

A COMPARATIVE ANALYSIS IN RESIDENCE DESIGN
IN
EARLY AMERICAN TRADITIONAL
AND
ONE OF THE CURRENT REVOLUTIONARY STYLES

BY

WALLACE F. HOLLADAY

A Thesis Submitted to the Graduate Committee

for the Degree of

MASTER OF SCIENCE

in

ARCHITECTURAL ENGINEERING

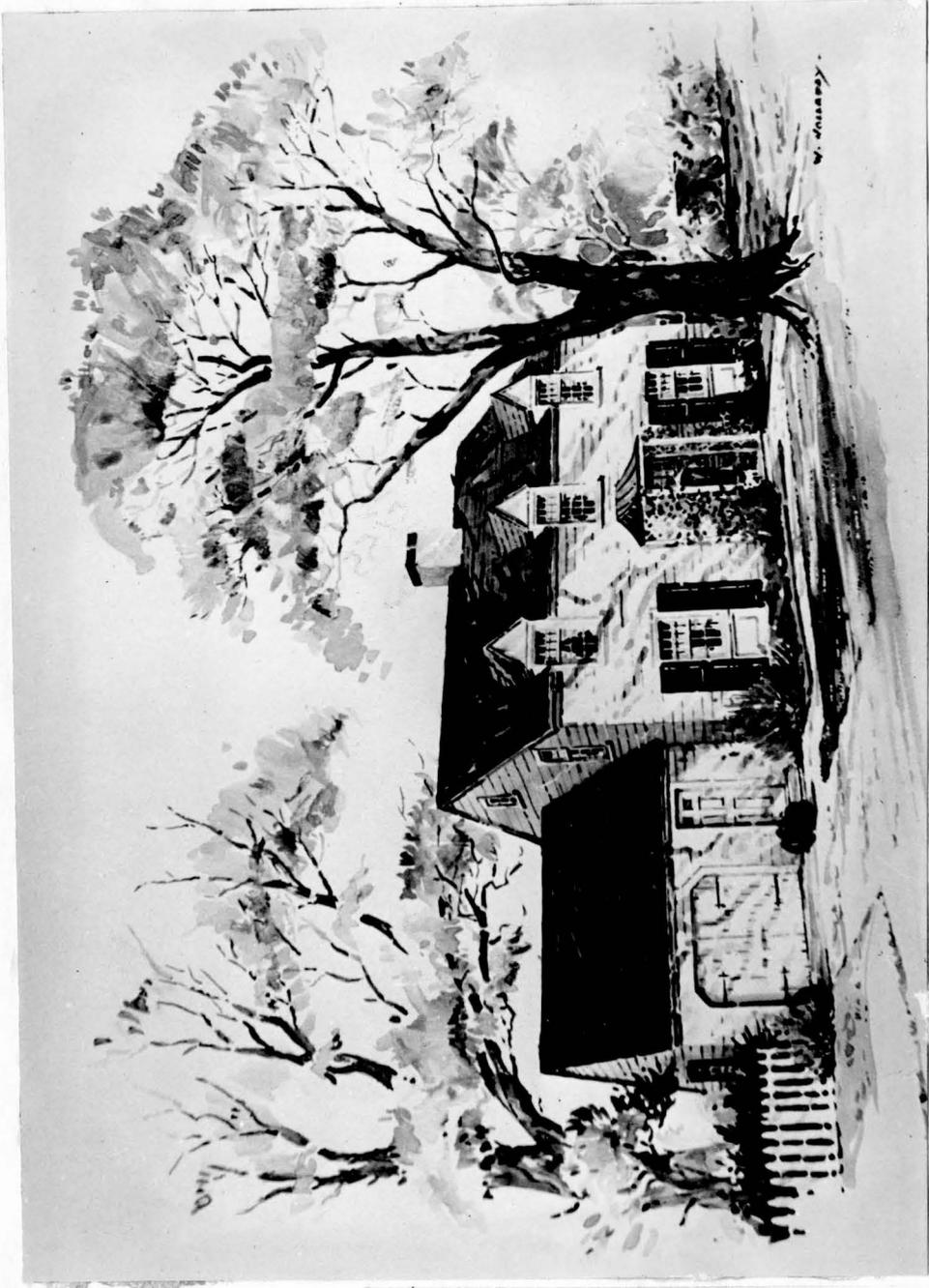
Approved:

Head of Department

Dean of Engineering

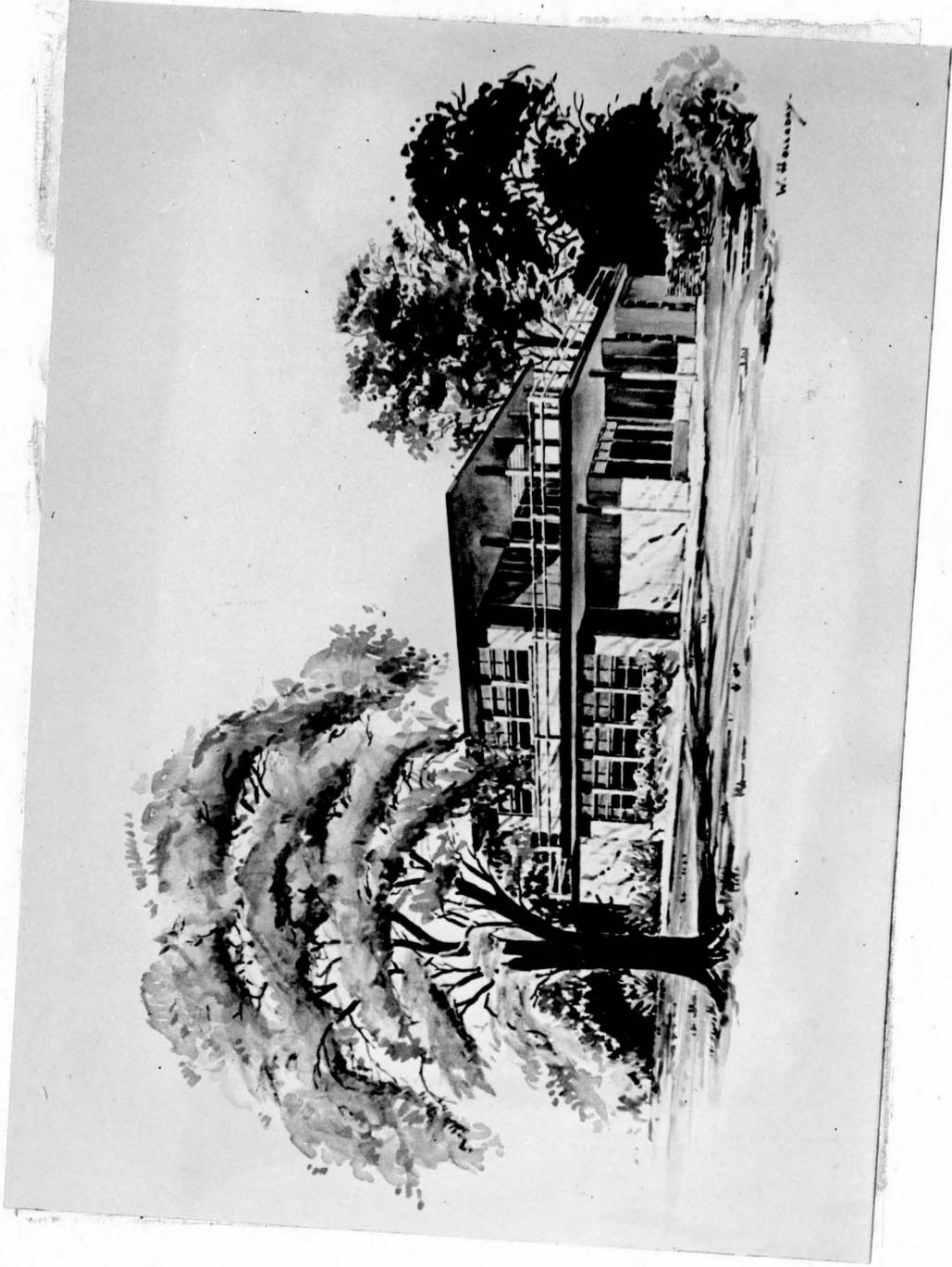
Chairman of Graduate Committee

Virginia Polytechnic Institute
May, 1942



TRADITIONAL

Photograph of Rendering



MODERN

Photograph of Rendering

ACKNOWLEDGMENT

Grateful appreciation is here expressed for the advice and suggestions given me in the preparation of this thesis by Professor C. H. Cowgill.

INTRODUCTION

I wish to state here and now that it is not in the purpose of this thesis to conclude that one style or approach in residence design is superior to another. The question of style is philosophical and deeply inter-related with the workings of the human mind in all its abstractions. Even if there existed some set of basic criteria by which we could properly evaluate the modern house in relation to its neo-colonial neighbor, then what? Idealism? Idealism in architecture is as extramundane as idealism in social systems. Sentiment is as essential to architecture as it is to literature, music or art. The danger lies in sentimentality or sentiment carried to the extreme, which should be avoided, as exemplified by period design. A reaction against this sentimentality, along with developments of new materials and processes, gave rise to the completely diametric approach to architecture called modern.

There are those who offer the argument that theory always runs ahead of practice, that today's departures are tomorrow's commonplaces. This is true in some cases but not always, for numerous blind alleys have been entered and run to a dead end as in the case of the "Art Nouveaux" in Europe around 1880. Today we have everything in architecture: modern, variations of traditional styles, "modern" houses with traditional plans, and traditional houses of modern plans. It has truthfully been said that that in a time of change there can be no unanimity. Perhaps the answer lies in the fact that architecture is a reflection of its time, and the

one outstanding characteristic of the present is change and, with it, uncertainty. The advocates of advanced ideas should not become impatient and exasperated with the slowness of public acceptance, for the inertia of the masses is against change.

Out of these conditions should develop an architecture which combines old forms with new. They offer the possibility of an indigenous, workable, and completely livable architecture for America.

It is the purpose of this document to compare analytically a house design based on traditional designs, drawing admittedly from the past but without the constraints of "period" design, and a house design based on the newer theory that tradition should be consciously avoided to free the architecture completely from the restrictions of past styles. The conclusion will not be a choice, but an understanding of each with regard to living needs of today and tomorrow.

PART IHISTORICAL BACKGROUND

In the 17th, 18th, and early 19th centuries in this country, various influences and men created in the field of architecture what we today term the Early American Traditional style. This is an all inclusive term covering the entire field of traditional types which existed in America. Since this thesis is primarily concerned with Virginia and vicinity, I will also limit the history to this locality as much as possible.

The first settlers of Virginia were English although later some of Dutch and German descent filtered in. The settlements in the colonies along the Atlantic seaboard were widely separated and represented several European countries. Each group copied the architecture of its homeland and consequently laid the foundation for "English Colonial," "Dutch Colonial," "French Colonial," et cetera, styles of architecture. These various types or styles were all alike in one respect--that of definite medieval influences of informality. They could hardly be otherwise on account of the architecture of Europe of the century.

As the eighteenth century came in, the domestic architecture of the colonies underwent many changes. Sir Christopher Wren, Inigo Jones, and other architects in England had begun to use the uniform cornice with the hip roof, wood sash instead of leaded casements, and the pedimented gable instead of a gable of medieval type. Numerous publications began to standardize the Post-Renaissance details such as broken pediments,

classical doorways, cupolas, and cornice details. These cornices and doorways were given rich detail of modillions and of pilasters with pediments, a characteristic which shows that labor was a very minor consideration in home building. Often years were spent in the erection and completion of a single house.

In Virginia the tendency was toward symmetry as is best exemplified by the architecture of Williamsburg. Westover, the Capitol building, and the Governor's Palace were all strictly symmetrical in every respect. The most popular construction materials used in the eighteenth century in Virginia were brick and wood. The same materials are still popular here today and used much in the same manner.

Thomas Jefferson's design for Monticello in 1771 shows strict adherence to Palladian canons in residence design for the first time. The pedimented portico, octagonal bays, and Palladian detail of Jefferson's work had an almost unbelievable influence on other domestic architecture, not only in Virginia, but over the entire South immediately following the Revolution and was carried on by craftsmen with little change. The Italian classical, temple-like porticos became the rage with huge two-storied columns supporting a massive pediment, forming the "frontispiece" of the house. Today, many homes, especially those of a pretentious character in the rural sections of the South, still employ these white columned porticos.

The interior detail slowly took on the attenuated forms of the Adams style already prevalent in the New England states. Delicate, almost effeminate mantel details and wall paper designs adorned the drawing rooms and parlors

of the now Georgian interiors. The high ceilings, the dark cool rooms with rich furniture and hangings are still admired and copied by some home builders of the South today. The "southern gentleman" had evolved a style of architecture which was both unique and beautiful and admirably suited to the plantation life of Virginia and the deeper South.

Immediately following the Civil War, this phase of American civilization was "Gone With the Wind" as Miss Margaret Mitchell so compendiously terms it. Labor became an important cost item in building and less expansive homes were the direct result. For the first time real-estate housing became a reality to southerners.

The first Americans trained at the Ecole des Beaux-Arts in Paris were returning to this country about this time, and an era of unrestrained eclecticism set in. After producing such clumsy, ill-proportioned, and ill-planned homes as illustrated, a colonial revival, parallel to the Queen Anne style abroad, was started. The firm of McKim, Meade, and White was the first advocate of this movement and produced, in the 1880's, many houses colonial in general appearance but with a richness of delicate detail on the exterior very different from the comparative simplicity of the old examples.

Passing over the unimportant, transitory classical and renaissance revivals of the latter part of the nineteenth century, we come to the beginning of the so-called modern movement in the architecture of the United States.

Beginning between 1890 and 1900, Louis Sullivan, Frank Lloyd Wright, and others who reacted against strict adherence to detail and form of the past, laid the foundation for the revolutionary "style" or conception of



Manchester, N. H. 1860's. This brick house, shaped like a box, now serves as the office of a secondhand car dealer. One of his cars is visible at left. Note high, narrow windows typical of period.



Adams, Mass. 1860's. This home is a "gingerbread" adaptation of French grandeur under Napoleon III. The roofs of these houses were so complicated that they resembled wedding cakes.



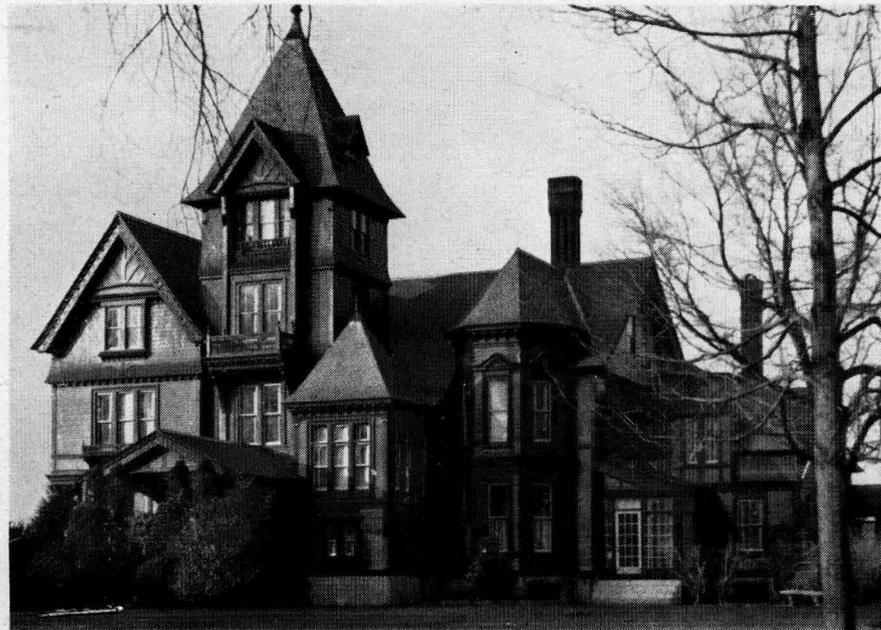
Keene, N. H. 1860's. This French-style home has the slate roof and iron grillwork of the period. Inside children had a fine time playing in the dark corridors and searching for secret panels.



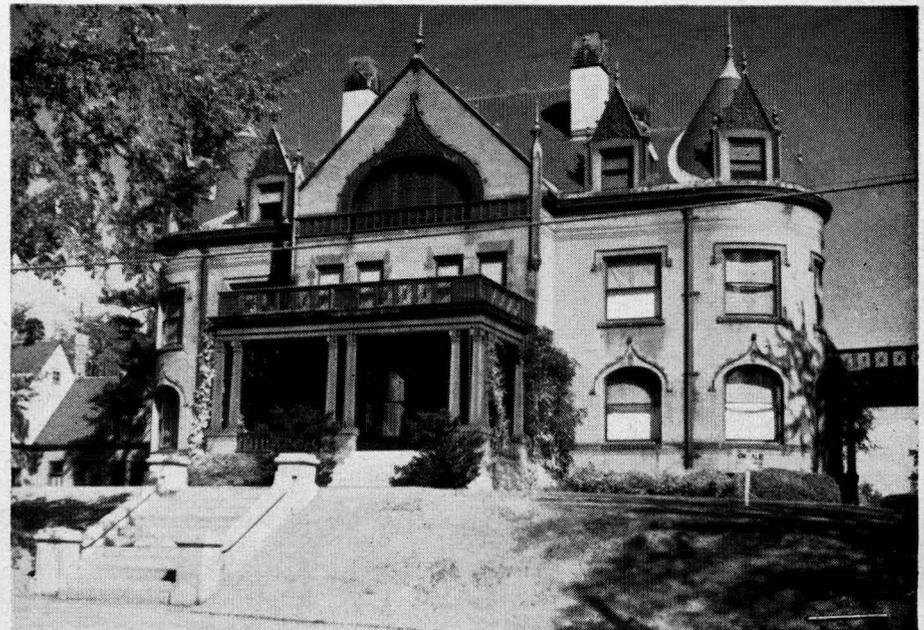
Manchester, N. H. 1870's. "The Willows" is known for its garden statuary (*see p. 11*). The towers on these homes, which often resembled turrets of forts, made a man's home his castle.



Rutland, Vt. 1870's. This mansion, now the Crestwood Hotel, bears a casual resemblance to the Louvre. Critics have since called this period of American architecture "The Reign of Terror."



Lowell, Mass. 1880's. This residence is an example of Victorian Gothic. The telltale Gothic spire has come a long way from medieval Italian cathedral steeples from which it is derived.



Manchester, N. H. 1890's. This mansion, which looks like a French chateau, was the home of the late Governor Charles M. Floyd. In this period sandstone replaced wood as a sign of opulence.

architecture usually termed modern.

These men elected to make a new approach, free of constraints, by consciously ignoring tradition and the expectations imposed by tradition with regard to plan and facade. They experimented with unprecedented forms and sought to fit the house to the habits, needs and nature of man. Many architects who accepted the philosophy of tailoring a home to fit the family, ignored the new forms and proceeded to readjust the traditional styles to suit modern needs and habits.

The first creations of modern architecture, excluding the efforts of Frank Lloyd Wright, were white cubes and cylinders, showing a definite influence of French and German cubism of the nineteen-twenties and early thirties. Nevertheless, these examples of houses were a transitional and necessary step in the development. They served as a testing ground for new materials and processes and acquainted the public with the new movement in architecture. In this country in the early nineteen-thirties, the majority of architects working with extreme modern ideas of architecture were trained in Europe where the movement first won approval. Such men as Neutra, Gropius, Sarrinen, Mies Van der Rohe, and Lescaze migrated to this country and began to practice and preach the modern or revolutionary conceptions.

Today, we have many younger men, trained in this country at such schools as Harvard and Frank Lloyd Wright's Taliesin, beginning to practice and advocate modern architecture. It can no longer be considered a transitory fad even by the most conservative and is already accepted by a majority of people for all types of architecture except domestic and ecclesiastical structures.

What the future holds for this new architecture is impossible to say,

but the home builder of today is confronted with two almost unrelated conceptions of how a house should be built and must choose between the two.

PART IICONDITIONS AND REQUIREMENTS ASSUMED FOR THE DESIGN EXECUTED

In order to present the comparison to follow in a fair and unbiased light, typical conditions and requirements are essential. Any outstanding peculiarity in either would tend to make the problem a specific case and would defeat the purpose of the comparison. Before stipulating the locality, various communities in Virginia were considered as possible theoretical locations for the project. Arlington, Virginia was finally decided upon as the most conducive to the intent of this thesis.

Arlington is a county, not a city. Its government, however, is operated very similar to the governing organizations of a progressive city. Arlington is peculiar in that its population has increased about 50% in the last decade. This increase consists largely of people coming from all parts of the United States to work for the government in Washington, just across the Potomac river from Arlington. They naturally have varied tastes and opinions concerning architecture and have built all types or styles of homes in the vicinity. The fact that this is the case in Arlington makes it a better location for this project. The modern home here would not be considered poor taste because of the neighboring houses.

The imaginary site was assumed level for obvious reasons. Any irregularity in topography would tend to make the problem peculiar to the site and the results anything but typical. It is also assumed that the plot is in a new but growing section with access to a sewage drains and water mains. Its size is taken at 120 feet wide and 210 feet long with the narrow side on the street.

The orientation with respect to the street is due south--that is, the street is along the north side of the plot. The present homes in the section face the street squarely and to tilt the house to build it on this site would be considered gross and ruinous to the appearance and layout of the whole street. This idea of formal rows of huddled houses is going out as it should, but unfortunately, it is still the practice to face a house to the street regardless of orientation.

The typical family was considered to be of four members--husband, wife, son, thirteen years old, and daughter ten years old. Of course, every family is different in its composition and personality, but the above family is a fair median. Since the plan of any successful contemporary residence is based directly on the habits, needs, and desires of the family it houses, the following conditions were assumed.

The husband is a government accountant with an income of \$2500.00 a year. He is likely to be earning more than this ten years hence, but the budget will be based on his present earnings. This is above the average family income but was so set since the services of an architect are seldom solicited on homes costing under \$7,000.00. The cost of the house should fall in the vicinity of \$7,500.00 or three times the per annum family income at present.

Habits and Characteristics of The Family:

Recreation:

Husband and son read a lot

Conversation is average

Wife plays bridge and entertains informally

Guests are seldom numerous

Separate recreation room desired but not demanded

Cooking:

Wife does her own cooking A maid comes in once a week to help with the laundry and house cleaning.

Medium sized kitchen desired since family will eat breakfast in this area.

Children will not be allowed to play in the kitchen.

Dining:

The children do not eat lunch at home during school session. Husband eats lunch at home only on weekends.

Dinner or evening meal is the only meal at which all family members are present.

Entertaining is light and informal.

Outdoor dining facilities are not required.

Hobbies and Homework:

Both children have school homework to do for several years yet.

Husband has no homework at present but should he go into private practice as an accountant, he would need space for accounts and correspondence.

Sleeping:

Three bedrooms are needed--Master's, son's, and daughter's. The study or optional room should contain a day couch to accommodate occasional overnight guest.

Mr. and Mrs. prefer double beds. Bedrooms will not be used for study, reading or writing as a rule.

Sanitation:

The laundry will be done at home and ample space for this operation is required.

Bathroom requirements are average--one lavatory on the first floor and baths as the plan makes necessary.

Storage:

Moderate space required--closet space should be large in master bedroom. (A dressing room would serve the purpose as well.)

Transportation:

One car--husband drives to work.

Wife shops on foot or has merchandize delivered.

Attached garage desired with entrance to house near the kitchen.

The personalities of the family are neither phlegmatic nor volatile, neither reserved nor dynamic. It is just an average American family. The boy hopes to go to college in about four years. The mother plans to send the daughter to a local business school after high school.

From the above data the following units were decided upon:

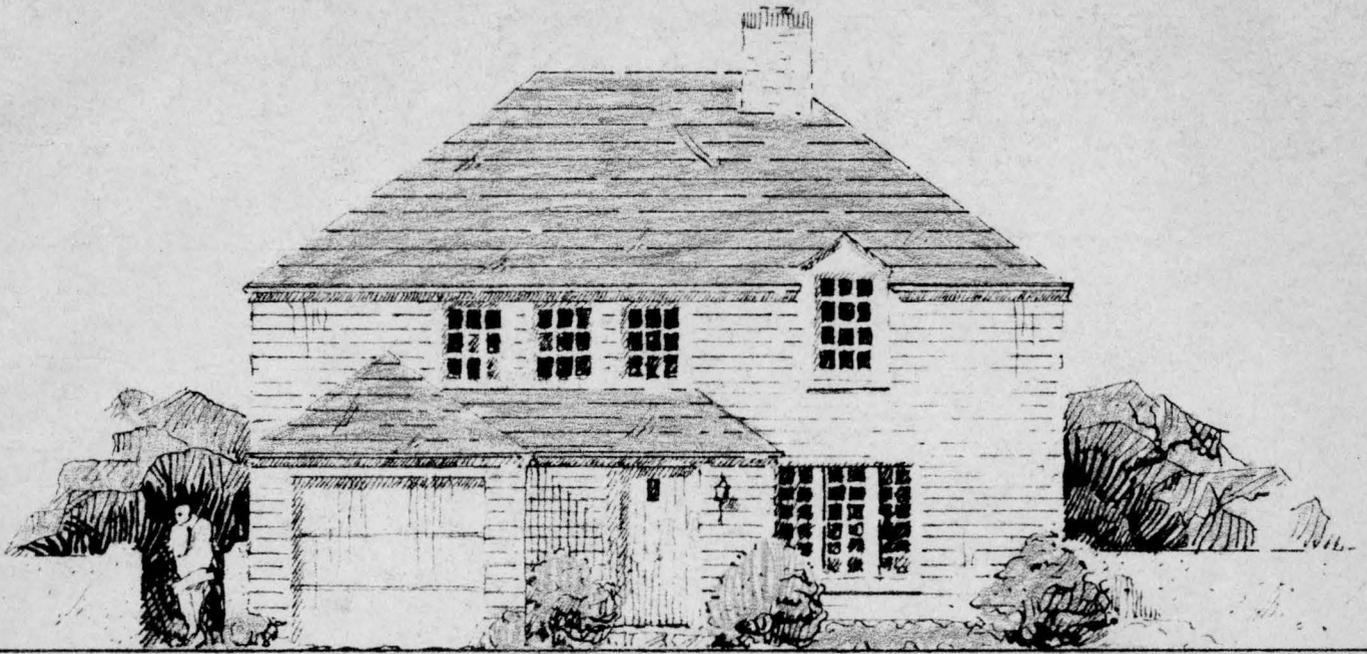
Kitchen:	Ample bathrooms
Dining room or space	Ample closet space
Living room or space	Garage or Carport
Laundry separate or Utility combined	
Master bedroom	
Son's "	
Daughter's bedroom	

The sizes of these units would be controlled by the overall cost and the purpose of each. The average home builder can not have everything he desires. Financial restrictions call for compromises between desires and actual needs and between needs and financial restrictions. If architecture was not a series of just such compromises, it would be comparatively easy to plan a home to serve the daily functions of a family. In designing two houses for the above described family, several compromises were necessary. The actual designing is discussed in PARTS III and IV of this document.

PART IIIDESIGN OF TRADITIONAL HOUSE

Before the actual designing could be started, it was necessary to study the various traditional styles prevalent in Arlington and vicinity. The most predominant types, as could be expected, were those showing French, English or Dutch influences. To attach to them a period appellation would not be altogether fair in many houses for they express the ideas of a twentieth-century architect and are adapted to twentieth century needs. They are often more traditional in detail, materials and use of materials, and outward appearance than in plan. While the inspiration is definitely from the past, the designs are interpretative rather than slavishly imitative. This is not true in every case, but is in many cases and is brought out here to call attention to the fact that a home design can be based on a traditional style without losing individuality or utility.

Since this paper is not primarily concerned with the actual procedure of designing a residence, the discussions of how each design was executed will be brief. All the logical and necessary considerations as to orientation, utility, flexibility, and circulation were made, and, as usual, numerous tracing studies of plans and elevations were drawn. A model was not employed in the study of the design since its simplicity of mass and facades were easy to visualize. Perspective studies were made and, finally, a perspective drawing was delineated in color. (See frontispiece #1.)



FRONT ELEVATION
scale 1/8"=1'-0"

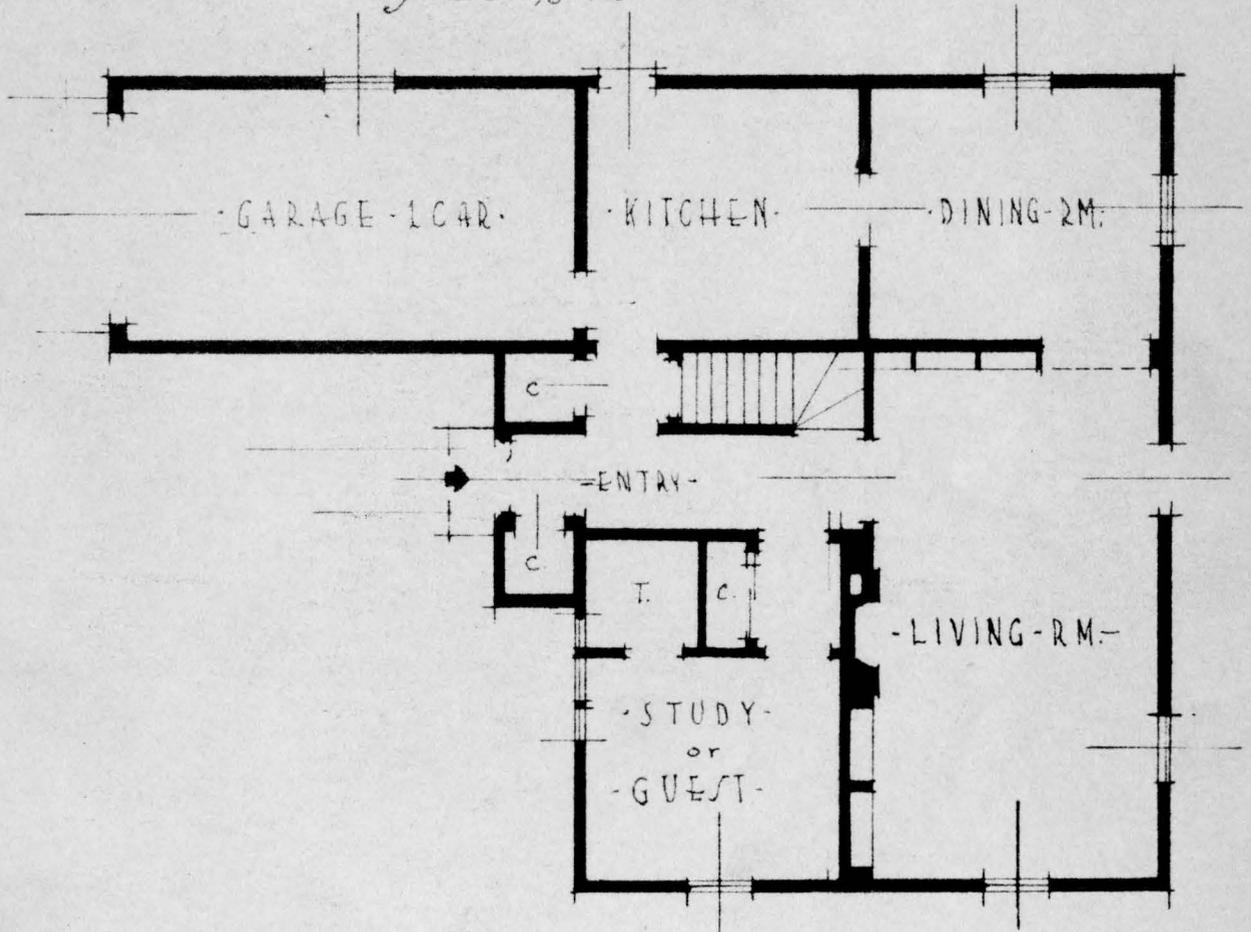
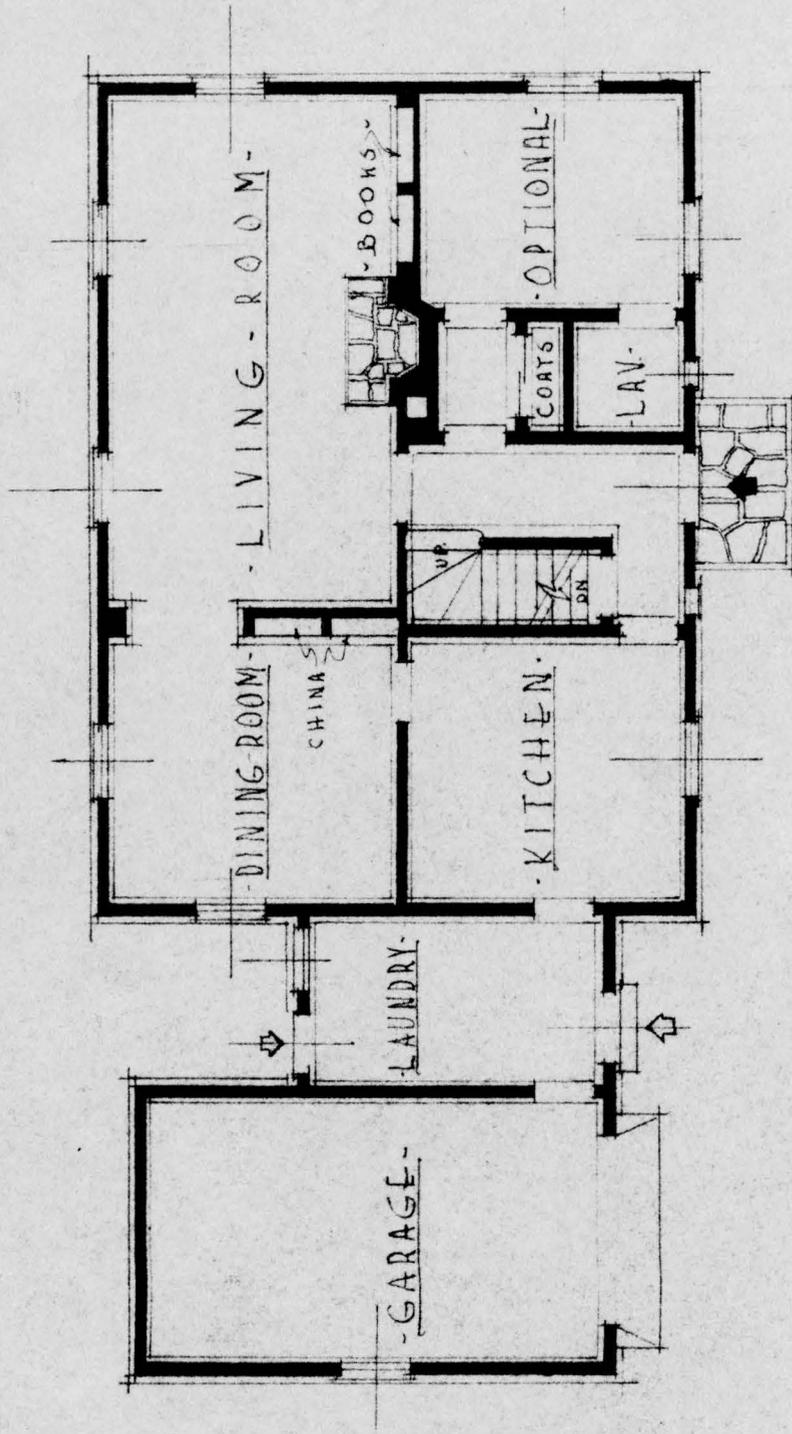


PLATE - I

It was decided that the house would be of frame construction because of cost limitation. This led to the choice of the most typical and predominant traditional type--that with white siding, blinds, pitched roof, etc. The first solution was slightly French in its appearance. (See Plate I.) The asymmetry of the fenestration, the overall informality, and the high pitched roof lend this atmosphere. While the plan functions fairly well except for the lack of laundry space on the first floor, the garage would appear awkward in perspective. This solution would probably be used if the lot were narrow and prevented the placing of the garage at the side.

The next and final stage (See Plates II, III, IV, V, and VI.) was reached by moving the garage into the position shown on the east side of the house proper, and connecting the two by means of a laundry room. The laundry room also serves as a circulation unit between the kitchen and service yard. The front windows are comparatively high from the floor (36" from the floor to top of sill) since one is in the kitchen and the other in the study. Panels were placed below these windows and full length blinds used to improve the proportions of the windows. This is purely superficial functionally, but preferable, even necessary aesthetically.

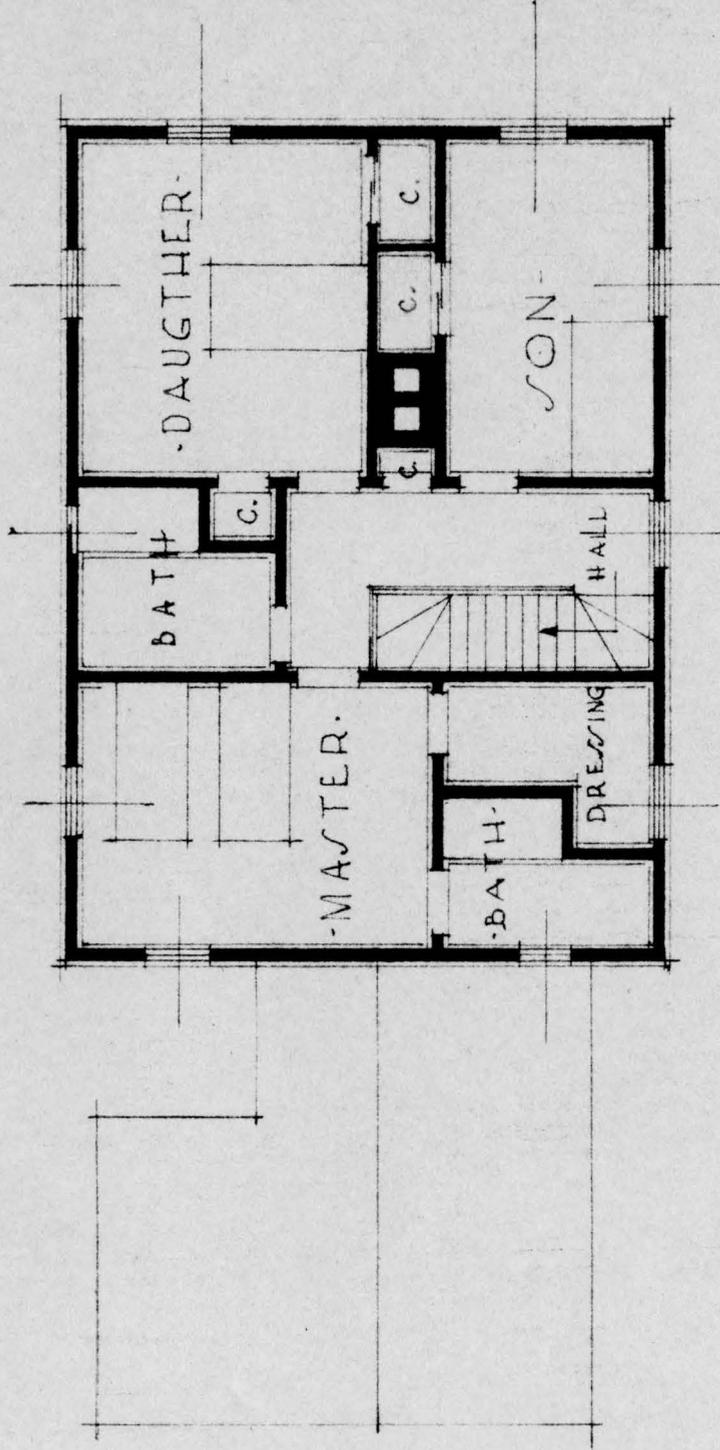
The lowering of the roof line to a height of five feet, six inches from the second floor was also done to improve the outward appearance. This mutation does not reduce the cost of the house, as some would assume, since the reduction in cubage is counterbalanced by the cost of the six dormers raised above the eave line. It is difficult to use guttering on the broken eave line since four separate down spouts would be required on



FIRST FLOOR PLAN

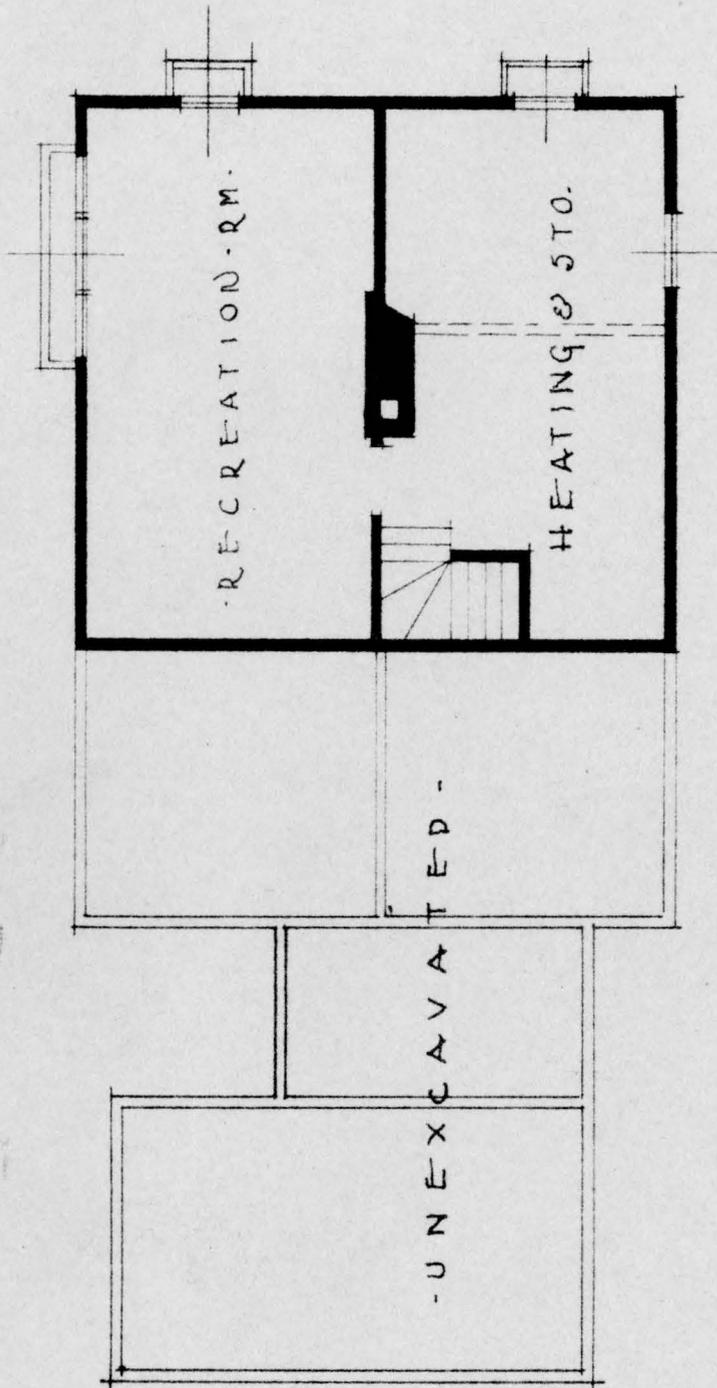
Scale: 1/8" = 1'-0"

PLATE II



~ SECOND FLOOR ~ PLAN ~
Scale: 1/8" = 1'-0"

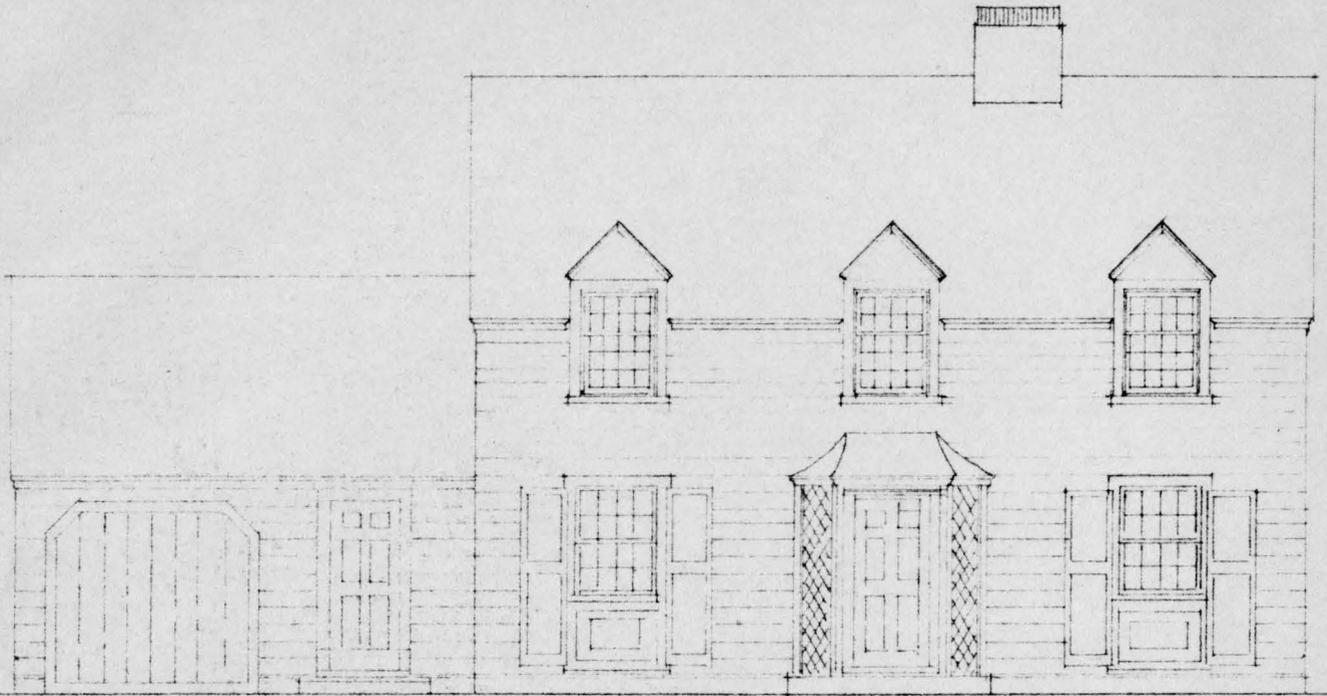
PLATE - III



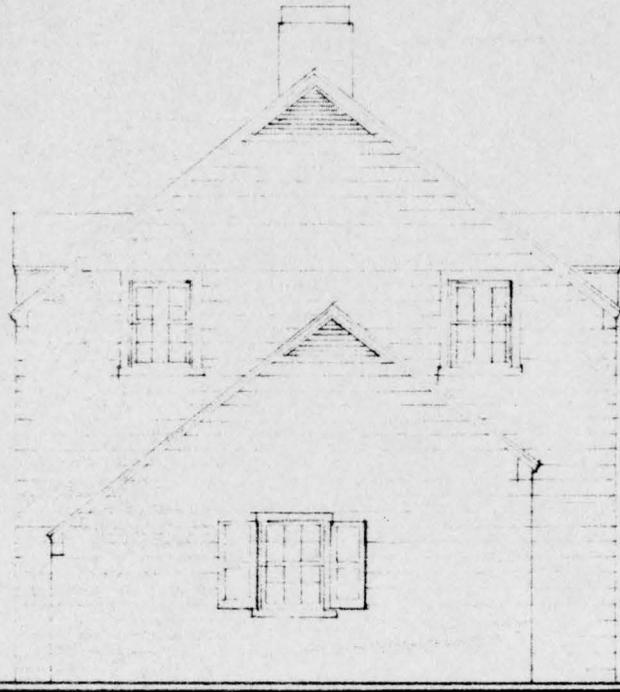
- BASEMENT - PLAN

Scale: 1/8" = 1'-0"

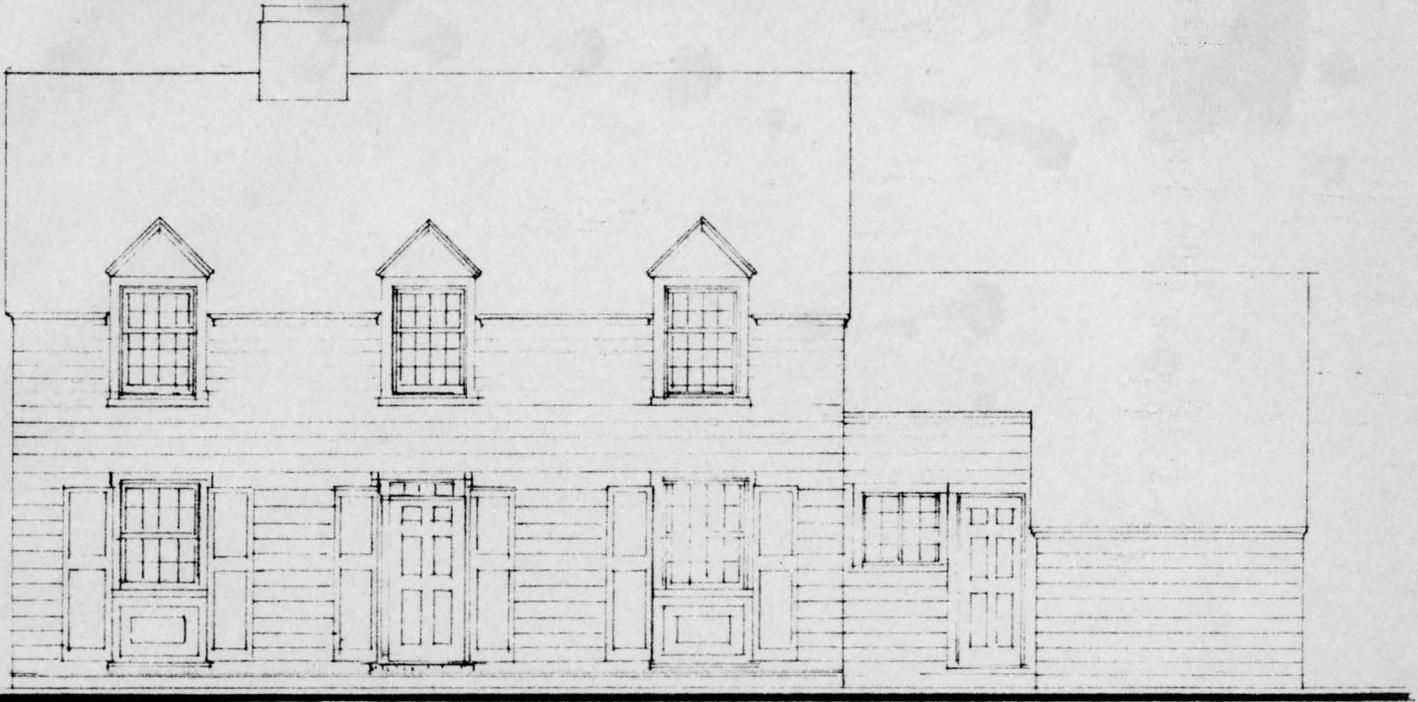
PLATE - IV



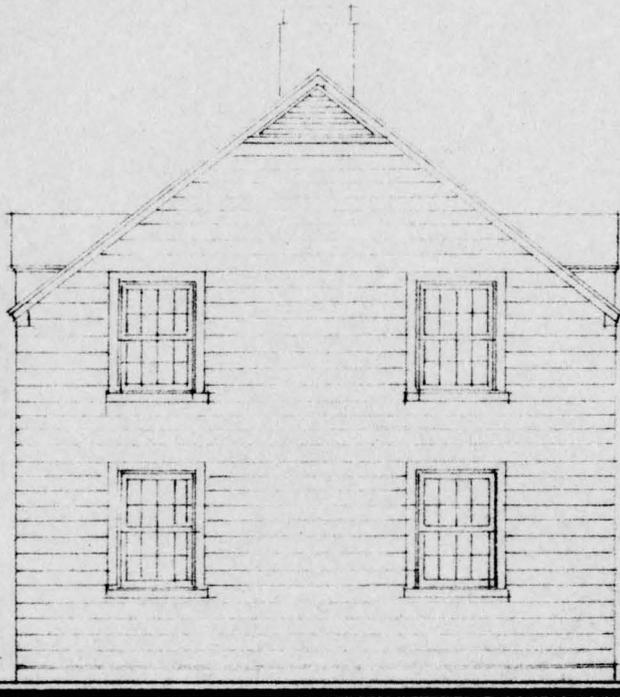
• N O R T H • E L E V A T I O N •
scale: 1/8" = 1'-0"



• E A S T • E L E V A T I O N •
scale: 1/8" = 1'-0"



S O U T H - E L E V A T I O N .
scale: 1/8" = 1'-0"



W E S T - E L E V A T I O N .
scale: 1/8" = 1'-0"
PLATE - VI

both the north and south elevations. A concrete splash at the ground with a protected entrance was the answer to this problem. This entrance covering was kept simple for reasons of cost. Wood lattice work to carry vines from the sides and a metal canopy over completes it. This detail also eliminates the desirability of a classical entrance frame (a costly item) for a simple frame is just as effective. The two small windows to the hall and lavatory on either side of the front door come under the shelter and do not interfere with the simplicity of the facade.

Since the majority of home builders consider a house incomplete without a fireplace, one was included. In order to locate the fireplace in the center of the interior living room wall, it was necessary to place the chimney off center with regard to the main portion of the house. No attempt was made to fake this by corbelling it toward the center. It is frankly placed nearer the west end of the house and, in composition, is balanced by the garage wing on the east side of the house. The chimney is larger than necessary. Its size is reminiscent of the potted chimneys of the sixteenth century, and, in itself, adds beauty to the building.

In a survey made by the "Architectural Forum", in 1936, a questionnaire was sent to building designers all over the United States. The purpose of this questionnaire was to reflect local influences of cost variations, living customs, and public demand upon a design of a \$7,500.00 house. It was composed of two parts, one dealing with the owners requirements, the other with methods used by the designers in meeting them in view of the local limitations of cost and size influencing planning, construction, and equipment.

From the thousands of answers, a "standard house" was sketched by the editors. I quote from the "Architectural Forum", "These (questionnaire answers) revealed that the small house costing \$7,500.00 implies to the great majority of designers who answered, a dwelling of Colonial design, averaging in size about 23,000 cu. ft. in the Northern and Western localities and about 24,750 cu. ft. in Southern localities. It is commonly two stories in height . . . and it almost invariably has a pitched roof in preference to a flat one. Invariably a basement was included." Although this article was not read by the author prior to the execution of the design, the traditional scheme fulfills these expectations in every detail. It can be assumed that the design is what is expected, most generally accepted, and what, in all probability would be erected.

The construction outline (see page 22) also is parallel to the "standard house" or composite house of the numerous answers. The average cost per cu. ft. for Southern localities was thirty cents. This survey was made six years ago and since that time prices have steadily increased. A cost of thirty-two cents per cu. ft. was assumed in arriving at the approximate cost of the house designed for this project. Accepted cubing methods were used in calculating the total cubage of the proposed house which is 24,246 cu. ft. Using 32¢ per cu. ft., the total cost of the house would be about \$7,750.00. While this exceeds the budget of \$7,500.00 by \$250.00, it is close enough for the purposes of this document.

The following construction outline is suggested were the house to be constructed. Compromises were made between cost and permanence as well as cost and quality.

Foundation: Concrete walls on concrete footings.

Structure: Exterior walls of frame construction covered with insulation sheathing and 10" redwood siding painted white. Interior partitions of plaster on gypsum lath on 2" x 4" studding. Floor construction of wood joist, pine sub-flooring, and oak finish. Bathroom floors covered with linoleum.

Roof: Red cedar shingles on asphalt felt and pine sheathing. Shingles would be stained green.

Insulation: Insulation sheathing on outside walls and glass wool on second floor ceiling.

Windows: Double hung wood sash and casement.

Wall coverings: Plaster, - wall paper in living room.

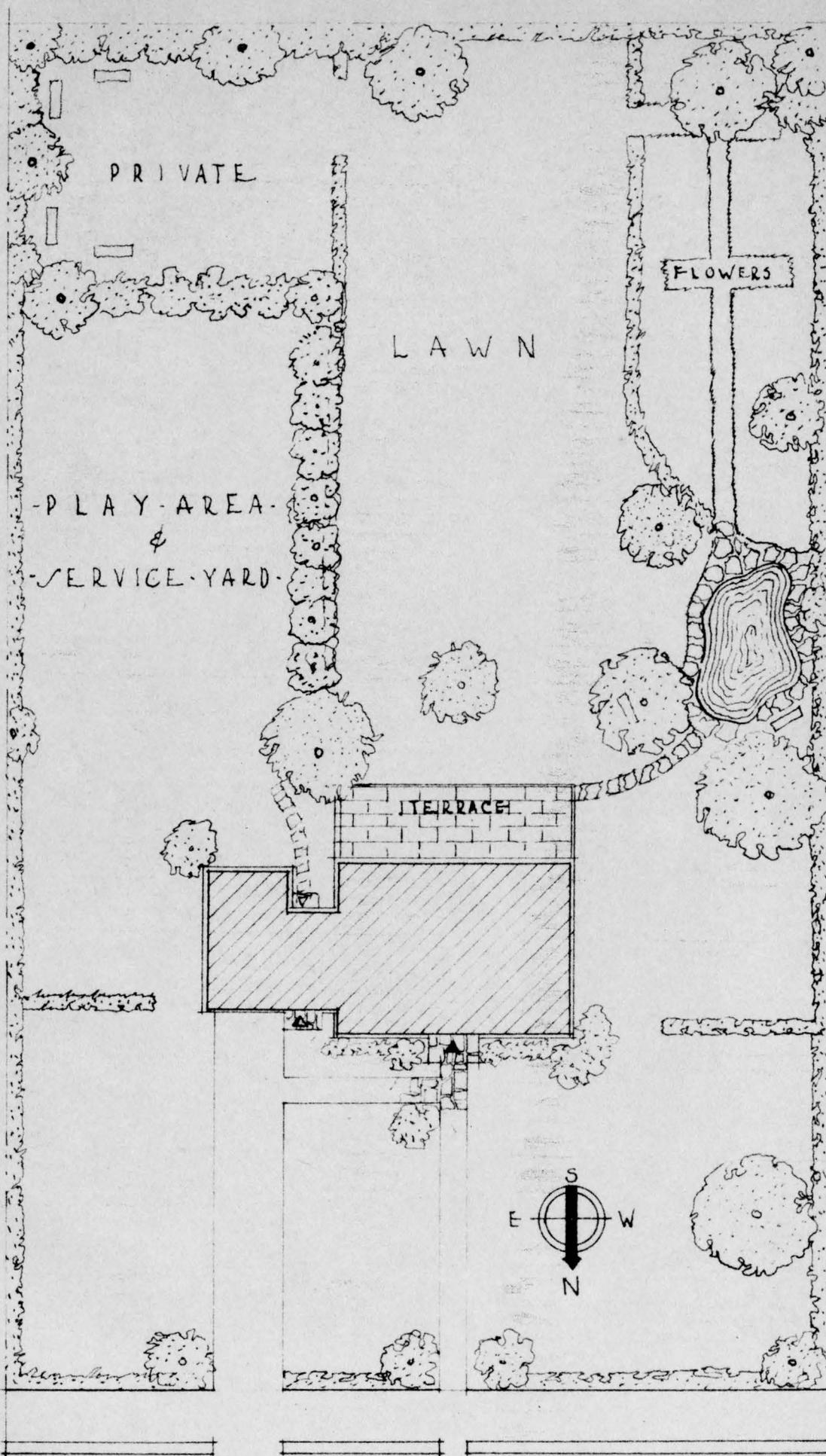
Woodwork: Trim of stock ponderosa pine mouldings. Doors in stock sizes of ponderosa pine.

Plumbing: Standard equipment, cast iron soil pipes, and brass water tubes.

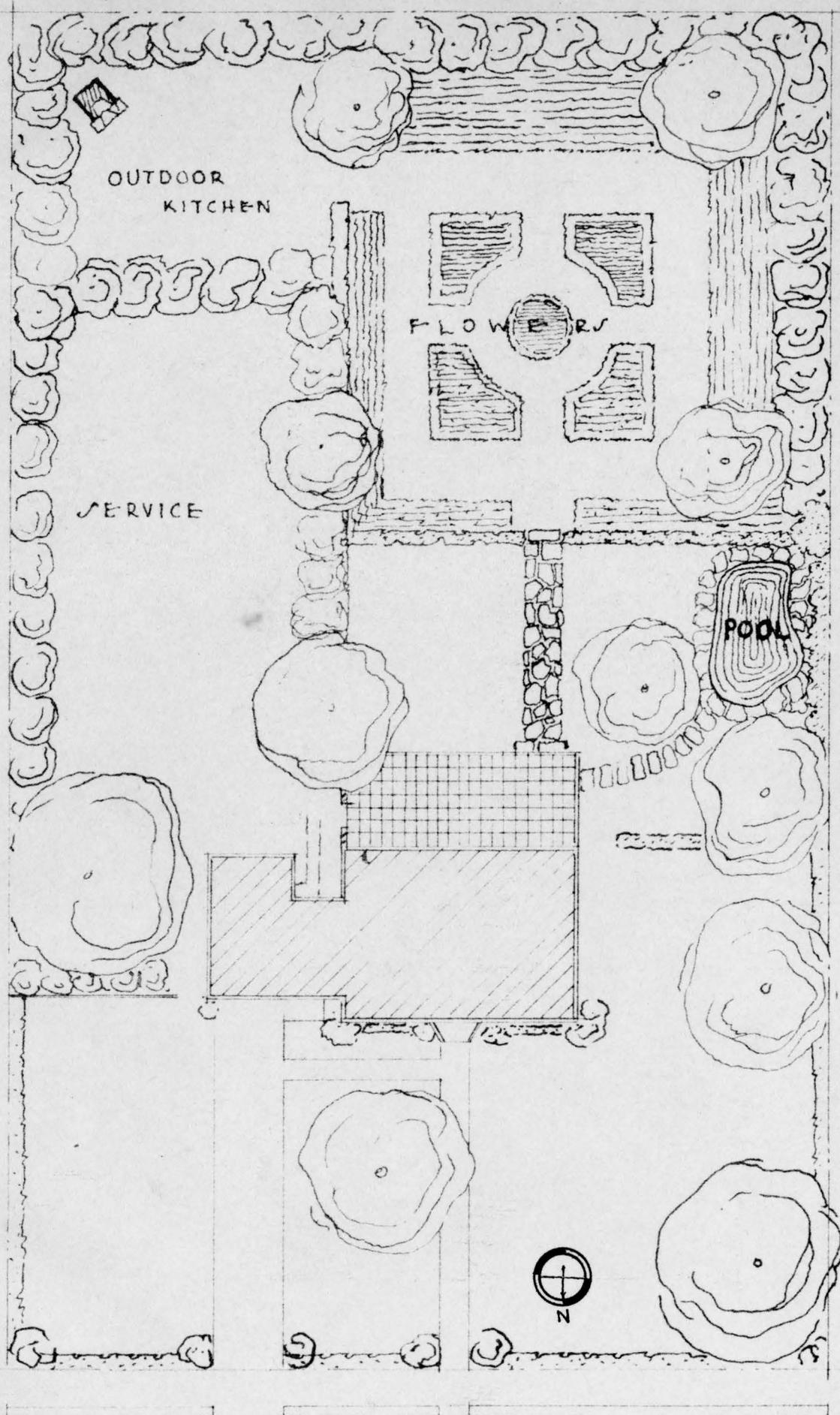
Heating: Hot water system, oil burner, radiators and hot water heater.

The exterior of a house is not complete in appearance or utility until it is properly landscaped. A general scheme, leaving nothing to chance, should be developed simultaneously with the house plan. The suggested plot plan included here is only a general scheme and could be compared to a preliminary sketch rather than working drawings. A complete plot plan would include the kinds of trees, shrubs, and flowers used and would require the services of a man trained in landscape architecture.

The first attempt (See Plate 7) was not very successful. The areas are properly separated by use of planting, but the general feeling is incoherent. There is no relation between the living areas of the yard. To correct this, a more or less formal flower plot, framed with trees and hedges, was included. This solution is adequate unless a large open lawn is desired.



- P L O T - P L A N - P L A T E - V I



- P L O T . P L A N .

scale = 3/4" = 1'-0"

PLATE VII

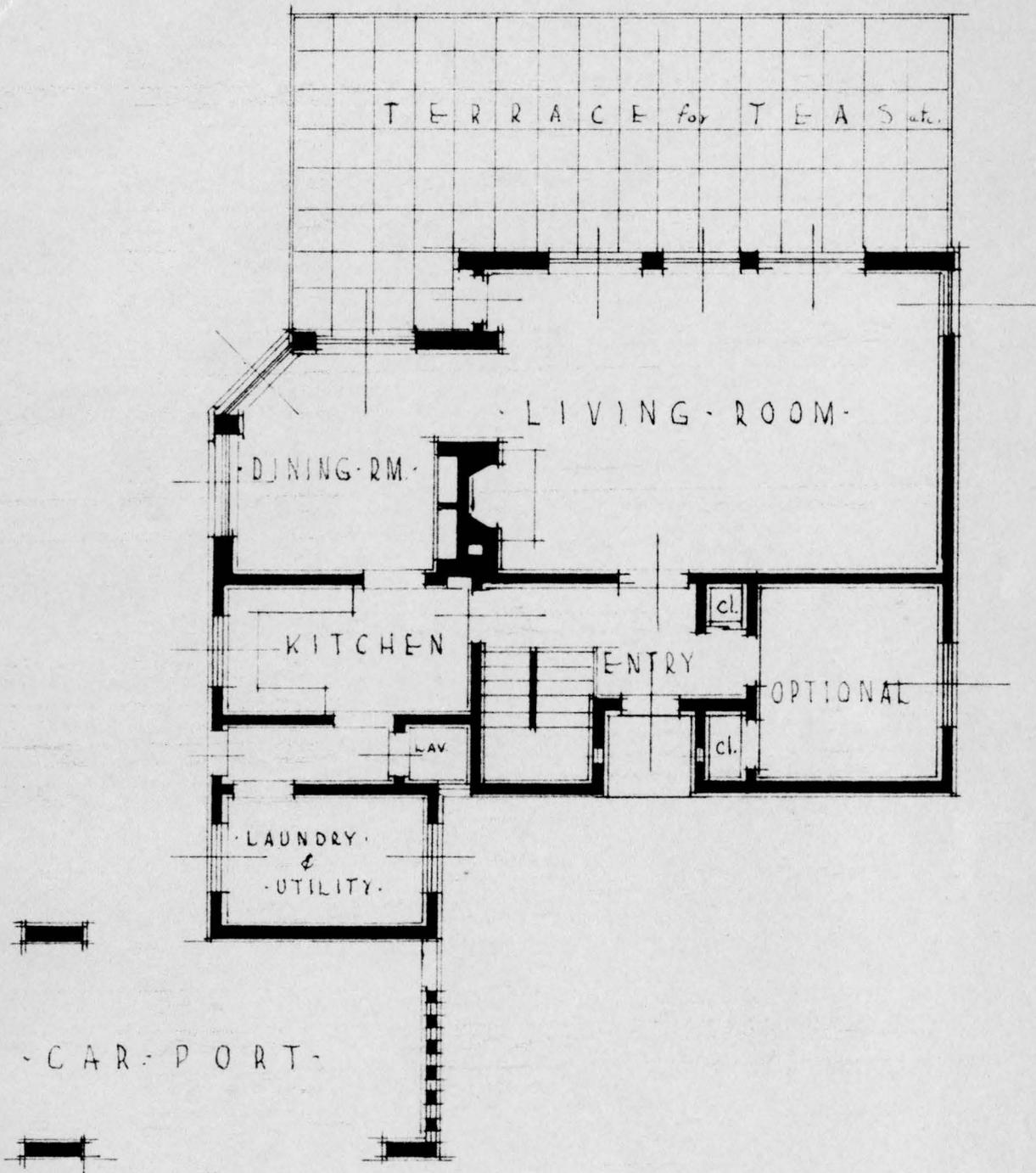
If this were the case, the inner plots for flowers could be omitted and the whole living area left open. The trees are placed in such a way they will frame the house and carry the eye to the center of interest which is the house itself. The trees next to the pool afford shade for the living and dining rooms as well as the terrace during the afternoon. The service yard with its unsightly features, is well screened from the living area and adjacent property to protect those at work from the gaze of the curious. It is also the play area for the children.

Further discussion of the final design will be in PART V of this thesis. Orientation, circulation, zoning, etc., will be treated on a comparative basis and is omitted here to avoid repetition.

PART IV
DESIGN OF MODERN HOUSE

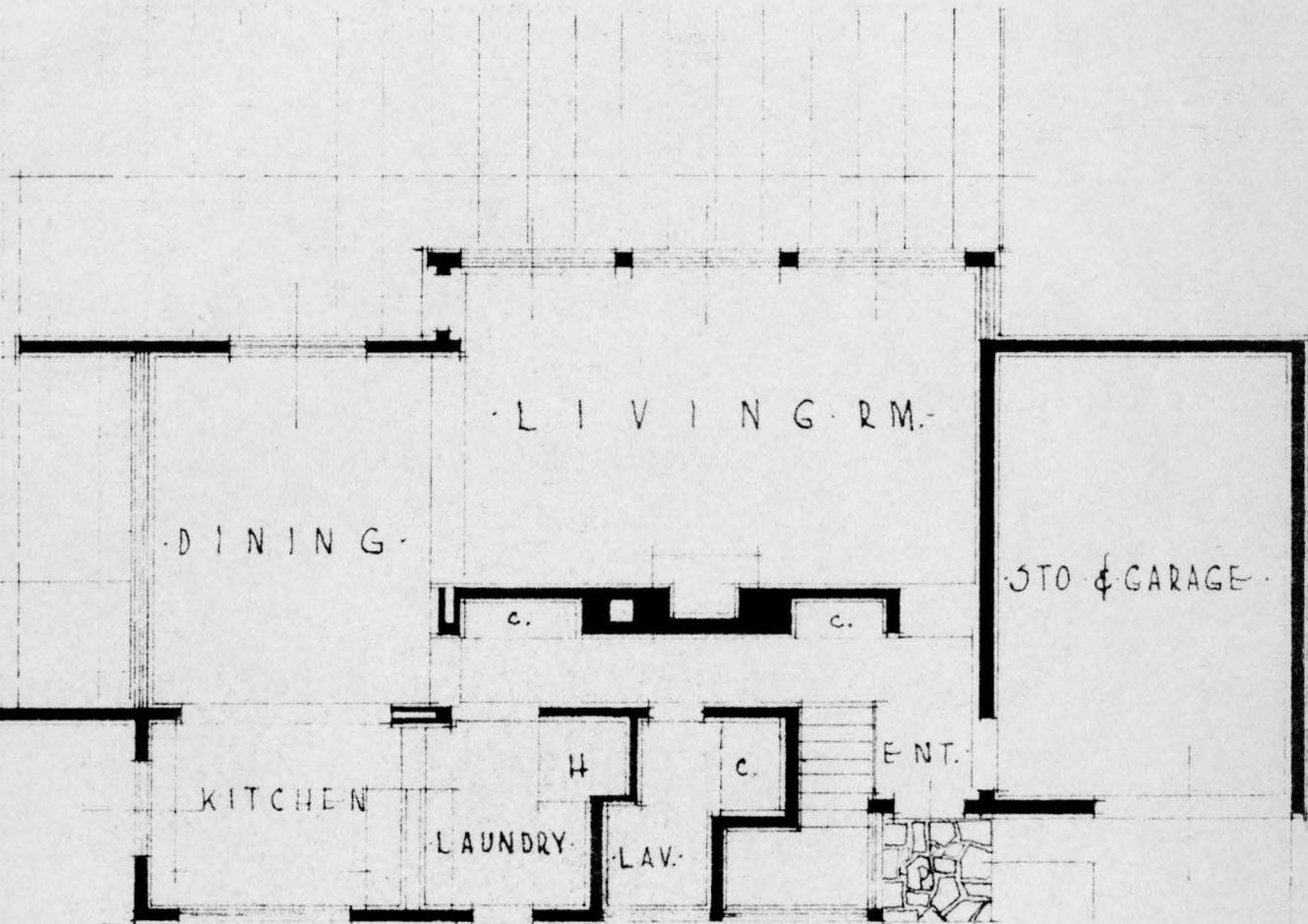
The design of a residence in the contemporary manner was a new experience for the author. Before the design was attempted, references were studied. The nature of the research for this house was different from the research made before the traditional house was designed. The latter consisted of a study of precedent, custom, and detail while the former demanded a deeper understanding of the origin, purposes and motives of the revolutionary ways employed by its advocates. Much of the material was philosophical in nature and some of the pro arguments were pure rationalization. On the other hand a deal of truth and sound common sense explaining the reasons and ways of this new architecture was found. James Ford in his publication, "The Modern House in America" says, "The essence of the new residential architecture is revealed in its twofold purpose: to base its plan upon the organic life of the family, and to make logical use of the products of invention. The outer form of the modern house becomes the outgrowth of a plan built about the interest, routine activities, and aspirations of the client and his family in terms of materials employed." Proceeding from the theory that the house grows from the inside outwardly, the actual planning was begun.

A house on one floor was first attempted in order to eliminate the stairs altogether, but the number of units tended to make the plan too spread out for the plot. The next plan (See Plate 9) was laid out with



• FIRST FLOOR PLAN •

scale: 1/8" = 1'-0"

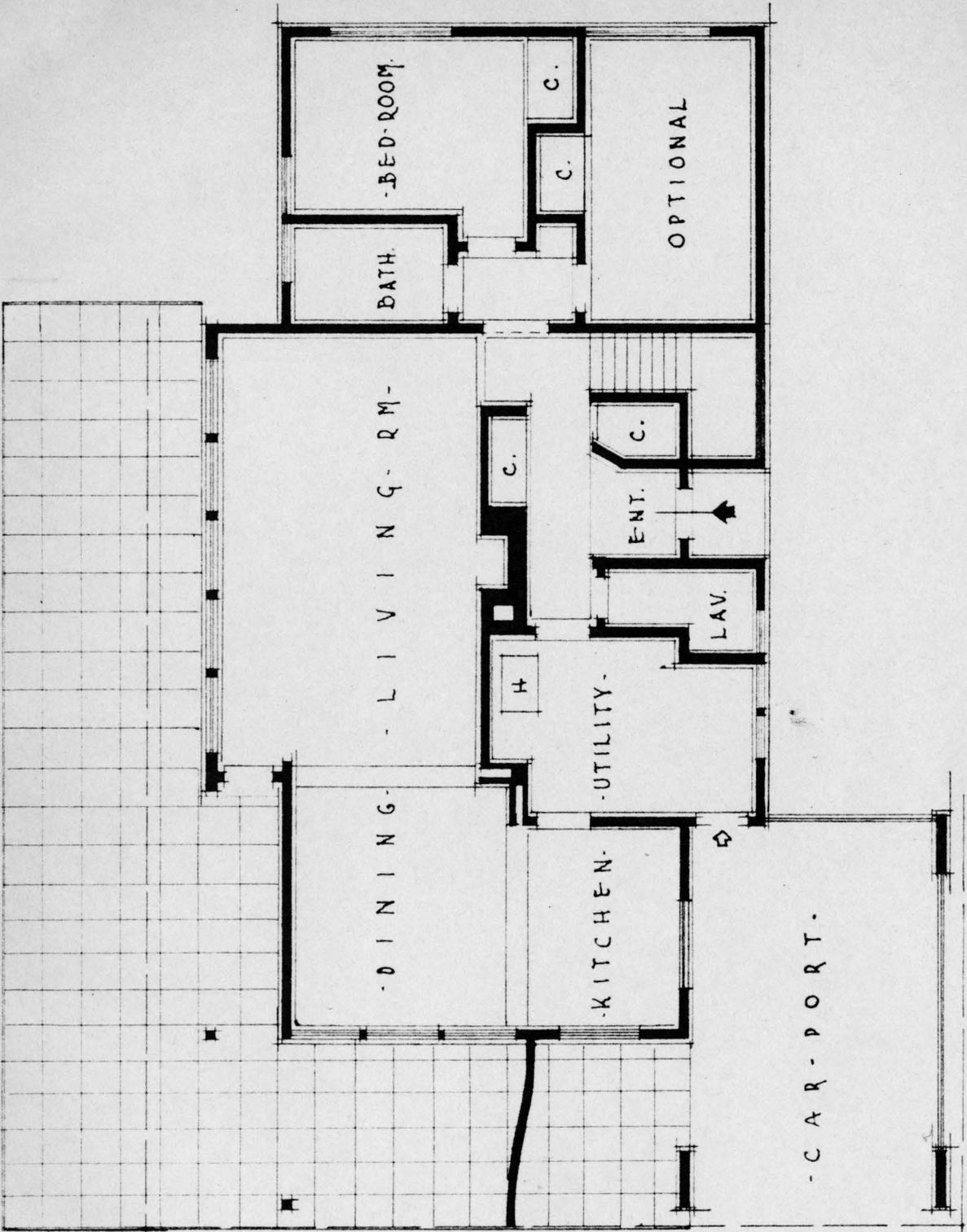


• FIRST FLOOR PLAN •
scale: 1/8"=1'0"

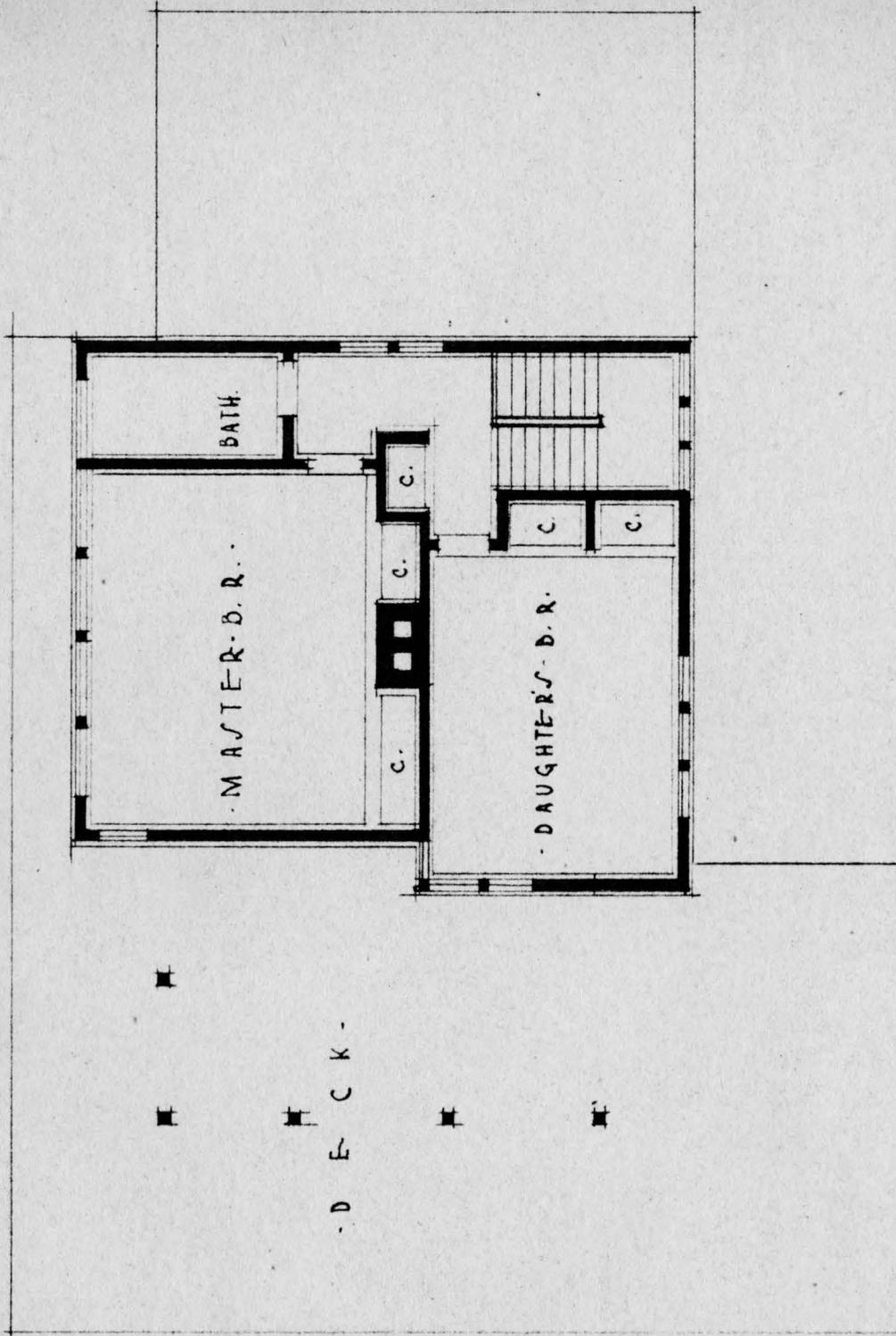
the dining, living, and kitchen spaces in the same general relationship as in the first house. This was not done to make the two plans as similar as possible, but because this arrangement afforded the best orientation. This plan appears to function well but closer inspection shows the utility area so located that a separated chimney would be necessary for the heating unit. A solution which would avoid this extravagance would be much more acceptable. Also, the fireplace in this plan is located between two openings which would make a circulation area rather than a relaxation area of the space surrounding it.

The next stage in the evolution of a plan for the modern house (See Plate 10) solved the fireplace problem but the location of the heater would still make a difficult detail. Another outstanding fault is the fifteen foot corridor from the front entrance to the kitchen without a single window. The service entrance is on the street side of the house and would have to be screened either architecturally or by planting. It would not be accessible to the service yard and should be relocated. The garage has been moved to a position on the west side of the house but not wisely for it will be remembered that the family desired it near the kitchen.

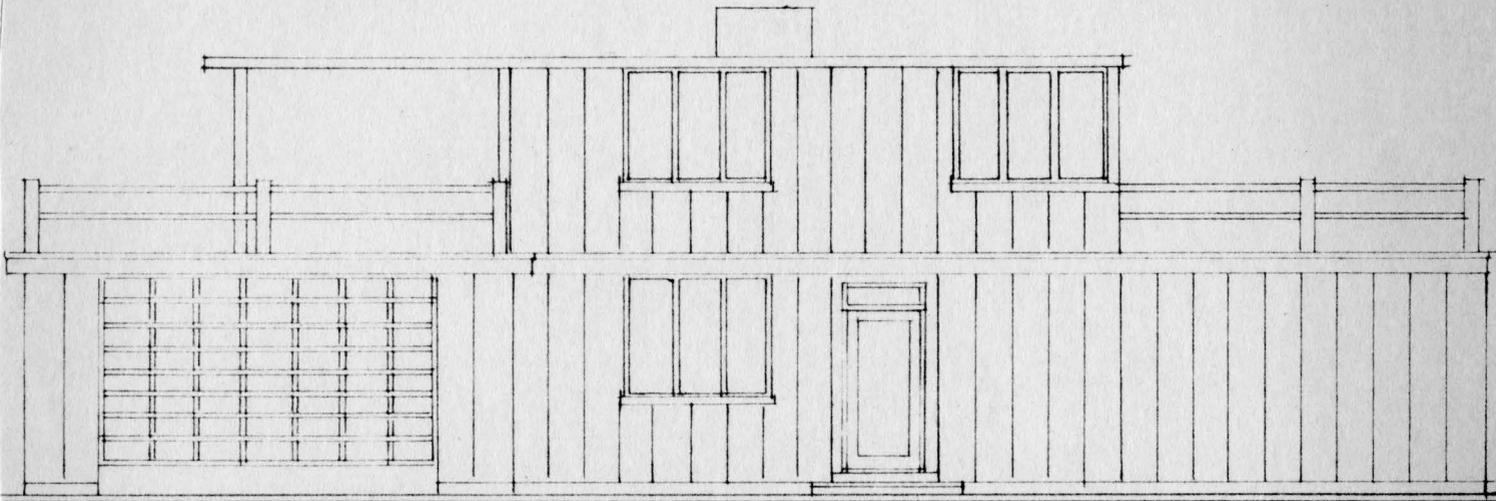
In the final stage (See Plate 11) these difficulties in plan were corrected in several ways. The moving of the front or main entrance to the left of the stairway shortened the hall to the kitchen. By extending the utility and laundry room as shown, the heating unit could be located along side the chimney and circulation from the front hall



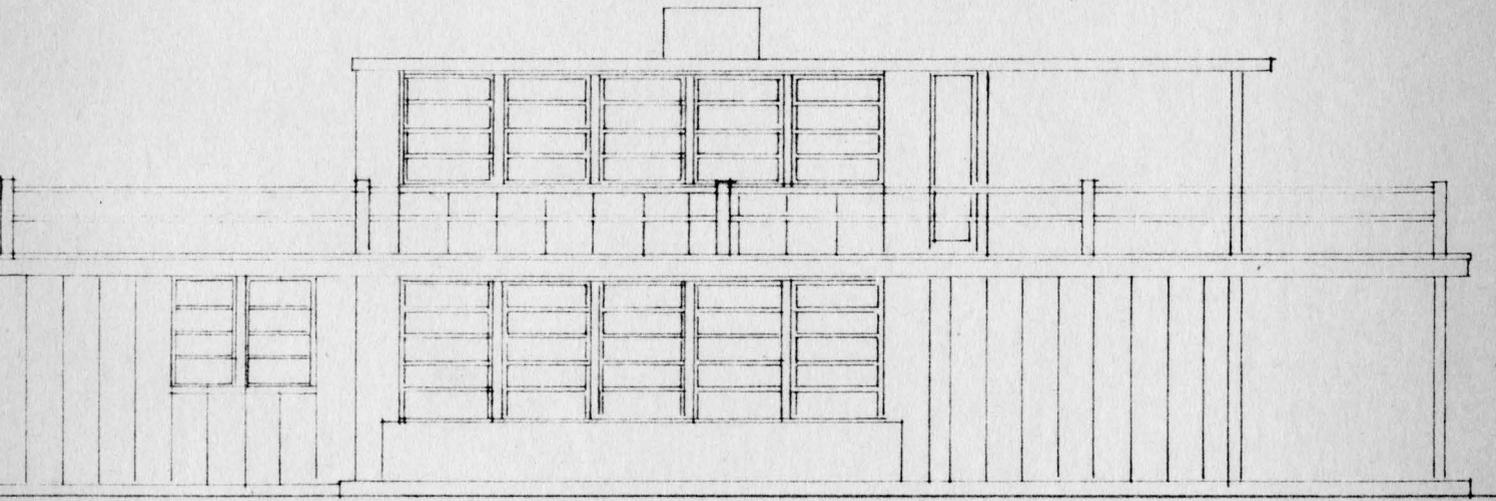
F I R S T F L O O R P L A N .
Scale: 1/8" = 1'-0"



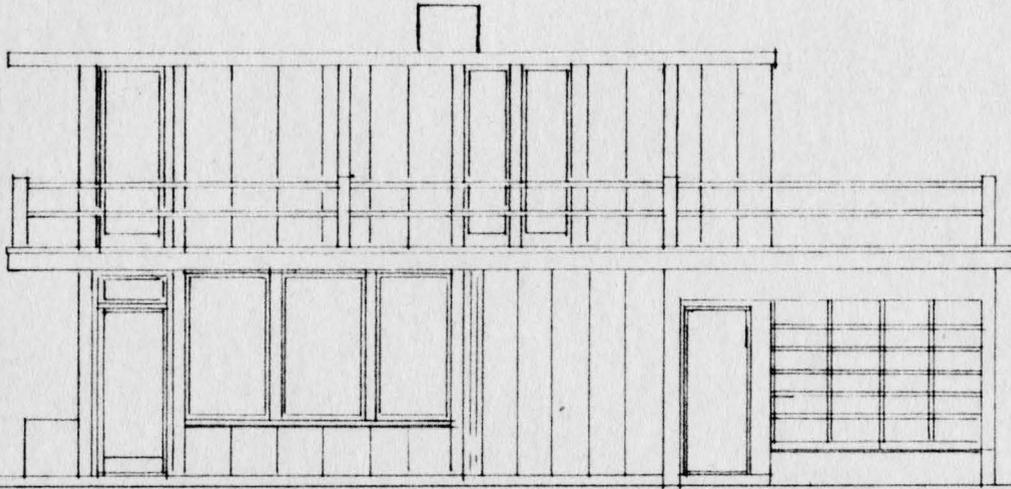
- SECOND FLOOR - PLAN -
Scale 1/8" = 1'-0"



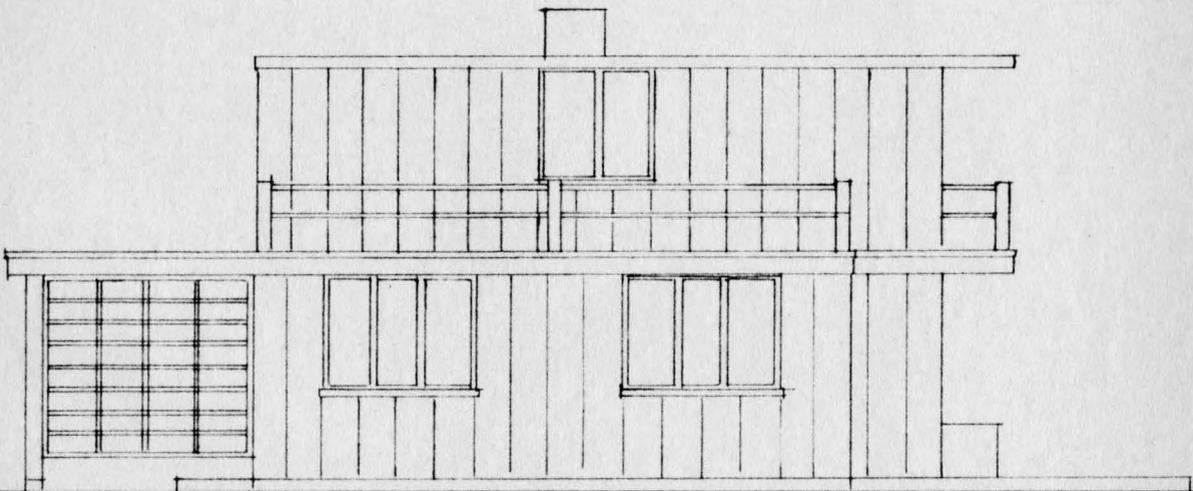
- NORTH - ELEVATION -
scale: 1/8" = 1'-0"



- SOUTH - ELEVATION -
scale: 1/8" = 1'-0"



- EAST - ELEVATION -
scale: 1/8" = 1'-0"



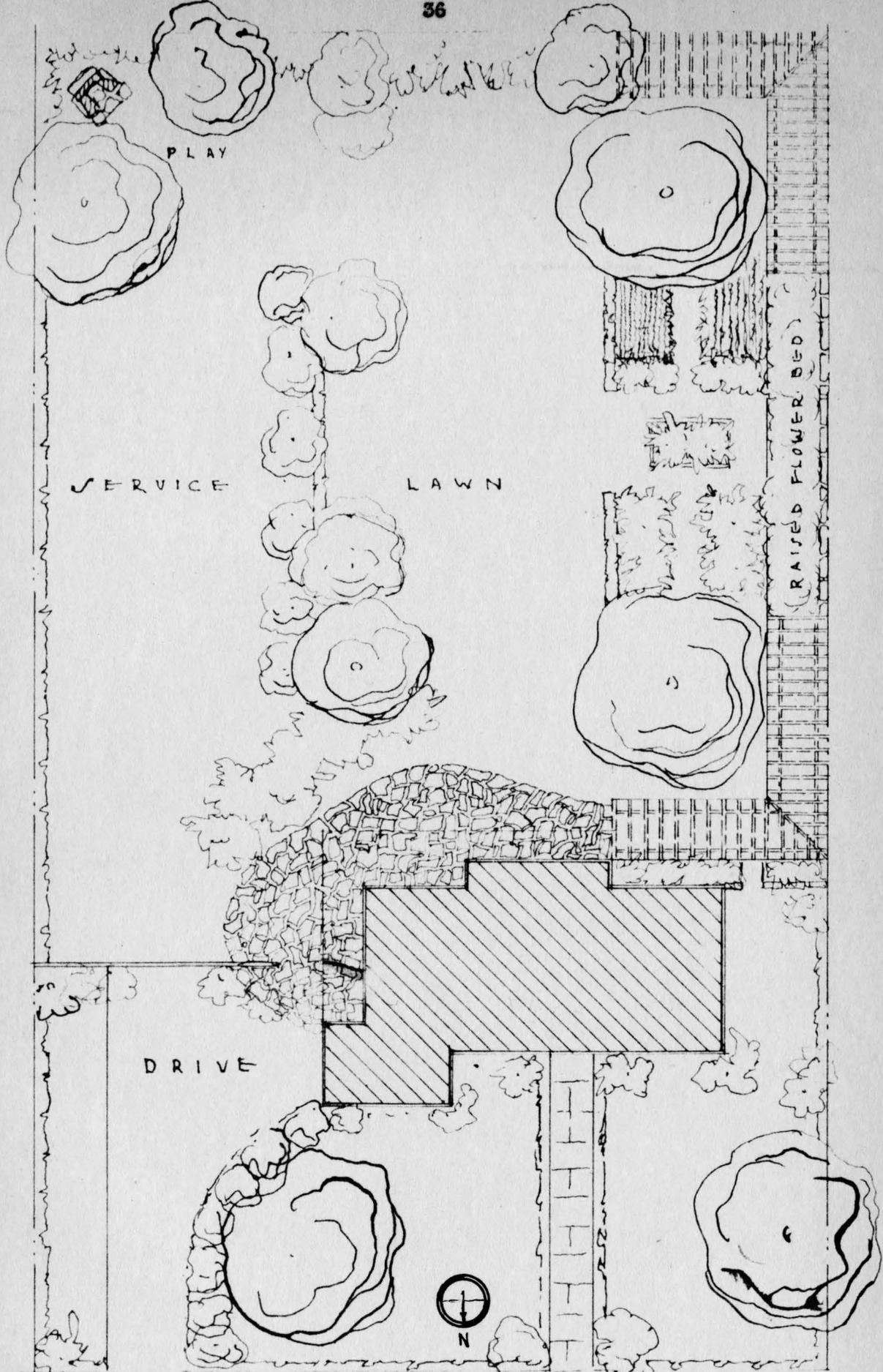
- WEST - ELEVATION -
scale: 1/8" = 1'-0"

to the kitchen carried thru this room. The garage was moved back to its original position and widened to allow circulation to the service entrance. The garage should really be called a car port since it is only a shelter with lattice work for vines forming one end and one side. This port affords excellent concealment for the service entrance from the street. The route from the service entrance to the service yard is now short and direct.

The curved partition is used to screen the kitchen terrace (traditional back porch) from the living terrace area. It is crooked in order to gain necessary footage from the car port and line up with the wall back of the drive. (See Plate 15). A straight partition from the wall to the house would interfere with the dining room windows. Such a "stunt" as this could only be executed in a non-traditional house.

The total volume was calculated according to accepted practices and found to be 23,745 cu. ft. This is approximately 500 cu. ft. less than the traditional house but a higher unit price must be assumed due to the fact that this design has no attic or basement which means most of the cubage comes in the living area of the house. Assuming a unit cost of 33¢ a cubic foot, the total cost of the house would be about \$7,830.00 or \$80.00 above the traditional house in spite of the smaller volume. Cost estimates made from cubage studies can only be expected to give within five or ten percent of the actual cost so this difference is insignificant.

The following construction outline was decided upon after studying the construction methods and materials employed in similar houses in this and other sections of the United States:



PLOT - PLAN

scale: 3/4" = 1'-0"

Foundation: Concrete walls on concrete footings.

Structure: Exterior walls of diagonally braced timber chassis covered with insulation sheathing and vertical jointed T & G redwood siding painted white. Floor construction of wood joist, pine sub-flooring and oak finish. Bathroom floors covered with linoleum. Fireplace finished in brick.

Windows: Hinged wood casements and sliding wood casements of Anderson type. Sliding type used in living area, dining area, and master bedroom. Double strength glass throughout.

Roof: 4-ply built-up asphalt on pine sheathing and wood joist on upper roof. Deck finish of painted 12 oz. canvas.

Insulation: Insulation sheathing on outside walls and fiber insulation board on exposed ceilings.

Woodwork: Doors flush wood veneered type in stock sizes. Trim of stock ponderosa pine mouldings.

Plumbing: Standard equipment, cast iron soil pipes, and brass water tubes.

Heating: Hot water system, oil burner, and radiators or hot air system with registers. Hot water heater.

The suggested scheme for the plot included here (See Plate 15) is elaborate. It could be built over a period of time if the cost proved to be beyond the means of the family. As in the case of the traditional house, trees are located to afford a setting for the house and lend an impression of protectiveness and, at the same time, afford shade for the outer and inner living areas. The pergolas and raised flower bed would form an excellent enclosing screen for the living area and render an atmosphere of complete privacy. As before, the service yard is screened in and is entered from the kitchen terrace. One change in the house itself would be made before proceeding with the working drawings, in order to obtain a better relationship between the house and plot. The dining room windows on the east would be

raised to a height of about three feet from the floor and a window seat incorporated beneath them. Windows would be placed in the southern wall to afford a view of the lawn, an improvement by proxy of the change of views.

Further discussion of the final design will be made in Part V of this thesis. Elimination of that material from this section will avoid repetition.

PART V

COMPARATIVE ANALYSIS

It remains to compare the two solutions already discussed, and to present the relative merits and short comings of each. The question here is not one of good or bad since each design appears to fulfill the requisites of the family, but one of comparing and contrasting from the standpoint of livability. The term "livability" includes the factors of utility, stability, and beauty, plus an emotional implication akin to sentiment. The two houses are for the same setting, family, and requirements; the materials are alike; wood, concrete, glass, and brick. Even the structures are not fundamentally different for both are based on the familiar stud frame. It is the approach that changes the solution, and the comparison is between the results of the different approaches.

I COMPARISON

A. THE PROVISIONS OF EACH HOUSE FOR ACTIVITIES ESSENTIAL TO LIVABILITY

TRADITIONAL



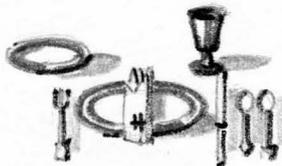
MODERN

COOKING

The cooking area or kitchen is separated from the dining area by a partition, which would restrict noises to a limited area. The arrangement is irregular because of the three doors and traffic which must pass thru the area. This is not ideal but is a compromise between functions. A breakfast table is incorporated in the kitchen since the room is relatively large. The customary location of the sink under the window was sacrificed to the breakfast table. Also, if the window were high enough from the floor to accommodate a sink beneath it, the exterior design would be marred

The space allotted to cooking is small, but the arrangement is "U" shaped. This shape is generally considered to be the most efficient. North and east windows are located over the sink and range respectively. Pantry space is not included, but a serving table is well located in relation to the kitchen and dining areas. The breakfast table is omitted since the kitchen and dining activities are separated by a curtain only and the areas are completely flexible. Food reception, preparation, and service are carried out in that order around the kitchen from the service entrance to the dining table. The feeling is of efficiency rather than intimacy.

TRADITIONAL



MODERN

DINING

The dining room is typical in its east and south windows, cased opening to living area, and swinging door to the kitchen. It would make an attractive room but, on account of its size and arrangement, could not be used to any extent except for dining. The size provides comfortably for two dinner guests only. Noises, as well as odors, are excluded from the dining area. The arrangement is on the formal side and more private than flexible

The openness of the plan lends a feeling of space to the dining "room." The area is completely flexible and could be expanded into the living space on occasions requiring more room. Odors could be eliminated by an exhaust fan but noises from kitchen activities could not. Ease in serving meals is the compensation. The addition of a south window as suggested in PART IV would afford an excellent view of the terrace and lawn. The arrangement is intimate and informal.

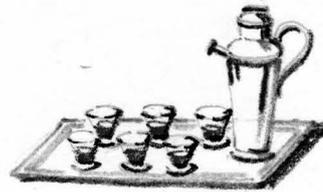
RELAX- ATION

The living room is large and cheerful and could easily accommodate six people comfortably. Circulation thru the room is at a minimum. Such sacred relaxation practices as the evening paper, radio listening, cocktails, reading, etc., are well protected from the interference of other activities.



The large glass area affords an abundance of sunlight and a nice view of the lawn. The fireplace group is private, quiet and comfortable, and adapted to relaxation. The size of the room suggests individuality and an absence of exactness. This is at the expense of an atmosphere of serenity found in the traditional house.

TRADITIONAL



MODERN

ENTER-
TAINMENT

Intimate entertainment activities such as bridge, visiting, teas, etc., could be well accommodated in the living room. Larger groups (unusual events according to requirements in PART II) would be cramped. Provisions are only fair for children's parties, buffet suppers, and the like. The separate kitchen is inconvenient for any drinking party when numerous trips to the kitchen are necessary.

Provisions for entertainment here are excellent regardless of type. This is accomplished by the sacrifice of maximum provisions for private dining and intimate relaxation. The protected terrace is ideal for fair weather afternoon guest or card games. The atmosphere is more "clubby" than cosy; more gay than refined.

SLEEPING

All bedrooms are cross ventilated and have ample closet space. The master bedroom has a small dressing room and private bath attached and is separated from the children's rooms by the hall. This adds to the privacy and quietness necessary for sleeping.



The master bedroom is large and has an excellent exposure. Closet space is ample in all of the bedrooms. The first floor bedroom allotted to the son would furnish and accessible "sick-room", and the first floor bath is nice for any guest quartered in the optional room. All of the sleeping areas are in quiet zones.

TRADITIONAL

TOILET- ING

The lavatory on the first floor opens into the optional room, which is excellent for guest but slightly inaccessible for family use. The master bedroom is small but would not be used for dressing or primping. Tubs in both bathrooms are recessed.



LAUNDRY

The space allotted to this function is on the first floor as it should be, with direct access to the service yard. The plumbing is common to that of the kitchen sink. The close relation of the laundry and kitchen allows the wife to supervise the work with ease.



STORAGE

Besides ample closet space on the first and second floor, the basement supplies a large storage space for miscellaneous articles. The garage is really storage space for the car, and being wide, for garden tools, etc.



MODERN

The first and second floor bathrooms are so arranged that a common stack could be used. The first floor toilet is excellent for guests and sick persons. The inclusion of a lavatory is possibly extravagant, but it is centrally located and has common plumbing with the laundry room.

The relation between the laundry and kitchen is the same as that of the traditional house. The route to the service yard is a little longer but completely screened from the other parts of the house. During the time when area is not being used for laundry, it supplements the small kitchen.

Having no basement to fall back on a large closet under the stair is used for storage of household articles. The closets are uniformly larger than those in the traditional house for the same reason. No provisions have been made for the storage of garden tools.

TRADITIONAL



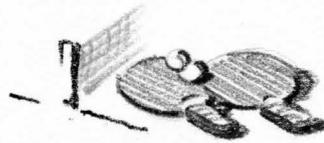
MODERN

STUDY

The room marked "optional" on the plan is to be used as a study as well as a guest room on occasion. The children's homework, the parents' bills, accounts, checkwriting and correspondence would all be activities assigned to this room since it is located in a quiet zone and furnished for the purpose.

The space allotted here for study, concentration, and deep reading is the same as mentioned opposite. It is even better insulated from the noisy activities. Lacking is the double exposure sacrificed for the furniture arrangement.

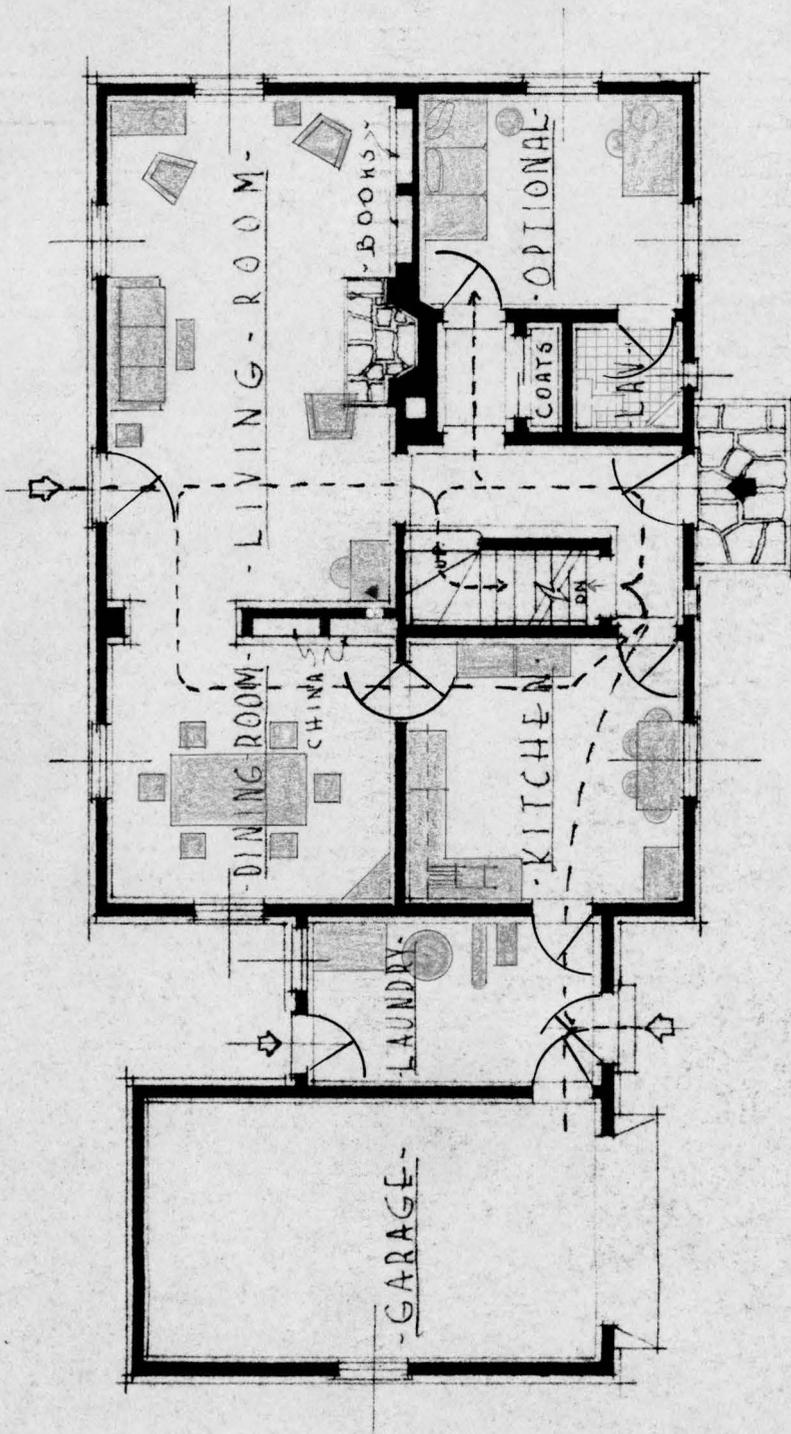
RECREATION



A finished room in the basement is provided for games and noisy hobbies. Although first floor space would be better, a compromise with cost was necessary. The room is ventilated by area windows only and electric lights would be needed even in the daytime.

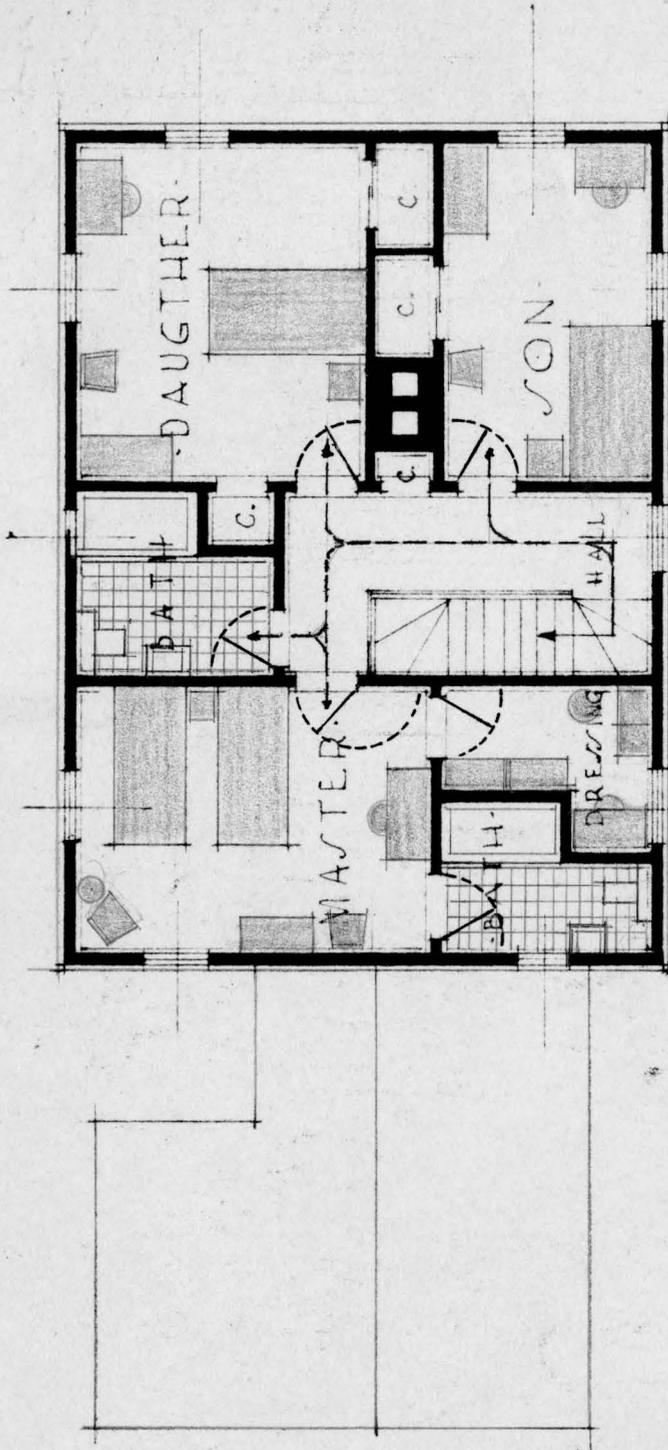
No particular room was assigned to this activity in this house. During the summer the large deck could be used for sunning, games, and the like, but the winter season would call for a conversion of the living and dining areas.

Note: Attention is called here to the location of the telephone (see red triangle on plan). It is centrally located in both houses. In the case of the traditional house the phone can be reached from the dining room thru an opening in the wall on the level of the china closet counter.



- F I R S T - F L O O R - P L A N -

scale: 1/8" = 1'-0"

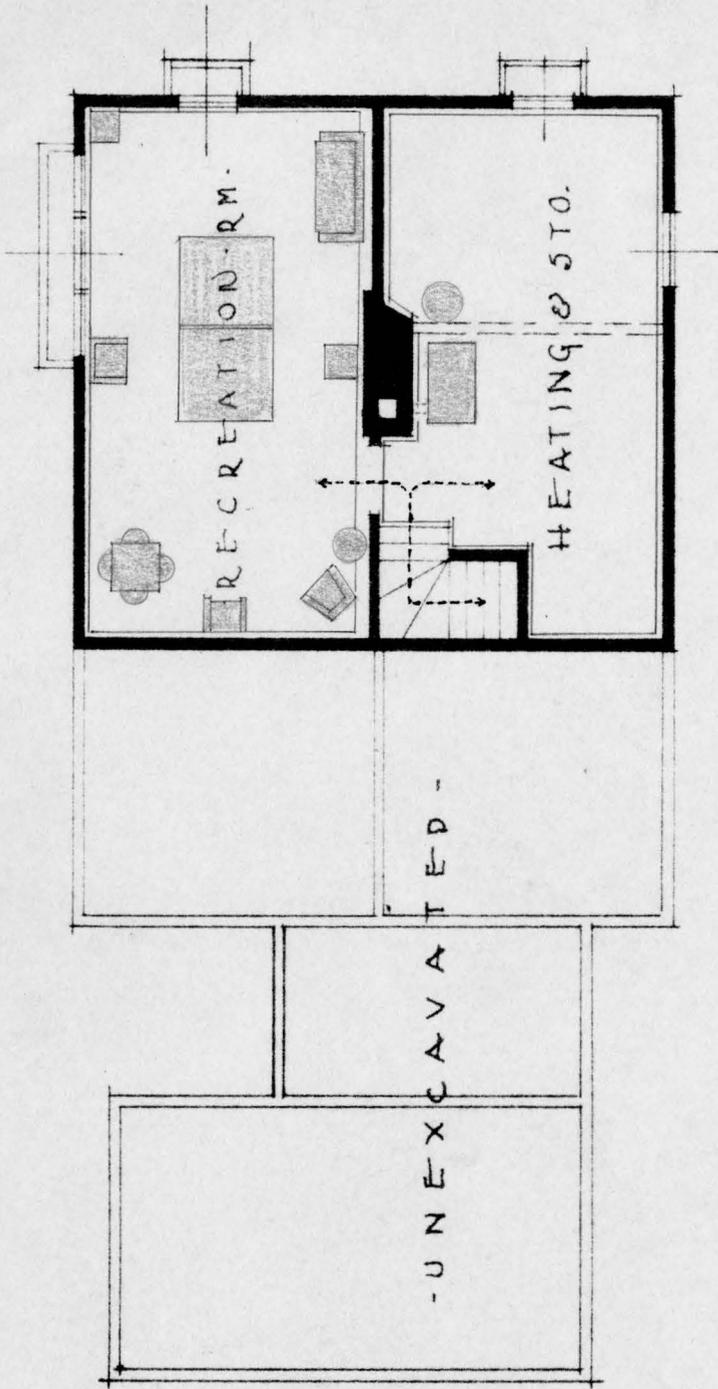


~ SECOND FLOOR PLAN ~

scale: 1/8" = 1'-0"

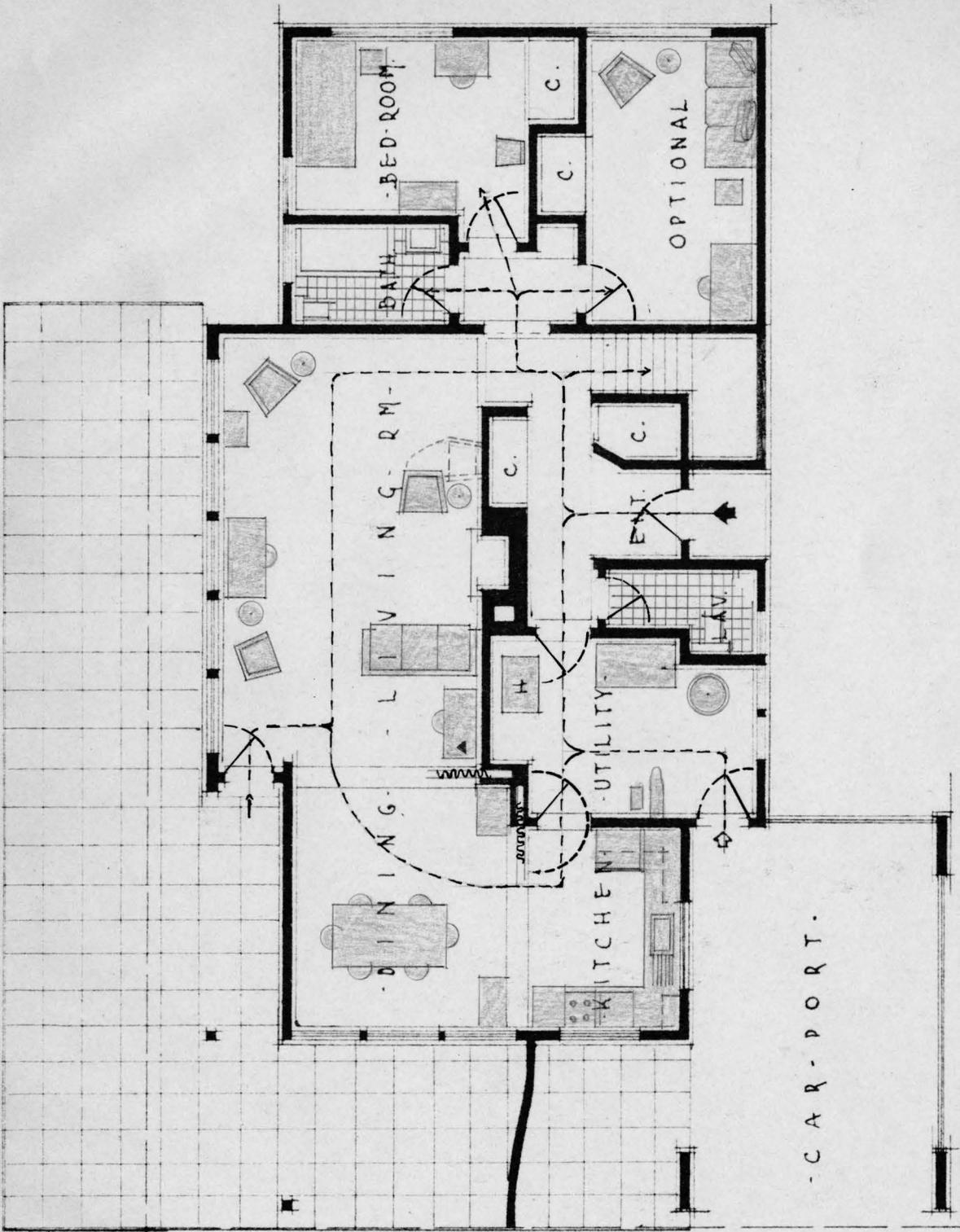
~ CIRCULATION & FURNITURE ~

PLATE

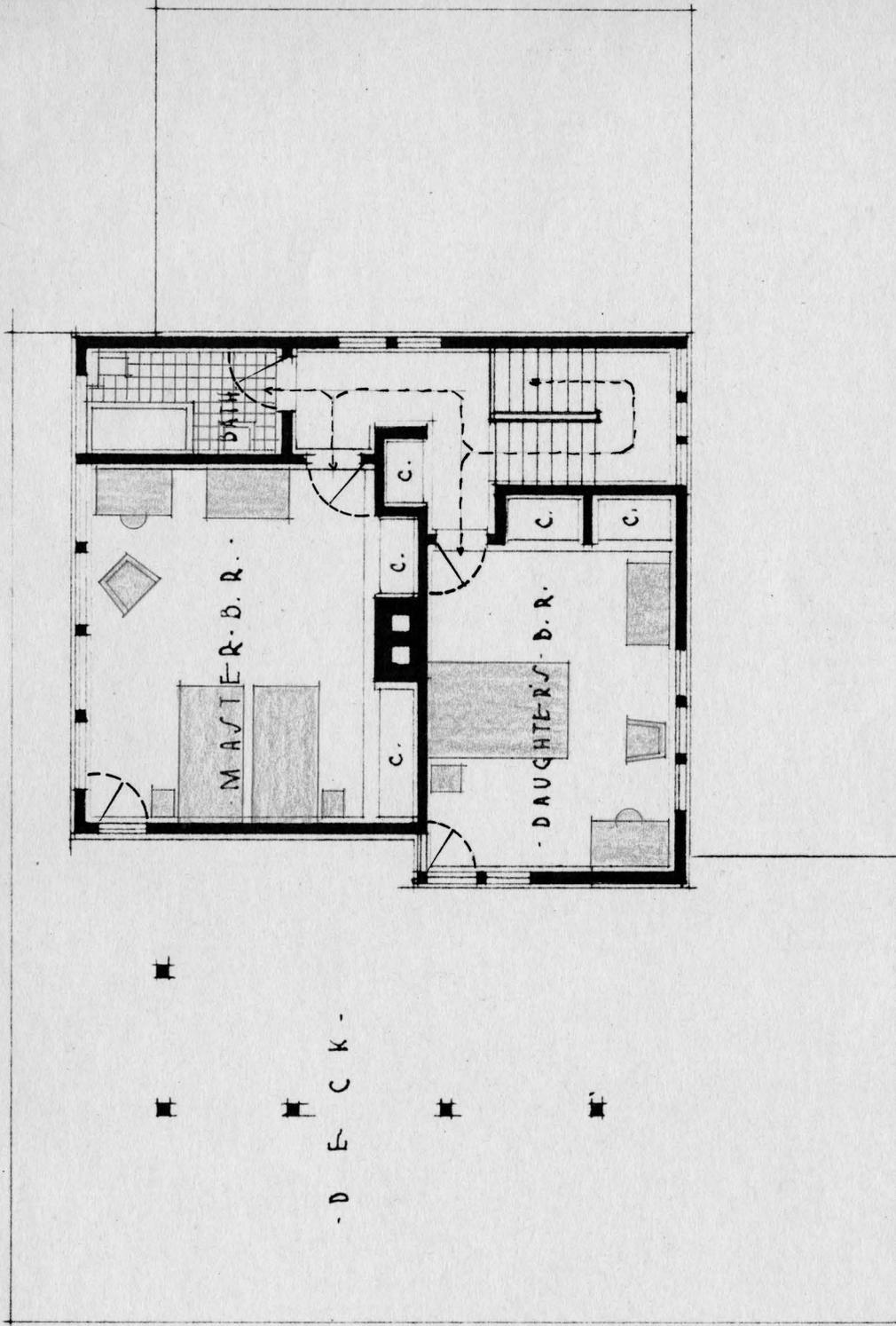


- B A S E M E N T - P L A N

Scale: 1/8" = 1'-0"



F I R S T F L O O R P L A N .
 scale: 1/8" = 1'-0"



- S E C O N D F L O O R P L A N -
Scale. 1/8" = 1'-0"

B. CIRCULATION

TRADITIONAL

The circulation throughout the house is direct and compact. The major shortcoming lies in the garage and service entrances' traffic crossing the kitchen and limiting the arrangement of the kitchen. This is necessary because of the location of the garage which could hardly be elsewhere and look as well in elevation and perspective. The vertical circulation or stairway cannot be considered better than fair because of the turns at both the top and bottom. This was done to shorten the run so the stairs would not infringe upon the living room's regularity. The front and terrace entrances are on the central axis of the house for reasons of outward appearance but function well with respect to the circulation routes within. The basement and second floor circulation is simple and self-explanatory. The upper hall is an attractive unit in itself.



MODERN

Traffic routes on the first floor are somewhat complicated because of the informality of the plan. The routes are longer but fairly direct. The stairway is well located with respect to the other elements and is not in the least cramped. Second floor circulation is simple except for the openings onto the terrace, which open informally from the two bedrooms. This arrangement adds to the privacy of the deck. The hall and stairwell are well lighted. Special attention is called to the route from the driver's position in the car shelter into the house. He can enter the kitchen or go directly to the study or upstairs without passing thru a major unit. The front entrance is not opposite the opening to the living room for reasons of privacy. The front door can easily be answered from the kitchen in this house and in the traditional house.

C. ORIENTATION

The charts (See Plates 21 and 22) were taken from the work of George Fred Keck, published in "The Modern House In America" by James Ford. They show diagrammatically the positions of the sun at various seasons and times of day with relation to a point at center of house. From them we see the sun is much closer to the horizon in the winter than it is in the summer, a fact which is important to note, for seasonal sun shelters depend on this phenomenon.

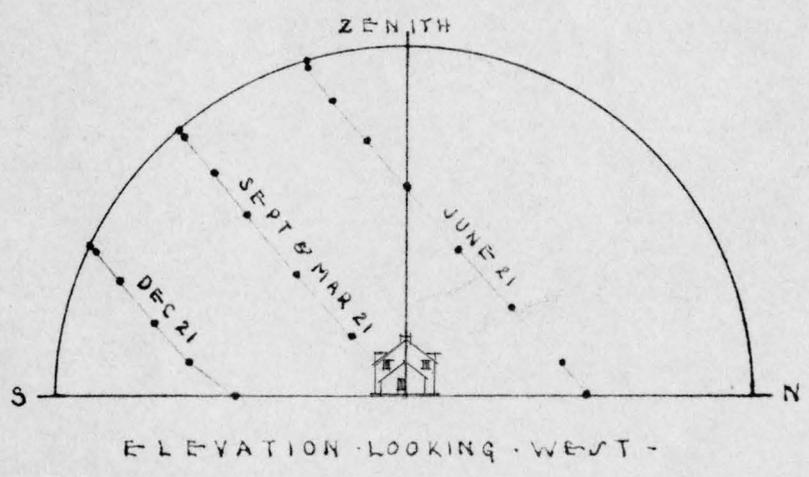
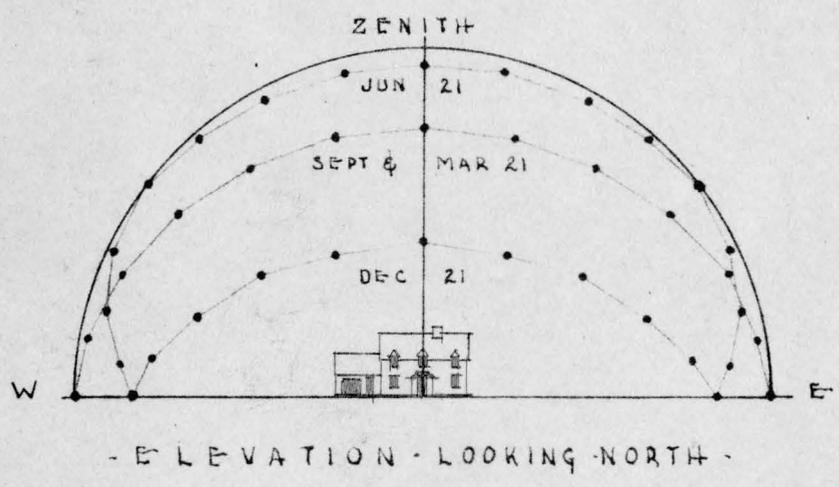
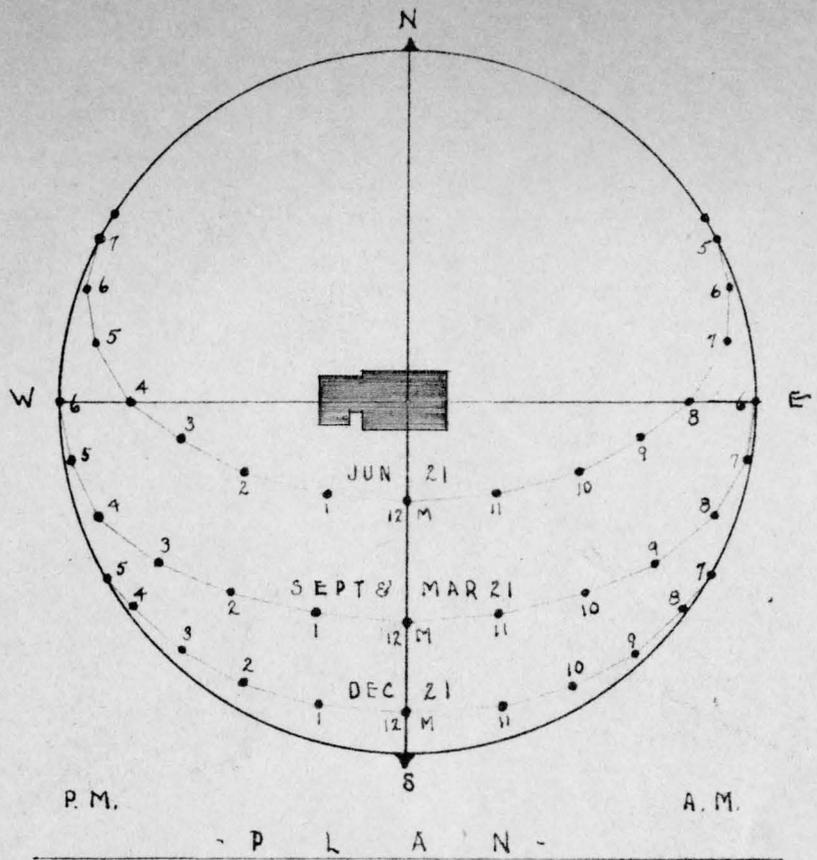
TRADITIONAL



MODERN

Full advantage has been taken of the plot's orientation. The house, to face the street, must face north, which means the living room should be on the "back" of the house, the dining room on the southeast corner, and the kitchen on the northeast corner. The master's bedroom has a southern and eastern exposure, and the other bedrooms are merely fitted into the plan. All three have cross ventilation. Outside of the location in plan with regard to the compass points and the planting discussed in PART III, little consideration was given to orientation. The chart will show what rooms receive sun at various times of day and seasons of year.

The general layout of the living, dining, and kitchen areas are the same in this house. The projecting roofs over the master bed room windows and the living room windows are designed to exclude the sun's rays in the summer only. The terrace would have summer sun until 11 A.M. and be mostly in shade the remainder of the day. Slots in the upper canopy over the daughter's bedroom windows would afford morning sunlight. All three bedrooms have morning sun to some extent and the master's bedroom has this asset the entire year. The dining room would receive morning sun only until 8:00 A.M. in summer and 9:00 A.M. in the winter.



Diagrammatic Plan and elevations of the sun's path at the summer solstice, the autumnal and vernal equinoxes, and the winter solstice.

II

TERMINATION

The word "Conclusions" was purposely avoided as a heading for this section. The aim of this document has been toward understanding rather than deducting; toward enlightenment rather than persuasion; toward investigation and recording--not toward research and solving. Various readers will undoubtedly deduce conclusions of their own but should make a conscious effort to prevent these conclusions from being mere rationalizations supporting preconceived convictions. One example of each style, no matter how typical, could not embrace the entire field of residence design. This is stated not as an apology but as an explanation.

Outstanding characteristics of each of the two solutions, disregarding appearance of "style," are enumerated: The modern house is more unified and yet more informal. The traditional house seems to provide for all activities with equability, so compromising in order that partiality is shown no single feature at serious sacrifice of another. The modern house sacrifices almost to the point of inadequacy in some instances in order to gain excellent provisions for other activities. A sense of space plus what the modernists term the interpenetration of inner and outer spaces is a distinctive trait of the modern house by comparison. A

feeling or sense of security and protection, of privacy and seclusion, is enjoyed by the inhabitants of the traditional house. Of course, "frame of mind" and attitude is a factor to be considered in a question of feeling or sensation, but regardless of the mental attitude, these sensations are present in a lesser degree in the modern house.

From the aesthetic viewpoint, a ticklish subject, I refrain remark. It has truthfully been said that beauty lies in the eye of the beholder. Some say the modern style possesses nothing beautiful in itself. Others see beauty in pure forms derived from function. The impact of a new environment has left us divided between the two. Are we to have Tradition or No Tradition, - Emotion or Logic. There is some of both in each solution. For example, the fireplace in this and most other modern houses is a sentimental survival of the days of inefficient heating. As a Swiss designer once said, "Design, in other words, is returning to basic principles. No period or style has had a monopoly of the means for expressing these qualities."

The End

BIBLIOGRAPHY

- "A History of Architecture" - Fiske Kimball and George H. Edgell.
Harper & Brothers, New York - 1918.
- "Architectural Forum"- Vol. 62 - Jan.-June, 1935
- "Architectural Forum" - Vol. 74 - Jan.-June, 1941
- "Better Homes & Gardens" - Vol. 17 - Sept. 1938-Aug. 1939.
- "Design For Concrete"- Portland Cement Association.
- "Houses For Good Living" - Royal Barry Wills.
Architectural Book Publishing Company - 1940.
- "On Architecture" - Frank Lloyd Wright.
Duell, Sloan and Pearce, 1941.
- "Planning the Little House" - Alice Waugh.
John Wiley & Sons, Inc., New York. 1941.
- "Shelter For Living" - Ernest Pickering.
McGraw-Hill Book Company, Inc., New York, 1939.
- "Small Houses for Civilized Americans" - Allman Fordyce and William Hamby.
Architectural Forum - Jan. 1936.
- "Speaking of Pictures" - Life - May 6, 1942.
- "Space, Time and Architecture" - Sigfried Giedion.
The Harvard University Press - 1941.
- "The Architect and the \$5000.00 House" -
Architectural Forum - April - 1936.
- "The Better Homes Manual" edited by Blanche Halbert.
The University of Chicago Press - 1931.
- "The House of Today" - R. H. Sexton.
House Beautiful - June - 1930
- "The Modern House in America" - James Ford and Katherine Morrow Ford.
Architectural Book Publishing Company - 1941.

"The Small House" - Architectural Forum - Oct. 1935.

"The Small House" - Benjamin F. Betts.
American Architect - May, 1934.

"Will This Modernism Last" - Thomas E. Tallmadge.
House Beautiful - Jan. 1939.