

Bulletin no. 28/

October 1, 1945

The Livability Problems of 1,000 Families

DEPT. OF HOUSING
AND URBAN DEVELOPMENT

FEB 11 1953

WASHINGTON, D.C. 20540

U.S. ^{Administration} Federal Public Housing Authority - National Housing Agency

72811
1336.18
P811
no. 28

FOREWORD *mc*

After several years of occupancy of prewar housing projects created under the United States Housing Act, it is appropriate to evaluate the workability of the projects; to determine the adequacies and inadequacies of areas, equipment, facilities; to determine tenant satisfactions and dissatisfactions; and to determine how the projects can take a look at itself, if mistakes are to be remedied and improvements accomplished.

The prewar program includes a very large volume of housing designed, at least generally, under uniform standards and occupied by tenants who have many characteristics and needs in common. This, in a sense, provided a great housing laboratory and offered a unique opportunity for shedding more light upon this relationship between planning and living. The "Livability Study" seems to have taken full advantage of this situation; it certainly exposes the nature and the scope of the problems and provides an approach towards their solution.

This study sets forth both the needs and desires of families, required family possessions that must be considered in space planning, and the use of space entirely inconsistent with the uses for which it was intended. Although, due to cost limitations on public housing, available funds will undoubtedly not be adequate to provide the space and facilities families desire and possibly not those required as indicated in the study, the report should be painstakingly examined to determine those needs that can be incorporated in future housing within cost limitations. The study is a thought-provoking and human document, and, as such, it should be stimulating and valuable to local authorities and to their architects by way of promoting a sympathetic understanding of tenant needs and desires. It is particularly a challenge to the ingenuity of designers in providing, with balanced proportion, as many of the things desired by the tenants as are possible in those cases where limited budgets compel close adherence to minimum standards.

The recommendations incorporated in the study should not be confused with the Minimum Physical Standards and Criteria for the Planning and Design of FPHA-Aided Public Housing Projects, which are mandatory minimum standards.

Philip M. Klutznick
PHILIP M. KLUTZNICK
Commissioner

THE LIVABILITY PROBLEMS OF 1,000 FAMILIES

CONTENTS

	Page
I Introduction.....	1
II The Scope of the Study.....	2
III Family Size, Composition and Income.....	2
IV Over-crowding is a Livability Problem.....	3
V What Families Want in Dwelling Types and in Dwellings.....	4
VI Entrances, Porches and Balconies.....	5
VII Living-Rooms.....	10
VIII Kitchens.....	25
IX Utility Rooms and Kitchen Closets.....	41
X Bedrooms.....	43
XI Bathrooms and Linen Closets.....	51
XII Uses of Laundry Facilities.....	54
XIII Space Uses and Possessions that Affect Space Planning.....	57
XIV Unstored Articles.....	59
XV Central Storage.....	59
XVI Walls and Floors.....	60
XVII Noise.....	62
XVIII Tenant Expenditures Occasioned by Unsatisfactory Layouts, Materials and Inadequate Equipment.....	63
XIX Tenant and Manager Problems of Garbage Disposal.....	65
XX Racial Patterns of Living Affecting Dwelling and Project Layout.....	66
XXI Conclusion.....	67

VF

728

1392

F22

C.4

THE LIVABILITY PROBLEMS OF 1,000 FAMILIES

I. INTRODUCTION

This is a study of the uses made of dwellings by 1,062 families living in aided projects. It is a study also, of the adequacies and inadequacies of areas, equipment, facilities, design features and materials that affect the livability of dwellings.

The purpose of the study was to disclose the defects of dwellings and unmet needs, based on acceptable household operating standards, family patterns of living and family possessions, in order to furnish factual material for guidance in future planning. By realizing and making full use of mistakes, better results can usually be accomplished immediately.

The techniques used for obtaining the findings require little clarification, since the methodology is obvious for obtaining information of this nature. Questionnaires were used for both tenants and managers to obtain the desired information. All questionnaires were filled in by the interviewer — not the tenants or the managers. Tenant interviews were informal and required about two hours each. Both tenants' opinions and interviewers' evaluations were obtained on adequacy of areas, arrangements and other livability features; since many tenants have not been privileged to live in adequately-designed houses, some are unable to make constructive suggestions. Others wish more of the amenities than would be economically satisfactory for public housing.

Cooperation was excellent. The desire on the part of the tenants to be interviewed, the interest expressed by the majority in furnishing information for the improvement of future housing, and their appreciation of the commendable features of their houses, merit noting. A few tenants expressed an unqualified acceptance of dwellings regardless of dwelling inconvenience and unsuitability.

The information on about one-third of the families was obtained in 1942, before the war period; the remainder in 1945. Although this was due to inability to complete the first study; the findings of the two periods provided an opportunity for comparing living patterns which might be influenced by changes in family income. However, insofar as possible, families with the lowest incomes were selected for interview during the later period.

The "Recommendations" following the various sections of this study are based on study findings only. They are not intended to be complete and they do not include those FPHA standards previously established that appeared to be adequate.

II. THE SCOPE OF THE STUDY

Families living in all areas, families of all races, both apartments and group houses, and all sizes of units were studied.

One thousand sixty-two families were interviewed and their houses evaluated. These families were located in 51 projects in the 8 regions. Sixty-one per cent of the families were white, 28 per cent Negro, 10 per cent Latin American and 1 per cent of other races. It should be noted that the 1,062 units evaluated were representative in unit type and arrangement of the total 28,000 dwellings included in the 51 projects.

Seventy-five per cent of the units were of the group house type and 25 per cent were apartments of 3 or more stories. Unit sizes studied were distributed as follows:

2 per cent,	2 and 2-1/2 rooms
23 per cent,	3 and 3-1/2 rooms
44 per cent,	4 and 4-1/2 rooms
27 per cent,	5 and 5-1/2 rooms
4 per cent,	6 and 6-1/2 rooms

Few 2 and 2-1/2 rooms were included in the later study, since the 1942 report showed all to be unsatisfactory.

III. FAMILY SIZE, COMPOSITION AND INCOME

1. Average Family Size and the Number of Persons in the Family.

Based on the sampling, average family size was 4.1. There was practically no variation in family size between white and Negro, but the average for Latin American was 4.7 and for the few Orientals, 5.2.

The number of members in the family indicates further the variation in family sizes between the white and Negro group and the Latin Americans.

	Number of family members				
	1 or 2	3 or 4	5 or 6	7 or 8	9 & over
White & Negro per cent	23	43	26	7	1
Latin American per cent	9	38	38	13	2

Section III (Cont'd)

The information is based on a limited sample only, but it is indicative of the need for larger units for Latin Americans.

2. Families with Children. Eighty per cent of the families have children of all ages. More than 50 per cent of these have small children -- less than 4 years of age. These families require consideration in the determination of dwelling types, the provision of enclosed back yards or other desirable play spaces and preferably home facilities for laundry work. Nearly 50 per cent of the families with children have children of school age, for which inside and outside recreation facilities and adequate lighting in desirable areas for home study must be provided.
3. Income. Average annual family income for the 1,062 families would not be indicative of incomes of all families living in aided projects at this period. Families with low incomes were intentionally selected for interview, in order that living patterns might be comparable for families qualified to continue to live in low-rent, public housing projects.

Average annual family income for the 1942 study was \$1,086; for the 1945 study, \$1,611. However, 28 families were included in the later study with incomes over \$3,000 to determine the effect, if any, on furniture purchases and quantity buying. Average income exclusive of these families, was but \$1,516. Annual income for Negro families in both studies was about \$300 less than for white.

IV. OVERCROWDING IS A LIVABILITY PROBLEM

The over-crowding of rooms and units by people and their possessions, overtaxing space, equipment and facilities is a first consideration to be taken into account in an evaluation of dwelling livability.

Unit over-crowding was surprisingly great, due chiefly to the unavailability of large units. An insufficient number of large units have been built in a number of projects, due principally to cost limitations. Extreme variations in family sizes occupying the various unit sizes appeared in both periods. The few small families occupying units larger than necessary were usually accounted for by the absence of family members or temporary occupancy; but for the over-crowded larger families, there were no adequate size units available. Families interviewed in the 1942 period as well as the later period, quite universally complained of the unavailability of larger units.

Section IV (Cont'd)

Over-crowding existed among all races, but the largest per cent was among the Latin Americans due to the over-large families of this group -- more than half of the number interviewed had from 5 to 11 members. Bedroom over-crowding was further complicated by family disapproval of living-room sleeping, since only 7 per cent of the 1,036 families living in units with bedrooms, used living-rooms for daily sleeping.

Recommendations.

- a. A greater number of 2, 3 and 4-bedroom units and some with 5 bedrooms, particularly for Latin American families;
- b. No 2 and 2-1/2 room units;
- c. Fewer, if any, 1-person bedrooms;
- d. Rigid adherence to occupancy standards in tenant selection.

V. WHAT FAMILIES WANT IN DWELLING TYPES AND IN DWELLINGS

1. The Types of Houses Families Prefer. Both tenants and housing managers were questioned on types of houses desired by families. There was no uncertainty among the families in the types they desire. Their expressions show

	1-story house	2-story house	1st floor of 2-story house	2nd floor of 2-story house	Apartment (in 3 or more-story buildings)
Per cent	59	32	5	3	1

Whether families live in group houses or 3 or more-story apartment buildings, the preferences for nearly all are 1- and 2-story houses. Ninety-five per cent of the families living in apartment buildings want houses. Half of those families desiring apartments were adults. However, since family preferences were not obtained for the New York area, desire for apartments might have been increased by this group. Negro family preferences were almost identical to those of white, but practically all Latin American families want 1-story houses. They are accustomed to these. Elderly couples want first floor apartments or 1-story houses, and with window area located so that they can see project activity.

Section V (Cont'd)

The reasons expressed for desires for 1- and 2-story houses were: "They are more home-like and we want a yard", "more privacy", and "stair climbing difficult with small children". The desire for more privacy was repeatedly expressed.

The principal objection to the duplex type was the inconvenience and lack of privacy due to the first floor bedroom and second floor bath. A few families used the down-stairs bedrooms for children's play-rooms or for dining.

Housing managers' reports of family preferences for dwelling types indicate the same results as those of tenants. Of significance are the recommendations made by managers for future dwelling types. Twenty managers only submitted complete reports. Of the 12 who managed projects of group houses, nearly all recommended all detached or semi-detached houses. Some of the remainder recommended both semi-detached and detached with 1- and 2-story apartments. One-story houses were recommended for Mexican families in the Texas area. Of the 8 projects with combinations of group houses and apartments, or apartments only, 2 managers recommended all detached houses, providing land costs permitted; the others, apartments and group houses with many semi-detached.

2. Enclosed Back Yard That the great majority of families want enclosed, individual back yards is indicated by reports from both managers and tenants. Families want enclosed yards for the protection of children, for laundry and some would like to garden. All but 1 manager of group housing projects recommended back yards for group houses, and half recommended an area 400 to 800 sq. ft. of yard space. Some managers believe maintenance cost could be reduced by fencing yards, but a number report that wood fencing has created a maintenance problem. Wire mesh fencing screened by planting has been recommended. That enclosures should have gates is demonstrated in those projects with gateless, fenced-in back yards necessitating the carrying of garbage through the house and around the block to the collection area.

VI. ENTRANCES, PORCHES AND BALCONIES

1. Front and Back Doors. The arrangement that would accomplish almost universal tenant satisfaction is the home with individual front and back entrances, the individual enclosed yard, the individual walk, entrance and porch. Where both entrances are provided in group houses, back entrances are used more than front — the most frequently expressed tenant reasons were "convenience" and "saves the living-room".

Section VI (Cont'd)

- a. Units with one entrance. Most group houses of 1-story and those where one family occupies both stories, have both front and back doors. Where one entrance only is provided, the majority of tenants objected. Most families living in second story apartments of group houses, where the one entrance was either to the kitchen or living-room, were dissatisfied. Living-room entrances only, frequently necessitate the carrying of garbage and trash through living-rooms. Families objected to kitchen entrances only, since guests must be admitted in kitchens. Family preferences are entrances through small hallways with access to both kitchens and living-rooms. (See Plates 1 and 2, page 7) About one-fourth of the families living in apartments, located in 3 or more-story buildings, objected to one entrance.
- b. Front doors opening directly into living-rooms. These were objected to by many tenants due to
- (1) the tracking of dirt into living-rooms;
 - (2) the beating in of rain where no covered porches are provided;
 - (3) drafts in cold climate areas; and
 - (4) undesirable views into kitchens, baths and doorless closets.

Rain leakage appeared to be due to inadequate weather stripping and warped doors as well as the lack of over-head protection.

In cold climates, half the tenants objected to front door drafts -- the seriousness of the objection was somewhat dependent upon the location of wall space for living-room furniture. If the only furniture wall was opposite the living-room door, drafts were more objectionable.

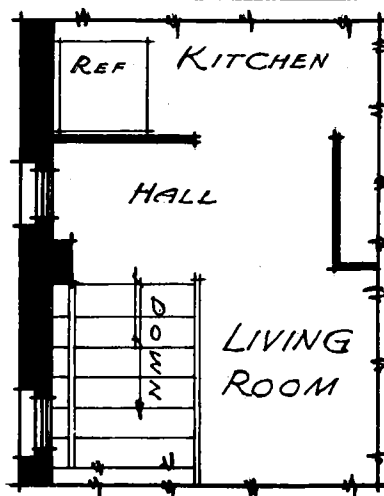
Most of the tenants living in units with objectionable views from the front doors were dissatisfied. Their chief objections were undesirable views into kitchens and into doorless living-room closets. Front door openings located directly opposite the second floor stairway and overlooking second floor baths at the top of the stairs or doorless linen closets, are undesirable and were objected to by all tenants.

- c. Self-locking front doors. A number of managers report that self-locking front doors require too large an expenditure of time in admitting locked out families. They do not recommend them.

**SECOND STORY APARTMENT OF GROUP HOUSES
WITH ONE ENTRANCE ONLY**

I

**A-FAMILIES PREFER
ENTRANCE
THROUGH SMALL
HALLWAY WITH
ACCESS TO BOTH
KITCHEN AND
LIVING ROOM,
IF BUT ONE
ENTRANCE CAN
BE PROVIDED**



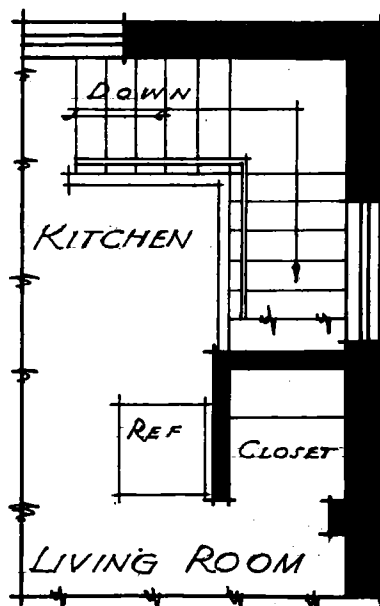
SECOND FLOOR PLAN

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

OBJECTIONABLE LOCATION OF ENTRANCE

II

**B-FAMILIES OBJECT
TO ENTRANCES
TO KITCHENS,
REQUIRING
PASSAGE
THROUGH THE
ENTIRE KITCHEN
TO REACH THE
LIVING ROOM**



SECOND FLOOR PLAN

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

Section VI (Cont'd)

2. Stairs and Stairhalls. There were few objections to stairs and stairhalls. The principal ones were concrete steps, sand finished walls, drafts and high hand rails. Families with small children are constantly distressed over children falling on concrete steps which, based on reports, is very frequent.

In a number of units sand finished walls were badly soiled. These also are difficult to maintain by tenants. Most hand rails are placed 30 inches above the front of the tread -- some are a few inches higher. Since 2 hand rails may be too costly, the lowering of the hand rail to 27 or 28 inches might not inconvenience adults and might help some of the children. Many families in cold climate areas complain of drafts from the stairway. Closing off the stairway might reduce it.

In a few projects where tenant maintenance is required, families report they are unable to paint the wall area over the stairs which extends to the second story. A cost of \$5 was reported for the painting of this small area.

There were no lighting problems, since all stairhalls were well lighted.

3. Porches. About 90 per cent of the families want porches. Front porches are much more desired by tenants than back, although families use rear entrances more frequently than front. Since most of the families living in apartments prefer living in houses, they too, expressed a desire for porches with a preference for the front. Families who want both front and back porches state they want the front porch to sit on and the back for children's play, sewing or other work.

All housing managers reporting information on Southern projects recommended porches -- most of them recommended both back and front. None were recommended by managers of California projects with the exception of one, who recommended a small back porch for laundry work, which is a customary provision in private housing in this area. One manager of a Washington project recommended covered sitting-out spaces rather than porches, due to rains in this area. The majority of managers in the Middle West recommended either back porches only, or both. Only one manager recommended porches for the Northern area.

Section VI (Cont'd)

Protected front and back porches for the South appear to be a necessity for family comfort, since doors must be open for ventilation and during rainy weather, rain drives into the doorways where there is no overhead porch protection. Furthermore, porches can be used several months during the year.

Where porches are not provided, front and rear door protection, particularly front, appears advisable. In some of the units, canopies and other overhead protections are inadequate. Managers of a few projects state that due to lack of protection both rain and door warpage have created additional maintenance costs.

The share the porch arrangement, where 2 families use the same porch, is not satisfactory to tenants. Managers also report innumerable tenant complaints. The majority of housing managers of projects where these 2-family porches exist recommended individual family porches, due to family friction and the time expended by management in adjusting complaints. Some of these porches are too small and one executive director believes the share the porch arrangement would be satisfactory, if porches were larger. Existing dimensions of some of the front porches were but 3' 6" by 10' 6" for the two families. With space allowed for the swing of the two front doors, there is barely adequate area for 1 chair for each family. Some of the back porches were 8' by 3' for 2 families. These also were too small. For double front porches, dimensions of 16' by 6' have been recommended for 2 families, and a 12' width for double back porches.

4. Balconies. The number of units evaluated with balconies was insufficient to make a final determination of their value. In one project where they appeared to be universally used for sitting-out purposes, they were enjoyed by the tenants. In the others, front balconies were cluttered with boxes and pails and used for clothes drying; some were used for garbage and trash. In projects where the building arrangement was such that balconies must be used as passageways to other apartments, they were not used for pleasure.

The limited information on balconies indicates that if proper arrangement, storage and clothes drying facilities were provided, tenants would use and appreciate them.

5. Recommendations

- a. Front and rear doors.

Section VI (Cont'd)

- (1) Both front and rear entrances for all 1- and 2-story group houses occupied by a single family; entrances through small hallways between the kitchen and living-room with access both to the kitchen and living-room for second story apartments in group houses.
 - (2) Entrances to apartments in apartment buildings through hallways with access to living-rooms and kitchens; or, entrance to the living-room area adjacent to the kitchen.
 - (3) Front doors located so that baths, open front living-room closets or the equipment area of the kitchen cannot be viewed from the front door opening.
 - (4) Vestibules or foyers for cold climate areas.
- b. Stairhalls. Walls with easily washable finish to simplify tenant maintenance. A double hand rail or one located at 27" or 28" height.
- c. Porches.
- (1) Both front and back porches with overhead protection for all group houses located in Southern areas.
 - (2) At least 1 porch for group houses in Middle West areas.
 - (3) The 2-family front and rear porch is not recommended; if provided, adequate area to be provided for the 2 families with some type of partition or screening separating the 2 areas.
 - (4) Overhead protection for entrances to group houses, in all other areas.

VII. LIVING-ROOMS

To determine living-room space and arrangement adequacy, and new requirements, the use of the room was evaluated and all family possessions recorded that require space planning. Over-crowding had to be considered in determining needed space. About one-third of the families objected to space and arrangement, but more than half of the living-rooms were objected to by interviewers. Inadequate space accounted for more tenant dissatisfaction than undesirable layout features.

Section VII (Cont'd)

1. Living-Room Uses that Affect Layout and Area. The majority of families reported using the living-room daily. The radio increases its use; new furniture decreases it, but only temporarily. The study shows, however, that many living-rooms do not have maximum uses, since this room contains the family's choicest possessions. The determination of living-room uses reveals, as was expected, limited dining and sleeping. The recording of uses by the 1,000 families shows

Dining 3 per cent use the living-room daily,
 5 per cent occasionally.

Sleeping 7 per cent use the living-room daily,
 11 per cent occasionally.

Sewing 38 per cent use the living-room; others use
 bedrooms and kitchens; a few use all rooms.

Ironing 8 per cent use the living-room; others use
 kitchens and bedrooms.

Children's
recreation 80 per cent of the families with children;
 some of these and others also, use bedrooms
 and kitchens.

Children's
study 38 per cent of the families with children of
 school age; some of these and others also, use
 bedrooms and kitchens.

Although a large number of families with children report living-room use for some type of children's recreation, this is limited by many families due to that insatiable desire by most for keeping living-rooms orderly. Children's toys are rarely stored in living-rooms, but usually in bedrooms, in linen closets and under kitchen dining tables.

The frequency of entertaining varies. About half the families entertain 1 or 2 times monthly, the remainder daily or weekly. Negro families report a greater frequency than white. Latin American families emphasize entertaining for Sunday dinners. Entertaining is in both living-rooms and kitchens, but few families report the use of the living-rooms for guest dining.

The significance of these uses as they relate to planning are

- a. The discontinuation of living-rooms planned for dining. Some families eat in relays in the kitchen rather than dine in the living-room.

Section VII (Cont'd)

- b. A very small space provided for the storage of children's small toys. Most families indicate a preference for toys in bedrooms, but some storage space in living-rooms might encourage their uses.
- c. Adequate lighting outlets for children's study and sewing. (See Windows, Natural and Artificial Lighting, page 21)

Planning should be encouraged that would justify the cost of living-rooms spaces, since regardless of living-room uses, families insist on the need for sufficient space for specific furniture items.

- 2. Furniture. The planning of living-room space and layout for unpredictable quantities, types and sizes of furniture has always created a problem. Therefore, types and quantities were inventoried to determine the spaces needed and the variations in living-room sizes required between large and small units.

- a. Types and quantities of furniture. Based on the furniture families have and want to retain

More than 90 percent of the 1,036 families (2 and 2-1/2 room units excluded) have a sofa, 1 to 3 easy chairs and a radio -- usually cabinet type. The majority of this 90 per cent have 1 to 3 end tables, about 35 per cent have reading or library tables and about 20 per cent have as many as 4 or more chairs. The remaining few families have other combinations.

About 9 per cent of the total number of families store sewing machines in the living-room, 8 per cent have pianos, and 5 per cent have buffets or china cabinets. A number of families have and express a desire for children's desks located in living-rooms.

Of significance in the determination of living-room areas, is the fact that families living in 3 and 3-1/2 room units have as much living-room furniture as those living in larger units. Some have more. This appears to be due to the family's desire to furnish the living-room in the traditional manner, regardless of family size.

Income and family size are not related to the purchase of furniture. Both large and small families with comparable incomes have comparable amounts of living-room furniture. The very large families, however, those of 8, 9 and more members, usually have inadequate furniture, due to income.

Section VII (Cont'd)

- b. Over-size furniture. The great majority of families have large over-stuffed chairs and sofas. Many chairs are 38" wide and 30" deep. Sofas are commonly 80" by 32" or 34". Most families have 2 of these large chairs and some have 1 or 2 additional smaller chairs. Both upholstered chairs and sofas occupy considerable space -- more space than was usually planned for by the architect. Space was found to be overtaxed by over-size furniture so infringing on areas of circulation that passage was difficult. Characteristic of the South is the rocking chair -- many 44" deep. Nearly all families have one or more which also crowd space.
- c. Furniture purchasing. In the 1942 study more than half of the families had purchased new living-room furniture, usually immediately before or after moving into the units, the majority spending from \$200 to \$500 per family. Buying was usually on the installment buying plan -- some families paying as much as \$15 monthly. Many of the others expected to buy. The majority of these families had been in the projects but a short period and furniture purchasing is usually immediately before or immediately after moving into new units. The 1945 study revealed almost no furniture purchasing, with only 3 or 4 per cent expecting to purchase. Most of these families had been in occupancy more than 3 years and were well established. A few families stated they would like to purchase if there were more space in the unit, if they had the money or if there were furniture available.
- d. Tenant guidance in furniture purchase. Some guidance in furniture purchasing would:
 - (1) Have its effect on reducing required areas for living-rooms;
 - (2) Reduce tenant expenditures, since most families buy furniture that has a doubtful period of life and comfort at costs far above their value; and
 - (3) Possibly increase the use of living-rooms which appears to be too limited.

The above findings on tenant-owned furniture are of significance in planning area and wall space, since the furniture possessed by 1,000 families is believed to be indicative of a group of this income range.

- 3. Living-Room Arrangement. There were considerably fewer objections to arrangement than size. It was apparent that a number of living-room areas could have been reduced had arrangement been more desirable.

Section VII (Cont'd)

- a. Openings and wall space. Insufficient wall space for the placement of furniture was the most frequent cause of arrangement dissatisfaction.

- (1) Too many openings and undesirable locations of openings. Commonly 4 or 5 openings existed. In some instances, as many as 7 with no wall space more than 5-1/2 feet long. (See Plate 3, page 15)

Front door and kitchen openings to the living-room are frequently located so that the living-room area becomes little more than a passage. Families with children, particularly, objected to the arrangement because of their inability to keep living-rooms clean. Living-room arrangements with the 1 entrance door or 2 entrance doors both opening into the living-room rather than 1 into the kitchen are objectionable to families. In about one-third of the arrangements, there was a view from the front door into the kitchen. Most tenants, but not all, objected.

Window size and location in living-rooms was not a concern in furniture placement, since families satisfactorily place furniture in front of windows.

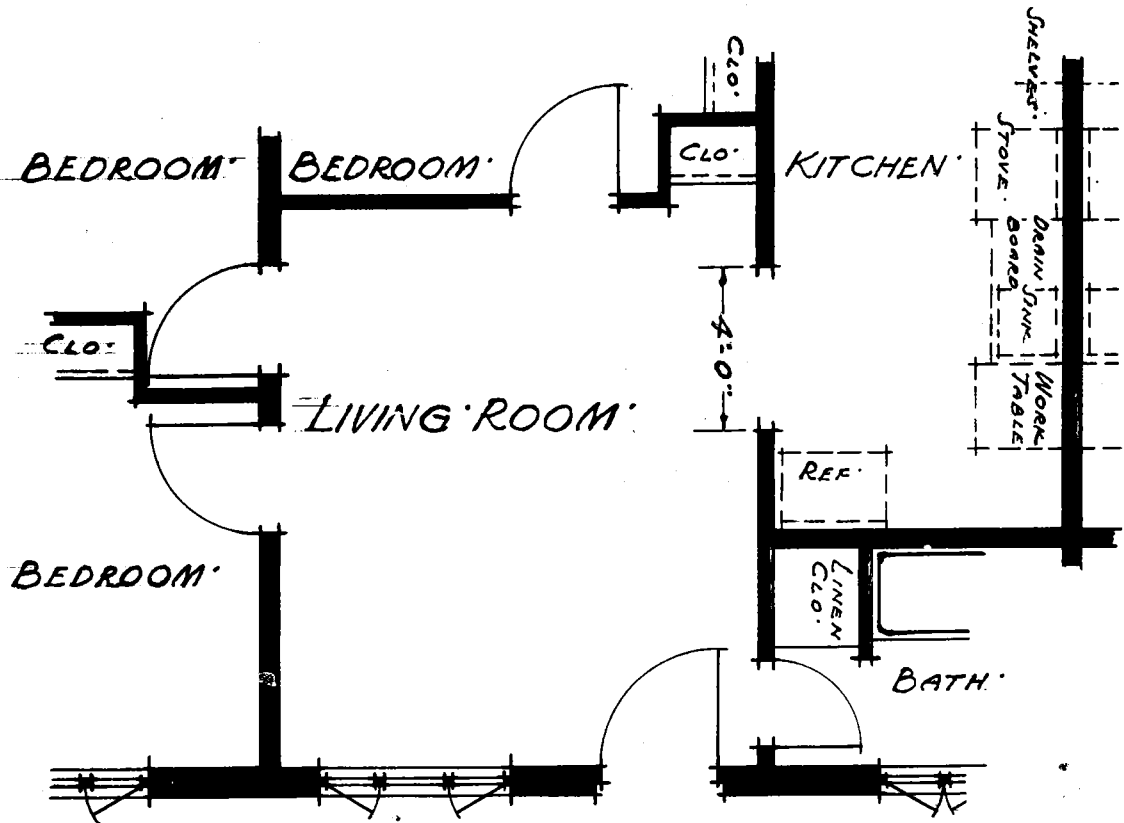
About half of the living-rooms had doorless closets and many of these had openings 3 feet wide. Many were directly opposite or in view of the most desirable furniture wall. These created almost universal dissatisfaction.

- (2) Partial partitions. Approximately 900 of the 1,000 units had partial partitions between the living-rooms and kitchens. These openings varied from 2'6" to 10' in width. More than one-fourth were over 5' wide. The most frequent tenant objections to partial partitions were

- (a) Kitchen view from living-rooms;
- (b) Living-room odors and dampness from kitchen cooking and laundry work;
- (c) Lack of privacy both for living-room and kitchen. Tenants dislike doing kitchen work when viewed by guests in the living-room.

OBJECTIONABLE 'LIVING ROOM' LAYOUT

III



FLOOR PLAN

SCALE: $\frac{1}{4}$ " = 1'-0"

1-SEVEN OPENINGS INCLUDED IN THE 4-LIVING ROOM WALLS

2-THE LONGEST WALL SPACE IS 5'-6" . .

3-DIRECT VIEW OF KITCHEN EQUIPMENT THROUGH FOUR FOOT KITCHEN OPENING . .

4-DIRECT VIEW INTO BEDROOMS FROM LIVING ROOM DOOR (DOORS IN THIS AREA REQUIRE OPENINGS FOR VENTILATION) .

5-DOORLESS CLOSET IN LIVING ROOM IS UNSIGHTLY .

6-BATH ROOM LOCATED CONVENIENTLY FOR CHILDREN PLAYING OUTSIDE, BUT LOCATION REQUIRES PASSAGE THROUGH LIVING ROOM FROM BEDROOMS .

Section VII (Cont'd)

About half of the 900 families objected to partial partitions. Most of those that did not object lived in units with partition openings but 3 or 4 feet wide and located so that kitchen equipment and operating space were out of view; or they lived in the Southern area and require some opening for ventilation. Most of the families in the South who live in units with doors between the living-room and kitchen, kept them open during hot months for air circulation. Because of the almost universal complaint of heat and lack of ventilation in this area, tenants are willing to sacrifice attractiveness for comfort. All families, however, object to wide openings.

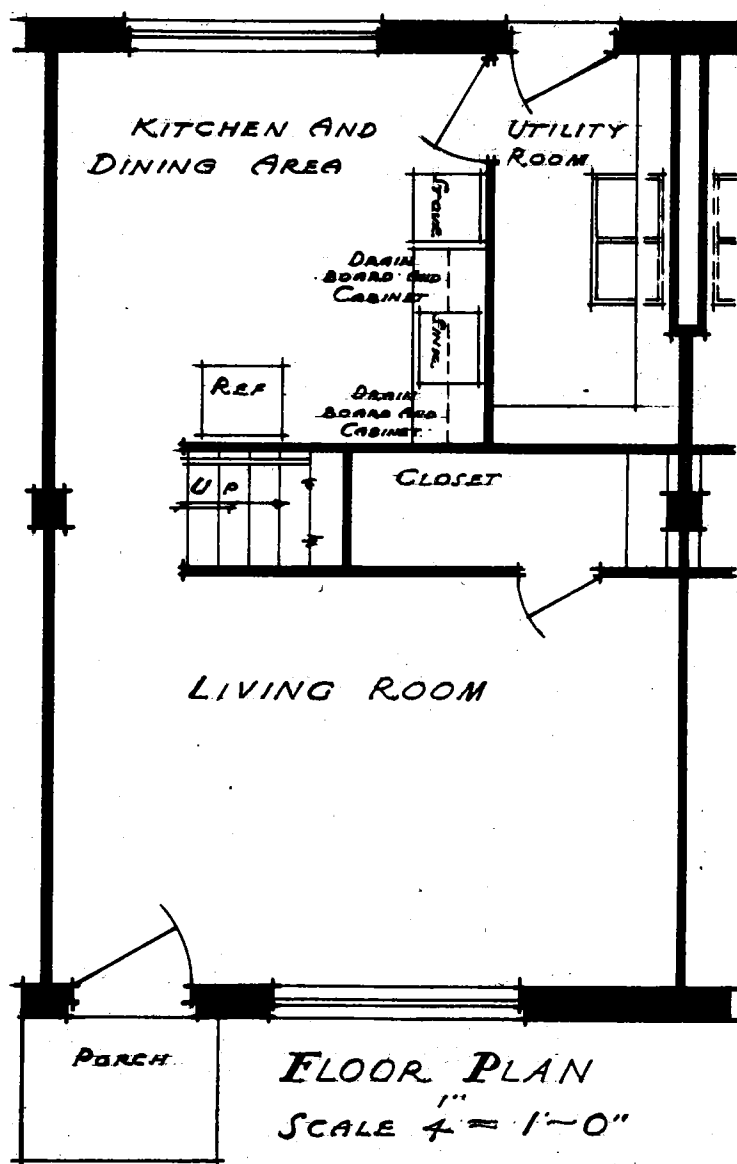
Less than 20 per cent of the families curtained the openings because of the cost of curtaining large spaces; soil of curtaining, principally due to children, but due also to the accumulation of kitchen grease and moisture; and the difficulty of curtaining fixed curtain rods. Stationary curtain rods, particularly those placed within two or three inches of ceilings, create a curtaining problem.

A living-room with a 6 or 7 foot partial partition opening, a 3 foot closet opening, in addition to the necessary door openings, gives an appearance of all openings. These living-rooms are extremely ugly in appearance and entirely unsatisfactory to tenants.

- b. Stairway locations. Families living in 2-story houses with bathrooms on the second floor object to the stairway located at the front door entrance, but prefer its location between the kitchen and living-room. The objection is inconvenience to the kitchen, and tracking through the living-room several times daily with small children to the up-stairs bath. (See Plate 4, page 17)
- c. Space heaters. Only one-third of the families having space heaters objected to them. Objections were chiefly due to the heater's utilization of needed wall space and the accumulation of dirt on walls and ceilings. Wall area 2 or 3 feet on either side of the heater is unusable for furniture. Some heaters were located so that parts of two wall areas were sacrificed. Those heaters located several feet from the wall were unsightly, particularly in small rooms. Heaters backed up to kitchen closet walls ruin the closet for foods. (See Plate 5, page 18)

*TENANT PREFERRED 'STAIRWAY' AND
'DINING SPACE' LOCATION.*

IV



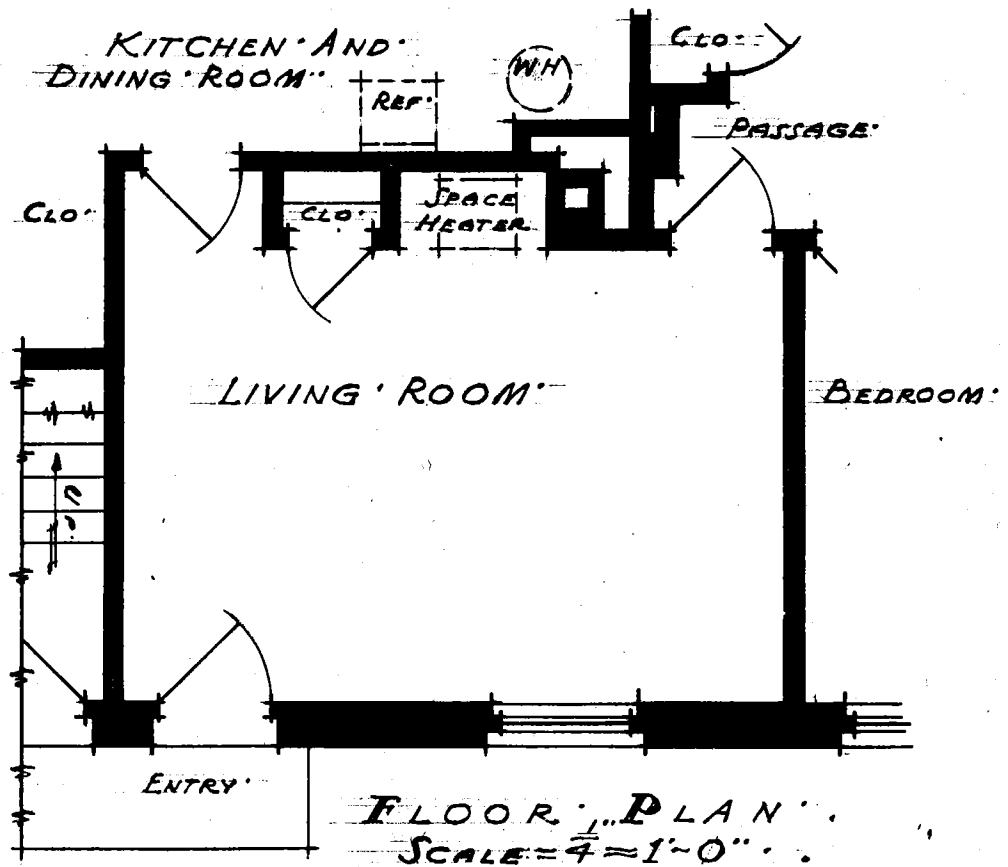
**1-FAMILIES WITH SMALL CHILDREN PREFER STAIRWAYS
TO SECOND FLOOR BATH LOCATED NEAR KITCHENS**

2-DINING AREA HAS NATURAL LIGHTING

**3-KITCHEN EQUIPMENT CAN NOT BE VIEWED FROM
FRONT DOOR OR LIVING AREA OF LIVING ROOM**

LIVING ROOM SHOWING TENANT PREFERRED SPACE HEATER LOCATION

V



TENANT OBJECTIONS TO SPACE HEATER IN LIVING ROOM:

1-THEY OCCUPY TOO MUCH WALL SPACE.

2-THEY ARE TOO OBVIOUS.

IN THIS LAYOUT, THE CLOSET IS PLACED ON WALL SPACE, OTHERWISE UNUSABLE.

Section VII (Cont'd)

The accumulation of dirt on the entire walls behind a great many gas and oil heaters and also on the ceilings, probably due to improper heater adjustment, was a source of universal tenant irritation.

- d. Exposed pipes. These are not a problem in planning, since only a very few of the families living in units where they exist, offered objections.
- e. What families need and want most in living-room arrangements.
 - (1) Sufficient wall space for furniture, with locations free from drafts and objectionable views of kitchen equipment;
 - (2) Closed living-room closets;
 - (3) Doors between kitchens and living-rooms, or 30 inch openings opposite kitchen-dining area only, particularly for families in the South;
 - (4) Stairways in 2-story houses located so that bath can be reached without passing through the entire living-room;
 - (5) Front doors located so that kitchens cannot be viewed, if there is a partial partition between kitchens and living-rooms.

The majority do not object to:

- (1) Space heaters in living-rooms, if they are not unattractive, if sufficient, well-located wall space is provided for furniture and if dirt accumulations on walls can be avoided;
- (2) Exposed pipes;
- (3) Present window sizes and location as they relate to furniture placement.

- 4. Living-room Areas. In a determination of living-room size inadequacy, over-crowding was considered and size recommendation based on required standards of occupancy. Units of 2 and 2-1/2 room sizes were not evaluated, since living-rooms in these units are combined with either kitchens or bedrooms.

Families objected to about one-third of the living-room areas, but evaluators objected to more than half. All family objections cannot always be relied upon for true evaluations of adequacy, since some tenants never object even in extreme conditions of inadequacy; some state: "We make it do", or "we get on pretty well", and others want more than is economically possible.

Section VII (Cont'd)

Extreme variations exist in living-room areas for the same unit sizes. Exclusive of areas specifically designed as living-room-dining-rooms, areas for unit sizes vary as follows:

Unit sizes					
		3&3-1/2	4&4-1/2	5&5-1/2	6&6-1/2
Sq. ft.					
area	1381-18197	142 - 199	147 - 203	150 - 236	

Since it was necessary, due to over-crowding, to relate living-room adequacy to family size, the uses of the living-room and furniture, a determination was made of the sizes of living-rooms that were adequate. The following shows the variation in adequate sizes:

		Family members				
		Less than 4	4 or 5	6 or 7	8 or 9	10 & over
Sq. ft.		154 -	160 -	160 -	180 -	200
area		190	190	200	200	

It should be emphasized that the majority of living-rooms of the 154 and 160 sq. ft. areas were inadequate in size. Area adequacy was dependent upon layout. Recommendations for area should be sufficiently generous to permit the necessary variations in layout. The 200 sq. ft. areas that were adequate for the very large families were because of inadequate furniture. Most of these families do not have sufficient income to provide furniture needs.

A large number of living-rooms are too narrow. More than 30 per cent were not more than 11' wide; some were as narrow as 9'6". Ingenious layouts only, permit a 10'6" or 11' wide living-room to be adequate, but these layouts were in the minority.

Large living-rooms of 210 and more sq. ft. should not be provided except for extremely large families. These, intended for dining purposes but not used as such, encourage families to buy furniture to fill up space.

Section VII (Cont'd)

5. Windows, Natural and Artificial Lighting

- a. Window size and location and natural lighting. The majority of living-rooms have been well supplied with windows. Some have an extravagant amount of area -- as much as 12' widths for areas of 180 sq. ft. These, however, were very pleasant rooms and appreciated by families. The only objection to large window areas was to the cost of curtaining. A few living-rooms had but one window of 3'6" width for a 150 sq. ft. area, and the natural lighting for these rooms was considered inadequate. The adequacy of living-room lighting, in some of the units, is dependent upon the wide openings between living-rooms and kitchens. Obviously, more window area would have been necessary, in some rooms, had these openings been closed.

In one project 12 units were evaluated where none of the living-room windows opened in the 180 sq. ft. living-rooms. Doors and the kitchen window were depended upon for ventilation. This condition, however, did not exist in the majority of units in the project.

Families object to windows located 39" from the floor line -- they appreciate seeing outside when sitting in the living-room, and children, too, like to look out. A 30" height is recommended.

- b. Electric lighting. Nearly one-third of the living-rooms had no central ceiling lights; some of these had no wall brackets, but sufficient wall outlets. Many ceiling lights were unshaded. Central ceiling lights are required for general lighting; also, all families cannot afford to buy an adequate number of floor lamps, although the majority of families had 1 or 2.

Wall brackets replacing central ceiling lights are not very satisfactory to tenants. They do not provide general lighting; they are not always located where they are most needed, and many are difficult to shade.

Most of the living-rooms were supplied with 2 or 3 outlets -- usually double -- which were sufficient for radio and lamp connections. Large living-room-dining-rooms, with but 1 outlet in the living-room area, but 2 in the dining area were unsatisfactory in outlet location; 2 in the living-room area and 1 in the dining area would have been a better arrangement.

Section VII (Cont'd)

6. Uses of Dining-Rooms and Living-Room-Dining-Room Combinations.

- a. Separate dining-rooms and dining alcoves. Of the comparatively few units with dining-rooms, more than half were used daily, a few occasionally, and a few were not used. However, it should be noted that kitchen areas regardless of unit size for all of the families except one, using dining-rooms daily, were less than 73 sq. ft. and space for kitchen dining was entirely inadequate. However, a few families who had dining-rooms and small kitchens, preferred over-crowding in these small kitchens.

Tenant objections to dining-rooms are

- (1) No natural light;
- (2) Dining-room too small and serves only as a passageway between the living-room and kitchen; and,
- (3) Requires more work.

- b. Living-room-dining-room combinations. These arrangements with one end of the living-room designed specifically for dining are not popular with tenants. Only about half of the families use them for daily dining; few use them occasionally. Even those living-room-dining-rooms with areas from 200 to 240 sq. ft. were not all used daily for dining by families. Some families have a dining table and chairs set up, but apparently for display; others use the entire areas as living-rooms.

- c. Dining in large living-rooms. Those units with large living-rooms of 200 or more sq. ft., with no particular area designed for dining, are rarely used for dining purposes.

It is apparent that large living-room areas or living-room-dining-room combinations designed to be used for dining, is space wasted. If dining-rooms were designed with adequate space for dining, some families might prefer them to kitchens. However, the findings indicate that families would choose kitchens if dining space were set apart from kitchen equipment and provided with adequate natural and artificial lighting.

7. Living-Room and Hall Closets. The principal inadequacies were:

- a. Area too small or inadequate depth;
- b. No doors;
- c. Combination living-room and kitchen closets.

Section VII (Cont'd)

- (1) Areas. More than one-third of the living-room closets, in units of 2 or more bedrooms, are 6 sq. ft. or less in area; a few are as small as 4 sq. ft. These do not include closets under stairs, some of which are 15 or 20 sq. ft. or more, but obviously with considerable space inadequate for daily use.

A few units had no closets. A number of others had a large closet adjacent to the kitchen which was expected to be used both for living-room closet and kitchen purposes. Nearly all of these combination closets were unsatisfactory for combined uses.

Those closets of 9 and 10 sq. ft. with width 2'4" or 2'6" were adequate for the larger units. Closets of 7 and 8 sq. ft. with comparable widths appeared adequate for smaller units. The 10 or 15 units with 2 closets were satisfactory. However, 1 closet of sufficient size is believed to be adequate for family needs.

More than half the housing managers suggesting coat closet areas, recommended 10 sq. ft. or more. Some of the others recommended as little as 6 sq. ft.

- (2) Open face closets. About half the closets were frontless or had no doors — the majority of the former type. Frontless closets are not only unsightly, when located in living-room areas, but families objected to their inability to keep clothing clean. All but one housing manager recommended closet doors.

Large closets of 10 or more sq. ft. in area, which are planned for curtaining, and large stairhall closets require electric lights. This omission is commonly objected to by families, due to the impossibility of holding back floor to ceiling curtains to admit light when the closets are in use. Furthermore, the safety certainty of extension cords commonly used by families for lighting closets should be considered.

8. Recommendations

a. Areas.

- (1) A minimum of 160 to 190 sq. ft. for 1, 2 and 3-bedroom units. (Variation is required more for differences in layout than for furniture quantities, since most families,

Section VII (Cont'd)

regardless of size, have about the same types and quantities of furniture.) A minimum of 200 - 210 sq. ft. for 4 and 5-bedroom units.

- (2) Where living-room space heaters are provided, an area of 16 sq. ft. should be added, if the heater is located adjacent to 1 opening.
- b. Living-room-dining area. Dining space outside the living-room area.
- c. Wall space. Desirably located wall space for a sofa 32" by 80", 2 upholstered chairs, each 30" by 38", 1 side chair 18" by 20", 2 end tables, 1 radio 16" by 32". Additional wall space approximately 24" by 36" to be allowed for at least one extra piece, such as a table, children's desk, or an additional chair.
- d. Openings.
 - (1) Five and 6-door openings to living-room areas to be avoided.
 - (2) Partition with door is preferable between the living-rooms and kitchens, except for Southern areas where doors only should be omitted. Where openings are permitted, openings to be opposite the dining area of the kitchen, not the equipment area.
- e. Stairways. Where bedrooms and baths are located on second floors of 2-story houses, stairways to be located near kitchens.
- f. Electric lights and outlets. One central ceiling light and a minimum of 2 double wall outlets. Wall brackets are not recommended.
- g. Dining rooms. These are not recommended.
- h. Living-room or hall closets.
 - (1) Areas to be not less than 7 to 10 sq. ft. with sizes varying with unit sizes; depth, not less than 2'4".
 - (2) Each closet equipped with a door, and a hanging rod and shelf.

VIII. KITCHENS

1. Why Kitchens are Unsatisfactory. The area with the greatest number of functions creates the greatest design difficulties; it is also the most unsatisfactory to tenants. Because of the multiple uses required of this area, perfection in design is impossible at low cost; therefore, major requirements only, have been considered.

The principal objections to kitchens are

- a. work areas too small;
- b. kitchen dining areas too small, insufficiently lighted and undesirably located;
- c. inadequate ventilation in some projects in the South;
- d. insufficient storage areas, particularly reachable storage area;
- e. inadequate or no work top area; and,
- f. inadequate amounts of or no closed cabinets.

2. Uses. Other than food operations and laundry work, the following percentages of families use kitchens

Dining 89 per cent

Entertaining of guests 25 per cent

Children's study 32 per cent of the families with children school age

Children's recreation 52 per cent of the families with children

Clothes drying 32 per cent

Ironing 82 per cent

Sewing 27 per cent

(See Living-Rooms, Bedrooms and Laundry Operations for other areas where some of the above activities take place.)

The activities that require consideration in space planning are dining and clothes drying. Children's study requires adequate lighting in dining areas.

ONE OF THE MORE DESIRABLE KITCHENS OF A 5-ROOM UNIT

VI

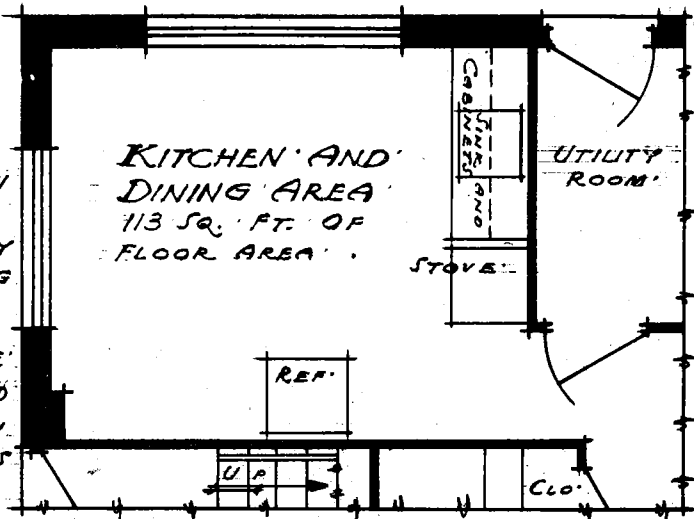
1- PLEASANT DINING
AREA SET APART
FROM KITCHEN
EQUIPMENT

2- FAMILIES ENJOY WINDOW
AREA, ALTHOUGH
LARGER THAN NECESSARY
FOR ADEQUATE LIGHTING
AND VENTILATION

3- DINING AREA SHOULD BE
INCREASED SLIGHTLY TO
PERMIT SIZE VARIATION
IN TENANT OWNED TABLES

4- TWO CENTRAL CEILING
LIGHTS SHOULD BE INCLUDED -
ONE OVER EQUIPMENT AREA
AND ONE OVER DINING AREA

5- ADDITIONAL REACHABLE STORAGE
AREA CAN BE PROVIDED BY
MOVING REFRIGERATOR SUFFICIENTLY
TO LEFT TO PERMIT A 2'-6"
BASE CABINET



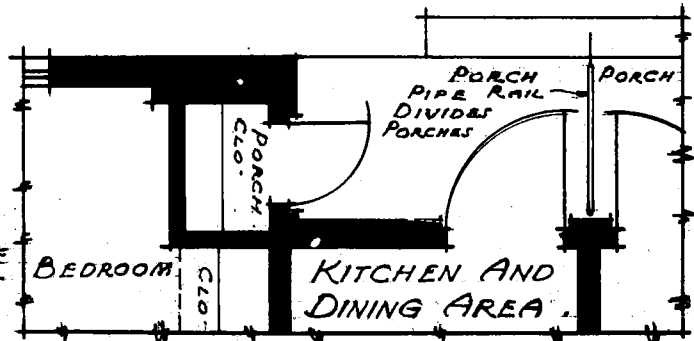
FLOOR PLAN
SCALE $\frac{1}{4}'' = 1'-0''$

PORCH CLOSETS FOR SOUTHERN AREAS

VIa

1- FAMILIES LIKE PORCH
CLOSETS FOR THE
STORAGE OF HOSE
AND GARDEN TOOLS

2- PORCH CLOSETS DO
NOT TAKE THE PLACE
OF KITCHEN CLOSETS
WHICH WERE NOT
SUPPLIED IN THE UNITS
WHERE PORCH CLOSETS
WERE PROVIDED



FLOOR PLAN
SCALE $\frac{1}{4}'' = 1'-0''$

Section VIII (Cont'd)

- a. Kitchen dining. The most frequently expressed reasons for kitchen dining preferences were: "We like it", "we have always dined in kitchens", "linoleum floor easier to clean", "too much clean-up after children in the living-room". The objections to kitchen dining space were: Inadequate area, undesirable location of area, and inadequate or no natural and electric lighting in the dining space. (See plate 6, p. 26)

Dining tables are of all sizes and shapes -- square, rectangular, oval and round. Families must use tables they have on hand and some are larger than necessary. A few were too small for family size, since they were purchased to fit the kitchen space, not to accommodate the family.

One of the most unfortunate mistakes in planning dining area has been the provision of only sufficient space to provide the smallest possible table that will barely accommodate the family; and a table of a shape that will best fit the space provided. This is unrealistic. Some flexibility in dining area requirements should be provided, since families definitely do not have just the size table for just the number in the family.

- b. Clothes washing and clothes drying. Practically all families who do not have access to central laundries wash in kitchens, since few send their washings to commercial laundries and few have utility rooms. The principal objections to uses of kitchens for laundry work are

- (1) Inadequacy of space in small kitchens, particularly for large families;
- (2) Confusion created by simultaneous cooking and laundry operations; and
- (3) Inadequate ventilation and collection of steam and moisture on living-room walls and furnishings, where partial partitions exist between living-rooms and kitchens.

Some families state they are required to move the dining table and chairs outside the kitchen to permit sufficient laundry work space.

The most desirable unit laundry space for the large families is the utility room equipped with double trays. (See Utility Rooms, page 41)

Section VIII (Cont'd)

Failure to include proper clothes drying space and facilities creates the greatest housekeeping problem with the exception of storage inadequacy. Findings indicate more kitchen clothes drying than families were willing to admit. Clothes drying is not done only in kitchens, but all over the house -- on living-room radiators and chairs, and in bedrooms, halls and bathrooms, which increases maintenance and decreases livability. Since the only sizable kitchen area for clothes drying is over the dining space, it seriously interferes with dining. Day-worn people do not like sitting under dripping clothes during the dinner hour.

The amount of inside space required for clothes drying varies with geographic areas. Projects located in cold climate areas and in areas with seasonal rainfall periods require more inside space than those in Southern States.

- c. Children's study. Adequate lighting is the only planning consideration for children's study, since the dining table is used for the purpose.
- 3. Sink-trays, Stoves and Refrigerators. Tenants object much less to kitchen equipment than to storage facilities.
 - a. Size and location of sink-laundry trays. There were no objections to sinks with the exception of location for efficient operation, but about 25 per cent of the families were dissatisfied with laundry trays. These were mostly large families who did not have access to central laundries. Objections were
 - (1) tray too small for washing;
 - (2) improperly located; and,
 - (3) no laundry tray provided.

Since most trays accommodate but one sheet at a time, they are inadequate for large families and families of 4 or more members, who do not own washing machines. These experience washing operation difficulties. Many supplement portable tubs and benches which further increase kitchen over-crowding.

The location of trays at a height of 39" instead of 36" should be avoided, since they are entirely too high for use for some families and too high for comfortable use for many. A few trays were located so close to the kitchen door opening that a washing machine could not be used.

PROJECTS STUDIED IN 1942

Region I	MASS-6-1 CONN-4-1 CONN-4-3	Sunset Hill, Fall River Elin Haven, New Haven Quinnipiac Terrace, New Haven
Region II	MD-2-1 MD-2-2 MD-2-4 NJ-3-1 NY-2-1 NY-2-2 NY-3-3 NY-3-4 NY-3-5 PA-2-1 PA-2-2	Latrobe Homes, Baltimore McCulloch Homes, Baltimore Edgar Allen Poe Homes, Baltimore Hravlag Manor, Elizabeth Lakewood, Buffalo Willert Park, Buffalo Vladock Houses, New York City South Jamaica Houses, Queens East River Houses, New York City James Walden Johnson Homes, Philadelphia Tucker Homes, Philadelphia
Region IV	ALA-1-3R ALA-1-4 ALA-6-1 ALA-6-4 ALA-1041 GA-6-2 GA-6-3 TENN-3-1 TENN-3-2	Central City, Birmingham Southtown, Birmingham Riverside Heights, Montgomery Riverside Heights, Montgomery Eastwood, Birmingham John Hope Homes, Atlanta Capitol Homes, Atlanta Western Heights, Knoxville College Homes, Knoxville
Region V	LA-1-1 LA-1-3 LA-1-7	St. Thomas Street, New Orleans Iberville Street, New Orleans Calliope Street, New Orleans
Region VI	CAL-2-2 CAL-4-1	Harbor Hills, Inglewood Township Ranoma Gardens, Los Angeles

PROJECTS STUDIED IN 1945

Region II	NJ-21-1	Riverside Terrace, Paterson
	NJ-16-1	Harrison Gardens, Harrison
	NJ-14-1	Pitney Village, Atlantic City
	PA-2-3	Allen Homes, Philadelphia
	PA-1-2	Bedford Dwellings, Pittsburgh
Region III	IND-4-1	Middletown Gardens, Delaware County
	IND-5-1	Munaryana Homes, Muncie
Region IV	FLA-1-1 & 1-1A	Brentwood Park, Jacksonville
	GA-4-1R	Pasbody Apartments, Columbus
	GA-6-4	Grady Homes, Atlanta
	SC-1-1-6	Mills Manor, Charleston
	TEXN-1-2R	Foots Homes, Memphis
Region V	TEX-1-3	Santa Rita, Austin
	TEX-6-1	Alazan Courts, San Antonio
	TEX-8-1R & 8-2R	(Wiggins Homes) (Navarro Place), Corpus Christi
Region VI	CAL-4-5	Alise Village, Los Angeles
	CAL-1-4	Valencia Gardens, San Francisco
	CAL-1-3	Sunnydale, San Francisco
Region VII	WASH-1-1	Yesler Terrace, Seattle
Region VIII	MICH-1-5	Charles Project, Detroit
	OHIO-4-1	Winton Terrace, Cincinnati
	OHIO-5-2	Mass Court, Dayton
	OHIO-9-1	Valleyview Homes, Cleveland

Section VIII (Cont'd)

In 162 units, families had no unit laundry trays and for 42 of this number, there were no available central laundry facilities. These families use portable tubs and bathtubs. The necessary frequency of washing clothes by families with small children, requires laundry trays in all units, since families are usually unable to leave small children at home to use central laundries frequently, and furthermore, central laundries do not permit sufficient frequency of use. (See Uses of Laundry Facilities, page 54)

Two sinks with a common waste pipe create difficulties; tenants complain of water backing up from adjacent sinks. Also, neither tenant wants to assume the responsibility for drain stoppage.

Wood portable drainboards used in the majority of projects were frequently found in a deplorable condition - burned, split and completely insanitary for kitchen use. A heat-resistant drainboard or counter top area is more desirable.

- b. Stoves. Only 10 per cent of the families objected to stoves. The greatest objection was burner top size; others were stove location and oven height.

Large cooking utensils, required by large families, cannot be placed at the same time on the four burners of the types of gas stoves usually provided. Utensils fall off. Furthermore, the placement of utensils on the edge of the burner wastes considerable gas. Grills over burner rings, found on a number of gas stoves, were not designed for the stability of cooking utensils, which are easily upset. Although there was some dissatisfaction with the 3-burner electric stoves, there is assurance that tenants can manage satisfactorily with a little assistance in operation. Oven heights of but 12", commonly provided in gas stoves, are inadequate for large families.

A few stoves are located so near outside door openings -- some but 13 or 14 inches -- that the flame blows out when doors are opened. Stoves located in corners of kitchens do not provide space for utensil handles. Those located with free space adjacent create a hazardous condition for children, who easily upset hot food or boiling water by running into projecting utensil handles. Stove location should be such that no free area is adjacent.

Some of the wall spaces back of stoves were found to be in a most undesirable condition. They should have a hard enamel finish or other protection from which grease can be easily removed.

Section VIII (Cont'd)

- c. Refrigerators and coolers. Objections to mechanical refrigerators were to size only. Based on tenant requirements for children's needs and week-end purchases, 4 cu. ft. sizes are too small for any but 3 and 3-1/2 room units. Six cu. ft. would adequately meet the requirements of families living in all larger units. Some managers recommend 6 cu. ft. sizes for all units.

In 125 units, no refrigerators or ice boxes were furnished by the project; however, some tenants in these units were able to meet their own needs.

Coolers were used in 70 units in Washington and California projects instead of refrigerators. Nearly all of these were unsatisfactory, and 45 of the tenants had supplied their own refrigerators, using the existing cooler for storage of foods not requiring refrigeration. Food experts specify temperature requirements to prevent food spoilage lower than can be met by coolers.

4. Tenant-Owned Kitchen Equipment.

- a. Tenant-owned storage cabinets. Because of the insufficient storage space provided, more than 25 per cent of the families either owned or had purchased kitchen cabinets. Some families had 2 or more. These cabinets over-crowded kitchens, but kitchen over-crowding with cabinets provided a better arrangement than a miscellany of unstored articles. A few families owned expensive cabinets before entering the project which they wished to retain, since these were superior to cabinets provided with the units. A number of families had buffets or china closets, also to provide additional storage space. That many families will always want space for their own cabinets or other equipment for kitchen use is a reasonable prediction.
- b. Tenant-owned work tables. A few of these were purchased to supplement existing counter areas, but about 40 per cent of the families use dining tables and most object. The use of these tables as work tables is unsatisfactory -- they are too low for standing operations; they are in an inconvenient location; kitchen work ruins tables not built for work purposes; the time for preparation of the table for dining conflicts with the time of many other table operations.

Section VIII (Cont'd)

- c. Refrigerators. More than 100 families own their own refrigerators and ice boxes and use them. Others store them. A few use both the project and their own refrigerators -- one for refrigeration and one for other food storage. Not all families can afford refrigerators and 100 per cent tenant-owned refrigerators should not be expected.
 - d. Washing machines. Of the 1,062 families, 374 own washing machines, but only 156 were stored in kitchens; others were stored in central laundries, utility rooms, basements; and a few in bedroom closets.
 - e. Sewing machines. Of the 435 families who own sewing machines, only 70 store them in kitchens, however, 300 families use the kitchen for sewing -- both hand and machine. The bedroom or bedroom closet is used by most families for sewing machine storage.
 - f. Space for tenant-owned kitchen equipment. With the exception of space required for dining tables and chairs, little additional space should be provided for family possessions with the possible exception of space for a tenant-owned cabinet. Utility rooms and closets are recommended for washing machine storage. (See Utility Rooms, page 41) Since all tenant-owned cabinets and kitchen tables inventoried in kitchens were supplied by tenants to supplement the lack of storage or counter area, the provision of adequate storage space should relieve the majority of kitchens of all other articles.
5. Project Supplied Storage and Counter Areas and Kitchen Facility Arrangements.
- a. Storage areas and their locations. Information on the lack of adequate kitchen storage space is not a revelation, but the degree of this lack should be of interest in storage planning. Due to the meager amounts of storage provided, a housekeeping problem was created that the most efficient housekeepers could not overcome. Utensils were placed under sinks, in laundry trays, ovens, linen closets; packaged foods and dishes were commonly found in linen closets and living-room closets; cleaning equipment and materials, in living-room closets, bedroom closets and linen closets; canned foods in bedroom closets, in boxes under beds, and in linen closets -- all must occupy spaces that families could most easily sacrifice without regard to location convenience. Problems of kitchen storage area are created by

EXAMPLE OF INADEQUATE KITCHEN STORAGE FOR 4½ ROOM UNIT

VII

1-THREE 12 INCH WIDTH
SHELVES PROVIDED
FOR ALL KITCHEN
STORAGE

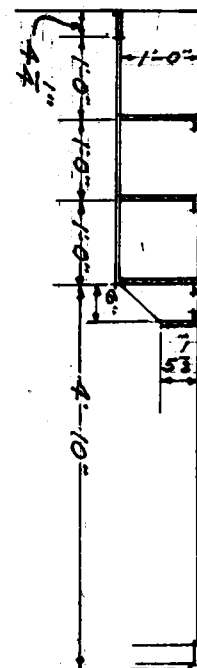
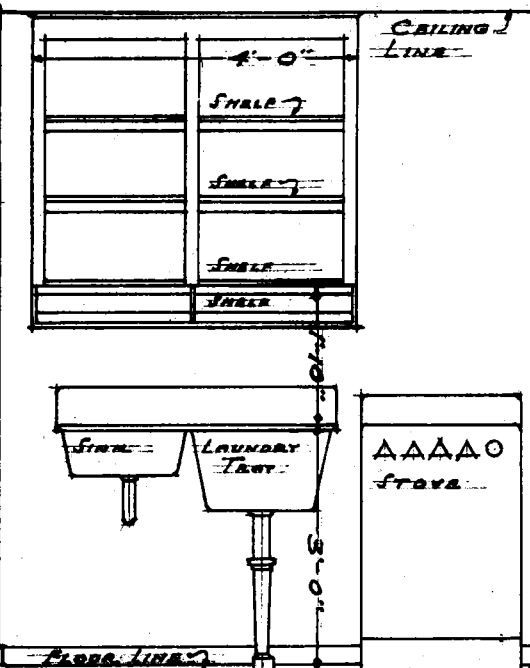
2-SOME FAMILIES CAN
REACH BUT ONE
12 INCH SHELF,
OTHERS 2

3-NO BASE CABINET
INCLUDED

4-SHELF SPACING DOES
NOT PERMIT LARGE
ARTICLES USED
BY FAMILIES

5-FURNACE ROOM PROVIDED,
BUT DUE TO COAL
STORAGE IS NOT
USABLE FOR KITCHEN
DISHES AND FOODS

6-LINEN CLOSETS ARE USED
BY THESE FAMILIES FOR
FOOD STORAGE

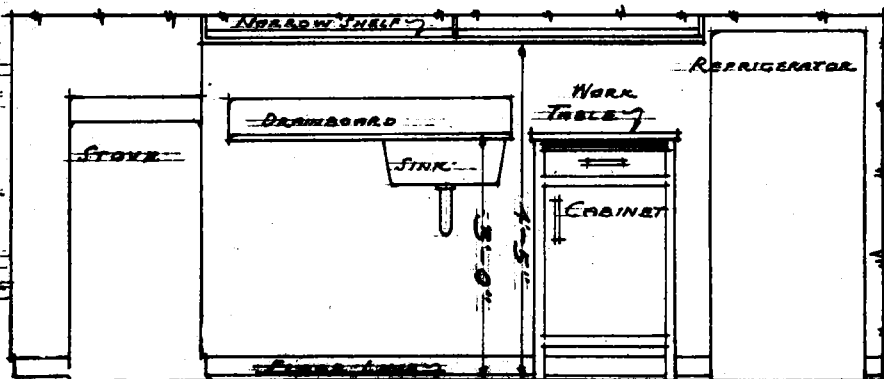


ELEVATION OF KITCHEN WALL
SHOWING EQUIPMENT
SCALE 1/4" = 1'-0"
CROSS
SECTION OF
SHELVES

INADEQUATE WORK TOP AREA IS COMMONLY PROVIDED FOR LARGE FAMILIES

VIIa

LESS THAN
4 SQUARE
FEET OF
WORK
TOP
PROVIDED
FOR
FAMILY OF
6 PERSONS



PART ELEVATION OF KITCHEN WALL SHOWING
EQUIPMENT WITH WORK TOP AREA
SCALE 1/4" = 1'-0"

Section VIII (Cont'd)

- (1) too little provided;
- (2) too little closed; and
- (3) too much out of reach.

- b. Existing amounts of open and closed shelving. (See Plates 7 and 7a, page 32) Exclusive of base cabinet areas which usually provided about 8 sq. ft. of storage space, and a number of families had none of these, more than half the families have less than 20 feet of storage area -- considerable of which could not be reached. If families were fortunate enough to have a base cabinet, the total kitchen storage for the majority was but 28 sq. ft. or possibly a little more if the base cabinet happened to be larger which existed in a very few units. (See plate 8, p. 34)

The little variation of storage area provided, between large and small units, exclusive of base cabinets shows

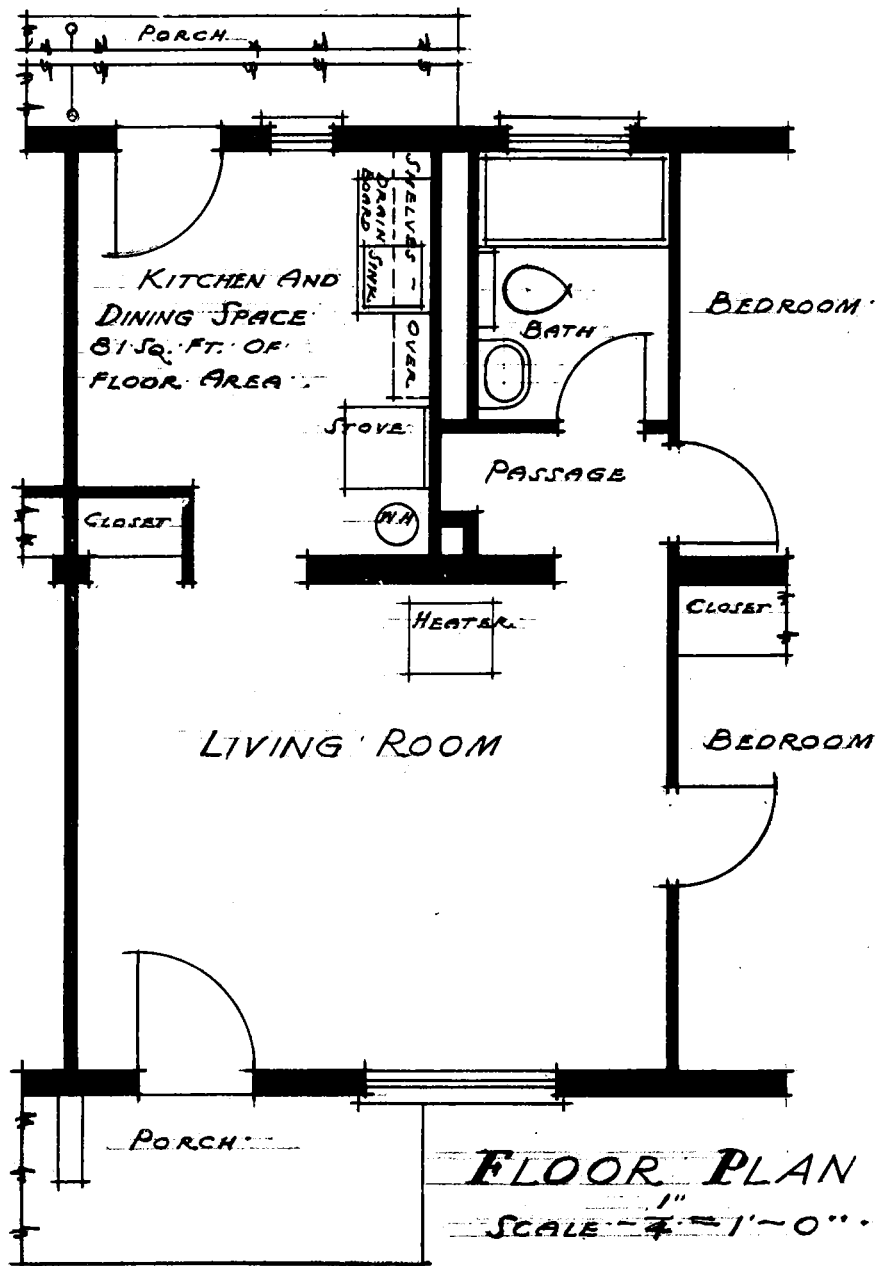
	All units	3&3-1/2 room	4&4-1/2 room	5&5-1/2 room	6&6-1/2 room
Less than 15'					
per cent	3	6	2	-	8
15' to 20'					
per cent	57	67	61	41	65
20' to 25'					
per cent	34	27	30	51	19
25' to 30'					
per cent	6	-	7	8	8

It should be further noted that some of the families with only 15 or 20 feet of shelving had no kitchen closets or utility rooms for storage. Although kitchen closets and utility rooms adjacent to the kitchen are not recommended for daily used foods, dishes and utensils, they relieve the kitchen of less frequently used foods and equipment.

- c. Reachable shelving. The small amount of shelving provided that does not require the use of a chair or ladder for utilization was a serious housekeeping problem. Of the 713 units on which reports were received, one-third of the families could reach but from 5 to 10 feet, exclusive of the 8 sq. ft. of base cabinet. Some families could reach but one

*INADEQUATE KITCHEN AREA AND ARRANGEMENT
FOR A 4 OR 5 PERSON FAMILY*

VIII



- 1- USABLE KITCHEN AREA IS BUT 81 SQUARE FEET
- 2- NO BASE CABINET, NO COUNTER-SHELVING, NO REFRIGERATOR AND NO KITCHEN CLOSET PROVIDED
- 3- WINDOW LESS THAN 2 FEET WIDE
- 4- FAMILIES DINED IN THE KITCHEN

Section VIII (Cont'd)

of the several shelves provided. Furthermore, there was little more reachable shelving in large units than in small. Out of reach shelving can well be termed hazardous, based on national reports of home accidents caused by falls from chairs and step ladders, but it also creates appalling disorder and confusion. Since families will not climb on chairs and ladders several times daily to properly store utensils and dishes, they are stored elsewhere, regardless of convenience. Commonly found were reachable shelves greatly over-crowded, and open, top shelves used for the display of dishes only.

The majority of cabinets over refrigerators and counter top water heaters are out of reach. A few units have storage over gas stoves.

Small kitchens create a problem in the location of sufficient wall space for shelves within reach. However, if more and larger base cabinets are provided, this problem is partially solved. Also, additional reachable shelving can be obtained by decreasing the distance of 2', usually provided, to 12" between the work top and the bottom shelf above it.

- d. Closed shelving. About 300 of the 713 families had no closed shelving within reach, except for the small base cabinet, if one existed. More than 160 families had no closed shelving whatsoever.

More than half of the tenants objected to open shelving, but the findings indicate that the majority of tenants want some open shelving or cabinets with glass doors, for the display of their most attractive dishes. All closed shelving is not recommended; although many tenants complain of dust and soil on dishes, it is believed that a small portion of open shelving would best satisfy the needs and desires of the majority.

- e. Cool storage. Difficulties in locating sufficiently cool storage space for home canned foods were experienced by families who did a substantial amount of canning. Some families store in bedrooms and turn off the heat to protect canned foods. Spoilage due to heat was a common complaint.

Based on the findings of the study, the most canning is done in the South; some in the Middle West, little in the North and almost none in California. Storage preferably located outside the kitchen area or on an inside kitchen wall, where it is reasonably cool, is required.

Section VIII (Cont'd)

There was also a lack of cool areas for raw vegetables and in the South for corn meal, commonly bought in quantity.

In one or 2 projects, heat pipes extend through food storage cabinets, which make them unusable for food storage purposes.

- f. Base cabinets. Usually 1 base cabinet only is provided, but 265 families had none. Those equipped with but one shelf are the most satisfactory, since space is required for large utensils. The small drawer, usually included, is invaluable and should be retained.

The findings of this study reveal the need for at least two base cabinets for units of 2 or more bedrooms. Since the base cabinet provides the counter area, locations adjacent to the stove and at the right of the sink are advisable. A second drawer for the storage of kitchen linen is needed. (Report on Kitchen and Utility Room Storage Space in preparation)

6. Quantity Buying. There was little quantity buying revealed in either the 1942 or 1945 study. Income was insufficient to make it possible in the earlier study; both income and rationing probably were responsible in the later study.
7. Work-top Areas. The majority of kitchen operations require flat work surfaces or counter shelving. More than half the families objected to the amount provided or the complete lack of it, since for many, none was provided. Inadequate counter shelving was as common to the 2, 3 and 4-bedroom units as to the 1-bedroom, since there was usually little variation between the amounts supplied large and small units. Counter shelving as well as storage should vary with family size to provide for more and larger dishes and equipment, and to accommodate more kitchen workers.

Existing amounts in units where work top area was provided show

75 per cent of the families have 2' or less;
25 per cent have from 2' to 4'.

These work space tops of 18", 20" and 21" widths are so completely inadequate for the use of large families that they are rarely used as work surfaces. Families use the tops of stoves, their dining-room tables and tenant-purchased kitchen tables. Counter shelving inadequacy is a major cause of kitchen disorder.

Section VIII (Cont'd)

The wood top cooler used in some of the Western projects provided the counter area; enamel tops of hot water heaters were also used in some projects. The latter were satisfactory except for their depths of 29", which made most of the shelving above unreachable. Where cooler and hot water tank counter tops are used, base cabinets also should be provided, since storage under the counter area is necessary. Enamel, wood and tile were in use for counter area. Tenants like enamel and tile better than wood.

The small portable drainboard, usually but 18" long, is completely inadequate as work top area and was never intended as such. Furthermore, some projects have no drainboards.

8. Kitchen Areas. More than half the kitchens were evaluated as inadequate in area. (See Plate 8, page 34) Inadequacies were not all due to planning, since living-rooms were frequently planned for dining, but not used as such. Areas were insufficient because
 - a. Adequate storage and counter area were not provided, necessitating tenant-owned equipment;
 - b. Kitchens were frequently reduced to 60 sq. ft. or less, regardless of unit size, where dining-rooms or dining alcoves were provided;
 - c. Dining requires more space than was provided for the number in the family, and sizes of tenant-owned dining tables were not anticipated;
 - d. Kitchen sizes did not vary with unit sizes in some projects;
 - e. Provision was not made for 2, 3 or 4 workers in large units.

Existing size inadequacies are shown by the per cent of units with kitchen areas less than 100 sq. ft. where no dining-rooms or alcoves were provided

Unit size	Per cent
3 & 3-1/2	62
4 & 4-1/2	20
5 & 5-1/2	16
6 & 6-1/2	46

Many of the large kitchens of 180 sq. ft. had no auxiliary storage such as utility rooms, closets or basements, but the large areas were supposed to accommodate all cleaning equipment and supplies. Practically all of the very small kitchens

Section VIII (Cont'd)

in large units had dining-rooms or alcoves, but 60 sq. ft. was entirely inadequate for kitchen use only. (See Plate 9, page 39.) Although many units had utility or broom closets and many opening into the kitchen, these do not relieve the kitchen of dishes and utensils used several times daily, which must necessarily be located near kitchen equipment.

The most frequently expressed tenant objections to kitchen areas were: "Inadequate to seat the family", "dining space too close to stove", "can't work together", "no space to put things", "must use stove for work table", and "must move furniture out when we wash".

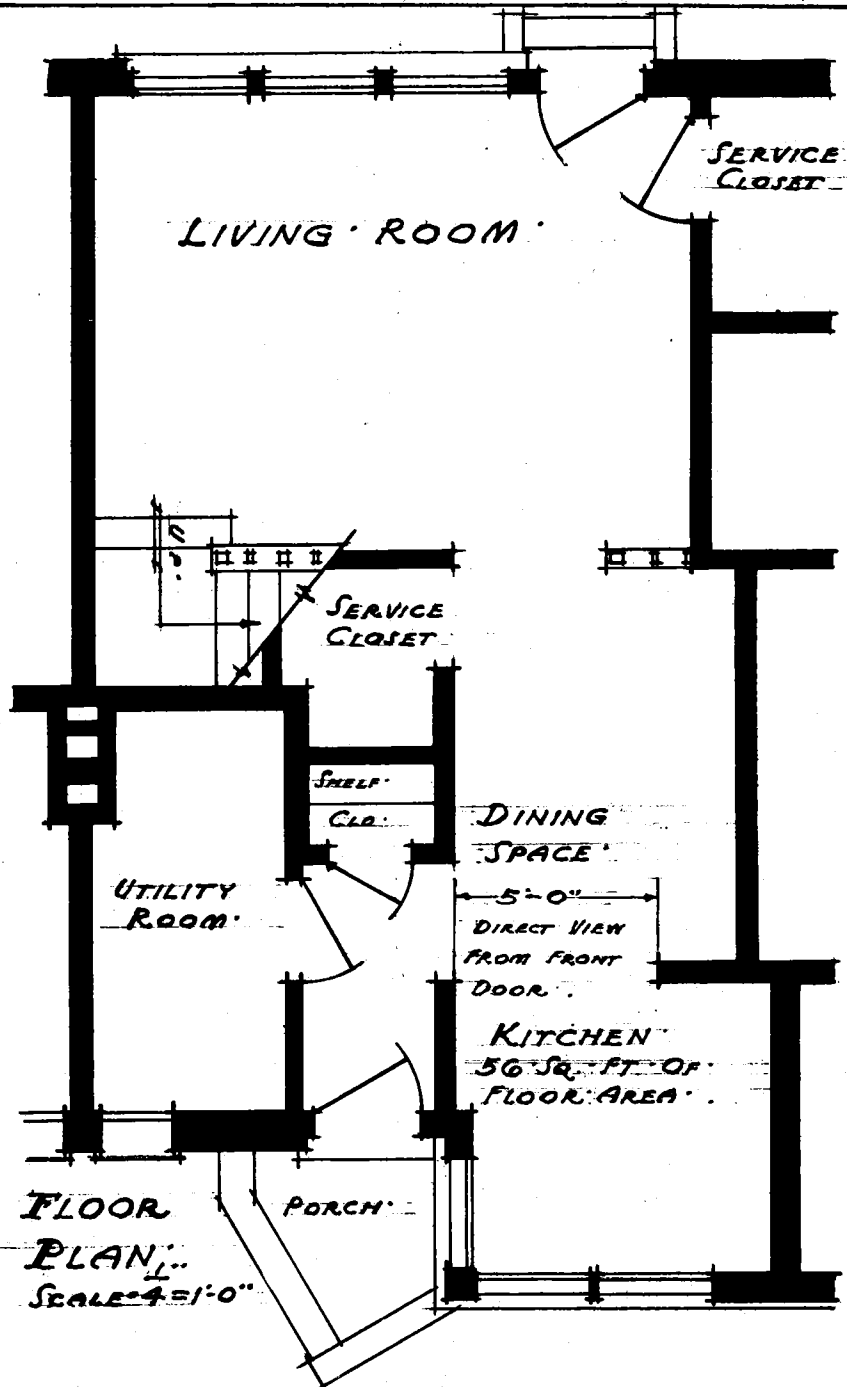
The information on kitchen size based on uses of kitchens and the quantity on sizes of utensils and equipment, families must operate with, shows that the majority of kitchens should be larger to provide for:

- more dining area;
- more work top and storage area;
- more free space for operation, particularly in larger kitchens which must accommodate 2 or 3 workers.

9. Towel Racks. Since the drying of dish and hand towels is frequently over chairs, table and radiators, or in other unsuitable areas, tenants need hanging strips for the placement of tenant-supplied racks.
10. Kitchen Lighting. There were fewer objections to kitchen lighting than to space, storage or work top areas.
 - a. Natural lighting. Most kitchens were adequately lighted with the exception of the dining areas. Few of these were located near windows and many families must move their tables near windows areas which were usually near the equipment, and an undesirable location for dining.
 - b. Electric lighting. Nearly all kitchens had but 1 ceiling light which was intended to be adequate for both dining and kitchen operations. This arrangement was unsatisfactory, since kitchen operations, particularly those at the stove and sink, require excellent lighting. Central ceiling lights were sometimes located so that the sink or stove worker must operate in her own shadow.

UNDESIRABLE DINING-KITCHEN ARRANGEMENT
~ FOR A 5½ ROOM UNIT ~

IX



- 1-KITCHEN AREA BUT 56 SQ. FT. WHERE DINING RM. IS INCLUDED.
- 2-UTILITY ROOM INCLUDED BUT DOES NOT PERMIT USE AS KITCHEN.
- 3-DINING SPACE HAS NO NATURAL LIGHTING.
- 4-VIEW FROM FRONT DOOR THROUGH KITCHEN.
- 5-A LARGE PORTION OF KITCHEN WALL SPACE OCCUPIED BY WINDOWS.

Section VIII (Cont'd)

11. Recommendations.

- a. Kitchen areas. Including dining areas and hot water heater space to be not less than 100 to 180 sq. ft. for 1, 2, 3 and 4-bedroom units, areas varying with unit sizes.
- b. Dining areas.
 - (1) To be provided in kitchen area, and at least 3' from stove and sink.
 - (2) Areas to vary from 40 to 88 sq. ft. for 1, 2, 3 and 4-bedroom units.
- c. Sink-laundry trays.
 - (1) To be provided in each kitchen regardless of accessibility to central laundry facilities, unless trays are provided in utility rooms.
 - (2) To be equipped with 1 drainboard of heat-resistant material.
 - (3) Height of top of sink-tray to be 36".
- d. Stoves.
 - (1) Burner top sizes for 3-bedroom or larger units to be not less than 2' x 2'; oven heights to be not less than 14" for gas stoves.
 - (2) Stoves to be located so that there is no free space on either side.
- e. Refrigerators.
 - (1) Project-owned refrigerators to be provided where tenants unable to supply their own.
 - (2) Cubical content to be not less than 4 cu. ft. for 1-bedroom units and 6 cu. ft. for larger units.
 - (3) Coolers are not recommended.
- f. Drains for washing machines. Drain to be supplied in kitchen area of units of 1-bedroom sizes where central laundry facilities are unavailable. (See Utility Rooms, page 41 for larger units.)

Section VIII (Cont'd)

g. Storage areas.

- (1) One base cabinet not less than 2' x 3' for 1-bedroom units; 2 base cabinets not less than 2' x 3' each, for all larger units; or the equivalent amount of base cabinet area. Each base cabinet to be equipped with 1 shelf and 1 drawer.
- (2) From 18' - 30' of open and closed shelving to be provided in addition to base cabinets -- amounts to vary with unit sizes.
- (3) At least one-half of storage area, exclusive of base cabinets to be reachable.
- (4) Two-thirds of all shelving, exclusive of base cabinets, to be closed. Open area preferably located over sink.
- (5) Cabinets for food should be preferably located on an inside wall and at a sufficient distance from the stove to be reasonably cool.

(Additional information on shelf width, spacing, location, etc. included in Kitchen and Utility Room Storage, in preparation.)

h. Counter area. From 3' to 6', exclusive of drainboard, varying with unit sizes.

i. Lighting.

- (1) Adequate natural lighting to be provided in dining as well as kitchen areas.
- (2) Kitchen area to be provided with 1 ceiling light and 1 double service outlet.
- (3) Dining area to be provided with 1 ceiling light and 1 service outlet.

IX. UTILITY ROOMS AND KITCHEN CLOSETS

1. Utility Rooms. About one-fourth of the units had no utility rooms, kitchen broom closets or basements for storage purposes. This lack of storage was as prevalent in large units as in small. In a number of units where utility rooms of 30 or 32 sq. ft. in area were provided, the storage condition was relieved considerably, but not adequately in large units. Some utility rooms

Section IX (Cont'd)

have no windows but an outside entrance; some had no shelving; others had but 12" width shelving, which was too narrow. Some utility rooms were a considerable distance from kitchens, where kitchen areas were less than 60 sq. ft. (See Plate 9, page 39). In a few utility rooms, coal furnaces and coal storage was included which made them unsuitable for household storage purposes.

Those utility rooms provided with 2 laundry trays were appreciated by families, but the area of 32 sq. ft. was inadequate for all household storage suitable for the area; and those of but 5' widths were too narrow, where laundry trays were provided. No drain was included for washing machines.

An inventory of unstored articles indicates that utility rooms should accommodate washing machines (unless tenants have access to central laundry facilities); laundry supplies, such as washboard, clothes basket, ironing board, soaps and soap powder; home canned foods, particularly for the South and Middle West areas; housecleaning supplies, such as brooms, mops, vacuum cleaners or carpet sweepers; inside drying space; regardless of central laundry facilities; garden tools and equipment, unless a porch closet is provided; and window screens.

2. Kitchen and Broom Closets. Those units with kitchen or broom closets provided to substitute for utility rooms, varied in areas. Some for both large and small units were but 3 sq. ft.

One utility room adequate in area to accommodate all unstored articles suitable for this area, would better satisfy families and probably be more economical than 2 small closets.

3. Porch Closets. These storage spaces for 1 and 2-story units provided to accommodate garden equipment and tools are very satisfactory, particularly in the South. (See Plate 6a, page 26)
4. Unit Basements. A few units with individual basements were evaluated. These provided for heating plants, laundry trays, drying space, canned foods and screen storage. Most tenants like them because of their large areas. They also provided a much needed space for children's hobbies and playrooms. Unit basements do not replace utility rooms, and they are not recommended because of cost and inconvenience for daily storage.

5. Recommendations.

- a. Utility rooms to be provided for all units.

Section IX (Cont'd)

- b. Direct access to be provided from the outside and from the kitchen.
- c. Drains to be included for washing machines, where laundry trays are provided.
- d. Sufficient window area to be included to provide both adequate natural lighting and sufficient air circulation for clothes drying.
- e. One central ceiling light to be provided over the laundry tray area.
- f. All utility rooms to be provided with inside drying space, regardless of unit size and the provision of central laundry facilities.

(Sq. ft. area, amount, width, spacing and location of shelving included in Kitchen and Utility Room Storage, in preparation.)

X. BEDROOMS

Due to bedroom over-crowding, previously discussed, and bedroom uses for miscellaneous unstored kitchen articles, evaluations for bedrooms were made on intended, not existing occupancy.

The principal objections to bedrooms are

- 1. Area too small;
 - 2. Width too narrow;
 - 3. Location requiring passage through the main living-room area;
 - 4. Locations of doors, windows and closets that prevent desirable bed location; and,
 - 5. Inadequate window area or window location for necessary ventilation, particularly in Southern area.
1. Bedroom Uses. Bedroom space is not used extensively for purposes other than sleeping. The study shows

<u>Children's recreation</u>	46 per cent of the families with children
------------------------------	---

<u>Children's study</u>	30 per cent of families with children school age
-------------------------	---

<u>Sewing</u>	25 per cent
---------------	-------------

Section X (Cont'd)

Ironing 6 per cent

All of these activities also take place in living-rooms and kitchens. Some uses would probably have been more extensive, had better electric lighting been provided in many bedrooms.

2. Furniture. Because of storage space deficiency, bedrooms accommodated a miscellany of articles, such as bicycles, automobile tires, garden tools, washing machines, ironing boards and clothes drying racks, foods and kitchen utensils. Also, furniture that families wish to retain and for which there was no other space was frequently placed in bedrooms. Due to the lack of clothing storage space, there was wardrobes, trunks, boxes and cedar chests used for best clothing and seasonal clothing. Closets, although adequate in size, do not accommodate satisfactorily all the articles families need. Space planning for bedroom furniture only, except for trunks or other articles required for clothing storage, was considered in determining bedroom area requirements.

Evaluation of furniture showed that it varied in quantity and type. Due to this variation, it was impossible to obtain a grouping of furniture common to the majority of bedrooms. However, more than 20 per cent of the bedrooms had one double bed, 2 dressers or a dresser and vanity and 1 or 2 chairs each. Many of these have bedside tables and many have trunks or cedar chests, or both. Families with small children keep cribs in parents' bedrooms. They are not kept in living-rooms or other bedrooms, except for daytime hours. These should be considered in space planning. Ten per cent of the families store sewing machines in bedrooms -- usually in parents' bedrooms.

About 70 per cent of all bedrooms (not units) were furnished with double beds and the remainder with 1 or 2 single beds; 90 per cent of parents' bedrooms had double beds. Thirty per cent of all bedrooms had vanities and dressers or 2 dressers and most of these were in parents' bedrooms.

Because of changes in standards of living, that affect space, family preferences for specific type of furniture require consideration. The 1,000 families expressed these preferences

52 per cent, double beds only;
25 per cent, double and single;
23 per cent, single only; and,
62 per cent both vanities and dressers, principally for
parents' bedrooms.

Section X (Cont'd)

Those families preferring both single and double beds, want the single beds for children. The preference for double beds was usually because of the additional cost required for 2 beds and necessary bedding.

Since present planning must be such as to meet needs and family desires for the next 40 or 50 years, bedrooms for children should probably be planned for 2 single beds.

3. Arrangement and Areas. In many bedrooms, arrangement was such that furniture could not be satisfactorily placed. In many other others, areas were too small, or widths were too narrow.

a. Arrangement. The principal arrangement objections were:

- (1) Closet areas placed opposite the only wall for bed placement with insufficient space for access, or adjacent to the outside wall;
- (2) Bedroom widths of less than 9 feet; and,
- (3) Windows so placed that bed location was unsatisfactory.

Closets located near the entrances are obviously preferred to those opening on or near the outside walls. Doorless closets located so that the bedroom door opens over the closet openings are very satisfactory. Closets opening in the center of a wall, particularly those with wide openings, are unsightly. (See Plate 10, page 46.)

Many bedrooms of less than 9' in width were inadequate for furniture placement; others were undesirable. Some were as narrow as 6'8" and bed location, particularly in Southern areas, is preferred adjacent to windows. (See Plates 11 and 11a, page 47)

The preferable window placement for families living in cold climates is on a wall parallel to beds; families in Southern areas prefer bed placement adjacent to windows.

- b. Existing square foot areas. Many bedrooms were found to be inadequate because

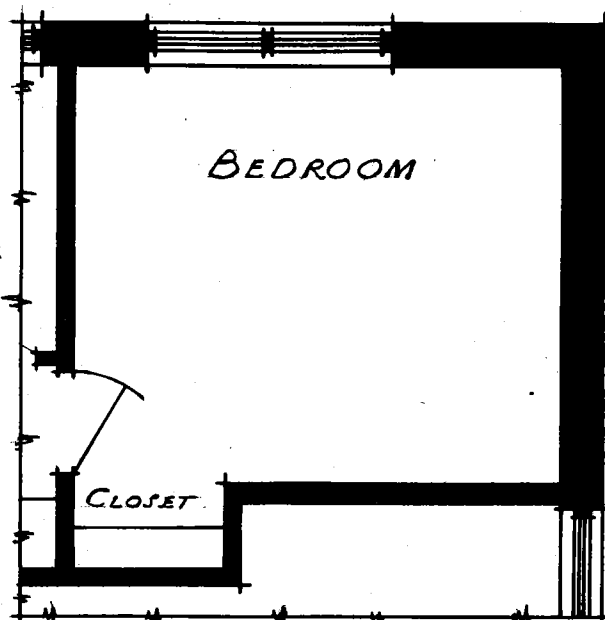
- (1) Areas were too small for a minimum of needed furniture;
- (2) Families used 2 single beds instead of 1 double, or a double bed in a 1-person bedroom instead of a single;
- (3) A vanity and dresser were used instead of 1 chest, and a trunk or cedar chest for needed storage.

WELL DESIGNED BEDROOM WITH ADEQUATE VENTILATION AND DESIRABLE CLOSET LOCATION

X

1-FAMILIES PREFER CLOSETS LOCATED NEAR ENTRANCE, AND ALSO THE PROTECTION AND IMPROVED APPEARANCE PROVIDED BY THE ENTRANCE DOOR OVER THE CLOSET OPENING

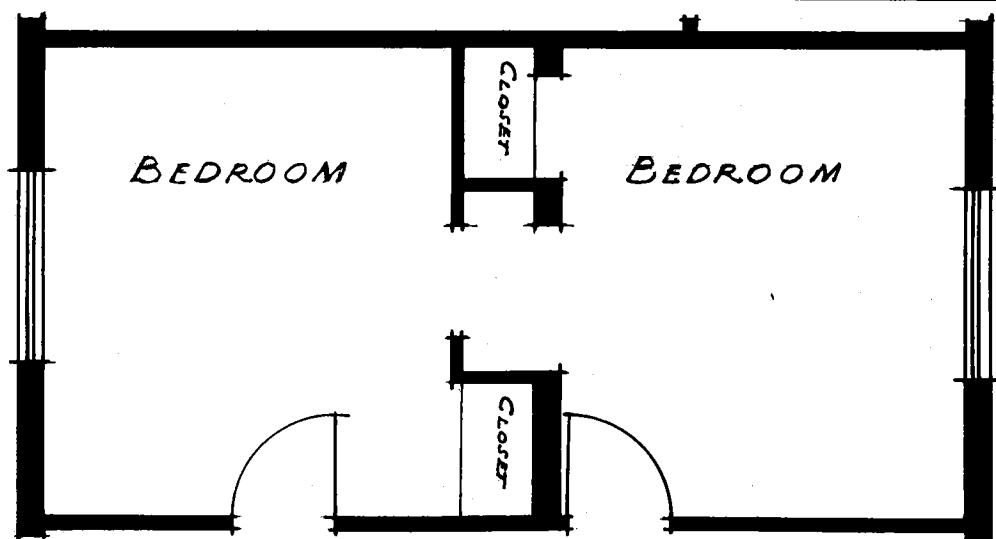
2-BEDROOM AND CLOSET SIZES ARE NOT ADEQUATE FOR MASTER BEDROOMS, BASED ON FURNITURE AND POSSESSIONS FAMILIES WANT.



FLOOR PLAN
SCALE $\frac{1}{4}'' = 1'-0''$

1-4-ROOM UNIT SHOWING CROSS VENTILATION THROUGH UNIT

Xa



1-INSIDE UNIT BEDROOMS WITH DESIRABLE WINDOW AND DOOR LOCATIONS FOR CROSS VENTILATION.

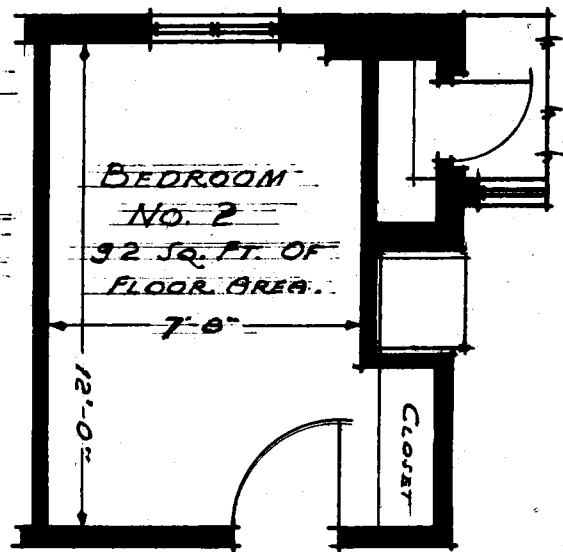
FLOOR PLAN
SCALE $\frac{1}{4}'' = 1'-0''$

*SECOND BEDROOM OF 4-ROOM UNIT LOCATED IN
SOUTHERN AREA, WITH UNDESIRABLE SPACE FOR BED*

XI

*1-WIDTH BUT 7'-8" DOES
NOT PERMIT BED
ON LONG WALL.*

*2-FAMILIES IN SOUTHERN
AREAS WANT BEDS
NEAR WINDOWS.*



FLOOR PLAN

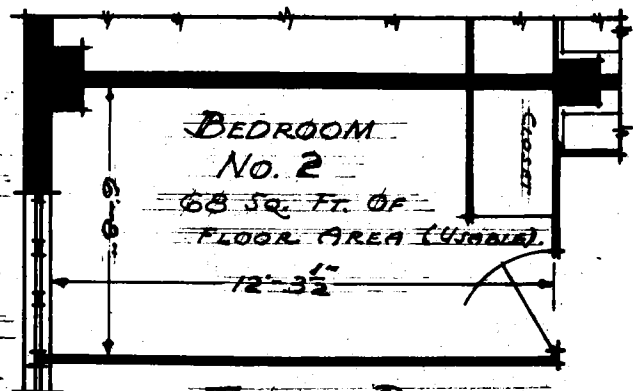
SCALE $\frac{1}{4}" = 1'-0"$

*SECOND BEDROOM OF 4 ROOM UNIT
WITH BUT 68 SQ. FT. OF FLOOR AREA*

XIa

*1-WIDTH BUT 6'-8"
PREVENTS BED
PLACEMENT ON
LONG WALL.*

*2-SOME OF THESE
BEDROOMS HAVE
DOUBLE BEDS.*



FLOOR PLAN

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

Section X (Cont'd)

Because of arrangement, some bedrooms with smaller areas better meet needs than larger ones. The review of the findings on bedroom uses and furniture indicates, however, that many bedroom areas exist, regardless of layout, that are too small for adequate use.

In nearly 200 units the main bedroom — the master bedroom — was less than 120 sq. ft.; many of these were but 110 sq. ft.; a few were but 100 sq. ft. Some of those of less than 120 sq. ft. were evaluated as adequate for use and for the furniture families have and want, but most had insufficient furniture for necessary use.

Parents' bedrooms, although usually larger than others, were found to be the most over-crowded, based on actual needs. Space is required for a double bed or 2 singles, a dresser and vanity, 1 or 2 chairs, a trunk or cedar chest, a bedside table, and infant's crib and infant's belongings.

Second, third and fourth bedrooms in large units do not have as much furniture as parents' bedrooms. Space is required for a double bed or 2 singles, a chest or dresser and a chair. However, more children's recreational facilities, such as children's hobby materials, desks and innumerable small toys are stored in these than in any other areas in the unit; and in planning these bedrooms, space for these should be considered. Space should also be considered for 2 single beds instead of 1 double for 2-person occupancy bedrooms, since these are preferred by families and they will probably buy them.

A number of the small bedrooms intended for single person occupancy were less than 70 sq. ft. Some of these were used for 2 persons because of unit over-crowding, but all, except for those where cots were used instead of beds, were evaluated as inadequate for one person. It has been assumed that where single person bedrooms are provided that families will furnish them with single beds. This does not result, since many families use the beds they have, which are usually double.

Small bedrooms should not be built in Southern areas, unless they can be provided with cross ventilation either in the bedroom or through the unit.

Section X (Cont'd)

4. Bedroom Ventilation and Excessive Heat Problems. Inadequacy of ventilation and excessive heat problems applied chiefly to Southern areas. In 6 of the Southern projects, tenants registered serious complaints of bedroom heat. In some of these projects, some of the tenants stated they were compelled to move their mattresses to the first floor living-room during the hot months. Others moved mattresses to the lawns outside. Excessive heat causes appeared to be due to
 - a. Flat roofs, although 2 of the 6 projects were built with gable roofs;
 - b. The lack of cross ventilation through the bedrooms or through the unit;
 - c. Bedroom exposure on a hot side of the unit, with no shade from planting;
 - d. Window area too small, some with but 28" width openings in bedrooms in Southern areas, and windows located so that beds could not be placed adjacent; and,
 - e. Ceiling heights of but 7' 10" in some of the bedrooms.

Obviously, bedroom cross ventilation cannot be attained in all row house units, but bedroom windows and doors located so that cross ventilation through the opposite wall of the unit from the bedroom would improve ventilation. (See Plate Xa, page 46.)

5. Natural and Artificial Lighting. The majority of bedrooms were adequately lighted by sufficient window area. However, windows of 3 feet or less in width located on the narrow side of bedrooms of 100 or more sq. ft. did not provide adequate lighting.

Electric lighting was adequate in those bedrooms with a central ceiling light and 1 or 2 wall outlets. However, in about one-fourth of the units, bedrooms were not equipped with ceilings lights, but wall brackets and wall outlets. A few had wall outlets only. Wall brackets do not give adequate light and some are so located that shade placement is impossible. Those units with outlets only, were unsatisfactory to tenants, since floor lamps must be provided. In a few bedrooms, tenants had not supplied lamps and were dependent upon the hall light for bedroom lighting.

Section X (Cont'd)

6. Bedroom Closets. The miscellany of articles in bedroom closets further indicates the types of storage space required in other areas. Many closets must accommodate soiled clothes hampers, ironing boards, canned foods, blankets and books. In a number, there were garden tools, lawn-mowers and washing machines. Quite commonly stored were fiber board wardrobes for the protection of clothing, since most of the closets were doorless.

Bedroom closets were inadequate for clothing uses because of:
(a) Inconvenience of location; (b) area, principally depth.

- a. Areas and dimensions. Closet areas varied from 5 to 15 sq. ft. for the main bedroom -- the majority were 6 to 9 sq. ft. Areas for the smaller bedrooms were frequently larger than those for bedrooms of greater areas. Some for all bedroom sizes were less than 2 feet in depth. These were unsatisfactory, particularly for main bedrooms.

Based on actual needs for closet space for the main bedroom, disregarding those uses for the countless articles that should be stored elsewhere, areas of 8 and 9 sq. ft. and less were inadequate. This was due to the necessity of closet use for both summer and winter clothing, work clothes, required boxes for clothing storage, hat boxes and suitcases.

Closets of 6 and 7 sq. ft. in secondary bedrooms occupied by children were adequate for children's clothing. Since no space is provided for children's toys and other treasured possessions, closets were commonly used for children's desks, work benches, tools and various species of hobbies. The use of this space was very satisfactory to the housewife, since it protected the living-room from confusion and disorder.

About half of the housing managers recommended closets of more than 10 sq. ft. in areas for all bedrooms. Some recommended 15 and 16 sq. ft.

- b. Doorless closets and curtaining problems. Open front bedroom closets were provided in 95 per cent of the 1,000 units evaluated, and more than 80 per cent of the tenants objected. The information indicates that most families prefer closet doors, but they would be better satisfied if at least one bedroom closet were closed, probably the parents' bedroom. Nearly all managers recommend closet doors.

Section X (Cont'd)

About 85 per cent of the families curtained 1 or more bedroom closets. Problems relating to curtains are: Cost, soil of curtains, appearance and inadequate lighting. Openings of 4 and 5 feet, which quite commonly exist, are expensive to curtain and some families state that they have been unable to afford curtaining after living in the project 3 or 4 years.

A number of families curtain the upper half of the closets in children's rooms, arranging the lower half for children's hobbies and toys. This was satisfactory except for the clothing out-of-reach for children.

7. Recommendations.

- a. Area. A minimum of 130 - 136 sq. ft. (depending on layout) for first bedrooms; all other bedrooms of sufficient size to accommodate 1 double or 2 single beds, 1 chest, 1 or 2 chairs, with sufficient flexibility in area to permit children's recreational possessions. Single person bedrooms to be not less than 90 sq. ft. Widths to be not less than 9'.

- b. Arrangement. Wall for bed spaces to be preferably an inside wall, except for Southern areas where bed wall space should preferably be adjacent to windows.

Closets to be located near or adjacent to entrances.

- c. Ventilation. 8' ceiling heights for bedrooms located in Southern areas.

Cross ventilation through bedroom or through unit for bedrooms located in Southern areas. (For all other areas, FPHA standards appear adequate, based on the findings of the study.)

- d. Lighting. Ceiling lights for all bedrooms; 2 outlets for first bedrooms; for all others 1. Brackets are not recommended.

- e. Closets. For first bedrooms, 12 sq. ft. with a minimum depth of 3'; for all others 7 sq. ft. with a minimum depth of 2'.

First bedrooms to be provided with closet doors; others, preferably with doors.

XI. BATHROOMS AND LINEN CLOSETS

1. Bathrooms. Objections were few to bathrooms, but they warrant consideration. The major ones were

Section XI (Cont'd)

- a. Areas too small;
 - b. No lavatories or lavatories inadequately designed;
 - c. No shelving, and no or an insufficient number of towel racks;
 - d. No medicine cabinets or medicine cabinets too small; and
 - e. Pull cords instead of wall switches.
- a. Areas. About one-fourth of the bathrooms were less than 32 sq. ft. in area. In one project, areas were but 29 sq. ft. Families state these bathrooms less than 32 sq. ft. in area are too small for a chair and the required supplies necessary to bathe small children, and to store a soiled clothes hamper. Larger bathrooms, those of 35 to 37 sq. ft., were adequate for all uses.
- b. Medicine cabinets, shelving and towel racks. Most of the units are equipped with medicine cabinets, but the majority are too small to accommodate the medicine, cosmetics and other supplies that families possess. Where window sills were conveniently located, they were over-flowing with these materials; the tops of refrigerators and linen closets were also used. If a larger medicine cabinet were supplied, it is doubtful that it would be adequate, and some shelving appears to be necessary. About 75 per cent of the families reported the need for shelving, and where shelving was provided the arrangement was very satisfactory. Many cabinets with the center of the glass 5'5" from the floor were reported by tenants to be too high, but this was usually due to the very small glass area provided.

More than 10 per cent of the unit of all sizes had no towel racks; in 70 per cent, 1 rack was installed, regardless of unit size and in the remainder 2. Furthermore, in a large number of units, no hanging strips were provided to permit families to install their own racks. The provision of but 1 rack and the lack of provision of strips for tenant installation of the required number, are not insignificant items, since a collection of towels on 1 rack encourages the spread of contagion and discourages proper child training.

- c. Lavatories, tubs and showers. A few lavatories were too small and a number had insufficient rims for the placement of drinking glasses and soap dishes.

Section XI (Cont'd)

Families were questioned on preferences for tubs and showers. More than 50 per cent want both tubs and showers, but practically all want tubs instead of showers, if only one or the other can be provided. Only 1 per cent stated preferences for showers. Women, not men, were interviewed.

- d. Heating. In some of the projects, with space heaters located in living-room, families stated that there was insufficient heat in bathrooms for the bathing of children.
 - e. Lighting. In the majority of bathrooms, lighting is satisfactory; but wall switches instead of pull cords would reduce maintenance costs and better satisfy tenants. **non metallic cover plates*
 - f. Windows. The 1942 study revealed considerable tenant dissatisfaction with windows over tubs. Practically none was reported in the 1945 study with the exception of a few instances of tenant complaints on difficulties in washing windows. Families seem to have become accustomed to the window over tub arrangement.
2. Linen Closets. A very large number of linen closets -- probably the majority -- were not used for linen and bedding. This was due to: (a) Inadequacy of area; (b) the lack of doors; and (c) the dire need for this storage space for other materials and equipment. Commonly groceries, dishes, utensils and toys are stored in these areas. In one project, all linen closets were used for foods and kitchen supplies. Linen and bedding are frequently stored in dresser drawers and boxes.

The majority of the linen closets were 4 sq. ft. or less in area, for all sizes of units. In more than 100 units of all sizes, areas were less than 3 sq. ft. Some are but 14 inches deep. The 4 sq. ft. area would have been adequate for the smaller units, if width had been sufficient and a door provided. Nearly two-thirds of the linen closets had no doors, which was one of the principal reasons for substituting other uses. Most closets were provided with 4 or 5 shelves which were adequate in number.

The findings of the study show that linen closets should be sufficiently large to provide for blankets, pillows, etc. as well as linens. Free space below the shelving is desirable to accommodate some of the boxes of sewing and other materials, tenants need to store.

Section XI (Cont'd)

3. Recommendations.a. Bathrooms.

- (1) Areas to be a minimum of 32 sq. ft.; preferably 35 sq. ft.
- (2) Five-bedroom units to be provided with an additional lavatory and toilet enclosed in an area separate from the bath.
- (3) Medicine cabinets to be at least 18" by 22" with glass area 14" by 18".
- (4) A minimum of shelving 30" by 9" to be provided in all bathrooms in 2-bedroom units and larger.
- (5) Strips to be provided for all bathrooms for tenant supply of towel racks.
- (6) The design of the lavatory to be such as to permit the placement of a glass and soap dish on the rim, unless holder or open shelf under the medicine cabinet is provided.

b. Linen Closets.

- (1) Areas to be not less than 4 to 6 sq. ft. varying with unit sizes; depths to be not less than 1'6".
- (2) Doors to be provided.
- (3) Closets to be equipped with 4 shelves extending the full depth of the closet, spaced at 12 inch intervals with the lowest at a 2'6" height.

XII. USES OF LAUNDRY FACILITIES

1. Commercial Facilities Used by Families. Of the 1,051 families specifying uses of laundry facilities, about 80 per cent do all of their own laundry. The remainder use commercial facilities for all or a part of the work. About the same percentage of families reported doing their laundry work in the 1945 study as in the pre-war study. The slightly higher family income shown in the war period study indicated no greater use of commercial facilities, with the exception of those families whose incomes were \$3,000 or more, who made considerably greater use of commercial facilities.

Section XII (Cont'd)

2. Frequency of Washing. Fifty per cent of the families wash oftener than weekly -- some 3 or 4 times weekly, some daily. Frequency, obviously is dependent upon the number of small children in the family.
3. Unit Laundry Facilities. (See size and location of laundry trays and inside drying, pages 27 and 28) The required frequency of washing definitely indicates that a laundry tray should be provided in each unit regardless of central laundry facility provisions.
 - a. One and 2-family drying yards. Individual drying yards are the most satisfactory to families. The only objections were the line areas of less than 60', which were usually inadequate; insufficient space between lines, only 10" in some instances; one post equipped with arm, which does not permit adequate space between lines where one hook only is provided on the house. Many managers also state that back yard drying facilities are the most economical to manage.

The 2-family drying yards create dissatisfaction where laundry must be done frequently. Some managers of projects recommend individual drying yards for each family to eliminate the settling of disputes.

4. Uses of Central Laundries and Group Drying Yards

- a. Laundry Uses. Only 55 per cent of the families provided with central laundry facilities report using them for washing; practically all use units for ironing. Most frequently expressed objections to central laundry use are: "Can't leave children", "too far to carry equipment and clothing", "women do not keep to schedules", "no locker for washing machine", "laundries too crowded", "need to wash oftener than weekly", "laundry locked after 5 P.M.". A few families stated that the laundry was too cold and damp.

A large number of families complained of distance, stating that 2 or 3 trips must be made to carry clothing and laundry supplies. Families also want assurance of safe storage of their washing machines. A number report parts have been stolen and some families carry parts of their machines back to their units after each operation.

Section XIII (Cont'd)

The most frequently expressed reasons for preferences for central laundries are: "Kitchen too small", "takes the confusion out of my house" and "like central laundry washing machines".

Those housing managers who operated projects with central laundry facilities recommend them for all types of units. However, some stated there were problems with families with small children, with families living on the top floors of 3 and 4-story apartments and with maintenance. One manager stated that the central laundry required 1 janitor's services for each 100 units. Some managers recommended more washing machines -- 1 for each 50 families using the laundry. One or two recommended coin slot mangles. Experiences with mangles where they have been used show that they have been unsatisfactory and have been removed, due to high operating costs and the inability to keep mangles in order.

A distance of 150 feet from units to central laundries was recognized as too great by some managers. Fifty feet was recommended.

The majority of housing managers of projects without central laundries did not recommend them.

- b. Group drying yards. Both managers' and tenants' reports show many of these to be unsatisfactory. Reasons are

- (1) Inadequate areas and amounts of line space;
- (2) Difficulties in scheduling time; and,
- (3) Locations too close to incinerators, play areas and driveways.

A number of managers report numerous tenant complaints on group drying which require considerable valuable time in settling disputes. Most difficulties are due to scheduling or inadequate space and lines; a few are due to the stealing of clothes. Some managers believe an increase in size and amount of line would solve the problem. All families object to drying yards located in the front of units. (Additional information on space, equipment, uses, and group drying, is included in Central Laundry report, in preparation.)

5. Recommendations.

- a. Central laundries and group drying yards. (See Central Laundry report.)

Section XII (Cont'd)

b. Unit laundries.

- (1) Double tray to be provided in utility rooms for all unit sizes larger than 1-bedroom for families without central laundry facilities; a sink tray to be provided in kitchens of all other units.
- (2) A minimum of 40 feet of inside line area to be provided all units of 2 bedrooms and larger without access to central laundry inside drying facilities, with the exception of families living in Southern areas; a minimum of 20 feet to be provided all other units.
- (3) An individual drying yard to be provided each 1 and 2-story unit occupied by 1 family, with total line area not less than 60 feet, and spacing between all lines and sections of lines not less than 18 inches.
- (4) Lines for 1 and 2-family drying yards to be supplied by tenants.

XIII. SPACE USES AND POSSESSIONS THAT AFFECT SPACE PLANNING

Uses of space and family possessions of significance to space planning have been previously described in those areas where operations take place or where the various articles are stored. However, a summary of uses and specific possessions better indicates space planning needs. It should be noted that some families use more than one of the areas specified below, particularly for children's recreation and study. Also, washing is done in both central and home laundries and some of the families using commercial facilities do part of their own ironing.

1. Space and facilities used by families

	Living- room	Kitchen	Bed- room	Dining- room	Central laundries	Commercial facilities
Dining per cent	3	89	-	8	-	-
Washing per cent	-	81	-	-	12	19
Ironing per cent	8	82	6	3	-	8

Section XIII (Cont'd)

	Living- room	Kitchen	Bed- room	Dining- room	Central laundries	Commercial facilities
Sewing per cent	38	27	25	2	-	-
Children's recreation per cent	80	52	46	9	-	-
of no. of families with children						
Children's study per cent	38	32	30	6	-	-
of no. of families with child- ren school age						

2. Per cent of families who own specific items of furniture and equipment

✓ Washing machines	35	Single beds only	4
✓ Sewing machines	40	Both doubles and singles	47
✓ Vacuum cleaners	20	Both vanities and dressers in 1 bedroom	41
Double beds only	49		

Based on preferences of families for special items of furniture, there is a strong trend toward more single beds throughout the unit and both vanities and dressers for 1 bedroom of the unit. Only 4 per cent of the families have all single beds, but 23 per cent prefer them; 41 per cent have vanities and dressers, but 62 per cent prefer them. There is little difference between the number of families that have all double beds and the number that prefer them.

XIV. UNSTORED ARTICLES

1. Classification. An inventory was taken of articles unstored or stored in undesirable locations. Since these show storage needs, in units or adjacent to building entrances, the following classifications are listed requiring specific types of storage
 - a. Foods, including raw vegetables and home canned foods requiring cool areas;
 - b. Dishes and utensils, requiring both daily used and infrequently used space;
 - c. Cleaning and laundry equipment and supplies, including washing machines;
 - d. Clothing, daily and infrequently used, and seasonal;
 - e. Linens and bedding;
 - f. Recreational equipment, including tool chests, collections and hobby materials, and toys;
 - g. Bicycles, perambulators and strollers;
 - h. Bathroom and medicine cabinet supplies, and clothes hampers;
 - i. Household and garden tools and equipment;
 - j. Screens, in those areas where they are not required yearly on windows; and,
 - k. Sewing machines.
2. Recommendations. Increased areas for kitchen storage, utility rooms, bedrooms and bedroom closets, bathrooms and linen closets previously recommended, should accommodate all unstored articles with the exception of bicycles and other vehicular toys, perambulators and possibly some garden equipment. Locked storage areas at the ground floor entrance appear to be the best arrangement. Porch closets, where these are feasible, are satisfactory for garden equipment.

XV. CENTRAL STORAGE

1. Uses. Forty-four per cent of the 724 units on which information was received, were supplied with central storage facilities, excluding the few units with individual basements. Where central storage exists, only 13 per cent of the families report using it. The majority of families state they do not need it, they prefer to keep trunks in units, and that storage is inconvenient of access, or unlocked.

A large number of families report the disposition of furniture and other articles before moving into projects; others report using the storage facilities of friends, and some have disposed of refrigerators while selling prices were high.

Section XV (Cont'd)

Experiences in 1 or 2 projects, on which information was obtained on diminishing uses, show that about 50 per cent of the tenants used these facilities when entering the project, but only about 10 per cent used it at a later period. In most projects, space is limited and consequently tenant uses. In some projects, 1 or 2 trunks, a refrigerator and a stove are permitted; in others fewer articles. The items permitted vary with projects.

The necessity of keeping storage locked requires the service of a maintenance employee when it is in use, but tenants object seriously to the insecurity of unlocked storage.

2. Managers' Recommendations. Nearly all managers operating projects with central storage facilities recommend them; but very few operating projects without these facilities, want them.

Some managers who recommended areas, preferred from 5 to 12 sq. ft. per unit. Recommended locations by managers were in basements of apartment buildings, at the end of each group of houses, near maintenance space for easy maintenance control and access.

3. Conclusions and Recommendations. Necessarily limited tenant storage space cannot possibly accommodate the temporarily unused possessions many families own. Consequently, they dispose of many or store them off the project. Based on the uses actually made of central storage space, its need is doubted. If it is supplied, an area of not more than 7 or 8 sq. ft. per unit should be provided with the total area providing for approximately 20 per cent of the families.

XVI. WALLS AND FLOORS

1. Wall Finishes. Since the undesirability of casein paint and other non-washable finishes is well known, tenant dissatisfactions are not discussed.

Practically all families living in units with both painted and unpainted sand finished walls objected, due to the needed frequency for cleaning, the inability to properly clean, difficulties in hanging pictures, and skin abrasion received by small children caused by the rough surfaces. Dirt accumulations on sand finishes from space heaters present a difficult cleaning problem.

Section XVI (Cont'd)

There were numerous tenant complaints on oil paints washing off. This may be due to the quality of paint or to techniques used by tenants in washing. As previously noted, there were many and serious objections made by tenants on dirt accumulation on both walls and ceilings from space heaters. Tenants maintain that these accumulations are difficult to remove and unit evaluators reported many walls to be extremely dirty and most uninviting.

In those units where stained instead of painted woodwork was provided, tenants like it in all rooms except the kitchen, for which they prefer enamel. About half the housing managers reporting preferred stained woodwork. In a few units, kitchen woodwork was painted a darker color than the creams and buffs commonly provided; this also was popular with tenants.

2. Floors. Tenant objections to uncovered concrete floor, as is well known, are almost universal. Some objections are justifiable, others not. It is obvious that tenants do not like them. In addition to tenant dissatisfaction, some managers report difficulty with dusting and with tenant-owned linoleum sticking to floors. The latter has resulted in considerable maintenance cost in some projects.

That 80 per cent of the families in units with asphalt tile floors would object to them, was unexpected. The two bonafide objections were color so dark that frequent cleaning was necessary, and unattractiveness in color; plain, dark colors require very frequent care. Some colors used were indefensibly ugly. Where easier-to-maintain colors were provided, some of the best housekeepers stated that cleaning and waxing once each two weeks is sufficient.

Some managers report disintegration of asphalt tile due to kerosene spillage where kerosene is used for living-room space heaters and frequent replacement requirements under kitchen sinks due to the standing of water.

Based on an evaluation of all tenant dissatisfactions with asphalt tile, it is concluded that other than the above-mentioned objections, families object to them because they are unused to them. The majority of families stating preferences for flooring, want hard wood, and there were no objections where wood floors were provided, with the exception of the soft woods used in one project which were difficult to maintain. However, the few wood parquet floors were reported by one local authority as "not very satisfactory".

Section XVI (Cont'd)

Linoleum for kitchens and baths are satisfactory to tenants, providing the color is attractive and such that too frequent cleaning is unnecessary.

In the few units where tile was used in bathrooms, this flooring was also satisfactory to tenants.

Nearly 80 per cent of the families used their own printed linoleum over floors — usually over concrete and asphalt tile — to reduce upkeep. Nearly 40 per cent of the families living in units with asphalt tile floors provided their own linoleum coverings.

3. Recommendations

a. Walls

- (1) All rooms and areas (excluding stairhalls in apartment buildings) to be finished with semi-gloss paint, with the exception of kitchens, baths and utility rooms where laundry facilities are included, which are to be finished with enamel.
- (2) The entire unit to be uniform in color, but consideration to be given to colors that are attractive as well as low in maintenance costs.
- (3) Woodwork to be either stained with wax finish or painted, with the exception of the kitchen, utility room and bath which should be enamel finished.

b. Floors.

- (1) Asphalt tile or hardwood flooring to be provided for all areas with the exception of baths, kitchens and utility rooms with laundry facilities; linoleum to be provided for kitchens and utility rooms with laundry facilities, linoleum or tile for baths.
- (2) Consideration to be given to colors for both attractiveness and ease in upkeep of both asphalt tile and linoleum. All plain, dark colors to be avoided.

XVII. NOISE

1. Walls and Ceilings. About 60 per cent of the families objected to noise through partitions and ceilings; few objected to outside noise. The great majority of objections were from

Section XVII (Cont'd)

group house families and many families stated they could hear all conversations through adjacent walls, particularly through adjacent bathrooms; others stated that noise as far as 2 stairways distant was irritating. Serious objections were made to the lack of privacy due to the ability of neighbors to hear all normal conversations in adjacent units.

Noise through ceilings was not as disturbing as that through partitions. However, in many apartments in group houses, walking and children's play on the apartment floors above were extremely irritating to families.

2. Recommendations. Provision of wall insulation for party walls and improved ceiling insulation.

XVIII. TENANT EXPENDITURES OCCASIONED BY UNSATISFACTORY LAYOUTS, MATERIALS AND INADEQUATE EQUIPMENT

More than 900 of the 1,062 families purchased materials or equipment to improve dwelling livability and reduce upkeep. These families bought linoleum for floors, or curtains for partial partitions or doorless closets, or kitchen cabinets. A few purchased all of this equipment, but many could only afford a minimum, such as curtaining for 1 or 2 closets or a small piece of linoleum for the kitchen floor.

1. Tenant-Purchased Linoleum. Nearly 80 per cent of the families purchased linoleum. Its use for concrete and asphalt tile floors is the most common. A few families cover existing linoleums, due to easily soiled colors, and a few cover wood. That families would cover concrete floors was expected, but that 40 per cent of the families living in units with asphalt tile flooring covered all or a part of the unit with linoleum, should be noted. The purpose of covering asphalt tile was to reduce upkeep, usually due to the colors provided that were difficult to keep clean. About 25 per cent covered the entire unit.

The average expenditure for linoleum was \$16, but some families spent more than \$50.

2. Tenant-Purchased Curtaining.

- a. Partial partition curtaining. Because of the cost of curtaining large openings, previously discussed, less than 20 per cent of the families purchased curtaining for these openings.

The average expenditure was \$4, but some families spent as much as \$20.

Section XVIII (Cont'd)

- b. Closet curtaining. Nearly all families curtain one or more bedroom closets and 85 per cent of the families purchased the material for this purpose, others used old materials.

The average expenditure was \$7, but some families curtaining a number of closets spent more than \$30.

3. Kitchen Cabinets. More than 100 families brought their own kitchen cabinets to the projects, but due to inadequate project supplied storage, about 25 per cent of the remaining families purchased them.

The average expenditure was \$19, but some families spent more than \$50.

In addition to the above, many families purchased kitchen work tables due to inadequate work space and curtaining for kitchen shelving.

4. Reduction of Family Expenditures. It should be recognized that these average expenditures noted above represent the expenditures of many families who could afford to curtain 1 closet of 3 or 4, including linen and living-room closets, and small pieces of linoleum rather than the required amounts. That few families of low income can afford to purchase curtaining for 2 or 3 closets, for partial partitions, for open shelving; a kitchen cabinet; a work table; and linoleum for concrete floors or easily soiled asphalt tile for which covering can be justified, deserves consideration. A sample was taken of what appeared to be a reasonable expenditure of a family living in a 4-room unit with concrete flooring. The cost of the requirements was \$85 — linoleum for the entire unit, \$40; partial partition curtaining, \$10; curtaining for 5 closets, \$10; kitchen cabinet with work top area, \$25.

Furthermore, first costs are not final costs. The short period durability materials that most families must buy soon require replacement, and a great many families state that they cannot afford the necessary costs to make the dwelling comfortable and reasonably attractive. The dwellings provided require too much tenant expenditure, based on tenant income, to complete them for desirable livability.

Adequate floor finishes, consideration of color in linoleums and asphalt tile, reduction in size or elimination of partial partition openings, the provision of closet doors or the reduction in size of closet openings, and adequate kitchen storage areas should greatly reduce required family expenditures.

Section XVIII (Cont'd)

5. Recommendations

(See Floors, Kitchens and Bedroom Recommendations.)

XIX. TENANT AND MANAGER PROBLEMS OF GARBAGE DISPOSAL

Most of the difficulties reported on the handling and disposing of garbage are concerned with collection stations.

1. Tenant Dissatisfactions. The principal tenant complaints were due to
 - a. Odors from collection stations;
 - b. Infrequency of collections;
 - c. The carrying of garbage down 3 or 4 floors;
 - d. The stealing of cans and particularly of lids;
 - e. Unsightly stations;
 - f. Trash incinerator too close to drying yards;
 - g. The sharing of collection station cans with other families.

Odors from collection stations due both to infrequency of collections and stations located too near to units, was a common tenant complaint. In some projects, collection frequency is but weekly. A few tenants stated that unit doors and windows must be kept closed due to odors. Some families would not object to walking long distances to stations if odors could be eliminated.

In projects where tenants place their own cans at collection stations, the thieving of cans and lids has become a problem. A number of stations were both unsightly and insanitary due to children searching for empty bottles, the lack of protection from dogs and a few irresponsible tenants. Often children are delegated the responsibility of carrying garbage to stations and the results are usually unsatisfactory. In those collection stations where all families use all cans, responsibility for orderly disposal cannot be delegated to any one family.

2. Managers' Problems and Recommendations. A number of managers report that the control and maintenance of collection stations is one of their major problems.

The lack of responsibility assumed by tenants where all tenants use all cans at collection stations, has been partially controlled by stenciling the numbers of the units on the cans to be used by the tenants. The use of 1 can by 2 families has been satisfactory.

Section XIX (Cont'd)

Other problems reported by managers are: No areas provided for city pick-up; weekly instead of more frequent collection; and inadequate drainage of collection stations.

A number of managers of group house projects recommend tenant-purchased standard cans permanently located at rear of units or at curbs; cans to be stenciled with number of unit and removed to collection stations by tenants on collection days. Some recommend elevated platforms for cans for protection from dogs. One or two managers recommend sunken cans at rear doors. A few believe that cans placed near the front entrance and properly screened would receive better tenant care.

3. Recommendations. The type of garbage disposal system that places practically all the responsibility on the individual tenant is the most desirable.

The following recommendations are based on the most satisfactory existing experiences reported in the study:

- a. Incinerators, wherever possible.
- b. Service driveways to permit collections at rear of each unit of group houses with complete responsibility delegated to each family. Tenants to be required to purchase standard cans.
- c. Where collection stations are necessary, standard tenant-owned cans, with the number of each unit stenciled on the can, to be provided. Preferable location is at the rear of each unit, properly screened from view. The tenants to assume responsibility for placing the can at the station on collection days and for returning it to the units.
- d. Collection stations to be located at sufficient distances from units to prevent odors from entering units.

XX. RACIAL PATTERNS OF LIVING AFFECTING DWELLING AND PROJECT LAYOUT

Based on the findings of this study, there are no appreciable differences between living patterns of white and Negro families. Differences in quantities of furniture and equipment owned, appeared to be due to differences in income only.