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House Planning

By

WILLIAM T. JONES, B. Arch.

Industrial Designer

6442A-1

Part 1

Edition 2

International Correspondence Schools, Scranton, Pennsylvania

International Correspondence Schools, Canadian Ltd., Montreal, Canada

Architecture home study course

HOUSE PLANNING

V. 3 PART 1

The first thing to do in planning a house is to know the wants of the person who is to occupy it; the next, to know the situation of the ground it is to cover; then to take into consideration the number, size, and height of the rooms wanted; also proper and convenient stair entries, passages . . . the eye ought to see, at the same time, every part of the building, and be sure that no one part of it interferes with another; also to see that the rooms are properly lighted . . . Strength, convenience, and beauty are the principal things to be attended to. (From a book on architecture by Benjamin and Raymond published in 1806.)

By

WILLIAM T. JONES, B. Arch.

Industrial Designer

Serial 6442A-1

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International Correspondence Schools,
Scranton, Pennsylvania
International Correspondence Schools Canadian, Ltd.
Montreal, Canada

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What This Text Covers . . .

1. **PRELIMINARY CONSIDERATIONS** ----- Pages 1 to 8
Here finances and budgets are considered and different types of mortgages are discussed. The importance of writing out your program is stressed.
2. **THE SITE** ----- Pages 9 to 20
Many factors enter into the selection of a site. Topography, ground water, nature of the ground, view, surroundings, zones, utilities, and services are discussed.
3. **THE LIVING AREA** ----- Pages 21 to 44
The requirements of the vestibule, living room, den, dining room, powder room, and recreation room are given in this section. The importance of keeping furniture sizes in mind is emphasized.
4. **THE SLEEPING AREA** Pages 45 to 55
Various arrangements of bedrooms and bathrooms are presented here. The multiple-occupancy bathroom and its advantages are explained. A discussion of storage and furniture is included.
5. **THE WORK AND SERVICE AREA** Pages 56 to 79
Sequences for the arrangement of kitchen and laundry equipment are given. Also, layouts for laundries, garages, closets, storage areas, and stairs are provided.
6. **OUTDOOR AREAS** Pages 80 to 83
The factors that enter into the design of outdoor areas are explained. The outdoor areas should supplement the activities of the house.

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House Planning

Preliminary Considerations

Objectives in House Planning

1. Throughout the ages, houses have been designed to provide shelter from the elements, protection from animals and robbers, and privacy from prying eyes. To provide all this, houses must have some degree of strength. In addition, in each age house owners have sought some measure of material comfort and beauty.

Comfort today has a different meaning than it did in grandfather's time. Comfort today means automatic heating, automatic kitchen and laundry equipment, television, and many other conveniences. The modern house offers a degree of comfort never before attained.

Closely related to comfort is beauty. People react to beauty in their environment and desire it. The quest for beauty is one of the basic urges of mankind.

For you to obtain strength, comfort, and beauty in a house, and to obtain them economically and efficiently, you must use great care and skill in planning.

Purpose of This Text

2. A knowledge of house planning is necessary to the architect, draftsman, interior decorator, builder and realtor. Many other persons besides have some interest in house planning. In fact, most of us undertake the arrangement of rooms at one time or another.

The purpose of this text series is to make you familiar with the basic elements of a house and the general principles of house planning, and so help you to prepare adequate plans and to better evaluate the plans of others. Throughout the text it is assumed that you are going to build a house and that you are going to prepare the plans for this house yourself.

Part 1 of this text series is devoted to a consideration of such factors as finances and programs, the site of the house, and the requirements of the main parts of the house—the work area, the living area, and the sleeping area. Part 2 deals with various planning problems and different types of plans. The fundamentals of sound and economical construction, and the principles that govern architectural design, are presented in other ICS texts.

Finances

3. Before you start to plan a house, you should know something about the finances that are a necessary part of this undertaking. In fact, it is impossible to plan a house intelligently without some idea as to how much money can be spent and what this money is to cover. In one case it may cover both land and house; in another case it may cover just the house.

A rule of thumb, often quoted, to determine the amount that can be reasonably spent is this: You can afford to spend for house and lot two and one-half times your yearly gross income. Beware of this rule. Actually no exact formula can be established, due to such modifying factors as stability of employment, number of children, and amount of savings.

You may have enough savings to pay for a house in a lump sum. In this case, you are simply exchanging one form of wealth for another. But most people make a down payment and borrow the rest. The amount of the down payment plus the amount that can be safely borrowed gives the total amount that can be spent for a house. This represents the investment

not only of your present savings, but also of what you expect to save over a period of years.

Home ownership can be regarded as a savings investment that has some costs attached to it. It can be a happy and profitable venture or it can be a disheartening financial burden, depending upon how accurately you appraise your ability to pay. In making your appraisal, it is better to be conservative than optimistic, because a house is consumed by living in it, and costs of maintenance must therefore figure in your appraisal.

The fact that a house wears out is often disregarded. Over the first ten years you should allow at least 1 per cent yearly of the cost for maintenance; after ten years you should allow 2 per cent yearly. This is a considerable sum; unfortunately, it is not a stable percentage that can be allowed for each year. A new roof may easily run 6 per cent of the total cost of any house and cannot be an unexpected expense after fifteen years. So it is best to be conservative in your appraisal.

Being conservative also means looking for the best possible bargain on the money you are borrowing and thoroughly studying the various borrowing possibilities. Remember that some ways of borrowing money are cheaper than others.

Mortgages

4. The most common way to finance a house is for the owner to give a mortgage. A mortgage is a promise to pay a debt, giving land and house as security for the debt. If the owner fails to make payment on or before a specified date, his right to redeem the property is lost and ownership passes to the person or organization that made the loan and took the mortgage in exchange. In such a case, the court will require that the property be put up for public sale so that the first owner will receive any surplus over the amount of the mortgage. Such action is the legal action of foreclosure and sale.

Since a mortgage may run for many years, the time ele-

ment is important. It would be obviously unwise for a wage earner fifty years old to embark upon a twenty-year mortgage. The ability to pay could not be expected to continue for that length of time. Likewise, future commitments such as the college education of children may affect the length of time that a mortgage can run without undue hardship.

The amount of money loaned is referred to as the principal of the mortgage. The interest is the sum charged for the use of this money and is generally expressed as a percentage per year. For example, consider a mortgage loan of \$1,000 at 5 per cent interest per year. This means that for the use of the principal, in this case \$1,000, you must pay every year 5 per cent of the principal, or \$50, until the principal has been repaid.

To amortize a mortgage you must reduce the amount of the principal by repaying part of it. Since the interest you pay is a percentage of the principal, each time the principal amount is reduced, the amount of interest is also reduced.

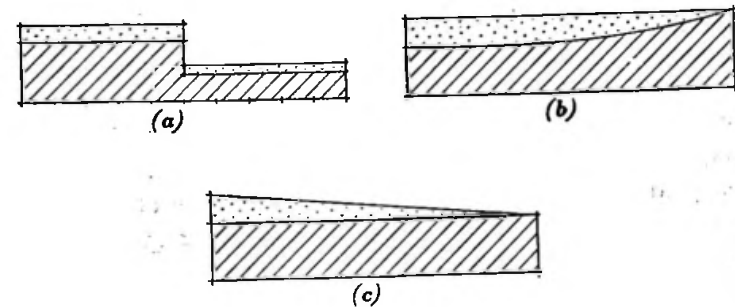
Mortgages are generally of two types, straight and amortized. Each of the two types serves a specific need for a particular financial situation.

Straight Mortgage

5. A straight mortgage is one in which you promise to pay the full amount of the mortgage on a certain date with no obligation to reduce the principal before that time. Interest is paid at regular intervals at times specified in the mortgage contract. This type of mortgage can usually be obtained only from private individuals.

Mortgages of this type are generally written for five-year periods with an understanding of renewal contingent upon the amount the principal is reduced. However, the lender is not obligated either to renew the mortgage or to renew at the same rate of interest.

Occasionally, the lender, instead of renewing the contract,



(a) Straight mortgage plan
(b) Fixed-monthly-payment plan
(c) Decreasing-monthly-payment plan

FIG. 1. DIAGRAMS OF SEVERAL TYPES OF MORTGAGE PLANS

allows it to continue without naming a new due date and simply collects the interest. The absence of a due date makes the mortgage payable at any time—tomorrow, even. This is a precarious situation for the owner. A word of warning: *Any agreements that you make regarding money should always be in writing.*

A diagrammatic picture of a straight mortgage plan is shown in Fig. 1(a). The mortgage is for \$6,000 to be paid in ten years; the interest rate is 5 per cent. In this case, the principal, represented by the hatched portions, has arbitrarily been reduced to \$3,000 at the end of five years. The interest, represented by the dotted portions, at the end of ten years totals \$2,250.

Amortized Mortgages

6. An amortized mortgage, which is the type offered by most banks, is one in which the value of the principal is regularly reduced by monthly, quarterly, or semiannual payments. In addition regular interest payments are made. Frequently, the bank will require that charges be included for taxes and insurance.

This type of mortgage is preferred by most people, because its terms are definite and fixed in advance. Furthermore,

people have become used to monthly payments through the payment of rent and time purchases of cars.

Mortgages may be reduced in fixed monthly payments or decreasing monthly payments. The fixed-monthly-payment plan requires the same total amount for principal and interest to be paid each month. For example, a mortgage of \$6,000 at 5 per cent to be paid off in ten years would require you to make fixed monthly payments of \$63.64. At the end of ten years, you would have made 120 payments of \$63.64, or a total of \$7,636.80. In other words, you would have paid \$1,636.80 in interest. A diagram of this plan of payment is shown in Fig. 1(b).

7. The decreasing-monthly-payment plan requires you to make the same payment on the principal each month, together with the interest payment on the balance of the principal. The interest payment becomes less with each monthly payment.

To pay off the same \$6,000 mortgage at 5 per cent in ten years, each monthly payment to pay off the principal must be \$50. To this must be added the interest, which for the first payment would be \$25, making the total for the first payment \$75. The last payment would again be \$50 plus the interest, in this case \$0.20, or a total of \$50.20. A diagram of this method of payment is shown in Fig. 1(c). At the end of ten years you would have paid \$1,511.80 in interest.

In other words, the third method costs the least in interest. However, this is only because the principal is paid off more rapidly. For example, if the straight mortgage illustrated in (a) had been reduced at 2½-year intervals instead of at 5-year intervals, the interest charges for the ten years would be reduced from \$2,250 to \$1,875. Conversely, if the mortgage had been allowed to run the full ten years without any reduction in principal, the interest would amount to \$3,000.

Budget for Building

8. To get detailed information on mortgages, it will be

well for you to make a trip to the bank to find out on exactly what terms you can borrow money.

Your first trip to the bank will probably be just an exploratory visit. But before you go to the bank you will need some idea of what houses cost. Since you do not yet have plans and specifications for your house, your ideas about the house may be rather vague. As a result, you will be unable to provide the bank with an exact estimate of cost. You can, however, provide an approximate estimate based on local building prices. If, for instance, you wish to build an 8-room house and the houses being built in your locality are averaging \$3,000 per room, you should be prepared to spend \$24,000. This amount, of course, may vary considerably either way, depending on the size of the rooms, the type of construction, and the kind of finish. However, this amount will probably be close enough for you to use in your preliminary discussion with the officers of the bank as to the amount that you need to borrow, the mortgage that you must give, and the terms of repayment.

Your plan of repayment must include not only reduction of the principal but also payment of interest on the money borrowed. In budgeting your income for housing, you should consider not only principal and interest but also taxes, insurance, and upkeep. The total amount may be considered as rent that you will be required to pay on your house. Another rule of thumb is that this amount should not exceed one fourth of your income.

To determine how much of your income is available for housing, sit down and make up a careful budget. Then you will know what part of your income you can set aside for house and site.

Program for Living

9. The way you live is different from the ways people lived in earlier times. Your needs as an individual are different

from the needs of your father or your grandfather. And while you may consider yourself an average individual, your needs are different from those of your neighbor. Your house, to be successful, must satisfy your needs as an individual, and the needs of your family.

What is your program for living? Do you entertain a lot? Work in the garden? Play the piano? Do you have an extensive library? Do you have any hobbies? Hobbies were once an indulgence of the well-to-do. But today it is a rare family in which there is not at least one enthusiastic hobbyist. The hobby may be stamp collecting, painting, woodworking, ceramics, photography, music, plant raising. Many hobbies require special equipment; all require space. Some hobbies may be accommodated in the garage, the recreation room, the bedroom. Whatever the hobby, be sure to include it in your list.

When you're writing your program, keep in mind that your family circumstances will probably change and that your family will change in size. Your interests will change as you become older and as you attain financial security. Your program should allow for such changes.

After you have your program established in at least a general way, you may select your site.

Summary

10. The house as the background for the home requires strength, comfort, and beauty.

To obtain strength, comfort, and beauty in a house and to obtain them economically and efficiently, you need a knowledge of house planning.

Before starting to plan a house you should consider such items as finances, mortgages, and your program for living. After you have your program established in a general way, you may select your site.

The Site

Selection of Site

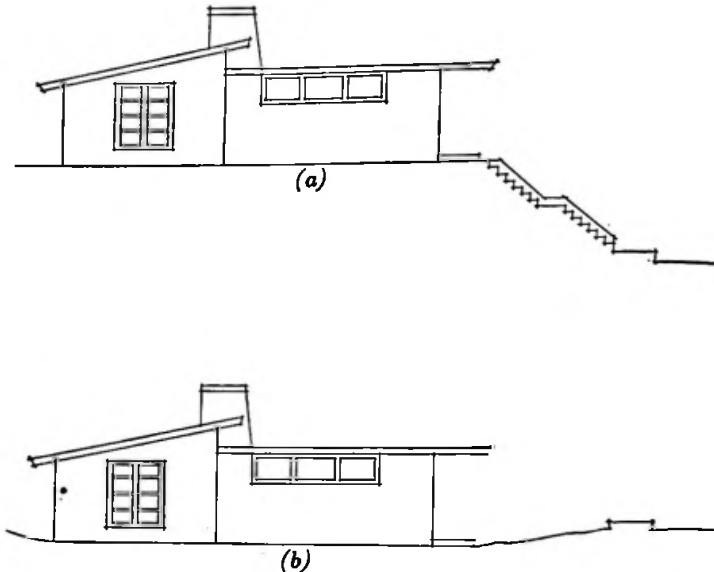
11. Too often the plans for a house are started before the site is selected. This procedure can have disastrous consequences. What may be an excellent plan for one site may be extremely awkward for another. It is rarely possible to place a stereotyped stock plan on any lot with good results. That is why plan-book houses often cost more to build than houses that have been designed to suit their sites. The selection of the site on which you are going to build involves many factors.

Size of Lot

12. Fifty years ago, the city house was either huddled between its neighbors on a 20- or 25-ft (foot) lot, often with a common wall in between, or set mansionlike on extensive grounds. The mansion often took up half a city block and called for a full-time gardener. Today both of these types are extreme. The scarcity of servants and high taxes have helped to eliminate the large estates. And the owner of a small house wants a larger lot. He wants a yard with play areas for his children; he wants the effect of ground and shrubbery; he wants the clean smell that comes from the earth.

It is not generally realized that large cities retain unpleasant odors, such as gas fumes, because the ground for miles around is completely covered with either asphalt or concrete. The earth absorbs odors, but it cannot do so when covered. The earth also absorbs heat more slowly than either concrete or asphalt does. The ground on a blistering hot day will be cool in comparison to the sidewalk. Because of this, weather that may be unendurable in a cosmopolitan area may be merely uncomfortable in the suburbs.

While some ground around your house is desirable, too much land is expensive and time consuming to keep up. Grass, shrubbery, and trees require constant cutting, clipping, and



(a) House above street level (b) House below street level

FIG. 2. HOUSE AND TOPOGRAPHY OF SITE

pruning. Still a plot that is too small can place great restrictions on the house plan. A desirable plot size is 80' x 100' or 100' x 150'. A one-story house, of course, requires a larger lot than a two-story house with the same floor area.

Topography

13. Surface characteristics—such as the slope of the ground, streams, ravines, swamps, gullies, trees, and roads—are all part of the topography of the site. The topography of the land will have great bearing on the plan as well as on the completed cost of the house. A house on a lot high above the street, as shown in Fig. 2(a), necessitates a long flight of steps. In northern climates such steps are unpleasant, slippery, and dangerous in winter. The building of a retaining wall may be required to prevent rain from washing away the front terrace. If the garage is in the basement, your driveway may present a major excavating job and require retaining walls.

Equally as bad is the condition shown in (b), where the house is in a lowland. When this condition exists, all the water from thaws or rain will gravitate toward the house. Waterproofing and drainage may then present problems that require the expenditure of large sums of money.

Generally, ground that slopes sharply either up or down from the street, as shown in Fig. 2, (a) and (b), may present difficulties in the development of an efficient working plan, although satisfactory layouts have been devised for ground of this type. As a rule, however, level or slightly sloping ground presents the fewest problems and can be treated successfully for the least amount of money.

Nature of Ground

14. The nature of the ground is important. If the ground is rocky, with outcroppings of ledge, it will be necessary to blast for foundations. This is not only expensive, but the surrounding soil is often not sufficient for a lawn or garden. While topsoil can be imported, it is expensive.

On the other hand, ground that has been filled may require that the foundations be extended excessively to firm soil or rock.

You must add all such expenditures to the price of the land when comparing it with other lots not requiring these expenditures.

Ground Water

15. Ground water is water under the surface of the ground. The ground water may be only a few feet below the surface of the ground and may ooze to the surface in the form of a spring, or it may be at a depth of a hundred feet.

The ground water may not always remain at the same level. In rainy seasons it may rise nearer to the surface, while during a dry season there may be no evidence of it at all. Consequently, it is desirable to know the highest level of ground water and plan accordingly. Basement floors that are at least

three feet above the highest level of ground water are generally considered safe against its entry without the installation of waterproofing.

Where rock is near the surface, ground water often is a problem. Surface water percolates through the topsoil and clay to the level of the rock below, and then flows along the surface of the rock. If the basement floor is near the level of the rock, the water during rainy seasons may enter the basement to a depth of several feet, more than enough to cause damage.

Where the building is on a sloping site, it is sometimes possible for you to install a gravity drainage system with underfloor drains which will prevent the water from entering the basement. If the building is on a level site, it may be necessary to drain the water to a suitable sump pit and pump that will take the water away from the basement.

For some localities, a drainage system may not be sufficient, and it may be necessary to waterproof the basement.

16. Basements can be waterproofed, but a satisfactory waterproofing job is more expensive than the average home warrants. Do not confuse dampproofing (usually a paint coating of the walls) with membrane waterproofing.

If ground water presents a hazard on the site you have purchased and upon which you wish to build, it is preferable to design the house without a basement or so that the basement floor will be at least three feet above the highest level of the ground water.

Before purchasing a site, you should investigate as to the presence of ground water; you should also find out whether water has seeped into basements of neighboring homes. A wet basement is a difficult and costly item to correct after a house is built. Any conditions that would cause water to enter the basement should preferably be anticipated before construction.

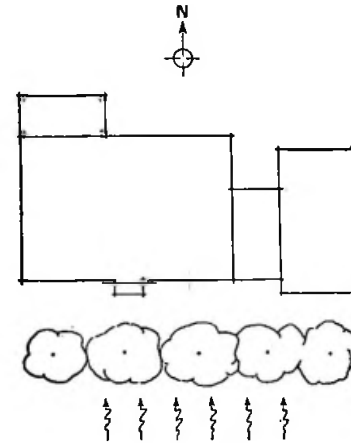


FIG. 3. TREES AS SCREEN AGAINST SUN

Trees

17. Strangely, many suburban housing developments are begun by the indiscriminate leveling of all trees in the area. Houses are then erected, and trees are eventually planted by the owners.

Aside from their decorative value, well-placed trees have other values. Shade trees on the southern exposure will shade the house in summer, helping to keep it cool. The same trees in winter, bare of leaves, will allow the sun's rays to warm the house.

In most areas the majority of storms come from one particular point of the compass. Two or three trees between the house and that point will serve as a protective barrier and spare the house the brunt of many storms that might otherwise damage it.

These values of trees are illustrated in Figs. 3 and 4. In Fig. 3 the trees are shown located on the south side of the house to provide shade. In Fig. 4 the trees are shown located in the northeast to serve as a protective barrier against the winds.

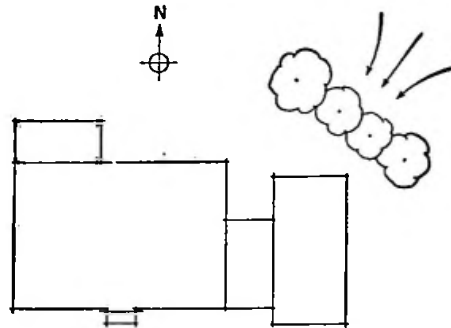


FIG. 4. TREES AS SCREEN AGAINST WINDS

Because of damage likely to sewers, many cities restrict the planting of trees to a few types, and regulate their placement in regard to the street. Information on this subject can be obtained from the city park commission.

When selecting your site, keep in mind that it takes years to grow a tree. Rather than cut down a fine tree, it may be advisable to modify the plans for your house.

View

18. The development of the modern heating plant with automatic controls has made possible the use of large glass areas. This in turn has made the view from any building lot a major consideration. For this reason, you should carefully investigate the view from the various points of the compass, and if possible you should check the views against the seasons. For example, the lake that is visible in the winter months may be completely screened from view by the summer foliage of your neighbor's trees and bushes.

Surroundings

19. In considering the character of a building lot, you should also consider the character of the surrounding area. The lot itself may be desirable, but a swamp nearby where mosquitoes breed is a health hazard. Or a chemical factory a considerable distance away from the lot may become a

nuisance if the prevailing breezes blow from the factory toward the lot.

Also, the individual tastes of you and your family must be considered.

You may be disturbed by the sound of distant railway trains, of crickets chirping, while heavy trucks roaring by may lull you to sleep. These are personal idiosyncrasies, but they must be weighed and considered.

In considering the character of the surrounding structures, keep in mind that, as a rule, it is not wise to build among substandard houses or where the majority of the houses are rented. Nor is it advisable to build a \$50,000 home in a \$15,000 area or vice versa, or to build a house of extreme contemporary design among houses of traditional styles. In the country it is inadvisable to build too close to superhighways or railways.

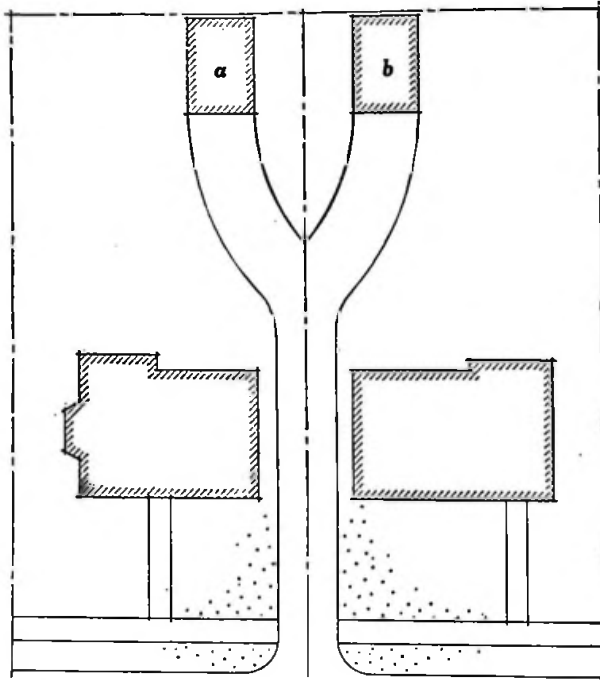
In many areas you will find zoning laws or restrictions. These should be investigated.

Zones, Restrictions, and Easements

20. Zoning laws are the legal rules and regulations that govern the type of building that can be erected in a specific area or zone. Communities generally establish zoning laws to stabilize real estate values and to protect the homeowner against drastic changes in the immediate neighborhood. Without zoning restrictions, a fine residence could shortly find itself alongside a slaughterhouse or a tannery. This would naturally lessen the value of the residence.

The term "residential zone" may mean that only single or semidetached houses may be erected. But the term may also permit the building of flats, apartment houses, and apartment hotels. Building any of these may cheapen and lower the value of the area. Obviously, a thorough investigation of the zoning requirements is necessary.

Generally speaking, zoning is desirable, and unless absolute



a, b, garages

FIG. 5. GARAGES WITH COMMON DRIVEWAY

control of the surrounding ground is assured, it is unwise for you to build on unzoned land.

In the absence of zoning regulations, property owners may agree among themselves to certain restrictions that are to their common interest. The agreement may be short, simply "forbidding the erection of any commercial building, or the conversion thereto," or it may be a lengthy stipulation regarding size, style, and price of houses built on this land.

Such agreements are termed covenants and are incorporated in the deeds, becoming deed restrictions.

21. Occasionally, property owners have a right to use without payment land owned by another person, as in Fig. 5. The houses shown were built before car ownership became

so common. When the time came to build garages, neither owner had sufficient land for a driveway. They approached the problem as reasonable people, with each owner installing half a driveway until past the houses and then continuing a full driveway to the garages *a* and *b*. While not incorporated in the deed—in fact with no written agreement—this arrangement nonetheless constitutes an easement which can only be abrogated by mutual consent.

Owner A may become unfriendly toward owner B; he may even sell his own car and tear down his garage. But owner B can still continue to use the driveway. Owner B may sell to owner C. The new owner when he buys the property also buys the easement.

Zoning requirements, deed restrictions, covenants, and easements should all be investigated before you buy your lot.

Ordinances

22. While you are finding out about zoning laws, you might well investigate the local ordinances or building codes as they affect houses.

Many cities and towns have building codes which must be rigidly adhered to. Such codes consist of laws that have been passed by the city or township and that govern building for that locality. A code may cover any and all aspects of building, or it may be relatively simple. A code may control the aesthetic features of a building as well as the mechanical ones.

Building codes are generally restrictive in nature. While good in themselves, they should be studied carefully before the lot is purchased, since they may make the lot valueless as far as the would-be owner is concerned.

For example, an ordinance may require that the buildings in a certain district be of fireproof construction. Fireproof construction might make the cost of a house located in this area prohibitive. Another ordinance may require a certain

number of feet from the property line to the building. If the lot is narrow, there may be too little ground left to build the type of home desired.

If you are considering a lot in a long-built-up residential area, you should carefully investigate the reasons why the lot has been bypassed. Often the changing of ordinances or the adoption of a building code has placed so many restrictions on a piece of land as to render building on it impracticable.

Utilities and Services

23. The utilities and services that are available with a site can easily be the determining factors as to the desirability of that site. Before buying, you should ask yourself these questions:

Are gas and electricity available? Are the minimum charges large, regardless of the amounts used? Is the electrical service sufficient for the area? Is it constant without breakdowns?

Is water service available? What is the cost of piping water to the house? What are the rates? If there is no local water service, what will be the cost of drilling a well?

Will telephone service be available? What is the rate charge for extensions? Will most of the necessary calls be within the area or will they be extra toll charges? Will the line be a multiple party line?

Will fire and police protection and garbage and waste removal be provided by the local authority? Or is garbage and waste removal an extra service handled by a private concern? Is it something the homeowner must take care of himself?

Is mail delivered, or must it be called for at the nearest post office? Are the streets paved? Are the streets swept and washed? Is snow removed by the local authorities?

Is there a sewerage system in the streets or must a septic tank be installed on the property? Septic tanks and seepage beds require space.

All these questions must be considered. The answers may

involve a yearly expense that transforms what at first seemed a low-cost site to one excessively expensive.

Titles

24. Most land has been bought and sold a number of times. The first owner may have received acreage from the government by gift or purchase. Other owners inherit or buy the land from the original owners. These transfers continue, and among them there may be some irregularity that affects the title to the property.

Obviously, before a man can sell you something he must first own it himself. Thus if, after you have bought and paid for something, it is discovered that the seller did not really own it when he sold it to you, you no more own it than he did and the real owner can reclaim it. In other words, you do not have good title.

Consequently, a title search by a competent lawyer should always be performed before any purchase is made, and your purchase should be contingent upon the furnishing of a clear title. Fortunately, there are companies called title guarantee companies, which search titles and, as part of their fee, insure the buyer against loss from faulty title.

Survey

25. After you have purchased your lot you will need a survey.

A survey is a surveyor's drawing showing the plan of a piece of land and giving exactly its dimensions, its boundaries in relation to the street and adjoining properties, its relation to the points of the compass, the position of any large trees, the various levels of the land, and the location of such existing utilities as sewers, water mains, and gas lines.

A licensed land surveyor always signs his work and his plan is accepted in court as correct. He charges a small fee for checking the deed, running the survey, and drawing the plan. The survey should be considered a *must*. Occasionally, for

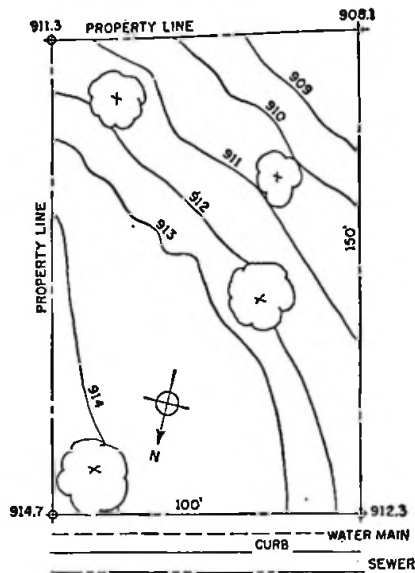


FIG. 6. TYPICAL SURVEY

lack of a survey, buildings have been built upon the wrong site. A typical survey for a building lot is shown in Fig. 6. The arrow points north.

In Fig. 6 the irregular numbered lines crossing the plot are called contour lines. All the points on each line are at the same level, as they are a fixed distance above a definite point taken as a standard, or datum. The usual datum is sea level, which is the datum shown in this particular survey. The southwest corner of the lot shows the figure 908.1, which means that this corner is 908.1' above sea level. The southeast corner is 911.3' above sea level, which means that the southern boundary of the lot rises 3.2' in 100' from west to east. When the relation to sea level is unknown, the surveyor may set certain fixed points as datum points and measure all levels in respect to them.

26. It is an advantage to have the survey show enough of the surrounding terrain to predict the natural flow of drain-

age. The drainage from adjoining areas should be carefully checked before the house is located. If possible, the house should be so located that the grades are away from it.

You can obtain considerable information from the simple survey shown in Fig. 6. The survey shows that the lot is 100' x 150', that the ground slopes gently from the lowest corner to the highest, that the entire rise from southwest to northeast is 6.6', and that the north half is comparatively flat. There are four trees worthy of note. The sewer line is shown, the water main, and the curb. All this information is important in preparing the plans for a house to be built on this site.

Summary

27. You should select your site before you start the plans for your house. The selection of your site deserves careful consideration. Some of the factors that you should consider are size and topography of lot, trees, utilities, surroundings, building codes, gas and electric service, mail delivery, garbage removal, fire and police protection, drainage, kind of roads, convenience to schools, churches, amusements, and shopping centers.

After you have selected a site and have your survey, you should again go over your program for living. You should then consider the parts of your house in detail.

The Living Area

Parts of House

28. The essential areas of a house are the living area, the work area, and the sleeping area. These areas may be combined in many different ways. The frontier cabin combined all of these areas in one room. The early American farmhouse that combined living, dining, and cooking facilities in one

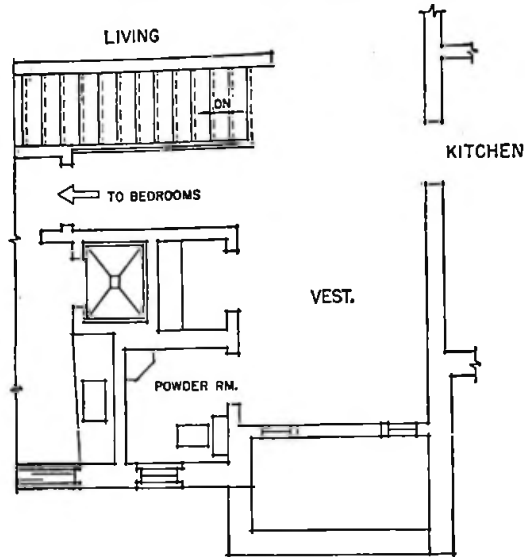


FIG. 7. STAIRS FROM VESTIBULE TO BASEMENT RECREATION ROOM

large room with the sleeping area either in the loft or in an adjoining room was a big step forward.

As houses became more pretentious, a separate room was often provided for each purpose. At the beginning of the century the large house had a living room, a music room, a dining room, a kitchen, a sewing room, and bedrooms. Today's high costs often do not permit such a lavish use of space. As a result, in today's house, space is often designed to accommodate more than one activity. Design is concerned less with rooms and partitions and more with the use of space.

Your program for living will determine the requirements for the space in your sleeping, working, and living areas.

Requirements of Living Area

29. The simplest living area may contain only a living room. The more complex living area may include an entrance vestibule, a living room, a dining room, a recreation room, a

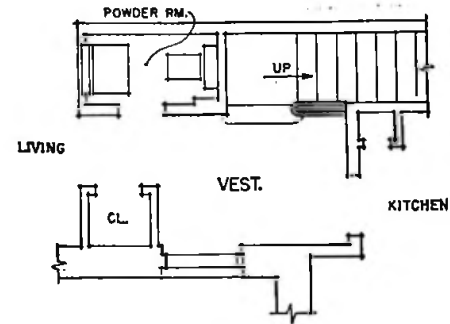


FIG. 8. VESTIBULE SERVING LIVING, SLEEPING, AND WORK AREAS

den, a coat closet, and a powder room. When any of these rooms are on different levels, the living area includes the stairs from one level to another. It should be possible to go from one part of the living area to another without going through the work area or the sleeping area. For instance, if the recreation room is in the basement, you should be able to reach it by a stairs from the front vestibule or living room. Such a stairs, leading from the front vestibule to the recreation room in the basement, is shown in Fig. 7.

Privacy is an essential requirement of the living area. This means not only privacy from prying eyes outside the house, but also separation from other activities in the house. It should be possible to receive and entertain in the living area without hearing disturbing noises from the work areas or running water from the bathrooms, and without smelling odors from the kitchen. Conversely, entertaining in the living area should not interfere with the normal functioning of other areas.

While privacy is essential, so also is spaciousness. Economical planning may be necessary, but a sense of spaciousness can still be obtained by imaginative planning.

Entrance Vestibule

30. The entrance vestibule generally serves the living room directly. Sometimes the vestibule commands the entrance to

the living area, the work area, and the sleeping area. Such a vestibule is shown in Figs. 7 and 8.

When possible, the entrance vestibule should include a clothes closet for hats, topcoats, raincoats, umbrellas, and overshoes. If made large enough, such a closet provides a handy storage space for spare card tables and for such special equipment as screens for motion pictures.

The entrance vestibule should be no bigger than necessary. But at the same time, it should be big enough to fulfill its purpose. In the quest for economy, however, entrance halls and entrance closets are sometimes made too small with awkward results. Some entrance halls, for example, are simply 3'-0" wide, but the minimum required to struggle into an overcoat is 3'-6" or better. And to assist a person into a coat, a 4'-0" space is needed.

Your vestibule should be placed or screened so that a caller cannot see directly into all of the living room, and so that opening or closing the front door does not immediately allow a draft of cold air to enter and chill the house.

Living Room

31. The living room is just what its name implies—an area in the home where the family can be at ease, receive guests in intimacy, rest in quiet amid cheerful surroundings, and be entertained. It is usually the largest and most important room in the house. It should be as comfortable as possible. In contrast to the old-fashioned "parlor," which was used on state occasions, and the sitting room, which was only slightly less formal, today's living room is used every day.

The living room must be so arranged that many activities can take place at one time if necessary. On entering a living room in today's house you may find one person reading, another studying, a third listening to the radio, and several others carrying on a conversation. These are all normal activities and you must provide space for them.

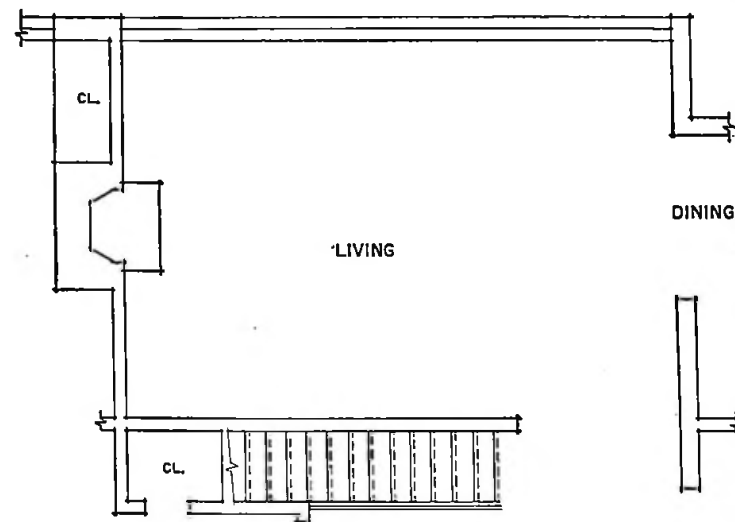


FIG. 9. LOCATION OF FIREPLACE

Sometimes the living room is designed with definite areas established for specific activities. However, this is not too desirable, since family needs vary from time to time. Usually, the living room is best designed with adequate space for many activities but with no fixed space for any one activity.

At one time living rooms were invariably located in the front of the house. This is not necessary. The location of the living room should be decided by such factors as orientation, view, privacy, and indoor-outdoor living.

It is generally better to have the living room rectangular in shape rather than square. There are good reasons for this. A room 15' x 15' and a room 12' x 18'-6" have approximately the same floor area. However, the room 12' x 18'-6" will appear larger because it has a greater perimeter, and therefore more wall space.

A good size for a living room is approximately 14' x 22'. A room larger than 16' x 26' is apt to appear oversized. It is poor policy to make the living room oversized at the expense

of the rest of the house. In designing any room, you must keep the plan of the entire house in mind at all times.

Fireplaces

32. An open fire has an age-old appeal, which perhaps explains why fireplaces are sentimentally attractive. However, even at best the fireplace is dirty and drafty. It presents a fire hazard and is an inefficient source of heat. Unless the house is large, it takes up more wall space than it is worth. After the first few years, most fireplaces are seldom used.

But because of its sentimental appeal it is doubtful that the fireplace will ever be entirely abandoned.

If you decide to include a fireplace in your living room or recreation room, it is advisable to place it out of the line of traffic. Such an arrangement is shown in Fig. 9, where the fireplace is shown at one end of the living room.

Living-Room Furniture

33. In planning the living room you should consider carefully the placement of furniture. If you don't, you may discover, for instance, that a living room intended to contain a piano, a fireplace, and large windows may be lacking in wall space to accommodate the usual living-room furniture.

In recent years interior decorators have been decrying the use of living-room suites and advocating the purchase of random pieces arranged in "conversation groups." The phrase "conversation group" usually means two chairs and a table. A group may consist of two easy chairs with a coffee table between, placed in formal stance before the living-room fireplace. Or it may consist of a sectional sofa with a corner table.

Whatever the arrangement for a conversation group, keep in mind that, as a rule, two people with normal hearing should have the backs of their chairs no more than 10'-0" apart, as shown in Fig. 10. In quiet surroundings this distance can be

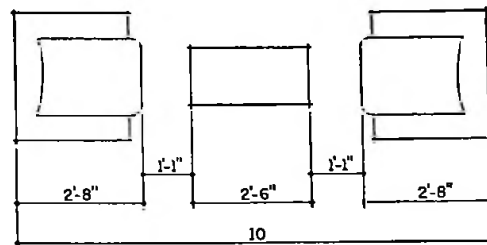


FIG. 10. SPACING OF FURNITURE IN CONVERSATION GROUP

increased, but not if other conversations are being held in the same room.

Easy chairs are generally 2'-6" wide and 2'-8" deep. If an ottoman is used in conjunction with an easy chair, a space 5'-0" long is nearly minimum, and a tall person who really stretches out will require a space 6'-0" to 6'-6" long. This space is much larger than many people realize. Another seldom realized fact is that a chaise lounge needs a space 5'-6" long and 2'-0" wide.

Incidentally, the conversation corner consisting of a sectional sofa and corner table, so popularized by some furniture makers, and shown in plan in Fig. 11, leaves much to be desired since the human figure requires a 10" space in front of a chair or sofa for knees and legs.

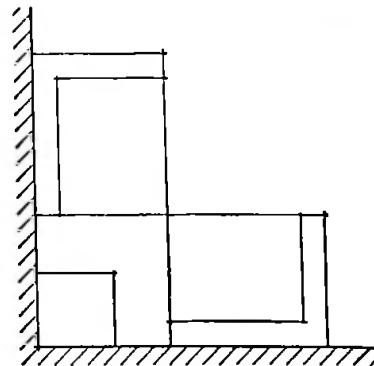


FIG. 11. CONVERSATION CORNER

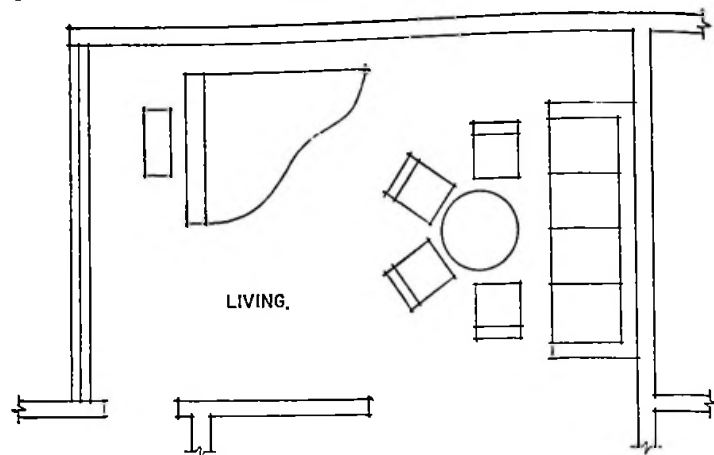


FIG. 12. ARRANGEMENT OF PIANO AND FURNITURE IN LIVING ROOM

Sofas or davenports come in three standard sizes: 6'-0" long by 2'-6" deep, 6'-6" long by 2'-8" deep (the most popular size), 7'-0" long by 3'-0" deep (clubroom size).

Pianos

34. Time was when people who could afford pianos and music lessons for their children could also afford music rooms in their homes. Such rooms had the advantage that they could be closed off when scales were being practiced, and they generally included many single chairs for the inevitable musical tea or recital. Today the piano is placed in the living room or the recreation room.

The baby grand piano is 5'-3" long by 5'-0" wide without the piano bench. Other types of grand pianos are even larger. An upright (which should be a few inches from the wall for the best sound) is 5'-0" wide, 2'-6" deep, again exclusive of piano bench, and from 4'-3" to 4'-6" high. The baby grand piano presents a finished appearance from any side, whereas the upright piano must be placed against a wall since the back is unsightly.

The spinet-style piano takes up the least amount of space, but it lacks the musical tone of the upright or grand piano.

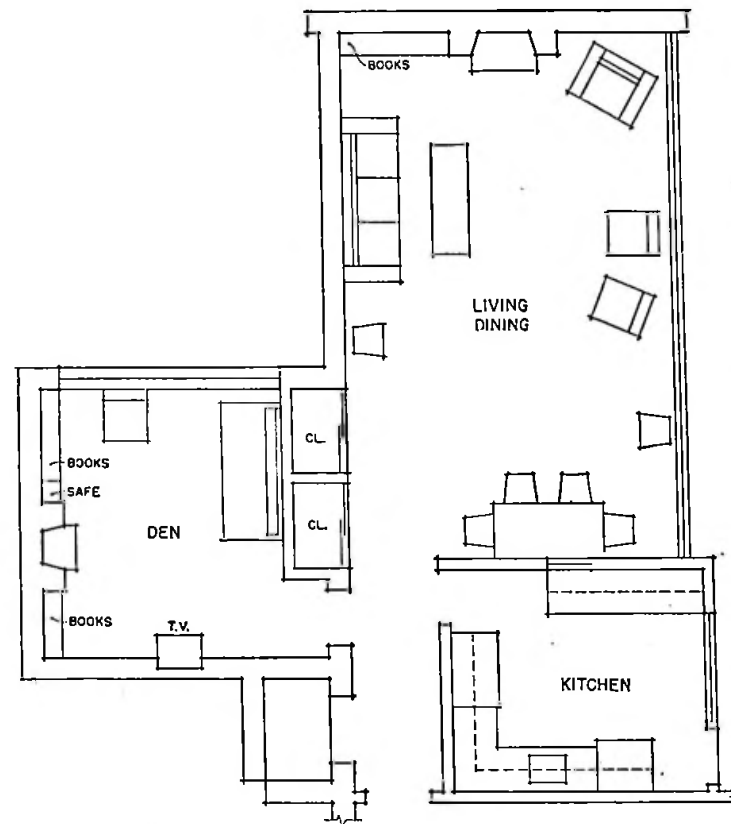


FIG. 13. LIVING-DINING AREA AND DEN

A large spinet is only 3'-0" high, 2'-0" deep, and 4'-8" long. Many are smaller than this.

35. If a grand piano figures in your plans, there are several arrangements of piano and furniture that are worthy of study. One grouping is shown in Fig. 12.

Note that the piano is placed in a corner so as to be out of the line of travel and to take up the least possible space in the room. It is also placed so that the pianist has good light from the windows behind it. The piano bench should not be

too close to the window, however, or the person playing the piano will be extremely uncomfortable.

Note that in this room, which is 15' x 23'-6", the piano takes up almost one half of the available floor space.

Den

36. The den is a room to which the master of the house can retire for privacy. It need not be a large room. A minimum size would be 10' x 12'. The usual den is equipped with bookshelves, desk, wall safe, built-in television set, possibly a fireplace, and a few easy chairs.

If you include a den in your plans, it should preferably be accessible from the front vestibule, so that you can receive visitors there without disturbing another member of the family who may have guests in the living room. Such a den is shown in Fig. 13.

Powder Room

37. The powder room or washroom for the convenience of family and guests should be a part of your living area. It is generally placed close to the living room or recreation room. It provides water closet and lavatory facilities without going through the family sleeping quarters.

While the powder room should be a part of the living area, its location should be made as inconspicuous as possible. The powder rooms shown in Figs. 7 and 8 adjoin front vestibules.

General Requirements of Dining Room or Dining Area

38. One of the major differences between civilized and primitive man is the emphasis placed on dining. Savages eat efficiently; civilized man dines. Dining calls for space and pleasant surroundings.

Many people, to save space, plan to dine in either the kitchen or the living room. Whether your house should have a separate dining room or a dining area that is part of the liv-

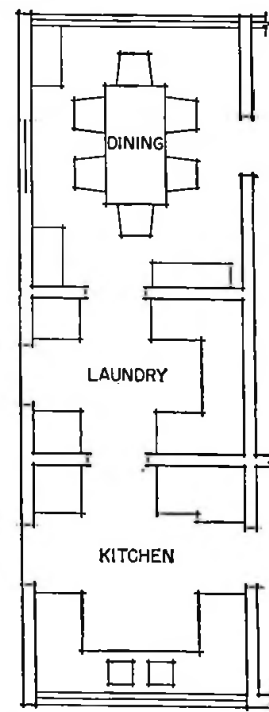


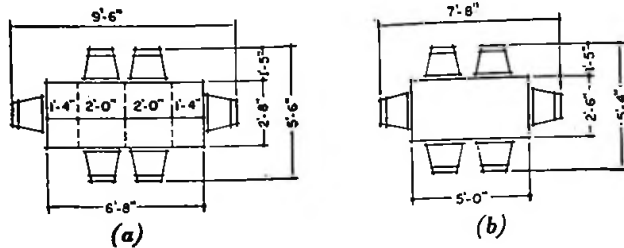
FIG. 14. KITCHEN AND DINING ROOM SEPARATED BY LAUNDRY

ing room or kitchen, only you can decide. For any dining area the requirements are the same.

The dining area should be of adequate size and well lighted. If possible, it should receive the morning sun. It should contain sufficient convenience outlets for various items of equipment. And it should have sufficient space for storage.

Location of Dining Area

39. Your dining area should be part of your living area and should have direct access to the kitchen. Obviously, it is inefficient and tiring to take unnecessary steps back and forth from kitchen to dining room. It should never be necessary, for



(a) Ideal size
(b) Minimum size

FIG. 15. TWO SIZES OF DINING-ROOM TABLES

instance, to cross a hall or go through a long serving pantry to carry dishes or food from kitchen to dining room. Such a condition is illustrated in Fig. 14, which shows the dining and kitchen separated by a laundry. A better arrangement is to serve directly from the kitchen into the dining room. Of course, if the dining area is part of the kitchen, there is no serving problem.

Size of Dining Area

40. Adequate space is a most important requirement of the dining area. Many dining rooms are too small. This is also true of the average breakfast nook, into which people are squeezed and once in place cannot get up without disturbing one or two neighbors. Too many dining areas are so small that dining reverts to efficient eating. Often a few inches will provide the difference between minimum requirements and that which is desirable.

In Fig. 15(a) is shown an ideal size for a dining table to be set for six persons. This size provides sufficient space for a complete dining service with a center floral display. At (b) is shown the minimum size required for six persons. Notice that the ideal size requires only 2" more in width and 1'-10" more in length than the minimum arrangement.

Your dining area must accommodate not only table and chairs but also such pieces of dining-room furniture as china

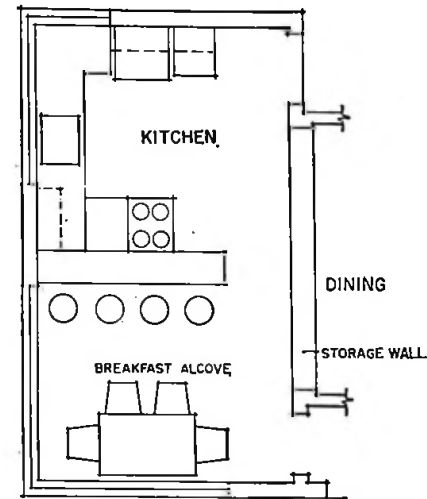


FIG. 16. STORAGE WALL BETWEEN DINING ROOM AND KITCHEN

closets, buffets, and serving tables. And the area must be big enough to permit the table to be served easily.

Dining-Area Storage

41. Much, if not all, of the storage space that is necessary for dishes, silver, linens, and crystal is generally available in the buffet, china closet, and server that are part of a complete dining-room suite. This, of course, means that your dining area must be large enough for a complete dining-room suite. The alternative is built-in storage space. One solution, particularly in homes with a breakfast alcove in the kitchen and a dining area as part of the living room, is the installation of a cupboard-and-drawer partition between the kitchen and the dining room. This arrangement appears in Fig. 16.

Types of Dining Areas

42. Your dining area may be combined with the living room and defined by the furniture arrangement, it may be part of the kitchen, or it may be contained in a separate dining room.

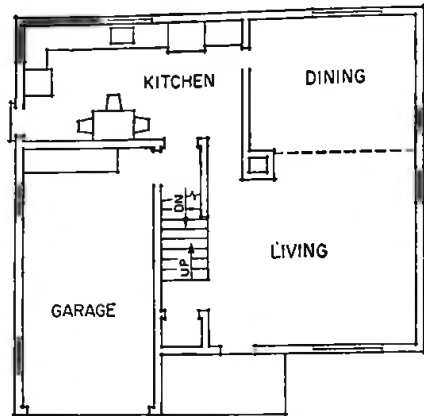


FIG. 17. LIVING-DINING AREA WITH FOLDING PARTITION

The living-dining room is a development of recent years in which high building costs have often made necessary a multiple use of space. In this arrangement one end of the room is given over to a dining table and chairs. Such a living-dining room is shown in Fig. 13. Sometimes a folding partition is used to give privacy to the dining area, as shown by the broken line in Fig. 17. When the dining area is not in use, the partition is drawn back and the dining area, which is used

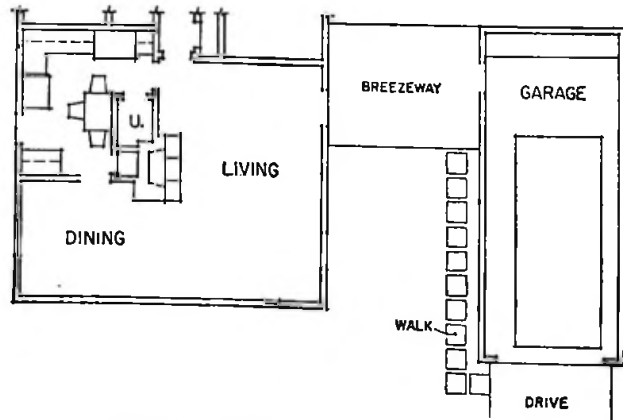


FIG. 18. L-SHAPED LIVING-DINING AREA

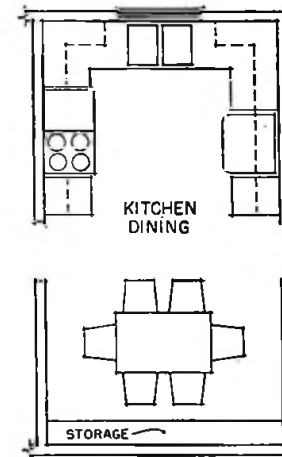


FIG. 19. KITCHEN-DINING ROOM

only three times a day, becomes part of the living room. One of the most satisfactory arrangements of the living-dining room is the L shape shown in Fig. 18, which gives a certain amount of privacy to the dining-room area without the need for a folding partition.

The advantage of the living-dining room is that in situations where cost is a deciding factor you are able to have a larger living room than would be possible with a separate living room and dining room.

The kitchen-dining room is another example of the multiple use of space. This arrangement represents a return to the large kitchen of earlier times when the kitchen was the heart of the house. A kitchen-dining room is shown in Fig. 19. This type of room can be made very attractive, especially when treated in some period such as Early American. But those persons who do not like to eat in the kitchen in full view of soiled pots and pans and dishes will prefer the living-dining room or the separate dining room.

The separate dining room provides privacy and comfort

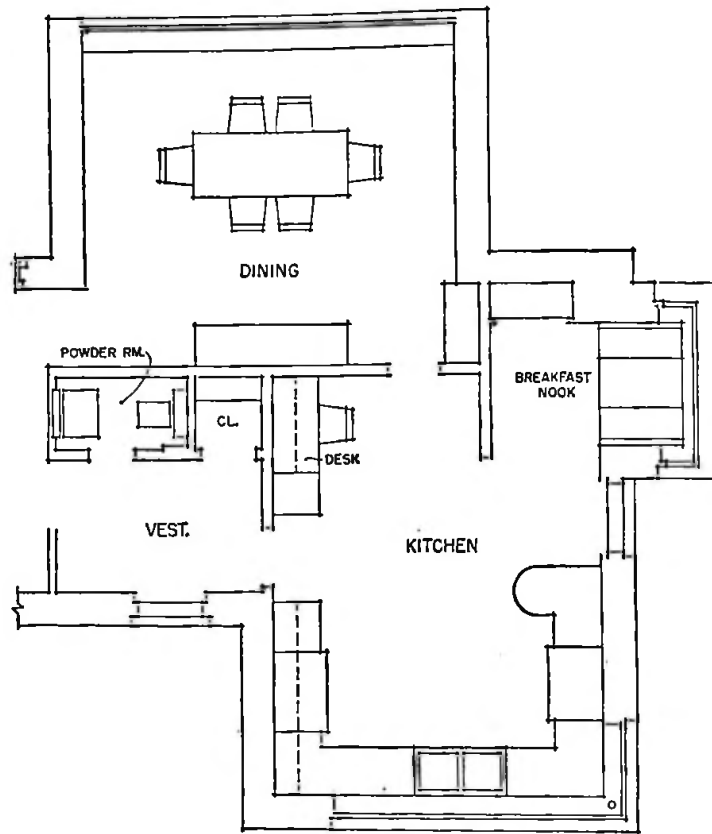


FIG. 20. SEPARATE DINING ROOM

for dining. Most dining rooms are too small. If a dining room is large enough, it can be used as a temporary sewing room or study (the table is big enough to lay out dress patterns or papers). To accommodate what is known as a complete dining-room suite—table, chairs, buffet, china closet, and server—you should have a room 13' x 14' or more. Such a dining room is shown in Fig. 20.

Breakfast Nooks

43. The breakfast nook is placed adjacent to or is made

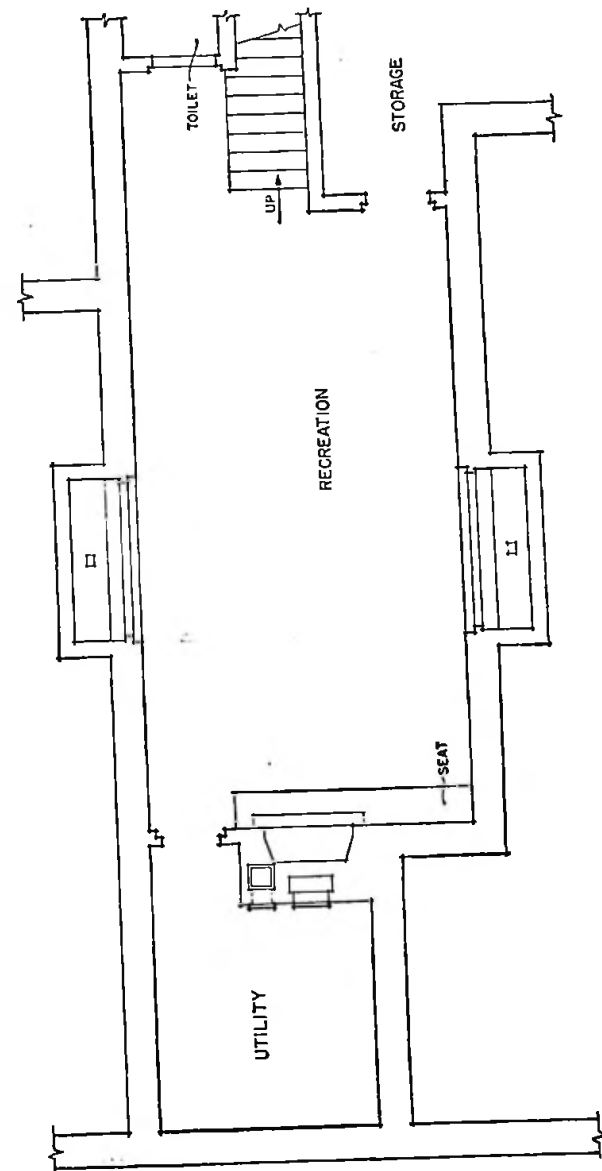


FIG. 21. BASEMENT RECREATION ROOM

part of the kitchen to save walking while serving simple meals such as breakfasts and lunches. It should be cheerful and well lighted and, if possible, should be so located as to receive the morning sun. Generally, the breakfast nook is filled with a table and with benches or chairs which usually require a space about 6'-0" square. The breakfast nook shown in Fig. 20 is approximately 5' x 8'.

The kitchen shown in Fig. 16 has a breakfast alcove approximately 8'-10" x 10'-6".

Recreation Room

44. The formal old-fashioned parlor which was only opened for use on Sundays and special occasions has disappeared. Today, your visitors may be received any day of the week in the living room, the garden, or the recreation room.

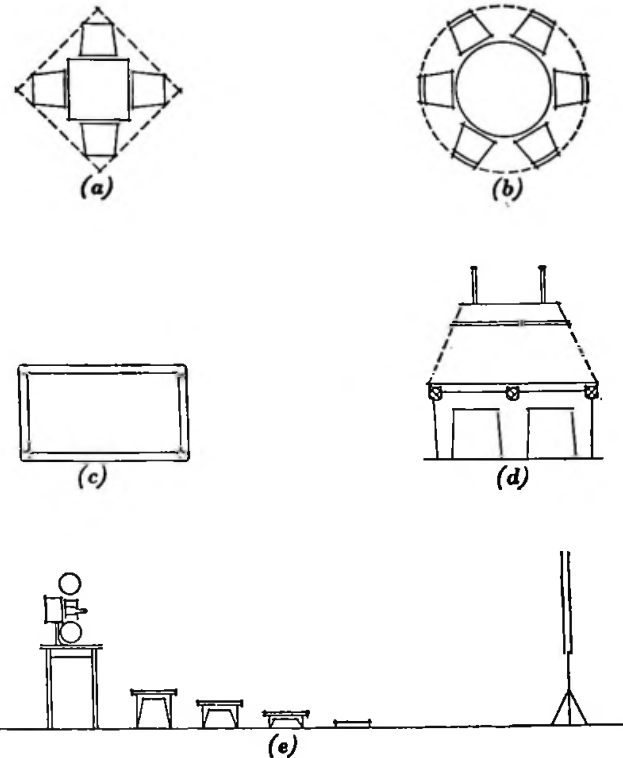
The recreation room—sometimes known as the rumpus room, game room, or playroom—has evolved with a change in living habits. This room is intended solely for recreational purposes. It is a room that is always ready to receive your guests or your children's friends.

The recreation room is frequently installed in the basement. It may be a simple room with washable floor and sturdy furniture, or it may be an elaborate room with bookcase, built-in soda bar, fireplace, and television set. It is advantageous to have a large-sized closet adjacent to the recreation room for the storage of items such as card tables. A basement recreation room is shown in Fig. 21.

If you decide to include a recreation room in your plans, be sure that it is well insulated not only against heat and cold but also against sound.

Sizes of Recreation Rooms

45. The size of your recreation room will depend on the types of recreation that you intend to accommodate. In designing your recreation room, you should keep the dimensions of the following items in mind.



(a) Card table and chairs
(b) Poker table and chairs
(c) Plan of billiard table
(d) Elevation of billiard table
(e) Movie projector and screen arrangement

FIG. 22. RECREATION-ROOM FURNITURE

Card tables are usually 30" square and, with four chairs, require 4'-6" x 4'-6" of floor space. An 18" passageway should be allowed between tables if the hostess is going to replenish drinks and other refreshments and empty ash trays. Poker tables for home use are 4'-0" in diameter, because poker may be played by an odd number of people. With chairs, a circle 6'-8" in diameter is necessary without allowing any room for onlookers. For arrangement of a card table and a poker table, see Fig. 22,(a) and (b).

The smallest standard-size billiard table, shown in plan in (c) and in elevation in (d), is 4' x 7'. For comfortable play, you should have 4'-0" of space on all sides.

Tournament-size ping-pong tables are 5' x 9'. Champions will require 12' of runback at each end, but the average player will find 7' ample with 4' on each side. The fact that a ping-pong table is 2'-6" from the floor and a billiard table 2'-9½" makes it impossible to combine the two.

46. Home movies are shown to their best advantage if the distance from your projector to the screen is approximately 20'-0". As shown in Fig. 22(e), a difference of 5" in seat height is desirable so that adults of approximately the same size can have an unobstructed view of a picture. No one should be expected to sit closer than 8'-0" to the screen nor at a pronounced angle to the plane of the screen.

A problem in watching television is to avoid eye fatigue. Opticians and television technicians agree that the best way to avoid eye fatigue is to sit at a distance from the set. Since eyes vary, the correct distance is difficult to determine, but nearsighted people should not sit too close.

Outdoor Living Areas

47. The increased use of glass in houses in recent years has made views of the outdoors part of the decorative scheme and has made possible a closer coordination between indoors and outdoors. This has helped the development of outdoor space for outdoor living. The cheapest space you can add to your living area is this outdoor space. The outdoor living space should be considered when you are selecting your site.

Indoor-outdoor living is not new. Before the automobile age, when the front yard was still a pleasant place, most houses had a covered front porch with rocking chairs, a swing, and a hammock. But now the street is a raceway for cars and delivery trucks and frequently the only place left for indoor-outdoor living is the space behind the house.

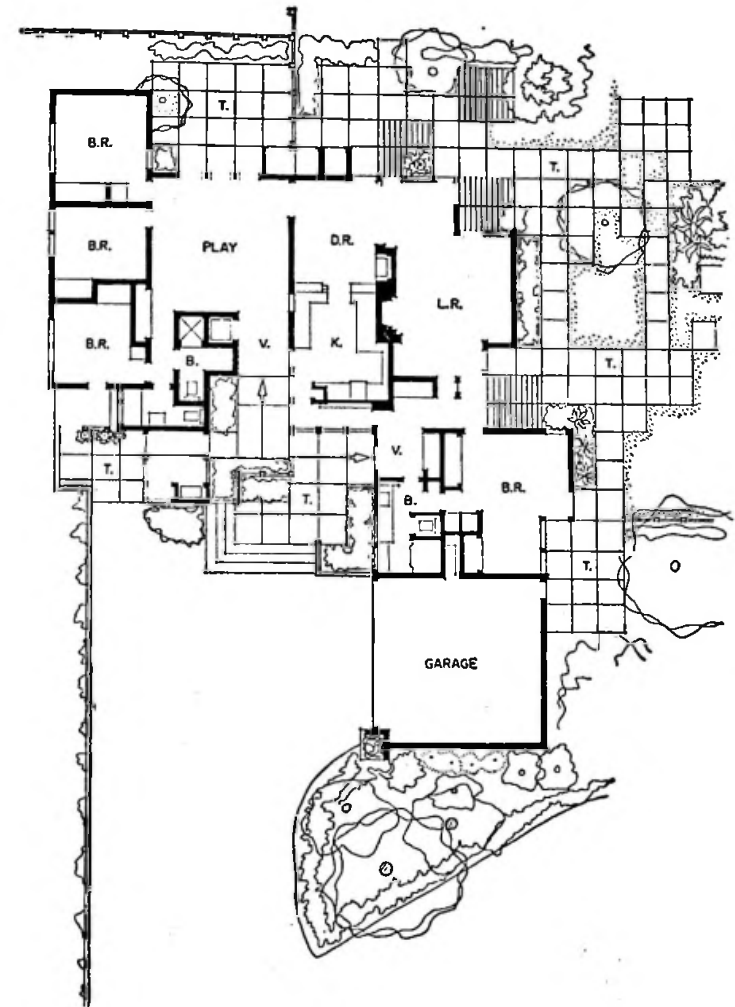


FIG. 23. LIVING, SLEEPING, AND WORK AREAS WITH TERRACES

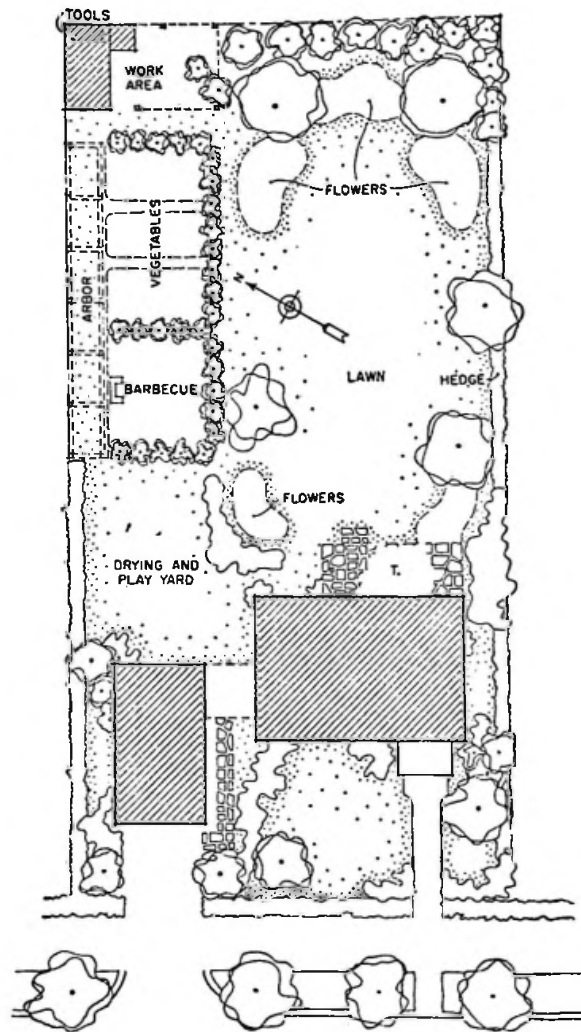


FIG. 24. SITE WITH AREAS FOR WORK, PLAY, AND DECORATIVE EFFECTS

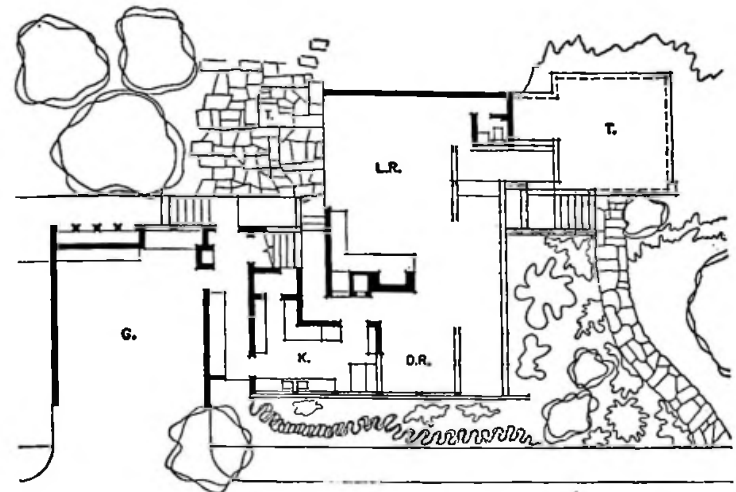


FIG. 25. INDOOR-OUTDOOR RELATIONSHIPS PROMOTED BY LARGE AREAS OF GLASS

Often the center for outdoor living is a porch or terrace attached to the house proper. On such a porch or terrace, the windows are often brought down to the floor. Except in southern climates where the heat of the sun is a problem, it is usually unwise to place a porch outside living-room windows, since it cuts off an excessive amount of light.

Somewhere on the lot there should be a children's play yard flexible enough to be changed as the children grow up. The sandbox may in time become a gymnasium and later a badminton court.

In Fig. 23 is shown a plan in which each of the main areas of the house has its own terrace. Notice that in this plan there is no partition between the dining and living areas and that a pass-through partition separates the dining area from the kitchen.

In Fig. 24 is shown a house in relation to its entire site. In addition to the covered porch or breezeway which separates the house from the garage, the house has a rear terrace

that is accessible from the living room. Notice that the site has been carefully planned with specific areas set aside for work, play, and decorative effects.

Another house that was planned with a consciousness of indoor-outdoor relationships is shown in Fig. 25. Notice the amount of glass in the living-dining area in this plan.

Planting

48. Too much emphasis cannot be placed upon the importance of planting as a design factor. However, it is not the purpose of this text to develop the subject of landscape design. The types of plants, bushes, and trees that can be used to ornament the grounds around a house are too numerous to mention here. Each type of plant has its special characteristics, and needs its own peculiar soil and exposure. A working knowledge of landscape design can be obtained only by study and experience.

Lacking a knowledge of landscape design, there are a few simple rules that you should keep in mind.

1) Shrubs planted close to the house should be of the slow-growing, compact variety that can be easily controlled, and that will not develop into a miniature forest.

2) A ruffle of planting completely surrounding a house is not desirable, since it gives the house the appearance of setting on a green pillow instead of on solid ground. Overplanting should be avoided.

3) If hedges are to be used along lot lines, it is advisable to use a type that can be trimmed.

Summary

49. The living area may include only a living room or it may include an entrance vestibule, a living room, a dining room, a den, a recreation room, a powder room, a terrace, and a patio. The living area should be accessible from the entrance vestibule without going through the working area or

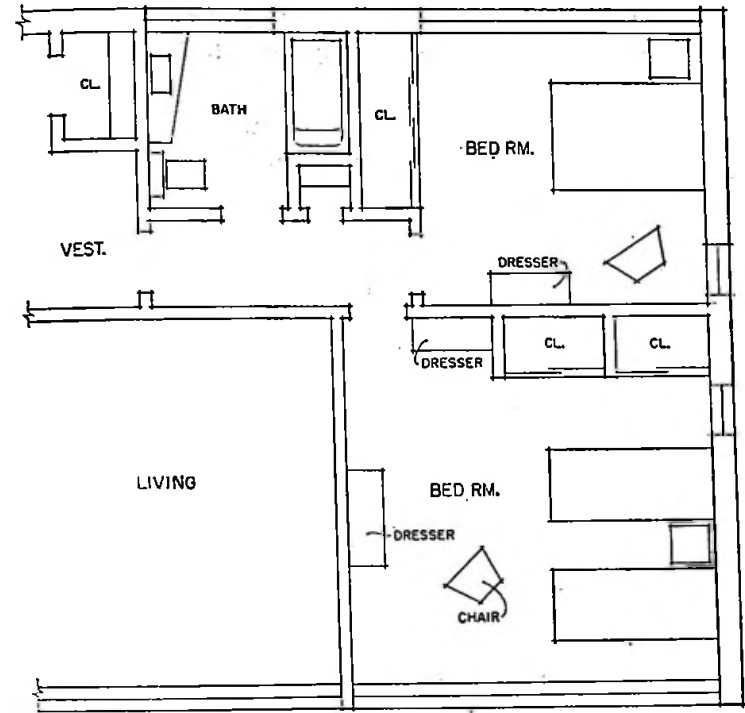


FIG. 26. SLEEPING AREA WITH PRIVACY

the sleeping area. At the same time, the living area and its various parts should have privacy.

In designing the living area, keep in mind the sizes of the various pieces of furniture that each room is to accommodate.

The Sleeping Area

Requirements of Sleeping Area

50. The sleeping area contains bedrooms, bathrooms, closets, and storage cabinets. You should be able to enter your house and go directly to the sleeping area without passing through other rooms. It is not desirable, for example, to walk from the main entrance through the living room, the dining

room, or the kitchen to reach the sleeping area. And it should never be necessary to pass through one bedroom to reach another.

While the sleeping area should be readily accessible, you should be able to shut it off from the rest of the house to ensure privacy and quiet in the bedrooms. Such an arrangement is shown in Fig. 26 where a door separates the vestibule from the sleeping area. Notice how in Fig. 23 the playroom forms a buffer between the children's bedrooms and the rest of the house.

It should also be possible to shut off all the bedrooms from the living area for economical heating. During the greater part of the day the bedrooms are unoccupied and it is wasteful to heat them to the same extent as the living area. Moreover, unless a barrier exists, when the bedroom windows are open at night the cold air from the bedrooms will enter the living area and force the heating plant to work unnecessarily to heat the continuous cold air coming in through the open windows.

Development of Bedroom

51. The old-time bedroom was often tucked away under the roof of the farmhouse or town house. It was poorly lighted and ventilated and provided little room for storage. The bare necessities, a bed and a dresser, were placed wherever space could be found. In northern climates, the room was cold in winter and hot in summer.

The development of insulation and of efficient heating systems has made it possible to maintain a uniform temperature in all parts of the house. The result is that today's bedroom is used not just for sleeping, dressing, and storage. When it is of adequate size and well planned, it often serves as a combination bedroom, study, music room, and hobby center. This use as a multipurpose room has produced a trend toward larger bedrooms; in all except the "minimum houses" the bedroom has been increasing in size. For one person, a bedroom

11' x 13' is desirable; for two persons, a bedroom from 12' x 14' to 14' x 16' is the average. Seldom should a bedroom be less than 10' x 12'.

It is possible that with the growth of air conditioning the bedroom of the future will be windowless, soundproofed, and mechanically ventilated, with warm air in winter and cool, dehumidified air in summer, somewhat like a Pullman bedroom. For allergic persons or victims of pollen, such a bedroom would be a blessing. Light sleepers, people who snore, or those afraid of storms would sleep better. Others would find this bedroom impossible and feel as though they were locked in a prison cell or a tomb. These are the people who like moonlight coming through windows, the sound of rain beating on roofs, the whistling of wind, and the creaking of trees. For each his own.

Planning the Bedroom

52. Before planning a bedroom, you should consider the interests of the one who will occupy the room. Is the bedroom for you or for your son or daughter, or is it to be the guest room? You should know the answers to these and the following questions:

1. Will a double bed, a three-quarter bed, or twin beds be required? What other pieces of furniture will be included?
2. Should provision be made for reading in bed? Should bookcases be included?
3. How large is the wardrobe? How much closet space will be required?
4. Will a radio or television set be used?
5. Will the bedroom also be used as a sitting room or study?

The master bedroom should command the approach to the children's bedrooms. This will allow the parents to be within

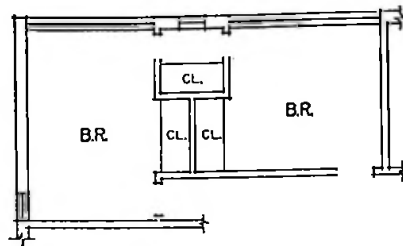


FIG. 27. CONNECTING BEDROOMS

quick call of the children when they are young and to supervise their hours when they grow older.

Not all owners are receptive to the idea of connecting bedrooms. These are desirable, however, when sickness occurs, as the patient is within easy hearing distance. A connection is also highly desirable between master bedroom and nursery. The two bedrooms shown in Fig. 27 are connected by a passageway. Locking either door transforms the passageway into additional closet space for the other room.

If possible, each bedroom should have two exposures for sunlight and cross ventilation. Cross ventilation is provided by the proper location of windows and doors. It is desirable to have a cross draft in summer and no direct draft in winter. You can obtain cross ventilation by having windows or a window and door on two walls with the bed somewhere in between. In summer both sources of air are used. In winter one or the other can be closed. A bedroom with cross ventilation is shown in Fig. 28.

The location of windows and doors is affected not only by the necessity for proper exposure and ventilation but also by the necessity for sufficient wall space for the placement of furniture. Keep in mind that a door to a bedroom should not be less than 2'-6" wide.

For a couple who are planning to raise a family, it is wise to include a nursery in the plans at the beginning. Too often the smallest bedroom is used for this purpose. But, as families

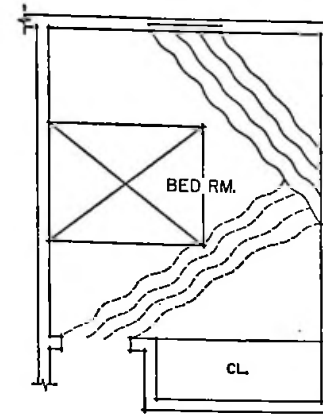


FIG. 28. BEDROOM WITH CROSS VENTILATION

increase in size and toys and books multiply, the smallest bedroom is often not big enough. After the children have grown up, the nursery can become a den or a regular bedroom.

Bedroom Furniture

53. The placement of furniture in the bedroom should be studied while your plans for the house are being prepared, not after the house has been built. The bedroom should contain sufficient wall area to provide place for the bed, dresser, chest, vanity or dressing table, night stand, chairs, and possibly a bookcase or desk. In a family that keeps jewelry or large amounts of cash on hand, a wall safe may be needed. It is desirable to be able to place the bed in more than one position and still allow ample space to walk around it for ease in making the bed.

The smallest single bed that should be used is 3' x 6'-6". Large adults are happier in a three-quarter bed, which is 4' wide. Whatever the size, two beds in the same room should be 2'-0" apart. This means that so-called twin beds require a minimum wall space of 8'-0". Double beds are of two sizes. While a width of 4'-6" is used by many manufacturers, there

is a tendency today toward a 5'-0" width. Dressers are from 3'-6" to 4'-0" wide and from 1'-6" to 1'-8" deep. Regardless of the size of the bed, the arrangement of wall space should not make it necessary to place the bed across a corner or in a corner against a wall.

Space can be saved in a bedroom by using built-in furniture. The bedroom with built-in furniture requires very careful planning.

In planning the bedroom, keep in mind that the bed is used the least number of times a day, the clothes closet and dresser the most. Therefore, the bed should never be placed so that it is necessary to walk around it to reach the closet or dresser on entering the room. If possible, the dresser should be placed close to the closet so that the bedroom storage may be in one area.

Bedroom Storage

54. Each bedroom must have sufficient storage space. Additional space for the storage of linen and blankets should be provided by a small closet, usually located in the hall of the sleeping area.

Some storage space is provided in the bedroom by the furniture. The remainder must be provided by closets. Today's closet is far removed from the catchall of former years. Many modern houses have no attic or basement, therefore closet space must be carefully organized. The subject of closets, dressing rooms, and storage space is treated later in this text.

Insulating Bedrooms Against Sound

55. Bedrooms should be insulated against sound if a radio or television set is to be played in one bedroom while the occupant of the neighboring bedroom is sleeping. And the sleeping area as a whole should be insulated against the sounds of entertainment in the living area.

While it is desirable to soundproof the entire sleeping area

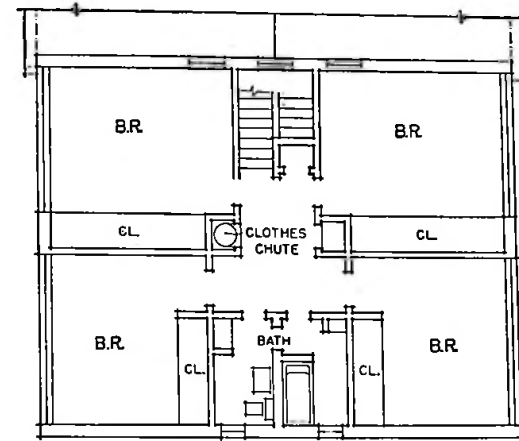


FIG. 29. BEDROOMS INSULATED AGAINST SOUND BY CLOSETS

as well as each individual room, this is sometimes not feasible from the standpoint of cost. However, by careful planning you can often effect sound barriers by placing closets between rooms. The double walls in themselves are effective barriers and the closets are doubly effective when filled with the normal allotment of clothes.

In Fig. 29 are shown the sleeping quarters of a split-level house. The closets form sound barriers between bedrooms and between bedrooms and bath. By carefully planning the location of closets and bathrooms, you can usually prevent bathroom noises from carrying to the bedroom. Notice the clothes chute in this plan.

Location of Bathroom

56. The bathroom should be a part of the sleeping area, and it should be conveniently located. Obviously, you should not have to go up or down stairs from bedroom to bathroom. And you should not have to go through the kitchen to reach the bathroom.

As important as convenience in the location of the bath-

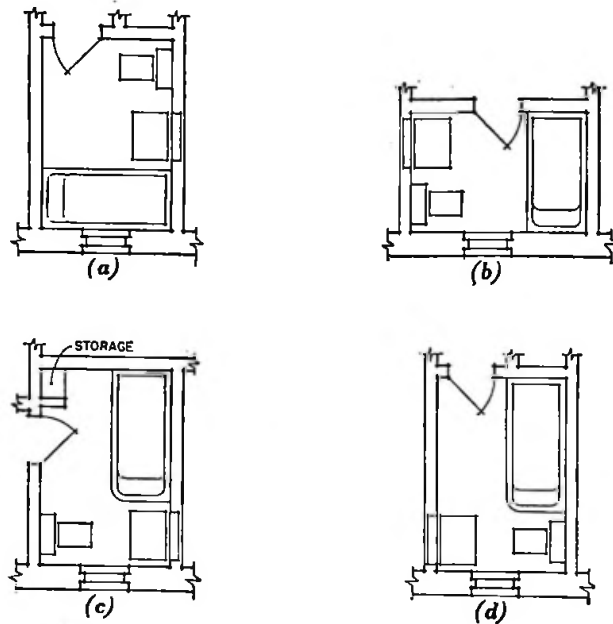


FIG. 30. MINIMUM-SIZED BATHROOMS

room is privacy. A bathroom in a hall, for instance, should not be at the head of a stairs. Wherever possible, bathrooms should have closets between them and the adjoining bedrooms, as shown in Fig. 29. A bathroom between two bedrooms with a door to each bedroom is, in general, undesirable, since it is apt to lead to embarrassing situations. Preferably, the bathroom should be entered from the hall rather than from the bedrooms. The bathroom door should always swing to shield the water closet when the door is open. Generally, a width of 2'-0" is sufficient for a bathroom door.

Costs of installation can be lessened if bathrooms are kept over each other or over other plumbing fixtures, such as kitchen or laundry fixtures; or if bathrooms on the same floor are located adjacent to each other, or back to back with the kitchen. However, in planning a bathroom, do not let piping

costs be the determining factor. Over a period of years, the convenience afforded by a logical and efficient plan is more important than a few feet of pipe.

Minimum Bathroom

57. The minimum bathroom contains the three essential fixtures: a lavatory, a water closet, and a tub.

Bathroom floor plans do not present the infinite variety that you might expect. A few of the various arrangements of the three essential fixtures are shown in Fig. 30, (a) to (d). The minimum area occupied by any of these plans is 5'-0" x 7'-6" and is shown at (b). Notice that the plan in (c) is the only one that has any storage space.

The plan in (a) is probably the most economical from the standpoint of piping, since the three fixtures are in a row. But this plan incorporates the common error of placing a window over a tub. Such a window is difficult to open without stepping into the tub and is a common cause of accidents.

A great deal of study has been given to the development of extremely compact bathrooms. But it is often mistaken economy to make a bathroom the minimum size. The care of the ill or of young children often requires occupancy by two persons. And for such occupancy the minimum-sized bathrooms shown in Fig. 30 are usually too small.

Size of Bathroom Fixtures

58. Lavatories vary in size. Corner bowls may be as small as 16" x 16", measured along the wall. The standard rectangular-shaped lavatories vary from 18" to 26" in length and from front to back are from 15" to 20". An average-sized lavatory is 20" x 18".

The space required by the average-sized water closet from the wall to the front of the closet is about 26". In placing a water closet, a space of from 24" to 30" in width should be allowed.

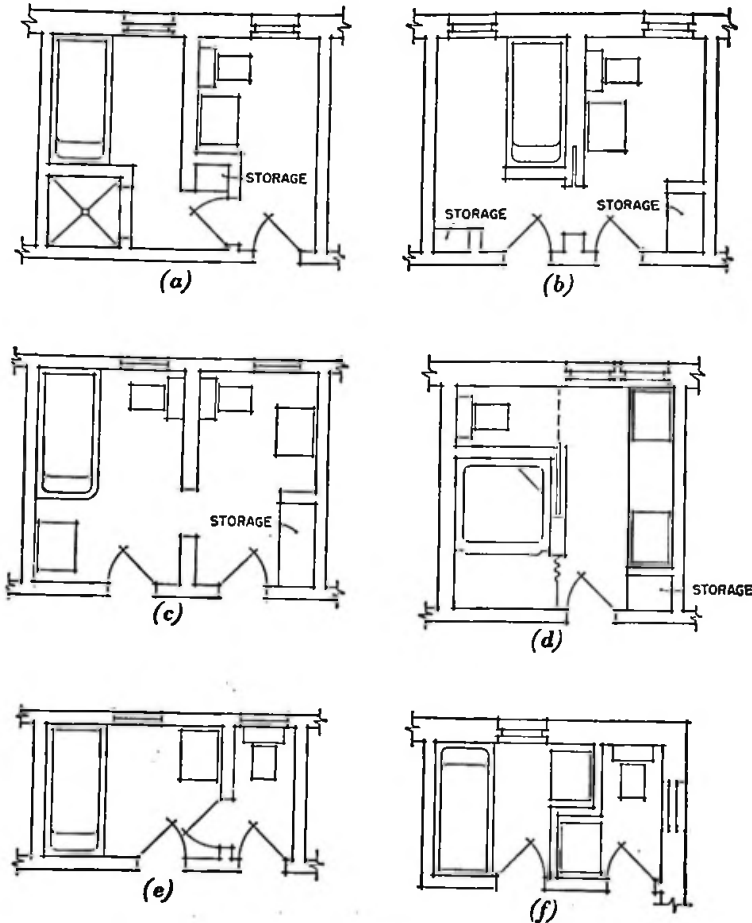


FIG. 31. MULTIPLE-USE BATHROOMS

Tubs come in lengths of 4'-0", 5'-0", and 5'-6" and are approximately 32" wide. Square tubs are about 4'-0" square. If a shower is provided in addition to or as a substitute for the bath, it should be approximately 3'-0" x 3'-0". Tubs are usually 16" high but may be as low as 12".

Medicine cabinets are approximately 4" deep and vary in width from 16" to 24".

Multiple-Occupancy Bathroom

59. Because of the cost factor, many homes are restricted to one bathroom. To permit a single bathroom to have more than one occupant, with each occupant having privacy, the multiple-occupancy bathroom has been developed. Examples of this type of bathroom are shown in Fig. 31, (a) to (f). Each example shows the bathroom arranged to permit simultaneous use of the water closet and tub.

The bathrooms in (a), (b), (c), (e), and (f) will accommodate two occupants. The bathroom shown in (d) with two lavatories, and separate compartments for the tub and water closet will accommodate four occupants. Notice that the plan in (b) with the three fixtures back to back lends itself to an efficient piping layout.

Every bathroom should have a medicine cabinet and storage space for towels and soap. Notice that the bathrooms in (a), (b), (c), and (d) have provision for storage, while the bathrooms in (e) and (f) do not.

Number of Bathrooms

60. Any floor that contains a bedroom should have a complete bathroom. If there are rooms for help, one complete bathroom should be provided for their exclusive use.

As a general rule, a family of three or more persons should have two washbasins, two water closets, one bathtub, and one shower, preferably arranged in two units. There is no question but that a house with two bathrooms is better equipped and more salable than a house with one bathroom. Today, most larger houses have two bathrooms and a powder room.

Summary

61. The sleeping area includes bedrooms, bathrooms, and storage. The sleeping area should be easily accessible, but at the same time it should be possible to shut it off from the rest of the house to obtain privacy, quiet, and economy in heating.

In planning a bedroom you should consider the interests of the individual who will occupy that room. The bedroom furniture should be considered while the bedroom is in the planning stage, not after the house is built. Bedroom storage should be adequate and should be carefully planned. Additional storage space should be provided in the hall for linens and in bathrooms for towels and bathroom supplies.

As a rule, the bathroom in the home should not be of the minimum size. The care of the ill or of young people often requires occupancy by two persons. The multiple-occupancy bathroom provides the advantages of two bathrooms, while effecting savings in space and piping.

The Work and Service Area

Requirements of Work Area

62. The work and service area includes the kitchen, laundry, garage, utility room, storage, stairs, and corridors. The work area should be so located as to ensure privacy and quiet in the rest of the house. You should be able to enter the house and go to the kitchen and laundry without passing through other areas. Also, the kitchen should have an outside entrance for tradesmen. Notice the plan in Fig. 32 in which the kitchen is accessible from the front vestibule and breezeway and the garage is accessible from the breezeway.

Development of Kitchen

63. The kitchen as a place for civilized man to prepare his food has undergone centuries of development.

The American kitchen of a few centuries ago was the center of family life. Around a huge fireplace with its cranes and ovens the women of the household did their cooking, baking, laundering, weaving, sewing, preserving, and soap-making. The kitchen was the hub of the house, the center for both work and recreation.

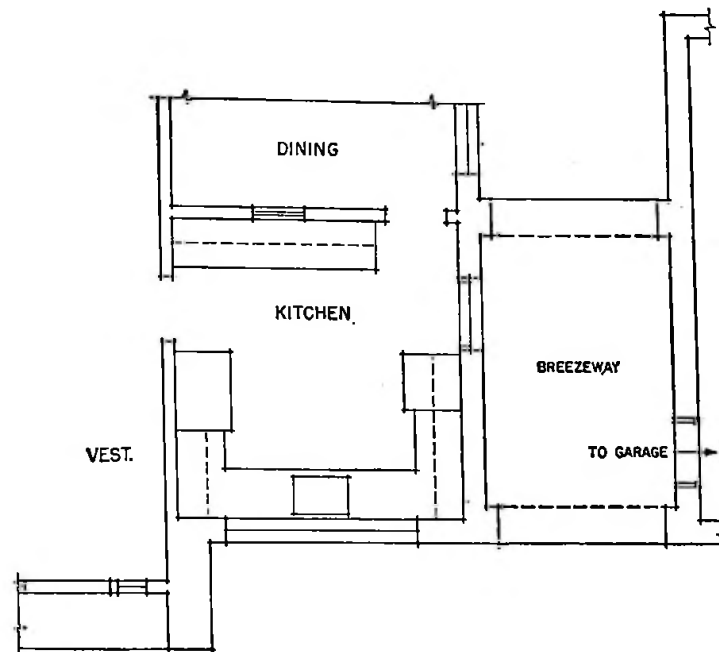


FIG. 32. WORK AREA ACCESSIBLE FROM VESTIBULE AND BREEZEWAY

This situation still prevailed in the nineteenth century. This was a period of large families and big eaters. Even city homes had a rural atmosphere. Horses, cows, and pigs (to eat the leftovers) were commonplace. There were many mouths to feed, and most men came home for the noonday meal.

As soon as one meal was finished, some member of the family had to start work on the next, while others cleaned up, and did the baking and the canning. It was natural to serve directly from the stove to the dining table and to linger in the warm kitchen for conversation. The kitchen was sprawling and inefficient, but this mattered little, since there were many hands to do the work.

Today's kitchen is a comparatively recent development which can be attributed to many factors. Chief among these is

the scarcity of servants and the efficiency of modern kitchen equipment. These same factors have resulted in the housewife, in most cases, doing her own housework. And the housewife has demanded efficient layouts. Instead of being the haphazard affair of former years, today's kitchen has become the laboratory of the house, in which household activities are charted and carried out. It is usually one of the most attractive rooms in the house.

Planning the Kitchen

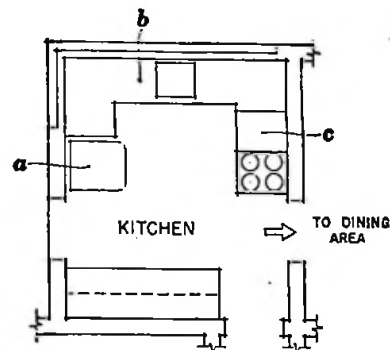
64. A kitchen that is unnecessarily large is tiring for the housewife. On the other hand, a kitchen that does not provide enough space to sit down or enough room for a second person to help with the meals is too small.

Your kitchen may be large or small, depending on your choice, the floor space available, and the size of your family. Some families prefer larger kitchens. Variations on the larger kitchen are the kitchen-dining area, the kitchen-laundry, and the kitchen-living area.

Whatever type of kitchen you select, it should be a cheerful, attractive room with a pleasant view and adequate working space, as well as adequate space for equipment and storage cabinets. The arrangement of the equipment may be L shaped, U shaped, or the like, but the sequence should be planned to save steps for the housewife. Normally, the sequence should be as follows:

The refrigerator, which is used for receiving and storing food, should be near the service entrance. Next to the refrigerator, and preferably with a working counter space between, should be the sink. Next to the sink, and again with counter space between, should be the range for cooking. As close to the range as practicable, but with a serving table between, should be the dining area.

The foregoing sequence, which takes into account preparation, cooking, and serving, is basic. Time and motion studies



a. food-reception area
b. food-preparation area
c. food-cooking area

FIG. 33. U-TYPE KITCHEN

have shown that a poorly planned kitchen necessitates at least twice as many steps in the preparation of a single meal as are required in a more efficiently planned work area. Keep in mind that fancy cabinets, tiled walls, and dishwashers will not correct an initially bad layout.

Types of Kitchen Plans

65. What is known as a U plan, in which the equipment in the work area is arranged in the shape of a U, is shown in Fig. 33.

When standing in the middle of the kitchen, the housewife is never more than a few steps from any of the fixtures and is out of the path of any traffic through the kitchen. You will find it difficult to better this arrangement.

In this illustration, note that all movements of the food are short travels. Starting at *a*, the unprepared food is brought through the service entrance and set on the counter of the food-reception area. Some food is stored in the cabinet there, and the perishables are put either in the refrigerator or in the freezer. At mealtime the food is removed from the storage area to the preparation area *b*. Here it is cleaned or washed, assembled, and transported to the food-cooking area *c*. In the

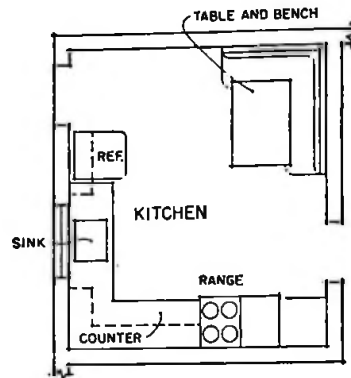


FIG. 34. L-TYPE KITCHEN

food-cooking area the finished product is prepared and delivered to the dining area.

In Fig. 34 is shown an L plan. This too follows the correct sequence from refrigerator to range and so is a good arrangement.

In Fig. 35 is shown an I-type plan. This scheme is used when only a long, narrow space is available. While not inefficient in operation, this plan presents two serious drawbacks. It is difficult to provide dining space except with stools and a counter, à la the quick lunch. And the door at each end

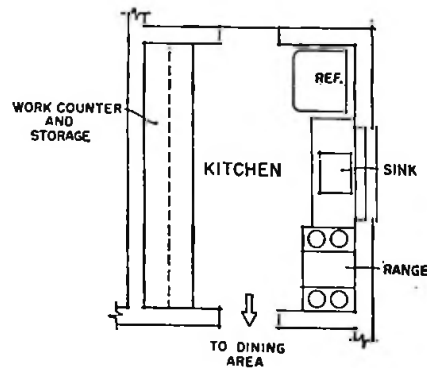


FIG. 35. I-TYPE KITCHEN

tends to turn the kitchen into a corridor. The resulting traffic is a definite hindrance.

Regardless of the type of plan that you select, the working areas should be separated from the nonworking areas. The various items of kitchen equipment should be grouped in units according to use. A kitchen may include a laundry, for instance, but it should not be necessary to walk past laundry equipment to go from the refrigerator to the range. Instead, the laundry equipment should be grouped by itself, becoming a self-sufficient unit apart from the food-preparing center. Likewise, the kitchen may incorporate a play area for your children or a breakfast nook, but these areas should be separate from the kitchen work areas.

The working area of your kitchen should be subdivided in a logical sequence for preparation, cooking, and serving. It should be traffic free. From this standpoint, the U-shaped plan is the best, since the only traffic in the kitchen must bypass the work area itself.

Kitchen Storage

66. Each subdivision of the kitchen work area requires its own storage. For example, the cupboards near the refrigerator must provide storage space for nonperishable foods and, ideally, a work counter for food preparation. Likewise, the cupboards near the sink must provide space for soap, towels, and brushes. In the area between the sink and the range should be stored the condiments, the kitchen cutlery, and the pots and pans.

A desk is a great convenience in a kitchen. Meals can be planned and orders given over the telephone; accounts and recipes may be kept in desk drawers. Such a desk is shown in Fig. 20.

Kitchen Equipment

67. While our grandmothers somehow managed without modern conveniences, the present generation finds life bleak

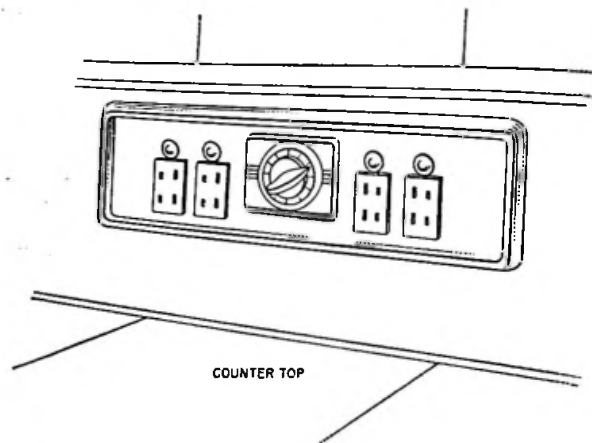


FIG. 36. PLUG-IN CENTER

without such items as dishwashers, automatic ranges, kitchen cabinets, ventilating fans over the range, refrigerators, automatic clothes washers, automatic clothes dryers, electric ironers, built-in ironing boards, food freezers, telephone outlets, room amplifiers attached to radio and record players, and clothes chutes.

All these items add to the cost of your house. There is good reason, however, for including them as part of the construction cost of the house. Bought on the continual installment plan, the interest rates are extremely high; bought as part of the house contract, the interest rates are the same as for the house. Also, any house that is fully equipped has a better resale value.

Portable Cooking Appliances

68. Not so many years ago, no one had ever heard of skillets, saucepans, or deep fryers with built-in precision heat control. But these portable appliances have proven extremely popular because they make it possible to cook anyplace in the kitchen.

Use of these appliances has brought about the develop-

ment of a "plug-in center," which consists of a specially wired group of outlets. A plug-in center is illustrated in Fig. 36, which shows eight outlets and a minute minder. Each receptacle is individually fused.

Development of Laundry

69. Before the advent of the automatic washing machine, washing clothes was sheer drudgery. Laundering was done either in the kitchen, which made "washday" a day of confusion, or in a room poorly located, arranged, and equipped. Often this was a dingy and inadequately lighted room in the basement.

The development of the one-story house without a basement has automatically placed the laundry on the first floor. And attractive styling has made it possible for you to place the laundry equipment either in the kitchen or adjacent to it. If your house is to have a basement, you may decide to place the laundry in the basement, since, in this type of house, basement space is usually cheaper than first-floor space.

In the two-story house it is not impractical to place the laundry upstairs, since the advent of the automatic dryer has made it unnecessary to hang clothes outside. This location makes it easy to collect soiled clothes and distribute laundered ones. However, as a general rule, it is best to have the laundry on the first floor as a part of the kitchen or adjacent to it. This keeps the work area all on one floor and saves steps for the housewife. If an automatic dryer is not to be used at all times, the laundry should be located a few steps from the drying yard.

Where the sleeping area is above the laundry, it is a good idea to provide a clothes chute from the sleeping area to the laundry below. A clothes chute is shown in the layouts in Fig. 29.

Planning the Laundry

70. Regardless of the location of your laundry, it should

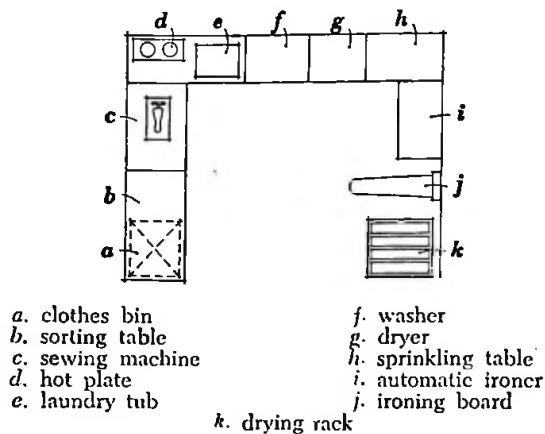


FIG. 37. PLAN OF LAUNDRY EQUIPMENT

be a good workshop. This means that it must be well lighted and that the equipment must be arranged in a definite sequence. The size of the laundry will be determined by the number of persons to be served and the equipment to be accommodated.

The typical laundry layout shown in Fig. 37 requires a room 14' x 14'. Work starts at the left with the clothes bin *a* and proceeds clockwise around the room. The clothes bin may be a bin to which clothes are carried, or it may be at the end of a clothes chute.

Next to the clothes bin is a sorting table *b* for separating white clothes from colored and also for separating different materials—cottons, woolens, and so forth. A sewing machine *c* is included as part of the sorting table. Mends as a rule are best made before washing, since washing may make a small tear large. Furthermore, sewing after washing may soil garments or make repressing necessary. The sorting table also provides housekeepers who are their own dressmakers with a good surface for laying out patterns.

Beneath the sorting table are shelves for such things as soaps, bluing, starch, clothespins, and clothes bleach. Adja-

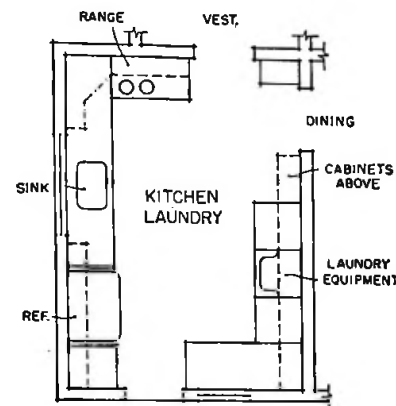


FIG. 38. KITCHEN-LAUNDRY

cent to the sewing machine is a hot plate *d* for making starch. Next to this is a laundry tub *e* for those items that must be washed by hand. Then come the washer *f* and the dryer *g*.

Next to the dryer is the sprinkling table *h*, and next to that the automatic ironer *i*. All this mechanical equipment must be checked for actual sizes, and it is well to allow ample space around each piece of mechanical equipment, since even the best equipment wears out and must eventually be replaced. Nothing causes more chagrin than finding out that replacements will not fit the old locations.

An ironing board *j*, either built in or in its own closet, is still a necessity, as is a drying rack *k*, which consists of a series of rods on which to place the finished laundry.

If your laundry does not contain a dryer, it should have either a permanent clothesline or hooks attached to the wall from which a line may be strung when the occasion demands. An exhaust fan may be added to remove excess moisture and heat.

A closet or cabinet for storage is a useful feature in a laundry.

A combination kitchen-laundry is shown in Fig. 38. Notice

that the kitchen equipment is arranged in an L shape on one side of the room. The laundry equipment is arranged in an L shape on the other.

Utility Room

71. The location of the utility room often depends on the type of fuel that is used. If the fuel is coal, the boiler room and the coal storage room will generally be placed in the basement. If the fuel is gas or oil, the utility room may be on the first floor and the house may be without a basement. Utility rooms are shown in Figs. 18 and 21.

There is no point in making the utility room any larger than necessary; on the other hand, it should be made large enough to accommodate an air-conditioning unit should the installation of one be contemplated for the future.

Development of Garage

72. The first garages were converted stables; sedans and runabouts simply replaced carriages and surreys. As cars became more popular and people built garages, the tendency was to place these garages in the rear of the property where the stable would ordinarily be. The car at this time was a fair-weather or Sunday vehicle, and was often stored during the winter months.

Today the car is a daily necessity. People do not hesitate to drive miles daily for work, shopping, or pleasure. The garage is, therefore, generally placed close to the street. This placement saves pavement cost, permits the back yard to be used for other purposes, and in northern climates saves the shoveling of great amounts of snow from the drive.

Placing the garage at the front of the lot also makes it feasible to attach the garage to the house. An attached garage affords many advantages: covered access to the garage; screening of the back yard from the street, making the backyard area more private; and simplification of the construction and heating of the garage.

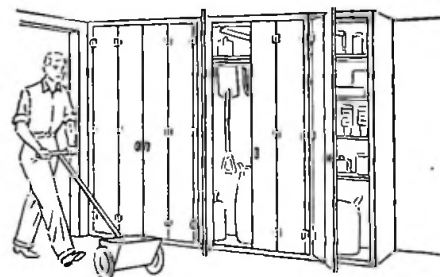


FIG. 39. STORAGE AREA IN GARAGE

Planning the Garage

73. The primary function of the garage is to provide storage space for your car. The minimum allowable space for the average pleasure car is 10' x 20'. If you also wish to provide space for a workshop, a second car, or storage, additional area must be provided. The single-car garage in Fig. 17, for instance, is 11' x 22'. In Fig. 18, the garage is 11' x 26'. Two-car garages are shown in Figs. 23 and 25.

If the house is without a basement, the garage often provides the only storage space for such items as garden tools and equipment, screen doors and sash, storm sash, and awnings. These items cannot be shoved into a garage helter-skelter; their storage space must be planned with that for the car. In Fig. 39 are shown storage cabinets along the rear wall of a garage. The folding doors allow opening at close quarters and provide maximum storage space with the least possible additional area.

Sometimes storage space is added at the rear of the garage with cupboards designed to fit around the front of the car. Such cupboards are awkward to get at and almost impossible to use if the car is in the garage. Furthermore, anything falling from the upper cupboards would be certain to dent the hood of the car. It is wiser to pay for the extra space involved in Fig. 39 than to be cramped and inconvenienced.

Overhead storage in the garage is sometimes provided by

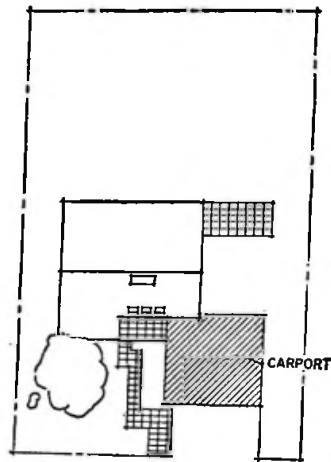


FIG. 40. CARPORT AT FRONT OF HOUSE

means of hooks and racks hung from the beams. This is a dangerous practice and one to be avoided.

Types of Garages

74. Of the various types of garages, the open carport is the most economical to build. It provides direct access to the house and in many parts of the country it provides adequate shelter. Such a carport is shown in Fig. 40. The carport sometimes doubles as an outdoor patio or play area.

In Fig. 41 is shown a garage connected to a house by a covered porch or breezeway. The breezeway has the advan-

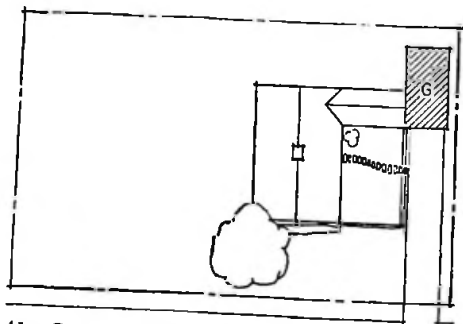


FIG. 41. GARAGE ATTACHED TO HOUSE BY BREEZEWAY

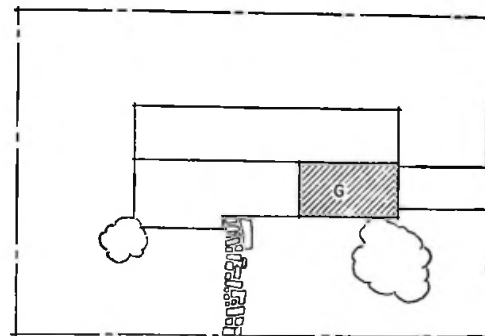


FIG. 42. GARAGE IN BASEMENT

tage of connecting the garage to the house without depriving the house of light and air. At the same time, it increases the apparent size of the house and often adds interest.

A garage in a basement is shown in Fig. 42. This arrangement is advantageous only when your house is located on a sloping lot and one side of the basement is entirely out of the ground. The walls and ceilings for a garage in this location should preferably be of fire-resistant construction. The garage in the basement of a house on a sloping lot is usually obtained at less cost than any other type of garage.

In Fig. 43 is shown a garage attached to the house with one wall in common. This type of garage is usually easy to heat, but it is sometimes obtained at a sacrifice of light in the adjoining part of the house. In this type of garage and in the basement garage, the door between the garage and the house should be extremely tight or gas fumes from the garage may penetrate the house.

Requirements of Storage Area

75. The development of the one-story house without attic or basement has made it necessary for storage space to be provided on the first floor. The high cost of space—whether on the first, second, or basement floors of a house—requires that storage areas be carefully planned.

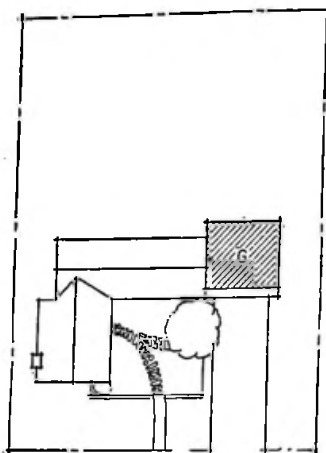


FIG. 43. GARAGE ATTACHED TO HOUSE

In planning your storage area you will discover that you require storage for all or most of the following items:

Food Items and Dining Needs. Besides the items bought daily or weekly, many families buy canned food in case lots. Other families have freezers for which space must be allotted. And for dining there are dishes, linen, glassware, and silverware.

Laundry Equipment. Soap, clothespins, clothes basket, hamper, drying rack, ironing board, ironer, washer.

Cleaning Equipment. Brooms, mops, dustpans, dustcloths, pails, cleaning solutions, vacuum cleaner, hand sweeper, and brushes.

Workshop Items. Household tools, stepladders, paints, and brushes.

Child-Care and Play Equipment. Toys, athletic equipment, bicycles, wagons, sleds, skis, skates, outdoor gyms, swimming pools, highchair, training table, crib, scale, playpen, feeding equipment (bottles, sterilizer), carriage, bathinette, and stroller.

Porch and Garden Furniture and Tools. Glider, outdoor

chairs, awnings, lawn mower, rake, hoe, spade, hose, hedge clipper, and flower bulbs.

Clothes. Winter clothes in summer, and vice versa. Raincoats, umbrellas, overshoes, and boots.

Bedroom and Bath Items. Sheets, blankets, pillows, pillowcases, spreads, towels, cloths, medicine, and shaving and sick-room equipment.

Recreation Aids. Cards, card tables, musical instruments, records, books, and picnic and camping equipment.

General Items. Luggage, sewing machine, and Christmas decorations (a considerable item).

A check of the foregoing list against the plans of the average house shows such plans to be woefully inadequate in regard to storage space. This is especially true of the house without a basement or attic. A solution is sometimes sought by providing a large storage room as part of the garage.

An easy way to add storage facilities to your garage is to use pegboard for the interior walls.

Planning the Storage Area

76. Regardless of the location of storage space, the articles stored should be as close as possible to their place of use. This is particularly true of articles in daily or weekly use, which must be close at hand. Articles in semipermanent or permanent storage may be farther away.

This means that your food storage should be in or near the kitchen. If there is a cold cellar for fruits and vegetables in the basement, the kitchen should have immediate access to the stairs leading to the basement. Dishes, table linen, silverware, and glassware should be stored adjacent to the breakfast nook and dining area, as shown in Figs. 16, 19, and 20.

There is a logical place to store each kind of article.

Size of Closets

77. Until comparatively recent times, closets were often haphazardly designed. Today, the high cost of space requires

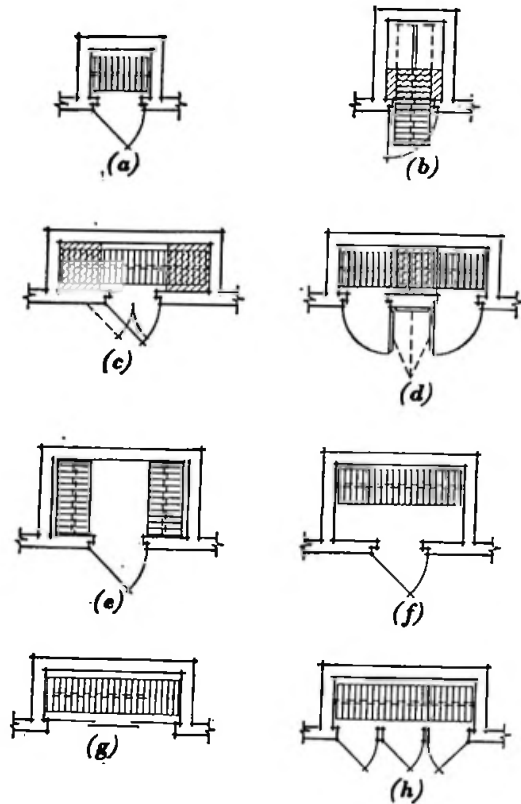


FIG. 44. TYPES OF CLOSETS

that closets be carefully planned. And efficient planning requires that any object in a closet be accessible without removing another object. Hanging space that does not permit you to remove easily and examine a garment is useless. The shape of a closet has a great effect on its usefulness.

As a general rule, you should allow a minimum of 5 lin ft (linear feet) of hanging space per person. For the usual closet, this provides a better index of closet capacity than floor area or cubage. Hanging poles are invariably placed too low. For adults, they should be 5'-8" above the floor.

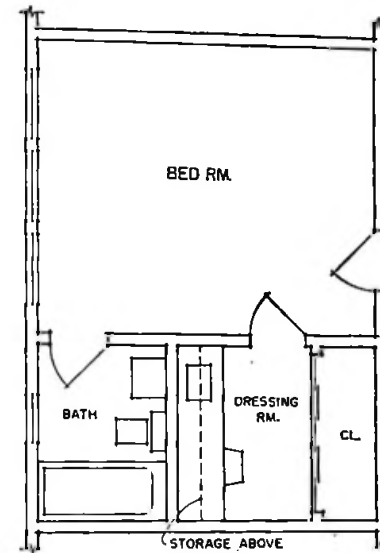


FIG. 45. BEDROOM WITH DRESSING ROOM

Mothproof bags for the storage of garments are approximately 22½" wide. A man's overcoat will measure a minimum of 24" in width. This means that no closet should be less than 2'-4" front to back.

Types of Closets

78. In Fig. 44 are shown various types of closets.

A small closet is shown in (a). This closet is 2'-4" deep and 8" wider than the width of the door. Since all the hanging space in this closet is accessible, this is a good arrangement.

In (b) is shown a deep, narrow closet. Normally, you would have to remove the objects in the front of the closet to get at the objects in the back. Even with the pull-out carrier indicated, the hanging space at the inner end of the carrier would be dead.

A wide, shallow closet is shown in (c). With the hanging space commonly arranged as shown, the only space that is

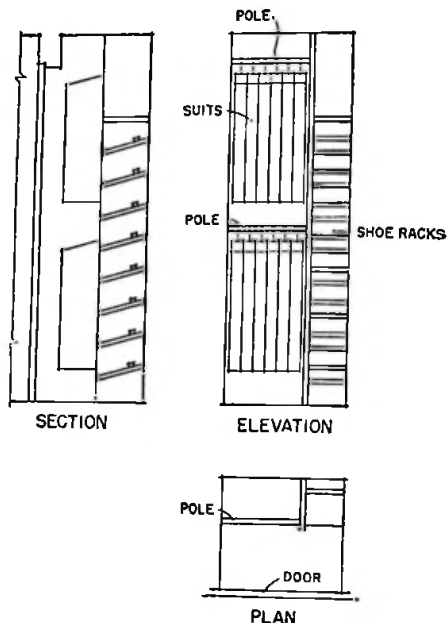


FIG. 46. PLANNED STORAGE FOR CLOSET

accessible is that in front of the door. And in the arrangement shown in (d) in which two doors are provided, the space between the doors is not accessible. In many cases the condition in (c) can be corrected by arranging the hanging space as shown in (e). Notice that the closet (e) can be made any depth, and can become a walk-in storage. The arrangement in (f) is good in that all the hanging space is accessible.

A closet with its entire front taken up by sliding doors is shown in (g). In considering this closet, keep in mind that the sliding doors take up excessive wall space and do not allow tie racks or shoe bags to be fastened to their backs as do the doors on the closet shown in (h). This type of closet is perhaps used to best advantage when a dressing room adjoins the bedroom, as shown in Fig. 45. The usual dressing room is about 8' x 10' in size and contains closets, drawers, dressing tables, and mirrors.

Utilization of Closet Space

79. In many closets the only space that is utilized is a 4' vertical hanging space. This means that the top and bottom space in the closet is wasted. One way to obtain a maximum of usable space is to build in drawers at the bottom of the closet or to drop most of the clothes poles 18" down and put some drawers and shelves above them, at the same time putting hooks and racks and accessories on the back of the closet door. In Fig. 46 is shown a closet in which the storage has been carefully planned. A tie rack and hat holders could be provided on the back of the door.

You can increase the storage space in your closets by making the closet ceilings the same height as the room ceilings and installing ceiling-high doors the full width of the closets. The top space in these closets is no good for active storage, but it is convenient to store suitcases, and to store summer things in winter and winter things in summer.

Requirements of Stairs

80. The stairway allows travel from one floor to another. The degree of ease with which travel is accomplished is the indication of a well or poorly planned stairs. Poorly planned stairs, awkwardly placed in the plan, too steep, or too narrow for two people to pass each other will cause constant discomfort. And to correct a poorly designed stairs is a major operation.

An important thing for you to remember is that not only people but also large pieces of furniture must go up and down stairs. From this standpoint, a straight-flight stairs is the simplest solution. And a straight-flight stairs without a landing is the most economical to build. But it is not the safest stairs or the most comfortable.

It is rarely appreciated that a person walking up stairs is lifting his weight the distance from one floor to another. It is more tiring to lift that weight in one continuous motion

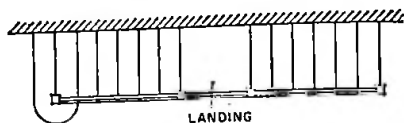


FIG. 47. STRAIGHT STAIR WITH LANDING

than to lift it halfway, take a few steps, and commence lifting again.

Older people have a tendency to lean forward as they walk, which puts them off balance. The possibility of their falling while going down stairs is consequently increased. Children a few years past the creeping stage go up stairs easily; but, since their eyes are not yet trained in depth perception, they may throw themselves off balance and fall as they go down stairs.

Women in high heels walking up stairs strike each tread with the ball of the foot. Walking down, however, they strike each tread with the heel; in this case the heel is not only raised but also reduced in area. The wonder is that more women do not fall down stairs. Also, for people troubled with a fear of high places, the sight of a straight run of stairs leading down is unpleasant and may lead to an attack of vertigo.

In general, a straight-flight run of stairs should be avoided. A good rule to follow is that no flight of stairs should have more than 14 risers. A landing is a desirable feature. In Fig. 47 is shown a single flight of stairs with a landing midway.

81. The objection to the arrangement shown in Fig. 47 is the amount of space that it requires. In a house with an 8'-0" ceiling and 1'-0" allowed for floor and ceiling construction, these stairs would have a total rise of 9'-0". If 15 risers are used, the height of each riser will be $7\frac{1}{3}$ ", which if the treads are $10\frac{1}{2}$ ", will make a comfortable stairs. With $10\frac{1}{2}$ " treads and a landing of 3'-0", the total length from the face of the first riser to the face of the last riser will be $14'-4\frac{1}{2}$ ". Such a distance can seldom be obtained without sacrificing other areas in the plan. Even if 14 risers are used, and the height to each riser is $7\frac{1}{2}$ ", the total length of the run would be

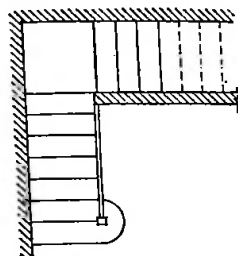


FIG. 48. STAIRS TURNED AT 90-DEGREE ANGLE

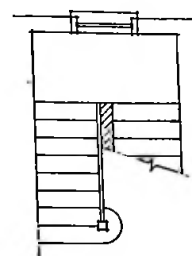


FIG. 49. STAIRS TURNED AT 180-DEGREE ANGLE

$13'-6\frac{1}{2}$ ". Other arrangements and ones that are usually more easily attained are shown in Figs. 48 and 49.

82. Occasionally, stairs are built as shown in Fig. 50. The treads in the area normally occupied by the landing are termed winders. Such winders present an extremely dangerous condition.

In homes with a basement, the stairs to the basement often start in the kitchen. If, however, the basement area contains a recreation room, the stairs may better start from the living room or entry hall. The recreation room is an extension of the living room, and there is no point in guests or family traveling through the kitchen to reach the recreation room.

The divided stairs shown in Fig. 51 are presented as an example of an undesirable arrangement of stairs.

These stairs start from the living room, arrive at a landing,

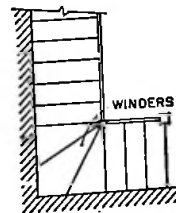


FIG. 50. STAIRS WITH WINDERS

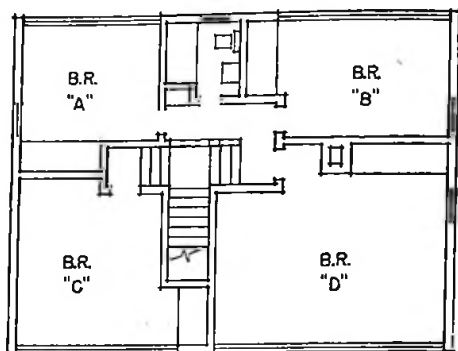


FIG. 51. DIVIDED STAIRS

and then divide, with the flight to the right serving three bedrooms and the bath, while the flight to the left serves only the bedroom C.

This means that a person in bedroom C must go down three steps, cross a landing, and then go up three steps to reach the bathroom. This is poor planning. Such an arrangement of stairs would be permissible only if bedroom C has its own private bath.

Planning a Stairs

83. In planning your stairs, keep in mind that these stairs should be properly proportioned. In general, the riser should not exceed $7\frac{1}{2}$ " ; the tread should be no less than 10", exclusive of the nosing. The common practice of making basement stairs with an 8" riser and a 9" tread cannot be too strongly condemned.

The number of risers in a stairs without a landing should not exceed fourteen, the width of the stairs should not be less than 2'-8" or more than 4'-0". A safe minimum distance to allow for headroom is 7'-0". The stairs should be well lighted. A window on a stairway is desirable. The relation of the stairs to the rooms at the top of the stairs should be considered. It should not be possible to look from the foot of the stairs di-

rectly into the bathroom. A stairs that is decorative as well as functional will require more study than a stairs that is solely functional.

A little time spent in proper planning will result in stairs that are a pleasure to all.

Corridors

84. To go from one area to another and from one room to another, corridors are necessary. Corridors should be not less than 3'-0" wide to permit the easy transfer of furniture, and they should be well lighted. You should keep the amount of space given to corridors to a minimum.

Summary

85. The work area includes the kitchen, laundry, garage, and storage areas. The work area should have privacy, but at the same time it should be easily accessible. It should be efficiently planned, with kitchen and laundry equipment arranged in a logical sequence and storage placed close to where it will be used. Closets for storage should have a minimum depth of 2'-4" and should be carefully planned.

Outdoor Areas

Relation of House To Outdoor Areas

86. In Art. 47 you learned that the outdoor living areas should be properly related to your program for living and to the living areas in the house. In fact, specific outdoor areas should be so related to individual rooms as to be visual extensions of these rooms and at the same time expand their usefulness. This is illustrated in Fig. 23 where playroom, dining room, living room, bedrooms and entrances have individual terraces. At the same time, the outdoor areas must be properly related to the overall house-garden plan.

The Patio

87. A popular, and perhaps overworked, word today is the word *patio*. In its beginnings this Spanish word referred to a courtyard, enclosed by the house and open to the sky. This protected area served as a combination- living-dining-barbecue area where family and friends relaxed, and children played sheltered from the summer sun. Today the word patio is still used to describe a fully enclosed courtyard; it is also loosely used to denote a terrace alongside a house, a separate garden area, or even a clearing in the forest. It may have shrubs and trees for walls, lawn for carpeting, and the sky for its ceiling; or it may be roofed over with the walls left wide open to the out-doors; it may be a room of the house itself with the outer wall missing. But whatever form it may take the patio today may be considered as an outdoor room that is intended to provide a pleasant leisurely way of life. As such it can be differentiated from the service or play area.

A common fault in the design of patios is to attempt to combine in one area all the elements that could be better served by two or more areas. The patio should not lose the appeal of intimacy. It should not be so large as to remind you of a public playground. While patios are also for children, for

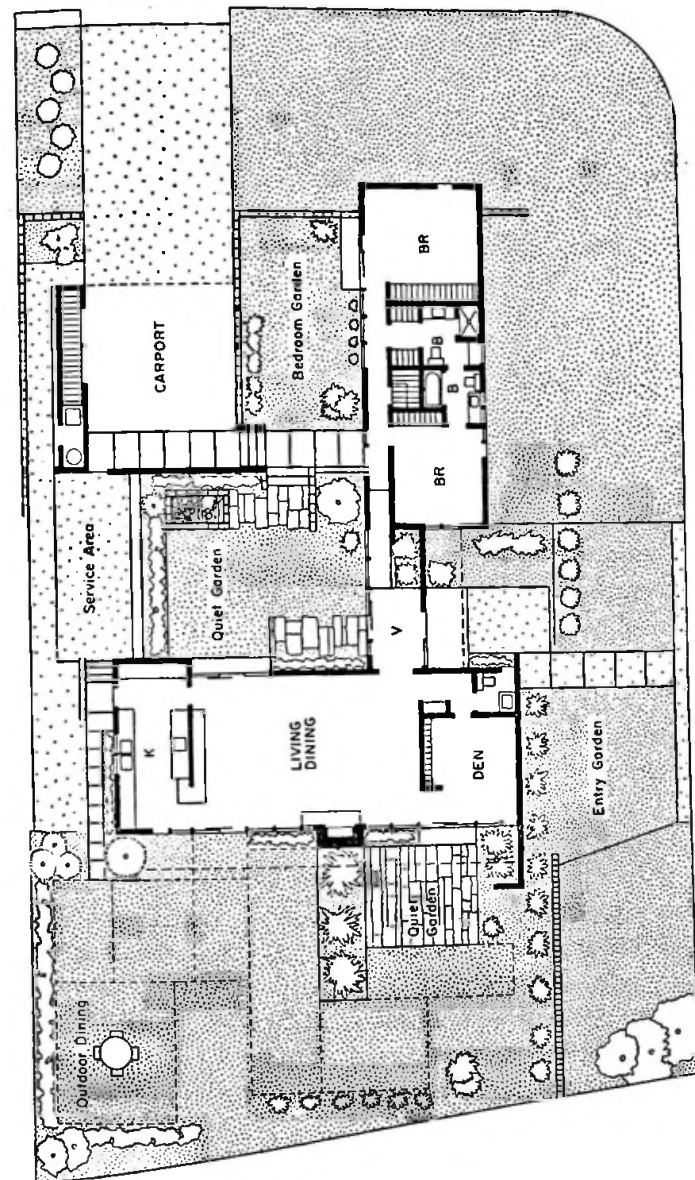


FIG. 52. SPECIFIC GARDEN AREAS RELATED TO INDIVIDUAL ROOMS

certain games it will be advisable to provide separate play areas.

Factors Affecting the Design of Outdoor Areas

88. Some of the factors that enter into the design of an outdoor area are the following:

1. The area should be oriented to invite or to evade the sun depending upon local climatic conditions. Any area will be benefited by screening that blocks the rays of the late afternoon sun.
2. The area should be properly related to expand the areas of the house, for lounging, dining and cooking, work, and play. A barbecue will often provide a center for casual dining.
3. The area should be of the proper size to accommodate the specific activities and furnishings for which it is intended.
4. The area should satisfy the need for privacy. Privacy may be obtained by screened fencing, by vines, and by planting.
5. Planting should also be used to provide shade, texture, fragrance, and color.
6. An open fireplace extends the use of the patio into cool evenings. Such evenings bring the fellowship of the camp-fire into the home.
7. The area will frequently require durable, non-skid, easy-to-clean flooring that is pleasing to look at and walk on.
8. Overhead screens can be used to break up winds, and to give a choice between sun and shade.

In Fig. 52 is shown the plan of a house and its site in which the grounds have been designed as an integral part of the house. Separate outdoor areas have been provided for living room, dining room, kitchen, bed rooms and entrance.

Summary

89. The outdoor areas should be designed to supplement

the areas within the house and at the same time be properly related to the overall house-garden plan. Specific outdoor areas should be so related to individual rooms as to be visual extensions of these rooms and also expand their usefulness.

You are now familiar with such considerations as financing, the selection of the site, indoor-outdoor living, and the requirements of the main areas of the house. You have learned that the space for living, sleeping, and work areas of the house should be planned so that each area is easily accessible and at the same time has some privacy. You have begun to think in terms of space rather than in terms of rooms and partitions.

In Part 2 you will study the various types of plans that may be used to assemble the space contained in a house into a satisfying whole.

House Planning

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Part 1

Edition 2

Examination Questions

Notice to Students.—Study this instruction text thoroughly before you answer the following questions. Read each question carefully and be sure you understand it; then write the best answer you can. You will profit most if you answer the questions in your own words. When you complete your work, examine it closely, correct all the errors you can find, and see that every question is answered; then mail your work to us. **DO NOT HOLD IT** until another examination is ready.

1. What rooms or parts of a house are included *a*) in the living area, *b*) in the sleeping area, and *c*) in the work and service area?
2. What three items of prime importance would you be careful to investigate before purchasing a site.
3. Draw freehand or mechanically at a scale of not less than $\frac{1}{8}'' = 1'0''$ a plan of a work area, showing the kitchen, laundry, and breakfast nook. Show kitchen and laundry equipment, doors, windows, and service and front entrances to the house.
4. Draw freehand or mechanically at a scale of not less than $\frac{1}{8}'' = 1'0''$ a plan of a multiple-occupancy bathroom. The bathroom is to have a tub, shower, lavatory, water closet, medicine cabinet, window, and door.
5. Draw freehand or mechanically at the scale of not less than $\frac{1}{8}'' = 1'0''$ a plan of a living area, showing the living room, dining room, and front vestibule. Show doors and windows.
6. Your family includes you, your wife, and your son and daughter. List the schedule of rooms for the new ranch-type house that you have decided to build. The house will include a two-car garage. Give room sizes.

H O S