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## Notes on Design and Construction of the Dwelling Unit for the Lower-Income Family—\*Part I

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**T**HE following notes form part of a report on a study of lower and low-cost housing design and construction, made in 1937-9, possible through the award by The American Institute of Architects of an Edward Langley Scholarship.

The sections here assembled are those parts of a wider study, which show roughly the tenant's view of his housing, whether as small owner or as rent-payer in subsidized or other low-rental developments: that is, a review of the dwelling unit, with only incidental consideration of financing, site selection, engineering and planning, combination of dwelling units in the layout of the house, provision for utilities.

My study originally included visits to over eighty developments in the eastern part of the country, mostly definitely lower or low-cost, many of them recent subsidized developments, and most of the rest limited-dividend, cooperative, philanthropic, or outstanding rehabilitation projects. During the past two years I have visited about half as many more: chiefly U.S.H.A. lowest-rental and defense developments. A few examples of practices noted in properties not coming under any of these heads are included as illustrating some point; also in a few cases mention is made of properties which, though not low-cost, differ from it little or not at all in the citation concerned. A few references to European practices are based on observations during two visits, totalling together about a year and a half, spent in pilgrimages from Spain to Scandinavia and from Italy to the British Isles.

No attempt is made here to prove the greater desirability of one or another system, or to set up

a design for living, neither is there any attempt to record all solutions of one problem noted, or to credit to each development the solution there adopted. I have tried to learn what the low-income client thinks he needs or would like to have, and what architects and other experts in the more architectural aspects of home-making think he ought to have, or can have, and how this or that solution works out in practice: collating and comparing, rather than criticizing, the opinions expressed, but keeping in mind always the necessity of reconciling as far as possible expressed desires with the present-day procedure as to cost, design, construction.

Some revision of the report as originally written has been made to include a few points in recent housing experience, but principally to eliminate statements made nearly two years ago and either no longer true or no longer significant: cost and other figures; arguments pro and con on matters no longer under debate; various matters on which other investigators have since published papers; and various sections rather meaningless without the almost three score illustrations—mostly unpublished photographs and drawings—impossible to reproduce in the space here available.

The following abbreviations are used for names of organizations occurring frequently in the text:

A.P.H.A.	American Public Health Association
F.E.A.P.W.	Federal Emergency Administration of Public Works (WPA)
F.H.A.	Federal Housing Administration
F.W.A.	Federal Works Agency
N.A.H.O.	National Association of Housing Officials
U.S.H.A.	United States Housing Authority. Now a branch of the Federal Works Agency

### WHAT PEOPLE WANT IN HOUSING

The object of housing, I take to be shelter from excess heat, cold, and noise, so combined with adequate provision of light, air, space, privacy and convenience as to be acceptable, and consequently useful, to those for whose service it is intended. And the business of sponsor and architect I understand to be translation into terms of the building

fabric of current ideas of what is acceptable, and translation in such a way that, like other commodities and services, the housing will normally be paid for by those using it.

Whether, as is the case with education, with an increasingly large field of disease prevention and cure, and with most of the arts, housing for many

\* Part II will appear in the November Octagon.

people must be, temporarily or permanently, subsidized by the public rather than paid for entirely by the individual user is a matter of secondary importance to the architect. Of first importance is it that good housing be so designed and so produced that either public or private sponsors consider it a sufficiently good investment to put money into adequate shelter for those needing it.

Good housing for some two-thirds of the nation has apparently not been regarded as a good investment for some time past; nor, in general can it be so regarded at the present time. But today's urgent need, the newer public interest, and the later developments in processes and materials combine to promise that long before the completion of the fourteen million dwellings estimated as needed in the next twenty years, housing will have worked its way at least to the level of other major national industries.

#### *The "American" home today and tomorrow*

The problem of ascertaining what any community wants in housing is complicated by our not knowing our community and the individuals composing it, and by our tendency to think of the "American" way of living, or the "American" home, in a country of great extent, with attendant great variations in climate, with rapid development and rapid abandonment of whole regions and entire industries, and with consequent suddenness of the ups and downs of individual families, a country with a population of widely differing national backgrounds and different degrees of assimilation even within one community, with widely different ways of living and vastly more different occupations than any population of equal size on earth. The "American" way tends, further, for all but the most careful observer, to be the standard of the more articulate part of yesterday's people: namely, the well-to-do and the upper part of the middle class, whose solutions of their shelter problem have long been recorded in books and journals—solutions already on their way to obsolescence as the record was being made; whereas housing as it concerns us aims at building for today's workers and would-be workers and their families homes serviceable today and half a century hence.

One can ill picture the details of life as it will be lived half a century hence; and it is only the realization that housing thought really good in any generation has continued to be so considered ages—

or generations—long which justifies present-day expensive erection of housing units unlikely to fall asunder three score years hence, however ill they may function before that time is past. Even at the moment "lag" is well in evidence in our difficulty in gauging equipment needs of members of an apparently homogeneous group: What is their position between industrial production of necessities and luxuries and the home production recently made easy by home-size power equipment for cleaning, laundering, preparation of foods, etc.? The relative costs of home and factory production in foods and clothing are vouched for as about fifty per cent saving through home cooking and from forty-seven to sixty-four per cent saving in home sewing respectively (94). But the measure of satisfaction a home-maker and her family find in home production is a different story; for satisfaction depends on skill and custom as well as convenient equipment, both for the doing and the quality of the results. And these drag some years behind opportunity.

#### *Health, freedom, privacy*

In trying to learn what the lower-income family wants in housing, one finds not a little illumination in expressions of what it either does not want or wants only moderately, or relatively with regard to other desirable things. Especially striking is the record of how little apparently some of the not so very poorly housed, as well as the slum dweller, care about modern housing and about the major comforts, conveniences, and safeguards considered their right by safety, hygiene, and other welfare organizations, while valuing highly a feeling of freedom, of independence, and of opportunity for self-expression. Discoveries made by Dr. Davies in his exhaustive examination of about a thousand statements of some eighty objectives or values recorded by housing research organizations, writers in social service journals, etc., (29) are well supported by the reports of housing managers (62, 74, 40), who for the time being best represent to us the ideas and wishes of the lowest income family.

Of these values, as determined by frequency of mention in the literature of the subject, Dr. Davies finds that "experience of freedom, resulting from plenty of room", "privacy", "creative expression of . . . personality", and "economic security" stand second only to "physical health"; while comfort and

decency rank only fourteenth and fifteenth respectively. Convenience comes seventh, safety eighth, opportunity for recreation ninth, and esthetic satisfaction eleventh.

This summary of opinions, not of low-income families but of social experts, which Dr. Davies continues down a long list, tends toward legitimizing some, at least, of housing's heretics: the shanty-town family, not yet aware that a man's home is no longer his castle; the trailer group, still far below Roger Babson's estimate of half the population but estimated as about a million people in 1936 (132), and about twice that number at the beginning of 1939 (141), living in some 600,000 trailers half of which are home made; the conventional family, exemplified by the ten thousand surveyed by a middle-western university, which would like to own a home, but only as thirtieth in a list of desirable things, with waffle-irons in the thirty-first place and vacuum cleaners, automobiles and radios in the first three; and the author of an otherwise convincing government publication on how to plan the subsistence homestead who does not mention the house, not even in his list of references for further information (142).

Then there are the people to whom good subsidized homes renting at little beyond the substandard alternative are not desirable if they cost just a little too much and give not enough elbow-room. The N.A.H.O. records for one southern project a turnover of one hundred and fifty families in the first thirteen months (62, Ap. 29, 1939), with twenty-five families moving out in one spring month, while another development reports an occupancy turnover "nearly as heavy", with twenty-two tenants moving out as soon as February brought a pleasant temperature—and this in spite of the management's known policy which "refuses re-admittance of all families who move out merely to satisfy their annual urge for the country". "The situation seems to result", says one of the managers, "from the local habit among certain income groups of moving to the surrounding countryside where the family will have plenty of room to itself, and can obtain at very low cost a house with a porch to 'set on' and a garden to cultivate". Some families in subsidized projects about that time were paying not far from thirty per cent of their income for rent; and the

fact that the percentage of the family income spent on rent by the forty F.E.A.P.W. projects reported on by the U.S.H.A. in 1938 was almost twenty-five (124) helps to explain a certain instability of tenure in quarters of a type for which there is ordinarily a waiting list.

#### *Social intercourse*

Some families will not bridge the distance between the new development and the old neighborhood where friends live, although many parents will move for the sake of their children, and some young folk will force the move. "Mother won't want to move; but we'll get her out" (147). Possibly one explanation is that of the London County tenant in new estates who disliked the social "coldness" of the new neighborhood, and moved back to the cosiness of the slum where friends lived (30). Possibly a soft drink parlor and beer garden, in addition to adult education facilities would prove a help to both tenant and manager, more especially in projects housing many tenants who do domestic work, for most of whom physical weariness and lack of prospect of any social or economic advantage combine to make organized evening education rather pointless.

Within the dwelling too, a normal life is desired. The family consisting of a mother and her working son, or of a married couple with an adolescent daughter or an adult relative, may be unhappy in the model subsidized apartment of the type available, however well equipped, the living room of which does not afford privacy for the odd member of the family, either for sleep or for personal affairs; whereas the slum dwelling at similar rent offers at least some sort of separate bedroom, leaving the living room free. Another score against the compact new dwelling is the low-ceilinged room, which, however well arranged, oppresses the family accustomed to the lofty room often found in outmoded houses.

#### *Convenience and order*

"Do we", asked a leading civic speaker at the 1938 Washington conference of the N.A.H.O., "need closets in these [publicly subsidized] dwellings? I am not at all sure of their relation to health and delinquency. . . . Every family has a right to . . . the essentials of decent, happy living, but we

can't afford to give any extras. . . ." (80, Sixth: 1938). And the affirmative to this question is undoubtedly the most unanimous demand in housing today. Broom closets, wrap closets, in the hall and near the back door, cool storage closets, kitchen closets near the stove and near the work surfaces, linen closets, bedroom closets, toy closets . . . are demanded almost vociferously by a people still rather inarticulate as regards most of its housing needs. The latest wail is this year's, when Boston's Old Colony, designed for lower-income subsidized housing, was taken over for defense workers, and all discontents regarding lack of privacy and smallness of living space seemed to some of the management to pale by comparison with the universal cry for storage space: no closets within the units except the shallow hanging and linen closets, no basement, no common storage space elsewhere, not even a utility room to help out in accommodating necessary family equipment.

And when the layman rests, the expert takes up the tale. The National Safety Research Institute points out the frequency of serious falls caused by keeping household equipment on the cellar stairs for lack of closet space (31), of falls by people climbing on flimsy furniture because they have no closet in which to keep a step ladder, of children's falls when climbing to a high shelf for toys which ought to be kept in a low toy closet, of accidental poisoning caused by lack of a lock-provided medicine cabinet—not to mention one of the most successful manufacturers of prefabricated houses who in his confidential instructions to his sales staff brackets together "closets and a knowledge of the amount due monthly on the house" as forming the foundation of "that order and security which are at the base of a successful home". Physical safety, which figures little in the homemakers' expressions of their needs and desires, is stressed also by the insurance companies in a day when accidents in the home cause about as many fatalities as those caused by automobiles (5, 31, 89). Falls account for a third of all accidents in the home, and for one-half of the fatal home accidents of aged people, to whom, therefore a ground floor bedroom should be assigned if possible. Scalds and burns are also serious, and should be guarded against by avoiding slippery floors in kitchen and dining spaces.

#### *Space and ease*

Convenience, labor saving, possibility of ease and rest in a strenuous domestic life seem to dominate tenant requests. And "clients are not what they used to be, . . . don't plead worthiness . . . but argue their rights", says one social observer. Working people will no more carry heavy baskets of clothing down to the community laundry than will better circumstanced people, if they can at all avoid it, observes one manager, who thinks a laundry lift to basement or roof a reasonable piece of equipment in view of the many wash days in his project accomplished without benefit of the power laundry. A more than convincing instance of the rôle convenience plays is the case of a city project which, having for economy's sake installed coal-burning ranges advantageously acquired, found that applicants were not biting in the sense desired, and when reported on, the project was but eighty per cent rented (74, p. 14), in contrast to the pressure of ten applicants for one dwelling in other projects. And convenience seems to be arrived at by the relatively simple recipe calling for adequate work and storage spaces and for opportunity to dry, if not wash, clothes where they will not irk the family at meals, at home work, and at rest.

Not flush toilets, not bathtubs, not hot—or even cold—running water come first in sanitary equipment desirable, according to a U. S. Department of Agriculture survey in which thousands of rural owner and tenant families in forty-four states took part (144). First place went to a kitchen sink with drain, second to cold water piped to that sink, third came a bath tub with drain, and fourth cold water piped to that tub. Hot water piped to the tub came ninth, but a shower stood next above it in the eighth place. The flush toilet came fifth.

Neither does mechanical refrigeration appear to be an obsession even among the people answering the questionnaire of a utility company (114) who, too, want more closets. I used to think the ice I saw delivered to luxurious metropolitan homes was for the champagne, and wondered at its form and the time of delivery. On investigation I learned that many well-to-do people had not yet even in 1939 been educated beyond association with a quiet old ice-box.

*Beauty and amenity*

Astonishingly little direct demand for beauty and amenity on the part of the low-income tenant comes to light, beyond the universally expressed desire for order. Even a distinct lack of appreciation of beauty might seem to be indicated in some places. Abuse of lawns is frequently reported. Shrubbery is ill-used. Purchasers of the pretty little Emergency Fleet Corporation semi-detached and group houses in Yorkship (121) near Camden, (now called Fairview) have painted in different colors their respective halves of the porches common to two adjoining houses, or have built additions in such a way as to mar the mass of the building to which their respective units belong. Again, many miners in a Pennsylvania town I visited preferred living in wretched old company houses near a worked out mine to moving to the subsidized dwellings not far away which would cost a trifle more and perhaps somewhat curtail their freedom. And so on.

On the other hand, lack of interest is not necessarily indicated by lack of articulate expression on the part of a people displaying a good deal of interest in such amenities as they can themselves control: cosmetics, dress—especially children's dress—cozy and coquettish interiors with dainty curtains, colored kitchen and table ware, all requiring time, thought, and money to maintain. Indeed, the high degree of skill shown by many housekeepers in making pleasant interiors in substandard houses, and even the very "disorder" of the forbidden fire-escape gardens, are a strong bid for beauty, as are the tenant-maintained gardens frequently seen, and, perhaps strongest of all proofs I have seen, the tenant care of company-owned beautiful old houses at Chicopee, near Chicopee Falls, by people mostly on relief.

A working class is limitedly lettered, and has little opportunity to tell the world what it likes. For social service needs it has many skilled mouth-pieces. I wish some managers would collect for us information on how housing strikes the tenant from the point of view of esthetic satisfaction or the reverse. Some expressions have come to my attention: those of the Red Hook Italian who spoke glowingly of how he and his friends on a sunny Sunday afternoon enjoyed the handsome shadows in his court, of the Emerson Tenement

women eager to show the visitor their pergola-embellished roof, well provided with seats and giving the impression of a pleasant club well frequented on the chilly afternoon I was there, and the eagerness of women in another development that I should see the nicest suite—for its fireplace, of all things.

Poverty has been thoroughly legitimized during these last years, and the pride of the poor dies harder than ever it did—and much less piteously. Toil, too, is worn with a difference: Katherine Anthony's long accepted picture of "Mothers Who Must Earn" (7) and Jacob Riis' account of "How the Other Half Lives" (109) are no longer true. Mothers who go out to work as well as running their own homes have more mechanical aids today, and generally improved conditions, with corresponding improvement in health, spirits and looks. The fight to keep up appearances now takes on a different form, including a little bridge and a measure of brightness and beauty—heaven-born, perhaps, but profitably nourished by a good psychologist named Woolworth.

Notable, by the way, is the success on the part of managers of many low-rental projects in establishing and maintaining those pleasant relations which enable the tenant to get the maximum use and enjoyment from his new housing. Striking, too, is the economy in maintenance where tenant cooperation seems strongest, and astonishing the extent to which good management can minimize the weak points and enhance the strong points in design. From among many visited it is a thankless task to select: but the neatness and the sense of well being at some projects is striking: Stanley S. Holmes at Atlantic City, Old Harbor Village, where one gardener suffices for 1,013 units, Yonkers, where tenants have done planting and made the curtains for their own halls and for the Housing Authority office, and many more.

Dr. Goldfeld's "Diary of a Housing Manager" is as readable as it is packed with useful information on tenants' needs and views (40); and the various tenants' handbooks, letters of welcome for incoming tenants, as well as discussion of managers in council (62, 74, 80: Ninth, 1941) are a source of practical information useful to the architect who, as a rule, has little opportunity to learn many economic-national-racial complications of gen-

erally human needs. In this connection mention should be made of Mr. Kastner's suggestion that the architect and his family should live in the project he has designed (preferably in the least desirable unit) as a source of information on what the "housing consumer of the lower-income strata" needs in housing (66).

People want what others have, whether a blue house, or a brown crockery pot on the porch, according to one of the country's most successful operative builders, in speaking of a large suburban development where construction and equipment costs were just under \$5,000. His efforts to avoid repeating one house design within the block were "without complete success" (36). A quite contrary experience is reported for a similar class of tenants at Buckingham Village, where, the manager says, people want to live in a house "which to them appeared distinctive"—in this case merely in one of the few buildings with exteriors differently colored for the sake of variety in the project (74, p. 74).

#### *Discontents*

Discontents registered seemed to concern mainly not a shortage of luxuries or novelties, but rather errors in planning or equipment, most of which could have been avoided with little or no extra expense. "I'd as soon live in a jail," said a traffic officer who directed me to a city medium-rent project; and I felt as I saw the project that he voiced perhaps, the feeling of the tenants, whose high walls enclosed echoing courts where children on roller skates tore along concrete walks. The planting, though careful, was ineffective, and the youngest children played on the dump outside the project while their playground was locked up. One community is bitter about its houses, many of which are so oriented that, while the house duly faces the high road with its interest and sociability, it is built on the wrong side of that road which the homestead straddles. Thus the front porch gets the prevailing winter winds and snow, but not the prevailing summer breezes. A southern community, accustomed to much outdoor living and outdoor kitchen work, finds these possible only in its few old houses, for the new houses are built with porches facing the dust and

the publicity of the highway. Minimal houses on stilts offend a group in another state, transplanted when their land was needed for a national park. Here wretched houses, poor in design, situated on arbitrarily fixed acreages too small to support power, or even a mule, and too large to cultivate by hand, are alike discouraging to the homesteaders; and here, again, the old homestead, well placed on arable land, the delight of its tenant who pays no more than the others, serves as a measuring stick for the community's discontent. Sagging of the rather flimsy construction with resulting disturbance of the unprotected stove pipes will probably send those particular houses up in smoke; and then one can begin again.

"They", "Washington" and other greater and lesser gods seem to scourge the ultimate consumer in a variety of ways in his effort to get what he wants. Thus, the bank in many places has still never heard of a house backing on to the street. For generations houses have faced the street, and therefore only for such houses are loans available. Similarly barred have sometimes been the house built further back on the lot than usual and the one built close to a quiet street to permit of greater garden privacy at the back. In some communities organized labor prevents use of economic processes, and so on. But banks do yield; and the well written bulletin in which the F.H.A. discusses design traditional and modern is a good weapon for the client to hurl at the bank slow to learn new ideas. And "Washington" shows a good deal of ability to steer between the ideally best and the expedient. Labor, too, once asked us to wear homespun exclusively and to break our stone by hand; today it is cooperating usefully in several large-scale operations. Further, good inexpensive housing has been achieved in a variety of ways, under different auspices, and in sufficiently large quantity to prove that the housing designed with the ultimate consumer in mind is a lasting achievement. One idealist's properties which two and three score years ago, respectively, realized all the law and the prophets regarding what people want in housing, are here cited as illustrating how the public need was quickly recognized and profitably satisfied, with every promise of continuing a serviceable and profitable existence for three score years more.

*Two Early Model Tenements*

These are two Brooklyn developments of Alfred Tredway White, which were so well designed and so solidly constructed, "Tower and Homes" in 1877-8 and "Riverside" in 1890, in a busy downtown location, that they are today in good condition and proving well worth the gradual modernizing now being made to meet changing demands. They were privately financed, they have always paid taxes, and, except during a short depression and remodelling period, modest but steady earnings.

Exteriors in brick, handsome in the style of the period but not florid, coverage fifty-two and forty-nine per cent respectively, courts grassed to avoid noise and to delight the eye, provided with walks, a fountain, a music pavillion, a children's playground with sand pile, house walls surrounding the court are covered with ampelopsis, most living rooms face on the tree-planted quiet court, "with a few exceptions every room receiving direct sunlight for many hours of every day in the year", every apartment with through ventilation, all partitions "deafened", apartments of from one room and scullery to five rooms, fitted with sink and one or two laundry trays, toilet for each apartment. Little balconies for access also provided sunning space, a small hallway within each apartment gave direct access to each room, each unit had a closet, a dumbwaiter was installed in each staircase, there were ash chutes, paved cellars with locked storage space, each tenant having the key to his own space, these lockers "so arranged against the wall as to leave no dark holes or hiding places". Patent metal garbage receptacles in several places in the yard were so constructed as to

"attract no flies and emit no odor", they were "sunk flush with the driveway and no one notices them", and there were drying racks on the roof and in the yard (134-137). So as to avoid violating family privacy rents were received at the office, and every effort was made to "treat tenants as if they were occupants of private houses living in complete independence".

No baths in the apartments, it is true; but bathing was infrequent even in the better-class home of the period, also free hot water baths were provided in the basement and could be reserved in advance for the hour preferred. Only one closet in each apartment; but it was about the period of Tower and Homes that a proud women's college boasted that it had provided each student with a hook on the back of the door of her room in the dormitory for the dress she was not at the moment wearing. No steam heat naturally, when central heating was a novelty and a luxury, but steam heat was supplied to the most exposed of the sculleries to prevent freezing of the pipes. Built-in furniture was rare then as now; but in some of the kitchen-living rooms a drop-leaf table was installed. No general community room; but one, if not both developments had a reading room.

Two per cent of the income went for repairs when Riverside was twenty years old, a fraction more than that paid for administration, and over a long period a small sum was laid aside for "betterments" such as electrification. Earnings averaged 4.7 per cent for the first ten years of Riverside, and 5.1 per cent for the next ten. About 1884 or 1885 the earnings on the Tower and Homes property were so satisfactory that they were shared with the tenants.

#### WHO ARE THE PEOPLE WHO WANT HOUSING?—UNIT SIZES NEEDED

"Group after group I have talked to will forgive the costs of the projects when they hear the ruling that insists on children", according to the executive secretary of a middle western housing authority (74, p. 45), voicing the popular impression that subsidized housing is planned for the family with children: a thing that executive could well do, since the authority represented was managing the only federal urban project in the country at that time with an average as high as four to a family,

(4.05), or just over two children to a pair of parents (124, p. 52).

At that, the project referred to, while admitting up to ten per cent of childless families, was housing families averaging twenty-one per cent larger than the then average of the forty F.E.A.P.W. projects in the country for which full figures are available, (3.33), forty-two per cent greater than the average of twelve of those projects, which was 2.85, or less than one child to a family.



*The American family*

Miss Lansing's population study offers applications pertinent to housing from Thompson and Whelpton's "Population Trends in the United States" (69).

Half the population of the United States is at present over thirty years old; in another forty years probably sixty per cent will be over thirty; people of forty-five and over now form about twenty-seven per cent of the population and people of sixty-five and over some six to seven per cent, with the trend indicating an increase to about double that percentage by 1970. Children under nineteen, on the other hand, showed a percentage of forty-four at the turn of the century; today they are a little over thirty-five per cent of the total; about 1950 they will probably be about thirty-one per cent, and about 1970 only some twenty-seven per cent.

In one city, New York, eight per cent of all families consist of one individual. Families consisting of one or two persons form 31.3 per cent of all the population, while families of three persons form 21.7 per cent. That is to say, fifty-three per cent of all New York City families consist of three persons or fewer, and addition of the four-person family would account for seventy per cent of the total, while not quite seven per cent have seven or more members. These percentages represent the City as a whole, and one assumes that professional and other upper-income families account for a high proportion of the smaller families. The figures for the Negro family, which enjoys few high or even moderately high incomes, is therefore the more striking. For the Negro family of one person forms sixteen per cent of the whole; the two-person family 31.9 per cent, the three-person family twenty per cent, and the four-person family 13.2 per cent, which is to say 81.1 per cent of the whole Negro population consists of families of four persons or fewer. Only five and a half per cent contain seven or more members.

New York is in many respects not typical; but the general national and rural averages offer no striking contrasts. The average American family at the 1930 census numbered just over four persons (4.10), while the New York family averaged 4.02; and the estimated national average for the

present time is 3.79 (26, p. xiv, p. xvi, table opp. p. xviii), while the forecast for 1950 is 3.3. Even the rural family is small. "The average number of occupants per occupied dwelling", as reported in the Agricultural Census for 1935 ranged from 3.51 in California to 4.99 in North Carolina. These figures include all occupants, whether related to the head of the family or not" (144).

*The "unattached" and the non-typical family*

For the numerous "unattached" and non-normal" small families several authorities plead a place in housing. Miss Lansing's study of community planning in terms of the span of life already cited (69) tells of people who spend half their income for the privacy of a home of their own. Professor Ford, the N.A.H.O., the A.P.H.A.'s Housing Hygiene Committee, and more than one city housing authority point out that housing's clientele actual and potential is not merely a young family with n-plus-one-or-two children, but includes also possible cousins, aunts, and that often present help in trouble, a grandparent.

Emphasizing the importance of the familiar neighborhood in the life of the low-income family, depending on friends and sociability for much of its spiritual well being, the American Public Health Association points out: "Continuance of the family in the community of its choice will be greatly fostered by the provision in every housing project of living units sufficiently varied to provide accommodation during the whole cycle of family development, from the phase of child rearing and gradually increasing family size on to the period when parents whose grown children have set up their own homes will live normally by themselves". . . . "Designers of houses should visualize the varied uses of family life and provide all reasonable variety in plan and arrangement". . . . "Related problems which must be solved are those of the non-typical household, a group of adults, unrelated to one another and possibly desiring more than normal privacy, or the normal family with grandparents, or including an invalid member". . . . Managers' difficulties in "reconciling the living units they have to offer with the needs of the families applying" leads to the conclusion that "these fundamental needs of family life have been much neglected in American housing" (5).

Objectives of modern housing, according to the N.A.H.O., include provision of "a range in sizes of dwellings that will accommodate a normal cross section of the families in the group to be housed, and that will accommodate individuals as well as provide for the normal development of families from the newly married couple through the phases of child rearing and on to childless old age. . . ."

Professor Ford's presentation of the plight of the "unattached" in lodging houses and elsewhere is well known (38, p. 753-70; 39).

#### *The "club" residence*

The boarding-house type of home or "club," often endowed to the point of enabling residents to have rooms for three dollars a week, fill a real need, especially for those at the very start of their earning career. While there are not enough such residences to meet the need for shelter for the unattached, it is to be noted that the vogue of this type of residence club is already passing; and few workers' residences have recently been endowed. Indeed professional and business people's residential clubs in central, and even fashionable, locations, show a tendency to give up a club house, with its attendant amenities, to take a suite in a hotel or a business building, or to double up with another club; while some clubs and associations, committed to considerable real estate obligations, are finding income from renting to sympathetic people roughly in the category of their members. Again, groups of three or four young men, or young women, rent an apartment together, such groups including presumably the more resourceful and better equipped of the young worker type which formerly lived in the endowed "club" or association quarters. Fashions change; and the style and fabric of the club no longer please, even if the house have duly modernized itself as to showers and wider social views. But the main cause lies probably in the irksomeness of the institutional atmosphere, inseparable from even the best managed of such homes, to a generation free to make its move from home to the outer world at a swifter pace than was formerly possible, and needing more privacy and better opportunity for rest and for self-development in an increasingly competitive existence. It will be recalled, too, that while a small proportion of men and women of all ages—and especially of young

people—live happily in communities: convent, monastery, school or club, such a life does not suit a great part of the people. Furthermore, whether or not it is because the more dynamic people move away while they are young, if free to do so, leaving behind those with less spiritual and material resource, it is found that older people live less pleasurably and profitably together, and indeed, as Professor Ford points out, some residences do not receive people over thirty-five. Sweden's housing provision for isolated single women shows similar experience (30).

With old age pensions just beginning and the average age of the population far from slowly rising, the elderly candidate for public housing is becoming steadily more numerous: and the present-day desire for privacy and independence on the part of elderly relatives, preferring hardship to doubling up with their in-laws, adds to that increase. Also the young family contributes to the tale of those requiring small suites; for a generation of youngsters, accustomed as long as it can remember to small and precarious incomes, often from relief sources, and regarding parenthood as a voluntary rather than an accidental or inevitable responsibility, marries young and begins life if need be in one room—often without much hope of eventually acquiring a great deal more.

In passing it should be noted that, while housing seems to have simplified its program by tacitly confining its attention for the moment to building for the more "desirable" or at least the more docile and convenient of the lowest-income class, the remainder of that class continues to dilute the effect of the expensive housing program now in progress. Enlargement of the present program to meet, in ways not necessarily expensive, the needs of the others would soon simplify housing's main program. No additional architectural problems arise, and patterns have been well worked out. Statement and solution of the problem on a basis of cooperatively managed housing for aged men and women—including ex-loggers and some other individualists—and, for the younger men, in addition, some rehabilitation for re-employment, are well stated in Mr. Neff's story of two years' experience in Washington State (84); and the rehabilitation of families of inconvenient habits of mind and body in Holland, well known to students of

European housing, are described briefly by Miss Denby (30), and in some detail by Mr. Ratcliff (103).

#### *The normal community*

Without making any radical change in policy, but merely by extending somewhat present practice to include some of the more easily assimilable of these groups and individuals, sponsors of large-scale public and semi-public projects might simplify planning and operation.

A higher percentage of two-room suites, a fair allowance of the one-room suites only recently finding foothold in public housing projects, arranged by giving access where possible from the outside instead of the main hall, as is done at Carl Mackley and at Hillside, could be made available for elderly and invalid people who must avoid stairs, and who fortunately prefer to live where they can see and hear what is going on out of doors. Continuation of the normal-sized apartment one story higher than is advisable for mothers with young children, would provide for many an adult family of normal type or for groups of friends. Cardiac troubles are on the increase, it is true; but one more flight to walk up, usually once and rarely more than twice in a young worker's day, will contribute little or nothing to that increase, particularly as there is less urge to go out seeking amusement if home offers opportunity for relaxation and for simple entertainment. Again, preferred exposures have little to offer the worker who leaves home before eight o'clock in the morning, returning during most of the year only after the sun has gone. Furthermore, the unattached worker is free to spend weekends away from his quarters as the family with young children rarely is. Small suites on the less sunny frontages for workers might also simplify economic planning, as at Thorneycroft, where a stack of one-room suites runs up among the three and four room apartments.

Both the, say, fourth floor workers and the ground floor elderly tenants will presumably cost less for supervision and maintenance. Further, they will ordinarily use play areas and sitting spaces at somewhat different hours from those preferred by school children and mothers with young children. Some of these adult tenants are likely to possess such positive social virtues as a knowledge of gar-

dening, sports and other hobbies, as well as some organizing ability and leadership, doubly valuable because unofficial, and, without competing with professional recreation leaders, may be available for promoting hobbies and otherwise contributing to the community life. Even if they prove merely decent neighbors, these adults are valuable to dilute an otherwise too purely parent-and-child community, which keeps child and adolescent perpetually in an atmosphere of authority between parent, teacher, recreation director, housing manager, guardian of the public lawn, and the rest, whereas it is their right to mix unofficially with their fellowmen of all ages as a preparation for adult life and work. Emphasis today has been strong on the advantages of the large project with its possibilities of segregation; and the smaller rehabilitation schemes in the minds of many social service experts are out of favor and for that reason if for no other. But housing must avoid establishing a new type of unnecessary segregation in addition to those already effected by school, by religious and political affiliations, by age, by sex, and by national backgrounds, even if the new segregation wear the badge of the disappearing so-called "normal" family.

Some housing authorities have declared themselves as a matter of policy ready to receive as tenants elderly or other childless people and some small suites have been designed in public developments. Since the family dwelling requires about the same amount of plumbing and other cost-consuming equipment whether it be large or small, it might well become the rental basis instead of the "room"; then the equipment spread over many rooms for a large family carries the brunt of the rent and all bedrooms beyond, say, three or four would be rented at a lower rate to the family with many children or other dependents, while the adult "worker family" will pay the maximum project rental per room, with whatever other dues the childless owe to the public cause. Before our birthrate falls to that of Sweden we may find good some adaptation of the Swedish plan for housing the large family—that is, the family with a minimum of three children—which enjoys rent reductions of thirty to seventy per cent, according to the number of children.

There has been discussion (147) of the advisability of designing some units in each development

with movable partitions or with sound-proof doors to facilitate re-dividing adjoining, say, four-room suites into three-and-five or six-and-two room dwellings. Requirements like those of the New York State Housing Division of this year (87) for an additional lavatory in public projects for each unit

for six or more persons give further impetus to this discussion. For while some vacancies are inevitable—and even wholesome—even in subsidized developments, an excess in vacancies may be avoided by easy subdivision of the suites of a type less in general demand.

### ROOM USES

From many sides come the lament that the low-income family has never lived in anything but second-hand dwellings. And perhaps it is because architects and sociologists—like the poor, and the good old families, and the nobility and royalty—have also ordinarily known only makeshift quarters, that we design the new poor man's home as we do.

The butler's pantry, it is true, has been eliminated from the butlerless home; the middle-class drawing room is gone, as is the slightly upper middle-class bookless library. The dining room has yielded in a wide range of homes to dining space in either the living room or kitchen. Even the mongrel den is gone; and state laws or some other rental regulation may eliminate the dining-alcove or dining foyer which often call for half a room's rent without giving much service beyond permitting sponsor and architect to extend the entrance hall and thus simplify the layout.

Yet the workingman's home and the lower middle class home are designed as a somewhat abbreviated edition of the large scale home.

A thorough study of space use, or rather of time-and-space use on the principle of Dr. Riemer's (108) Stockholm analysis of a family's use of its quarters is needed. One of the research foundations considered the matter a few years ago; but seems to have shelved it for the moment.

#### *Congested living room and kitchen*

There are obviously congested areas. From the people who use their living room as a family center there comes via the President's Conference (97), Dean Amos' survey (6) and others much the same complaint in slightly different wording: Too much living in the living room. Homework suffers. The breadwinner becomes inefficient for want of rest at home. "Too close companionship when we are in one room". "No place for children to play

without bothering their father who wants to rest". "My husband wants to read". "The radio disturbs study". "We have no playroom, no workshop". And so on, to include the drawback of eating in that already congested space.

Decentralization for the middle class family started a few decades ago with the "library" and the "den" which have fallen into disuse; today the family which can afford one extra living room tends to make it a practical workshop-playroom or game room.

Few families in the lower-income half of the nation can afford one extra room. Few can even take the trouble to live in their living room.

The congestion then occurs in the kitchen, where there is even greater discomfort, as well as a certain stigma attaching to having only one room for washing, cooking, eating, dishwashing, drying steaming linen, ironing, bathing the baby, changing him, handling his daily quota of diapers, homework, recreation, and the informal entertaining which is all the lower-income family can ordinarily manage. Homework is done there because there light has to be maintained, and because in the poorest home that is the warmest room in winter, says one large group reporting; and over eighty per cent in the same group eat meals there, not only because it is too much trouble to serve meals in the living room but also because one room must be kept neat, and not "mussed up" two or three times a day. The farm family naturally eats in the kitchen; but tries to keep washing and other major operations out of it (145: 3) although ironing is approved because it is a clean job. Preparation of food, eating and clearing away make some nine fixed items on the day's schedule for that room; and laundry work alone is endless. It is not done once a week, but three or four times a week, or daily. Few, if any, working-class families can pile up a week's supply of dresses, play frocks

and suits, mechanics' overalls, etc., to say nothing of underwear.

"They use their kitchen for things they ought to use their living room for", says one manager, more in sorrow than in anger. Eating, perhaps, or dressmaking, or mending or just sitting? "Whether architects realize it or not", writes N.Y.C.H.A.'s Miss Lansing, "people who do not have servants enjoy sitting in a cheerful kitchen, and will continue to do so whenever there is enough room to put down a chair" (69). I think her's, too, is the expression a "true kitchen", which, save by an evil chance, must be also, I suppose, "a cheerful kitchen". "By all odds, the most important room in the house", according to a survey of slum dwellings. "Often the most attractive room in the house", says a rural survey, speaking of the kitchen which often serves from two to five dozen meals a day to workers living outside the farmhouse, and without calling itself a restaurant at that.

#### *Unused spaces*

On the other hand are the great unused spaces, which must be paid for by someone, whether entirely by personally earned wage or salary, or with the aid of public subsidy. The living room is idle most of the day, as is the bathroom. Bedrooms are used only for one-third to one-half of the less productive hours of the twenty-four, for sleeping and for the storage of beds, bureaus, a chair or two, and, ordinarily, thus equipped, useless for any other purpose.

The teen-age girl, meanwhile, longs for some practicable low-cost variation of the Hollywood boudoir; often all she is looking for is a quiet place for her homework. Equally the boy, of whatever class or income-bracket, needs some place for his own affairs and room for discussing them with his peers—who are ordinarily not his parents and sisters. Fathers, too, have hobbies, and, like other people, sometimes need quiet and some measure of solitude.

#### *Wanted: A new nomenclature and design for combined uses*

A new nomenclature, combined with changes in plan and detail, neither radical nor costly, would restore to use these areas, increasing the efficiency of the shelter, and at the same time embellishing

the small-scale family scene. Some kind of all-the-time name, substituted for "bedroom" would help to turn that space into the daytime use also to which it is entitled in modern heated dwellings, and thus relieve pressure in the general living quarters.

Thus a "children's room", if no better word is found, is simply a playroom by day for safe, unsupervised play, out of reach of gas jets and hot surfaces and the wash, and a sleeping room at night. If furnished with a low table and one or two small chairs this space could be used for serving minor meals which a child in the pleasant company of his own things, and without the pressure and excitement of grown up company, will eat at his own leisurely rate and without coaxing, while a toy closet or chest will tend toward developing a neat young housekeeper of either sex. A "girls' room", or a "boys' room", or otherwise designated spaces thus dedicated, could contain one or two cots or bunks. But instead of the tenant supplied bureau, expensive to buy, especially on the installment plan, soon dated and sooner shabby, a simple set of shelves and a few inexpensive trays built into a closet to store clothing. There is now room for a table for work or hobbies, a good chair or two, or the backless stool at the moment highly fashionable but never quite out of style. School friends can work or play here undisturbed, leaving work or playthings when meals and errands call. A "parents' room", similarly equipped for daytime use would find many uses. The U.S.H.A.'s suggestion for enlarging the fifth and sixth bedrooms in defense housing "to permit the design of the bedrooms for some daytime use" is a move in that direction (130).

Combined uses of rooms vary somewhat with climate and region for the same income class. In the low-income home, however, there is little choice. In many urban low-cost housing developments it is assumed that the living room doubles as a bedroom. This space cannot therefore be used as a living room when the day's work is done unless the sleeper is sufficiently grown up to keep the parents' hours. The same applies almost generally also to the small farm house (144, p. 4). Exception is to be made for some southeastern families, which demand a separate kitchen and a combined living room and dining room, this demand

coming presumably from the white family with Negro helpers. The southeast differs too in room use in that the parents' bedroom, "furnished as a bedroom, with double bed, is generally used as a living room if there is no other living room in the house" (144, p. 12).

*The living room: a reception-sleeping space?*

Allowing as much space as possible for the "bedrooms", and that somewhat at the expense of the living room area might better serve a great variety of families, especially as the progressively shorter working week and seasonal unemployment are gradually more and more compensated for by intensive recreation and adult education activities requiring some isolation and a little space for use without interruption. The living room, nowadays no longer used as a rule for weddings or funerals, and only occasionally for a formal meal, if treated frankly for what it is, namely a sleeping room and a reception room, can have more, rather than less charm than has the present wasteful, often little used omnibus living room, and that would apply particularly to the many recent dwellings in which the living room is merely a kind of lounge extension of the passage from the public hall to bedrooms and bath, with no lights except tenant supplied lamps.

*The kitchen*

As for the kitchen: there seems still too much congestion and too much variety of function. Some investigators report preference for a clothes drier in the bathroom to one in the kitchen, and many U.S.H.A. projects have a drying rack over the bath-tub, while Parkchester's model furnished apartment places the rack above the toilet—an original solution. Space is needed too for a second hanging of the clothes after ironing (23). And one laundry tray is not enough even for the smaller wash; the sink is used also, and blankets, quilts, and other heavy pieces are washed in the bath-tub. One ingenious housekeeper tells me that after soaking in suds these pieces are best trodden by foot, both during washing and rinsing. It is the least heavy way of doing this serious task, it uses different muscles and is pleasant.

In N.A.H.O.'s good company, one scouts the "hypothetical risks of food contamination through

splashing from the laundry tray" (82). But the unrest, the discomfort, and the generally unesthetic result of too close juxtaposition of food processes and laundering, which used to drive father to the corner saloon, still contributes to the reason "why girls (and boys and mothers) leave home", washing which is done largely while the family is absent probably making a much smaller contribution than drying.

*A bathroom-laundry?*

A combined bath and laundry would probably better meet the needs of apartment dwellers with children, as well as those of the family living in a house with most of the rooms on the ground floor. Apart from the advantage of eliminating from the kitchen the discomforts of steam, dripping clothes and a wet floor, discouraging both to homemaker and to the family members coming in for meals, work or rest, such an arrangement would enable the washing to be done at a pace suited to the washer, without interrupting processes at awkward times to fit the meal schedule.

*Utility room*

Indeed, the utility room, whose functions have been distributed for one reason or another, seems now disposed to collect them, and to hang out its own shingle. Several types of utility rooms are found in F.E.A.P.W. projects. One serves in the atticless, cellarless family house as storage place for articles which cannot find a place in closets. U.S.H.A. recommends in the row house a "utility room and a small laundry with each unit: This is a vestibule, storage room, laundry and pantry combined", and this recommendation tends to speed its more general adoption. In many of the individually heated cellarless defense houses a utility room opening off the kitchen is designed to accommodate a heater and to store the washing machine. Such a room recalls the English workingman's back kitchen or scullery, which houses some or all of such functions as washing, sometimes cooking by gas, dishwashing, storage of the bulkier cooking and other utensils, as well as a bicycle or two on occasion, serves as a back entrance, and thus helps to conserve the warmth as well as promote amenity in the kitchen-living room. In the American rural home, and particularly in the purely farm home,

where the functions of the utility room are extensive and varied, the basement sometimes offers space for a glorified utility room, accommodating curing, canning, washing in winter, cold weather workshop operations, and many other activities often taken care of in summer on the back porch.

#### *Odd spaces*

In seeking to use space to maximum efficiency, some developments have created new difficulties. A dining-alcove or dining-foyer looks well in the plan and in the publicity text of a medium-rent development, rates as half a room in statistics and rent; and weary house-hunters may sign an agreement before realizing that there is no natural light, that bathroom, bedrooms, kitchen and living room are all entered via that "foyer", and that when the table is in position with its complement of surrounding chairs little passage is possible in any direction, as in the case of two medium-rent developments I know. Access to living rooms, bedrooms and bathroom from the foyer of a similar development in another city may blind the house-hunter to the fact that most of the living room has

to be traversed before the kitchen is reached. Again, light, exceptionally good cross draft, and a sense of space are achieved simply by separating kitchen and living room with a wide opening to carry a curtain. But cookery fumes from a hoodless stove will settle on the living room walls and finery. There seems to be a wide difference in opinion as to the social advantages and disadvantages of separating kitchen and living room.

"Nobody in his senses would ever dine there", says a friendly critic, of one lowest-rental project's dining-alcove (*New Yorker*, Feb. 17, 1940; see also Oct. 18, 1941). And perhaps no one in his senses would use the "utility room" as a sleeping space in either of two middle west apartment developments. Still, with laundry tubs, clothes closets, and heating apparatus provided for elsewhere, the "utility rooms" tempt the housekeeper to abstain from making up the living room couch for sleeping—unless the project management has some way of insisting on the ruling that rooms of such small area be not used for sleeping. "Can American people be regimented in barracks like Europeans?", asks the Los Angeles Housing authority.

### ROOM SIZES

Much variation in size and shape of room is shown not only in existing housing surveyed, but also in recommendations of government authorities and other experts.

#### *Current requirements and recommendations*

A survey of lower- and low-rent developments made by the Housing Study Guild (64) shows the effect of adequate size on rentability: the apartment with an average net room area of 168 sq. ft. proved satisfactory, while that with a net room average of 113 sq. ft. was "very difficult to rent, the bedrooms especially proving too small". U.S. H.A. minimum areas of 1938 were: Living room, 150 sq. ft.; first bedroom, 120; second, 90; third and fourth, 80; kitchen, 60-70; dining room, 100; which, in the usual arrangements and with even liberal allowance for the required net aggregates (122), would give averages of the kind "very difficult to rent" to lower-income families even in depression years in congested New York. The N.A.H.O. at about the same time advised a mini-

mum of 150 sq. ft. for a living room for two or three persons, major bedroom 120 sq. ft., and minor bedrooms not less than 80 sq. ft., with occasionally a smaller bedroom designed for a single occupant.

Naturally N.A.H.O. does not recommend that minimum dimensions obtain throughout. Neither does U.S.H.A.; yet in its "Unit Plans" (122) the average room areas for some two dozen arrangements for apartment, flat and house areas is approximately 114 sq. ft. Where an area has been developed in more than one way, I have used the plan giving the greater net average.

The 1939 revision of U.S.H.A. recommended areas not only increases the minimum areas for second and third bedrooms from 90 and 80 sq. ft., respectively, to 100 for each, but also suggests more generous areas all along the line. Nevertheless, adoption of dimensions in the 1939 "Checking List" (127) would give little space beyond that necessary for circulation around the usual furniture. It is therefore a matter of congratulation that, as the List points out, "there will be cases,

generally in row houses and three-story combination buildings, where the exigencies of the plan impose a greater aggregate area". It will be noted in support of this that areas of F.E.A.P.W. projects often went well beyond the required minima of 110 sq. ft. for main bedroom, 100 for second bedroom, and 150 for living room (100). U.S.H.A. standards for Lanham Act defense housing range thus: principal bedroom 120-130 sq. ft.; additional bedrooms for two persons 110-115, and for one person 65-80; minimum living room area in units with five bedrooms or fewer 160 sq. ft., and in six-bedroom units 170. Extension of the principal bedroom to 135 sq. ft. in units with five or six bedrooms is suggested to permit the design of bedrooms for some daytime use (130).

Professor Hamlin's recorded impression that it would require a shoehorn to get two children into Williamsburg's smaller bedrooms (56) entirely agrees with my own impression of similar rooms in many projects, and continues to do so even after I find that any Williamsburg secondary bedrooms I have checked have areas of at least 102 sq. ft. Again, the Fort Wayne house, built for families on relief at exceedingly low rentals brought forth strong disapproval for its 92 sq. ft. bedroom, although the proportions are good (7 ft. 8 in. by 12 ft.) and the built-in two-decker bunks in the children's room economize floor space more than sufficient to bring the area to the equivalent of 100 sq. ft. (42, 43; 46; 79; Feb. 28, 1939).

Recent New York State recommendations were for living room 180 sq. ft.; bedrooms 140; kitchen 70; with ceiling height 8 ft. 6 in., the State Board of Housing, like the U.S.H.A., using "reasonable flexibility" in applying requirements (86). The present New York State Division of Housing's recommended standards for public housing do not specify minimum dimensions for living rooms, but require a 120 sq. ft. minimum for two-person bedrooms, and 80 sq. ft. for a bedroom for one person. Its minimum total areas per dwelling unit divided by the room count vary from a possible 120 in one case through 150 for several others, to 185 in one case, with 150 as an average. This rough average includes of course such passages as are within the unit as well as the bathroom; but it does not include stairs in one-family houses (87).

In its practical study "Housing for the Family"

the Women's City Club of New York, while recognizing that "many architects believe that 200 sq. ft. of gross area per room is adequate for the lowest rental housing", recommends in its "Principles of Good Planning for Low-Rent Housing" a gross of 237 sq. ft. The net averages have not been worked out in that study; but, by applying the average of ratios obtaining in twenty-three projects studied by the New York Housing Authority, namely, approximately 100:75, the net room areas would average 178 sq. ft. If the ratios of current design and construction are applied, for example those of the U.S.H.A. "Unit Plans", the net room averages would be about 155 sq. ft. The Club recognizes that its average is "larger than is usually regarded as a minimum acceptable standard"; it justifies its recommendation, which is supported by plans to show the placing of necessary equipment, by explaining that "While it may not now be possible to build such apartments for the lowest-income groups . . . the additional area makes for housing which is good and not really extravagant. Such apartments should withstand obsolescence, even if new methods of construction enable us a few years hence to build more cheaply" (147).

An interesting recent estimate of the lowest-income family's needs is that of the Alley Dwelling Authority of the District of Columbia, as illustrated in the restoration of Hopkins Place for a Negro population (32). About half the project consists of old dwellings restored, and half of new buildings; and whereas in the old houses living room areas average 120 sq. ft. in the new they are 203, while bedrooms are 114 and 158 respectively, and kitchens 100 and 166.

#### *Some earlier standards*

In view of the great variety of opinion on space needs, and especially in view of the fact that U.S.H.A. and N.A.H.O. minima (which however carefully offered must tend toward setting standards) approach the tenement standard of room-sizes of thirty to forty years ago, it is worth while to examine some typical dimensions in housing erected under different auspices over a long period.

Chicopee Falls Village, a Massachusetts mill town, in the 1830's built its rooms so that with deductions for space necessary for added bathrooms,



closets, etc., in recent remodelling, the living rooms today average 188 sq. ft.; the bedrooms 146; kitchens 103; with ceiling heights 8 ft. 6 in. Some forty years later a model tenement, "Tower and Homes", was erected in downtown Brooklyn in 1877-8, and after similar deductions for modernization, including additional rooms contrived by replanning, now give average net room area of 148 sq. ft. for the living room-kitchen; living room (with adjoining kitchen) 129; and bedroom 108.

Families were larger two to four generations ago. Home industry was important: Dressmaking; general plain sewing; laundering; food storage and food preparation without canned helps; nursing when sickness-and-health had not yet become an industry; amusement in the pre-cinema, pre-Ford age; and entertainment of many hues including weddings and funerals—more often taken care of today by restaurants, hotels, and the undertaker's parlor.

A more useful comparison therefore might be that with twenty-three New York workers' and small "white-collar" projects, built in the thirty years from 1904 to 1933, including the pre-war

decade, the prosperous '20's and the worst depression years. An unpublished survey shows gross apartment areas as 253, 235, 233, 229, 227, 225, 209 sq. ft. and down, with an average for the twenty-three of 176, while net areas per room in sq. ft. run from 182, 171, 169, 165, 162, 154, 153, down, with an average net room area of 133.7. Quite different averages emerge, however, if we eliminate from that list six developments: first, the three oldest; next, one which, though comparable in most respects with the others, is not strictly low-cost in the same sense; and thirdly, two which are out of scale with the planning of their respective decades. The remaining seventeen developments show an average gross apartment room area of 190, and a net of 142.9. Similar areas are found in the fourteen projects built in the same city under the state housing law of 1926, most of them for similar types of tenant, and indeed some of them contributing to the averages just cited. Average living room areas are here shown to be 192.8 sq. ft. and average bedrooms 145.7. The averages of the projects in this group (85) are significant because many of them were built for workers by workers, some in the boom years, some in depression time.

## KITCHENS

Of many hundreds of homemakers whose opinions and wishes have been collected by recent investigators, relatively few express any considerable dissatisfaction with the house as a whole in comparison with those discontented with the kitchen and related spaces. Changes desired relate chiefly to inadequate size, poor finish, and unsuitable heights of work surfaces, and to poor planning with regard to other work spaces, rather than to lack of more and better equipment.

*Functions: Workshop, dining room, place of assembly*

Preferences as to type of kitchen vary naturally with urban and rural life and with income brackets of the groups reporting; but the variation between the various groups is astonishingly small.

The lower-income family, even with a convenient living room, uses the kitchen not only for work and meals, but also for general assembly. Light and heat cost money, and in the house not ade-

quately heated, the kitchen is often the only comfortable room in winter. Carrying meals into the living room makes too much work. It is not merely a matter of setting and clearing the table: children drop greasy and sticky things on the rug with as much abandon as adults drop crumbs.

Of urban women reporting to the President's Conference Committee on Kitchens (97) some seventy per cent want laundries separate from the kitchen, where otherwise steam, dripping clothes, stacked dishes, children playing, preparation and serving of meals mix together to the discomfort of all concerned. Farm women want canning, laundering, and other functions beyond preparation and serving of meals taken out of the kitchen (144, 145: 2, 3). This desire in one form or another occurs again and again: in some cases with a cellar suggested to supplement the kitchen space, in others a utility room to house many of the functions, leaving the kitchen free and pleasant for meals and for a family center. One of its strongest expres-

sions comes not from houseworkers but from the jury's comment on the recent nation-wide Productive Home Competition which underlines the homemakers' complaints: Monsignor Ligutti, founder of the Granger Homesteads (33) and President of the National Catholic Rural Life Conference, points out that: "Little attention was paid to a place for preparing food. . . ." Mr. Neutra, architect, urges: ". . . A living space protected against dirt and disorder . . . muddy shoes . . ., defended by the very layout itself against a perpetual reverting to an unclean and messy condition. . . ." Miss Davison, home economist, comments: "A noticeable lack of storage space. . . . Not enough attention . . . to protecting the homemaker from noise, confusion, dirt. . . . An additional washroom should be given serious consideration. . . ." (146).

Whether or not use of the public project laundries equipped with coin-operating washing machines was insufficient to justify the space they required I do not know; but some of the more recent developments have no basement, and laundry work therefore is done in the kitchen.

Sixty per cent of the urban apartment dwellers of a somewhat higher-income group, reporting to Dean Amos' survey (6) deplore inadequate work surfaces. "We have the last word in modern, perfectly equipped kitchens, yet no place to work. I have to put dirty dishes on the floor, under the stove, the refrigerator, in the sink. . . ." This is one of the commonest complaints. "I have to walk miles to do my kitchen work," says one householder reporting to the President's Conference; and the number of miles is established by one study as between 155 and 162 a year merely for the preparation and serving of meals as well as ironing—all with the help of economical equipment well placed.

#### *Dimensions and arrangement*

It is not for want of well illustrated studies, views, and opinions that unsatisfactory kitchen spaces are found. Ramsey and Sleeper (102) Don Graf (44), Bureau of Home Economics studies (116), the President's Conference (97) and others (67, 145, 45, etc.) differ little if any regarding the amount of free space needed in front of equipment, the space for door swing, and for one person

to pass another. Substantial agreement is also found regarding the desirability of logical arrangement of equipment, and regarding the best alternatives when the position of doors or windows prevents the best time- and labor-saving arrangement. There is also comfort in the fact that of five distinct types of arrangement worked out in one study showing variations in the relative positions of meal table, working space, etc., "no one is distinctly superior to the others", and these arrangements are at the base of most of the extensive literature of the subject (145). In still another arrangement the sink, with work surfaces at each side and storage space below, stands at right angles to the window. It, and its attendant work surfaces, are thus approached from either front or back, and all are well lighted (45).

If agreement on theory is general, dissenting practice, even in newer buildings, is not uncommon. Thus, one finds, for no apparent reason, the single drain board at the right side of the sink, an arrangement which a leading authority classes as belonging only either in a museum or in the kitchen of a left-handed person. Again, to find the stove so close to the refrigerator that the oven blisters its neighbor is the more astonishing when it occurs in a kitchen whose plumbing stack would have been better served by placing the sink between these two pieces, while nothing in the position of doors or windows prevented such an arrangement. (No, not an operative builder, but the design of an otherwise good and reputable Institute member for a higher rental apartment.) Less than satisfactory, too, is the metal and masonry kitchen with no shelf or cupboard near the sink, and no possibility of driving a nail, so that only several feet distant can the miscellaneous items of varied shape used at the sink be stored—unless they are heaped on the drain board. Those same masonry walls permit of no convenient surface on which to lay spoons, slice, ladles, etc., used at the stove.

#### *Work surfaces*

Work surfaces seem to present the main difficulties in the unsatisfactory kitchen, and faults relate to surface materials, to areas, and to heights alike.

Enamel chips and discolors, chrome finish flakes and rusts, wood decays (64). One study suggests scrubbable hardwood as being durable and not noisy

—an important point (147). This introduces a new cleaning problem, however, or rather re-introduces an old one which most homemakers would gladly forget; and probably the vote today would be for some hard surface, however impermanent, which can for the most part be cleaned by merely wiping.

There are never enough work surfaces, according to all accounts, and while the compact modern kitchen is too small to permit of enough well placed permanent work surfaces, interchangeable or movable surfaces might be made to supplement the main work surfaces. Thus a drop-leaf table built along one wall in the larger kitchen takes care in turn of clothes in the process of sprinkling or folding, of dishes used in serving meals and of those on their way to the dishpan afterwards, of preserve jars about to be filled, covered, etc. When the table is folded down the floor space is available for sewing machine or ironing board, later stored elsewhere. If no wall space is available, as will be the case in most of the smaller kitchens, small extensions to any convenient horizontal surfaces are easily attached by hinges or otherwise if space is allowed for in the plan. Even the window sill will serve to hold one. A double-deck zinc-topped work table on casters is suggested to supplement the surface of an inadequate stove-top, to extend the sink work counter, or to stand temporarily in any other position desired for preparing meals, collecting and stacking dishes, etc., and the recent U.S.H.A. Checking List (127) suggests consideration of wall space for a small work table. Since such a table would simplify kitchen design it may well come to be included with the enamel-topped pieces of equipment now general. The newer type of hot water heater for the single family home, which has already come down from a height of about 54" or 50" to about 40", may by dropping to 36" contribute also to needed work surface.

Studies of working surface heights brings out, among other things, that the graceful, streamlined one-height work surface is not the most economical in use. Stove top, drain boards and many other surfaces are approved at 36", but several authorities agree that 32" or 32½" is the right height for beating and mixing, processes for which many people use their sink bottom instead of the 36" high top (111, 82, 145, etc.)

#### *The stove*

Better insulation for stoves would save fuel and refrigeration cost, as well as making the kitchen pleasanter when the oven is in use: while return to the hood over the stove found in many old kitchens would not only carry off cooking odors but would also reduce the amount of smoke film which settles in other rooms. The A.P.H.A. says "any gas ovens . . . which involve the possibility of partial combustion must be provided with an adequate flue opening to the outer air" (5). A Committee of the President's Conference years ago recommended that gas stoves be vented with a flue to the chimney or outer air; and Mr. Gray in the OCTAGON deplores the lack of an electric fan or other device to avoid accumulation of cooking odors in lowest-rental housing for families on relief (46).

The low, shapely gas stove contributes to the good appearance of the kitchen. It is inconvenient in use, however, and one I saw in a medium-rent development near Washington was so low, and so awkwardly placed with regard to the door leading to the dining room, that the housekeeper, after having shut that door, had to kneel at an awkward angle to use the broiler. To handle a heavy joint would be almost impossible. A letter a year or two ago in one of the architectural journals reminds us that a few decades ago an oven at such a height that no stooping was required for basting was hailed as progress in the right direction.

Pilot lights have their disadvantages, especially when naphtha or benzene used for cleaning are brought too near to them. That is scarcely a reason for depriving everyone of their convenience, any more than is the experience of one management reported to be opposed to them on the ground that would-be suicides in that development cause expensive explosions when the pilot light ignites the escaping gas. Neither, I believe, is the fact that some tenants stand on the stove cover an adequate reason for depriving all tenants of the amenity and convenience of a stove cover, as proposed by another good management-mind.

#### *Storage*

Storage shelves for utensils and cutlery are often too high, according to the reports of managers. Cooperators in a western study are well suited if shelves for light-weight utensils and packaged groceries are not higher than 72", where there is no

countershef or other obstruction; that shelves for stacks of plates, glass, etc., ought not to be higher than 67" without countershef or other obstruction, and 64" with an obstruction amounting to 12" (111). Many Eastern city dwellers will probably prefer them an inch or more lower.

Lack of sufficient storage accommodation is generally complained of: more shelves are needed, more drawers, more closets. Staples are usually bought once a week in the city worker's home, vegetables and other perishable foods daily, as a rule. Few medium and low-rent kitchens have adequate storage space for convenient quantities of staples which would permit of economical individual buying or of the cooperative buying so often advised to cut costs. The Swedish workwoman's glass-fronted food drawers rather shame our miscellaneous odd cartons of minute quantities.

The draft, or cold cupboard, open to the air, which supplements refrigeration storage in many rural homes, will probably come into its own when we temper our present enthusiasm for year-round mechanical refrigeration with consideration of its cost and its limitations in use. A great part of the population of this country lives in the latitudes of its largest cities. Now, excluding the Coast cities, Los Angeles and San Francisco, the remaining twelve of the country's fourteen largest cities have an average temperature from November 1 to May 1 of 39.2° F; while nearly half of them, namely Milwaukee, Detroit, Chicago, Cleveland and Buf-

falo, average 35.5° F for those months. That is to say that for a great proportion of homes east of the Rockies little beyond draft storage is necessary during half the year. Such inexpensive roomy storage space would, among its many advantages, include avoiding mixture of odors and flavors inevitable where too many different kinds of foods are stored together in a refrigerator.

For larger developments, buying power at wholesale rates, there is little advantage in the draft cooler from the point of view of economy. For the family with an individual meter retail rates are a serious item; and at least one public body, the Alley Dwelling Authority, has installed draft cupboards in one or more of its projects in the District of Columbia. The ice-box with access for ice delivery from the outside, featured in the John B. Pierce Foundation's low-cost house at Lebanon, N. J., might lend itself to adaptation for iceless cooling when the weather permits.

Much ado about little, one is inclined to think; yet this space is often at once workshop, factory, laboratory, nursery and family center, operated over a term of years by one individual on whose health and efficiency depends largely the effectiveness of the rest of the family arrangements. Even in 1929 at the peak of our prosperity only 20 per cent of American families had any paid servants; and the figures worked out in a U. S. Department of Labor survey for the economic value of the kitchen product are staggering (94).

## BATHROOMS

### *Showers*

Showers are now required, says a Housing Study Guild survey of some low-rental quarters in 1935; and one lower-rent project studied, which was built in the prosperous late 20's without showers, was obliged later to install them (64). Notwithstanding, subsidized showerless housing has in most places more applicants than it can accommodate.

Substitution of a shower for a tub is in general not liked by occupants of low-rent housing, according to N.A.H.O. and other investigators, one of whom attributes this dislike to the association in the mind of the slum dweller between the shower and the stark discomfort of the public bath house.

As a substitute for the "desirable but costly"

shower and tub combination the N.A.H.O. suggests tubs provided with inlet fittings threaded to receive a shower connection furnished by the tenant (82). Just why the shower head, purchased in the quantities required by large-scale housing, should be expensive is not apparent; in any case planning is for three-score years ahead and means planning for five or six generations of shower-trained school children.

Where there are showers, regulating equipment to minimize the danger of scalding, as well as a non-slip floor are urged by the National Safety Research Institute (31), and the National Safety Council (65); and a grab bar about breast high is help when one inadvertently slips on the soap whereas

the grip about the level of the tub rim is not. Desirable also is general adoption of hot water faucets of such a height and form that the bather who does slip does not turn on the hot water faucets either by being hurled against them or by seizing them for support in his panic.

#### *Bathtub*

As for the tub: many of Dean Amos' clients want "Smaller tubs with one side bowed out to provide a seat" (6); and the Journal of the R.I.B.A. suggests that for older people the sitting bath is to be preferred to the usual tub (75).

The built-in hand grip for tub users is often in poor position; and A.P.H.A. urges temperately that it be placed "sufficiently in front of the bather's position to be within convenient reach". Safety suggests too that all grips be made of metal, as serious cuts have resulted from the breaking of ceramic grips (65).

#### *Toilet*

"Are toilet seats and covers necessary?" asked a southern authority in 1939, "for people only yesterday accustomed to the old privy?" The practical answer comes from another who points out that without them the puppy is as likely to find itself in the bowl, as are rubber balls and miscellaneous metal objects.

Granted that a toilet seat is necessary, the open front seat is urged by both the N.A.H.O. and the A.P.H.A., the latter from the standpoint of avoiding venereal disease transmission. So far as I recall, they have not been used much in public housing projects I have seen, which is not amazing in view of the fact that they are not general even in public buildings, and even in a leading architectural school where new seats have recently been installed the old form is used. One state, at least, now requires the open front seat for all work. A large proportion of the people reporting to Dean Amos want a foot-operated valve flush. On the other hand, a tank, instead of a flush valve was suggested somewhere not long ago as an economy measure for low-rent developments. This has the disadvantage of prolonging the toilet noise which the N.A.H.O. characterizes as one of "the most irritating to be found in multiple dwellings". Insulation of the soil pipe would help diminish this noise, of which a certain

amount must be tolerated within the dwelling unit; and insulation between the back-to-back medicine cabinets of adjoining apartments would not only cut off much of the neighbor's plumbing noise, but would also render his conversation inaudible—and designers of hotels, clubs, and expensive apartments may one day become aware of that simple device and adopt it.

#### *Door and window*

Neither children nor the shorter adult can open the window set above the bathtub without stepping into the tub, which nullifies U.S.H.A., F.H.A., and other good counsel about windows made to open. This window forms a feature of U.S.H.A. and F.H.A. planning recommendations. Most architects adopt for the small dwelling unit, especially in the apartment house, the solution shown in the great majority of U.S.H.A. plans (122, 130, etc.), namely placing the window above the bathtub, while agreeing with the Authority that this is a poor, though convenient solution. Well hung sash operated by a removable handle would seem to be indicated, since placing the window elsewhere would ordinarily require a more costly general layout.

Placing the lock of the bathroom door too high for small children to lock themselves in would save mental anguish for the family and rescue time for the management. Since taller children and even adults may be trapped also, a door latch to permit release from the outside would be good so long as the young fry do not abuse it, and so long as its key, if it has one, is not kept in the medicine cabinet in the bathroom.

#### *Minor fittings*

A number of small annoyances are recorded, many if not most of which can be foreseen.

The extending soap tray, glass holder, toilet paper fixture and bath grip, all easily broken, are common. No additional expense would be involved if soap trays were provided with drains; those usually found, even in better class houses need endless wiping for reasonable neatness. Toilet paper fixtures fit as a rule only the smaller rolls comfortably. A non-slip towel rail would cost no more than the type commonly found; and this is the most frequently requested "small item" in Dean Amos' survey. Simple provision for the great variety of items ordinarily or most conveniently used in the bathroom is

easy to install at the time of building; later make-shift provision is difficult, looks badly, damages walls and woodwork. Such items are clothes brush, shoe-buffer, hot water bottles, enema, bath brush, toilet brush, cleaning powders, wiping cloths, bath mat, and *all* the family's towels, washcloths, toothbrushes, etc. An average family uses far more medicaments and semi-medicaments than can be kept in the regulation cabinet.

N.A.H.O. suggests that "where requirements of low-cost housing preclude initial installation of towel bars, medical cabinets, soap dishes, and inset toilet paper holders, bathrooms should be provided with suitable nailing strips to which tenants may attach their own fixtures" (82); and the U.S.H.A. in its Checking List seems to agree with the transfer from initial construction to tenant maintenance of this trifling cost. The main thing is that there be some way in which an orderly family can arrange its indispensable equipment.

A simple wood cupboard, or, where the plan permits, a closet, would probably better solve the storage problem of most families than does the usual small metal cabinet. The need of a lock medicine cabinet

for storage of poisonous or irritating medicaments, urged by the Safety Research Institute, is indicated by the fact that accidental poisoning occurs fifty per cent oftener in the case of the adventurous climbing boy than it does with his more sedentary sisters; and designers might well transfer this lock cabinet to the parent's room, leaving the bathroom cabinet for the family dentrifices, cosmetics and shaving materials.

The lavatory is reported as too low for average-height housekeepers by a New York survey which emphasizes the fact that 33" or 34" would be much more comfortable for the "average person" (147). The combined hot-and-cold water faucet which, when the water is turned on, splashes from the patent stopper to the floor or the user, is found a nuisance rather than a convenience.

Toilets separate from bathroom and lavatory are reported good by many families, principally as a time saver during the morning rush hour; and a combination bathroom-laundry-utility room, as suggested in the section on space use, would leave the kitchen free for meals, homework, and general assembly.

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## Recent Appointments

The President of The Institute has announced the appointment of the following corporate members to serve as representatives of The Institute on the technical committees indicated:

Mellen C. Greeley, *Florida North Chapter*, on American Standards Association, Building Code Correlating Committee—1941-42, with Theodore Irving Coe, *Washington, D. C. Chapter*, as alternate.

Harold R. Sleeper, *New York Chapter*, on American Standards Association Sectional Committee on Chimneys and Heating Appliances.

Dewey A. Somdal, *North Louisiana Chapter*, on American Standards Association Sectional Committee for Iron and Steel.

Herbert M. Hathaway, *New York Chapter*, on Ameri-

can Standards Association and NFPA Sectional Committee on Building Exits Code.

S. F. Voorhees, *New York Chapter*, on American Standards Association Sectional Committee for Elevators, Dumbwaiters and Escalators.

M. Edmunds Dunlap, *Philadelphia Chapter*, on U. S. National Bureau of Standards Committee on Commercial Standards for Burners for Pennsylvania Anthracite.

Abraham Levy, *Philadelphia Chapter*, National Fire Waste Council of the U. S. Chamber of Commerce.

Karl Schmill, *Buffalo Chapter*, on U. S. National Bureau of Standards Standing Committee for Recommended Commercial Standard for Hardwood Stair Treads and Risers, CS89-40.

Lebon Seron, *Chicago Chapter*, on American Standards Association Committee A58—For Minimum Design Loads in Buildings.

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*The Washington Situation*  
*Employment of Architects for Defense Projects*  
*Design and Construction of the Dwelling Unit for the Low-Income Family—Part II*  
*Massachusetts Law for Registration of Architects*  
*Technical Services Department — With the Chapters*

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## Notes on Design and Construction of the Dwelling Unit for the Lower-Income Family—\*Part II

BY ELISABETH COIT, A.I.A., NEW YORK

### BASEMENTS

Elimination of the basement, or even reduction of its size, made possible by the form and efficiency of the newer equipment, promises an economy of which present-day living habits permit of but slow realization, although the cellarless public project row houses and apartments, many of the smaller prefabricated houses, and a few private enterprises are showing the way.

Cellar stairs in the one-family home are often complained of as being poorly designed, dangerous, awkward (97); but a basement is usually desired even where there is ample space on the ground floor for work and storage. Probably the desire for work space well out of range of the family living space, voiced frequently in discussion of home needs, is considered compensation for the extra steps involved. The need for cool storage for fruit, vegetables, canned foods, is also ever present; and ground floor extensions for laundry, workshop, etc., interfere somewhat with the through draft needed for comfort in the living spaces.

#### *Work Space*

Of eleven thousand families in upper New York State, presumably largely town and suburban, surveyed by the Niagara Hudson System of public utilities in 1936, eighty per cent wanted full basements, and another fifteen per cent partial basements; furthermore the percentage of those requiring full basements was practically the same for five price categories ranging from below \$5,000 to \$15,000 (114). The same survey showed eighty-two per cent of the families wanting basement laundries, and fifty-five per cent a "fruit and vegetable room". Every small-home architect knows how often the basement seems to be the deciding factor in the question of buying an old house *versus* building a new one. Not only a spacious laundry and cool storage, but also the possibility of contriving a useful and inexpensive workshop or playroom out of the un-

necessarily large full cellar weigh in favor of the old house as against the modern one with more convenience but less opportunity for what to the family in general means ease of living. "Something for nothing" is a handy way of classifying the desire. Another, perhaps better, way is to recognize the urge toward salvage and creation, through contriving a room out of waste space. For designers the point is that basement living and extra stairs are not to the householder as objectionable as they are to the hygienist and to the architect seeking economical construction.

Regional diversity in climate and crops, also, to some extent, in national backgrounds, account for varied practice in home curing, canning, and other preserving. The U. S. Department of Agriculture detailed regional survey of farm families' needs in housing shows that a farm family cans about three to five hundred quarts of food each season, except for those in Southern California and the winter wheat section, which can about two hundred quarts, and that the only region using less than two hundred quarts of home-canned food is Florida and the southern fringe of the remaining Gulf States. The rural home, and particularly the true farm home, must provide also storage for cured meats, apples, potatoes and other winter vegetables; and since in all but the mildest climates most of this storage must be indoors, there must be basement space for barrels, stone jars, crocks, kegs and sand storage (144). The same comprehensive survey cites basement uses in the farm home, approved by reason of comfort and convenience, as well as of keeping out of sight many unattractive jobs: Canning, meat curing, drying of clothes in winter, handling smallscale dairy and poultry products, winter workshop operations, sometimes cooking for large crews of workmen in warm weather, even serving meals, providing an excellent playground for children, and in some parts of the country affording living and sleeping quarters in hot weather (144, p. 10).

\* Part I appeared in the October OCTAGON.



### *Living Rooms*

The basement living which so wrings housing's heart is really sub-basement or cellar living; and complete approval of sub-surface living quarters is well illustrated not only by the farm study just cited but also by the colonists of the Granger Homesteads in Iowa, who, a year after occupation were living mainly in the basements. These families, provided with kitchens and living rooms on the ground floor, found that, even with a kitchen range burning, the furnace still had to be used to heat the living room, that in moderate weather the hot water heater sufficed comfortably to heat the tile-walled cellars for general living, while in cold weather the furnace with very little fuel accomplished the same, thus eliminating the need of heating the entire house (33). Food therefore was prepared and eaten in the basement; radios, floor lamps and other equipment brought in to make of this space a combined kitchen, dining room, living room—and complaint was even made that faucets and a drain pipe had not been installed for uses entirely unforeseen when the houses were designed.

### *Laundries.*

Basements, on the other hand, intended for laundries, at the Lake County homesteads near Libertyville in Wisconsin, while provided with water for laundry use had no drain when I was there, and water to be thrown away had to be carried up half a flight of stairs to the open air. A similar oversight occurs also in some large city projects where staff work space in the basement lacks porters' sinks.

Usage always lags a little behind maximum economy; and the electrically equipped simple household, with a washing machine and a dryer in bathroom, utility room or elsewhere does not need a basement laundry. But so long as many families feel, as they do, that a basement is desirable, there is little one can do about it; and "It will probably need a decade of evolution", says one editor, "to break down some of these fixed ideas, so rooted in the past are they" (114).

A decade is a short time. It will probably take an æon or two to make people with any choice offered them to follow the route they do not prefer. Thus the well equipped project basement with community washing machine and locked cages to prevent theft

sometimes enjoys limited use while the housemother washes in her inadequate laundry tray, consoling herself for her unwillingness or inability to carry down a heavy basket of clothing and carry it up again, three flights, perhaps, with the thought that the younger children's play is better in the apartment than in the steamy cellar. In time, doubtless, a dumb waiter to roof or cellar will come to the rescue for transport of laundry baskets; at present we are too near to the memory of the old unsanitary trash dumbwaiter for such a contrivance to find favor with designers. With a lift to the roof or to a drying yard the apartment dweller could air blankets, mattresses and other items rightly forbidden on balconies and window sills, and often practically impossible to air adequately within the apartment. For large city developments the trend is toward minimum excavation on the grounds of avoiding expense as well as underground living; and merely enough excavation for pipe access and heating plant obtain where laundry, storage and recreation facilities are cared for elsewhere. For some time both laundry and storage had been usually basement housed in public city developments, in spite of the tenants' preference for outdoor drying even in cool weather (40). The U.S.H.A. Checking List of 1939 to meet this demand assumes basement laundries, but recommends outdoor drying space adjoining. Some of the most recent U.S.H.A. developments are without basements, washing being returned, so to speak, to the kitchen, while drying is done either in outdoor drying yards or within the dwelling. Toilet facilities and space for storage of equipment owned by tenants are also among the recommendations for communal basement laundries. The basement laundry designed with overhead heat, contributing little to the speedy drying of clothes but overheating the apartment above, is probably an isolated case (62, Ap. 29, 1939).

Managers report supervision of basement laundries a serious difficulty where they must be left open during long late hours to accommodate tenants obliged to wash in the evening, for they offer unsuitable places in which children congregate.

### *Recreation Rooms*

Recreation rooms below grade are apt to be noisy to the point of disturbing first floor residents. The later U.S.H.A. recommendations include sound-

proofing for all children's playrooms, and many managers think it necessary for all public rooms. Basement community rooms are apt to be unattractive unless ceilings are higher than is advisable economically; the expense is to some extent offset, however by the protection the high basement affords the first floor apartments, thus eliminating the need of installing and maintaining grilles. With a reasonable amount of window surface above grade—U.S.H.A. recommends the entire surface—the rooms ought to be attractive even for daytime use; but it is found that only by using sight-proof glass can security from street disturbances be found, and sight-proof glass is unattractive during daylight hours from the inside. Possibly the future developments without special provision for invalid or aged tenants on the main floor may find space there for community activities. Intensive developments on small lots have little choice as to where to house community activities; but Lavanburg and Michigan Boulevard, for example, with high coverage such as was common until recent years, have developed intensive roof use.

#### *Storage Space*

Tenant apartment house storage space seems to be calculated generally as 20 sq. ft., being about 10 sq. ft. for dead storage and 10 sq. ft. for baby carriages, bicycles, and wheel toys; but a recent report on "low-rent" F.H.A.-insured "white-collar" housing estimates 30 sq. ft. as the average needed (73, p. 91). Some recent public projects have no basements and little or no common space. Normally in large projects dead storage seems to be mainly in locked areas to be visited only under management supervision; and there is no way of estimating closely the ultimate cost of that system as compared with construction of individual bins with tenant-operated locks. Possibly a strong manager may reduce supervision cost by strongly regimenting visits to the storage area; but that is scarcely the object of providing such storage. Where baby carriages are stored separately from other items, one authority thinks one space sufficient for each seven-and-a-half families (113). All authorities agree that a ramp from storage space to ground level is necessary.

### SURFACE FINISH: FLOORS, WALLS, CEILINGS

#### *Flooring*

The concrete slab floor, necessary for fireproof construction, and therefore general in large-scale construction, is practically indestructible, and on that account it is inexpensive to maintain if properly surfaced. It is, however, too hard for present day ideas of foot comfort. Also, unless there is ample heat, it is too cold for the interior of most United States dwellings. It is impossible to keep it in clean-looking condition unless it is painted, and when painted it needs frequent refinishing.

Surfaced with asphalt tile for the main rooms, as in many public developments, it is pleasant to the feet, not cold, easy to wipe clean. On the darker shades frequently used every footprint shows, so that no amount of wiping gives lasting satisfaction; but doubtless the middle and lighter colors now on the market will soon come into general use to do away with this objection. The cracking observed in some places is caused, says one manufacturer, by too brittle mix in certain makes. In other cases faulty installation is apparently to blame: owing frequently to roughness in the finish of the slab

on which it is laid. There are several nationally known makes, most of which have been on the market over a dozen years, so that there has been ample time to observe the behavior of this material in ordinary wear, and to learn its limitations and the treatment it needs; notwithstanding which managers report much replacing of tile specified for recent public projects. As extraordinary wear must be classed the trouble reported by one project; "All insecticides so far used have proved a solvent to the asphalt and mastic flooring, resulting in loosening of the tiles from their base" (62, Ap. 29, 1939). A later note on this subject reports that "Our difficulty with the tile floor has occurred in connection with the use of this liquid fumigant . . . Chloropicrin. . . Whenever a drop of this liquid falls upon the tile floor it softens the tile but does not loosen the tile from its base. . . We have found improved diffusers and sprays which have minimized this problem and which appear to be the solution for the time being" (62, June 26, 1939). All of which leaves it rather less than clear whether there are two difficulties or one difficulty. When the "time

being" is past the point will be worth investigating, for this fluid is reported as preferable to cyanide gas, in that it is not dangerous to human life, while equally effective in destroying eggs of vermin.

The alternative for flooring of the principal rooms is by all accounts hardwood, whether attached to sleepers or floor joists, or laid in mastic; and this, with asphalt tile, divides practically the entire public project field for hard going, with North Carolina pine or some similar wood for bedrooms and other less frequented spaces. Hardwood laid in mastic is found by one group of investigators to be not sufficiently resilient, and by one development unsatisfactory in that the mastic oozed to such an extent that the job had to be done again, which experience astonished a Boston operator who says that a well done job could never ooze. A serious objection to even a well laid hardwood floor is the noise, in at least one low-rental project so grave that ceilings below had to be soundproofed. To what extent the hardwood is to blame, and to what extent the laying of the floor, is not always apparent; but anyone familiar with apartment house life knows that one or two creaky boards, even gently trodden on can spoil the life of the family in the suite below; and managers of public, limited dividend, and other projects urge soundproofing for all floors.

Linoleum for kitchen and tile for bathroom seem generally approved as the best solution of use and maintenance problems. Waxing the kitchen linoleum is often the cause of scalds and burns when some one falls against the stove, or indeed elsewhere, when carrying a hot liquid. For both the housekeeper eager for a shiny floor easily cleaned and for the owner anxious to protect his linoleum there is virtue in a coat of clear varnish which needs complete renewal only at long intervals while permitting of touching up worn areas once a year or thereabouts. Recent tests made by the National Bureau of Standards classify twenty-three floor coverings according to their relative values with regard to the extent to which they are permanently indented under abuse (112). According to that classification, the coverings most desirable for comfort and resistance to abuse are all linoleums: three grades of battleship and one marbled. If resistance to abuse alone is considered, the materials rank thus: Marbled asphalt tile, pressed fibre-

boards, short strip maple, strip Douglas fir, strip white oak, asphalt tile plain maroon, asphalt tile plain black, yellow strip pine, inlaid linoleum gray mottled, and rubber tile. Neither so abuse resistant nor so high in foot comfort rank half a dozen materials, which, however, as the Bureau observes, will probably prove to be the lowest in cost. They are felt bases with surfaces of linoleum or of one or another enamel finish, or of mastic or composition. A newer series of tests embraces wood finishes,

Adequate floor maintenance, everywhere an expensive item, is particularly so in public projects, where complex income requirements, increase in the family size, etc., involve a considerable tenant turnover, and where succeeding tenants' furniture cannot be expected to coincide with the marks left by that of their predecessors. A development still in the making can meet the difficulty by providing a certain amount of built-in furniture. Maintenance of hardwood floors by tenants who do not own a power polisher is a heavy task; and the suggestion to tenants given by one medium-priced project seems almost counsel of perfection: "The original finish is an oil stain which has been waxed. We suggest that as soon as possible after moving in you give your floors another coat of wax, and during the first month or two, continue waxing every two weeks. . . . All wooden floors are to be finished with wax only". Possibly some managers have an arrangement for renting to residents the power machines which, hired from a commercial concern, cost from a dollar to a dollar and a half a day—entirely beyond the reach of the low-income and almost beyond the middle class idea of legitimate floor maintenance cost. Another project's similar instructions to wax heavily, clean with a dry mop, after waxing, and "use water only when dirt or stains cannot be removed by dry mop or wax and then . . . sparingly" seems a good recipe for quickly antiquing the floor exposed to hard wear unless great care and some experience are brought to the work. To what extent those instructions can be enforced I do not know. Managers in some projects I have visited recently say that some of their most meticulous housekeepers still believe that soap, soda, hot water and a scrubbing brush best correct a dirty floor; and the parquet suffers accordingly.

*Wall finishes*

Within the dwelling the casein paint advocates battle with the oil paint defenders. Casein paint, tried in many places with a view to economy, proves difficult to apply satisfactorily and not washable. Two coats sometimes prove necessary for a satisfactory refinishing job, instead of the one estimated, thus eliminating any hope for saving. According to a speaker at the N.A.H.O. Institute, casein paint builds up a surface difficult to change over to the oil paint which he and others would prefer, and many others seem to agree. If decoration is unavoidable before the walls are cured, casein paint is useful as a first coat since it does not prevent the natural curing of the plaster, while oil paint retards it. Construction men say that there is no difficulty in washing off casein paint when the walls are ripe for a permanent finish—and if there is, well that's up to the maintenance. . . . The old argument. For commercial properties, in which appearance requires repainting long before the usefulness of the existing paint is past, casein paint will serve; and the owner of one development tells me he halves what would otherwise be his decoration cost by using casein for walls and stain for the woodwork, instead of oil paint, with apparently no unfavorable reaction from the tenants who are of good professional and business class.

Oil paint, long in use, is still, probably, in the experience of most owners something of an unknown both in application and service. The general experience about washing paint seems to be, with Mr. Satterfield, that "it is virtually impossible to do a satisfactory job of washing with a flat oil paint", and perhaps less generally so when he says he knows "some egg-shell paint that will stand washing" (74, p. 180). Some success in washing flat paint is indicated by Cincinnati Model Homes; and doubtless in districts where high smoke density makes frequent washing necessary, special attention is given both to the quality of the paint and to the manner of applying it. Managers in some places think tenants have not enough skill to be entrusted with renewing paint, and one points out that in his city "it is heresy for a man to wash his own walls" (74, p. 202). Others think better of the situation and not only assume that the tenant may and can wash his own walls, but sug-

gest the sum that ought to be allowed him for painting his own walls and ceilings. There exists, however, some doubt as to his ability to refinish woodwork. An economy I found liked by Stanley S. Holmes Village tenants is a darkish band painted on the plaster wall above the floor shoe, as being not easily soiled and easily renewed when necessary. Where the floor finish is dark, as in this case, the dark band looks well. Another economy,—in user effort, houseworker cleaning, and, to a lesser degree, in refinishing worn paint—would be effected by placing of door handles at about elbow height, say three or three and a half feet from the floor instead of in the low position dictated by the old four-panel door. People always handle the door at a convenient height, and elbow height handles long common in central Europe have made unnecessary the finger plates with which the British long met the difficulty. Now that the one-panel door has become so general in new construction there is no reason why the more convenient height should not be adopted. Makers of refrigerators would earn the gratitude of tenants by specifying refrigerator handles at use-heights also.

Blistering of paint on interior walls is explained by some as caused by either too much free lime in the plaster or insufficient time for drying between processes. Where the processes have been timed properly this will not occur, but since time and weather may prove incalculable, why not arrange for occupation of dwellings before the plaster walls are decorated as was done not so very many years ago by thrifty well-to-do people who decorated only after the plaster had been thoroughly cured? This should be the more practicable today since most dwellings are finished in white or some pale tint.

Paint, in spite of its high maintenance cost, has as yet no serious competitor for interior finish. Fourteen projects reporting to the New York State Board of Housing averaged recently \$8.19 a room a year for "renovating" with an average of \$7.67 a room for redecorating since their respective inception. Several of these are workers' cooperatives with a relatively small tenant turnover, and presumably the work was done with union labor. In the same city a private cooperative with a good class professional and business clientele averaged

just under six dollars for the past two years; while the one and two room suites already referred to, with a greatly disproportionate number of bathrooms (not counted as rooms in this calculation), and with a high tenant turnover, kept its average down to \$6.00 a room a year by using stain for trim, casein paint for walls, and project labor.

### *Water-proofing*

Exterior surface finish and refinishing to remedy construction faults have been much in the housing mind in recent years; important to note here is the amount of interior refinishing necessitated by leaking walls. Undoubtedly it was chance which took me in 1938 during a tour of many projects, mainly public developments, to project after project which was either in the act of waterproofing its walls to remedy leaks or reported having recently done so. But the Housing Study Guild states that almost all of the projects visited in one of its investigations had had similar trouble (64); Ex-commissioner Langdon Post reports similar experience for the F.E.A.P.W. projects erected during his term of office in New York; and a reporter for N.A.H.O.'s Washington Conference told of "a passionate plea from Detroit for the secret of waterproofing cinder-block construction", tantalizingly leaving us uninformed as to "whether a symposium on the subject was held, and the answer duly revealed" (80: Sixth, 1938, p. 21). "Not enough lime in the mortar", would seem to be the explanation, according to some of the lime interests, which judgment seems reasonable enough in view of the rec-

ognized shrinkage of cement during drying and the wearing qualities of old walls, built often with but a modicum of cement and innocent of waterproofing. The Bureau of Standards report on "Water Permeability of Masonry Walls", however, describing tests of various types of masonry walls, reports that "permeability . . . was not greatly affected by difference in the relative amount of cement and lime . . . walls built with the high-cement low-lime mortars were slightly less permeable". The composition of proprietary brands of lime may account for some of the confusion; but "Of the many factors, workmanship is the most important single one", says the Bureau, leaving us again at the mercy of the sub-contractors' operators, thrice removed from our control. It is comforting, therefore, to learn that "Molten paraffin, oil paint, and cement paint were effective coatings", even though the approximate length of service of these waterproofing media is not indicated (37).

One wonders did not some waterproofing mania or hysteria hold the country in its grip for a time, greatly exaggerating the amount of the trouble. For report of an investigation a couple of years later disclosed that in all the F.E.A.P.W. projects inherited by the U.S.H.A. for administration "two building walls leaked slightly and one leaked badly" (124, Rel. 424). Recent developments seem to have little or no trouble in that respect. Apparently the air spaces now general between wall and inside plaster accounts for some of the improvement, and reinforced concrete post-and-girder construction appears to account for the rest.

## WINDOWS

Assume about twenty per cent of the exterior wall area to be required for windows, says the U.S.H.A. (122), which comes to about the same as the A.P.H.A.'s recommendation of fifteen per cent of the floor area. The latter is more specific, however, for that percentage for the latitude of Washington, or 39°, should be "increased or decreased by two per cent for each degree north or south, varied according to altitude, air pollution, humidity and average daylight illumination. . . (5, 61) with casement or sash to permit of opening not less than one half of the area.

### *Height*

Current practice, as illustrated in public and private developments and supported by A.P.H.A. recommendations, for window sills at least thirty inches above the floor has several advantages. It avoids glare, it keeps children and toys on the right side of the barrier, and, provided one is fairly close to the window, permits a person in a sitting position to supervise the children's play and enjoy the rest of the passing scene. For the average maximum height of a window sill permitting a view of the

yard twelve feet from the house is 35" for a person seated, and 47" for one standing (111).

The thirty-inch sill height has the distinct disadvantage, however, of giving less air movement, and thus less comfort during hot weather, especially where humidity is high, than does a lower sill. The lack of air circulation is sometimes painfully noticeable when the entire body is below the sill level, as is the case of a person lying in a bed of normal height; and doubtless general adoption of this height will hasten the day of mechanical air-cooling in summer, at least for the medium and higher cost house, and the day of obsolescence for the house not so provided, unless the current 14"-to-20" bed height yields to that general in the days of the casement so admired in the old house, where both bed and window sill were often of practically the same height, about thirty inches. A recent development in the casement window is a fixed horizontal sash, eight, ten or more, inches high, immediately above the sill, so that air circulation, still operated through one half of the window area, may start at almost three and a half feet above the floor level: nearly breast height for many a mother and well above the head of a young child.

#### *Light and ventilation*

A U. S. Department of Agriculture study of "Housing Requirements of Farm Families", combining with a survey of farm home functions a practical application by region of U. S. Weather Bureau year-round reports, urges that in regions of high summer humidity "it is advantageous to provide ventilation partly by doors or wall panels that can be removed or opened, instead of by glass windows. Window sills should be low, and there should be transoms over doors and windows, and ceiling fans are desirable" (144). One realizes too that the frequent use of french windows in town and country alike by generations which took their fresh air at home, so to speak, was not a mere fad, any more than is the sliding wall section in some of the new luxury buildings: home, hotel, club and hospital.

One Middle-Western rural development has pleasing french windows opening on balconies; for winter ventilation a small supplementary window, a movable pane, or a ventilator will doubtless be

needed. Windows extending almost to ceiling height make transoms unnecessary for windows, and privacy and quiet demand that for the city dwellings, at all events, they shall not be used above most doors. The high-silled small window formerly common (I found it recently at Greenhills), supplementing the main window, gives cross draft and some additional light, without diminishing the amount of wall space for the placing of furniture. And one small minimum-cost development had windows on three sides of its large living room-kitchen, placed high so as to leave unlimited wall space. If the back and front entrance doors which afforded ample hot-weather ventilation had been glazed these ought to have been attractive as well as uncommonly efficient rooms.

Regarding air and light, for which architects are at pains to secure the best orientation possible, it is sometimes difficult to gauge the tenant-consumer viewpoint. The petite bourgeoisie in individual dwellings desiring orientation that will protect carpets and upholstery from sunlight can be understood. Blazing sunlight, a southern exposure and drawn shades, wherever found, are also easily understood. But just how does the "white-collar" family in a small apartment use a suite with rooms facing north or south or east or west, one of hundreds in a ten to twelve story building from which almost all air movement and almost all sunlight are excluded a great part of the day, when most windows—especially living room windows—have a sash curtain covering one half of the glass area, a drape covering about three quarters, a shade drawn down half way, and perhaps a screen? Not even in high summer is there enough light to read a newspaper or play cards during the interval between work and supper. Does a family sit hours long in conversation, with a fan to stir the air? Or does it turn off the fan to listen to the radio? Or does it spend muggy afternoons at the air-conditioned movie; and if so is it because the movie has an interesting program day after day or because the dwelling is intolerable?

#### *The metal frame*

Steel casements are now so general that New Towne Court in Cambridge, for example, which meant to use double-hung wood sash in New Eng-

land traditional style, found steel casements cheaper. "Wood can't be weathertight", one hears on many sides. Perhaps nothing can be quite weathertight; but adequate weatherstripping helps.

Metal interior window reveals, seen on a number of developments, while a saving on initial construction costs, are a source of maintenance expense, paint having a tendency to check on them in exposed positions. If the enamel were baked on there would be probably less trouble in this respect. Aluminum frames and sash would pay for themselves out of maintenance saving.

Casements occasion heat loss; but when open permit of more ultra-violet ray penetration, says the A.P.H.A. (5). I believe the added advantage of a feeling of being almost in the open air, which the casement affords, has much value in making for contentment, especially among tenants essentially city and house bound. Some of the casement designs noted defeat both these advantages general in the older-design casement.

The use of non-transparent glass in some kitchens and bathrooms makes frequent cleaning unnecessary; and gives for that reason a slovenly appearance. For stair hall windows, however, easily fingermarked by everyone passing, a rippled glass is almost a necessity for good appearance.

Lack of proper curtain rods for corner windows has occasioned some pitiful makeshifts seen in a F.E.A.P.W. project. U.S.H.A. provides for this in the Checking List; and A.P.H.A. urges rods so placed that draperies hang adjacent to, and not over, the window surface.

## OUTDOOR LIVING SPACES: BALCONIES, PORCHES, ROOFS, GROUNDS

### *Balconies and porches*

Balconies in city apartments are largely a matter of local custom, based, one is inclined to think, on climate and national backgrounds. On the other hand the general use of fire escapes in the poorer districts by tenants of all nationalities for sitting, for house plants, or for airing clothing and bedding—and that in spite of all regulations to the contrary—would seem to indicate that, given opportunity, most families would like to use such space.

### *Shutters*

A high degree of year-round comfort, combined with saving in heating costs, might be secured by use of the solid outside shutters frequently used in Continental Europe. Closed after dark in winter, they prevent heat loss by radiation, and greatly diminish street noise. Closed not too tightly, before the heat of the summer day, they exclude much radiated heat, their actual performance in this respect being enhanced by the *feeling* that the blazing heat and light from pavement or chalky high road or the light stucco houses across the way are being excluded. Even a hurried traveller will recall the "grateful gloom" of his hotel room at siesta time, and the pleasant contrast when the heat of the day was past and the evening light admitted. The double window, formerly oftener seen here than it is now, would according to the *American Lumberman*, pay for itself in two years, and the A.S.H.V.E. says it reduces heat loss by fifty per cent.

The slanting window sill, urged long ago as preventing use of the outside sill for storage of milk bottles or for unmoored window boxes or flower pots, is still far from common.

Cooking ranges should be located at least one foot from the window jambs according to safety experts, for many fires start when window curtains are blown across the stove. The non-inflammable spun glass curtain fabrics now on the market are still too costly for general use; but they may soon be accessible to all, thus simplifying placement of the stove and incidentally saving laundering, for the fabrics are said to be cleaned satisfactorily by wiping with a damp cloth.

I have seen on coldish fall days elderly people sunning themselves on the rather narrow balconies of Brooklyn's "Riverside" apartments, a model tenement built in the 90's where residents are still mainly of Scandinavian, Irish and German background; and the intensive use of some of the little metal slat balconies, with a bit of linoleum or oil-cloth for flooring, in Manhattan's Yorkville, with their morning-glories and petunias, and a safe play space for little children, give anything but a slum

appearance to these unimproved properties tenanted chiefly by people of various central European origins. The curiously persistent absence of people on balconies in a low-cost development well located for outdoor living was eventually explained to me by a tenant who said that abuse of these well-constructed balconies by some tenants had led to a general prohibition of balcony use. This triumph of management over design seemed the more regrettable because the balconies were well designed for access, and it is probably an unusual case.

Management problems in connection with balconies are apparently serious, as evidenced by suggestions from managers of various types of housing that all balconies be omitted (23). At the same time the A.P.H.A. recommended that provision for balconies be made for all dwellings more than one story above the street level.

Privacy, at least to the extent of separating the balconies of different units by some little distance or by an opaque barrier, would seem desirable if the balcony is to serve as a living space, and this is found in many developments new and old. Some F.E.A.P.W. projects have many balconies, and some of the newer public projects have also, but not one to every dwelling, while a Philadelphia defense group has a continuous slab balcony running the full length of the top floor with metal fences between the units.

As even a small amount of carrying of furniture and equipment tends to discourage balcony use, it is well to make access as easy as possible. One F.E.A.P.W. project comes to mind with comfortable balconies, but doors so narrow that only slender furniture can be taken out of doors. An electric outlet might make for longer use by permitting a lamp for work and recreation; in the more secluded balconies, at least, it would make possible ironing out of doors.

Oriented for privacy and the prevailing summer winds, the country back porch has almost endless uses, from rinsing the vegetables and other messy jobs, through the family wash, canning, summer meals, sitting, sleeping for the children; and complaints are without qualification or mercy, for example at Tygart Valley and at Norris, against the "city" architects who designed many of the porches without regard to orientation, climate, or use.

The value of open air living space is expressed not in terms of homemaker's discontents but in those of money and management in an article in *Collier's* for October 4, 1941, stating that low-rent defense housing in San Antonio which lacked garages, porches and adequate landscaping found only eighty tenants for its five hundred four-room units, the remainder of the defenders preferring to rent quarters in town, while the rejected units are being offered for rentals ranging up from a little more than a third of the original rental expected.

### *The roof*

The city dweller thinks longingly or appreciatively, as the case may be, of the roof for both work and play. Recent low percentage coverage leaves space and ground level for recreation; but the sense of space and of being "above the battle", which the roof affords, is valuable to those people who rarely leave town, or even their own neighborhood, for a day. Mothers, too, fear for their children who escape into the traffic routes. With an adequately fenced roof supervision would be simple. Lavanburg Homes, in a congested district, has a concrete tile-finished roof, used to capacity by old and young, including children not resident in the Homes. Movies, games, and a quiet place for sitting were planned for from the start, and drinking fountains and toilets were later added (40, 41, 64). Michigan Boulevard also makes intensive use of its roof, which includes "a half mile roof promenade where members of this community enjoy walking winter and summer", and a small roof garden used in summer for outdoor parties and entertainments (76). Hillside's small covered roof is also considered a boon; and the preference for the roof is well illustrated by the way in which great numbers of tenants were found using the wind-swept roof of the Emerson Tenements on a cool day, while just across the street lies a pleasant little park, far from overcrowded.

Doubtless the cost of adequate roof surfacing and fencing for intensive use, combined with the amount of space available at street level, accounts for the smaller amount of tenant use planned in recent city developments, some of which have later installed at least catwalks to accommodate tenants requesting roof drying space. But the newest sub-



sized projects seem definitely to have decided against any roof use except as a fire escape, so much so that there are often no penthouses and no parapets. Presumably the scuttles will be adequately inspected and will open easily in emergency, while modern fireproof construction makes improbable any great crowding near the unguarded roof edge. Nonetheless one feels more comfortable in presence of, say, East River Houses' light graceful grill.

#### *Landscaping and playlots*

Landscaping, initially a costly item, has proved in many projects difficult and expensive to maintain (62, Aug. 10, 1939; 74, p. 205-219). In some three dozen city projects of the F.E.A.P.W. initial costs varied between eight and forty-seven dollars a room, depending on the site; from Williamsburg's old level site, through Harlem's slightly hilly one developed with a sunken playground, to Hillcreek's virgin hilltop with everything to do. Maintenance costs of the F.E.A.P.W. projects were estimated by the U.S.H.A. in 1938 as averaging three dollars a room a year; that of the simpler and more practical U.S.H.A. projects constructed since that time ought to cost appreciably less.

Lawns will probably continue weak in many developments for some years to come; but some well designed features have been a delight from the start, such as the well proportioned and strategically placed garden houses at Chatham Village for the storage of tools and other equipment, the beautiful lamps attached to the house corners at Cedar Central, the wading pools at several projects, sandpiles and playground equipment, while Jane Addams' animals, so modelled as to provide climbing steps and grips, are not only interesting in themselves but promise also the embellishment of a continuous swarm of delighted youngsters climbing on them.

Numerous small scattered playgrounds make maintenance difficult and costly; but they are necessary where small children must be under supervision much of the time by mothers indoors. The National Recreation Association advises minimum areas of 1,500 to 2,500 sq. ft. for small folks' playlots, which allows for sand piles and a reasonable amount of equipment for the children of thirty to sixty families. The Association points out

that for small children the playground is essentially part of the home, whatever provision the municipality may make for older children and adolescents (83), and must, therefore be located so as to be supervised from the home windows.

Apparently wading pools have in some cases carried foot infection, and today the spray pool with water constantly draining away is taking its place. Infection too has been spread by barefoot youngsters playing in the sand piles and the sand piles themselves are easily contaminated in many ways. Many projects are now covering their sandboxes; some others have eliminated them, including one which is glad that the nearby park has sandboxes which remove responsibility from the project management. Sand or a substitute would seem to be one of the most important single playthings, as is evidenced by dozens of swings and junglegyms which get a few minutes' attention now and then, while sand or a bit of unpaved ground outside the project is good for the rest of the day for digging or building or otherwise making something—a hole in the ground will do.

Even children with well equipped playgrounds persist in running out into the street. One development tried to protect them by a barbed-wire fence partly concealed in a privet hedge, and removed it only after children had been hurt by it. Stanley S. Holmes Village meets the difficulty with curtain walls so designed that the children are obliged at least to slacken pace by having to turn sharply as they leave the grounds and enter the traffic routes. A well constructed fence with padlocked gate around an empty play space, which I saw one early afternoon, seemed pitiful on two counts. The playground was well overlooked by many dozen windows, making supervision by parents an easy matter; and the dispossessed young people were playing on the dump and in the puddle just beyond their home. It was in the same project that older children roller skating on the concrete walks in the courts, with their attendant echo, suggested pandemonium, while a staff supervisor mounted merely on sole leather, toiling after in a vain attempt to force the skaters out of the court, seemed ill cast for the rôle of chief tormentor. Skating is forbidden in some projects, while Baxter Court has set aside three large play areas for this sport.

### *Paving*

Rough paving near a popular nursery school I visited was pleasant to the eye, but it caused many a stubbed toe, I was told, and consequent fall. The best surfaces for children's play spaces, according to one manager is moulders' sand, with tanbark for small areas under swings and other similar apparatus where children most often fall. A mid-west city health department says tanbark is apt to cause infection, while another manager thinks his project has "the most satisfactory of any type surface found in use: a composition of emulsified asphalt and sand". Any modification of the hard and abrasive concrete often found in parks and playgrounds is so much to the good, and this surfacing is now usually banned from the areas beneath swings, etc.

The asphalt or cork-asphalt paving used in many recently constructed playgrounds is sanitary and otherwise serviceable, but it is unattractive, even forbidding, and in my experience noticeably deserted. For drying yards it probably combines most of the virtues except that it makes a hot area near the house which quickly growing clover would avoid. During clover's off season a few light slatted walks under the drying lines, at least for apartment house yards, where there is heavy traffic, would suffice.

### *Grassed areas*

Lawns prove expensive to maintain, and tenants often persist in cutting corners and even making diagonal tracks. The manager of a project of twenty-five acres, including buildings, reported a landscape maintenance force of six men required to keep shrubs and lawns in shape during one summer. "Attempts to educate tenants to be more careful have been fruitless", in spite of the abundance of shrubbery and other landscaping "giving an impression more of luxury than of low-rent housing". Such indifference on the part of one of the lowest-income groups (62, 29 Apr. 1939) was doubtless nourished on the too great contrast between the luxurious beauty maintained by a salaried staff and the tenants' own exiguous existence. The grass lawn, requiring generations to make and daily care thereafter to maintain, is at best out of condition and out of use during many months each year in most parts of this country, and even meadow-type

land needs care especially on the borders. Ivy gives a year-round cover, easy to keep neat, decorative during a great part of the year. It is found in public parks that it discourages trampling and is therefore useful especially for borders, it flourishes even in narrow sunless city back yards with sour undernourished soil, ill drained and replenished chiefly with dust and cigarette stubs.

Harlem River Houses protect their lawns with a border of flat paving stones and Queensbridge follows a similar plan using brick instead of stone. The brick and stone are set loosely, and coarse grass grows in the joint, producing quite a handsome effect and requiring little care. A small elevation, even eight or ten inches above the sidewalks, also gives good protection to both lawns and low hedges, which otherwise suggest short cuts; and equally effective ought to be the little Lambert Plan sunken lawn at Princeton (72) surrounded with a low briar hedge. A measure of protection here lies probably also in the plan whereby tenant cooperation in gardening and minor repairs is rewarded by rent rebates.

Michigan Boulevard Garden Apartments also recompense tenant labor, hiring boys living in the project to do planting and watering, a course perhaps not possible in publicly subsidized projects. To the latter however is possible enlisting the whole neighborhood's interest and help. There is rarely enough space in any community for children's gardens under garden guild or school supervision; and the project setting aside space for them gets help with its maintenance as well as providing daily matter of interest to parents and others passing, and developing early in its young tenants the cooperative attack. The low fence need not be either expensive or unsightly. If a reasonable respect for other people's property develops, rabbit keeping may come next. It will probably so develop. South Jamaica Homes in New York found the merest gesture of a fence between allotments was enough, and even that was soon abandoned. The allotments were good to see recently: still in their first full season and producing well in spite of a record drought—with a waiting list for any possible vacant lot. In that project one of the high spots of the social season was the home grown vegetable lunch in honor of the N.Y.C.H.A.'s chairman. A badge

of enrollment sufficed at Mission Hill to keep a corps of young volunteers interested in seeing that the grounds were kept clean, while Old Harbor Village for its thirty-one acres—including buildings—as noted above, found that it could manage with one full time gardener. Little foot-high white picket fences to protect vulnerable margins and corners, planting, and so on, were the tenants' contribution to the embellishment of their housing.

#### *Sitting space*

Mothers complain that there is no adequate place to sit in cold weather while airing the baby. In one place I found a great congregation of them hugging a theatre wall just outside the development, because it was the only place in the neighborhood offering sunshine as well as shelter from the wind. As I recall it, the architect's preliminary study for the project included mention of just such provision for mothers within the project. Low masonry benches on platforms, designed on the principle of golf or shooting shelters, but without a roof, could offer a certain amount of shelter from the wind at all times, and in mild weather all four sides could be used. In cold weather cushions for seat and back could be brought in the baby-carriage.

Quiet sitting is about the only outdoor recreation possible in many cases for breadwinner and housekeeper alike, and the minimum of regimentation seems desirable. On one project sitting place reserved for adults is much appreciated. Zeal for distinction and order is considered overdone by

tenants of a medium-rent project who may not sit near their own two and three story apartments but must sit with their neighbors in the general sitting place in the center of their grounds. Contrariwise, the tenants' desire to sit and chat near their entrance door was met at Yonkers by construction of concrete slabs eight feet wide at each side of the entrance, and these little platforms provided with benches are reported to be in constant use. In visiting one or two projects the thought persisted that fathers and children might easily be induced to remove the candy wrappers and weed out the plantains, which together covered a great part of the "grassed" areas in return for, say, the right to sprawl together on those extensive areas on hot Sundays, instead of sitting on benches ranged along torrid walks.

#### *Waste disposal*

No satisfactory solution of waste disposal out of doors has been generally adopted. Huge trash baskets at the front door and all over the place mar one development. In several the system whereby tenants take the trash to trash compounds looks badly and attracts flies. Trash or garbage spilled when tenants empty containers into outdoor incinerators is swept up by the management but bad stains remain on the concrete platforms. Stanley S. Holmes Village has satisfactory ventilated trash houses for collecting material (which by Atlantic City ordinance must be left for removal by the municipality). These are provided with doors which the tenant closes after emptying the trash.

## THE COST OF HOUSING

Factors contributing to the present high cost of new housing have been well presented in numerous studies: expensive financing, small scale operation, traditional construction processes, wasteful overhead, politics, rackets, obsolete building codes and other aspects of "the law's delay", uneconomical merchandizing, land cost and land uses, taxes, the tyranny of organized labor, the architect's limitations. On most points agreement is fairly general as to the evils involved. There is also fairly substantial agreement as to the remedies for the "chaotic condition of the building industry" suggested

by architect, engineer, economist, realtor and other students of the American scene.

#### *The American family's income*

Other studies tell us that normally a family ought to spend not more than twice a year's income in buying or building its home, and not more than one fifth of its income for rent and utilities; that about a third of all American families have incomes of \$800 or less; one half \$1,150 or less, and two thirds less than \$1,800. That is to say, homes for the lowest third ought to cost rarely more than

\$1,600; for the five million families between that and the median not above \$2,300; for the five million between median and upper third something between \$2,300 and \$3,600: all well below the averages for U.S.H.A. simplified units: namely \$4,414 over-all; \$3,390 for dwelling facilities, and \$2,762 for construction alone.

#### *One fifth for housing?*

The assumption that in general a family's expenditure for rent and utilities ought to be about a fifth of its income is perhaps for the moment a useful starting point; and the aim ought to be to provide reasonable space, comfort, sanitation and amenity at that price.

Two points suggest themselves, however, in this connection. One is that decent housing is not available to the lower-income family at that price even in subsidized federal projects; the other that spending one fifth of one's income for shelter and convenience has apparently for a great number of people little appeal in competition with other good things.

Just how twenty per cent has come to be assumed to be a fair proportion for rental I do not know; but several studies of twenty to twenty-five years ago give a much lower figure. Average rents for American workers during the housing shortage at the end of the last war were 13.65% for the family with an income of \$900 to \$1,200, and 13.12% for the family with \$1,200 to \$1,500, which, with liberal allowance for the tenant-supplied light and heating of the period would bring the rent-with-utilities figure to little if anything above seventeen per cent (68). Whitten and Adams in 1931 cite similar figures; but for reasons not stated, assume that average to be too low (138).

None of the F.E.A.P.W. projects reported rented for 20%; some rented for 27% to 29%, only four of forty reported fell below 23%, all four in the South, and the average for the forty was 24.6% (124). These figures include utilities. U.S.H.A. has reached a much lower income group, averaging when last reported \$787 (125), as compared with \$1,245 for the families it took over previously from the F.E.A.P.W., but the rental of U.S.H.A.'s 22,807 units reported averaged practically 20% without utilities (19.87%).

True, today's dwelling is a more smoothly running machine than that of twenty years ago, with more convenience and better sanitation, and novelty, all of which bring higher prices. On the other hand, while other manufactured products as well as services have on the whole arrived at greater and more varied usefulness, ordinarily at lower cost, housing, while its price has increased has come to take a progressively smaller place in the day's life of even quite lower-income families, who need a variety of clothing unknown a generation ago—sports and "party" clothes as well as a greater selection of work clothes; wider recreational activities, camp, dancing, movies, excursions, athletics; special remedial and cosmetic aids, medical and surgical, far from free even in clinics, to enable the weaker to run the increasingly strenuous race for work; commercial provision of commodities and functions formerly provided at home, from being born, through laundering, preserving, sewing, dress-making, sick nursing, wooing and wedding, to the preliminaries to being buried. Education in domestic sciences and general electrification of the dwelling are bringing some of the more routine of those back into the home; but most of them are booked elsewhere for many years ahead.

#### *Housing patterns*

Meanwhile many a lowest and median income family is fairly well housed even if not according to modern standards of convenience, often without spending a fifth of its income for lodging and usually without immediate benefit of architectural advice. The patterns are well known:

1. A few new houses, sometimes individually built, sometimes bought from realty development companies, built with varying amounts of unskilled, skilled and union labor, and with a minimum of architectural advice.

2. The home constructed of used materials: salvaged lumber, piping, bath and kitchen fixtures, doors and windows, bought from wrecking companies. Often, but not always it is the rural one-family home. At least one federal project has used second-hand material. One local authority was induced to drain the land and give other services to a little colony of relief workers who had established themselves in houses constructed out of waste

material on suburban land they had bought. One city has used a variety of second hand material in a harmonious little development which stands to its sponsors for righteousness on esthetic as well as on shelter grounds now that the monotony of much new large-scale housing palls almost as much as did the drabness of the slum it has superseded; while housing's record to date for shelter and convenience at lowest cost was achieved by one city by a reversed process: new material, new processes, good organization, waste labor (unskilled-unemployed) and waste land (leased or bought for a nominal sum).

3. The used house, whether bought, traded or inherited, used unchanged, or modernized, with new or used material, fixtures, etc., with the aid of skilled or unskilled labor.

All tried practices these, promising to continue in about the present proportions with the trend for the immediate future toward a smaller percentage of new construction. For apart from the present emergency's shutting off much of the new material needed, there remains in urban dwellings alone most of the \$7,750 millions worth of rehabilitation business estimated by the *Building Reporter* as available in 1938, a great part of it apparently for new equipment and such slight changes in layout as the combination of buildings mainly sound structurally and provided with utilities and a public increasingly limited in spending power may suggest to the entrepreneur.

#### *Rehabilitation*

No outstandingly good fundamental modernization of commercial city apartments for low rental has emerged. Most of the properties, even when changed in little beyond providing modern equipment surface finish and fire retarding, have substituted for the low-income tenant of substandard days one with a medium or upper income. Restoration in units at least block-size is urged by the Citizens' Housing Council of New York (27); and possibly legislation such as the recent Illinois and New York urban redevelopment laws will, by simplifying assembly of adjoining land parcels, give impetus to this type of housing provision, estimated to prove even in large cities far above minimal accommodations at from \$300 to \$400 per room.

Outstandingly successful, on the other hand have been the restoration and re-equipment of some properties to accommodate the same type of tenant for which they were originally designed. Brooklawn's reclaiming of two thirds of the houses within its borders—erected near Camden, N. J. during the last war for shipbuilders' families, bought later by individuals, abandoned and dilapidated—was not only good municipal housekeeping, protecting the remaining third of the properties and producing not a little income: it also affords low-rental housing in a pleasant little town of curving tree-lined streets. Chicopee Falls Village, a Massachusetts mill town, after more than a century's continuous service, modernized its 818 rooms at a cost of \$190 a room for construction and continues to shelter rather graciously people, many of whom are proud to have been born there. At \$4 a room a month, exclusive of utilities, there is a surplus. Two others are Brooklyn's Tower and Homes and Riverside where thorough modernization (including re-planning for greater protection and amenity which incidentally produced several extra rentable rooms) with best materials and workmanship cost about \$600 a room, of which \$440 a room took care of refinishing, re-planning and re-equipping the dwelling.

Agreement on standards can with difficulty be achieved. Idealists who make no small plans, and want complete housing communities, frown on minor restoration schemes. At the other end of the scale are those two dozen-plus building officials who a few years ago reported for their respective communities "no blighted areas of any extent", including several—among them one from Boston—who reported no blighted areas or slums at all (132); and the civic minded group in Senator Wagner's own Yorkville who at the opening of the present rehabilitation movement awarded a prize for a bank-owned tenement block on a fair wide avenue, of which when I looked it up six years later, more than half of the units lacked bath tubs and individual toilets. One of the architects thinks the prize was awarded for the window boxes, long since gone.

#### *Financing new construction*

In new construction the need to keep down initial expense continues to add to the burden of operation and maintenance. Fireproof individual

homes are probably out of the question for some time in a country in which ninety-three per cent of all farm homes and eighty per cent of all homes outside of one or two cities are of frame construction. It is doubtful, however, whether semi-fireproof construction for a public development outside the city's fire-zone is a real economy; or management hanging of tenants' pictures over three score years, for lack of picture rails; or transferring to the lowest-income tenant provision of most of the lighting fixtures; or floors not soundproofed in medium and higher rental apartments—"although . . . as tenants become used to noises complaints cease" (125).

If operation and maintenance make a heavy demand on the small owners' housing dollar, financing makes one which also could be lessened by the initial design. One way is to design for partial construction; another is to lessen the equipment cost by building in all possible furniture.

Financing public housing over a sixty-year amortization period, even at the low interest rate possible for government projects, brings the cost to a figure which can be borne only because it is collected on a nation-wide basis. The small private owners' typical financing pattern at a higher interest rate and amortization over twenty-five years, bringing the cost of the venture to some seventy-five per cent more than the sum advanced, can also be at least endured. It may even be considered a good investment if the family incurring the cost continues a patterned course in the neighborhood of its choice, with custom, use and wont, association and sentiment to take the place eventually of novelty, adventure and the convenience of earlier days.

Relatively few families follow that course. Many, even without experiencing adverse fortune, would be better served, long before those twenty-five years are up and the house paid for, by smaller houses or apartments with opportunity for simpler or more modern housekeeping, less responsibility, perhaps a different neighborhood, and greater freedom of action. For many a family, far from settled or content in the communities of its first choice, and insecure in its economic life, a less perfect home and a smaller mortgage to be paid off in about half the time now usual would be of greater service.

Financing patterns have not been to any extent worked out for such families; nor are they welcome in most subdivisions. Isolated, therefore are the families of small material resource but fair creative imagination, who build their homes almost out of income. A good architectural plan and specifications, and an F.H.A.-insured loan for the owner who undertakes to carry out his approved enlargements in an approved order, would enable the more imaginative family to start with a living room with bunks or couches, the beginnings of a kitchen and a partially finished bathroom, to which nucleus, further equipment, needed rooms, and other improvements can be added in the order dictated by necessity and income, either by the original investor or by his successor.

On the simplest scale this plan is realized by the Finnish small farmer who first builds the hut, later to be the family steam-bath, and lives in that with his bride during the summer while he builds his house, finishing that in turn after he has moved in. Akin is the system by which the Hoess Brothers of Hammond, Indiana, advance on easy terms sums from \$1,600 to \$3,000 for an acre and a house for which the shell, wiring, and installation of fixtures needing skilled labor are in charge of a local builder, while landscaping, painting and accessories are left for the owner to finish according to his need, his taste, and his ability to pay. The acre provides food and keeps the family busy at home. A more strenuous but cheaper plan enables Stockholm artisans to acquire at phenomenally low rates dwellings erected largely by the future owner at weekends and on long summer evenings under skilled direction from the municipality which finances the project (30).

#### *Prefabrication's promise*

Prefabrication's accomplishment in cost reduction still lags far behind its promise; except in large scale operations. The obstacles in small scale work remain, after years of promotion: poor merchandizing; uneven distribution; difficulty of transportation; labor's objections, in some neighborhoods so effective as to be prohibitive; unfamiliarity of local dealers with the product or the process; cost; unsuitability of certain products, essentially by-products of other industries; unreliability of makers

to keep to schedules and to complete orders; difficulty of marrying a standardized plan to an unstandardized site.

For large scale operations with adequate administrative machinery the story is different, and possibly "a devastating and rapid reduction" in building cost is on its way; possibly the two efforts to which one writer refers "the details of which have been most carefully kept secret" (16) are different from those severally cherished by most interested investigators living week by week in tense anticipation of one or another epoch-making development, details of which have been confidentially described by their several sponsors for years.

One or more of these difficulties is overcome by one or another sponsor. The Gunnison low-cost housing in which financing, construction and even complete furnishing, if desired, are in the hands of one firm is limited only by the fact that not all regions have a Gunnison overseer. The Homasote Company's Precision-Built house, on the other hand, is one of a type easily constructed in any place not too remote from a mill with a jig-table for cutting and assembling large sections, thus permitting local

contractors to handle the job; and this house has been built from coast to coast.

To judge by Fort Wayne and Lebanon the solution for the small owner with some little mechanical skill may prove to be a packaged house with clear directions on the label, costing perhaps a thousand dollars for materials in addition to a few—a very few—days' work on the part of the owner with a helper or two. For the John B. Pierce Foundation demonstration house at Lebanon, including most essential furniture built in, was assembled by four men who had never before erected such a house; and the Foundation estimates that four days would suffice for the work, although the experimental house took longer (107). That house also cost \$2,000, while the Foundation's estimate is that subsequent units would cost about \$1,700. Neither this nor the Foundation's second experimental house conflicts with current craft organizations. Fort Wayne's house, mentioned above, cost \$900 for material, and it is estimated by the Authority that if W.P.A. labor had not been available the labor cost would have been about \$800 for labor instead of the \$400 which unskilled relief labor did cost (42, 71).

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## Massachusetts Registration of Architects

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**A**FTER repeated attempts to convince the Legislature of Massachusetts that some sort of Registration of Architects was necessary, such an Act has finally become law, having been passed by the House and Senate, signed by Governor Saltonstall on October 24, 1941 and becomes effective ninety days thereafter.

In previous attempts to obtain registration, bills sponsored and supported by the Boston Society of Architects were unofficially opposed by a number of prominent architects in Boston, and had little active support from architects outside of the Metropolitan Area.

This year the newly formed Massachusetts State Association of Architects made it their principal business to work for a Registration Law, and active support was obtained throughout the State. It is interesting to note that this year the architects had the active support of the Building Trades Council of the American Federation of Labor.

The bill as filed was entirely re-written and thereafter approved without change by the Committee on State Administration. It was passed by the House without material change, but had many of its "teeth" removed by the Senate. While we did not approve of these changes, it was felt expedient not to carry opposition any further, and worked to get concurrence in the House.

The Act, as signed by the Governor, retains all the administrative requirements as desired by the architects, but for the present, registration is not mandatory for performing the functions of an architect. It sets up a Board of Registration composed of five (5) architects appointed by the Governor.

The appointees must be residents of Massachusetts and have been practicing architects for at least ten (10) years. Except for the original appointments, there will be one architect appointed each year for a five year term, and after the first year each appointee shall also be a registered architect in the State. The Board is empowered to make its own rules and regulations and to set up its own administrative machinery.

The Law provides for a registration fee of twenty-five dollars (\$25.00) and a renewal fee of ten dollars (\$10.00). Until January 1, 1943, architects may register under three so-called "Grandfather" clauses. (1.) In practice as a principal for at least five years. (2.) Eight years experience in the office of practicing architects. (3.) A graduate of a recognized architectural school, with three years experience in architectural offices. After January 1, 1943, all applicants will be subject to examination in such subjects as the Board may determine.

While the law as passed is not all that might be desired, the administrative set-up is such that the state Board, properly supported by the Society and the State Association, can hope to obtain, in the not too distant future, the added requirements to make this a model registration law.

The State Association and the Society have collaborated in sending to the Governor a list of architects who we know are qualified and willing to serve on the Board. It is hoped that the Governor will make his appointments from this list.

This year there also became law a bill for the permissive registration of professional engineers, sponsored by the affiliated engineering societies.