thin layers of glass. Suitable, in form of bricks, for heat-insulating partitions or wall linings.

air-sealed glass

"Thermolux," a new translucent glass developed in Italy, is soon to be manufactured in this country, *Glass Digest* reports. A cross between glass blocks and double glazing, it will be sold and installed through ordinary glass outlets. Compound structure: a central lamina, composed of spun silk threads regularly arranged, is held between two sheets of clear glass; edges of this porous layer are hermetically sealed so that the air it contains is not disturbed. Conserves indoor heat by insulation. Transmits sunlight, minus sunheat, without distorting visible wavelengths of spectrum, giving indoor colors their true values. Diffuses light directionally, reducing glare.

fireproofed cloth

A chemical dip that makes fabrics flame-resisting is part of a new exhibit presented by du Pont at the New York Museum of Science and Industry. The compound does not affect color or texture of fabrics.

steel-saving concrete system

Developed in Switzerland 3 years ago and now introduced in this country by Porete Manufacturing Company (North Arlington, N. J.), "Alpha System" is a floor construction in which steel and concrete work together as a statical unit. A spiral steel rod is electrically welded to top flange of I-beam and embedded solidly in concrete slab. This coil transmits total horizontal shear from slab to beam, thereby increasing its carrying capacity. Since the concrete takes care of compressive stresses produced by superimposed loads, a much smaller steel beam can be used to carry the same loads as before. Saving in weight of steel: 40 to 75%. Particularly adaptable to buildings with heavy loads and long spans; also to bridges.

research in concrete

Three new series of long-time tests have been started at University of California on the plastic behavior of concrete. Studies cover (1) moisture loss accompanying plastic flow under sustained load, (2) validity of the assumption of plane bending in beams under sustained load, (3) effect of compound composition and fineness of cement on flow. Tests involve 500 specimens.

cellulose freed in new way

A process that extracts cellulose from wood and other soil products in a single operation has been developed by M. J. Stacom, Island Lumber Company, Long Island City. It is hailed as opening vast wealth in both farming and industry. The cellulose is literally squeezed out under enormous pressures (100,000 to 140,000 pounds per linear inch), leaving behind uninjured fibers that require no drying. The pressures are obtained with machinery utilizing a new discovery on the horn angle (curved lines branching out of a common stem); rotating cylinders of toughest steel are placed inside each other to form such angles.

integrated home laundry

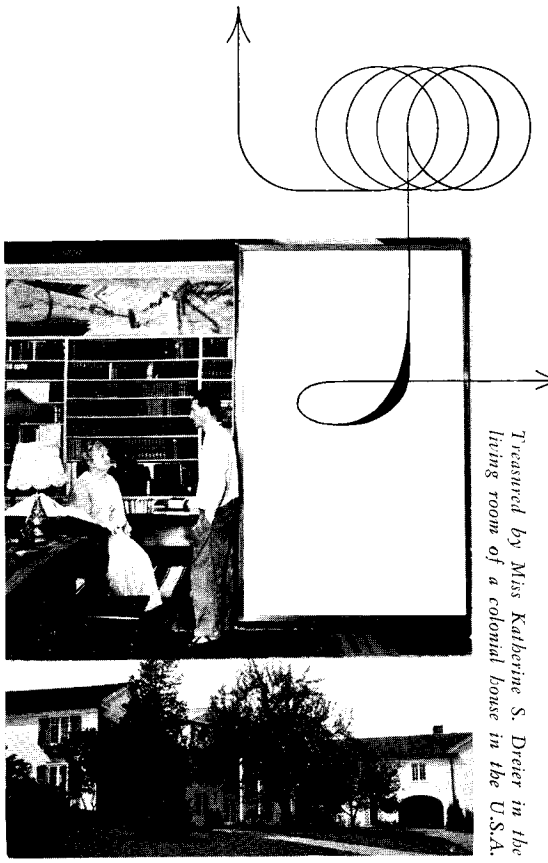
A "packaged" assembly of home laundry units—clothes chute, sorting and sprinkling counter, 3 bins on casters, electric washer, sink, ironer, shelf wagon, cabinets, radio, telephone, speaking tube—was unveiled at third annual Westinghouse "Kitchen Clinic" at Mansfield, Ohio. Principles of greater standardization and simplification, marking the development of planned "unit kitchens" by the electrical industry, are utilized.

DESIGN — CORRELATION

FREDERICK J. KIESLER

Architecture is control of space.
An Easel-painting is illusion of Space-Reality.
Duchamp's Glass is the first x-ray-painting of space.

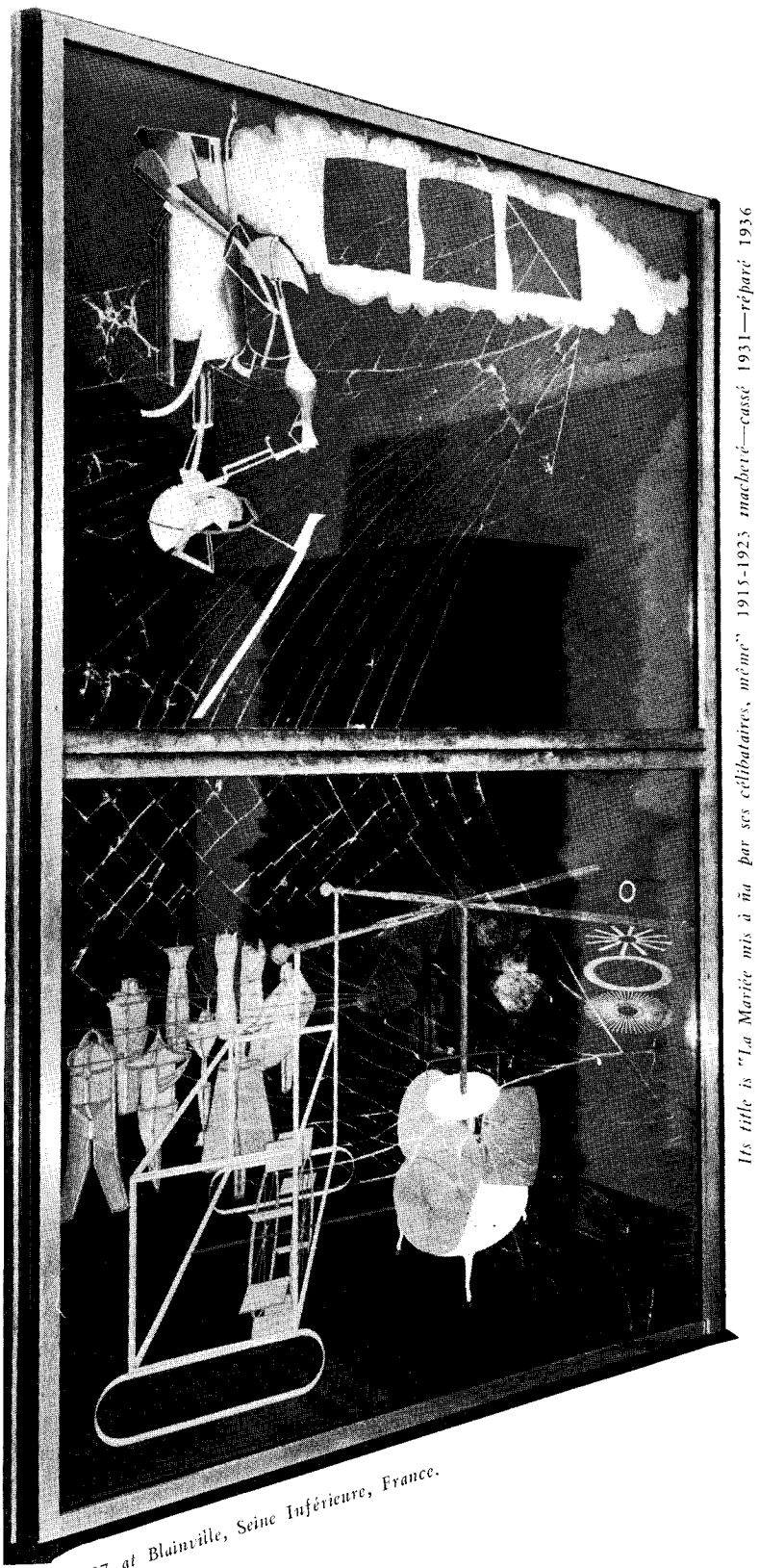
From brush-painted glass pictures of the middle ages



to 1920's

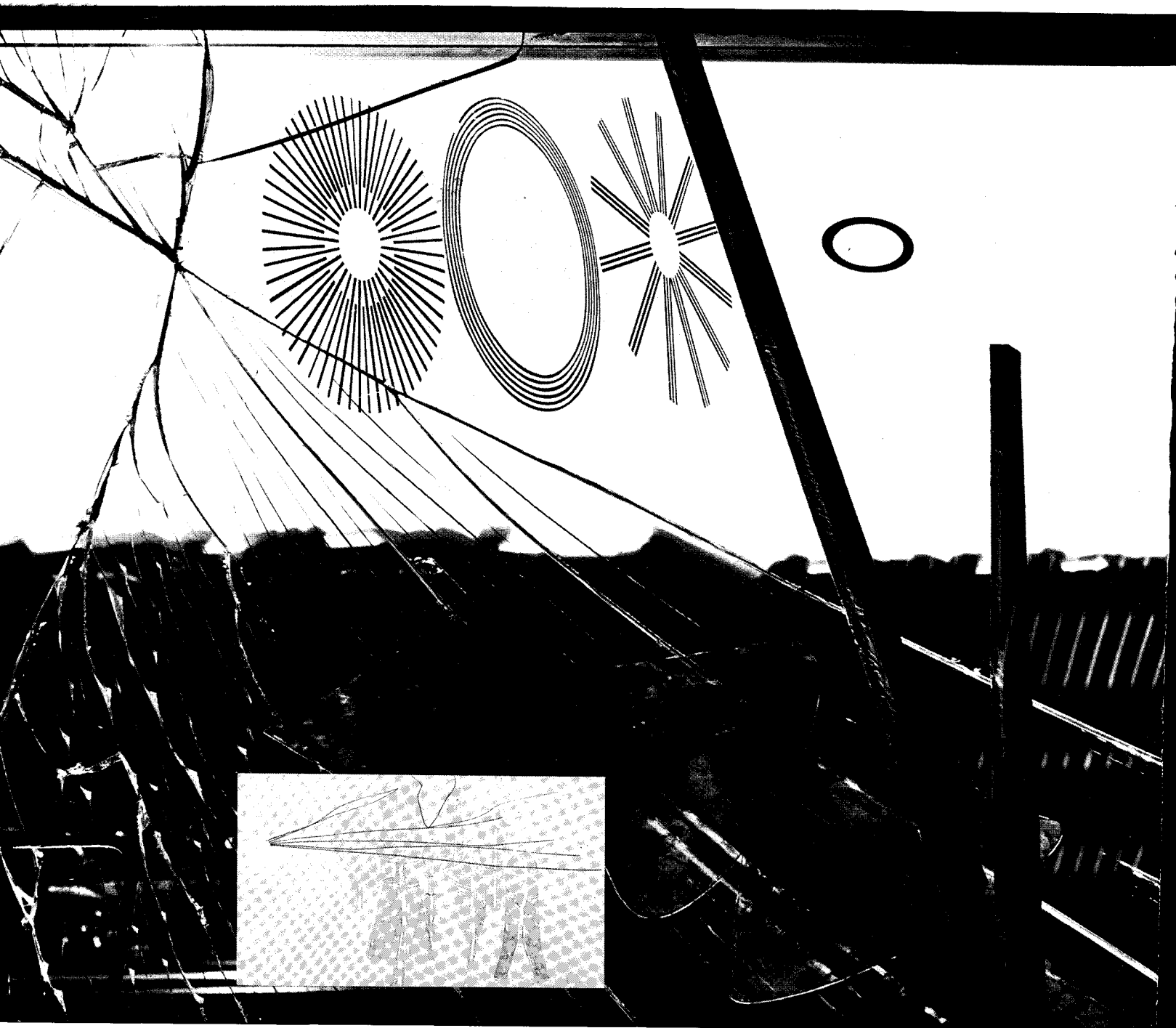
Treasured by Miss Katherine S. Dreier in the living room of a colonial house in the U.S.A.

Structural Painting on plate glass of this Superior-Sane Iconoclast Marcel Duchamp.



Its title is "La Mariée mis à nu par ses célibataires, même" 1915-1923 machevé—cassé 1931—réparé 1936

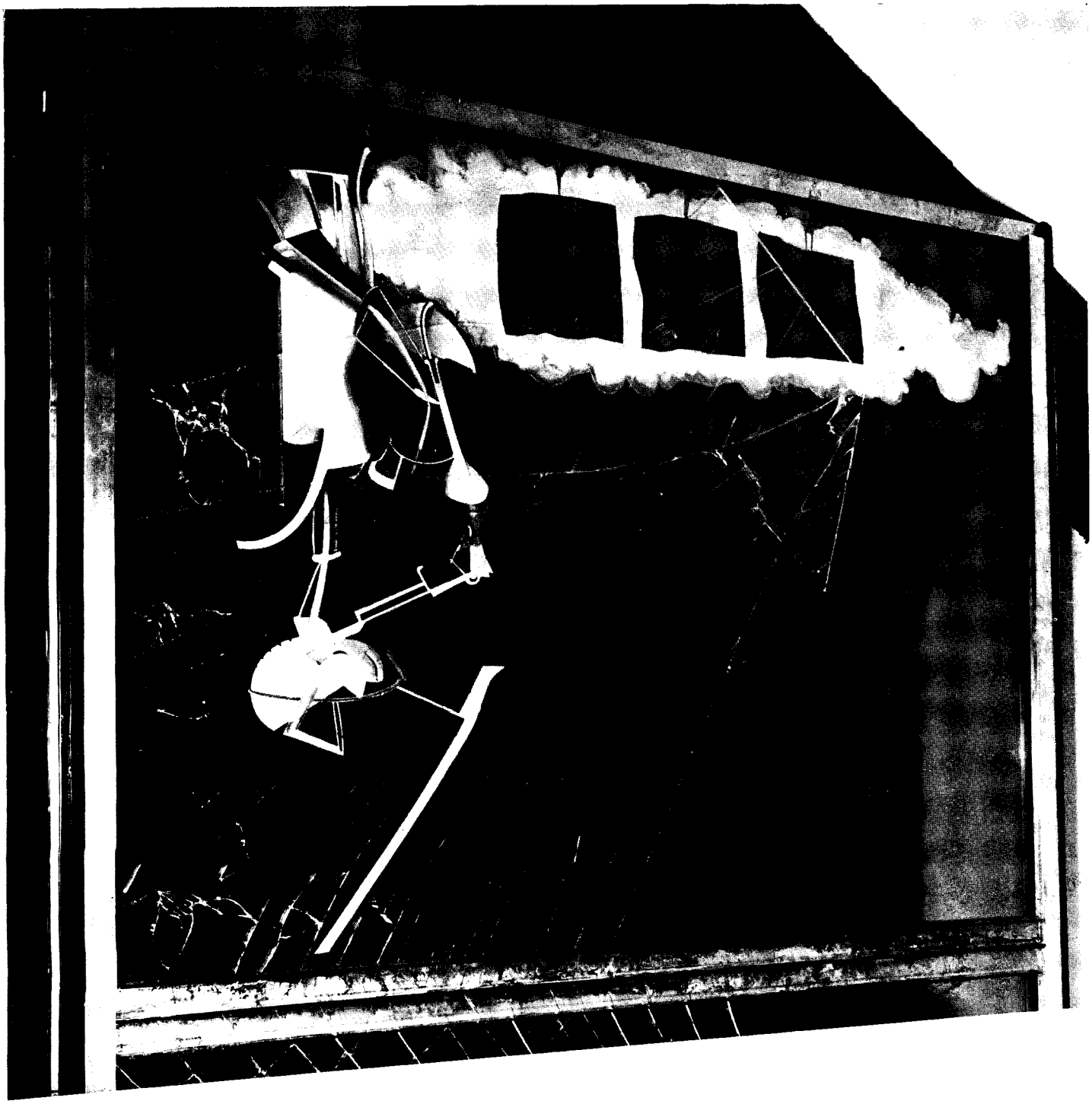
born 1887 at Blainville, Seine Inférieure, France.



This detail and all following photographs of the "Big Verre" have been taken this winter by Berenice Abbott for the Architectural Record, on a special trip arranged by the author.

Duchamp's "Big Glass" created 1912-1923 in New York City's Fourteenth Street, known at that time only to a small group, is in 1937 acclaimed by the progressive professionals throughout the world. It surpasses in creative ingenuity any painting since the great Illusion-Builder SEURAT, anticipating as well as continuing the line of development Picasso—Miro—Dali, X., Y., Z. It will fit any description such as: abstract, constructivistic, real, super-and-surrealist without being affected. It lives on its own eugenics. It is nothing short of being the masterpiece of the first quarter of twentieth-century painting. It is architecture, sculpture, and painting in ONE. To create such an X-ray painting of space, materiae and psychic, one needs as a lens (a) oneself, well focused and dusted off, (b) the subconscious as camera obscura, (c) a super-consciousness as sensitizer, and (d) the clash of this trinity to illuminate the scene. The glass plate cracked 1931, cutting strokes across the pane that would have broken any other composition, but not this singular masterpiece of tectonic integration. Strange for the factualist is the magic of subconscious creation with which the outburst of broken glass-streaks which now veins the whole picture was anticipated by Marcel Duchamp. A preparatory drawing of 1914 (insert above) already showed radiating lines abstractly superimposed upon the reality of the main theme of the design. But it seems to me that not until the breakage had actually occurred was the cycle of perfect fusion of the subconscious image with its realization completed, and the time ripe to give its message to the public.

We look at it not to interpret its bio-plastic exposition of the upper half of the picture or of the mechanomanic lower part; such physio and psycho-



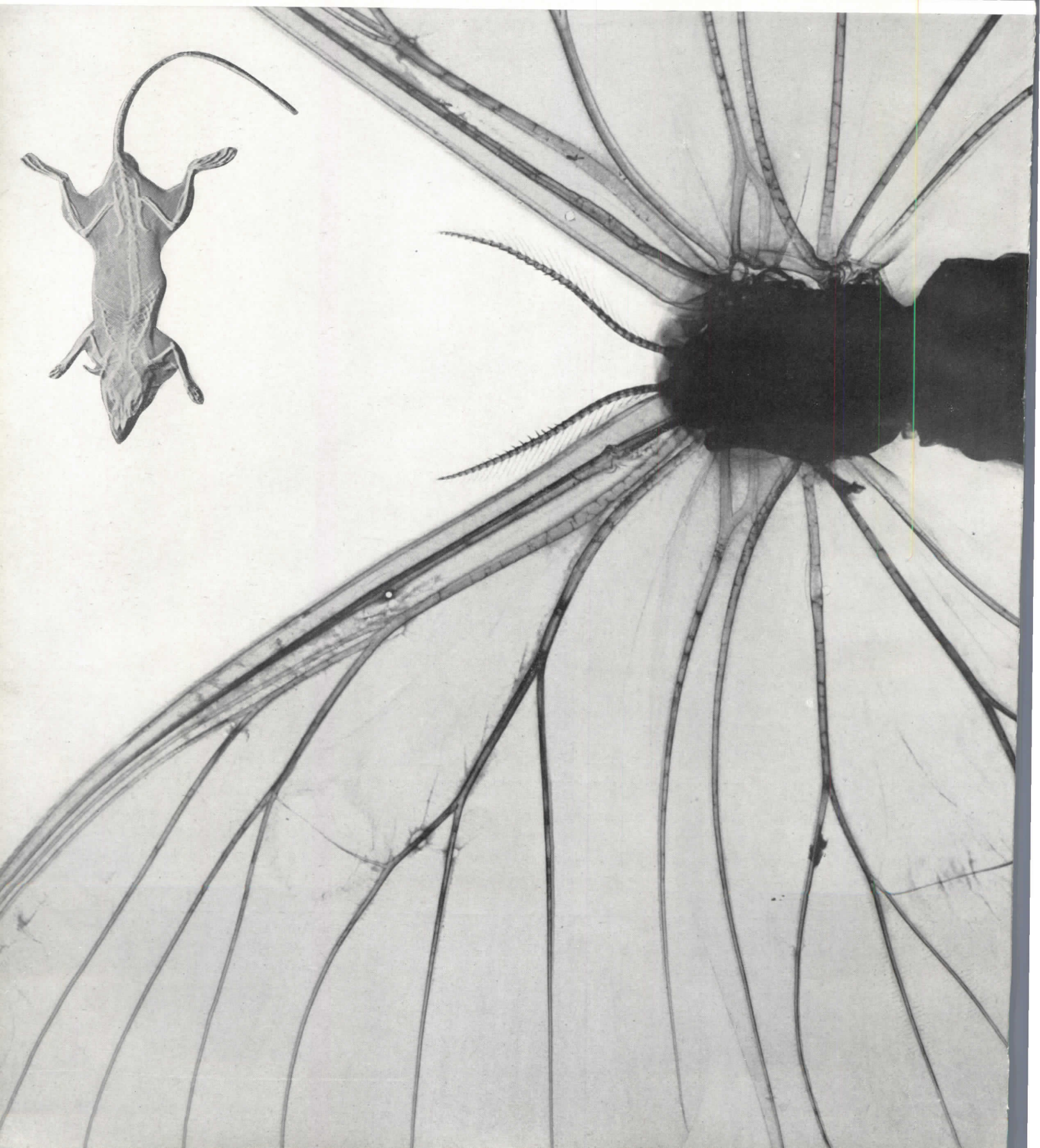
analysis will be readily found here and there, now and later—but I bring to the technicians of design-realization the teaching of its techniques.

Translucent material such as glass being used more and more in contemporary building finds its manufacturing not for commercial but spiritual reasons. [Those who think only in "practical" meanings: dollars and cents, brick and mortar, jobs and publicity—would do well to turn to the very last page of this section. The best way to understand such painting is to look at it with closed eyes and an open mind; or with eyes wide open and the mind alive like darkness.] Glass is the only material in the building industry which expresses surface-and-space at the same time. Neither brick nor stone, nor steel, nor wood can convey both simultaneously. It satisfies what we need as contemporary designers and builders: an inclosure that is space in itself, an inclosure that divides and at the same time links.

Normally one looks through a translucent plate glass from one area into another, but in painting an opaque picture (like this) one also accentuates the space division optically. The painting then seems suspended in midair negating the actual transparency of the glass. It floats. It is in a state of eternal readiness for action, motion and radiation. While dividing the plate glass into areas of transparency and non-transparency, a spatial balance is created between stability and mobility. By way of such apparent contradiction the designer has based his conception on nature's law of simultaneous gravitation and flight.

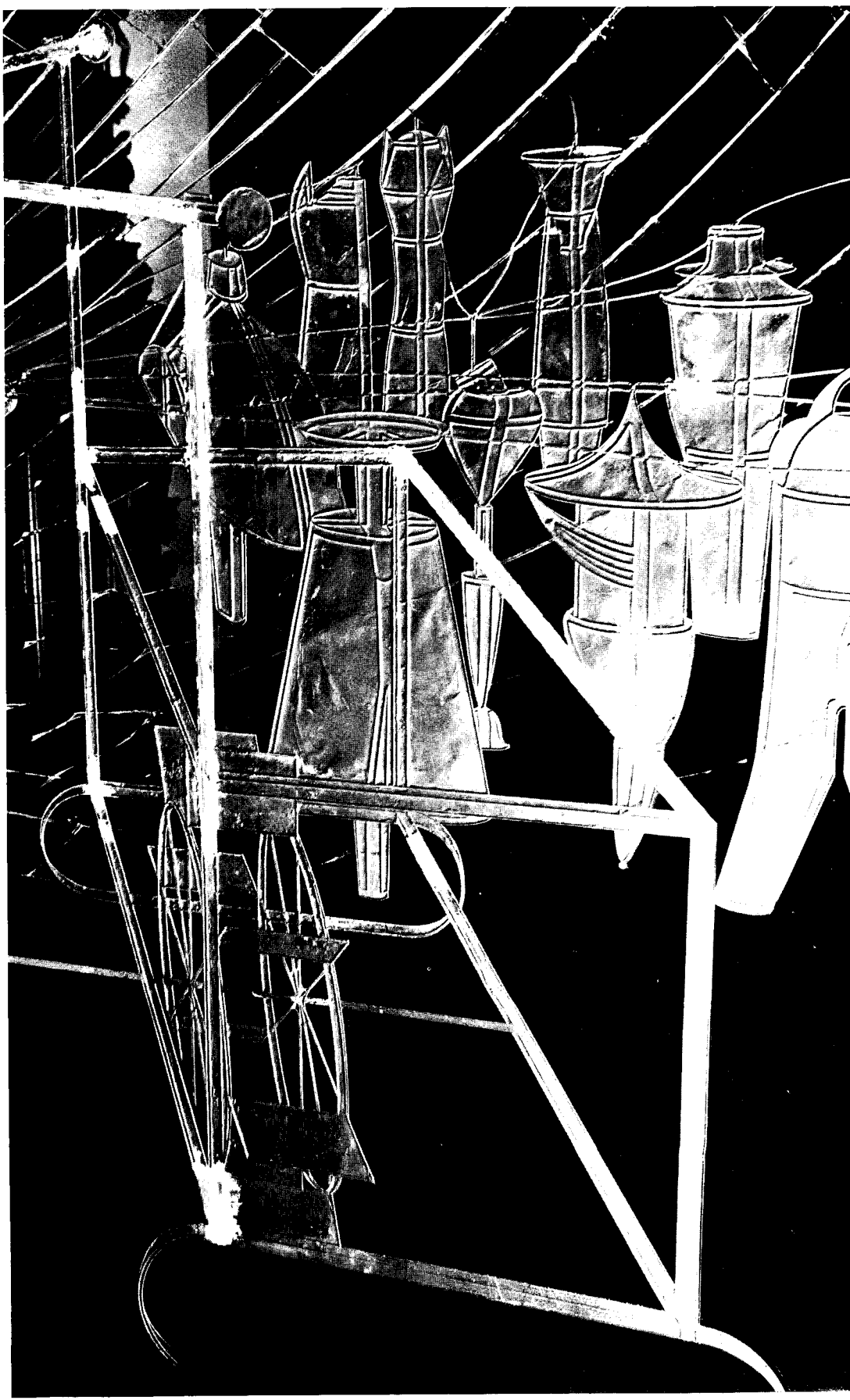
Nature distinguishes between framework and tensional fillings, both elastic and interdependent, while we build rigidly, inflexibly, lifelessly. The manner of joining parts of similar or different densities in this interdependence is tantamount to nature and to artificiae. Contour design is nothing else but joint. A contour is the illusion of a spatial joint of forms. Joints are dangerous links; they tend to dis-joint (everything in nature is joined and a group of joints is form). Hence, all design and construction in the arts and architecture are specific calculation for re-joining into unity, artificially assembled materiae, and the control of its decay.

Duchamp's painting's outstanding (tectonic) achievement is its new joint-design. The ligaments of steel-or-what-not, single or double spaced, wires that are used, instead of paint strokes, for contourings make wider and narrower outer and inner contours to create precise form articulation. Those



heavier and lighter lines thus divide all shapes and at the same time link them! Technically they are held fast to the glass-back-surface by mastics or cooled-off white lead. That is unimportant, because you may and will invent your own mastics and the Marcel-imprint should not be imitated; but important is its spirit, guiding lost sheep and collective herd back to juicy roots embedded in nature's creative subconscious instead of encouraging them to take refuge in re-search and statistitching.

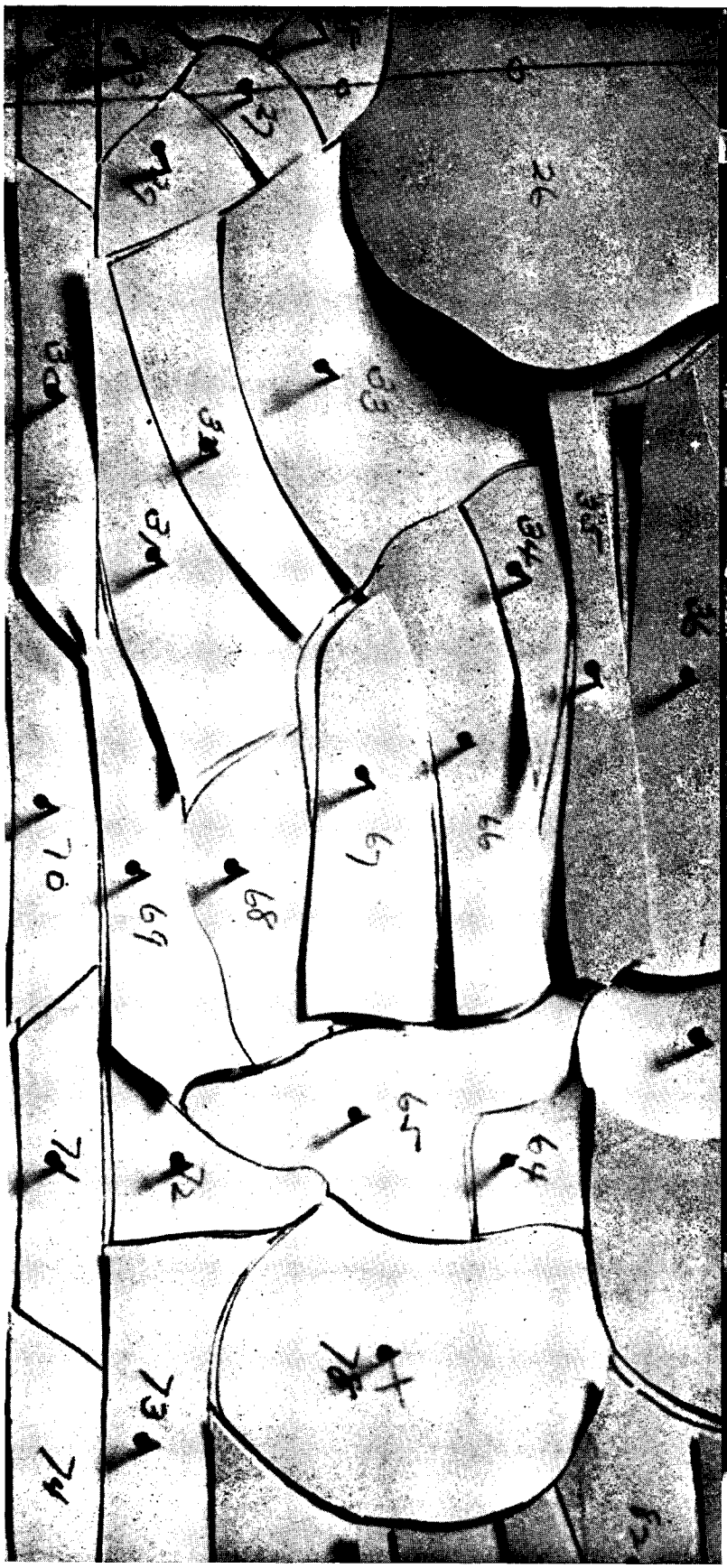
The structural way of painting is Duchamp's invention. Anybody who designs space (forms) knows the pre-conscious command for sharp contour, exact contour, unmistakable accentuation of shape horizons. Areas between the boundaries are here, not brush-stroked, but once and a million times tamponed to give a vibrant mass of luminous densities, transparent, lucidly shivering with its tender layers of color-coverings.



Front view of details. Back view of details (right).

Marcel Duchamp's plate glass picture carries its structural paint technique only on one side (back) of the glass pane. The plate glass as a whole is intact. In the stained glass windows of the middle ages the large windows were composed of small pieces of colored glass held together by small structural members of lead, soldered together with an approximate composition of forty per cent lead and sixty per cent tin. The artist's design is reproduced in flux (crown glass) which is mixed with colored powder and applied only on the (front) glass surface. It melts in the heat of the kiln (about 900 degrees) and is bound insolubly to the glass. First, the whole design is cut into a pattern of paper templates. Later, they are replaced by glass pieces of precisely the same shape, spaced by an outline that has the exact thickness of the center wall of the I-shaped frame-bar. The outer face of the bar which is visible to the eye has the width of the standard flange of the same frame-bar. Marcel Duchamp has simplified such antiquated techniques, and outmoded them with his new method of "structural painting."

As may be seen in this x-ray-graph of a leaf, heavier structural members cover the whole area to give additional strength to the small network of



Photographs courtesy Photographic Div., Federal Art Project, WPA

vascular veins and to the chlorophyll-bearing cells that carry on the work of photo-synthesis. The veins are merely the extensions into the leaf of the chief elements of the stem. They form the framework of the leaf, as well as the complex network of highways for the transportation of materials between the blade as a whole and the stem. They help to create TURGOR, the resistance—rigidity of plant—structures.

Stained glass window design showing width of contour equal to width of came-lead bar.

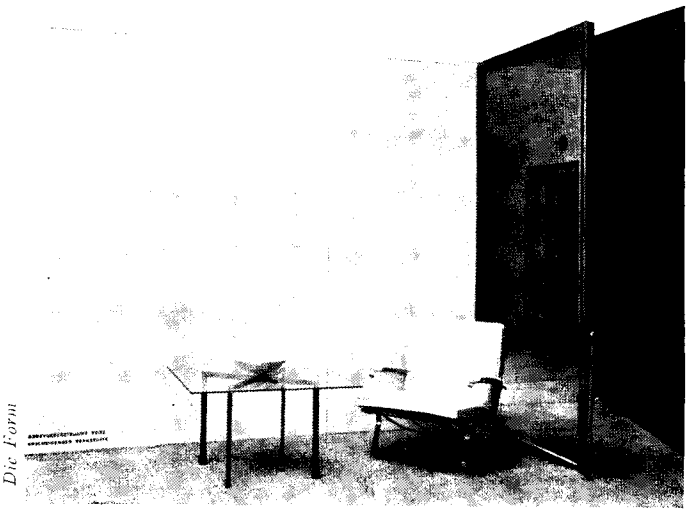
To cut templates a special scissors with double-edge blades is used. Distance of double edge equals thickness of the center wall of

the came-lead used for framing.

Glass pieces being put into the came-lead.

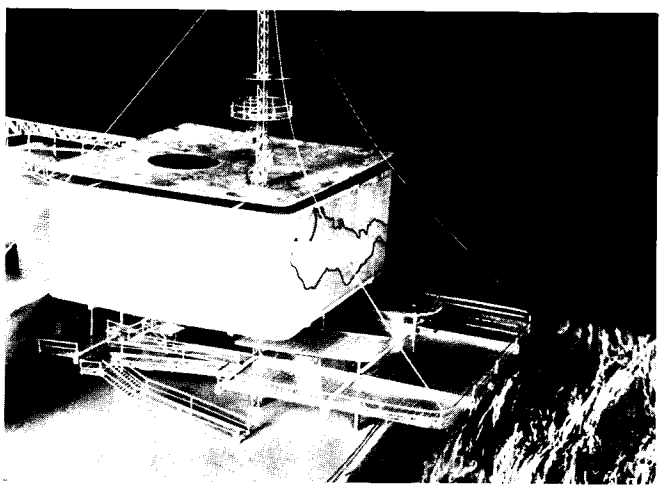
Detail of a completed stained glass window showing thickness of lead contour joints and bracing-bars.

CERTAIN INDUSTRIAL DEVELOPMENTS TO PREVENT BREAKAGE OF SHEET MATERIAL AND DISCOLORING OF PLASTIC SHEET MATERIALS.



Die Form

Big plate glass in metal frame used as room partition by Mies van der Rohe (1931).



Model of the building of the Czechoslovakian pavilion for the World's Fair in Paris (1937) showing interpretative design applied to translucent outer wall material.

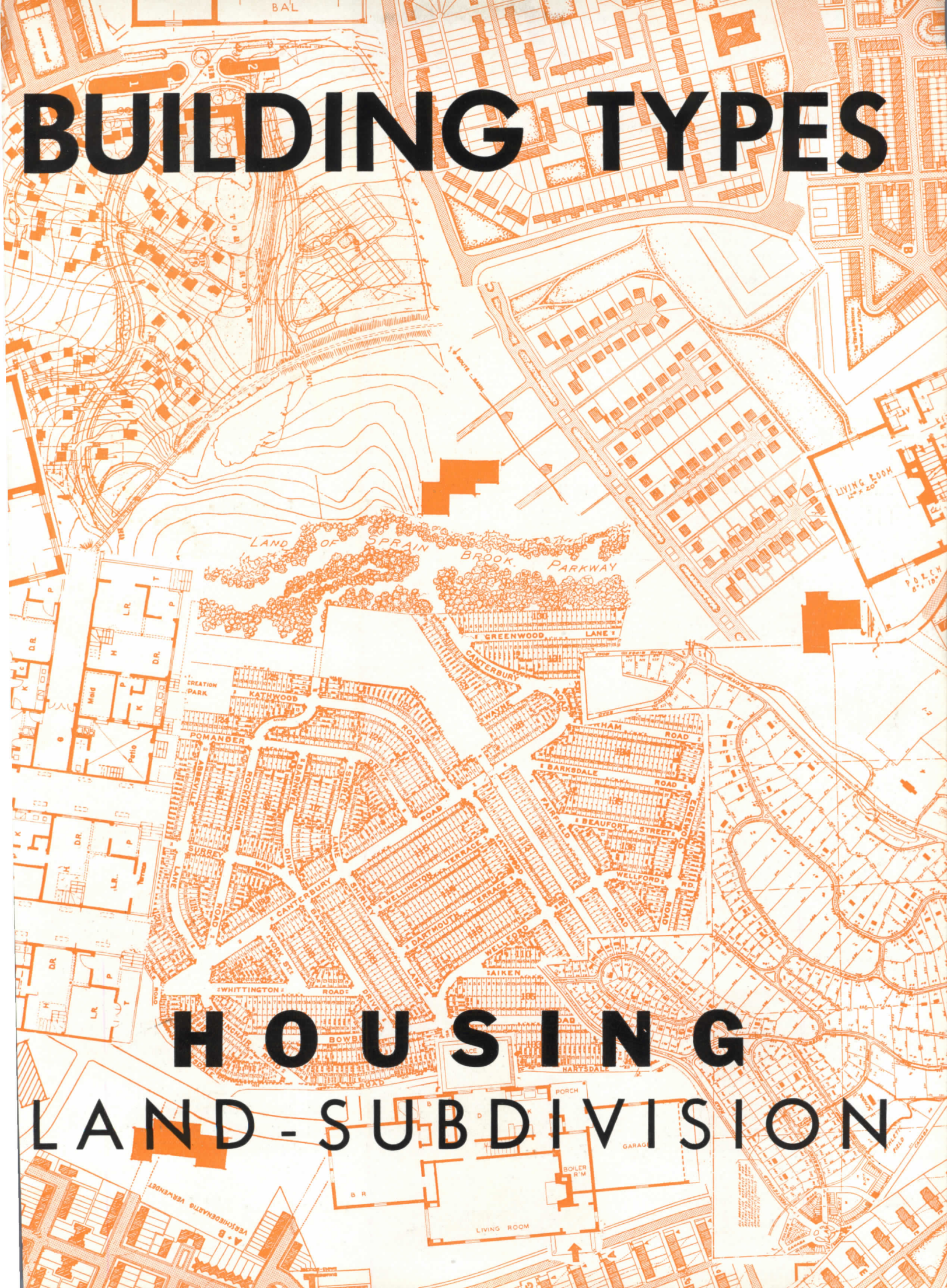
Bullet-proof glass of the Pittsburgh Plate Glass Co. The insert shows the girl looking through nine and one-half inch thickness of Lucite, a new duPont plastic, which is clearer than optical glass, only half as heavy and is non-shatterable. It resists 8,000 pounds pressure per square inch.

Insert photo by Dana B. Merrill

Five men standing on Herculite tempered plate glass specially processed by heat and chilling, demonstrating the resistance to an impact seven to eight times greater than ordinary plate glass.

Johnson & Johnson and Pittsburgh Plate Glass Co.

BUILDING TYPES



HOUSING

LAND-SUBDIVISION

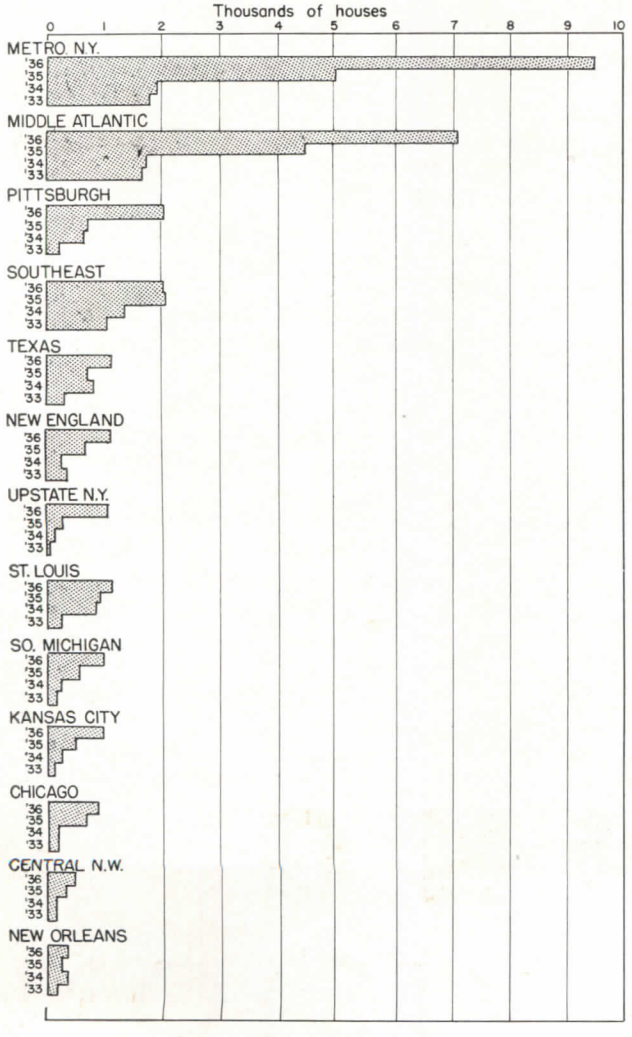
OPERATIVE BUILDERS ARE BECOMING MORE ACTIVE

By L. SETH SCHNITMAN,

Chief Statistician, F. W. Dodge Corporation

Construction of single-family dwellings by operative builders is rapidly gaining stride. In 1936 the number of houses erected in so-called development operations was more than 3 times the number constructed in 1934 and more than 60% greater than the total in 1935. Such is the picture for the entire area east of the Rocky Mountains. To a greater or lesser extent each of the 13 major geographic districts participated in this broad revival. The largest relative gains over 1934 occurred in upstate New York, Southern Michigan, the Chicago territory, Metropolitan New York, and New England.

SINGLE-FAMILY HOUSES ERECTED BY OPERATIVE BUILDERS IN 37 EASTERN STATES



ARRANGED AND RANKED BY DODGE DISTRICTS

By far the greatest number of houses built by operative builders in 1936 were erected in the Metropolitan area of New York; here was centered one-third of all such housing in the entire area east of the Rocky Mountains. Incidentally, for Metropolitan New York the 1936 total was 90% greater than the 1935 figure. Next in importance in development type housing is the Middle Atlantic area which in 1936 accounted for an additional 25% of all single-family house construction by development builders in the 37 eastern states.

The remaining 42% of the number of houses erected by developers in 1936 were undertaken in the other 11 geographic districts ranked as follows:

DISTRICT	PERCENTAGE TO 37-STATE TOTAL
Pittsburgh	7.5
Southeast	7.0
Texas	4.1
New England	4.1
Upstate New York	3.6
St. Louis	3.6
Southern Michigan	3.3
Kansas City	3.3
Chicago	3.1
Central Northwest	1.4
New Orleans	1.0

It is of interest, too, to note that in 1934 the average cost of the house erected by development builders in the 37 eastern states, amounted to $3,200; that in 1935 the average was $4,210; and that in 1936 it amounted to $4,750.

For the first quarter of 1937, houses erected in the 37 states by operative builders showed a total which was more than 100% greater than the figure in the corresponding period of 1936, thus continuing the favorable trend in evidence since 1934. At the same time the average construction cost for houses built by operative builders during the initial quarter of the current year totaled just under $4,700, which was about *the same as* the average cost for the first quarter of last year.

Further gains in activity of operating builders appear probable for the remainder of 1937, but it is likely, too, that the average construction cost per dwelling will rise above the level which obtained during the first quarter.

Fairchild Aerial Surveys

SUBDIVISIONS
FOR INVESTMENT OR SPECULATION

by Henry S. Churchill

Subdivisions fall into two general classifications. The first, and largest, is the speculative class, in which the "improvements" are primarily a means to selling the land. The second is the investment class, where the object rather is a long-term return on invested capital than a quick turn-over. This second class may take the form of either a careful, conservative "for sale" development, which may be called quasi-investment, or it may be on a rental basis which is genuinely of the investment type.

Speculation in land is an old custom of the country. It used to be a rather simple process. The speculator bought raw land, platted it, put in some dirt roads, a sidewalk or two and perhaps a sales-office. He then proceeded, with bally-hoo and beer, to attract crowds, sell what he could, and get out. Vast expanses of our cities were thus subdivided, but as the game grew more difficult, more work had to be done before sale. More care had to be taken in selecting areas, the "improvements" had to be more extensive if not more substantial, and city councils had in some manner to be persuaded to extend city water, sewers and transportation.

The tremendous extent of this type of development, expanding the cities abnormally horizontally at the same time they were being abnormally concentrated into skyscrapers, resulted in idiotic street-patterns, fantastic transportation problems, a high tax-burden, bankruptcy, and blight.

With the lessons of the past well-learned during the depression, we can concentrate on the investment type of subdivision as providing a means towards better future civic patterns. The principal object of any investment is security, the maintenance of values. The old speculative subdivider did not bother with future values: the burden of blight and bankruptcy fell on the "home owner."

In the present discussion, therefore, the speculative development will not be considered. Insofar as the speculator has appropriated the catch-phrases of "planned community," "integrated neighborhood," and so on, it is only the same old planning with a new pretense.

Of the more stable and responsible types, the "for sale" development is numerically far the greater, although in my opinion the "for rent" type presents the sounder form. The reasons for this statement, as well as the difficulties of the "for rent" set-up will appear.

Security of investment, that is, maintenance of values, is the primary objective. In the past many promising subdivisions have become a disappointment to the house owners because even though great care may have been taken in writing deed restrictions, the surroundings have become blighted by neglect or infiltration of undesirables. The building-up of any subdivision is a slow process, and the consequence

of surrounding depreciation has been to blight the development itself by the cessation of sales.

The Federal Housing Administration is issuing a new bulletin entitled "Subdivision Standards" in which the basic principles for stable subdividing are excellently stated. The three cardinal requirements are "(I) that the development of urban land should create neighborhoods of definite identity; (II) that such neighborhoods must be in proper relationship to a reasonable consideration of the manner and extent of the expansion of the community as a whole; (III) that such neighborhoods should be designed to meet a demand for a definite type of housing accommodation within the community."

There are two methods of creating neighborhood identity and they apply both to "for sale" and "for rent" undertakings. First, the area to be developed must be of sufficient size to be capable of maintaining its own character as a neighborhood. It is hard to say how large that is: it depends on whether the tract is in the center or edge of already highly developed territory, or whether it is outlying. It has, within limits, nothing to do with size per se, for a very large development may lose all sense of identity through loose planning or may fail because it remains "unfinished" too long, whereas a quite small one may be designed as a true neighborhood from its inception and so retain its distinctive character. Much depends on physiographic features such as watercourses, parks or parkways, high-speed arterial highways, railroads and industrial areas. These features may create natural boundaries or impediments to blight; they may be actual or potential dangers.

The second method, following on the proper size and location of the tract, is the internal planning of the subdivision, and the inclusion of all necessary supplemental features over and above streets, utilities and proper restrictions on the houses.

Here again there are no possible hard-and-fast rules. The factors entering into decisions are many and complex, and require careful study for each separate case. The possible items, for a very large, self-contained development on outlying property might be:

Shopping center, perhaps including a movie.

Garage and filling station.

Parked ways, internal pedestrian circulation.

Playgrounds—for small children and for adult organized games.

Tennis courts; swimming pool.

Water supply and sewage disposal.

Electric power plant.

Central or group heating systems.

Day nursery.

School.

Deed restrictions of special type.

A small and well-protected development close to existing facilities might need none of these things except very careful planning to preserve amenities of open space and satisfactory orientation. The smaller the development, however, the more it will repay the developer to spend adequate time and money on the working out of the plan so that nothing can happen to destroy the unit character of the whole or decrease its desirability as a place in which to live.

"For sale" developments will naturally continue to be the major type of operation and careful consideration of the FHA standards will do much to minimize losses in the future. The attainment of these standards will require a greater investment in skilled technical advice than has been customary in the past, including a type of preliminary research to which most subdividers are unaccustomed. The collaboration of expert real-estate experience, architect, land-planner and engineer should obtain from the beginning. As FHA says, "Too frequently, a developer endeavors to find use for a piece of land instead of carefully ascertaining the housing needs of the community and then securing land that will meet the need."

The essential factors for a sound subdivision are related under the following "minimum requirements" in the bulletin:

1. *"Convincing evidence of a healthy demand.* There shall be convincing evidence of a healthy and continuing demand for houses of the type contemplated in the location proposed and at the prices asked."

Most real-estate "evidence" is wishfulfillment. It can and should be checked by careful, competent research into population trends, industrial trends and general business condition of the community.

2. *"Appropriate surroundings and topography.* The subdivision site shall be plainly suitable for the type of residential development contemplated. It shall have no serious hazards such as smoke, fog, noxious odors, nuisance industries, possibility of subsidence, or the probability of floods. It shall not be unattractive to the average, reasonable, prospective resident on account of the existence of any hazard or any other objectionable feature."

Although this is kindergarten stuff, it is too often overlooked, particularly as to future expansion of industry, or the possibility of ramshackle fringe growth. As to the topography itself, beautiful sites are often ruined by adherence to ridiculous city patterns. (As much of Long Island, where the confusion of the New York street pattern and a set of official grades established without the slightest consideration for existing topography not only makes for terrific grading costs but makes an intelligent subdivision completely impossible.) On the other hand, some excellent sites are often called "impossible" because the land-planner or engineer has no idea of how to handle slopes. Chatham Village is a superb example of what care and ingenuity can do with an almost "impossible" site.

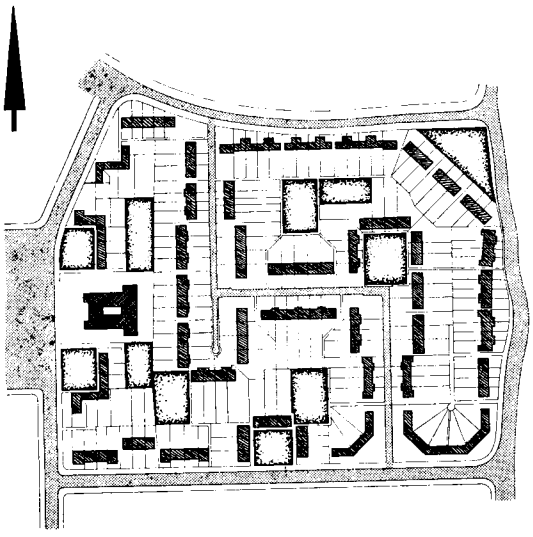
3. *"Accessibility to schools, employment, shopping and recreational centers.* The subdivision shall be accessible by highway or by other means of public transportation at reasonable cost and with reasonable expenditure of time to places of employment, schools, shopping centers, parks, playgrounds."

In order to assure permanence of desirability, a careful study of the situation must be made. It is not necessary in every case to build in all or any of these things: but it may be a surprisingly good investment to do so. The temptation to overdo revenue-producing elements such as shops is very strong; too many shops and too many "community facilities" may wreck a subdivision as well as their arbitrary exclusion.

4. *"Suitable utilities and street improvements."*

These are a matter for expert engineering determination and are, usually, in respect to utilities, subject to either local or state control or both. The street pattern itself should seldom be left to purely engineering consideration: the architect and land-planner should determine the circulation, size and shape of blocks, desirability of culs-de-sac, and proper location of house and other building sites. But the engineer must be cooperated with, or sewer costs may become excessive.

5. *"Compliance with zoning requ-*



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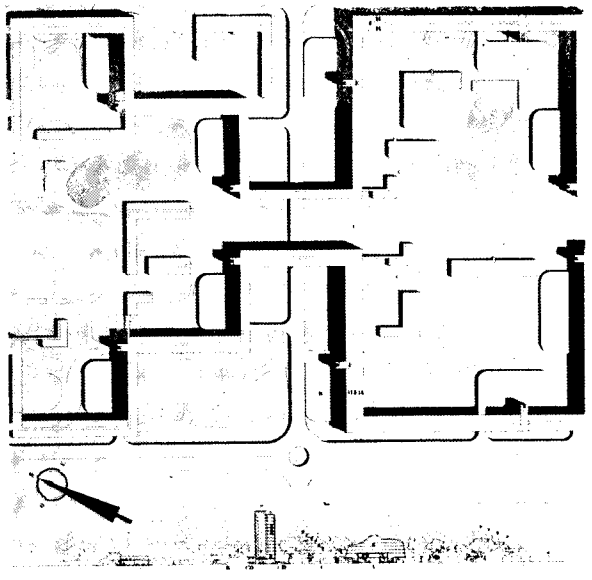

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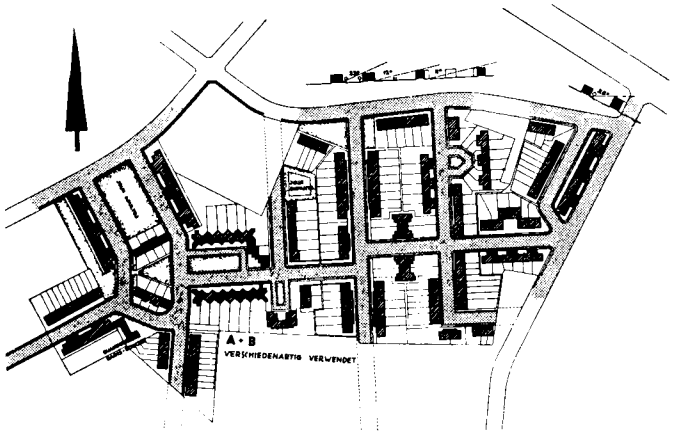

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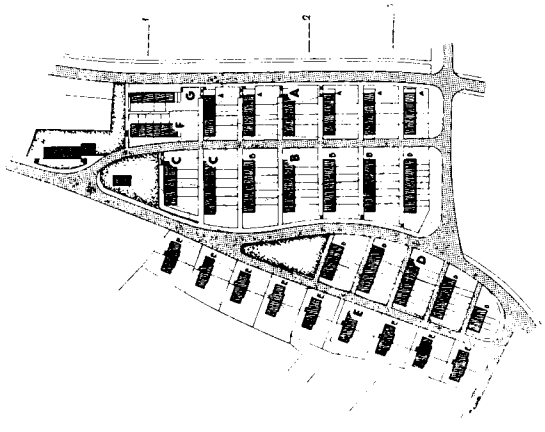

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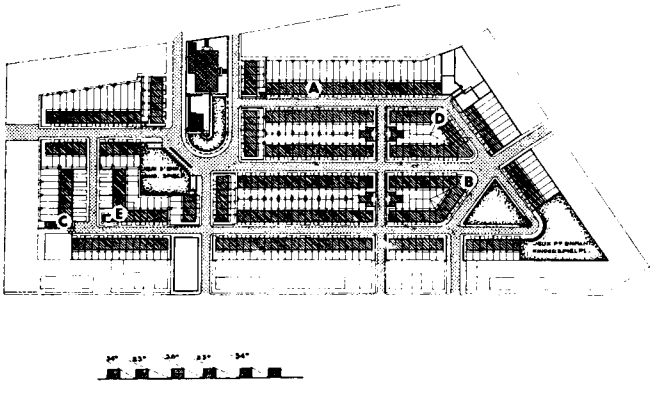

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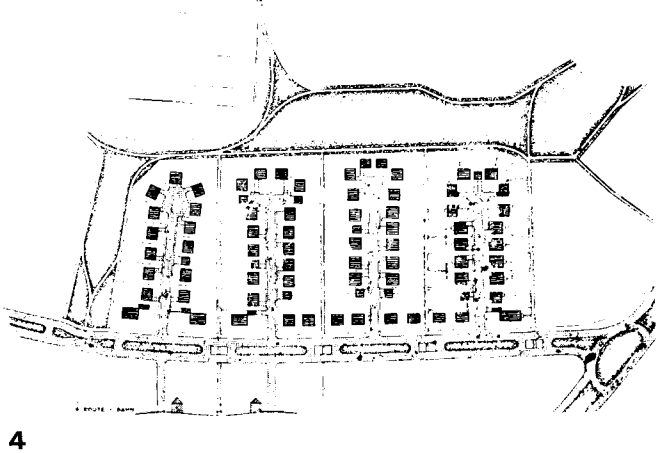

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30 YEARS OF SUBDIVISION DESIGN: 1. PRIXMORE HILL, LETCHWORTH, 1903. Garden city for middle-class residents. 13% street area, 8 dwellings per acre. 2. CITE MODERNE, BRUSSELS, 1922. Dwellings for functionaries with swimming pool, laundry and children's garden. 23% street area, 20.5 dwellings per acre. 3. KIEFHOEK, ROTTERDAM, 1925. Low-cost housing with school and church. 20% street area, 35 dwellings per acre. 4. RADBURN, N. J., 1929. 19.7% street area, 5 dwellings per acre. 5. NEUBUHL, ZURICH, 1930. Development for middle-class residents, 19.8% street area, 15 dwellings per acre. 6. VILLE RADIEUSE, PARIS, 1933. 9% street area, 81 dwellings per acre.

Plans and information from "Rationelle Bebauungsweisen"

lations and provisions for adequate deed restrictions. The subdivision shall comply with the provisions of existing zoning regulations and shall be protected by appropriate and recorded deed restrictions."

As the bulletin points out, zoning regulations by themselves rarely offer sufficient protection. They are too often loosely drawn, and are too easily changed. Deed restrictions provide very necessary supplementary protection, if a means of enforcing them is also provided. Sound legal advice on this point is essential.

6. *"Conforming to planning regulations.* Whenever the subdivision, or any part of it, falls within the jurisdiction of a city, county, regional plan, subdivision, platting regulations or state laws, the design and development shall comply with such plans, regulations and laws."

There are occasions, however, such as in New York City previously cited, where the developer should make every possible effort to obtain a change or variation of the existing laws.

7. *"Suitability of subdivision plan.* The subdivision plan must be suitable for the site and appropriate for the use intended."

8. *"Sound program with respect to mortgage and tax indebtedness."*

These points cover the primary technical requirements of a good subdivision. Over and above these, from the viewpoint of the eventual "home owner" and the social good of the community, there are other factors.

In a "for sale" set-up the crux of the problem, from the point of view of the community and the individual owners, is the responsibility of the development company. The paper plans in themselves mean nothing unless there is a substantial equity involved. The original intentions may be thoroughly sincere, but if the sales are slow or there is another financial setback, the promised community features, no matter how necessary, may never materialize and the population will be left stranded and facing the same old depreciation of property.

Indeed, it is hard to see how this can be avoided as long as a part of the object of the development is the sale of land, based on the erection of a few houses and large promises. There are too many economic obstructions to the complete carrying out of a "community" scheme by a company dependent for its future activities on profits from land exclusively. Deed restrictions have a peculiar way of putting all the obligation on the party of the second part; and even if the developers covenant to do all the other things implied by their published plans, there could be no compulsion or adequate remedy in the face of bankruptcy and foreclosure.

The "for rent" development presents a different picture, and I do not think its possibilities have been fully explored. A very excellent groundwork has been laid in some of the better "company towns," and of course Chatham Village in Pittsburgh is an outstanding example. The Greenbelt Towns of the Resettlement Administration will provide further experience, but these latter are on a scale and a social theory far beyond the scope of any private corporation. Certain features however are well worth the consideration of private enterprise.

The principal characteristics of a large-scale "for rent" subdivision are:

1. The larger amount of capital required, and the slower turn-over. This definitely puts it in the strictly investment category, and insures responsibility.

2. There are definite problems of taxation, schools, and utilities created by the sudden increase in population, which are in a large measure obviated by the slower growth of a "for sale" development.

3. The "for rent" developments of the past have for the most part been either multiple dwellings or row houses. There are admittedly some questions in regard to the management, maintenance and tenure of individual houses that would need very careful working out. I do not believe them impossible of solution, but a fresh attitude is indicated.

The above points may be briefly annotated.

1. The stabilizing effect of the larger equity cannot be questioned. It makes for security of possession, and likewise tends to establish (a) better relations with the parent municipality, (b) the carrying out of needed adjuncts to the development so that the whole enterprise becomes more stable. Exact data is not available, but on the basis of experience I believe that a "for rent"

GREENHILLS, Cincinnati, Ohio, seen from the air. *The town*, one of the government's Greenbelt projects, was laid out by Justin A. Hartzog and William A. Strong. The houses are built around the edges of large blocks. Each block has a park and footpath system. Community buildings are grouped at the business center.

development will show distinct offsetting economies of capital expense due to (a) large-scale construction, (b) greater bargaining power with public utility companies both for installation and rates, (c) utility construction economies made possible by ignoring individual lot-lines, (d) better financial rates and lower financial and legal overhead, (e) a quicker return on money invested although the turnover is slower. I believe a careful study of these elements would show the "for rent" type to be just as satisfactory financially as the "for sale" type, and from the investment angle more satisfactory, both for developer and tenant.

2. The sudden influx of population into a community already over-taxed and under-schooled may present serious problems that must be met from the very beginning by cooperation with the local authorities. Normally, the "for sale" subdivision adds population gradually: the taxable values and the school population increase together. Where the subdivision is completed as a whole, and occupied, the school population jumps far ahead of the gains in taxes. Most communities are definitely under-schooled. It does not alter that fact to admit that nearly everywhere the method of raising money for schools is obsolete. The existing situation must be met, and while there is no rule that can be cited, it is almost always possible to work out a method by which the developer can purchase school bonds which later can be used to pay off taxes, or to find some other device for assisting the local school-district.

3. The management of individual houses should present no greater difficulties than those of a series of group houses such as Chatham Village. Whether or not the maintenance would be higher is a very debatable point. Given sound construction, substantial materials, and careful tenant selection I can see no reason why it should exceed that for an equivalent class of multiple dwellings. It is often argued that a tenant has not the same interest as an owner in keeping up a house. Under ordinary circumstances this is obviously true. It should, however, be possible, and it would be exceedingly desirable, to work out a long-term lease that would provide the incentive to proper maintenance by the tenant.

Such a lease would be for perhaps not less than ten years. It should provide for a revision of the rent, up or down, according to a government index of living costs or some other base, let us say twice during the term. A release or sublet clause should make it possible for the tenant, for good and sufficient reason, to get rid of his lease either by a cash forfeiture or some other device that would protect the landlord from caprice. The landlord should also have a recapture clause that would enable him to evict undesirables. Tenant representation on a management board is a help.

A long-term lease, with security from arbitrary action, would give the tenant the same interest in the home that he would have if he "owned" it. There is no magic in the ten or fifteen per cent equity of "ownership" and its concomitant privilege of total loss. The feeling of "staying put" gives pride in neighborhood, the sense of home, and makes for care in use.

The "planned community" means nothing unless it is carried past the paper stage. I doubt very much if it can be done on the basis of "home ownership." The odds of debt are too much against it: debt of the developer to financial institutions, debt of the individual "owner," over all the bonded debt of the community. Ever so often these debts must be canceled: the case history of "A Hundred Years of Land Values in Chicago" is no joke—nor has the basic situation changed. The reclamation of blighted areas, the prevention of new blight, cannot be accomplished by methods of subdividing or re-building which are financially the same as they always were, no matter how admirable are the technical planning devices used to retard the process. Blight, under a system which must have a turn-over in order to continue to market debt, is a necessity. Only through blight can old debts be paid off, and only through that process can homes be supplied for two-thirds of the population. There is no use blinking the fact: the planned community, the integrated neighborhood, security of living, and safety of investment can come only from reform in the marketing and use of land and adequate provision of homes for the great mass of the population that now obtains shelter by the disruptive process of forced deterioration.

Dallin Aerial Photo

YORKSHIP VILLAGE, Camden, New Jersey, designed in 1921 by Electus D. Litchfield for the Housing Division of the Emergency Fleet Corporation, U. S. Shipping Board. The original plan included a village green, a community center with hotel, school, stores, and a community building. Since completion of this colonial village, other types of dwellings have been allowed to crowd in on the outskirts.

HOW TO PROVIDE HUMAN (SALES) VALUES

By CLARENCE ARTHUR PERRY
of the RUSSELL SAGE FOUNDATION

The following specifications constitute the main features of a subdivision that is designed to afford the maximum satisfaction to the average American family. Each of these standards can be made the subject of a sales argument. If you cannot quite meet a requirement, come as close to it as you can.

Size. Ascertain from your Board of Education the pupil capacities of their typical schools, those they consider the most efficient. Multiply those pupil capacities by six, and you will have a series of optimum sizes for the population of a subdivision. Cities vary greatly as to the preferred school size. So long as you meet the requirements of your local board and make sure that your development will have a school centrally placed—that is the main consideration. If it happens that you have more land than is needed for one school district, cut off by a main street that portion of your plot which can be best developed in connection with its adjacent area and handle it as a separate proposition.

If your plot is so small that, even when built up with the highest practical density, it will still not make a neighborhood unit, then try to fit it to that adjacent area which, thus supplemented, will most closely constitute a desirable school district. The home-seekers who constitute your best market generally consider good school facilities a prime requisite.

A neighborhood unit district—designed for the motor age—should be defined by main or arterial highways. If any edges of your plot are now marked by narrow streets or by property lines only, then it will be best to widen such streets or lay out new wide highways, at the expense of your own area. Do not use a railroad, a stream, or a park as a boundary. If a park happens to have a thoroughfare near to and parallel with your border, so that it will take the traffic which otherwise would traverse your development, then you can back up lots against the park. *Street safety* is a money-getting slogan.

Having made it easy for through traffic to by-pass your development, you will then feel free to make the internal streets suit the particular needs of your residents.

Internal Streets. The directions in which your people will move to and from work should determine the directions of your leading streets. Besides the traffic junctions, transit stops and avenues most used by the workers, the school and other institutions at the center of the development will be a common daily destination for children and adults. Your street net should enable direct movement to those points.

In width these streets should be adapted to their prospective traffic loads. A street bounding a local park, which will be continually crossed by children, might well be adjusted to one-way traffic. Do not be disturbed if the narrower streets, with cars parked on them, tend to slow up traffic. If they make rapid driving impossible, intelligent parents will prefer them. For the purpose of discouraging outside traffic, stagger your streets at the borders so that they do not jibe with the internal streets of the adjacent development. Cul-de-sac planning is all right so long as it is divorced from the super-block with its long straight-away main stem highway. An underpass may enable school children to avoid its dangers, but that will not remove the danger of neighborly and playtime crossings at many other points in its course through the development.

A thoughtful father drives carefully near his own home and those of his neighbors. In a residential district he is always near neighbors. He will be glad to drive slowly within his community, if he knows that in a couple of minutes he will enter a boundary highway planned for speed. If your street net meets this modern safety standard, you can point to it with pride.

Institutional Sites. In the center of the subdivision it will be wise to reserve adequate sites for the following institutions: An elementary school, a branch public library, and at least one church. If several denominations were interested in advance, it might be well to reserve two church sites. However, for a parish that will include adjacent territory, a site might well be provided, not at the center, but at some convenient street junction near or on the circumference. These various sites could be laid out in such a way that, if they were not finally taken up, they could be improved for residential use. Providing for them in the design at the outset makes it certain that, if they are needed, they will contribute to a fine neighborhood composition.

Recreation Areas. In laying out a subdivision as large as a school district, substantial economies in street area, paving, and public utilities can be gained. These economies are generally sufficient to make it possible to provide just as many building sites and set aside 10 per cent or more of the total area in parks and recreation spaces.

Functionally, the recreation areas might well include the following: A school yard of from two to three acres accommodating games and sports for the smaller children; for the older boys a play field large enough for baseball or football in season; and for the girls a field large enough for soccer. Some-

where in the neighborhood plan there should be a number of tennis courts. The balance of the area saved could well be devoted to small parks, circles, or ovals in appropriate locations. If there are a few apartment houses around the business districts, they should face upon, or have the use of, good sized, landscaped courts. Of course the best use of your particular topography, existing trees, and other kinds of planting, should be made in the laying out of these various spaces. If necessary to gain a good recreational layout, a few inches might well be taken off the depths of the lots.

Retail Shops. Careful research shows that in a neighborhood community from thirty-five to forty feet of business frontage might well be allocated per 100 persons of the final population. The stores should be located at the point, or points, which the residents pass daily in going to and from their places of work. If this daily exodus occurs mainly at one point, that is the right place for a market square. If there are two or three other points which will serve as portals, the total business frontage should be divided up among them, proportionately to their probable traffic.

In any case these shopping districts should be bunched, since in that form the stores are more conveniently reached. Where possible, parking spaces should be provided and also service lanes, permitting deliveries from the rear of the store. Market squares located on main highways should be set back far enough to provide through travelers with a safe haven while attending to their shopping wants. There is a rich increment of value in these shopping districts, and your subdivision should be planned in such a way that you will get the benefit of it.

Restrictions. The restrictions should be so devised as to perpetuate the character and the quality bestowed upon the development by the original plan. They should provide for maintenance fees and for the transfer of the rights and duties under the restrictions to a local nonprofit property owners' association, after the promoters have withdrawn from the development. Such a set-up of the restrictions will be a valuable talking point, since without a property owners' association many restrictions fall by the way because there is nobody public-spirited enough to go to court and enforce them.

In a development meeting these requirements American families will find things they have long sought but seldom found in the settlements where they have had to make homes. Safety and tranquility, the right environment for children, the institutions required for cultural and social occasions, an address that represents them and of which they can be proud—how many real estate subdivisions offer home-seekers qualities and assets such as these? Plan for them in your development and you will find the mortgage money coming easily and your customers helping you to make a quick get-away.

MECHANIZATION OR INTERGRATION?

By ALLAN F. KAMSTRA and SAMUEL RATENSKY

Allan Kamstra, a native of Holland, worked with Henry Wright and Clarence Stein on Chatham Village, Hillside, and Radburn. Later he was Town Planner for Resettlement Administration's Bound Brook project, and consultant on the Greendale project. He is now Technical Director for Paramount Communities. Samuel Ratensky studied with Frank Lloyd Wright at Taliesin, was executive secretary of the Housing Guild, and then was in the Resettlement Administration's Research Department. He is now Research Director for Paramount Communities.

We are concerned here with the patterns of dwelling construction and land development which we may expect to see in this country in the next five years. The quantitative shortage of dwellings will tend to make potential demand increasingly effective by economic or political means. We are concerned therefore with the question of which line of development offers the most fruitful means for immediate application and long-range improvement. Any simple answer to this question tends to be an over-simplification. The patterns in so far as they will differ from older and unsatisfactory patterns will be projected through different lines of industrial development, borrowing what is immediately available from each and subject to the controls of economic pressure and legislative stimulus. They must inevitably bring with them corollary changes in methods of land planning, financing, and distribution. The interdependence of these factors is so strong that progress in any one of them must be paralleled by feasible progress in the others. The basic problem will remain, regardless of the production of the dwelling unit or the equipment that goes into it: how to plan land properly, how to relate land planning to community organization and a changing industrial pattern. Legislative economic means for such planning do not exist within our political framework, nor is the development of a technique sufficient to effect it. We can reasonably hope however for the development of an analytic technique so geared to industrial progress as to have immediate application, and so carefully studied in relation to these more basic problems of our economy as not to be in conflict with progressive action on a wider front.

Practically all projected solutions to the purely industrial problem of efficient production of shelter have, in general, been based on the following methods:

1. A higher degree of mechanization in production: usually involving the substitution of a greater amount of fabrication in the shop for assembly in the field and standardization of parts.

2. A better integration of existing and improved processes functionally organized to serve the market of potential but ineffective demand.

THE PREFABRICATED HOUSE

For many years past we have been subjected to much romantic and uncritical enthusiasm for the "prefabricated" house. The term has been loosely applied since the major elements in the conventional contemporary dwelling are now largely prefabricated. In casual use the term has come to mean prefabrication applied to larger units in the elements of walls and floors, and some new aesthetic integration of these with the equipment in a dwelling. Undoubtedly much profitable investigation along these lines is possible. New structural and aesthetic possibilities have been opened by plastics, pressed sheet metals, and insulating materials. Ultimately, we hope, these materials, creatively synthesized and efficiently fabricated, will contribute to a superior end-product available to a larger section of the population at a lower price.

The prefabricated house has unfortunately been publicized as offering all things to all men. Despite the fact that we have never learned how to relate the archaic custom-built house properly to the land or to the economy of the community, the prefabricated house is expected to solve all of our housing problems, some of our land problems, and some of our governmental problems; it has even envisaged a new industry which would bring back prosperity to a depression-torn nation. Yet its proponents have demonstrated no intrinsic merit which will cause it to solve any of these larger problems. In respect to proper land planning, the prefabricated house unit has no advantage over the custom-built job. Its greater flexibility for adaptation to the needs of the family unit tend to indicate an even more unstable relation to the social units—the neighborhood and the community.

THE MOBILE HOUSE

Of more recent date we have seen the prefabricated house prematurely take to wheels and emerge as the trailer, a variation of the same family. However much you or I may dislike the idea of perennial migration, large numbers of people are buying trailers and the trailer is rapidly achieving a high order of technical development. We are told there is "big" money behind the trailer, and a big market for it. Ergo the trailer is not only an ideal solution to the camping trip, but an important factor in residential construction, in city planning of the future, and a solution to some of our housing problems.

Investigation tends to indicate that this market consists of a permanent market which is inconsequential from the point of view of residential construction, and a very important specialized and temporary market. The permanent market comprises:

1. Those people who choose a migratory life as a means of escape from themselves, and who find in the trailer a modern ivory tower against a changing landscape.

2. Certain categories of traveling salesman.

3. Elegant campers.

The temporary market, important because it represents a social manifestation of economic maladjustment, comprises:

1. Home owners who seek escape from the insecurity of home-ownership and heavy tax burdens.

2. Workers with highly seasonal or itinerant employment.

3. If the price is brought low enough, agricultural workers who migrate with the picking seasons.

Among the significant contributions which the trailer may make to our living pattern are:

1. A much faster application of new materials, processes, and concepts due to the absence of craft-labor regulations and obsolete building codes in the production of trailers.

2. A liaison between the aesthetic vocabulary of the house and that of the auto. This may ultimately pave the way for a popular acceptance of an un-"styled" prefabricated house.

3. A liberalization and modernization of building codes.

4. A better public understanding of the intimate relation between municipal taxes and residential development. If any widespread dispersion of population takes place via trailers the burdens of debt in many municipalities will have to be shifted onto the nomad. This may cause tremendous dislocation of existing units and functions of government.

INTEGRATION

"By definitely meeting the fundamental and elementary requirements of good modern dwelling forms and their capable organization."

Four basic premises underlie any effort at integration of building processes to serve the market of potential but ineffective demand. They are:

1. The development of an analytic planning technique.

This will require a synthesis of various techniques implemented by methods and information from the fields of economics, finance, production, land planning, engineering, architecture, construction, purchase, public relations, and administration.

The core of such a technique, however, will be proper land-planning. Many years ago the late Henry Wright developed living patterns that were immeasurably superior in amenity and economy to accepted patterns. Except for isolated instances they were never applied, and even in these instances were in part invalidated by the traditional economics of their application. Nevertheless the heritage of method and criteria he left us is the form on which we must shape our technique—modifying a consistent line of economic analysis by a new human factor—the community rather than the individual.

2. The organization of large-scale home-building companies as employers of this technique on an industrial rather than a professional basis.

Characteristic of such companies will be:

a. Continuity of operation and experience, and the assembly of a body of comparable data which will serve to document the technique.

b. Large-scale purchase of materials and equipment geared to a planned volume of production, and consequently the eventual elimination of many of the wasteful intermediate costs of distribution which are symptomatic of an unstable market.

3. The planned neighborhood as the unit of development.

This will provide:

a. Protection of social and economic values by means of the best available safeguard—a homogeneous pattern of residential buildings and open spaces large enough to maintain its character against encroaching deterioration.

b. A realistic basis for positive community and city planning.

c. A sound economic relation to the tax structure of the local unit of government, and consequently a lower cost-of-use to the consumer.

4. Single ownership and management of a large core of rental-dwellings in each planned neighborhood.

This will provide:

a. Flexibility of use and stability of investment in relation to changing patterns of industry and employment.

b. Soundness of construction and equipment as protection against deterioration, and therefore lower cost-of-use rather than lower capital cost.

c. Economies inherent in centralized control, large-scale purchases of materials and services, and consequently lower cost-of-use.

In varying degree these will be part of any large building program, whether controlled by private industry, government or both; any large volume of residential construction which does not recognize them will repeat, at increasingly callous social cost, the mistakes of the past.

A building program which accepts these four premises would supply desirable physical environment, with infinite possible variations for every area—economic and geographic; limited, however, in extent and effect by availability and price of land, and availability and terms of financing.

In our cities and suburbs we have wasted our land—a natural bounty of which we have almost as much as we have air—exactly as we have wasted our forests. We have capitalized our wishful thinking so that land which is now desirable for conversion to residential use according to a rational plan must bear the heavy burdens both of our waste (through taxation) and our wishful thinking (through excessive and unrealizable valuation). Nevertheless, in many of our large cities, in most of our smaller cities, and in a great many satellite and dormitory towns, large parcels of land still in single ownership, or not too multiple ownership, are available for use in the start of such a program. But of course their tax burdens and price will in many cases limit their use to middle income groups.

Availability and methods of finance more than any other single factor will be the controlling force, both as the stimulant for the size of such a program, and the solvent which will make it reach down into the lower areas of potential demand. Some form of public subsidy, logically a redistribution of wealth, will be required to reach the lowest income groups, since their housing problem is basically economic. In addition some form of governmental stimulus and control will probably be necessary to bring sufficient investment capital into the program to make private enterprise effective on a large scale.

We believe that large home-building companies, employing a consistent planning technique for the building of planned residential neighborhoods, carefully geared to economic demand, offer the soundest field of long-term investment available to private capital today.

Since demonstrable economic and social values of such a building program are contingent on large-scale continuous operation, and since investment capital is conspicuously cautious about entering this field after its mistakes of the past, it may be necessary for some time to come for proponents of such a movement to think and talk in terms of large-scale operation, while their work is subject to many of the limitations of small-scale operations.

1 BUCKINGHAM, CLARENDON, ARLINGTON COUNTY, VIRGINIA

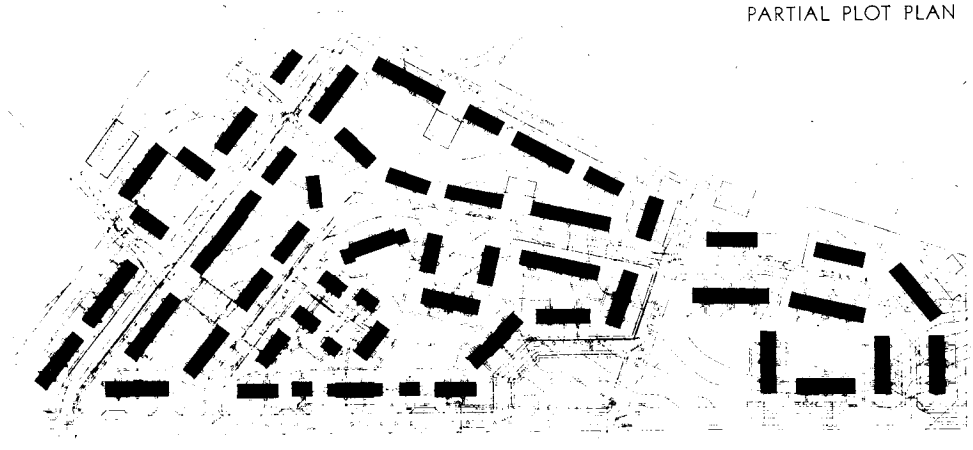
DEVELOPED BY PARAMOUNT COMMUNITIES, INC.

CONSTRUCTION VIEWS

TYPICAL HOUSE

FOUNDATION: footings, concrete; walls, structural hollow tile. STRUCTURE: exterior, solid brick, tile back-up; interior, gypsum block and plaster; bath, tile. ROOF: slate. FLOORS: oak; bath, tile; concrete T-beam slab construction. WINDOWS: wood double-hung; standard glass; bronze screens. HEATING: hot-water gravity return system. INSULATION: Rockwool in attics; Celotex on flat roofs. WATERPROOFING: walls, mastic; spandrels, membrane. PAINT: walls, casein.

PARTIAL PLOT PLAN



Buckingham, located near Clarendon, Virginia, across the Potomac from the nation's Capital, is planned as a residential community, consisting of two-story group houses ranging in size from 2 to 16 families, and one three-story building containing 18 families. The section under construction at present will provide accommodations for 510 families. Ultimately the development is planned as a community of 2,500 families. Its land coverage is less than 20 per cent, and all open spaces are developed in landscaped areas and play spaces.

Buckingham is a rental development, planned and constructed as an investment to be maintained under continuing single ownership, to serve families of average annual income ranging from $1,200 to $3,000.

Buckingham is 15 minutes by car, not more than 20 minutes by bus from the heart of Washington. No particular orientation was preferred in planning the site, but the buildings have been arranged for a variety of orientations in accordance with the requirements of the site and block planning.

The site of the present development is crossed by one street already dedicated (Pershing Drive). Continuation of another existing through street was required. These fixed elements in large measure determined the street pattern. Footpaths are provided in the interiors of blocks, which are landscaped and contain play spaces for children of preschool age. The arrangement is such that some window in almost every apartment has a direct line of vision to a play space.

Present plans provide for:

(1) A shopping center.

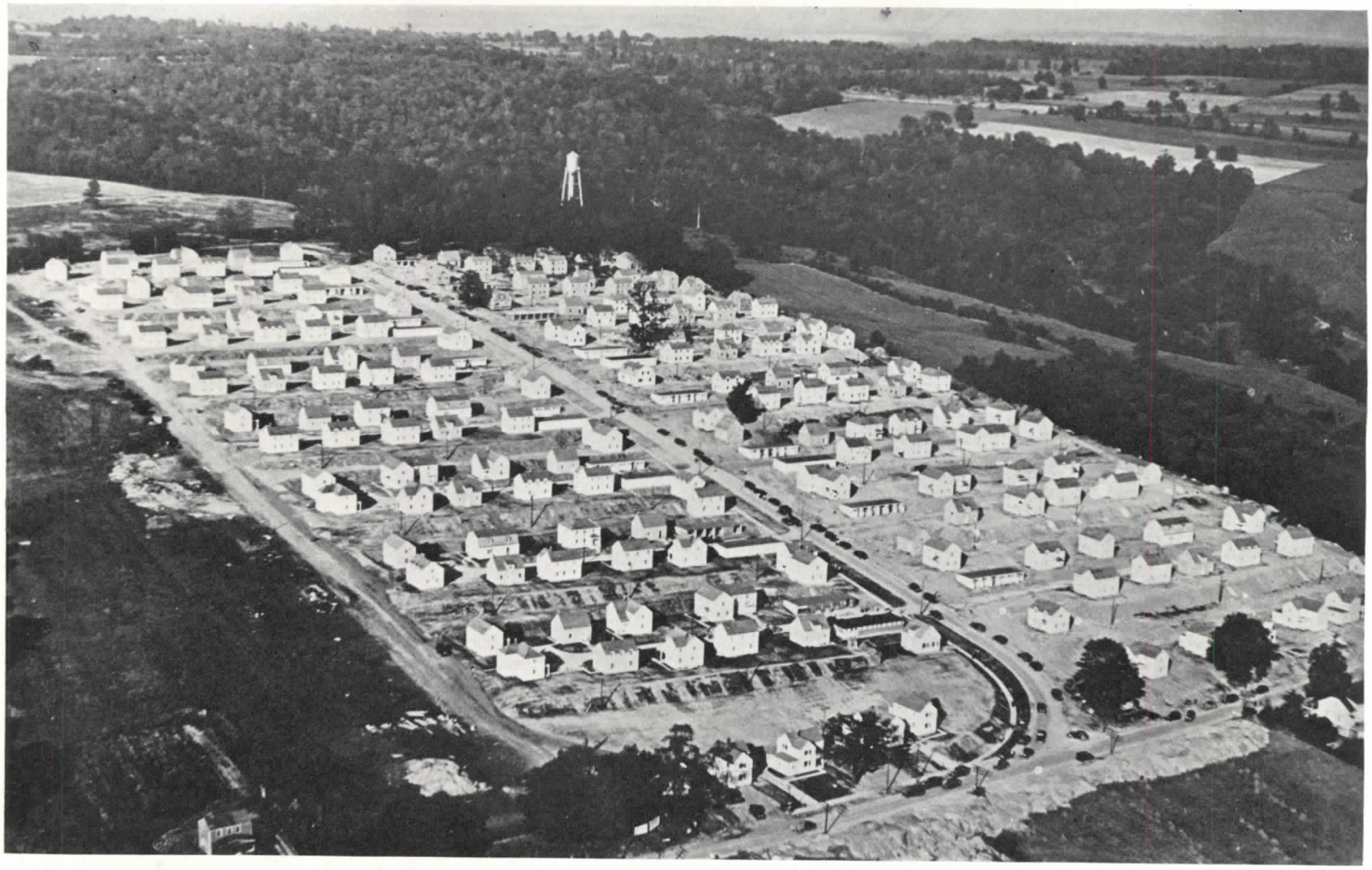
(2) Space for community rooms, tenants' workshops, and an auditorium and nursery school, if desired by tenants.

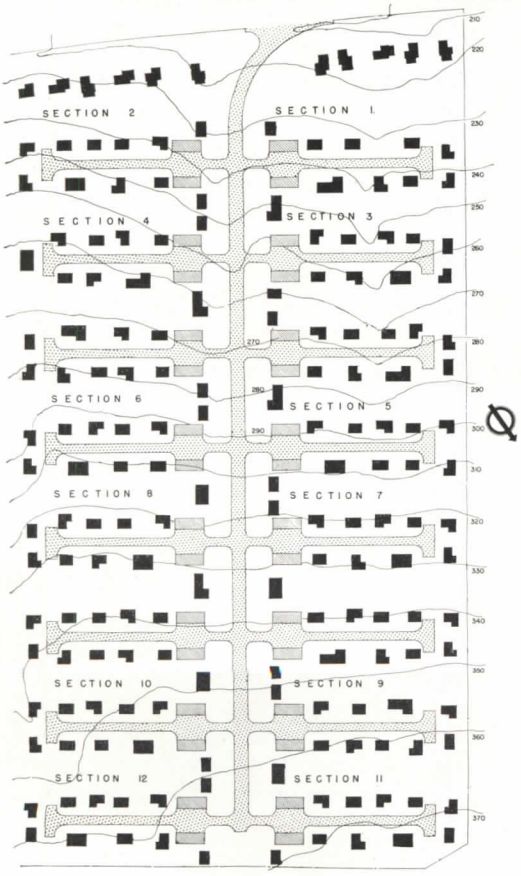
(3) Playground for children 5 to 11 years of age. A fully equipped playground is planned for children in this age group.

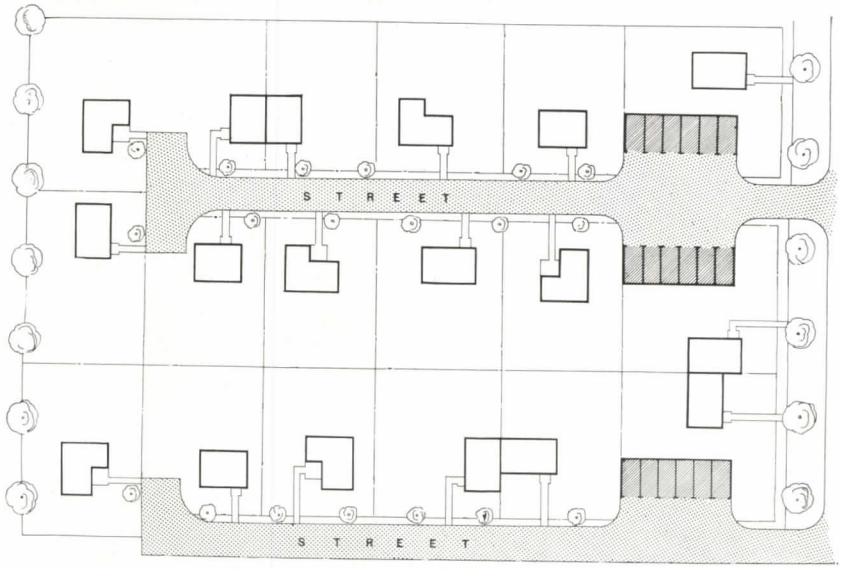
Future development is to include a medical center.

Group houses range from 2 to 16 families; 2, 3 and 4-room apartments on one floor; 5, 6 and 7-room apartments on two floors. The total area of present development under construction is 26.5 acres.

2 HILLCREST, MEADVILLE, PENNSYLVANIA







DETAIL OF TYPICAL CUL-DE-SAC

Completed five months ago, Meadville's Hillcrest community is unusual in promotion, financing and construction. Expansion of two large industries in the town caused a serious housing shortage, both in medium and higher income classes. The Meadville Housing Corporation, sponsored by the Chamber of Commerce and the local Central Labor Union, was created in the latter part of 1934. An equity of $212,000 was obtained through the sale of stock in the Corporation to individuals and firms. The State com-

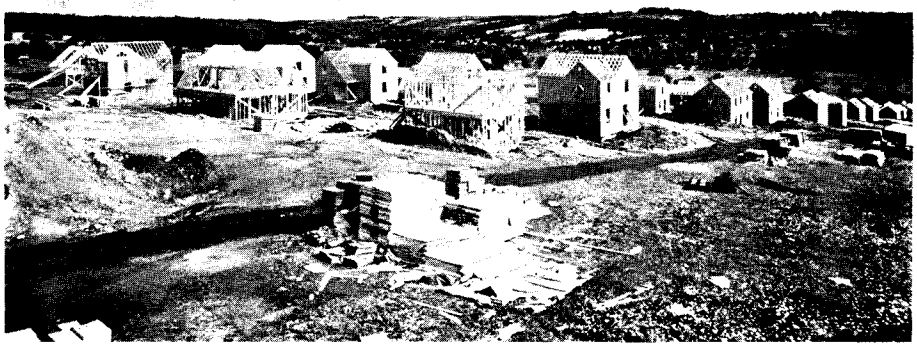
pensation insurance fund gave a mortgage of $800,000, which the FHA insured at a rate of 4%, lower than the interest rate given to any similar project. Amortization of the loan is fixed at 30 years. When the loan is paid off, stockholders, who have agreed to waive all interest rights until then, come into full possession of the property.

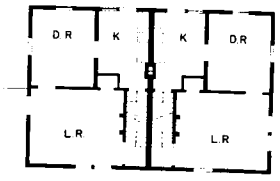
The plot occupies forty-three acres of hillside, twenty-seven acres of which were used for building purposes. Five acres were reserved for future use, and eleven acres were given to the city of Meadville for park area. Lots are 60′ wide by 80′ deep, and double houses stand on double lots. The plot arrangement is such that all but twenty-four of the houses are on terraces rising from the side streets. There are no sidewalks on these side streets, but concrete steps lead from the houses to the roadway.

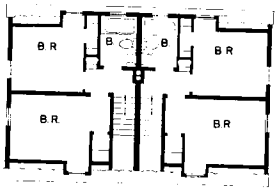
There were no utilities on the area selected for development. Mains were laid by the city water forces and, according to local custom, there were no assessment charges against the property served. Power, gas and telephone companies installed their own services. Everything else, including landscaping, was included by the Corporation in the general contract.

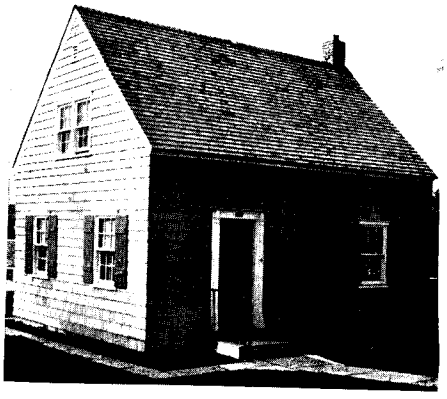
Construction was along the line followed in large building operation, the first example of this in small-house building. Sewers and storm drains were first laid on the western half of the project. Then, in accordance with the program laid out, work proceeded up that hillside until completed, when work began on the eastern half. Pull-scoop shovels for cellar excavation were followed by a concrete mixer and its crew. While this was being done, the plot was graded with bulldozers and a power grader. The framing job was done by 140 laborers divided into several gangs, each doing a specified job, lower floor joists, wall and roof framing, side boarding, shingling, etc. Once this program was well started, fifteen houses were framed in each five-day week. Exterior and interior finishing was carried on as soon as the framing was completed.

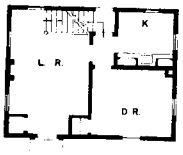
Large order purchasing of standard materials and coordinated building operation account for an estimated 25% saving over individually built houses of similar size and quality.

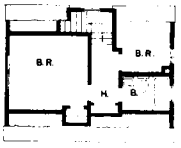


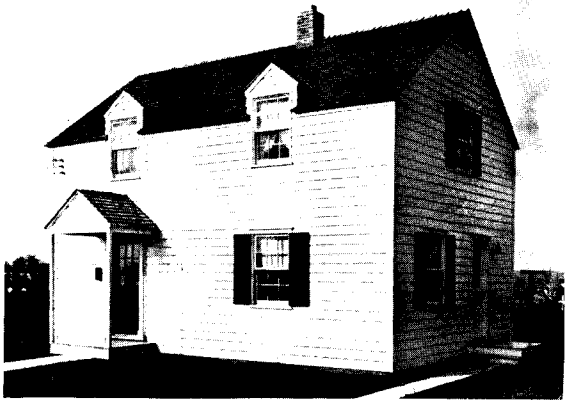


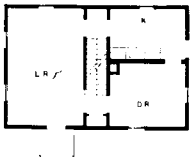


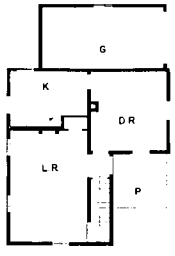


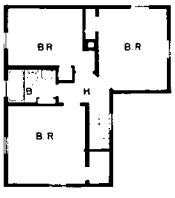


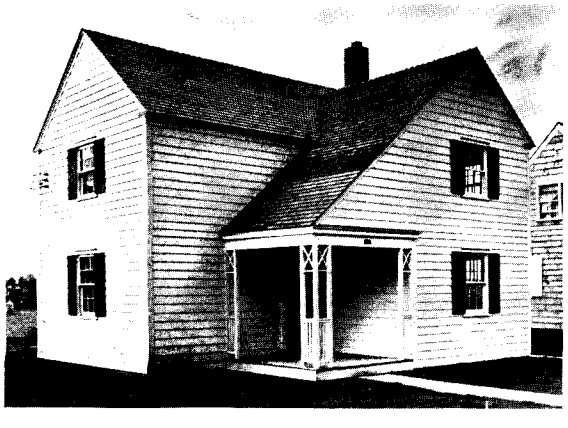


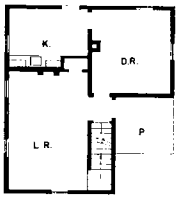


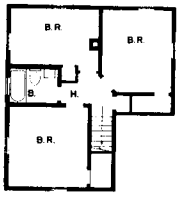












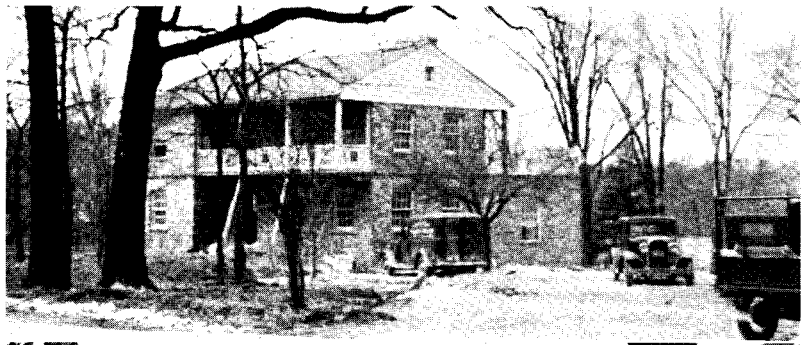
FIVE TYPICAL HOUSES

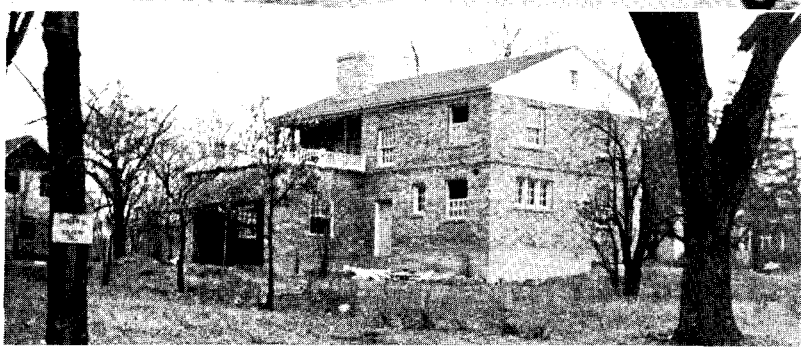
CONSTRUCTION

FOUNDATION: walls and cellar, lightweight concrete blocks on 6"x16" poured concrete footings. STRUCTURE: wood framed; exterior, sand finished clapboard on some houses, shingles with diagonal sheathing under walls on others; interior, plaster over metal lath backed by insulation; wallpaper on plaster (design to be selected by tenant). FLOORS: hardwood (oak) over subfloor; cellar, 3" concrete. BUILT-IN FEATURES: "Kitchen Maid" cabinets; laundry tubs; linen cases. LIGHTING: wall and overhead fixtures; wall outlets. WINDOWS: double-hung wood sash, fitted with storm sash; storm doors. HEATING: warm air; natural gas furnace in 150 houses, and coal furnaces in 52 houses; gas-burning fireplaces in all houses in addition. INSULATION: Insulite and Reynolds Metallation. PLUMBING: copper piping for all house connections and laterals from mains.

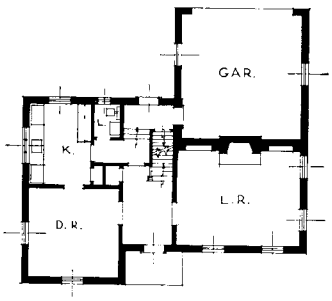
3 DOUGLASS SUBDIVISION, KIRKWOOD, ST. LOUIS COUNTY, MO.

HOLDEN, McLAUGHLIN AND ASSOCIATES, CONSULTING ARCHITECTS

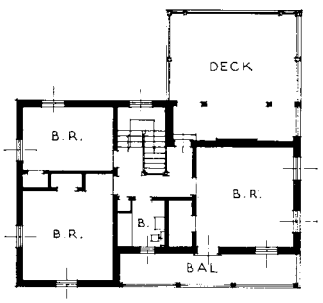




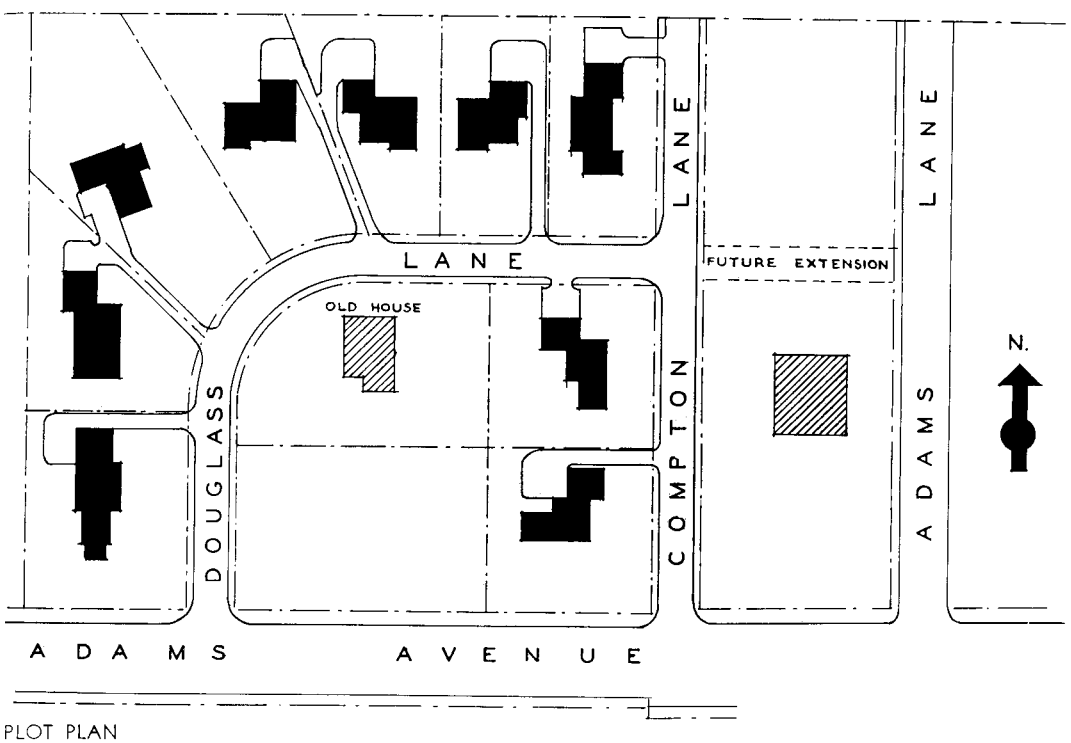
SOUTHEAST AND NORTHWEST VIEWS



FIRST FLOOR



SECOND FLOOR



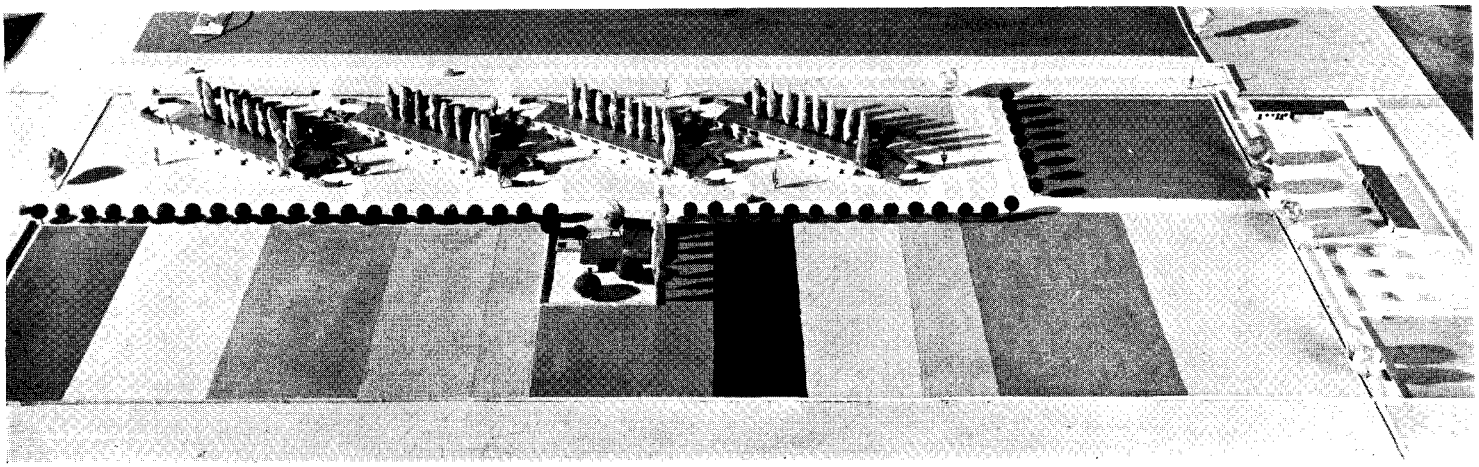
PLOT PLAN

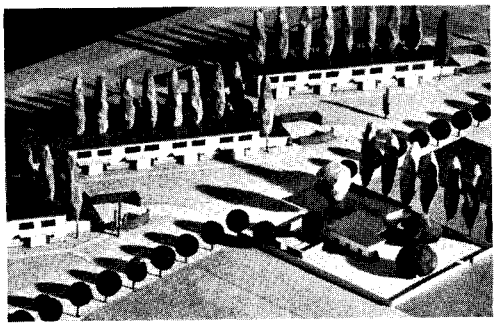
This is a subdivision on the extensive grounds of an old house which was no longer an economic asset.

A country club adjoins the property and a shopping center is within three blocks distance. All the houses are of the single-dwelling type of medium size with basement and two-car garage.

The one illustrated has concrete foundations, solid brick exterior walls, slate roof, wood floors, wood double-hung windows and copper screens.

4 CHANDLER TRACT OF ARIZONA PART-TIME FARMS, PROJECT OF RURAL RESETTLEMENT DIVISION OF





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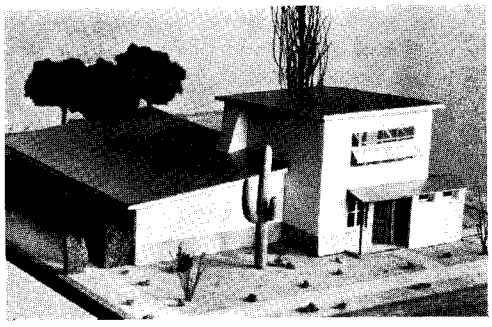
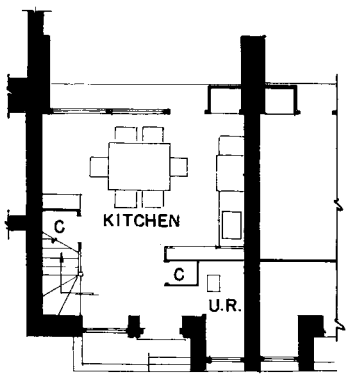


2

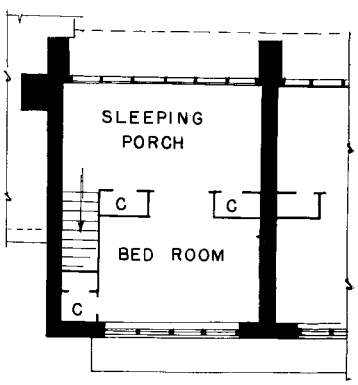
3

DESIGN STAFF, ARCHITECTURE AND ENGINEERING SECTION

BURTON CAIRNS, Chief
VERNON DeMARS, Regional Architect
CORWIN R. MOCINE, Regional Landscape Architect



FIRST FLOOR

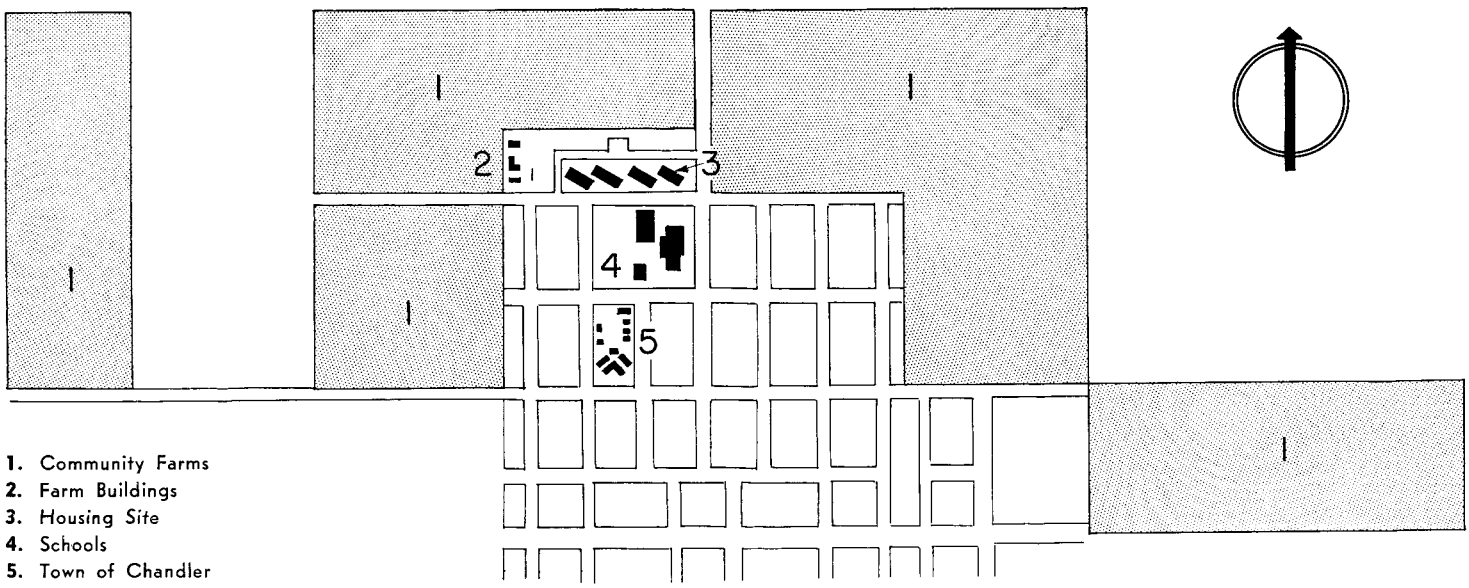


SECOND FLOOR

1. View from the community house. 2. Typical dwelling and group of garages. 3. Rear view of dwelling showing vegetable and flower gardens.

RESETTLEMENT ADMINISTRATION, DEPARTMENT OF AGRICULTURE

REGION IX, JONATHAN GARST, DIRECTOR



1. Community Farms
2. Farm Buildings
3. Housing Site
4. Schools
5. Town of Chandler

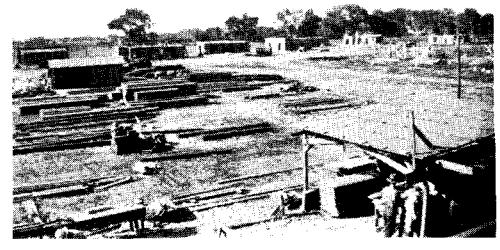
Row houses of adobe construction will house farm workers whose migratory habits have been engendered by incomes sufficient only for mere subsistence. Regular occupations of the workers are packing lettuce, driving tractors or trucks, and doing farm work, but all this work is usually of a temporary character. As the project is to be self-liquidating through rental revenues and not through sales, row houses are a practical and economical solution. In Arizona climate is an important factor in determining orientation, and the rows have all been placed so as to catch prevailing winds, and to obtain protection from the direct rays of the afternoon sun. All houses face in the same direction. Garages for cars, which are a necessity for transportation to work, are attached to units in groups of three.

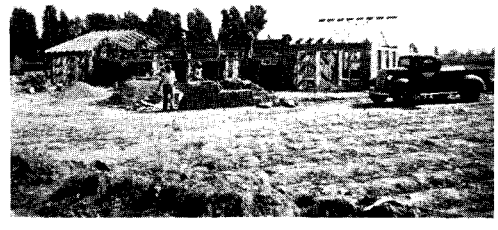
The project supplies 350 acres of farm lands surrounding the housing tract on which marketable crops and livestock will be raised by the laborers in periods of temporary unemployment. This will supplement the cash income of tenants, and with the minimum but adequate housing will help to create and make possible higher standards of living. In addition to crop lands, each apartment will have a small garden where flowers and special vegetables can be grown.

All sleeping quarters in these dwellings are on the second floor, where complete cross ventilation is provided. There is adequate sunlight during the winter for the living room, but the projecting second story and wide eaves give shade in the hottest weather. The dwellings will cost approximately $1,200 each.

The community building will have facilities for a day nursery, for social gatherings and for various other activities. Farm buildings for community use include a cooperative dairy, storage for farm implements, silos, henneries.

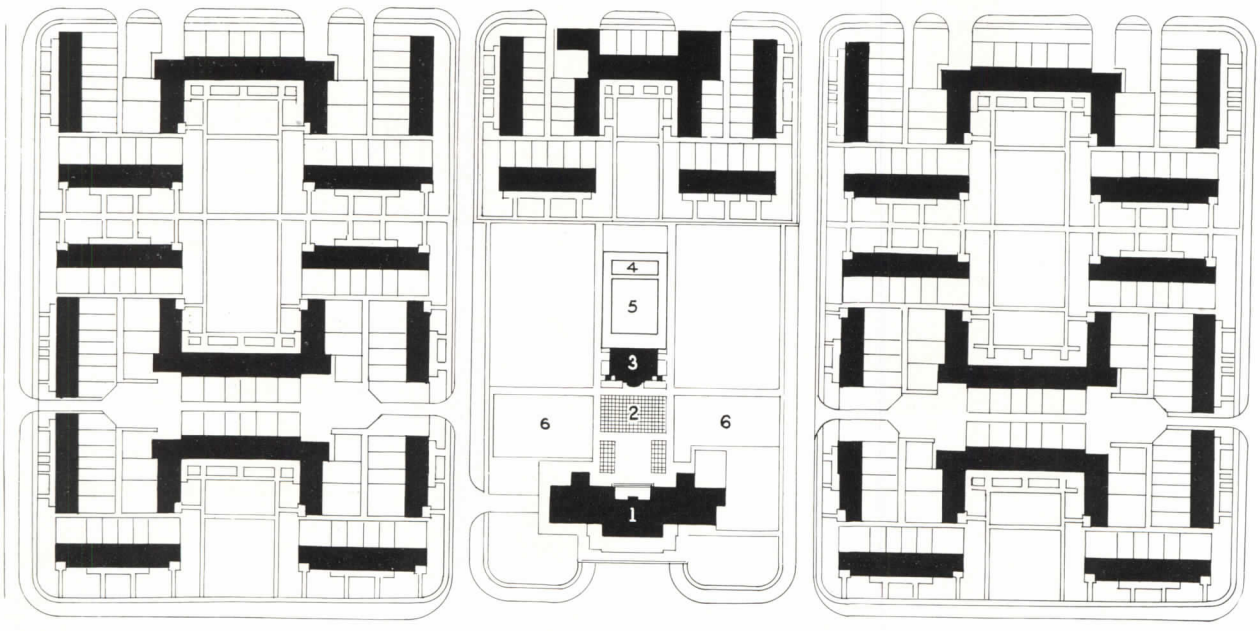
WOOD AND LOCAL MATERIALS
are used in Arizona Resettlement constructions.





5 LIBERTY SQUARE, MIAMI, FLORIDA

Photographs courtesy PWA



PLOT PLAN

LEGEND

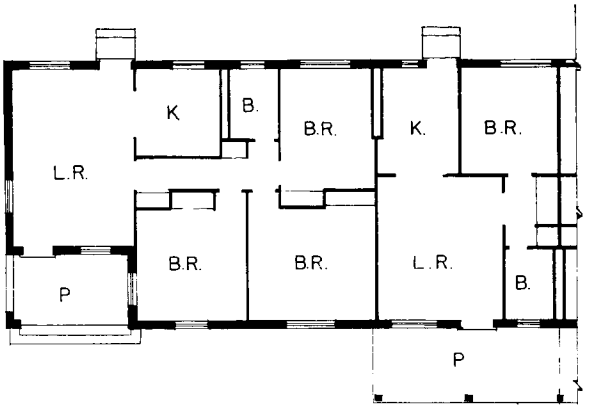
1. Community Building
2. Dance floor
3. Bandstand
4. Wading pool
5. Swimming pool
6. Play space

DETAILS OF CONSTRUCTION

FOUNDATION: concrete. STRUCTURE: 8″ concrete; exterior walls, stucco finish; interior walls, plaster on metal lath. ROOF: white asbestos shingles. FLOORS: wood. WINDOWS: casement; wood blinds.

Liberty Square, recently opened PWA housing project, stands on the outskirts of the city of Miami. Its 243 units are made up of one- and two-story group houses containing from two to five rooms each. They will house only families who previously lived in sub-standard homes and whose income does not exceed five times the rent plus the cost of facilities. Each unit is supplied with sanitary equipment, modern ice box, oil stove, and hot and cold running water. The site plan calls for a community building, centrally located, with accommodations for a day nursery to care for children of working mothers, a large auditorium, and several stores. Behind the community building is an open, terrazzo-paved dance floor. The swimming and wading pools are flanked on either side by large grass plots. The arrangement of the buildings allows court space for children's playgrounds and garden area for adults. The construction is considered hurricane-proof.

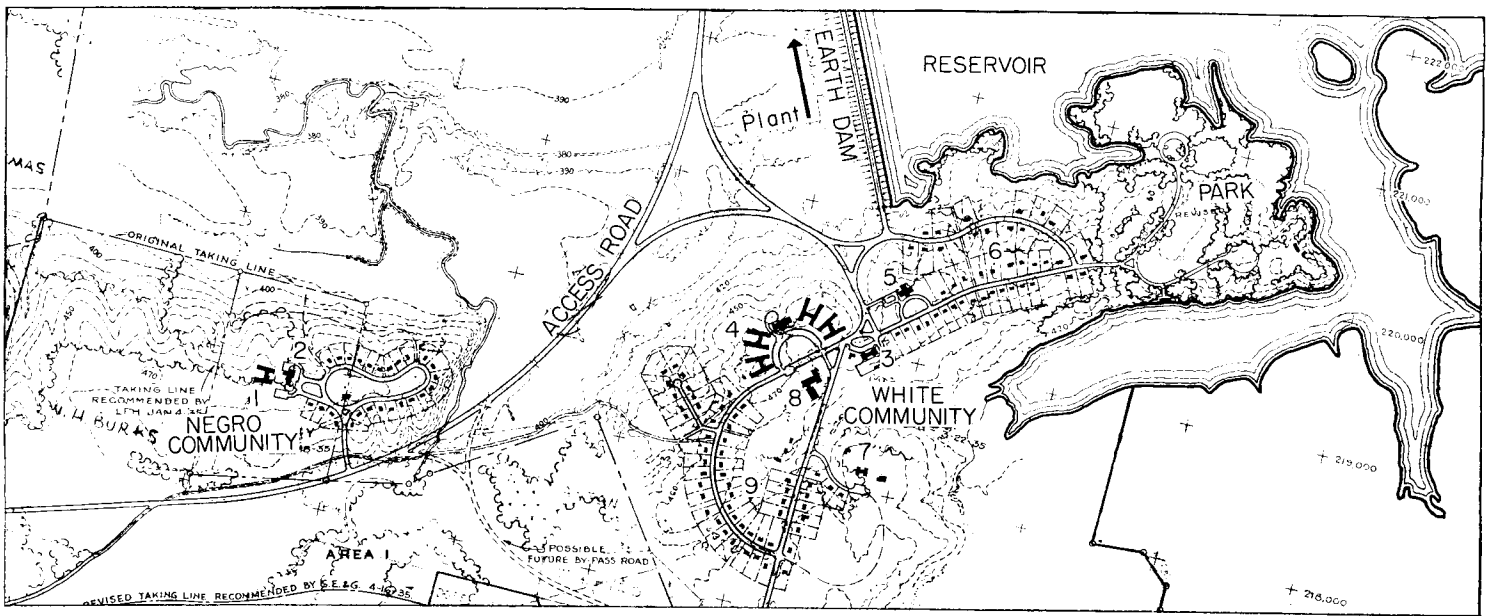
TYPICAL ONE-STORY HOUSE



TYPICAL TWO-STORY HOUSE

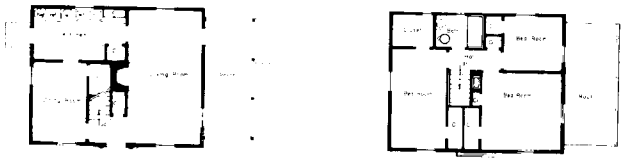
FIRST FLOOR SECOND FLOOR

6 PICKWICK LANDING DAM, TENNESSEE
PWA HOUSING PROJECT



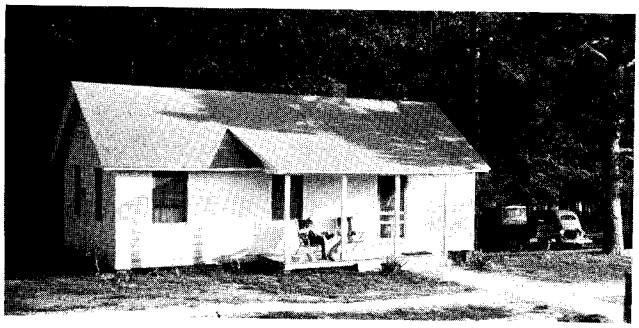
1. Negro community. **2.** Cafeteria. **3.** Stores. **4.** Bunkhouses and cafeteria. **5.** Hospital. **6.** Permanent and semi-permanent houses. **7.** Town office. **8.** Community building. **9.** Permanent houses.

A



HOUSES IN (A) WHITE AND (B) NEGRO COMMUNITIES

B



Permanent and semi-permanent houses for workers at this Tennessee Valley Authority plant are arranged along two-lane roads and in culs-de-sac. There is one group of dwellings for white and one for negro workers. Community services and buildings are located so as to care for both groups. This is a self-contained community with various grades of TVA workers as inhabitants and, as it is not in direct relationship to nearby towns, community facilities are of importance.

The actual planning problem covered an area of a mile and a half square, but only portions of this area were developed. The main traffic road by-passes the residential section, and access roads connect directly with main through highways south of the river, and by ferry, with main routes north of the river. There are no cross intersections in the residential areas. Main arteries follow ground contours but are generally northeast and southwest. Orientation of houses follows street directions.

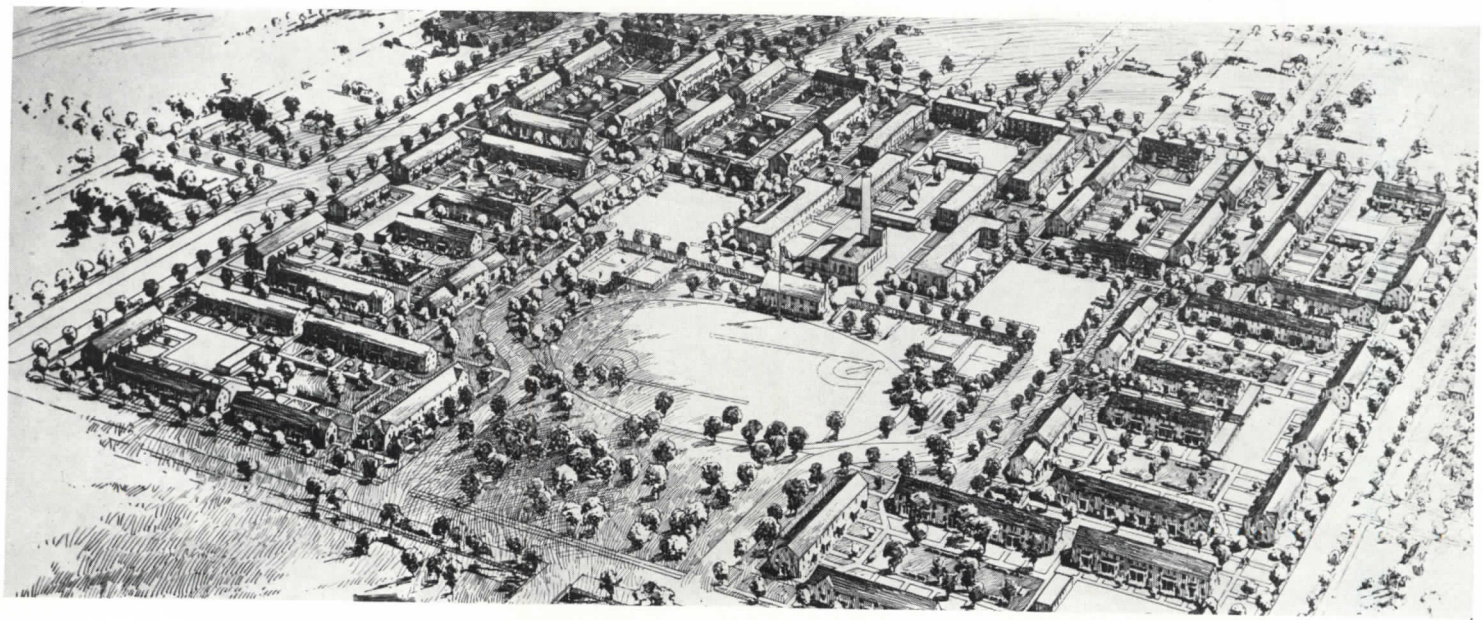
The project includes a 10-room public school in combination with a community building which contains an auditorium for both white and colored, a reading room, sitting room, post office, etc. There is a separate school for negroes. The hospital is equipped to care for both white and colored, with a surgery, examination treatment and x-ray rooms, separate wards for men and women, convalescent porches, etc. The personnel and town offices handle all employment and public administration problems. The community has water, sewer, light and power from the nearby power plant on the Tennessee River, and phone systems.

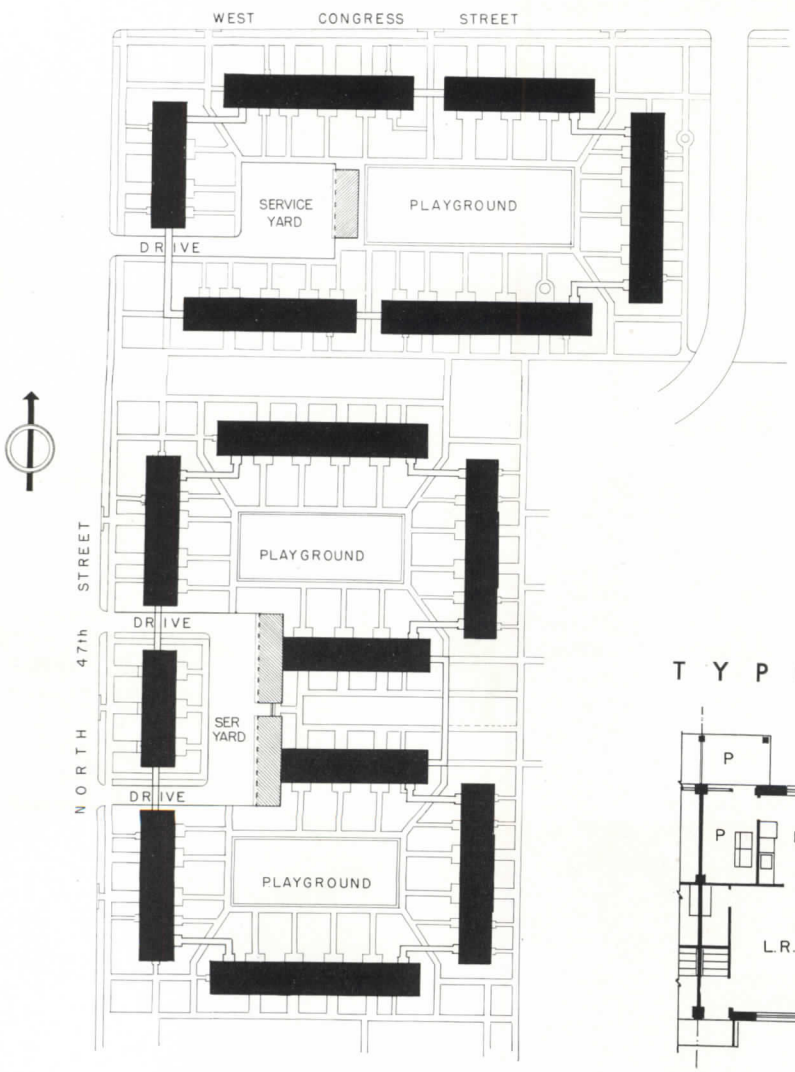
PERMANENT HOUSES: FOUNDATION: brick, metal shield termite protection. STRUCTURE: wood framed; exterior walls wide siding; interior, plastered. ROOF: asbestos shingles. FLOORS: hardwood on pine subfloors. WINDOWS: steel casement; standard glass; bronze screens. LIGHTING: inexpensive stock fixtures. EQUIPMENT: electric range; refrigerator; hot-water heaters; sink, laundry tray.

SEMI-PERMANENT: FOUNDATION: creosoted wood posts and footings; metal shield termite protection. STRUCTURE: wood framed; exterior walls, shiplap siding; interior, V-cut shiplap, vertical; ceilings, insulation board. ROOF: slate-surfaced asphalt shingles. FLOORS: hardwood on pine subfloors. WINDOWS: double-hung wood sash. EQUIPMENT: electric hot-water heater.

7 PARKLAWN, MILWAUKEE, WISCONSIN

PWA HOUSING PROJECT

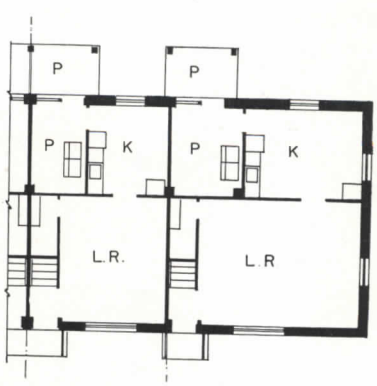




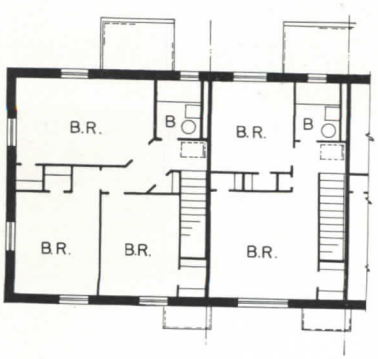
SECTION OF PLOT PLAN

The most recent PWA housing project to be completed is Parklawn, a development located immediately adjacent to Milwaukee's industrial and employment district. The tract of 42 acres contains 64 fireproof structures, grouped around courts. Dwelling units are accessible to commercial services by means of service walks. There are no traffic thoroughfares in the development. Parklawn consists of three-room apartments in two-story buildings and one- and two-story group houses of three, four, and five-room units. There are 518 units, rent for which varies with the size of the dwelling. Maximum family sizes for the different units have been fixed to prevent overcrowding.

TYPICAL FLOOR PLANS



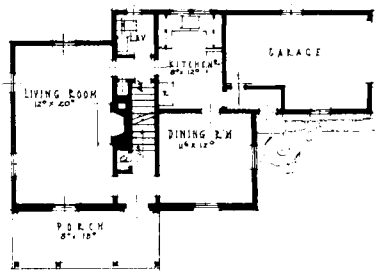
GROUND FLOOR



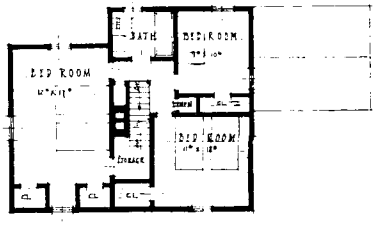
SECOND FLOOR

8 ORCHARD HILL, WESTCHESTER COUNTY, NEW YORK

DEVELOPED BY HARMON NATIONAL REAL ESTATE CORPORATION



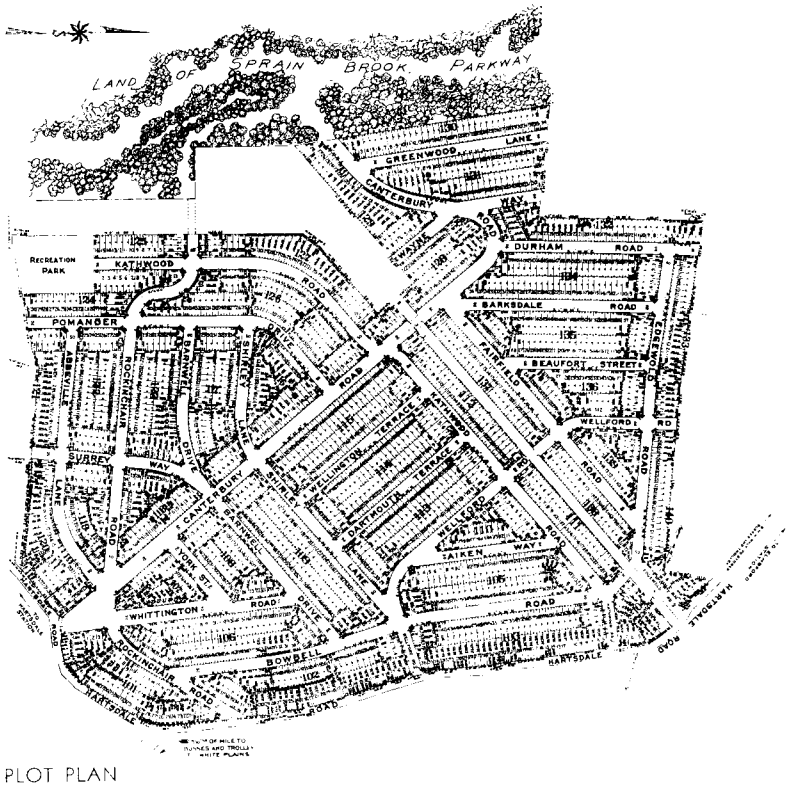
FIRST FLOOR



SECOND FLOOR

Orchard Hill, a subdivision in which dwellings are restricted to single houses, is near White Plains Station and Elmsford, and covers 140 acres of rolling country. The average lot size is 75 x 100 feet. Residents are professional people and artists. The minimum price for houses in Orchard Hill is $8,000, including land. The Harmon Corporation has an architectural service which designs homes for its developments, but plans are flexible and can be changed within reason to suit the client. Garages are all attached to the houses. Schools, libraries, nursery and clubs are located near the development, but are not a part of it. A shopping center is to be developed in the triangular plot at York, Whittington and Canterbury streets.

The main arteries on the property are Canterbury and Bowbell Roads. No sidewalks are used.

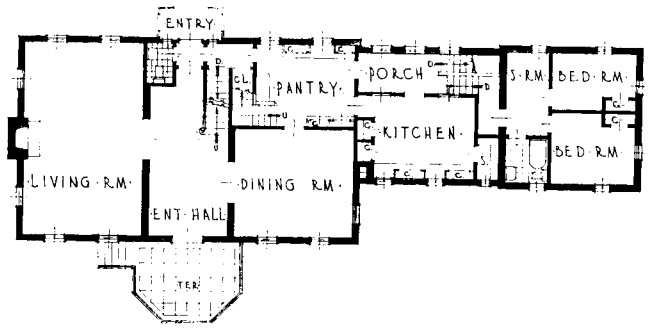


PLOT PLAN

9 MOUNTAIN BROOK, BIRMINGHAM, ALABAMA

DEVELOPMENT OF THE JEMISON COMPANIES

Photograph by A. C. Kelly



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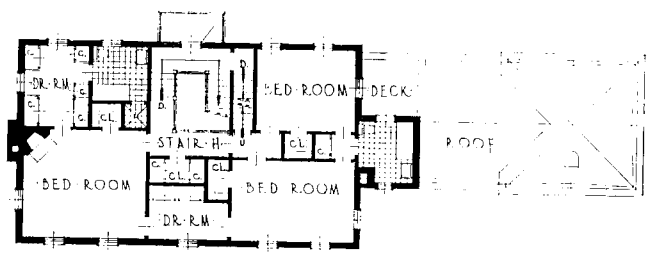
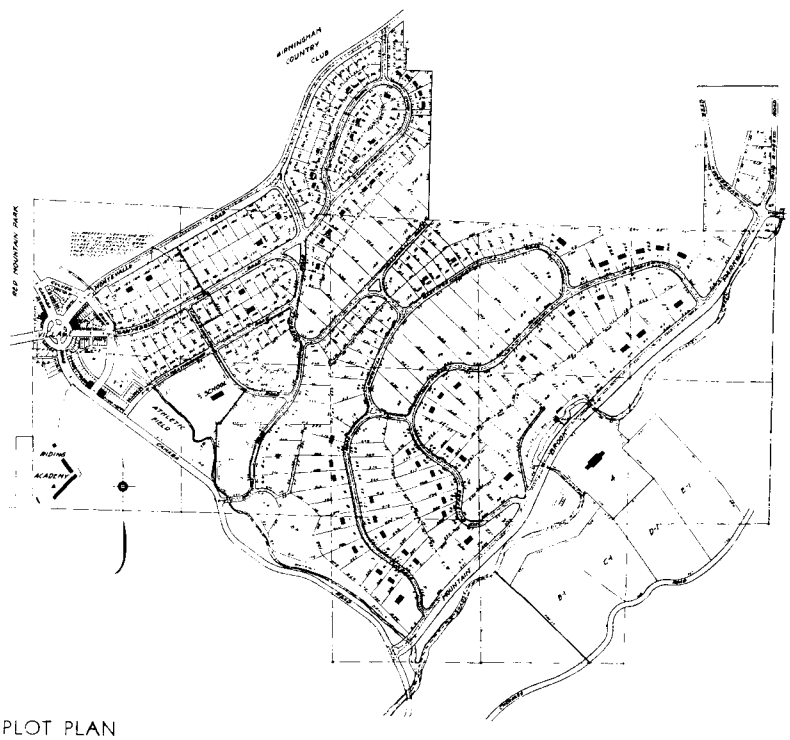


SECOND FLOOR

WILLIAM J. CABANISS HOUSE, JACK B. SMITH, ARCHITECT

This highly restricted subdivision is located at Shades Valley, 2 miles south of Birmingham, and 3 miles from any industries, in rolling land bounded by streams. It contains only single dwellings and its residents are drawn from the higher-income group. The total area developed is 400 acres. Plot sizes average 125′ x 175′, and the minimum size is 75′ x 100′. Two main arteries cross at Mountain Brook Village; roads in the residential area are winding and follow ground contours.

Community facilities include grammar school, kindergarten, two country clubs, and a riding academy. The shopping center is at Mountain Brook Village. Water, light, power and telephone services are supplied, and the sewer system is partially developed. Transportation is by bus line.

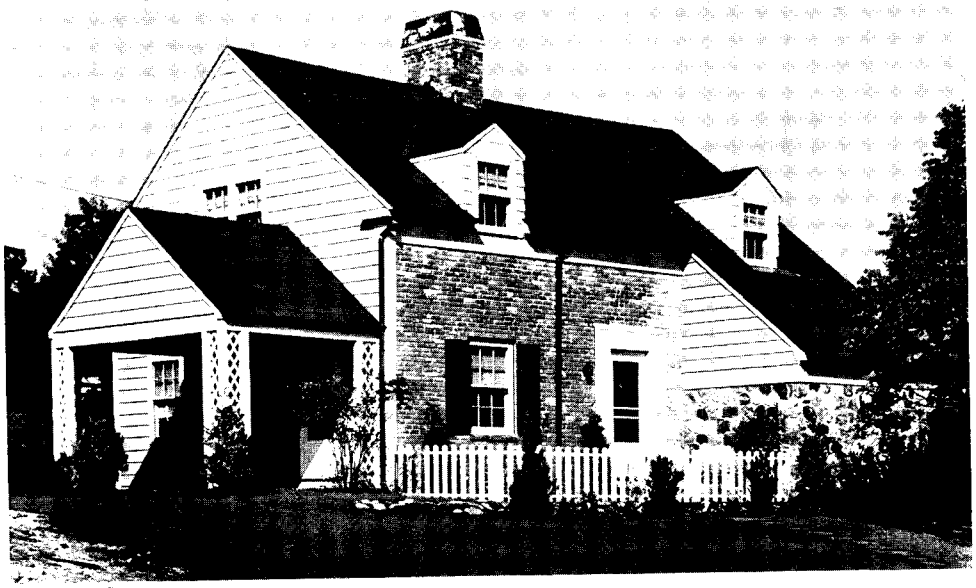


PLOT PLAN

CONSTRUCTION DETAILS

FOUNDATION: concrete. STRUCTURE: wood framed; exterior walls, brick veneer; interior, living room, dining room, stair halls, canvas on plaster; bedrooms, wallpapers; baths, tile. ROOF: slate; copper flashing gutters and downspout. FLOORS: hardwood, oak; baths, tile; kitchen and pantry, linoleum. WINDOWS: wood double-hung; standard glass; copper screens. HEATING: hot air. INSULATION: flexible blanket type in exterior walls and roof. WATERPROOFING: asphaltic. COLOR: exterior, two coats cream "Bordex."

10 WHEATLEY RIDGE, EAST WILLISTON, LONG ISLAND
DEVELOPED BY NEWELL AND DANIEL



Murray M. Peters

R. E. HOPKINS HOUSE
PORTER O. DANIEL
ARCHITECT

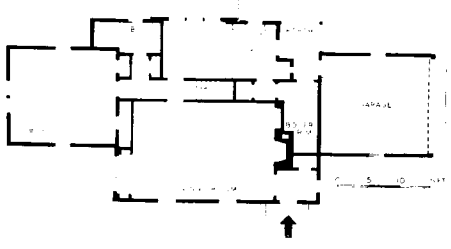
FOUNDATION: concrete. STRUCTURE: wood framed; exterior walls, brick veneer; shingle facing; stone; interior, plaster and wallpaper; wood panels. ROOF: slate. FLOORS: oak. WINDOWS: wood and steel double-hung; standard glass; copper screens. BUILT-IN FEATURES: dining room, corner cabinets; linen closet with drawers, etc. HEATING: hot air; Pittsburgh hot-water heater. INSULATION: rigid insulation board. AIR CONDITIONING: humidification; air circulation. WATERPROOFING: integral. COLOR: light gray painted brick, and shingles.

Dwellings in Wheatley Ridge are restricted to colonial type one-family houses, and are designed by the architectural staff of Newell and Daniel, developers of the subdivision. The development is nineteen miles from New York City, and is near Hempstead and Garden City. Residents are of the middle-income class. The development has traffic roads but there are two connections with main routes. No community facilities are provided, as there is a school nearby, and the Wheatley Hills Golf Club adjoins the property. The railroad affords transportation to New York City and Long Island points. Power and light come from Long Island utility companies, and water from the town of East Williston.

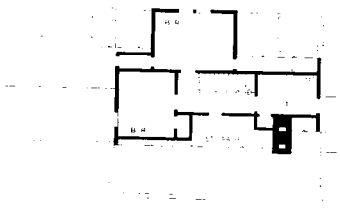
11 TWO HOUSES DESIGNED FOR SUBDIVISIONS

RANDOLPH EVANS, ARCHITECT

Photographs by Gustav Anderson



FIRST FLOOR

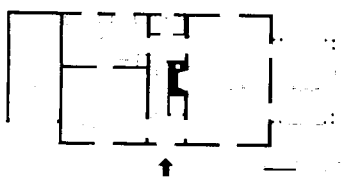


SECOND FLOOR

TETLOW HOUSE

HARBOUR GREEN, LONG ISLAND

FOUNDATION: concrete block. STRUCTURE: wood framed; exterior walls, shingle facing; interior, plaster and wallpaper; tile in baths. ROOF: wood shingle. FLOORS: oak; porch floor, garage, and boiler room, cement; baths, tile; kitchen, linoleum. WINDOWS: wood double-hung; standard glass; copper screens. LIGHTING: Colonial brass. BUILT-IN FEATURES: kitchen cabinets; living room, bookcase. INSULATION: side walls and second floor ceiling. AIR CONDITIONING: air circulation; humidification; Bryant gas-fired air conditioner.



FIRST FLOOR

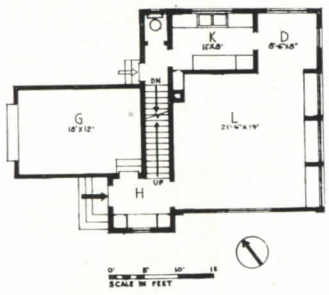
SECOND FLOOR

"THE KENSINGTON"

NASSAU SHORES, LONG ISLAND

FOUNDATION: concrete. STRUCTURE: wood framed; exterior walls, brick veneer; interior, plaster and wallpaper; tile in baths. ROOF: wood shingle. FLOORS: oak; baths, tile; kitchen, linoleum; porch and cellar, cement. WINDOWS: wood double-hung; steel casement in basement; standard glass; copper screens. LIGHTING: Colonial brass fixtures. BUILT-IN FEATURES: kitchen cabinets. HEATING: steam. INSULATION: side walls and second floor ceiling, aluminum foil. PAINT: Devoe and Raynolds. COLOR: walls, white; roof and blinds, gray; entrance door, red.

12 FOUR HOUSES, FROST WOODS, MADISON, WISCONSIN



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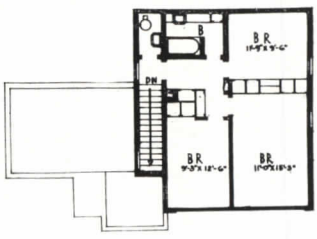
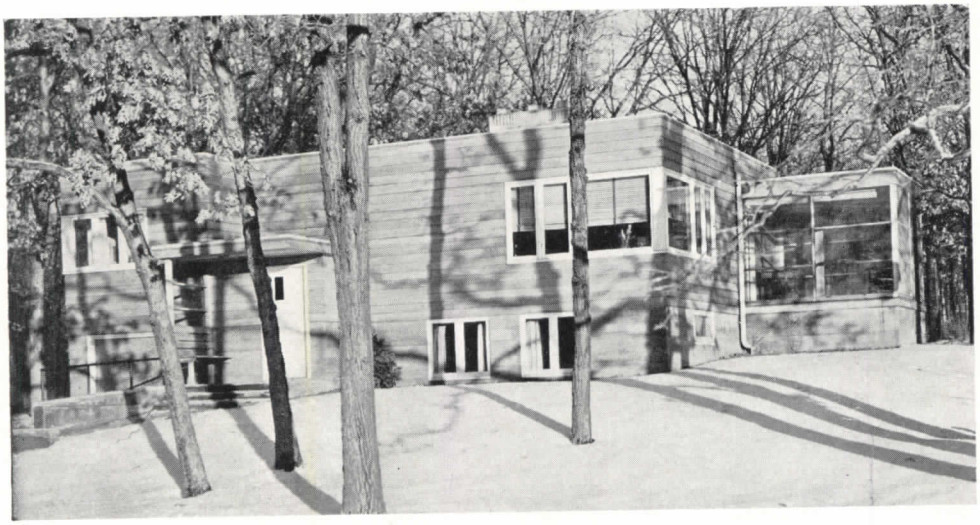
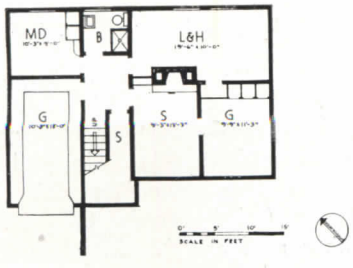


SECOND FLOOR

ROBERT C. POOLEY HOUSE

FOUNDATON: concrete. STRUCTURE: wood framed, hemlock and yellow pine studs, Douglas fir joists; exterior walls, sand lime brick veneer, and 6" beveled siding; interior, Celotex; Masonite papered in bedrooms; fir painted in kitchen and bath. ROOF: 4-ply built-up asphalt and felt. FLOORS: strip oak; linoleum in kitchen and bath. WINDOWS: Fenestra steel casements; D S A glass; bronze screens. HEATING: forced warm air, oil burner; humidification. INSULATION: 1/2" Celotex and Masonite: 1" Balsam wool in ceiling. PLUMBING: Kohler.





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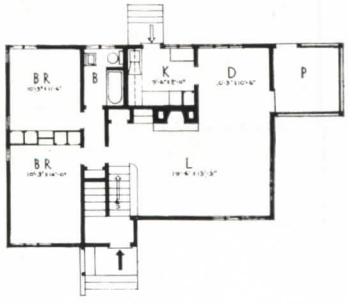


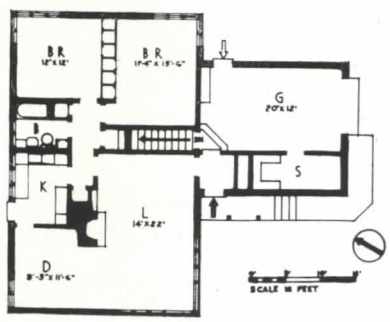
SECOND FLOOR

MARCIA HEATH HOUSE

FOUNDATION: concrete. STRUCTURE: wood framed, hemlock studs, Douglas fir joists; exterior walls, 8" beveled cypress siding; interior, 1/2" Masonite insulation board papered; 3/16" Masonite tempered Presdwood on 1/2" Masonite insulation board in bathroom, tile in bath recess; ceilings, Red Top Acoustic tile. ROOF: 4-ply built-up asphalt and felt. FLOORS: strip oak; cement surface on ground floor; linoleum on fir flooring in bath and kitchen. WINDOWS: wood casements; D S A glass; aluminum fabric screens (wood frame). HEATING: Comfort Maker forced hot-air furnace; Badger oil burner. INSULATION: U. S. Gypsum 1/2" tile on all ceilings; 1/2" Masonite on all exterior walls; U. S. G. 4" bulk wool on entire roof area. PLUMBING: Crane. OTHER EQUIPMENT: electric water heater, and well pump; water softener.

E. A. THOMAS HOUSE

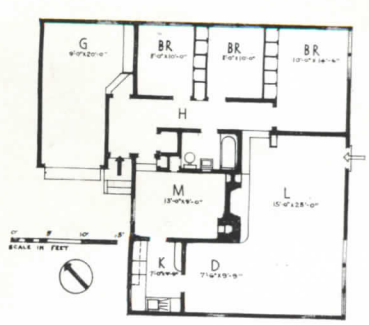
FOUNDATION: concrete. STRUCTURE: wood framed, hemlock and yellow pine; exterior walls, brick (common) veneer; interior, knotty pine V-joint horizontal boards, Douglas fir plywood elsewhere. ROOF: 4-ply built-up felt and asphalt. WINDOWS: wood casements rabbeted for zinc-framed double glazing. HEATING: Superflex oil-burning forced warm-air system. INSULATION: 1/2" Masonite board in exterior wall; 4" U. S. Gypsum wool in roof. PLUMBING: Kohler. OTHER EQUIPMENT: electric water heater; deep well pump; water softener; septic tank.



FLOOR PLAN

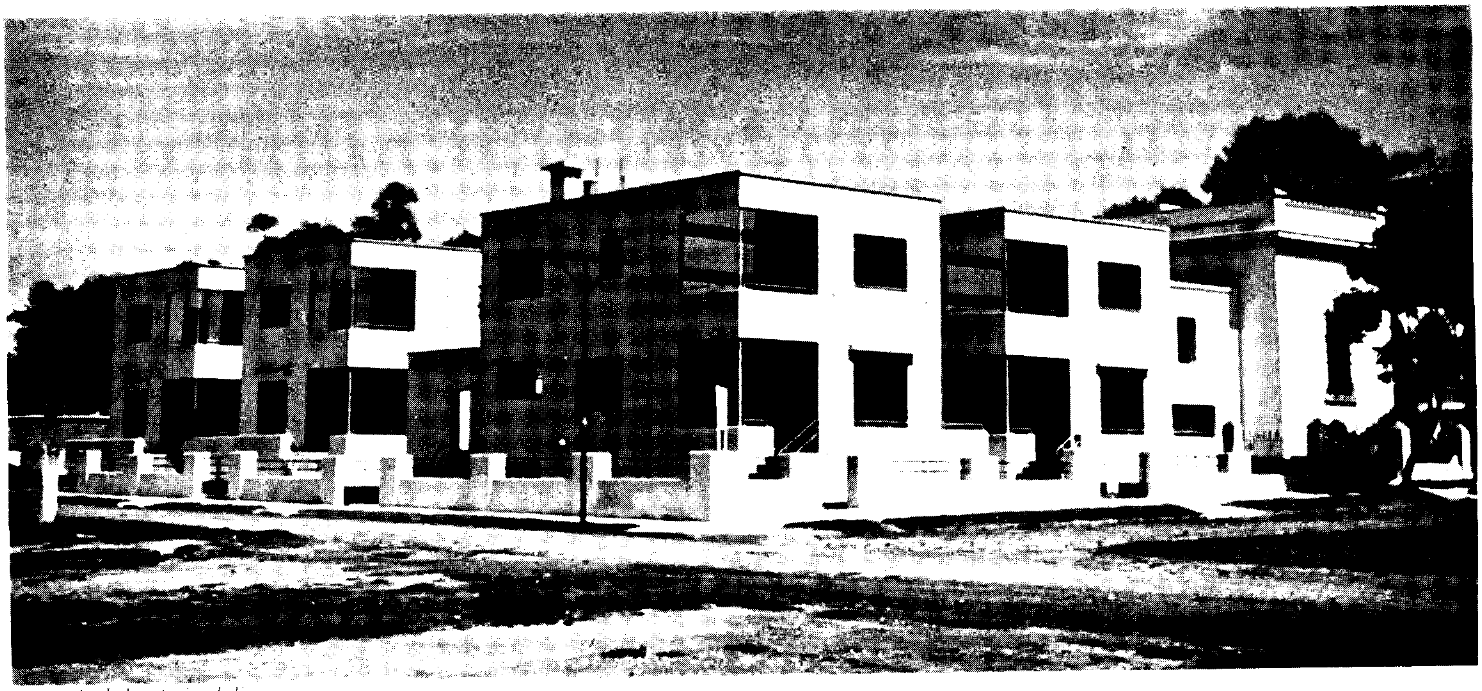
JOHN MARSHALL HOUSE

FOUNDATION: concrete; membrane-waterproofed slab over entire house area. STRUCTURE: wood framed, hemlock and yellow pine studs, Douglas fir joists; exterior walls, 1" x 16" cypress battens; interior, Philippine mahogany in living room; Linotile wainscot in bathroom; Douglas fir plywood elsewhere. ROOF: 4-ply built-up asphalt and felt. FLOORS: Bruce blocks in living room; linoleum in kitchen; rubber tile in bath and halls; cement surface in machinery room. WINDOWS: wood double-hung; D S A glass; wood framed aluminum screens. BUILT-IN FEATURES: buffet drawers. HEATING: Oilomatic oil-burner boiler. AIR CONDITIONING: G. E. unit. INSULATION: walls, 1/2" insulation board; ceilings, 4" Johns-Manville Rockwool. PLUMBING: Kohler. OTHER EQUIPMENT: incinerator; kitchen vent fan, water softener; oil-burning water heater.

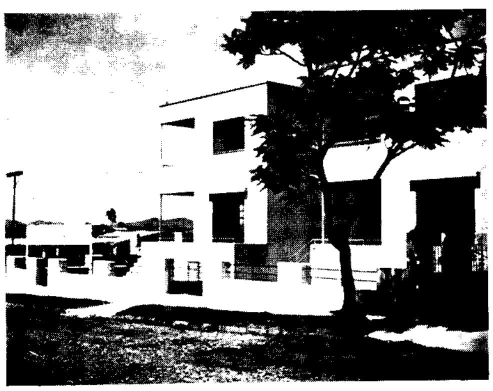


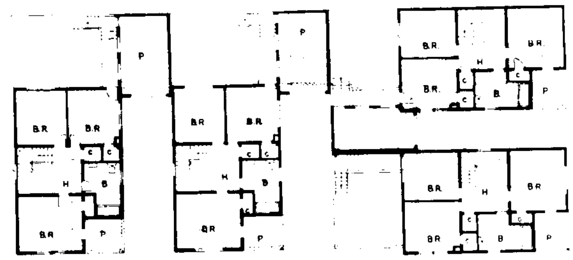
FLOOR PLAN

13 ROW HOUSES IN MEXICO, D. F.
RAMON HERMOSILLO, ARCHITECT

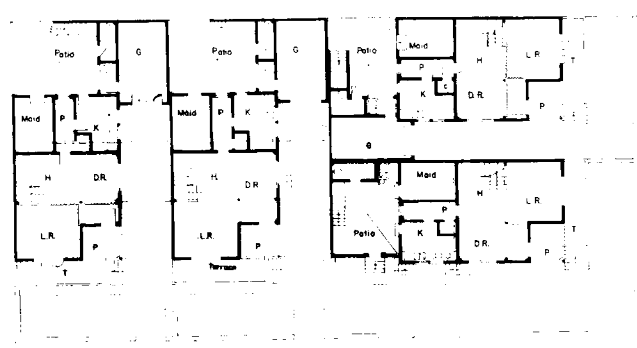


Photos by Laboratorios Julio





SECOND FLOOR



FIRST FLOOR

Color plays an important part in the design of these dwellings, recently completed in the "Colonia Reforma" section of Mexico City. The walls are of white stucco except on the porches and terrace pergola which are vivid blue. Window ledges, cornice, and pergola beams are yellow, and window frames are blue. Handrails and pipe columns on the porch are red. Steps of the service stair are gray cement and the handrail is blue. Interior walls are greenish gray or neutral yellow. Stair halls and floors are yellow tile. The baluster of the main stairs is red-orange, with a blue handrail. Garages are all attached, and separate the houses.

14 CHURSTON DEVELOPMENT, SOUTH DEVON, ENGLAND
WILLIAM LESCAZE, ARCHITECT

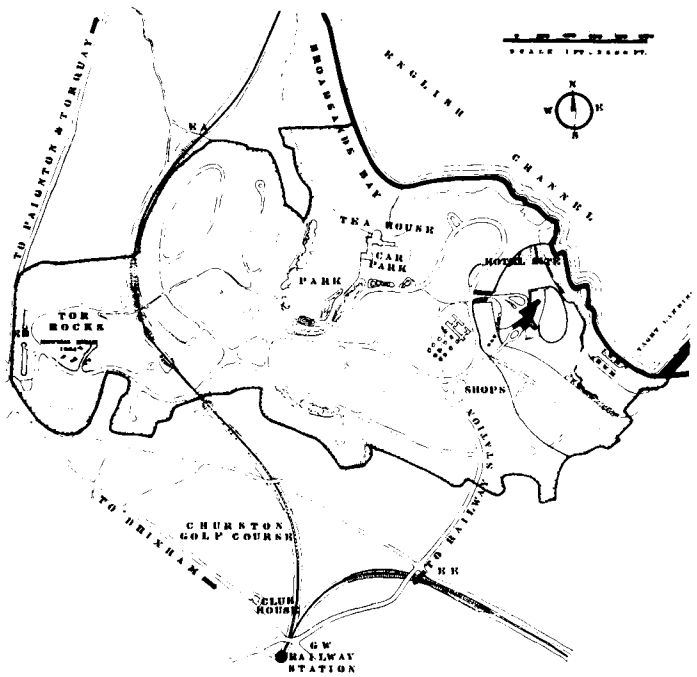
S. H. Holland

SITE OF CHURSTON

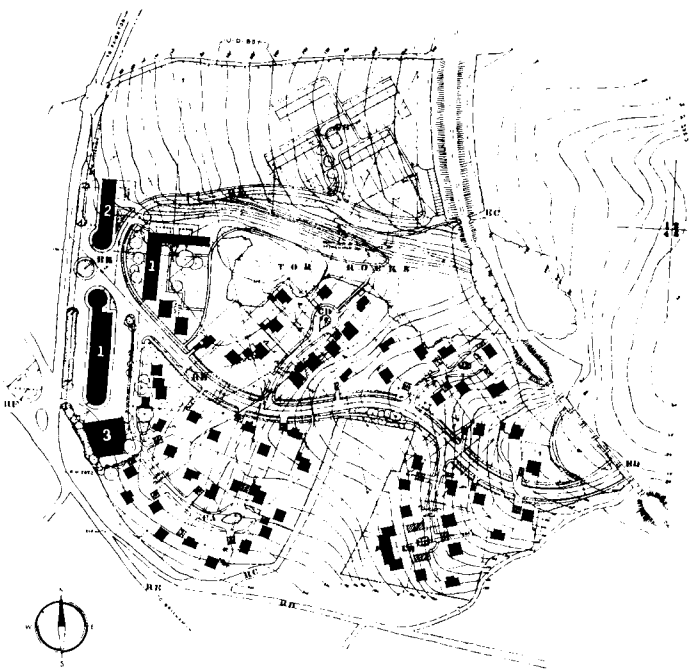
Dell and Wainwright

MAIN ROAD OF DEVELOPMENT

Owing to the mildness of the climate the development was planned for a community of retired business and professional men, without any particular connections with centers of employment. The development is accessible from two points, and crossings with through traffic arteries were carefully avoided. The windings of the residential road are explained by the fact that the tracing was done strictly in relation to the contour lines; the subdivision of lots was effected by a number of culs-de-sac. According to the nature of the terrain and the view there are six price groups for lots. The established density is 7 to 10 houses per acre. Several points of interest are created within the development from the location of the community buildings and grounds for sports. The houses are of the single-dwelling type; two apartment houses are planned near the entrance of the development.

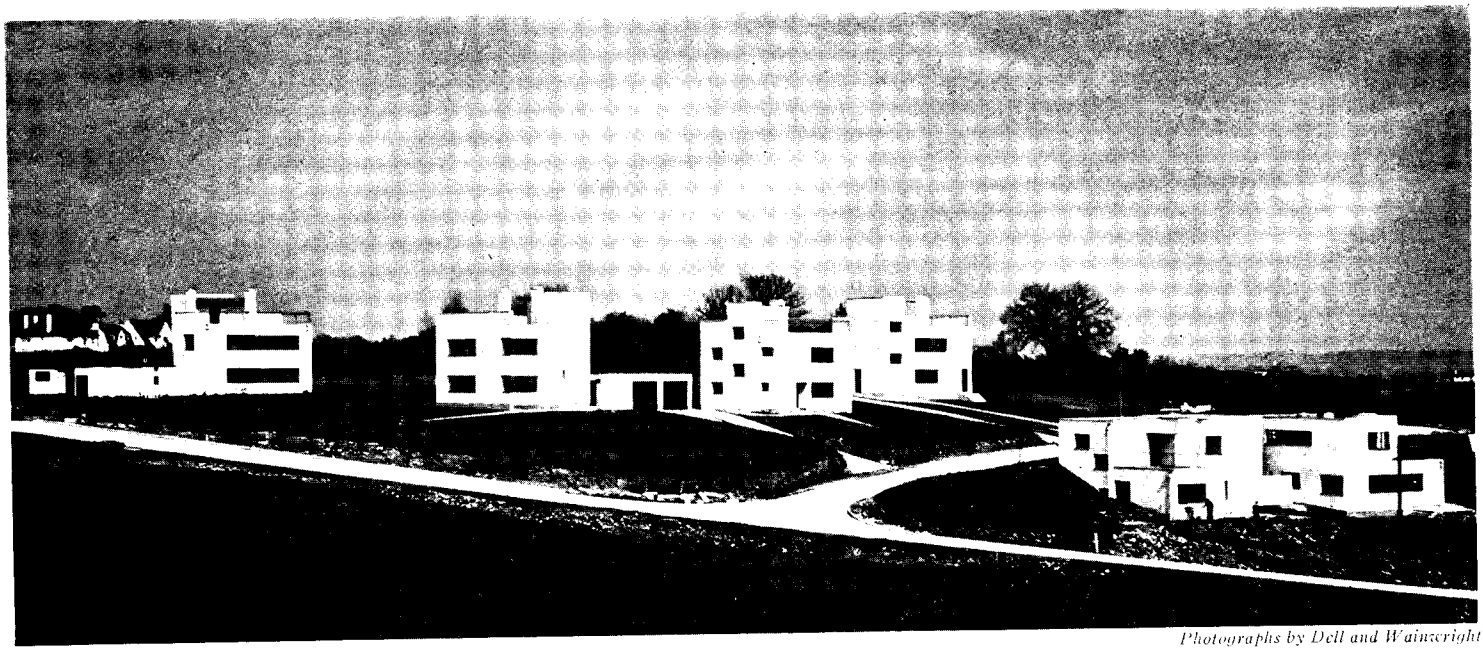


GENERAL LAYOUT



SECTION UNDER DEVELOPMENT: 1. Apartment houses . . . 2. Administration building . . . 3. Theater.

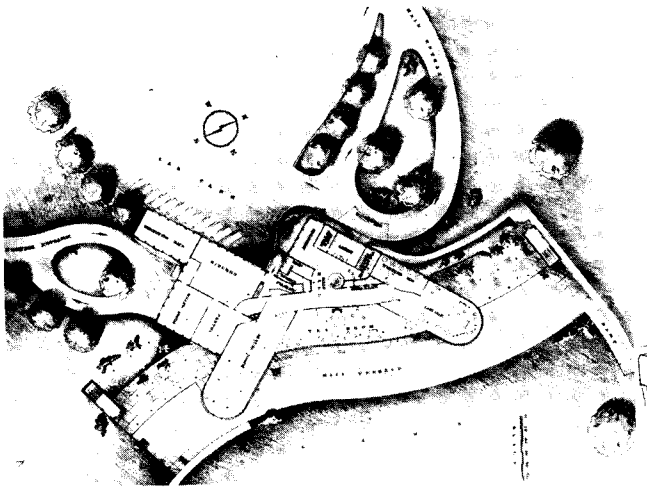
CHURSTON DEVELOPMENT, SOUTH DEVON, ENGLAND



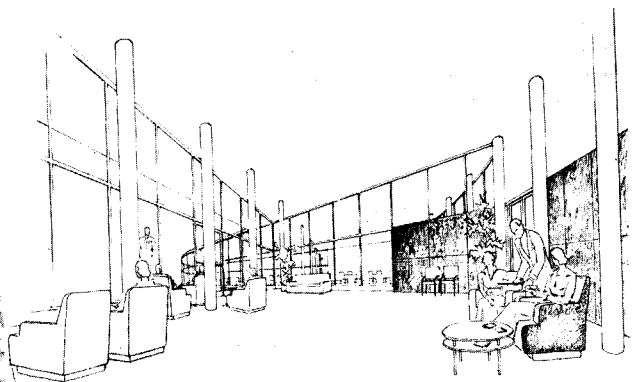
Photographs by Dell and Wainwright

GROUP OF HOUSES

DESIGNS FOR PROPOSED HOTEL

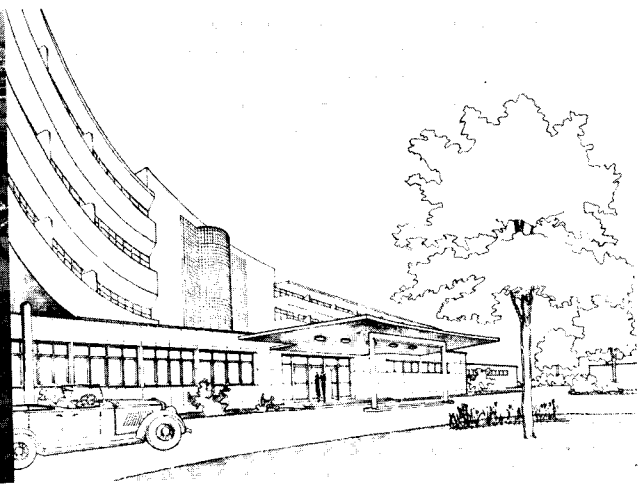


GROUND FLOOR PLAN

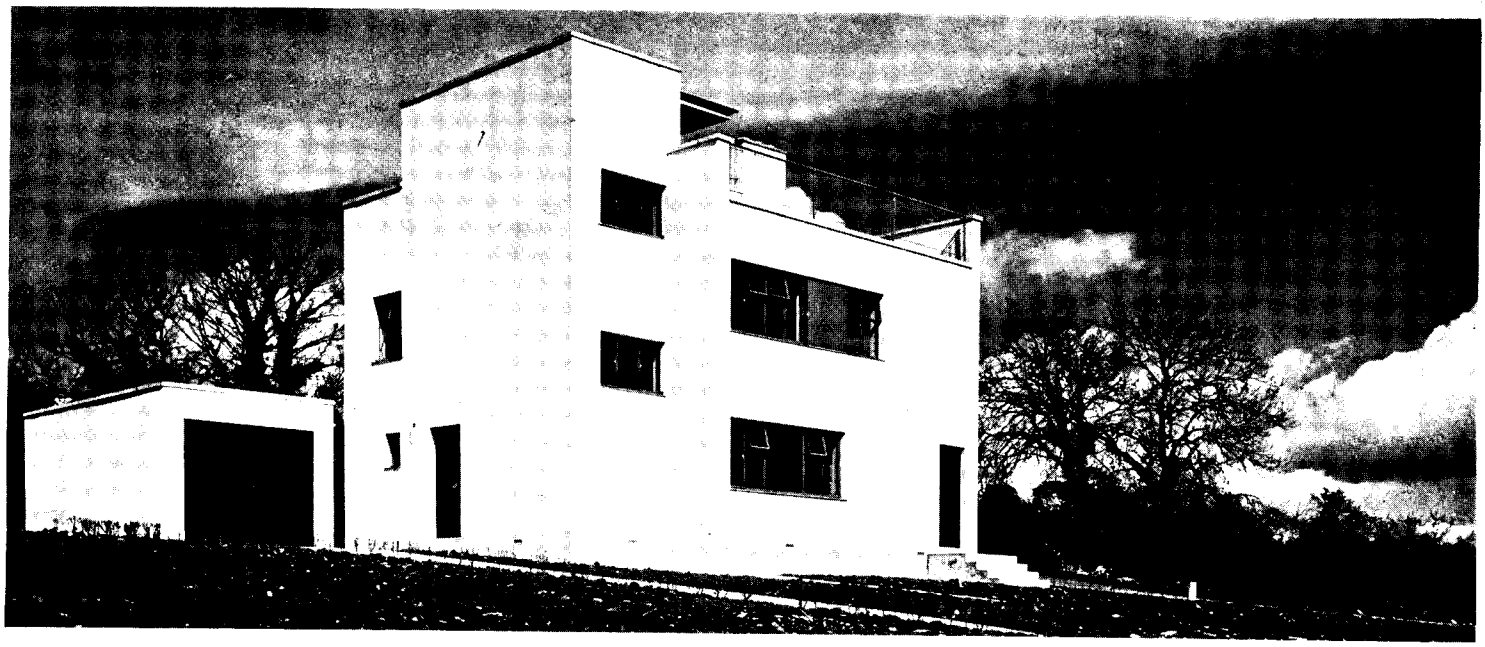


INTERIOR OF LOUNGE

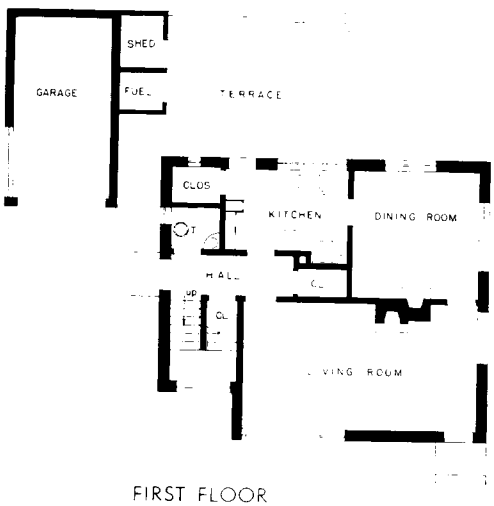
PROPOSED LOCATION



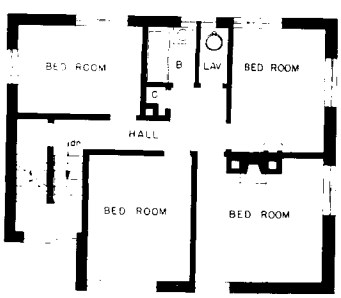
MAIN ENTRANCE



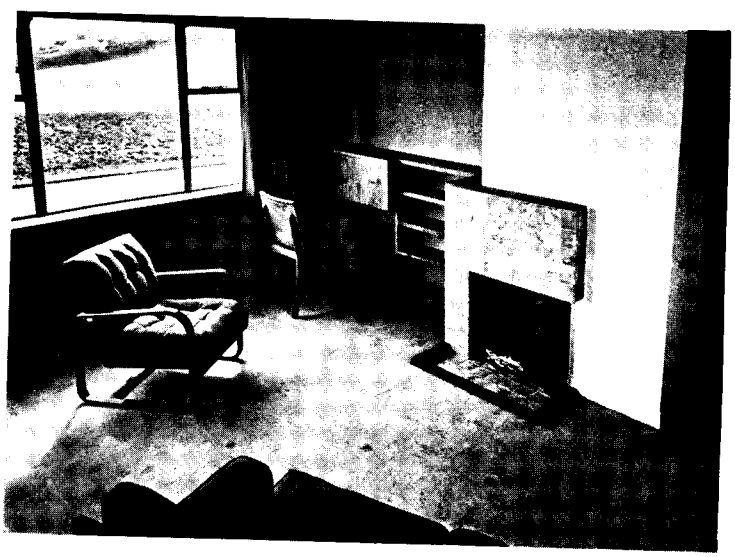
This house from the Churston development, designed by William Lescaze, architect, has brick foundations, 12″ brick cavity walls with 2″ air space, wood floors on wood joists, built-up roof gravel type, and steel casement windows.



FIRST FLOOR

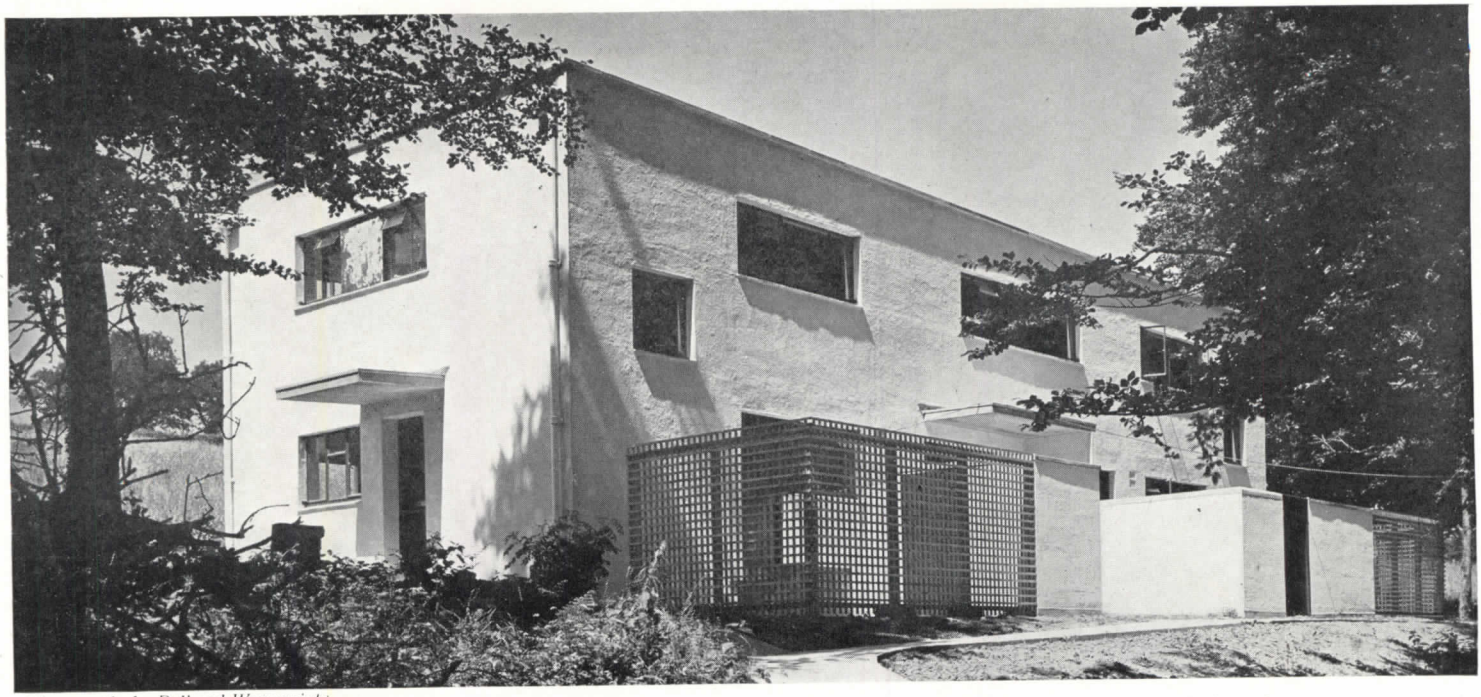


SECOND FLOOR

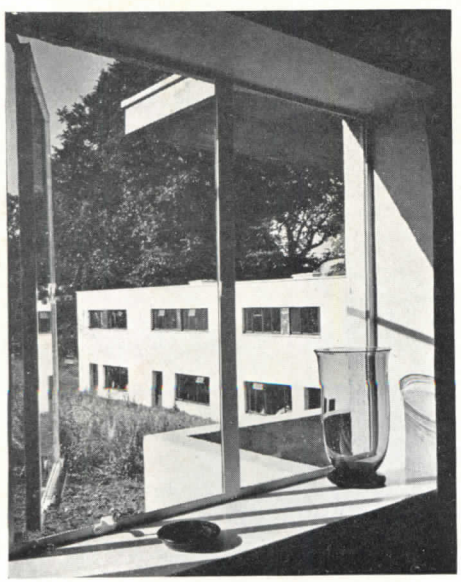


15 DARTINGTON HALL, SOUTH DEVON, ENGLAND

WILLIAM LESCAZE, ARCHITECT

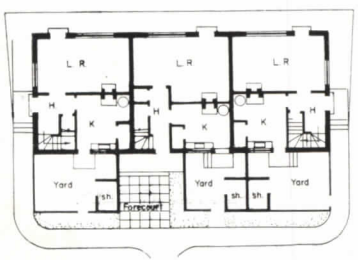


Photographs by Dell and Wainwright

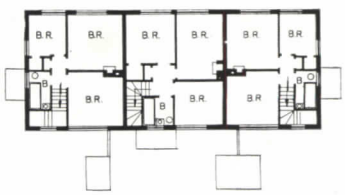


This small development of semi-detached and row houses is to provide homes for the teaching staff of Dartington School.

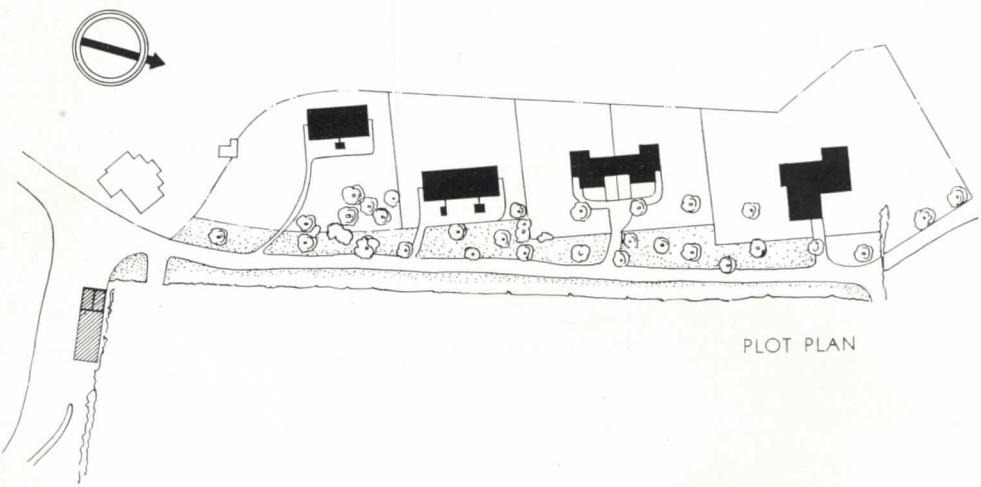
The illustrated 3-family house has brick foundation walls, 12″ cavity exterior walls, tile partitions, wood floors on wood joists, flat roof on boarding. The exterior finish is stucco with concrete copings and sills. A service yard with a tool shed is attached to every dwelling.



GROUND FLOOR



SECOND FLOOR



PLOT PLAN