

CIRCULAR SERIES

INDEX  
NUMBER **A2.0**

SPECIFICATIONS  
FOR THE ERECTION  
Covering labor and  
GENERAL

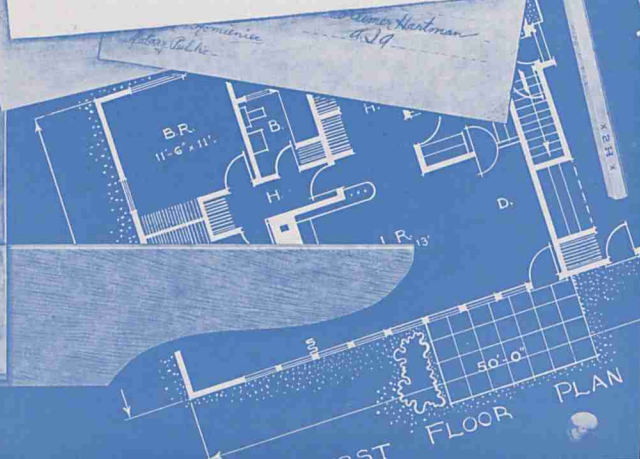
WAIVER OF LIEN  
MATERIALS OR LABOR

AGREEMENT BETWEEN  
CONTRACTOR AND OWNER

AGREEMENT BETWEEN  
OWNER AND ARCHITECT  
THIS AGREEMENT

# BUSINESS DEALINGS

With the Architect  
and the Contractor



ISSUED BY THE  
**SMALL HOMES COUNCIL - BUILDING RESEARCH COUNCIL**

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BUSINESS DEALINGS  
SMALL HOMES COUNCIL

**A2.0**

## WHOSE SERVICES DO YOU NEED IN BUILDING?

Among persons who have built homes, some remember building as a pleasant experience. Others look back upon it with displeasure and disappointment because of unanticipated costs and, perhaps, lawsuits. The difference between pleasant and troublesome building is usually due to the amount of care exercised by the owner in business matters. Equally important are the ability and the integrity of the people engaged to plan and build the project.

Each step in building is an important transaction involving large sums of money. To build without professional advice and written agreements is foolhardy.

The business agreements and procedures in home building which concern the homeowner are described in this circular, as are the services offered by architects and contractors. While this circular refers primarily to the single-family house, the information is also applicable to multi-family and commercial construction. (See SHC-BRC Circular A1.3 — "Financing the Home," for procedures in arranging a loan.) By acquainting yourself with the services of the architect and the contractor (home builder) you — as a prospective homeowner — can make the most of the guidance of one or both, depending on the professional aid you choose. While the description of services and documents may seem complex, they take on a logical and uncomplicated order when the owner has the help of a capable architect and a reliable contractor.

Planning and building a house entails obtaining a workable set of plans and specifications; preparing and awarding of contracts; building operations; and satisfactory completion of the building and conclusion of contracts.



## OBTAINING PLANS AND SPECIFICATIONS

A good set of plans and specifications is essential. Regardless of where you obtain these plans and specifications, you should first develop an intelligent listing of your needs — the number of rooms, size, type, location, arrangement — and fit these needs to your building budget.

### Plans and specifications may be secured from:

- **An architect.** By engaging an architect, you can be assured that the drawings and specifications will be complete and accurate, and the house will be well-planned and designed for you individually. To select your architect, you should consider:
  1. Recommendations from satisfied clients of architects.
  2. The architect's tastes and yours. The type of work which the architect does should agree with your tastes. Study houses which architects have done.
- **A plan service agency.** "Stock" house plans prepared by such agencies can be purchased from magazines or secured from material dealers. Many of these agencies employ architects, and their plans and specifications are satisfactory. Some stock plans are inferior in design and their specifications may be incomplete. The owner must judge whether the plan is well designed, and rely on his material dealer or contractor as to the adequacy of the plans and specifications.

An owner who selects a stock plan and makes modifications is likely to encounter trouble unless he has competent assistance to make the alterations. All revisions must be recorded and must be fully understood by the contractor before the revised plans and specifications are used as contract documents.

- **Complete service builder.** If the house is constructed by a builder who furnishes plans, specifications, and all building operations, the builder will provide the minimum plans and specifications required by code and lending agencies. The stock plans available through these organizations are subject to the limitations described above.





## PREPARING THE CONTRACT DOCUMENTS

When the plans and specifications are completed, you, as owner, will become concerned with preparing and awarding the contracts for construction. (See page 7.) Plans and specifications must be approved by your loan agency before the contract is awarded. If you have an architect, he will supply the necessary technical information for the contracts to be drawn up by you and your attorney. The architect will assist in awarding the contract.

Without an architect, you must select and engage a contractor yourself, and with him prepare the necessary documents. When the contract is signed, the contractor becomes responsible for the building operations.

Written agreements are necessary to describe the obligations of the various parties concerned with planning and building operations so that nothing is taken for granted. Such agreements protect the interests of all parties. Each party to the agreement should have a signed copy.



## SELECTING A CONTRACTOR

When you have an architect, the usual method of selecting a contractor is through competitive bidding by equally competent and responsible contractors. The architect issues a set of plans and specifications to each contractor invited to submit a bid. Instructions must clearly state the basis on which the bid is to be awarded. The lowest bidder is usually selected. If the lowest bid is not low enough, you can either: 1) ask the lowest bidder to confer with you and your architect as to what changes can be made to cut costs; or 2) ask two or three of the lowest bidders to refigure from a list of deletions and substitutions to be made in the plans and specifications. Method 1) is usually more satisfactory. All changes should be made a part of the plans and specifications.

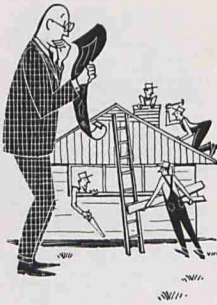
Another way to select a contractor is on the basis of recommendations of the architect, or of material dealers, lending agencies, or friends. If there is no architect, the recommendation method is preferred since most owners are not qualified to select a contractor by competitive bidding.

Sometimes an owner attempts to plan and build a house himself with the aid of subcontractors. Don't try this if you are inexperienced in building.

### Some Rules for Trouble-Free Building

1. Have a good set of working drawings and specifications which describe all the work involved. Be sure that you know what work and materials are included.
2. Do not attempt to obtain bids from every contractor. Unqualified contractors should not be permitted to bid. Neither should a contractor be asked to bid merely for the benefit of having his estimate. Estimating takes time and costs money.
3. Prepare written agreements with your architect and the contractor. The agreements should list the responsibilities and duties of each party. The American Institute of Architects has standard contract documents which are acceptable to most architects and contractors. It is wise to consult an attorney in regard to these legal documents.
4. Since the construction contract is between the owner and the contractor, all questions which arise during construction should be directed to the contractor. If an architect is employed, all communications with the contractor should be channeled through the architect. Don't ask favors of, issue orders to, or complain to the workmen or subcontractors.
5. If you believe that something is wrong, get the matter settled. If your contractor is the kind he should be, he will correct his mistakes.
6. Do not blame the contractor for delays beyond his power. Do expect him to finish his work promptly.





## THE ARCHITECT AND THE SERVICES HE PERFORMS

The title of "architect" is a legal one, indicating that a person has demonstrated his professional competence by examination and is registered—or licensed—by the State to practice architecture. The drawings necessary for construction purposes are also prepared by **designers** and **draftsmen**. However, they are not licensed to practice architecture.

The **usual duties** of the architect are to:

1. Analyze the family's living needs and relate these to the building budget.
2. Visit the site to determine the desirable location of structure and rooms. (The architect may even advise the owner in choosing a site.)
3. Draw preliminary sketches (general plan and appearance of the project).
4. Prepare preliminary estimates of costs.
5. Prepare working drawings and details (exact dimension drawings showing floor plans, exteriors, structural details, mechanical installations).
6. Prepare specifications. (See page 7.)
7. Provide the necessary technical information for contracts relating to the work of the contractor and, in special cases, to the work of subcontractors.
8. Advise on the selection of the contractor or contractors. In competitive bidding, the architect analyzes the bids for the owner.

If the owner wishes to give the responsibility for the entire construction operation to the contractor, the architect concludes his services at this point. However, the usual procedure is to have the architect carry on the administration of the construction contract to the completion of the project. If he does this, then his **further duties** are to:

9. Observe construction to determine in general that the work is carried out according to the plans and specifications.
10. Examine requests from the contractor for changes or substitutions of materials; make written recommendations to the owner for the disposition of proposed changes; and to issue written "change orders" for approved changes.
11. Check requests from the contractor for payments, and issue certificates for payment.
12. Make a final inspection.
13. Prepare a certificate for final payment when the project is complete.

## Fees and Payments

Many people hesitate to ask an architect about his services because they fear their inquiry will place them under obligation; however, no obligation is incurred until a contract is signed with the architect.

The fee\* for an architect who performs the duties mentioned above varies from 6 to 15% of the total cost, depending on the size and complexity of the project. When the architect performs only partial services, the fee is reduced. Services may also be provided on an hourly or negotiated basis. Additional reimbursable expenses may be due the architect. Any such expenses will be explained in the agreement between the owner and the architect.

The schedule of payments to the architect as recommended by the American Institute of Architects is as follows: 1) retainer, 2) at completion of design phase, 3) at completion of construction documents phase, 4) at completion of bidding or negotiation phase, 5) monthly during the construction phase. This schedule is sometimes modified, depending on the size and complexity of the project.

If the owner decides not to build at any point during his dealings with the architect, this decision does not release him from paying the fees incurred up to that point.

\* FHA permits loan agencies to include the architect's fee in the evaluation of the project.

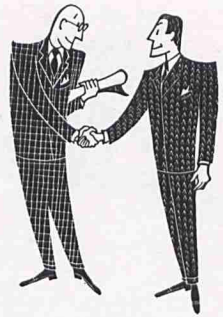
## THE OWNER-ARCHITECT AGREEMENT

The owner-architect agreement should:

1. Describe the services of the architect.
2. State the amount, the time, and the method of paying the architect's fees.
3. Set forth the owner's responsibilities. These are to:
  - Provide the architect with information regarding restrictions, easements, boundaries of the site, sewerage, and utilities.
  - Have a survey made of site showing contours, grades, adjoining properties, and streets.
  - Give prompt, careful consideration to all papers submitted by the architect.

An owner-architect agreement will clear up such misunderstandings as those relating to:

- **The architect's function.** The architect's function is not to "draw blueprints," but to perform a service for the owner. All contract documents (drawings, blueprints, and specifications) furnished by the architect remain his property and are not to be used by the owner for other than the specific project for which they were made.
- **The use of the word "architect."** This term, when used in a contract, implies the architect himself or any person he designates to represent him.
- **The architect's role as an arbitrator.** If the owner and the contractor disagree, the architect (if he administers the construction contract) shall be the impartial interpreter of the requirements of the contract documents. The owner and the contractor must report their dissatisfactions to him. The owner should not think that all decisions will be in his favor because he pays the architect.
- **The architect's role during construction.** The architect does not provide constant observation of the project. His responsibility at the site is to make periodic visits to determine in general if the work is proceeding in accordance with the contract documents. On larger and more complicated projects, it may be desirable for the owner to have more extensive representation at the site. Such additional service would be an additional expense to the owner.



## COMPREHENSIVE SERVICES

Some architects offer comprehensive services. In addition to the services described previously, such an architect may take on the duties commonly performed by a contractor. He superintends and coordinates the work of the separate trades. For these extra services, he is paid an additional fee.

The architect who offers this service has the contract documents for the individual trades written in such a form that each trade becomes a contractor. Each provides its own permits, pays any sales tax, carries necessary insurance and workmen's compensation, and complies with all laws, ordinances, and codes.

Bids are requested from several contractors for each trade. The architect assembles the several bids and then, with the owner, selects the contractors. The lowest bidders are usually selected unless the time element or quality of workmanship becomes a factor. The owner signs the contracts with the separate contractors — each of whom represents a different trade. The architect takes out the general building permit for the owner; the owner pays for it. The trades are notified by the architect when to begin work.

The architect visits the project each day to see that the work of the trades is coordinated and that contract documents are being followed.

As the owner's representative, the architect prepares certificates for payment when the trades are to be paid. He sends the certificates to the owner, who makes out checks payable to the contractors. The architect may distribute the checks and may collect waivers of lien. (See page 6.) When there is a construction loan, the loan agency usually distributes the checks and collects the waivers.





## THE CONTRACTOR AND THE SERVICES HE PERFORMS

The contractor assumes the responsibility of constructing the project. He is in charge of all building operations.

The contractor must be competent in his work, in his financial affairs, and in his business relationships. Rate all contractors whom you are considering according to:

Financial resources; credit.

Reputation in general (Integrity, cooperation, and fair dealings.)

Ability to get the job done on schedule.

Experience and competence. (Years in business, work done, type of structures built, knowledge of existing conditions.)

Relations with labor, subcontractors, and material men. (Subcontractors must like to work with the contractor.)

The contractor furnishes all the material and performs all the work for the project as shown on the drawings and described in the specifications. Specifically, he:

1. Carries out the provisions of the contract documents. (See page 7.)
2. Orders and pays for the materials.
3. Coordinates shipment of the materials to the site.
4. Awards subcontracts to the various trades and schedules the work of each.
5. Directs construction.

## Fees and Payments

The usual arrangements for payment:

**Lump sum** (most common). The contractor agrees to construct the project for a fixed sum, which includes all costs and the contractor's profit. The owner pays this sum, plus any "extras" due to changes or omissions.

**Cost-plus**. The contractor is paid the actual cost of materials and labor plus a fixed fee (or fixed percentage of costs—usually 10% to 15%—for his overhead and profit). This method does not place an upper limit on the cost of the project.

**Maximum total**. The maximum total cost of the project is agreed upon by the owner and the contractor. This includes the contractor's fees. Any saving in total cost is divided between the owner and the contractor.

The usual schedules for making payments are:

**Partial payment**. This plan is the most commonly used. Payments are made monthly, based on the amount of work completed and materials delivered to the site.

**On completion**. The contractor receives the entire amount upon completion of the project. Few contractors will accept this method on a project which extends over a period of several months.

In each of the above methods, a percentage (usually 10%) of the value of the work completed is retained by the owner. This retained amount is due upon the final acceptance of the project by the owner.

## Liens and Waivers of Lien

A **lien** is a claim against a project under construction whereby the real estate (if a private project) or the fund appropriation (if a public project) is made security for material or labor. It gives the contractor, workmen, material dealers, and, in some states, architects, a claim against the owner for the materials and labor supplied for the project.

A **waiver of lien** (an affidavit waiving the right of lien) certifies that all bills for labor and material have been paid. The owner should insist that the contractor present evidence that subcontractors and material dealers have been paid each time the contractor asks for payment. In order to protect the owner against possible liens, a waiver of lien must be secured from each subcontractor and supplier, as well as from the contractor.



## CONTRACT DOCUMENTS

All business arrangements relating to the actual construction are between the owner and the contractor, whether or not an architect is engaged to design the project and to follow it through to completion.

The contract between the owner and the contractor consists of the contract documents, which usually contain the following items.

- **Agreement.** This should state all points agreed upon by the owner and the contractor — *i.e.*, scope of work; time of completion; and amount, method, and time of payment. Because it avoids misunderstanding, an agreement helps to create and maintain pleasant relationships between the owner and the contractor. Should misunderstandings arise in cases where no architect is involved, the services of an impartial arbitrator (*i.e.*, a lawyer, an architect) should be obtained.
- **General conditions of the contract** (including supplementary or modifying conditions). This lists 1) the responsibilities and obligations of the contractor and the owner to each other (See page 8); and 2) the duties of the architect in relation to the contractor.
- **Plans and specifications.** The plans consist of all drawings in connection with the work; the specifications consist of a description of all materials, their quality, and installation or application.
- **Changes, modifications, and interpretations.** All changes or interpretations should be made in writing.

### What the Specifications Include

The contractor is responsible only for the materials and construction of the project as described in the specifications and drawings.

The specifications should include a description of all materials used, including brand names, quality markings, and model numbers where applicable. Check carefully. Items omitted become “extras” — the owner pays for them over and above the contract. In addition to materials, the specifications describe the work to be done by listing all the necessary building operations under major classifications, such as site work, concrete, masonry, metals, carpentry, finishes, furnishings, mechanical, and electrical.

Common practices in certain trades often give rise to misunderstandings when the homeowner is not familiar with these practices. For example, the electrical work usually includes the provision and installation of electrical wiring, devices, and any special items such as the kitchen fan, if specified. Lighting fixtures can be purchased separately, or a cash allowance is provided, whereby savings or costs in excess of the stipulated allowance would revert to, or be paid by, the owner.

Hardware specifications may include only rough hardware — *i.e.*, garage and sliding door hardware, and all nails, bolts and screws. Finish hardware may be specified or covered by a cash allowance as described above.

### Surety Bonds

The owner may require the contractor to furnish bonds covering the faithful performance of the contract and the payment of all obligations arising from the contract. These are generally referred to as the Performance Bond and the Labor and Material Payment Bond. These bonds assure the owner that the contract will be fulfilled, including payment of all obligations, if for some reason the contractor is unable to complete the project. The purpose of bonds is similar to insurance against fire, damage, or accident. However, bonds differ significantly from insurance contracts. Since the laws governing surety bonds vary considerably from state to state in regard to the obligations of the parties concerned, the assistance of an attorney is advisable.



## General Conditions of the Contract

The general conditions are important because they define the rights and responsibilities of the owner and the contractor. Don't overlook them. Below is a digest of some of the provisions of the General Conditions of the Contract, September, 1967 Edition, published by the American Institute of Architects.

CONTRACTOR	OWNER
<b>Insurance</b>	<p>The decision as to whether the contractor or the owner will provide certain coverage is, in many cases, arbitrary. The important consideration is that all reasonable risks are insured.</p> <p>Purchase and maintain liability insurance, to include workmen's compensation, bodily or personal injury, and property damage. Coverage shall include injury or damage by the contractor or anyone employed directly or indirectly by him. Certain exclusions, completed operations, and other modifications shall be covered if requested by the owner, and limits of liability should be approved by the owner.</p> <p>Generally, it is not possible to insure against theft of materials at the construction site. In a lump-sum contract, such material is the property of the contractor and is his responsibility. In a cost-plus contract, such material is the property of the owner and is his responsibility.</p>
<b>Permits</b>	<p>Purchase and maintain property insurance, to include fire, extended coverage, vandalism, and malicious mischief to cover all property at the site (this will not include contractor's tools). Also, the owner should carry his own liability insurance. Consult with insurance counsel in regard to exact terms of coverage and limits of liability.</p>
<b>Ordinances</b>	<p>Responsible for securing and paying for all permits, fees, and licenses required for the work, and shall give all notices required for the work. These would include city building permits, utility connection fees, etc.</p>
<b>Surveys</b>	<p>Comply with all laws, ordinances, rules, and regulations of any public authority.</p>
<b>Taxes</b>	<p>Furnish complete survey showing legal description, easements, utilities, and physical description of site.</p>
<b>Other Responsibilities of the Contractor</b>	<p>Pay all sales, consumer, use, and other taxes.</p>
<b>Other Subjects Covered in the General Conditions</b>	<p>Provide and pay for all labor, water, power, equipment, temporary heat, tools, and scaffolding necessary during construction.</p> <p>Provide and maintain necessary sanitary facilities.</p> <p>Pay royalties and license fees; defends all claims for infringement of patent rights.</p> <p>Pay necessary expenses in connection with protecting his work from damage.</p> <p>If requested: Furnish surety bond guaranteeing completion of contract.</p> <p>Supervise the work continuously; is responsible for its correct execution.</p> <p>Leave the house "broom clean" — ready for the owner to move into.</p> <p>Guarantees all work; makes good all defects due to labor and materials for 1 year or more after acceptance; is responsible for damages caused by his negligence.</p>
<b>Other Subjects Covered in the General Conditions</b>	<p>Definition of the contract documents and the intent and disposition of the documents.</p> <p>Explanation of the architect's role and responsibilities to the owner and contractor during his administration of the construction contract.</p> <p>Arbitration procedure.</p> <p>Time required for the completion of the contract, including delays and extensions.</p> <p>Method of payments to the contractor.</p> <p>Changes in the work and correction of work which does not conform to the contract documents.</p> <p>Termination of the contract.</p>

### Changes and Change Orders

Probably more trouble and misunderstandings during construction are caused by changing the original plans and specifications than by any other act.

If changes are to be made during construction by either the owner or the contractor, or if extras are to be added, the instructions should be put in writing before the change is made. Have a written agreement on the cost of the change, whether an addition or deduction. Be sure that changes can be paid for from your cash or included in the loan.

When an architect is employed, the instructions and authorization for the change are issued by the architect in the form of a change order.

### Terminating the Contract

Either the owner or the contractor may end a contract before the project is completed under circumstances varying according to state statutes and terms of the contract. Written notice must be given.

Generally, the owner can terminate a contract if the contractor neglects to do the work properly or fails to perform any provision of the contract. The owner must, however, pay the contractor for work done, less damages.

The contractor may end a contract if the owner fails to pay him within a certain time after a payment is due or if work is stopped for any length of time by any public authority, or the owner.



RESEARCH AND SOME COMMERCIAL REFERENCE MATERIALS  
AVAILABLE  
to  
COUNTY AGENTS

STANDARD DIMENSIONS HELPFUL IN PLANNING  
FAMILY HOUSING

I. STANDARD WINDOW AND DOOR SIZES

DOORS

WINDOWS (double-hung wood)

	<u>Width</u>	<u>Height</u>	<u>Thickness</u>
<u>Exterior</u>			
Front	*3'-0" x 6'-8"	x	1-3/4"
Back	3'-0" x 6'-8"	x	1-3/4"
	*2'-8" x 6'-8"	x	1-3/4"
<u>Bath</u>			
	2'-0" x 6'-8"	x	1-3/8"
	*2'-4" x 6'-8"	x	1-3/8"
	2'-8" x 6'-8"	x	1-3/8"
<u>Closet</u> (hinged or sliding)			
	2'-0" x 6'-8"	x	1-3/8"
	2'-4" x 6'-8"	x	1-3/8"
	2'-8" x 6'-8"	x	1-3/8"
	3'-0" x 6'-8"	x	1-3/8"
<u>Bedroom</u>			
	2'-6" x 6'-8"	x	1-3/8"
	*2'-8" x 6'-8"	x	1-3/8"
	3'-0" x 6'-8"	x	1-3/8"

	<u>Width</u>	<u>Height</u>	<u>Thickness</u>
<u>Kitchen</u>			
<u>Sink</u>	2'-0" x 3'-2"		
	2'-4" x 3'-2"		
	2'-8" x 3'-2"		
	*3'-0" x 3'-2"		
	3'-4" x 3'-2"		
<u>Bath</u>			
	2'-0" x 3'-2"		
	*2'-4" x 3'-2"		
	2'-8" x 3'-2"		
<u>Bedroom</u>			
	2'-8" x 3'-2"		
	3'-0" x 3'-2"		
	2'-8" x 3'-10"		
	3'-0" x 3'-10"		
	*2'-8" x 4'-6"		
	*3'-0" x 4'-6"		
	3'-4" x 4'-6"		
	2'-4" x 5'-2"		
	2'-8" x 5'-2"		
	3'-0" x 5'-2"		
	3'-4" x 5'-2"		

Standard double-hung wood sashes are 1-3/8" thick

<u>PICTURE WINDOWS</u>	<u>W i d t h s</u>	<u>Hgt.</u>
(with flanking double-hung sashes)	1'-8" x 3'-0" x 1'-8" x 3'-0"	4'-6"
	2'-0" x 3'-0" x 2'-0" x 3'-0"	4'-6"
	1'-8" x 4'-0" x 1'-8" x 4'-0"	4'-6"
	2'-0" x 4'-0" x 2'-0" x 4'-0"	4'-6"
	1'-8" x 5'-0" x 1'-8" x 5'-0"	4'-6"
	2'-0" x 5'-0" x 2'-0" x 5'-0"	4'-6"

\* most commonly used

## II. POPULAR SIZES OF EQUIPMENT

	<u>Width</u>	<u>Depth</u>	<u>Height</u>
Ranges	20", 24", 30" 36", 39", 42"	25"	36"
<u>Surface Units</u>	15", 30", 42"	20"	
<u>Range Hoods</u>	30", 36", 42" 48"	20"	
<u>Ovens</u>	23" 30"	24" 24"	27" 29"
<u>Refrigerators</u>			
11 cu. ft.	26"	29"	59"
13 cu. ft.	32"	28"	60"
<u>Refrigerator-Freezers</u>			
12 cu. ft.	32"	28"	59"
14 cu. ft.	32"	28"	65"
<u>Upright Freezers</u>			
12 cu. ft.	33"	29"	59"
16 cu. ft.	32"	27"	72"
20 cu. ft.	32"	31"	72"
<u>Chest Freezers</u>			
13 cu. ft.	48"	31"	38"
17 cu. ft.	60"	31"	38"
21 cu. ft.	71"	31"	38"
5 cu. ft.	32"	24"	38"
<u>Dishwashers</u>			
Portable	21" 24"	28" 26"	34" 34"
Built-In	24"	24"	34"
Sink D.W.	48"	25"	36"
<u>Sinks</u> (without drainboards)			
Single	24"	21"	
Double	32", 42"	21"	



	<u>Width</u>	<u>Depth</u>	<u>Height</u>
<u>Water Heaters</u>			
Table Top			
30 gal.	21"	25"	36"
40 gal.	21"	25"	36"
52 gal.	24"	25"	36"

## Round

30 gal.	18"		38"
52 gal.	20"		53"
66 gal.	23"		52"
82 gal.	25", 23"		62"
6 gal.	16"		18"

<u>Diameter of Jacket</u>	<u>Height of Jacket</u>
---------------------------	-------------------------

## Standard Low Boy

20 gal.	18"	28-3/8"
30 gal.	20"	30-7/8"
40 gal.	22 $\frac{1}{2}$ "	30-5/8"
52 gal.	24 $\frac{1}{2}$ "	32-5/8"

<u>Washing Machines</u>	<u>Width</u>	<u>Depth</u>	<u>Height</u>
Wringer	29"	---	47"
Automatic	24"	25"	36"
	29"	25"	36"
<u>Dryers</u>	29"	25"	36"

III. CABINET DIMENSIONS

	<u>Height</u>	<u>Depth</u>
Base Dimensions	36" (34"-38")	24"
Wall Dimensions	30"	12"
Toe Space	4"	3"

Distance from counter top to bottom of wall cabinet is 15" generally but may vary from 12" to 18" to suit individual's height.

Bottom cabinet should be 9" to right or left of range or be of fireproof material.

IV. CHIMNEY FLUE

16" x 16" brick with 8" x 8" terra cotta flue lining. Avoid projecting flue through roof valley or hip. In home remodeling flue can be more conveniently added on exterior of house. Extend all chimneys 2'-0" above ridge of roof if within 15' of chimney.

# Plan a Sewing Center ...



ideas for:

- working arrangements
- storage
- lighting
- equipment to make

## PLAN A SEWING CENTER

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# PLAN A SEWING CENTER

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Specialist (Housing)

You will find more time to sew if you have a well-planned sewing center that is organized so that equipment and supplies are easy to reach and easy to use.

Plan your sewing center according to your individual needs. The size of your home, room arrangement, and the size of your family will determine the amount of space available. For the homemaker who sews a lot, an entire room would be ideal. However, convenient and attractive sewing centers may be located in other rooms such as the family room, den, bedroom, workroom, or in a large kitchen.

Space requirements and sewing needs have been established by home economists at several universities. Recommendations in this publication are based on their findings.

## LIST ALL NEEDS FIRST

Before making definite plans for the size of your sewing center, list all activities that will be included in this area or room. Then list all large equipment you will use, such as sewing machine, cutting table or cutting board, ironing board, pressing equipment, full-length mirror, and convenient storage for supplies.

Your needs and preferences will determine the amount of space needed and the location of your sewing center. Lack of space in many homes makes it necessary to have compact sewing centers. However, if you can have a separate sewing room, the sewing machine can be left open while working on major projects, and the ironing board can be left up at all times. This will save time and energy in assembling and in putting away materials and equipment.

## HAVE ENOUGH STORAGE

### Chest-Type Cabinet

A sewing cabinet, chest of drawers or a storage closet for sewing supplies and small equip-

ment located within easy reach of the active sewing area is convenient, if carefully planned. Drawers, trays, or shelves should be located and designed specifically for items to be stored—such as a partitioned, easy-to-reach drawer for scissors, shears, thimbles, pins, tracing paper, tracing wheel, etc.; a drawer with adjustable partitions for filing patterns; another partitioned for thread, and other drawers for such items as fabrics, garments under construction, garments to be mended, machine attachments, etc.

The storage cabinet designed by the Southern Agricultural Experiment Stations is a free-standing unit 36½ inches high. (See Figure 1) When drop leaf is up, it has a cutting surface of 45 by 48 inches. The eight drawers are partitioned for specific items. For efficient operation, use easy-glide hardware on drawers.



Figure 1. Sewing cabinet with drop leaf extended for cutting. Drawers provide space for sewing materials and supplies. (Designed by Southern Agricultural Experiment Stations.)

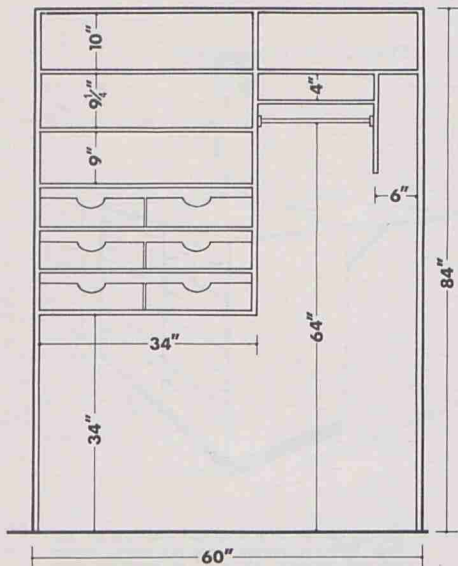
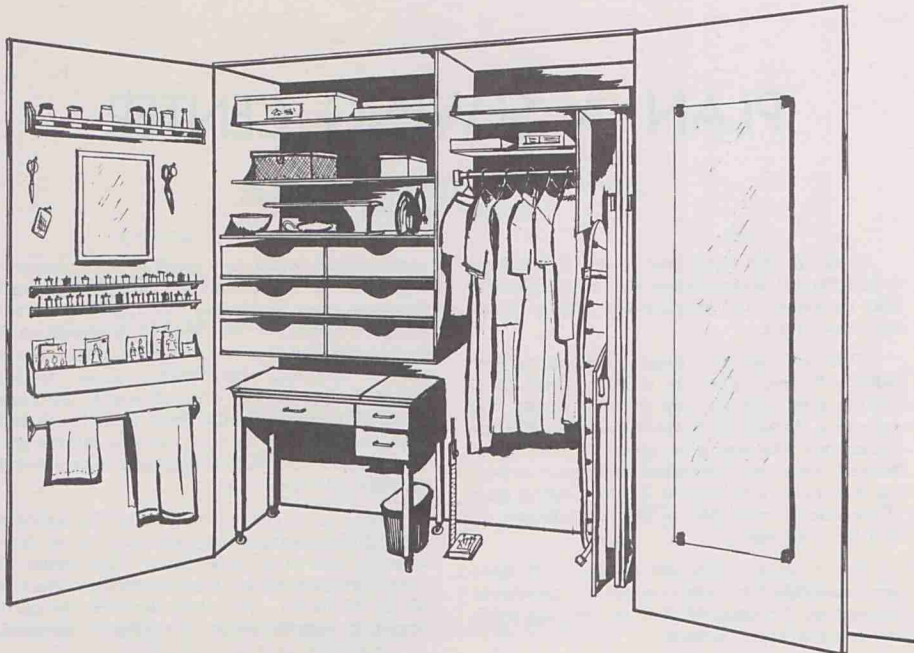


Figure 2. This storage closet will take care of all your storage needs for sewing, pressing and cutting. ("Space Design for Household Storage," Helen McCullough, University of Illinois, Urbana, Ill.)

Figure 2A. Dimensions of the storage closet above are shown in drawing at left.

For a larger cabinet and cutting area, use a cabinet 20 inches deep and 72 inches long with a drop leaf that would increase the cutting area to twice the cabinet size. If you prefer, use other measurements to accommodate the length of fabrics needed for garments you make.

### Chest of Drawers

For the homemaker who does a limited amount of sewing, a chest of drawers approximately 36 inches wide with drawer depth 14 to 16 inches would store a minimum of materials and supplies. A chest of drawers already on hand may prove useful. Use partitions and/or plastic trays or small boxes in drawers to make the chest more functional.

### Storage Closet

Where wall space permits, you may prefer a closet for storing your sewing and mending equipment and supplies. A closet 5 feet wide by 2 feet deep as shown in Figures 2 and 2A provides space for a standard cabinet-type sewing machine, folded cutting table, ironing board, sewing table, and space for hanging garments and folded materials. It has space also for an iron, sleeve board,

skirt marker, pan, sponge, press cloths, yardstick, waste basket, and all other equipment and accessories needed in tailoring. If a portable sewing machine is used, a 4-foot width would be sufficient.

The cabinet provides for further convenience—a long mirror fastened to the inside of one door and small racks for holding spools, patterns, and accessories on the other door. Adjustable shelves will make the space more usable. (Metal strips used for these shelves are inexpensive.)

For safety, use asbestos board on the shelf and adjoining wall where you store hot irons. Install a hook directly above this shelf to hold the cord away from the iron.

The folding sewing table (Figure 3) can be used as an additional work table. Place it within easy reach of the machine. The cutting table (Figure 4) permits working with better posture and more ease than when using the bed or floor for cutting out. The person of average height should have a cutting table about 36 inches high. Height may vary, however, from 36 to 40 inches, depending on the individual's height. With this type of sewing closet, it is necessary to move the sewing machine forward each time it is used. This may be objectionable to some homemakers.

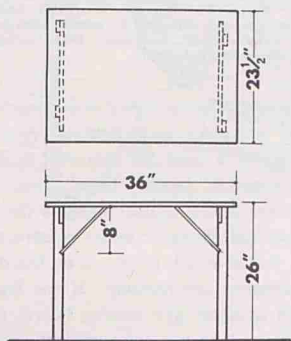


Figure 3. Folding sewing table for use by side of machine while sewing.

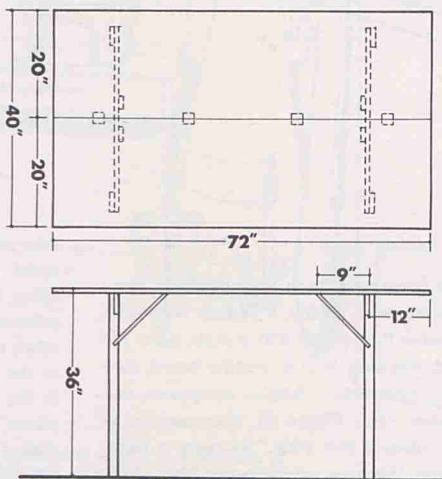
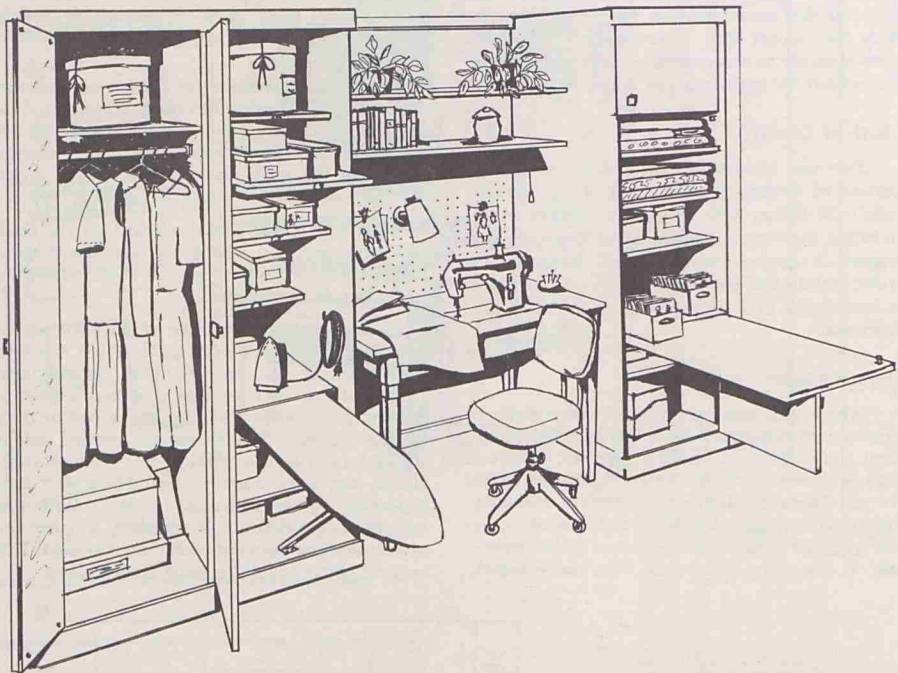


Figure 4. Folding cutting table designed for person of average height.



**Figure 5.** This unit is planned for sewing and for use as a study area. Fluorescent tubes (two 30-watt warm white deluxe or cool white) light the work area. (Based on research done by the College of Home Economics, Pennsylvania State University Bulletin 619. Adapted by special permission from Farm Journal, November, 1957. Copyright 1957, Farm Journal, Inc.)

### One-Wall Sewing Area

If wall space permits in your bedroom, family room, workroom, or den, a 24-inch deep sewing area that is 9 feet wide will provide space for your sewing machine, built-in ironing board, garments under construction, fabrics, equipment, and other supplies. (See Figure 5) The machine is placed in a niche 4 feet wide. By using a desk-type machine, this area would double for a study area or business unit. Use shelves above machine for books and other items. A shielded fluorescent

tube mounted on the bottom shelf above machine could provide adequate task lighting. Storage space to the right is used for patterns, fabrics, scissors, and supplies. Ironing board, iron, and other supplies are in one compartment to the left of the machine and garments under construction in the other. A full-length mirror is on the door where the garments are hanging. If the homemaker prefers another type ironing board, plan for space to store it in one compartment. Space could also be allowed for storage of a folding cutting table.



### Small Sewing Unit

The compact sewing unit (Figure 6) may be located in a 2-foot deep closet that is only 5 or 6 feet wide. This allows space for the machine, ironing board, for hanging garments, and for a

small chest for storing fabrics and supplies. Peg board on the back wall provides additional storage. When folding or bifolding doors are used with this arrangement, garments under construction can be left on the machine until completion.

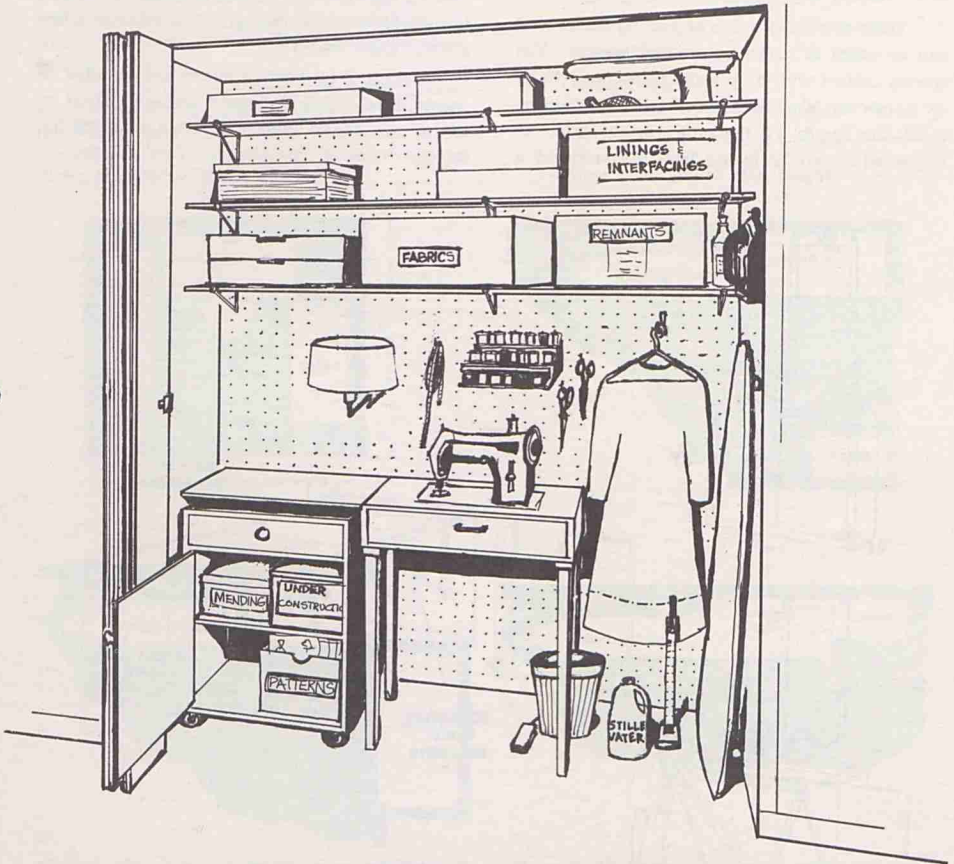


Figure 6. Compact sewing unit planned in a minimum of space. Most used items are within easy reach of homemaker. (Designed by Mrs. Ruth Thompson, Assistant Specialist (Editorial Artist), Louisiana Cooperative Extension Service.)



## PLAN FOR A CUTTING SURFACE

A cutting table that is a comfortable height permits working with better posture and more ease than when using a surface that is too low. The person of average height should have a cutting table about 36 inches high. Height may vary, however, from 35 to 40 inches depending on the individual's height and preference.

There are many types of cutting tables that can be made in various sizes and heights. The sewing cabinet with drop leaf cutting table 45 by 48 inches was established as the limited requirement for length (4 feet). A cutting table 40 inches wide and 72 inches long is considered a

liberal cutting space. A longer table would be impractical to use or to store in the average home. A seamstress or person who makes draperies, slip covers, etc. would need a much larger table.

A compact, fold-away cutting table as shown in Figure 7 folds into a cabinet only 9 inches deep. It has a 36 by 60 inch cutting surface and is 36 inches high when open.

An easy-to-make cutting table can be hinged to the wall with the underside finished to look like a panel when folded up.

A sheet of plywood or hardboard mounted on sturdy wood blocks of correct size and placed on top of the dining table can serve as a cutting table.

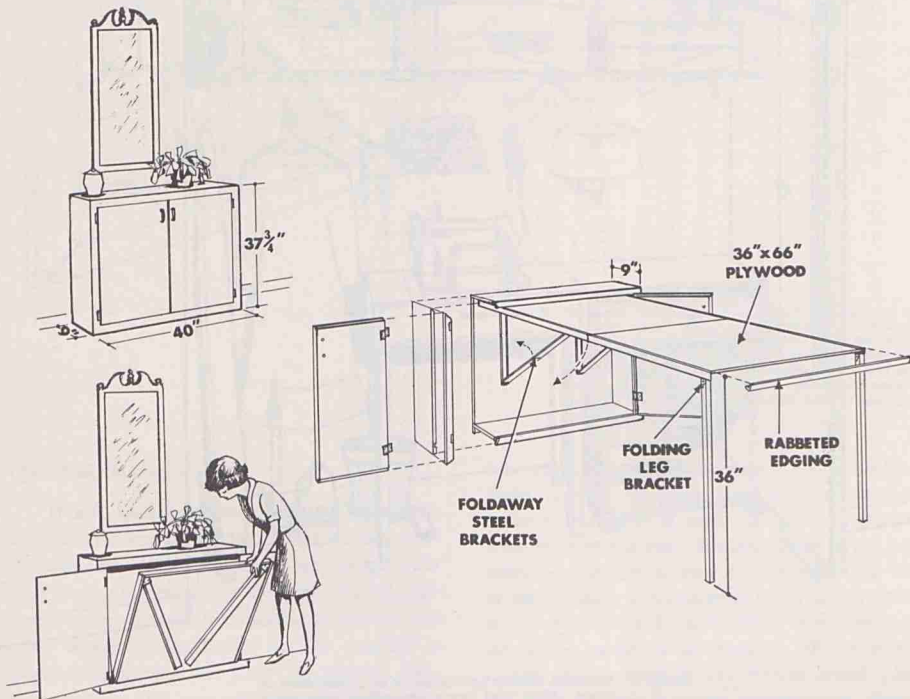


Figure 7. When the folding table is not in use, it occupies floor space only 9 inches deep. (Designed for Farm Journal Magazine by American Plywood Association.)

## PLAN A CONVENIENT WORKING ARRANGEMENT

From the standpoint of good work habits and quality work, many women favor the U-shape arrangement in their sewing centers. (Figure 8) In this arrangement, the sewing machine is in the center of the U, ironing board is on the left, and the work table is on the right. If more convenient, this could be reversed. By using a chair on casters, you may remain seated and reach any part of this arrangement. Area for cutting garments would require additional space outside of the U.

If you do not have a separate room for sewing, the amount of available space will determine the sewing area you develop. It may be an L-shaped, two-wall, or one-wall arrangement as shown in sketches 9, 10, and 11.

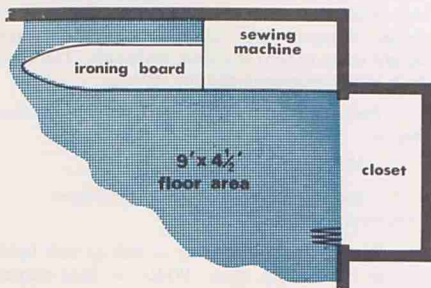
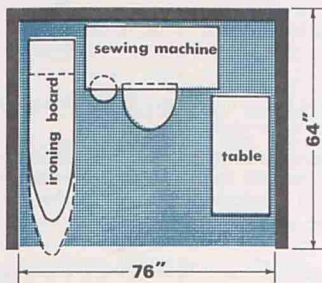


Figure 8. Upper left—A U-shaped sewing arrangement is a favorite of many homemakers. Ironing board can be pulled forward when in use. (Arrangement taken from Research Publication 138, Pennsylvania State University.)

Figure 9. Lower left — L-shaped sewing arrangement using existing closet for storage.

## CORRECT HEIGHTS ARE IMPORTANT

Regardless of the arrangement you choose, be sure to plan correct heights for equipment in order to conserve energy and plan a convenient, definite place for all supplies.

Recommended working heights for the person of average height are:

Sewing machine table	....	28 inches
Chair	.....	16 inches
Cutting table	.....	36 inches
Ironing board		
(sitting position)	.....	24 inches
Small work table	.....	24 inches

Adjust according to your height.

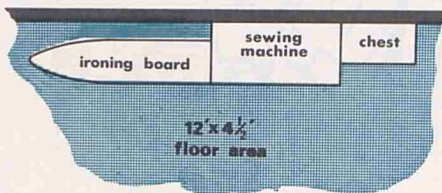
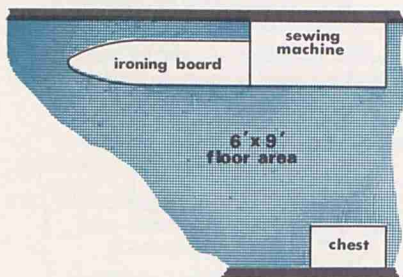


Figure 10. Upper right — Two-wall sewing arrangement using chest for storage.

Figure 11. Lower right—One-wall arrangement for use in long narrow area.

## YOU NEED GOOD LIGHT

Lighting authorities of the Illuminating Engineering Society have determined the minimum amount of light needed for certain tasks. These levels of illumination are given in foot-candles\* of light.

You can check your present lighting with a light meter and increase light if necessary.

Recommended minimum levels of illumination for sewing are:

	Foot-candles
Dark fabrics (fine detail, low contrast) .....	200
Prolonged periods (light-to-medium fabrics) .....	100
Occasional (light-colored fabrics) .....	50
Occasional (coarse thread, large stitches, high contrast of thread to fabric) .....	30

Correct placement of light for hand sewing and machine sewing is shown in Figures 12 and



Figure 12. Sewing requires twice as much light as casual reading. Use this position with measurements as shown.

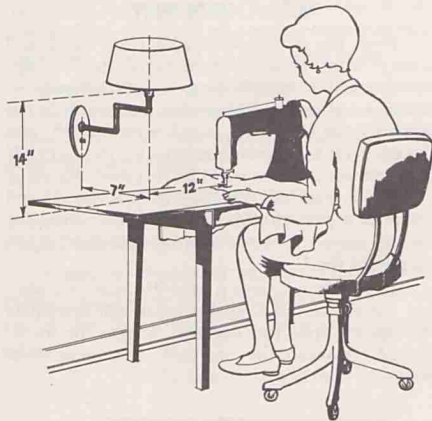


Figure 13. For machine sewing, bottom of lamp shade should be at eye level and positioned as shown.

13. These lamps have diffused light with bulb size of 200 or more watts.

A good quality of non-glare light in the correct amount can be provided with the proper size and use of incandescent bulbs or fluorescent tubes placed in an appropriately designed lamp or fixture.

Commonly used light bulbs are available in three finishes: inside frost, inside white (silica-coated), and clear. Inside frost is satisfactory for sewing only if used in a well shielded fixture. Inside white, which has a milky white coating, produces diffused, soft light and helps to reduce bright spots in thin shielding materials. The clear bulb is not recommended for sewing.

The minimum recommended wattage for sewing is:

- 150 watts for occasional sewing
- 200 or more watts for prolonged sewing

Provide general lighting as well as task lighting in the sewing area. White or light-colored walls, ceiling, and other surfaces reflect more light and are therefore more desirable than darker

\* A foot-candle is the amount of light falling on a surface 1 foot away from a standard candle that is 1½ inches in diameter.

colors. Good lighting will increase the efficiency of your sewing area.

Plan your sewing center to fit into the space available and to meet your individual needs. Remember to plan:

- Adequate space for equipment and supplies

- Convenient arrangement for ease when working
- Good quality lighting
- Proper heights for cutting and sewing
- Comfortable chair (preferably armless swivel)



This information is based on . . .

Bland, Frankye E.; Mize, Jessie J.; Simons, Joseph W.; 1959. *Space Requirements for Home Sewing*, University of Georgia, Agricultural Experiment Station, Bulletin NS 69

Johnson, Kathleen A.; Smith, Ruth H.; and Wise, Mary P.; 1957. *Space for Home Sewing*. Pennsylvania State University, Agricultural Experiment Station. Bulletin 619

McCullough, Helen E., 1952. *Space Design for Household Storage*. University of Illinois, Agricultural Experiment Station. Bulletin 557

Slaughter, Margaret C., 1954. *Sewing Centers for the Home*. Montana State College, Agricultural Experiment Station. Bulletin 497

Taylor, Genevieve K.; O'Brien, Constance D.; and Parker, Russell W.; 1965. *Workrooms*. Home Planning Aids, USDA Miscellaneous Publication No. 1002

*Home Sewing Areas*. Southern Cooperative Series Bulletin No. 58, Supp. A 1961

*Plan Your Home Lighting*. Home and Garden Bulletin No. 138. USDA

Information in this bulletin is consistent with principles taught by

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Betty Jane Hodgkins, Associate Specialist (Clothing)

Louisiana Cooperative Extension Service

LOUISIANA STATE UNIVERSITY  
AND  
AGRICULTURAL AND MECHANICAL COLLEGE

COOPERATIVE EXTENSION SERVICE  
JOHN A. COX, Director

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June 30, 1914.





**THE  
HEART  
OF THE  
HOME**



**AMERICAN HEART ASSOCIATION**

## PREFACE

The American Heart Association and its affiliated local heart associations throughout the country are interested in helping the homemaker who has heart disease.

In 1948 a "Heart Kitchen" was constructed according to the carefully worked out plans of a voluntary subcommittee of the New York Heart Association's Committee on Cardiovascular Diseases in Industry. The subcommittee was headed by Doctor Lillian Gilbreth, consulting engineer, and included authorities in industrial and management engineering, home economics, family relations, psychiatry, physical therapy, physiology, rehabilitation and architecture.

This pamphlet is the outgrowth of the work of the New York Heart Association subcommittee. Its aim is to encourage the homemaker to apply in her own kitchen the principles of time-and-energy saving outlined here and illustrated in the Heart Kitchen.

The question has often been asked, "Must I have heart disease in order to make use of the ideas in this pamphlet?" The answer is *No*. Most of us can enjoy the luxury of extra time and extra energy that results from finding easier and better ways of doing our work. For the women whose work capacity is limited by heart disease, time and energy saving is a necessity.

AMERICAN HEART ASSOCIATION  
44 East 23rd Street, New York 10, N. Y.

***T**his booklet is designed to help you find easier and pleasanter ways of doing your work. It suggests how to save time and energy by applying efficient methods. This is important to everyone. It may be particularly helpful to you if heart disease has limited the amount of work you can do comfortably.*

---

## **GENERAL INFORMATION**

This booklet does not tell you what your specific limitations are or whether you have any. These can only be determined by you with your physician's advice. The booklet assumes that, in general, you want to:

- Avoid worry about things you can't change.
- Allow yourself enough time to do things so that you need not rush madly at the last minute.
- Plan your work so that you do not get overtired or push yourself to get a job done.
- Avoid lifting, pushing, or carrying heavy things.
- Avoid running up or down stairs.
- Have leisure time for rest and recreation.

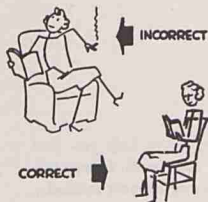
### **Body Mechanics**

It is the *way* you do things as well as what you do that is important.

One of the easiest ways to save energy is to use your body properly. Few people do this unless they train themselves. Correct body mechanics is the art of distributing the work over several sets of muscles and using the stronger ones. If you do this, you'll use less energy, have fewer accidents, and feel fresher at the end of the day.

Think about your posture. Keep your head erect; your shoulders relaxed and low; your chest high; your abdomen flat; your hips tucked under; your knees straight but not stiff; your weight toward the outside of your feet.

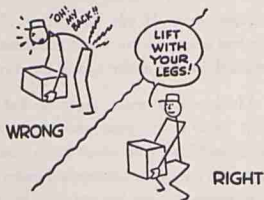




Sit well back on the seat of your chair with your feet flat on the floor and the upper part of your body in a straight line. Bend forward from your hips — not your waist.

Walking should start from your hips, not your knees. Swing your arms freely. Point your toes straight ahead. Touch the ground first with your heels. Transfer your weight forward toward the outside of your feet and push off with your toes. Avoid swaying your hips from side to side. Don't lock your knees. In other words, develop a relaxed, graceful walk which takes the least energy.

Climb stairs like this. Keep your body erect; put your foot on the step and straighten your knees to lift the body; raise yourself by leg action and a vigorous thrust with your toes.



Lifting should be done with your leg muscles rather than your back

muscles. Bend your knees and get your body as much underneath what you're lifting as you can.

If you push a heavy object, use your whole body weight. Lean your body from your ankles, brace your feet, and push against the ground.

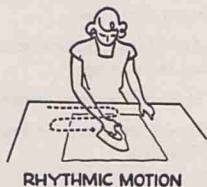
If you pull something, brace your feet firmly, bend your knees, round your back, take hold of the object firmly, and let your body weight do most of the pulling.

**Relaxation:** Lie on your back. Extend both arms overhead and stretch your entire body. Relax gradually. Begin with your fingers and continue relaxing until your entire body feels limp.

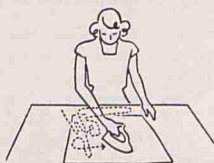
### Pace

The rate of speed at which you live is important. Hasty thinking and hasty working seldom accomplish what you want.

You may be interested in knowing that fast walking takes  $1\frac{1}{2}$  times as much energy as slow walking; walking downstairs takes twice as much and walking upstairs 7 times as much energy as walking on level ground. So you see you will save energy by adopting a moderate pace and staying on one floor as much as possible.



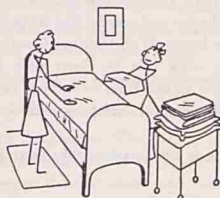
Find for yourself a rhythmic, relaxed way of doing things and you will accomplish more, have fewer accidents, and spend less energy. Perhaps music would help you here — records or the kind of radio program that makes you feel serene and happy rather than restless and excited. You should enjoy working out your own rhythmic pace. This will, of course, be easier for you if you haven't a tremendous physical or emotional drive to move rapidly. If you have, perhaps the work simplification this booklet discusses may help you since it will remove some of the reasons for haste.



**WASTED ENERGY**

Control of the mind is more difficult than control of the body, but it is worth trying. If you can train yourself to accept the things you can't change, you will have more energy to change

the things you can control. Unnecessary worry and irritation are costly and do not help any situation. On the other hand, interest, enthusiasm, and serenity of spirit are always helpful.



### **Teamwork**

Homemaking can be more creative and interesting when the whole family shares in it. This is especially true when each member is given a job he likes and is best able to do. Such a family partnership can be made easy and pleasant, if the work is well-organized and done in the simplest, most efficient way.

Don't expect teamwork to become routine at first; your helpers may need some suggestions and reminders. But in the end, you will be spared energy for the things you alone can do.



# WORK SIMPLIFICATION

There are certain principles of work that will help you. These principles have been applied to jobs in business or industry and can be just as helpful in the home. With improved methods better work can be done with less effort — in less time — without hurry — with greater safety — and lower costs.

This is the way to study your job.

## Step One

### Break down the operation

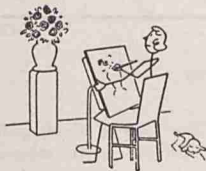
List all the details exactly as you do the job at present.

- Get ready* — collection of tools and equipment.
- Do* — motions you use to do the job.
- Clean up* — the putting away of equipment.

## Step Two

### Ask these questions

WHY is it necessary? Does the result pay for the time you spend doing it? Or could this time be spared for an enjoyable and restful hobby?



WHAT is its purpose? Does doing this contribute to the physical or emotional well-being of your family?

WHERE should it be done? Could you use community resources and have some things done outside your home? Send the laundry out? Place your youngster in a nursery school? WHEN should it be done? Could you prepare your husband's or children's lunch while the dinner is cooking and save that rush the next morning?



WHO should do it? If it should be done at home, are you the logical one to do it? Or would another member of the family enjoy sharing by doing this particular job? Or could you afford hired help for such chores as heavy cleaning?

HOW is the best way to do it? Are you doing a lot of unnecessary running around to get this job done?

*Also question the equipment.*

Are you using the most convenient appliance you can afford? Long-

handled brooms and mops save much stooping.



Dusting mitts will help you use both hands to clean.

A wall-type can opener saves energy.

Does your work chair have a comfortable back and foot support?

Are your knives sharp?

Have you a portable table?

Have you a shopping cart?

### Step Three Develop the new method

After you have broken down the operation and questioned each detail in writing, have a round table conference and let the family team work out the new method together.

1. *Eliminate unnecessary details.*
  - a. Scald dishes and let them drain dry.
  - b. Fold sheets, towels, underwear, without ironing. Drip-dry clothing and paper napkins will save ironing.
  - c. Drop biscuit and cookie batter from spoon to save rolling dough.
2. *Combine details when practical.*

While you are cooking, wash and put away utensils as you finish with

them. You can work better in a tidy kitchen and have more space. Clutter is fatiguing.

Serve food in the baking dish.

Make a large supply of pastry, congealed salad, and jello, and store unused portion till needed.

### 3. *Re-arrange for better sequence.*

Measure dry ingredients before wet ones to save washing dishes.

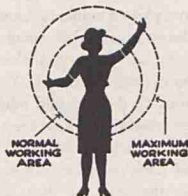
### 4. *Simplify all necessary details.*

A — Make the work easier.

*Work Heights* — The height of the work surface should be comfortable for work done at each work counter. This height should make it possible for you to stand in a relaxed position and work without stooping or raising the hand above the level of the elbow.

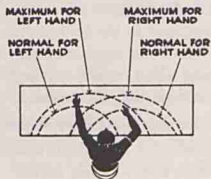
Adjust the height of your work chair so that the relation of your elbow to your work surface remains the same as when you stand to work.

The average work surface recommended for such jobs as vegetable preparation, where you use short-handled tools, is 36 inches. For the use of long-handled tools such as egg beaters and large spoons, the lower height of 32 inches is better. If you can't arrange two work levels you may use





## WORKING AREAS

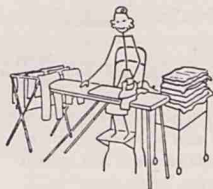


a pull-out lap board or portable table; or sink your bowl into the counter. Use your ingenuity here to put blocks under or a drawer counter above a counter that's not the right height.

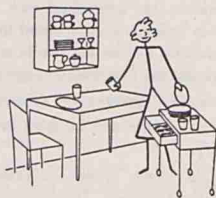
Work counters should not be so wide that you must stretch to reach the back. Your most comfortable reach is 16" from each elbow in all directions.

*Storage*—Store the things you use most often on shelves where you neither stoop nor stretch to get them. You can save space, and save lifting a stack of things to get one thing you want, if you'll use shelves that are different distances apart — a bowl needs space but a cup needs little and you can easily build shelves between those you already have to accomplish this. Use vertical dividers for tall platters, trays, pie and muffin tins, and lids. Deep drawers can have small trays built in the top section to make small things more easily obtainable. You will avoid opening drawers and other unnecessary motions if you keep your knives on a rack on the wall. Hang pots and pans on a cabinet door or even on the wall, if dust isn't a problem.

*Sit whenever possible* — to wash dishes, prepare vegetables, mix ingredients, iron, feed the baby. When you iron, place your dampened clothes on your portable table at your left; a rack to hold ironed clothes at your right; and yourself on your work chair at a comfortable height to get the same arm movement you use when you stand.

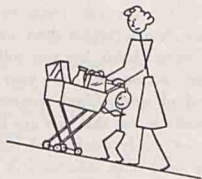


Remain seated at meals. Assign one other member of the family to serve.



Use a portable table: (1) For extra work space. (2) To assemble and transport things — dishes and food to and from the table; groceries as you place them where you use them first; cleaning supplies from one room

to the other (dust mitts, furniture polish, glass cleaner, a container to empty ash trays and collect odds and ends); clean and soiled linens as you make beds and distribute clean towels. (3) To hold dampened clothes when you iron and carry them to the place where they are stored.



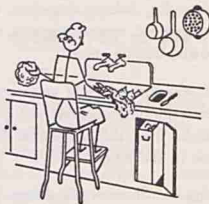
Even though another member of your team does the heavy shopping once a week, you may want to buy fresh vegetables more often. If you don't have steps to climb, you'll find a shopping cart helpful. You'll probably find other uses for such a cart.

Use a gravity-drop container for flour—it sifts flour right into the measuring cup. Use one for sugar, too. Use a step-on garbage can.

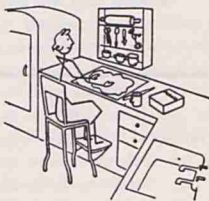
#### **B—Pre-position equipment and supplies.**

Ask yourself where you use an article most often and store it there. Group things that are used together near a work area.

*Cooking*—Store at the stove the things that are used first with heat—canned goods, seasoning, utensils for canned goods, serving dishes, and platters.



*Vegetable preparation and clean up*—Store at the sink the things that are used first with water—vegetables that don't need refrigeration, soaps, knives and strainers.



*Mixing* — Store the non-perishable ingredients for baking together with your rolling pin, measuring cups, mixing bowls, baking pans.

*Lunch preparation* — If you prepare a lunch to go out, assemble wax paper and bread near the perishable foods you use in the lunch.

*Cleaning* — Store small things in a box or basket with your broom, mop, sweeper. Using this principle may mean you'll need two dust mops, two pairs of dust mitts, etc., to save stair climbing.

**C — Let both hands do useful work.**  
Iron with one hand — smooth with the other.



Dust with both hands.  
Put away dishes with both hands.

**D — Use prepared material.**  
Ready-mix for pastry, waffles.  
Frozen vegetables and fruit juices.

**5. Write down details of the new method.**

#### **Step Four** **Apply the new method**

After you have developed a new method for any job, begin using it at once. It may take a short while to establish the habit, but you will soon become accustomed to your new method of work. Check yourself occasionally to see that you are following your newly established patterns. At the same time, look for still better methods of work which might be developed. Work simplification can become a game for your entire household to play and you can save up to 60% of the time you once spent on a job.

When you have worked out something good, share it. The neighbor who learns about it will almost surely contribute something of her own, and good ideas grow that way.

Trading experiences with other people will help you maintain the good work methods you have established and sustain your enthusiasm for further development.



## THE MOTION STUDY CHECK LIST

The following check list may help you to see whether you have done a good job of *work simplification* and suggest other improvements which you might try out.

### A. The Job

1. Why is it necessary that this job be done at all?
2. What is the purpose to be accomplished?
3. Where can it best be done—in the home or elsewhere?
4. Who is best fitted to do this job?
5. When is the best time to do it?
6. How can this job be simplified?
7. Can the *make ready* or *put away* be reduced: By combining two or more jobs, tools, materials? By larger size batches? By changing sequence of jobs? By planning *put away* to save *make ready* of next job?

### B. The Layout

1. Are work centers in proper sequence to avoid back tracking?
2. Are work centers close together to save steps without crowding?
3. Can incoming supplies be stored effectively without unnecessary handling for the kitchen operation?
4. Can aisle space be cleared to permit use of wheeled carts or mobile work tables?

### C. The Work Place

1. Is each work center arranged so that tools, materials, and utensils

are within the normal work area?

2. Is work level for the hands at comfortable elbow height?
3. Must tools, materials, or utensils be raised and lowered unnecessarily during use?
4. Are holding devices provided to relieve hands, thereby reducing fatigue and promoting safety?
5. Are fixed work stations provided for equipment like can openers, mounted at proper working height?
6. Are waste materials disposed of in containers with foot pedals?
7. Are work surfaces smooth, level, and free of crevices for ease in cleaning?
8. Is there a place for all necessary things, and are all unnecessary things eliminated?

### D. Tools and Equipment

1. Are tools properly designed for safe effortless operations, ease of cleaning, and maintenance?
2. Are tools pre-positioned for quick grasp and easy disposal?
3. Are shelves at comfortable height to avoid stooping or climbing, and arranged so that most frequently used items are close at hand?
4. Can utensils be selected without undue search and handling?
5. Can drawers or doors be opened with minimum effort?
6. Are chairs provided with posture seats, adequate back and foot rests?



7. For constant standing jobs, are there suitable back rests or support?

#### E. Materials and Supplies

1. Are they conveniently stored near point of use?
2. Can gravity feed-hoppers be used for materials like flour and sugar?
3. Are your containers designed for easy cleaning with rounded corners and wide spouts?

#### F. Work Methods

1. Does the worker use the simplest, shortest motion path?
2. Are both hands usefully occupied at the same time?
3. Does worker use circular, rhythmic motions at a smooth, steady work pace?

4. Are periodic rest periods arranged or frequent change of occupation to reduce monotony and overcome fatigue?

#### G. Working Conditions

1. Is there sufficient illumination, evenly distributed, properly color balanced, without glare or sharp contrast?
2. Is your color scheme cheerful and pleasing?
3. Is worker supplied with sufficient fresh air? Are there ventilators to get rid of fumes and odors?
4. Are temperature, humidity and air circulation within comfortable limits?
5. Are surroundings as pleasant and quiet as possible?





*Pictorial Supplement*

# HEART OF THE HOME

The American Heart Association presents in the following pages the floor plan and photographs of the Heart Kitchen. You will also find related material, such as suggestions for home-made conveniences. The Heart Kitchen was planned by the New York Heart Association with the help of research workers, motion and time study engineers, home economists, architects, physical therapists, and physicians.


*This is not a model kitchen to be copied exactly. It is a demonstration kitchen. It demonstrates practical ways of saving time and energy. It was planned to help the woman whose physician has told her she can carry on with her household tasks—if she “takes it easy.”*

Of course you do not have to have heart disease to enjoy the bonus of extra time and energy that results from finding easier and better ways of doing your work. It is hoped that you will find here many ideas that can be adapted to your own kitchen, your own needs.

AMERICAN HEART ASSOCIATION

## The measurements used in this kitchen

*are based on a 5'4" woman*



Over-all height of cabinets is 6'6". Top shelf is no higher than 6'—the height our "average" woman can reach comfortably.

Work counters for vegetable preparation, dishwashing, etc., are 36" high. Work counter at mixing and baking center is 32" high. This height is more convenient for using the long-handled tools that you usually employ at the mixing center.

For easy reaching, the maximum depth of work counters is 20".

Allow at least 2" toe space between cabinets and the floor.

All shelves are adjustable in multiples of two inches. Adjust the distance between shelves according to the articles stored. You need no more than  $\frac{1}{2}$ " margin over the tallest item on each shelf.

Depth of shelves for storing groceries: Shelves  $4\frac{1}{2}$ " deep will hold about 85% of all packaged foods. Shelves 6" deep will hold *all* goods.

Depth of shelves for storing dishes: Usually 12" over-all depth is enough.

Measure work chair so that your elbows are the same height from the work counter when you are sitting as when you are standing.

## WORKING AREAS



## *But not all women are 5'4" tall!*

To adapt these measurements to your own height and reach:

1. Sit down at a table of comfortable height which has been covered with a sheet of wrapping paper. Hold a crayon in each hand.

2. Without reaching, swing an arc with each hand.

3. Swing a second set of arcs at a comfortable reach (arm extended). This is your normal working area and distance you can reach comfortably. (See diagram.)

4. Stand facing a sheet of wrapping paper thumb-tacked to the wall.

5. With a crayon in each hand, and without reaching, swing two arcs beginning at the top and curving to the side and down. (See diagram.) The circle formed outlines your normal vertical working area. Objects used most frequently should be placed on shelves within this area.

6. Now, with a comfortable reach (arm extended), swing two more arcs, one with each hand. This larger circle marks the maximum working area. No working shelf should be placed higher than the top of this circle.

7. To find the proper height for your work chair, ask someone to measure the distance from your elbows to the floor while you stand with hands at sides. The distance from floor to elbow when you stand, minus the distance from floor to elbow when you sit equals the amount to be added to the present height of chair.



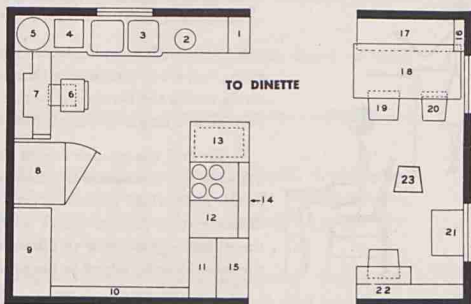
## **Just a word about the open shelves in this kitchen**

Some women like the gay color-note and the convenience of cans and packaged foods ranged on open shelves. Other women say open shelves are distracting and dust collecting. The open shelves in this Heart Kitchen make it easier to show you where supplies are placed. It is easy to solve the problem of cupboard doors vs. open shelves. Just ask yourself which you prefer!

1. **SHELVES**  
*(Open from both sides)*
2. **GARBAGE DISPOSAL AND PARING CENTER**
3. **DOUBLE SINK**
4. **WASHING MACHINE**
5. **REVOLVING SHELVES**
6. **WORK CHAIR**
7. **MIX CENTER**  
*(Baking and mixing)*
8. **REFRIGERATOR**  
*(Handle of door is next to mix counter)*
9. **STORAGE FOR CLEANING TOOLS**
10. **GROCERY STORAGE**  
*(Week's supply for family of four)*
11. **STORAGE FOR COOKING UTENSILS**
12. **RANGE AND OVEN**
13. **WORK COUNTER**  
*(Wheeled table underneath)*
- 14, 15. **STORAGE FOR COMPANY DINNERWARE**
16. **STORAGE SHELF**
17. **DINETTE BENCH TOY AND HOBBY STORAGE**
18. **DINETTE TABLE**
- 19, 20. **DINETTE CHAIRS**
21. **RECORD PLAYER RECORD STORAGE**
22. **PLANNING CENTER AND BOOK SHELVES**
23. **ROCKER**

## Floor plan of the work simplification kitchen and dinette

Because you usually serve from the stove and return dishes to the sink, these two areas have been placed conveniently near the entrance to the dinette.





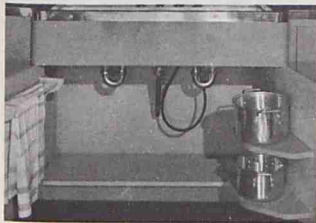
## At the sink

*Vegetable and fruit preparation* center at the right of the sink. Peelings and scraps are pushed through the hole in the counter and drop into the paper-lined metal container beneath. The chromium top of the can is flush with the counter.

*Garbage can* swings out with the door for easy removal. Piano hinges on door prevent sagging.

*Pans and tools* used in preparing foods with water are stored within easy reach of the sink. Note the day's supply of vegetables in the basket on the sink work counter.

*Cabinet under sink* holds dish towels within easy reach. Seldom used pans are stored at right.





*Clothes washer* for light laundry to the left of the sink. Cover fits flush to the counter—gives extra work space when washing machine is not in use. Soap, starch, bleach, measuring cups are within easy reach above the counter.

*Everyday dishes* on adjustable open shelves can be reached easily from either the kitchen or dinette side. Note the bulletin board for family messages, shopping notes, clippings.



*Company dinnerware*, seldom used, is stored on these less accessible shelves in the dinette.





*Files* above the mixing center hold pie plates and cake tins within easy reach. (Shelf is 6' from the floor.)

*Utensils* needed here are hung on the wall, ready for use. Gravity-feed bins hold sugar and flour.

*Pans* seldom used are placed on lower, less accessible shelves. Adjustable files make it easy to select pans without groping through a stack.

Equipment and materials needed for baking are right at hand. (*Storage at point of first use*, the time-study engineers call it.)

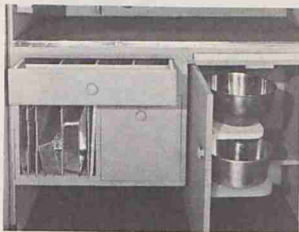
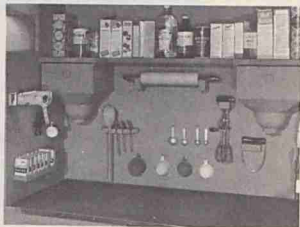
At the flick of a finger, the revolving shelves on the right bring the mixing bowl to hand.

The refrigerator is within easy reach on the left. When you buy a refrigerator decide on which side you want the door to open. Manufacturers make both right- and left-hand doors.

It is sometimes wise to have duplicate sets of inexpensive equipment. For example, measuring spoons are at the baking center, stove, and sink.

When everything you need is *where* you need it, you can sit down while you work.

## At the mixing center



## Where do you store them?



**Groceries**—6" deep shelves are deep enough to hold anything you bring home from the grocery. When supplies stand in single file there is no need to play hide-and-seek to find items. The husband buys and stores the week's supplies for the family of four on Saturday.



**Table needs**—salt, pepper, paper napkins, breakfast cereal, extra silver, etc., are all within arm's reach on the shelf above the dinette table. This is a good trick for eliminating trips to the kitchen during meal time. (Height: 1'11"; width: 1'6"; bottom shelf is 4½' from the floor.)

**Toys** and hobby equipment are stored in dinette bench. (1'6" wide; 5' long; 3' from floor to top of back; 1'6" floor to seat.)



## Things on wheels

Let wheels do the heavy moving jobs for you.

*The wheeled table* stored under the work counter beside the stove is handy for serving; use it to set the dinette table in a single trip.

*The ironing board* rolls easily on wheels. The shopping cart doubles as a laundry-cart-on-wheels when you add a plastic liner.

*The kitchen work chair* (not shown here) has wheels mounted on the back legs 2½" above the floor so that it can be tilted and wheeled about easily and yet stand firm when in use.







## **Cleaning is easier**

- . . . when you assemble your cleaning supplies in one basket.
- . . . when you use long-handled brush and dust pan to avoid stooping.
- . . . when cleaning tools are easily accessible. (Note storage of tools in closet in background.)
- . . . when you use two hands.
- . . . when you use four hands it's even easier. Family teamwork takes the drudgery out of housework.





### At the stove

*No need for stooping* or other gymnastics when you use a high oven. Note the use made of the wheeled table; the roaster is slipped onto it.

Note food storage shelves at right, with items needed most often at the stove.

*Cabinet next to stove* holds utensils and dishes that are used there first—serving dishes, pot lids, skillets, some pans. Because the drip coffee pot needs boiling water it is stored near the stove instead of near the sink. This cabinet is 16" deep, 2'9" wide, 4' high. The file dividers are adjustable and removable for easy cleaning.



## Sit down!



### —*When you iron*

First assemble everything you need within easy, circular reach. Your work chair should have a back and foot rest.

### —*When you plan*

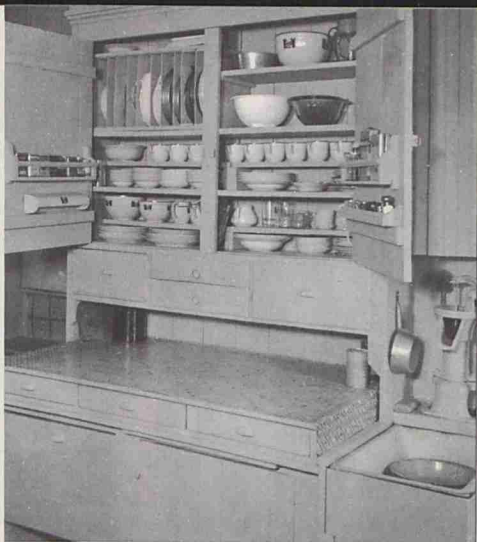
While the soup is simmering, this is a convenient spot for planning the week's work, making out menus, writing notes.

### —*When you relax*

Bring that rocking chair out of the attic and into the kitchen or dinette then take time out to sit in it. Another advantage of the low rocker: you can rock forward easily to scoop up the baby for cuddling.



PHOTOGRAPH COURTESY  
CORNELL UNIVERSITY

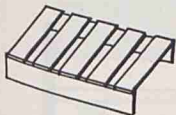


**You don't**

**have to wait for a dream kitchen**

*Work with what you have.* See how extra shelves and files prevent stacking of dishes and turn this old-fashioned cupboard into an efficient storage unit. The work counter has been raised by adding a row of shallow drawers. Note the saucepan hanging near the pump. Whether you get your water by turning a spigot or by pushing a pump handle, remember the work-saving principle of keeping pans at the place you will first use them.

*Unclutter your kitchen.* Chances are that with a bit of drawer searching and soul searching you can gather together a box full of gadgets you never use. *Throw them away.*



*Use home-made conveniences.* When your sink is too low, this sink rack will raise your dishpan to a comfortable height. A low stove can be raised on wooden blocks. If you have a landlord who won't let you nail shelves into the cupboards, try easy-to-make removable loose shelves developed at Rutgers University. See next page for details.



## Instructions for making removable loose shelf

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**How long shall the shelf be?** Measure the length of the cupboard space and subtract  $\frac{1}{8}$ ". *Warning:* Take measurements at both the back and front of the cupboard; you may find that they will vary as much as an inch.

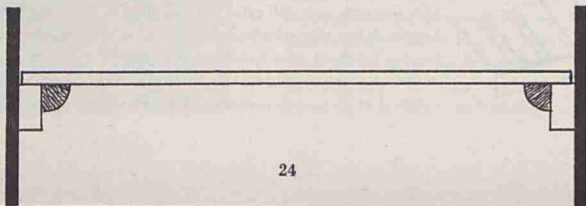
**How deep shall it be?** You can build a narrow shelf for cups or you can build a shelf that runs the full depth. If you want the deeper shelf, you may have to make it in two length-wise sections in order to slip them into the cupboard easily.

**What materials are needed?** Let us suppose you are making a shelf 24" long and 6" deep:

- $\frac{3}{8}$ " plywood 24" long, 6" wide for the shelf
- 2 pieces of  $\frac{1}{2}$ " quarter-round, 6" long
- 2 pieces of  $\frac{5}{8}$ " lumber for supports cut 6" long
- Glue
- Paint

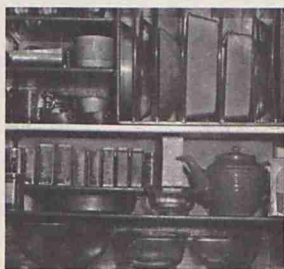
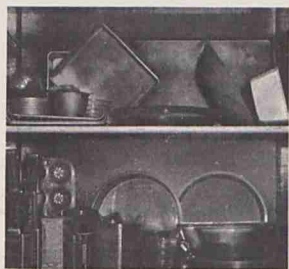
**How do you make it?** First nail or glue the  $\frac{1}{2}$ " quarter-round on the underside of each shelf end. If you are using  $\frac{5}{8}$ " lumber for supports, fasten the quarter-round  $\frac{5}{8}$ " from the end. See diagram. The quarter-round fits snugly against inside of supporting block. Note that the rounded ends of the quarter-round face in towards the center.

Next place the supports upright against the wall of the cupboard and slide in the new shelving. The quarter-round keeps the board from slipping out of place. It is sometimes easier to hold the shelf in place and slip the supports under it, one at a time.

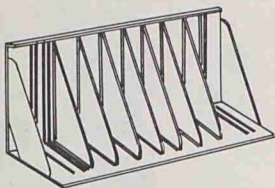




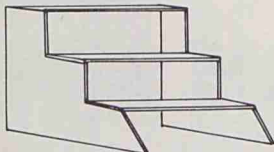
*When space is a problem* these storage units developed at Cornell University may be the solution.



*Sometimes it is a matter of organization* as these before and after pictures from Rutgers University clearly show.



COURTESY CORNELL UNIVERSITY



## HOME-MADE CONVENIENCES

Files for flat pans and dishes. Grooves for the partitions should be close together to make files adjustable to articles of many different widths. Partitions should be slanted or curved at one end so that the article can be grasped easily.

Step shelves made to fit deep cupboard shelves give you more space, less clutter. Use a miniature edition of these shelves to hold your spices.

## What are you doing about *your* kitchen?

Whatever the size of your kitchen, your family, or your pocketbook, you can make your kitchen work easier.

Go through this booklet once more to pick out the ideas that you can adapt to your own needs. You will find that you can make many time-saving changes in your kitchen without driving a nail or spending a penny.

To help yourself get into action, you might try the schedule outlined below:

**Sit down and figure out what your needs really are.**

**Decide what you have to do.**

**Determine what you *can* do.**

**DO IT.**



## HOMEMAKER'S CONSULTANT SERVICE

When the physician tells a woman that she can continue to do her housework if she "takes it easy" he may not be familiar enough with specific household jobs to tell her *how* to take it easy. That is why many physicians have welcomed the opportunity to refer patients to a local Heart Association Homemaker's Consultant Service.

Many heart associations affiliated with the American Heart Association have set up these services in order to help the cardiac housewife find easier ways to do her work. Emphasis is put not on expensive gadgets or on elaborate remodelling jobs, but on methods of work simplification that can be applied in any home.

Ask your local heart association about the Homemaker's Consultant Service. If no service like this exists in your community, perhaps an expression of interest from you will encourage your heart association to provide the service.



AMERICAN HEART ASSOCIATION

44 East 23rd Street, New York 10, N. Y.

## NOTES

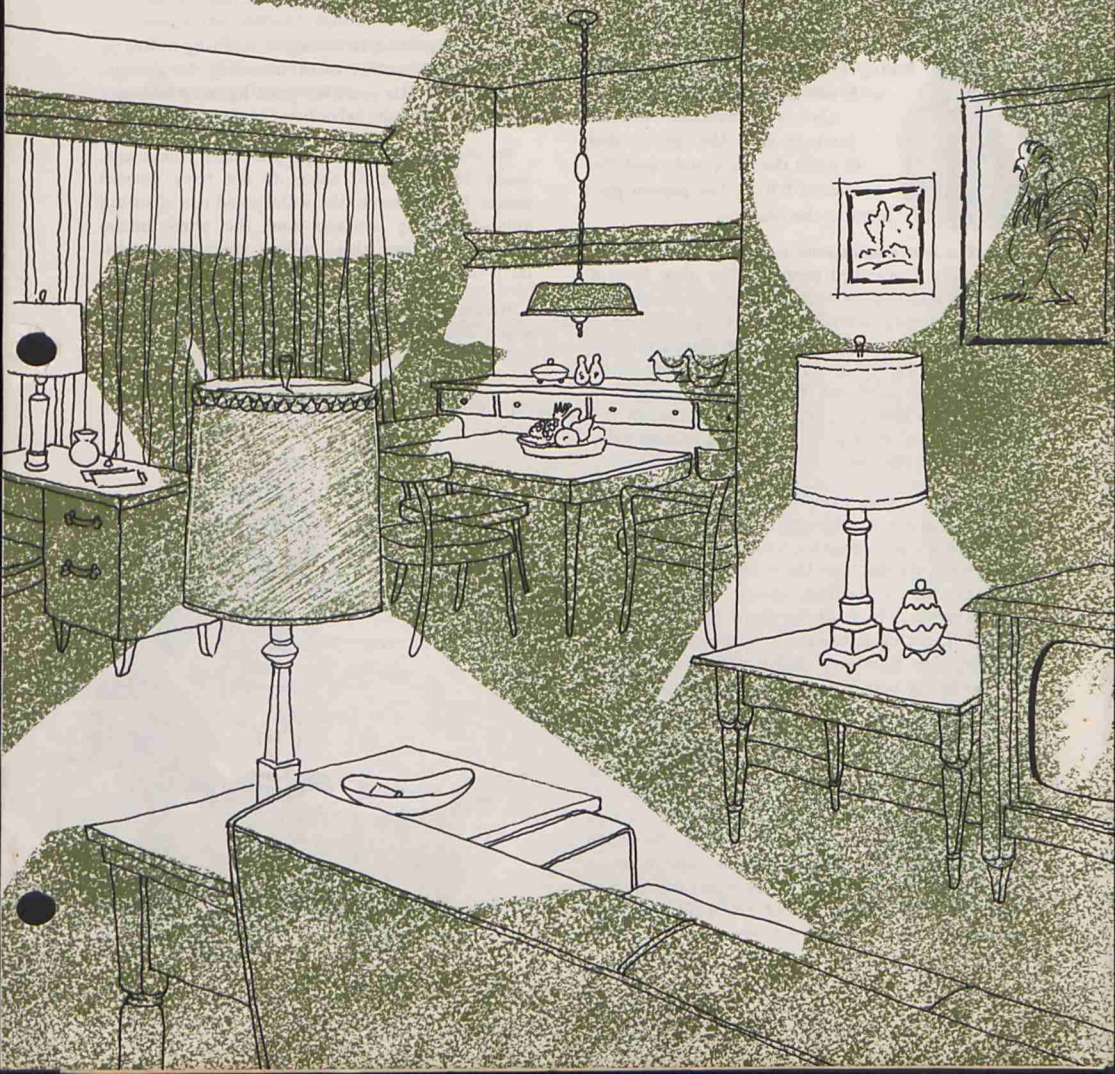


## NOTES

## NOTES



● *Save your sight...*  
*with good light*





# Save your sight... with good light



Seeing is a complex task performed with two tools—light and vision.

Always interrelated are the job to be done, the light needed to make the job visible and the sensation felt by the person performing the job.

Just a few generations ago, artificial lighting was solely a practical concern. The glow from a fireplace and torches, then from candles and then from sputtering oil-fed lamps let people read a little, spin and weave; and it kept them from colliding with walls, furniture and each other in the dimness after sundown. Then came the gaslit era which made seeing at night a little—though not much—better. Finally, the sunburst of electricity turned night into day.

Ever since the invention of the incandescent bulb, lighting has continued to take new directions in meeting the increasing needs of the house and the family. We can have the specific and functional light needed for reading, sewing, cooking, games and other activities where sharp visibility is required. Lighting is used to enhance the beauty of a room, also. Whatever its function, good lighting is possible for both eye comfort and eye appeal.

A well-lighted house is essential today. In it the entire family can see easily, accurately and comfortably. Many accidents can be prevented and mental and physical strain lessened if there is adequate and proper light for different age groups and tasks. Sufficient light for accident prevention makes one feel more secure at home, and it makes it possible for tasks and hobbies to be carried on in comfort with a minimum of eye discomfort and irritation.

Man's eyes are essential to him in carrying out the activities of this complex world. And good light is vital for good sight. Seventy-five percent of our activity depends on the eyes, and 75 percent of all stimulus to the brain comes through the eyes. Good lighting, therefore, is a must.

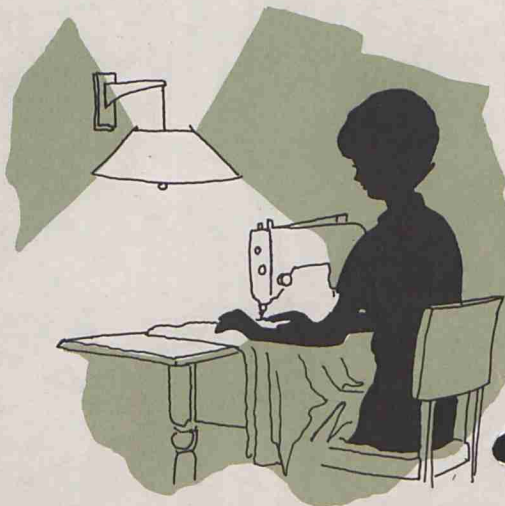
## SPECIAL NEEDS

Good lighting is vital to every member of the family; every age has its special needs. Lighting specialists have developed the following information on the special lighting needs of all members of the family:

The young child, as he begins learning to live in our world, responds most favorably to a well-lighted path. His need for good lighting becomes greater as he enters school and begins studying.

By the time our young people reach college age, about 40 percent of them do not have normal vision. In addition to the widespread use of seeing aids—including contacts and the wire-rimmed glasses they love, these college students particularly need the best kind of lighting.

Homemakers need good light to perform their many close-vision tasks—food preparation, sewing, ironing, cleaning, keeping books—much of it done by indoor light. Among homemakers it has been estimated that about 70 percent suffer eye defects.





The lighting needs of professional people vary a great deal, depending on their work. For example, only 10 percent of farmers, who work mostly by day-light, have known eye defects. On the other hand, among people who do such work as drafting and accounting for 40 hours a week by artificial lighting, about 90 percent have eye defects.

The elderly require a high level of light for effective, safe living. The ability of the eye to function properly decreases with age and needs to be compensated.

Regardless of the age or the task, the need for fast, accurate seeing is a part of everyday living. That is why the value of good lighting is immeasurable.

Although adults live and work in the house with their families, they are poor judges of the correct amount of light needed for each task. Our eyes try to adjust to existing light so we are often unaware that we sometimes expect and demand too much from them.

#### USEFUL SIGNALS

Studies conducted with young children have revealed some useful "signals" that indicate eye defects or poor lighting. Your child may show symptoms of defective sight even before he learns to read. Regular medical checkups that include eye examinations are your best bet in detecting eye defects he might have or might be developing.

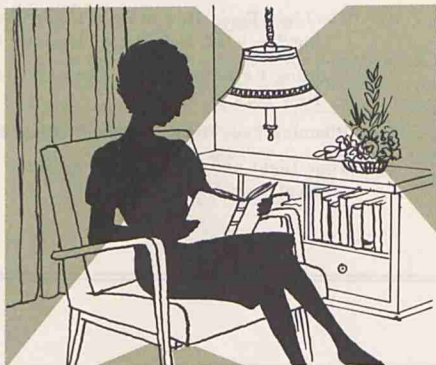
When the lighting is poor, the very young child is quick to respond adversely. Here are some types of behavior among children that may be regarded as possible signals:

- Attempting to brush away a blur.
- Blinking more than usual.
- Watery eyes.
- Frequent headaches.

After he begins to read, a child may show other signs of visual difficulty, such as:

- Holding a book too close to his face when reading.
- Evidence of difficulty in reading or in other work requiring close use of eyes.
- Tilting his head to one side or thrusting his head forward to near or distant objects.
- Irritability when doing close work.

These are important indications of the special needs of children, but they may indicate that the lighting is not good enough for older family members either. Adults may become so accustomed to getting along in their surroundings that their behavior may not reflect their actual lighting needs.



#### HOW MUCH LIGHT?

How much light your family needs for reading, studying, sewing, food preparation and enjoying hobbies depends on several conditions.

First, it depends on the kind of work you're doing. Some tasks require better seeing conditions than others. It's harder to read the fine print of a newspaper than to read the headlines. It's even more difficult to read black print on colored backgrounds such as, for example, many comic books have. The colors absorb some of the light, so more light must be supplied to make the print as easy to read as black print on white paper. Less light is needed for you to scan casually the pictures in your favorite magazine than for your daughter to study one of her textbooks.

Second, the amount of light you need depends partly on how good your eyes are and on your general health. If your sight isn't perfect, your eyes may need more light to help them see easily.

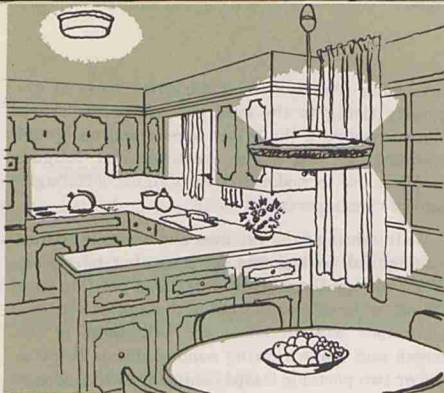
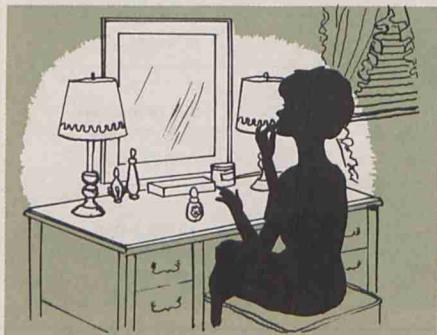
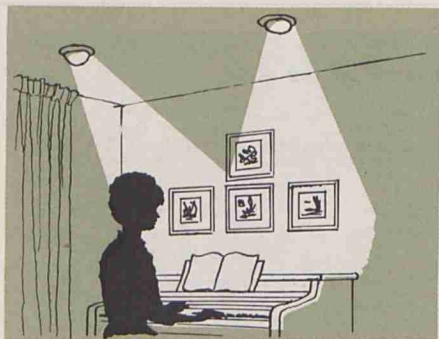
Finally, the amount of light you need depends partly on the length of time you'll be doing the same type of task. The eyes may not complain when forced to work for a few minutes under poor light, but they'll probably become very tired if you continue that task for an hour or two.

## AMOUNT NEEDED

Studying and other extended close reading require one of the highest levels of light. The amount needed can be supplied by a portable lamp at a desk with a 150-watt bulb, a shade with a top diameter of 8 inches and a bottom diameter of 16 inches, and a diffuser to spread and soften the light. (See chart on page 5.)

The same level of light would be appropriate for reading difficult music and for working at the sink in the kitchen. A two 40-watt fluorescent channel may be positioned over the sink, while a 150-watt incandescent spotlight could be directed onto the sheet of music for best seeing.

Tasks requiring a slightly lower level of light include working at the range or counters in the kitchen, in the laundry, at the sewing machine, and while shaving or applying makeup in the bathroom and bedroom.



The most desirable way to light the work areas in the kitchen is with a 30-watt fluorescent unit attached to the wall or cabinet about 18 to 22 inches above each work surface. For shaving or applying makeup, light should be directed on top of the head, on both sides of the face and (by reflection from the lavatory) even under the chin. This way no shadows will interfere with a close shave or precise makeup. Warm white fluorescent tubes of a 20-watt size on each side of the mirror and two 15-watt tubes on the ceiling will satisfactorily meet this need.

An even lesser amount of light may be adequate for the casual reading of magazines and newspapers, for occasional sewing by hand and machine and for table games. A 50- 250-watt incandescent bulb in a swing-arm lamp will provide the lighting needed for both reading and sewing. Lighting for table games may be provided with three 75-watt incandescent bulbs in a ceiling fixture or with six 20-watt fluorescent unit tubes installed in a ceiling panel.

General lighting needed for each of the areas in the home may be provided by ceiling fixtures of many types or with structural lighting. This will provide a lower amount of light throughout an area. This light is needed for moving about safely and for softening pools of other light provided for specific tasks.

For eye comfort, both general and specific, or local, lighting is needed. There must not be too much disparity in the amount of light provided by each for eyes tire when there are abrupt changes from too much brightness to too much dimness. Background light should be at least one-tenth as bright as the "activity" illumination.

Viewing television in a darkened room is extremely tiring to the eyes because of the sharp contrast between the bright screen and unlighted surroundings. To avoid eyestrain and fatigue, provide a low to moderate level of lighting throughout the viewing area.

Wall lighting from valances and brackets creates a delightful background for watching television. When you use these types of lighting, position your TV set to the side or in front of the lighted walls.

Another way to offset the brightness of the screen and make viewing comfortable is to place one or two portable lamps behind or at the sides of the set. This helps prevent reflections on the TV screen. If the lamps have three-way controls, turn them on the low settings.

Your home decor has an effect on seeing. The lighting methods recommended for each of the situations mentioned below will provide the needed amounts when the colors in the room are within recommended reflectance values. Usually, you'll get these reflectance values if you use light to medium colors.

#### SUMMARY

In designing the lighting for your home to meet the needs of your family, you should plan to include good quality and adequate quantity of light and its placement in relation not only to the overall appearance of the interior but also, and particularly, to the comfort, safety and health requirements of each family member.

#### RECOMMENDED LIGHTING LEVELS FOR THE HOME

Lighting for:	Size of bulb (watts)	Height to bottom of shade (inches)	Where to place lamp (inches)
<i>Studying</i>			
Desk Lamp	200	15" to desk top	15" to left of work, 12" back on desk
Wall Lamps (above desk)	150 each	15" above desk	2 lamps 30" on centers
Floor Lamp	50-200-250	47" to floor	15" to left of work
<i>Reading</i>			
Bed Table Lamp	150	20" above mattress	22" to one side and 16" back from work
<i>Sewing</i>			
Floor Lamp	100-200-300		15" to left of work, 12" back

### SOURCES OF INFORMATION

"Good Lighting—for Eye Comfort and Eye Appeal," Penney's Home Fashions and Fabrics, Vol. 8.

"The Light Book: How to Be at Home With Lighting," General Electric Residential Lighting Specialist, Nela Park, Cleveland, Ohio.

"Lighting Keyed to Today's Homes," Illuminating Engineering Society, 1860 Broadway, New York, N. Y.

"Planning Your Home Lighting," House & Garden Bulletin No. 138, U.S.D.A.

"Your Light and Your Sight," by Mary S. Pickett, assistant professor, household equipment, Iowa State University.

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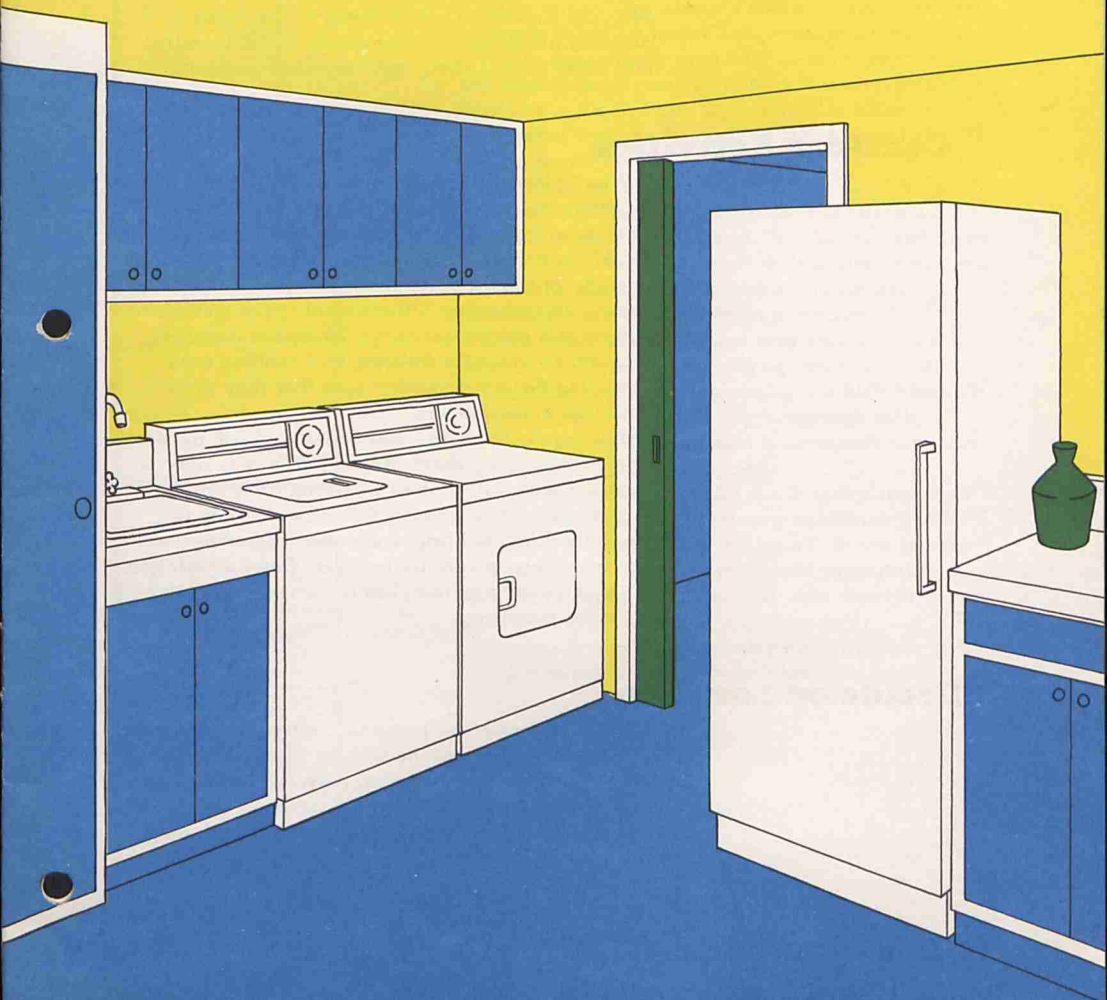
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# ● ATTRACTIVE, EFFICIENT WORKROOMS

FOR LAUNDRY AND OTHER ACTIVITIES





# **ATTRACTIVE, EFFICIENT WORKROOMS** FOR LAUNDRY AND OTHER ACTIVITIES

A well-planned, efficient and pleasant workroom for laundry and related activities makes your work easier and leaves you more time for other interests. With the workroom conveniently located and properly arranged, you can easily do the laundry and other chores along with housekeeping jobs.

## **Consider Activities**

When planning your workroom, consider all the activities you would like to perform in this area. This determines its location and how large it should be. Many homemakers want a workroom only large enough for the activities related to washing, drying, ironing and mending. Others want space enough for cutting and sewing garments. Many homemakers also want a place for freezing and canning food, arranging flowers and other jobs that they prefer not to do in the kitchen.

These jobs are many and varied and will depend on your family's pattern of living. You may need a wash-up area for the men returning from work or hunting. You may want facilities for cleaning the game the hunters bring home. Some families want space and equipment for hobbies. Careful planning of this area is important, but becomes vital as the activities increase.

## **Decide on Location**

The location of the workroom will be influenced by the relationship of the area to other rooms in the house, family living patterns, personal preference and activities planned for the workroom. Think about how often you and other family members will use the room for each activity.

Most homemakers have definite ideas on where they want the laundry area. Consider the several locations and decide which is best for you and your family since there are advantages and disadvantages to all locations. If you are remodeling or building a new house and feel that you cannot afford to get all modern laundry appliances at one time, be sure to plan a large enough area. Install rough plumbing to accommodate all equipment at a later date.

Since most of the family's soiled clothes and linens originate in the bedroom-bath area, you may want to locate the laundry area here to save steps. A separate laundry room located in this area would need space for washer, dryer and a sink for pretreating clothes. Space for ironing, mending and sewing would be desirable.

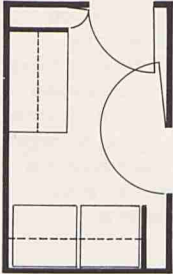
A hallway in this part of the house could be a convenient location for a small laundry area if a separate room is not feasible. Bi-fold louvered doors could conceal the equipment. It is desirable to install an exhaust fan to eliminate excess moisture, particularly in a space without a window.

Extra space in a bathroom may be a suitable location for laundering. Building materials and finishes used in bathrooms withstand high humidity. You may wish to enclose the equipment with louvered doors. This location is especially practical for the elderly or handicapped.

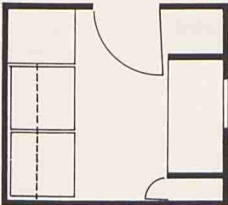
Some homemakers prefer the laundry area in or near the kitchen. They can dovetail laundry tasks with meal preparation. If the area is in the kitchen, a planning desk, counter peninsula or partition may be used to separate the laundry area from kitchen work centers.

If space is available and income permits, a separate room is desirable for some families.

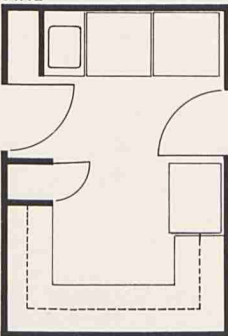
6'x10'



8'x9'



9'x12'



## Plan the Centers

Whether you have a separate room or incorporate the workroom in another room, plan for enough space for all the equipment and storage you need for each activity. Storage space is needed in each of the different work areas for materials and supplies. Naturally the size of your room will determine the amount and arrangement of equipment.

A more convenient workroom will result if you think of a work area or center for each activity. Naturally some centers and facilities will serve more than one activity, but with a "center" in mind you will be apt to group supplies and equipment together.

Planning the arrangement of work space, storage, equipment, supplies and facilities in each center is the next step toward a convenient place to work. Decide which of these you need space or a "center" for:

- Storing soiled articles
- Sorting and pretreating
- Washing and drying
- Hanging or folding  
clean articles
- Ironing
- Sewing and mending
- Wrapping packages
- Arranging flowers
- Potting plants
- Decoupage
- Ceramics
- Photography
- Other hobbies

## **Laundering Center**

A convenient laundry area includes modern laundering equipment, a sink and a counter or table. It should have the space and equipment for ironing and mending and in many instances room for regular sewing and for other activities.

### **Storing Soiled Articles**

Plan for storage of soiled clothes. This may be in a closet in the hallway or in linen closets in the bathrooms. The soiled items may also be stored under the counter near the washer, or on shelves above the washer and dryer. Some homemakers prefer to store soiled items in the laundry area, while some leave them in the rooms where they originate. It is recommended that soiled clothes be stored in ventilated baskets, bins or hampers and not on the floor.

### **Sorting and Pretreating Clothes**

Sorting may be done as the clothes are put in the washer or as they accumulate. Hampers for the different loads make the latter way easy. You can sort on a table, counter or into a basket. A counter 24 inches deep and 48 inches wide would be adequate for sink and sorting counter for the clothes of an average size family. This counter could be used for stain removal or pretreating clothes, as well as other activities.

A folding or drop-leaf table conserves space and could be used for sorting and pretreating if it is located near the sink. Storage will be needed in this area for stain removal supplies. Be sure to keep these items out of reach of children.

A 32-inch high cabinet or table is comfortable for a person of average height. Table height may vary from 32 to 37 inches, depending on the individual's height and preference.

## Washing and Drying

The really convenient laundry area will be planned as a unit. The wash-dry area will be adjacent to or within a few feet of the sorting and pretreating area, the sink and the folding area.

The minimum width needed for installing a washer and dryer side by side is 5 feet 6 inches. You need 3 feet clearance in front of the equipment for easy use. Where the washer and dryer are installed directly opposite each other, 3 feet of workspace is needed between the appliances.

If a combination washer-dryer or the type with dryer above the washer or only one piece of equipment is used, a width of 3 feet is needed to provide space for a laundry basket or cart. Where space is limited, the dryer may be placed directly above the washer. At least two such models are available. One dryer is designed to permit the washer to be loaded from the top.

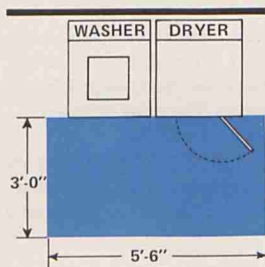
A non-automatic washer with stationary laundry tubs requires 6 feet 6 inches by 8 feet of space.

Before you buy laundry equipment, be sure to check the available space in your home.

If you do not have a dryer, plan for convenient drying lines. Allow 2 feet of passageway in front of the line. A load of clothes requires about 40 to 50 feet of line.

Different types of clothes lines are available. Folding or umbrella types mounted on a center post, or disappearing lines that unreel and lock in place when in use are favorites of some homemakers. Several types of drying racks for use in bathtubs or small areas are useful for indoor drying or as an ironing valet.

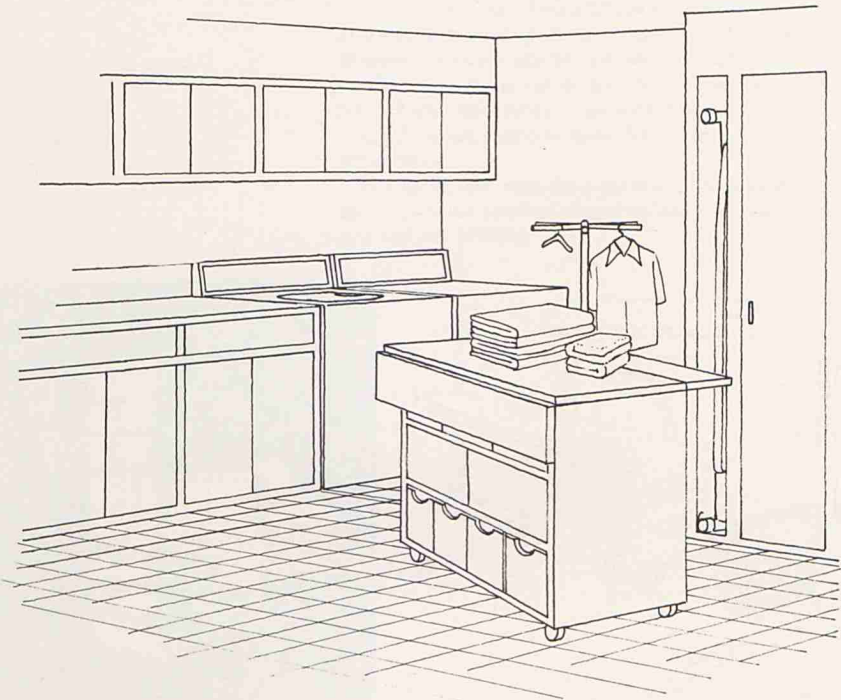
Regardless of the type of equipment used, the sequence of work (work pattern) is simplified if it moves in one direction. It begins with removing clothes from the hamper to the sorting counter, to sink if pretreatment is needed, then to washer, dryer and to the place for folding, hanging or ironing.





## Hanging or Folding Articles

Provide a rack in a convenient location for hanging permanent-press dresses, shirts and other garments taken from the dryer. This rack may also serve for hanging garments as they are ironed. Permanent-press cotton garments look their best when dried in a dryer. Most durable press garments now, however, have the capacity to dry smoothly when hung on a line from a washer that cools the garment before spinning. It may no longer be necessary to let these drip dry after the rinse cycle. Check your instructions for the garment and your washing machine to be sure.

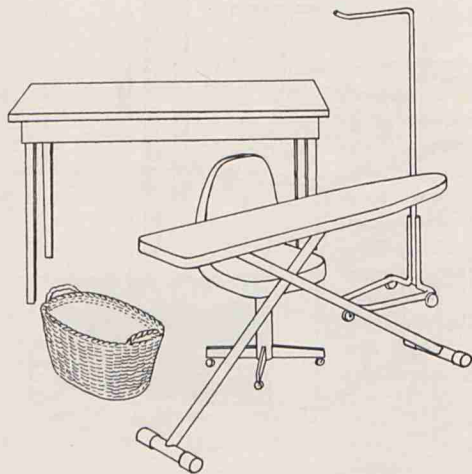


## Ironing Center

Plan your ironing area according to your needs and preferences. Your work habits, family size, type of garments and linens will influence the location of your ironing area.

In a separate workroom, you may want a permanent ironing area where you can leave the ironing board in place for "touch up" pressing and for ironing. Most homemakers prefer a portable type board because of clearance for the elbow when ironing, adjustability of height and mobility. Adjustable boards are more functional. If the electric outlet is located forward of the ironing board and at a height of about  $4\frac{1}{2}$  to 5 feet, it will act as a cordholder.

Be sure to provide a convenient place to hang or deposit ironed articles as you finish ironing them.



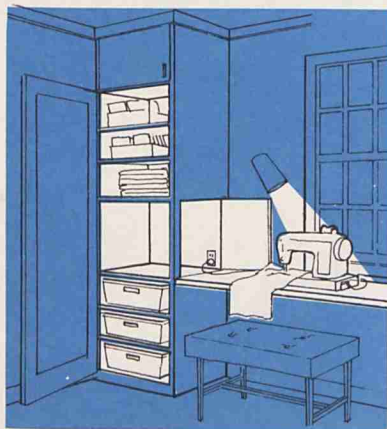
## Mending and Sewing Center

Your sewing area, its size, arrangement and equipment will be determined by available space in your workroom, as well as your preference.

A convenient sewing center consists of a sewing machine, ironing board, storage for sewing supplies and garments to be mended and a place to hang unfinished garments. Allow a width of 4 feet for the machine. This provides space for a cabinet-type machine or for a sewing table for a portable machine. A cutting table in this room would be a real help if you do much sewing. You might use a portable folding type, a large table top 36 by 72 inches or a movable counter with drop leaf.

A movable counter 20 by 72 inches with drop leaf provides a 40 by 72 inch cutting table. A counter also furnishes adequate storage space for all sewing materials and supplies and for articles to be mended. Drawer depths should vary from 3 to 9 inches. Shallow drawers are convenient for cutting equipment and small items and the deeper ones for fabrics and garments to be mended. Dividers in the deep drawers make storage for patterns and other items.

If you do not include a counter, do plan storage space in your sewing center to keep all the supplies needed for sewing.

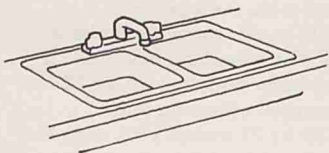


## Food Preservation

The workroom, if located near the kitchen, is also a good place for the freezer. Many homemakers prefer to prepare foods for freezing in this area instead of the kitchen. A built-in cook top or a hot plate on the counter makes this room an excellent place for canning or freezing foods.

Counter space on the latch side of an upright freezer or adjacent to a chest type is convenient for placing foods in containers and then into the freezer. Storage above the freezer provides space for empty jars and containers. A large sink in this room would be ideal for food preservation work.

If wall space is available, you may store canned foods in this room. Shelves 4½ inches deep or 8 to 9 inches deep, spaced according to can sizes, provide easy-to-reach storage.



## Centers for Other Activities

The location and size of the workroom and the family's hobbies and interests determine other activities you plan for this area. This room may serve as a place for working on ceramics, painting, potting plants, making flower arrangements, cleaning fish. It may not be possible to have a separate center for each activity, but plan a convenient work space for performing the task and space for storing supplies.



## Selecting Materials

**FLOOR COVER.** Cost, maintenance and preference are factors in choosing floor coverings for the workroom. Plain or colored concrete that is hard, dense and smooth is easy to maintain. Plain concrete can be painted with special concrete-floor paint. Plan to use rugs or pads over the concrete in areas where you stand for any length of time.

Commonly used floor coverings include linoleum, vinyl asbestos, vinyl tile, sheet vinyl or seamless flooring. Terrazzo, ceramic tile and indoor-outdoor carpeting are also used in workrooms. Consider underfoot comfort and ease of care, then select the type that suits you and your budget.

**WALL FINISHES.** Easy-to-care-for is the main criteria for wall finishes. Walls of wood paneling may be finished with a transparent or a painted finish. If painted, use a semi-gloss or gloss enamel. Walls adjoining counters may be laminated plastic, ceramic tile or sheet vinyl.

The wall space between wall and base cabinets should also be covered in an easy-to-care-for material.

If cost is not a factor, laminated plastic is a good choice since it is easy to maintain. Less expensive wall materials include prefinished wood paneling, hardboard paneling and painted plywood.

### COUNTER OR TABLE TOP FINISHES.

Commonly used counter tops for workrooms are laminated plastic and ceramic tile. Stainless steel is in the high price range, but it is very acceptable. Less expensive materials include linoleum and flexible vinyl.

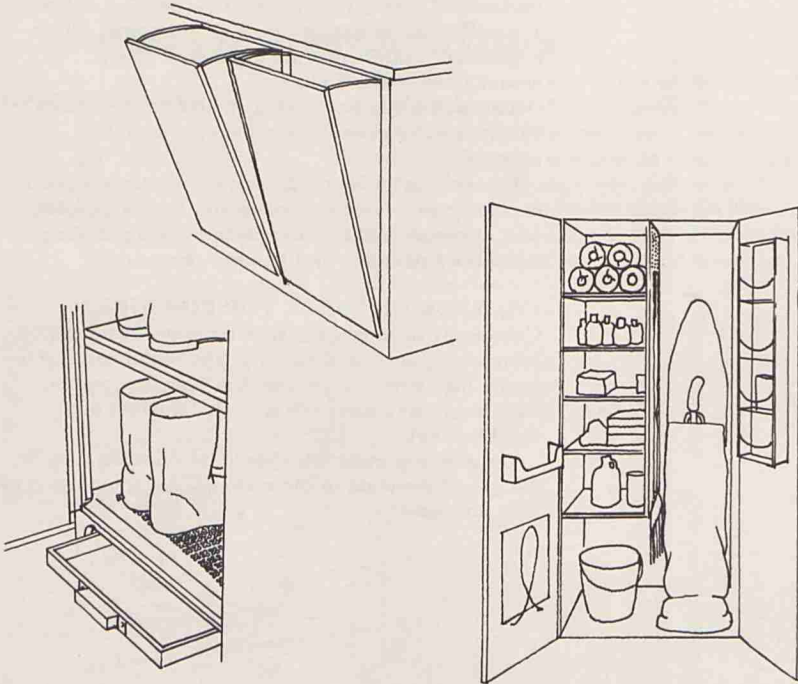
Counter top materials should be durable, easy to clean and resistant to moisture, stains, scratches and cuts and heat.



## Other Necessities

**STORAGE.** The importance of adequate storage has already been mentioned. Good storage can contribute measurably to the convenience of the workroom. Consider these guidelines when planning the storage in each of the "centers" for the activities you include:

- Store near first point of use
- Use together, store together
- Easy to see, reach, grasp
- Only like items stacked together
- Keep storage flexible
- Discard unused items

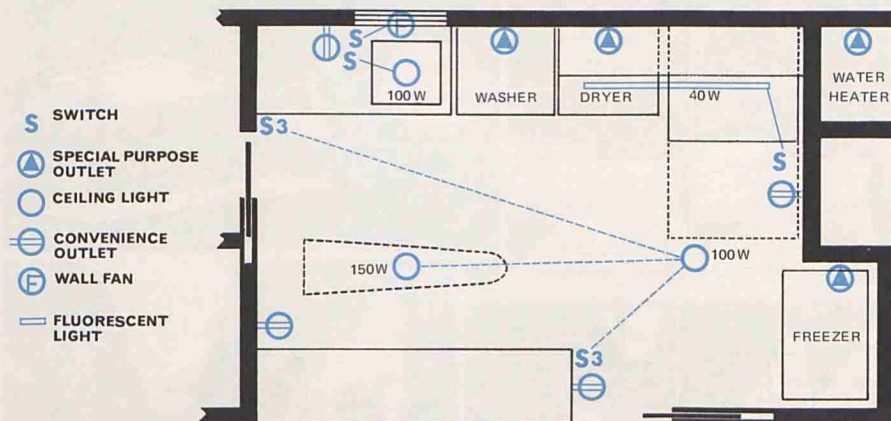


**WIRING.** Plan safe and adequate wiring for your workroom. Give special thought to location of major equipment, convenience outlets and individual circuits. When two or more circuits for convenience outlets are installed, several appliances may be used at the same time. All electrical outlets should carry appropriate voltage necessary to serve a specific use — lighting, heating or major equipment.

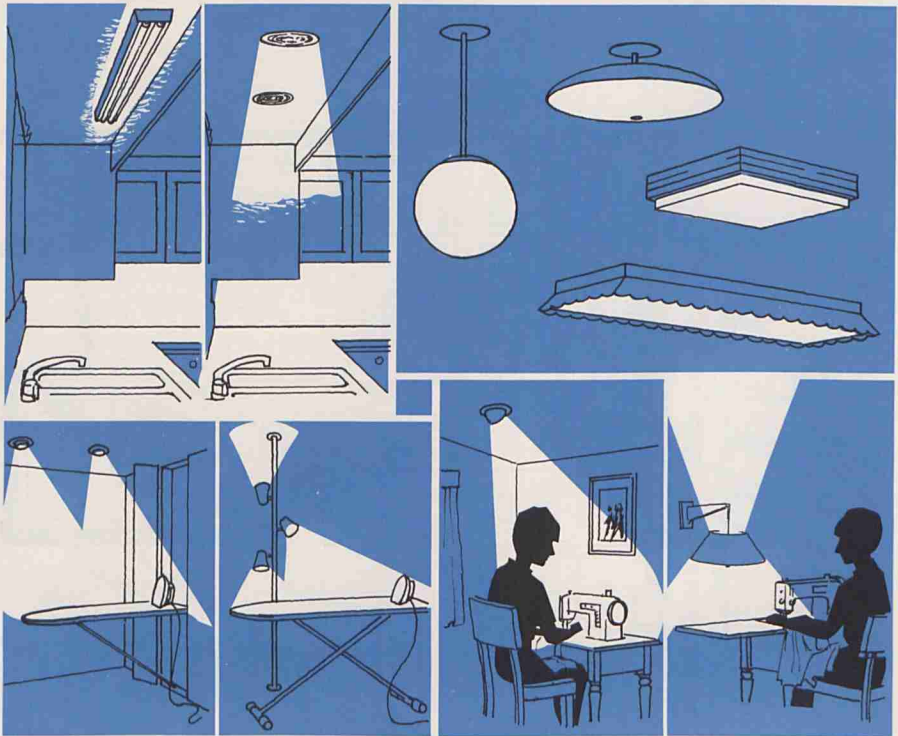
Each major appliance must be wired according to its demands for power. Special-purpose outlets may be either 120 or 240 volts, depending on the equipment to be used.

*All outlets should be grounded.*

All electrical installations must meet national electric code standards and state and local regulations.



**LIGHTING.** For efficiency and safety use both general lighting and area lighting in your workroom. All lighting should be glare-free. Control general lighting with a wall switch located at the entrance. Area lighting is needed at each work center. When performing tasks such as ironing, sewing and stain removal, use 150- to 200-watt incandescent bulbs. For short periods of work, one 40-watt or two 20-watt fluorescent tubes are adequate; but for prolonged work of this type, use two 40-watt fluorescent tubes. It is best to use deluxe warm white or deluxe cool white tubes.



COMFORT. For year-around comfort plan for the control of ventilation, temperature and humidity. Insulate the room against weather extremes. Provide windows for daylight and ventilation. Also use a ventilating fan to remove excess moisture as well as odors. Vent the dryer to the outside, if it is not vented through the drain. Temperature can be controlled with individual units or by central heating and cooling.

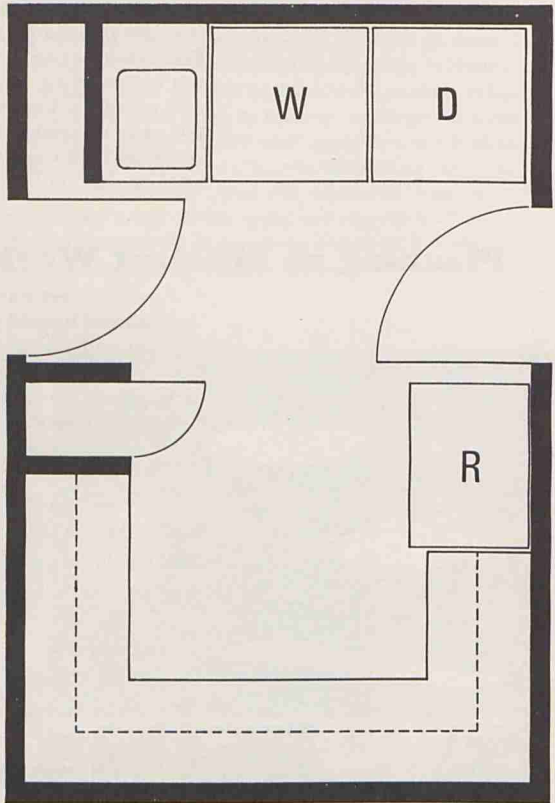
## **Planning an Efficient Workroom**

Several ideas have been presented briefly to get you started toward planning an efficient workroom for you and your family. Now you are ready to begin. You may want to seek additional information and help. There are several sources of help, including your Cooperative Extension Service.

### THE STEPS IN PLANNING

- 1—Decide on money available
- 2—Decide on activities you want to include
- 3—Decide on location
- 4—Plan center for each activity include:
  - work space—floor and counter
  - equipment
  - special facilities
  - storage for materials and supplies
- 5—Plan arrangement within center
- 6—Include adequate wiring and lighting
- 7—Select easy-to-care-for materials and finishes

When your room is completed, you will be ready to enjoy rather than dread the work you do there.

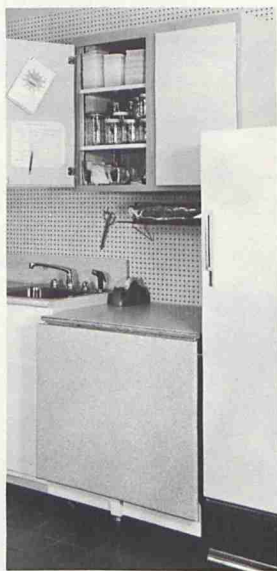


Appreciation is expressed to Mrs. Bertha Bryson, former Housing Specialist, Louisiana State University, for her contribution to this bulletin, and to its author, Miss Frances Fortenberry, Extension Specialist in Housing and Equipment, Mississippi Cooperative Extension Service.

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## PLAN A WORKROOM for laundry and other activities

## PLAN A WORKROOM for laundry and other activities

*Arlean Pattison, Extension Home Management Specialist, Washington State University*

SQUARE FOOT for square foot, a workroom can be one of the most useful rooms in the entire house. It can provide a convenient place for doing the laundry—plus space for several other activities that would otherwise clutter up the rest of the house.

Doing the laundry is more convenient and pleasant if you have enough room to work easily—and most homemakers wash from 5 to 15 loads a week. Many women report that they don't mind washing but find that ironing and mending pile up—"If weren't such a job to get everything out and get ready."

With a workroom, jobs can be left and finished later. The door can be closed on messy or untidy jobs. Odors and humidity from the laundry won't invade other parts of the house and it will be easier to keep the back entrance more presentable. And there's less competition for the kitchen sink and counters if there is another room with a sink. Example: "Keep the fish catch out of my sink while I'm getting the meal."

If some of these activities are cluttering up the house, try planning a place for them in a workroom—

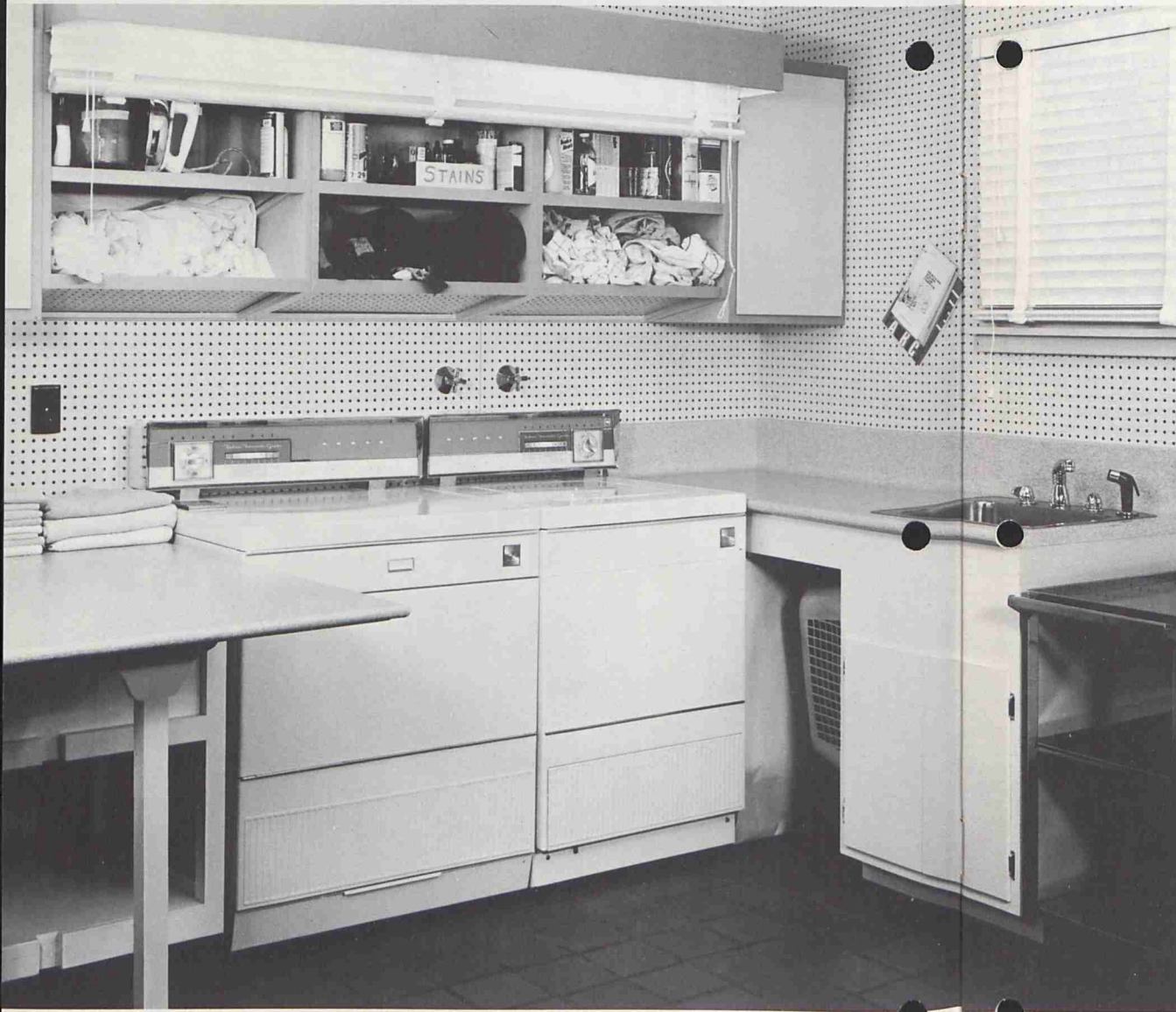
- Taking off drippy rain or snow boots or shedding coats or umbrellas.
- Changing to and from work clothes or cleaning up after gardening.
- Taking care of garden produce, arranging flowers, or caring for plants.
- Shampooing small children, giving home permanents, or tinting hair.
- Diapering the baby and storing diapers and other baby-care supplies.
- Working on cut-and-glue projects or other do-it-yourself projects.
- Cleaning the fish and game catch or storing sports gear.
- Grooming and shampooing the family's pets.
- Storing out-of-season equipment and supplies—pressure canner, picnic basket, barbecue grill, etc.
- Handling food in quantity at canning or freezing time.

Where costs are a consideration, you'll need to compare benefits—considering frequency of use and the homemaker's time. However, having enough space to make jobs convenient doesn't need to be expensive. Building costs are as much the result of finishes chosen as the amount of space. If you are tempted to put storage or some activities on another floor, consider what good planning could get you for just the space required for the stairs.

If you decide on a workroom, here are the steps to follow in planning—

- *Locate the workroom* in relation to the other rooms in the house and the activities you plan. You don't need to make a detailed floor plan yet—just consider the relationship of the rooms to each other.
- *Determine the size* by allowing space for all the activities planned for the workroom. The amount of space needed for many activities has been determined by research at Washington State University and other schools. Homemakers of different heights and ages participated in these studies.
- *Complete the details* of storage, lighting, wiring, finishes, etc. Activities assigned to the workroom may indicate its finish. If you plan to do the ironing and mending in the workroom, you'll want to finish it in gay, light colors since both ironing and sewing are long-time, stay-at-it jobs. If you sew often and plan to have garden products, muddy clothes, etc. in the workroom, you may want to iron and sew elsewhere and let the workroom be roughly or simply finished.

The rest of this bulletin goes into the specifics you'll need to consider if you'd like to plan a workroom that will really work.





## LOCATE THE WORKROOM WHERE IT WILL BE CONVENIENT

The first step in getting a workroom that really works is planning a good location. This depends on what you want to do in the workroom and on how you do your housework.

Here are some things to consider when you plan the location—

- On the main floor if you want to avoid climbing stairs.
- With a view of the play yard if you want to supervise the children while you work.
- Near the kitchen if you want to do the laundry while you prepare meals or clean up.
- Near the bedroom and bathroom area if you prefer to do the laundry and mending along with housework in the sleeping area.

- Or near both the bedrooms and the kitchen.
- So that there are no stairs to the back yard if you want to hang clothes outside occasionally.

The other activities you plan may help determine the location. For example, the workroom needs to be near the back entry if you plan to use it for cleaning up after gardening and similar jobs.

You'll also want to consider traffic into and through the house. Let it go past the workroom rather than through it. Saving space by eliminating halls isn't much of a saving. Halls keep rooms from becoming throughways with more traffic space than work space. Halls are wonderful places for storage walls, too.

## PLAN SPACE FOR ALL THE STEPS IN DOING THE LAUNDRY

It takes more than a washer and a dryer—no matter how automatic they are—to make a convenient laundry. Just as a deluxe range, a refrigerator, and an automatic dishwasher do not by themselves make a convenient kitchen, appliances alone do not make a convenient laundry.

Each of the steps in doing the laundry needs to be considered. Some require storage space for supplies. Others require space for working; and still others need space for equipment.

Here are some of the things to keep in mind when you plan the laundry area—

### FACILITIES FOR COLLECTING LAUNDRY

If the soiled laundry is gathered up from the bedrooms, bathroom, or kitchen at laundry time, a three-shelf cart can be useful. It can be used to return clean laundry, too.

It may be more convenient to have a place for soiled laundry in the workroom than to have hampers scattered throughout the house. Family members can cooperate by bringing their own laundry.

In some homes the workroom can be located so there is a convenient pass-through for both delivery and pick-up.

### SPACE FOR SORTING LAUNDRY INTO LOADS

Once the laundry is in the workroom, it still can't go directly into the washer. It needs to be sorted into loads that can go into the machine together.

Modern washers can be programmed to supply the right conditions for many different kinds of fabrics. Water temperature, wash speed, spin speed, and rinsing can all be controlled. But the homemaker still needs to choose a companionable load and push the right button. It takes careful sorting to prevent fading, shrinking, wrinkling of wash-wear garments, pleat removal, and other costly mistakes.

Many items—sheets, towels, etc.—accumulate so rapidly that there will be a load each time they are collected. Others—wash-wear dresses, white dacron or nylon, dark fabrics, or bright colored ones—will usually have to wait until there is a load of like items that require similar treatment. Bins for sorting and holding are a convenient solution to this problem.

Having from three to six sort bins located on the wall over the appliances or over a table near the washer can make the sorting part of doing the laundry as convenient as the washing and the drying. Stand-up sorting is a back saver, too. It eliminates stooping over stacks of laundry piled on the floor or reaching into deep hampers.

To be most convenient, sort bins need to be planned to suit the height of the homemaker. A woman of average height can reach only one row of bins if they are located over a top-opening washer. She could have two rows of bins if they were located over a front-opening washer or a narrow table (28 inches or less deep).

Bins constructed of perforated board allow for necessary ventilation. If closed bins are desired, a loose hanging or ventilated covering can be used. Garments will stay in if the bins are slanted at the

bottom—about 3 inches lower at the back than the front. With slant bottoms, too, the space is less likely to be commandeered for other storage. If the bins are built so that they hold just as much as the washer holds—8 pounds, 10 pounds, or whatever its capacity—a full bin will indicate that a load is ready for washing.

Custom-built bins are not the only way to solve the sorting problem, however. A less expensive version of this idea is a row of plastic baskets or cardboard boxes on a shelf—still located, of course, at a height that's convenient for the homemaker. However, even a tall person can use only one row of baskets or boxes because the opening is at the top rather than at the front.

#### A PLACE FOR STORING LAUNDRY SUPPLIES

Laundry supplies—detergents, bleaches, conditioners, softeners, stain removers, fabric finishes, and other laundry aids—need to be stored where they are easy for the homemaker to reach but out of reach for toddlers.

The old rule, "There should be storage space and a work surface next to each piece of equipment," applies to the workroom as well as the kitchen. Here are some other guides for convenient storage—

- Store often used items within easy reach.
- Store at the point of first use or most frequent use.
- Plan the space to fit the item.
- Store only needed items, discard others.

Heavy containers may be stored under the sink or counter if the door is kept securely fastened to foil inquiring youngsters.

Laundry supplies usually require from 4 to 8 linear feet of shelving. Check the supplies you now have to determine the amount of space you'll need.

#### A DEEP SINK FOR PRE-TREATING LAUNDRY

A sink that's 12 inches deep and 18 by 20 inches across is a valuable partner for the automatic washer and dryer. It's used for pre-treating, stain removal, clean up, dampening for ironing, and a host of other jobs.

If the washer is designed for re-use of wash water, a full-depth laundry tub—about 21 inches deep—will be necessary, but otherwise such a tub is too deep for convenient hand use. A deep tub that's used to save suds needs to hold as much as the washer holds—or be equipped with an overflow pipe.

From 2½ to 5 feet of available counter space adjoining the sink can be very useful. If the



Easy-to-reach sort bins make a convenient place to hold the few delicate or bright colored items that must wait until there is a load needing the same temperature, amount of agitation, or spin. Light-weight baskets on a shelf are economy version of the bins.

washer is to drain into the sink, the counter will have to be on just one side so that the washer can be on the other. If the washer has its own in-the-wall drain pipe, the counter can be on both sides of the sink.

The counter can be the same height as the



appliances, but a tall person may find it more comfortable to work at a sink and counter that are from 1 to 3 inches higher than the normal appliance height of 36 inches.

#### SPACE FOR WASHER AND DRYER

The width of washers and dryers usually varies from 24 to 30 inches each. It may be wise to allow at least 55 to 60 inches of wall space for the pair to accommodate a possible change in size when replacements are chosen. The combination washer-dryer or stack-on models are designed for minimum space laundries.

The depth needed will vary according to plumbing and wiring installation. It's generally wise to allow 28 inches front to back.

Space in front of the washer and dryer for the worker to work conveniently is important, too. Space needed to load and remove laundry varies with the door style, but an allowance of 36 to 40 inches in front of the washer and 38 to 44 inches in front of the dryer will allow the worker to work without being cramped. Add 24 more inches for clearance if a passageway behind the worker is desired. This practically eliminates hallway installations.

If the washer hose is to drain into the sink, the washer needs to be located next to it. Locating the dryer on an outside wall facilitates venting.

#### A PLACE TO HANG GARMENTS

The directions for drying wash-wear garments are "remove from the dryer immediately and hang on hangers." A rack for hangers near the dryer lets you do this conveniently.

For the very few items that need to be drip-dried—some pleated skirts, glass fiber curtains—an extension rod over the sink or the floor drain, if there is one, will be useful.

#### A TABLE TO FOLD ON

Towels, sheets, and nearly everything else that isn't hung on hangers must be folded and sorted into piles for either pressing or return to storage. Research workers recommend a 34 by 60 inch table as a convenient place for folding fitted sheets and other items. The best location is near the dryer. The dryer top can provide some stack space, too.

The table can also serve well for additional sorting space before washing, for pre-treating laundry, for drying sweaters, and for other-than-laundry jobs.

#### IRONING OR TOUCH-UP PRESSING AREA

Ironing, often the dreaded part of the laundry, is less of a chore when the ironing unit is convenient. To iron comfortably, there should be space for the ironed and unironed garments within easy reach of the worker. It is especially important for the seated worker to be able to reach the hold rack or table without getting up.

It will take a space 6½ by 7 feet for a convenient ironing center. Even if you plan to leave the ironing board up most of the time, it's still a good idea to have a place that's high enough and wide enough to store it. A folded ironing board is about 60 inches high and 22 inches wide.

If you plan to do the ironing and sewing in another part of the house, rather than in the workroom, a touch-up pressing center near the dryer may help get lots of garments ready to wear without waiting for ironing time. The dry and steam iron, a jug of distilled water, and a small press board—used on the nearby table—are all that you'll need. Plan to store them close to the table.

Touch-up pressing is all that is necessary for many garments in today's laundry. A small press board in the workroom would be a good idea if the full-size ironing board is in another room.





## PLAN SPACE FOR OTHER WORKROOM ACTIVITIES, TOO

Many of the other jobs assigned to the workroom can use the same facilities required for the laundry. The deep sink with its adjoining counter can double for plant and flower care, for cleaning fish and game, or for grooming the family's pets. The only thing that needs to be added is some nearby storage space for supplies. Other activities, however, may require more careful planning.

### FOOD FREEZER

The first floor workroom can be a convenient location for the freezer. Since it is a heavy piece of equipment by itself and becomes rapidly heavier at the rate of 35 pounds per cubic foot of storage space, it needs to be located along an outside wall or where there is extra floor support. This is particularly important for upright freezers, since the weight per square foot of floor area is greater than for top-opening styles.

A space 36 inches wide and 26 to 30 inches deep will accommodate most upright freezers; 30 inches additional space in front of the freezer will be needed to open the door. Storage cabinets over top-opening freezers need to be high enough to allow the lid to open, too.

If you plan a storage cabinet over a freezer, it might be a good idea to build it as a separate unit rather than as a permanent part of a larger cabinet. A new freezer might be taller than your present model.

For work space next to the freezer you could have a counter, a table, or a portable cart. Allow at least 4 square feet of space to take care of jobs like sorting packaged food. Storage space for wrapping, sealing, and labeling supplies and for reusable containers should be located near the freezer, too, or near the sink and counter where the packaging is done.

### FOOD PANTRY

When kitchen space is scarce, a food pantry can provide extra first-floor storage space for home-canned food, bulk purchases of food, canning equipment, and seasonal equipment. It could be located to open into the workroom or into the hallway.

A space 2 by 2½ feet or larger and with carefully spaced shelves can provide convenient storage. Since even canned food keeps better if the temperature is below 70° F., but above freezing, ventilation may be desirable if the storage area is

in a warm part of the house. Even with ventilation, however, a food storage area should not be built along a wall that has hot pipes.

### "MUD CLOSET"

A "mud closet" for outdoor wraps, work clothes, and rain gear needs to be near the back entrance. It might be better to locate the closet so that it opens into the rear hall rather than into the workroom.

The closet should be 3 to 5 feet wide to hang wraps for six people. A depth of 30 inches will be needed for men's topcoats. The rod should be located at least 63 inches above the floor or boot rack. A lower rod for children's coats can be adjustable to go up as they grow up.

Where there are lots of wet boots and coats to drip, a shower-type floor with a drain could be installed to solve the puddle problem. A rack about 4 inches above the floor would keep boots high and dry. The closet could double as a place to hang drip-dry garments, too.

### CHILD-CARE CENTER

The workroom sink and counter and cart or table can serve as a child-care unit. Mother can diaper and bathe the baby or shampoo the small child at a comfortable, stand-up height and leave the soiled laundry near the washer. Water spills are in a can-take-it room.

For a convenient child-care area, you'll need at least 4½ feet of counter space on one side of the sink—the left, preferably—and extra storage space for supplies.

### MENDING OR SEWING CENTER

If you plan to do the ironing in the workroom, having the mending or sewing center there, too, will let you use the same table, ironing board, and good light. Of course, some homemakers who sew a great deal may prefer to have a sewing center in another part of the house.

Floor space requirements for a sewing center may vary from 4 by 4½ feet for a small unit to 8 by 12 feet for a complete sewing center. The space needed for a compact sew-mend center—suitable for a homemaker who does more mending and altering than new garment construction—is shown in the diagrams at the end of this bulletin. Check references for more complete information on planning sewing centers.



This laundry area includes a table for folding at the left and a deep sink at the right of the washer and dryer. It has three sorting bins and storage space for laundry products above the appliances. The valence light provides general room lighting as well as good task lighting at laundry time.

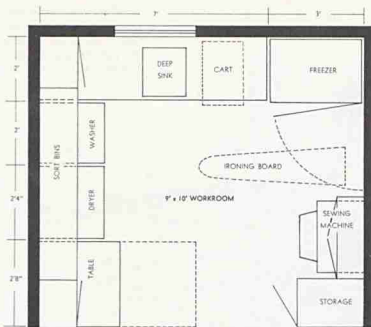


When the day's laundry is done a metal Venetian blind covers the sort bins but still allows ventilation.





Family A wanted their workroom near the kitchen since they planned to put a freezer in the workroom. They also wanted it near the garage or back entry so the laundry sink could double for washing garden vegetables and for clean up when the family came in from yard work. To go along with this, they planned a "mud closet" for work clothes just across the hall from the workroom near the door to the garage.



### MRS. A DECIDED TO COMBINE LAUNDRY, A MENDING AREA, AND THE FREEZER

In this example, the family listed—

- Automatic washer and dryer.
- Deep sink and counter.
- Convenient place to sort and hold laundry.
- Place to fold clean clothes, especially fitted sheets.
- Cart to take clean clothes back to bedroom area.
- Storage space for laundry supplies.
- Large upright freezer and a storage area for reusable freezer containers.
- Place where ironing board could be left up if necessary.
- A compact sew and mend unit.



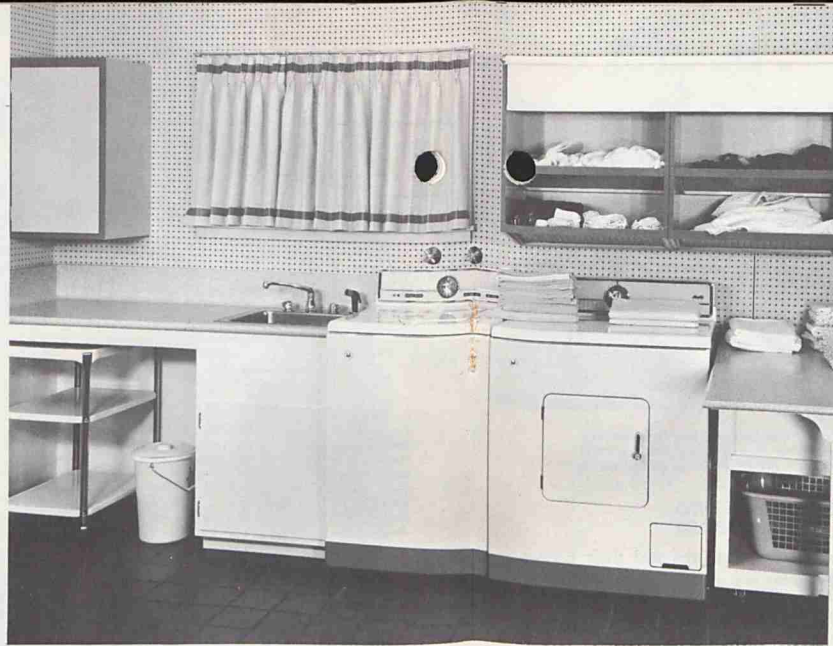
With the aid of a sturdy box, even little sister can bring her pajamas to the bin reserved for them. They'll wait there until there is a load of like items to be washed together.

Folding a fitted or contour sheet is less of a problem when there is table room for folding. Even though folding methods vary, research workers determined that one person could fold a fitted sheet quite conveniently and still leave stack room if the table was at least 34 inches wide and 60 inches long. When the laundry is finished, the leaf goes down to make a table half that size.





The laundry sink and counter is a fine place for a little girl's shampoo. Mother likes to work at this height and daughter appreciates the "no suds in your eyes" shampoo. Spray hose rinsing makes it nearly like a beauty parlor shampoo.



This workroom has sort bins over the table and appliances and a place for the roll cart and diaper pail under the counter. Dangerous supplies—bleaches, stain removers, etc.—are stored in the wall cabinet where toddlers can't reach them.

Since Mrs. B is tall, she can easily reach into the top of a double row of bins. Location allows washer to open.



The shelved cart is convenient for taking clean, folded garments back to their storage spaces. Even Junior can share in this part of the laundry job.

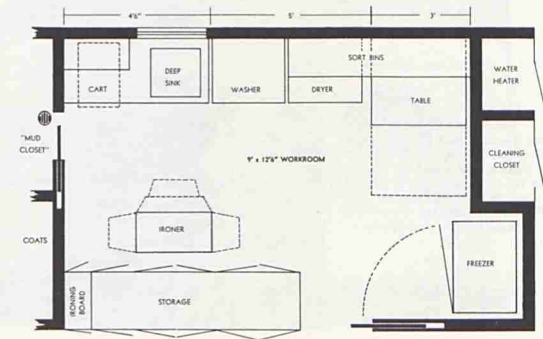
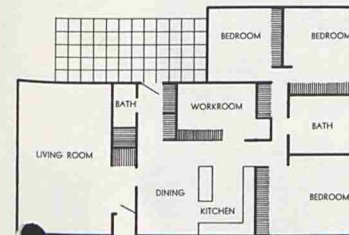


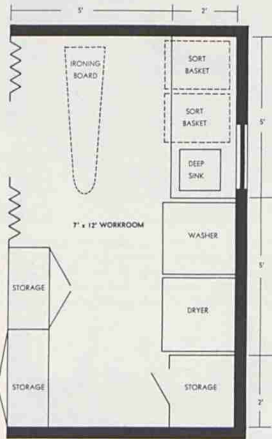
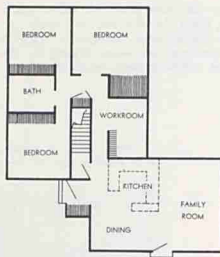
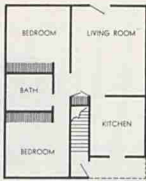
### THE B'S WANTED A CHILD-CARE CENTER WITH THE LAUNDRY

The family in this example wanted these things—

- Automatic washer and dryer, deep sink, and space for stand-up sorting.
- Room for a motor-driven ironer and a place to leave the ironing board until the job was done.
- Baby-care area and a place where Mrs. B could shampoo the children's hair without stooping.
- Space for a large upright freezer.
- Lots of storage space and a "mud closet" for rain gear and drip dries.

The B's wanted their workroom near the kitchen and not too far from the bedrooms. They wanted a room that could be closed and made comfortable for bathing the baby and shampooing the girls. After the days of bathinet, playpen, and watercolor games, the area could accommodate adult hobbies. Mrs. B wanted a view of the backyard play area and she also wanted to be able to use the "mud closet" by the back entrance with its drain in the floor as a place for hanging drip-dry clothes. A small sliding door allows access to the closet from the workroom. Since Mrs. B decided that the little sewing she does could be done in the light and sunny dining room area, the ironing board cabinet opens from both the workroom and dining room sides.





Family C wanted to remodel their house so that they could bring the laundry area out of the basement, have a more convenient kitchen, and add another bedroom. They needed more storage space for linens and cleaning supplies, too. They decided to convert the old kitchen into a workroom and add a combination kitchen-family room with a more attractive entrance because "guests always come to the back door." With this arrangement, they could use much of the plumbing and wiring that was already in the old kitchen. They left the water heater in the basement and added a water softener down there.

### THE C'S CHANGED THEIR KITCHEN INTO A WORKROOM WHEN THEY REMODELED

In this example, the family decided to remodel their kitchen as a workroom. They wanted—

- Automatic washer and dryer and space for sorting and storage.
- Convenient ironing arrangement.
- Laundry sink that could also serve for wash-ups in their one-bathroom house.
- Place for flower and plant care.
- Way to shut off workroom so that Mrs. C could leave unfinished jobs until she got back to them.
- Storage for extra food supplies and seldom-used equipment.
- Light color scheme because the room didn't have much outside window space.

Since Mrs. C is only 5'11" she decided that sort and hold baskets on sliding shelves under the counter would be easiest to reach. Lower row of bins is assigned for less frequent use. The baskets can be removed if needed for portable jobs.

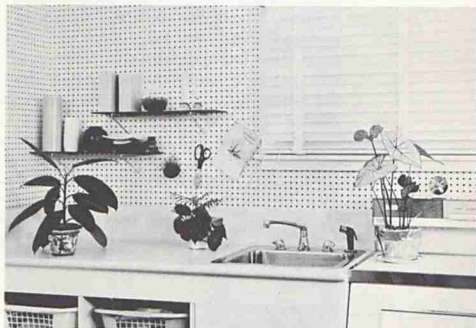






Garment hook and hangers are within easy reach. The electric outlet is high enough and far enough forward of the ironing board to provide a natural cord holder.

Mrs. C—a plant and flower hobbyist—keeps a few well chosen vases and flower arranging tools near the deep sink with its spray hose for plant leaf washing.



The laundry area has an automatic washer and dryer, a deep sink, and sort and hold baskets on sliding shelves—left open to allow for good ventilation.



The storage cabinet near the dryer has a pull-out rack for hanging wash-and-wear garments that should go on hangers just as soon as the dryer stops.

## COMPLETE THE PLAN BY PROVIDING GOOD LIGHTING, ETC.

Finishing up the plan by providing for good lighting, electrical service, plumbing, venting, surface finishes, etc. takes some time and requires some attention to details. However, good planning will pay off handsomely through the years in the satisfactions of having a workroom that really works.

Since there are new developments in appliances all the time, it's wise to allow for them—particularly when it comes to wiring. If you just plan on the minimum requirements necessary for present appliances you may not be able to add new equipment without costly rewiring or remodeling.

### LIGHTING

It takes both general room lighting and local lighting for each job to make a workroom that's efficient, safe, and pleasant.

However, the general room lights can often double as local job lights. For instance, ceiling fixtures do not need to be centered in the room if moving them from 2 to 5 feet in either direction would provide better light for a certain job. They will still provide general or traffic light, too.

One or more of the ceiling or job lights should be switched by the door. If there are two doors, switch by both.

One way to estimate the amount of light to provide is to allow at least 3 watts per square foot of floor space. (For example, a workroom that's 9 by 12 would have 108 square feet of floor space and would need at least 325 watts for lighting.) More light may be needed for hard-to-see jobs like sewing, night-time ironing, stain removal, or craftwork.

You may use incandescent bulbs in drop or flush-to-ceiling fixtures or fluorescent tube fixtures or a combination of the two types. Count on at least two fixtures. You may need three or four if sewing, ironing, and other activities in addition to the laundry are included in the workroom.

Use "warm white" fluorescent tubes for better color. Incandescent bulbs of 100 watts or more need louvers or diffusing fixtures to soften the light—especially if the bulb can be seen from work areas where you will normally stand or sit. The smooth surfaces generally used in laundry areas cause reflected glare unless light sources are well diffused.

For a workroom that's a real morale booster, consider a luminous ceiling to provide overall,

shadowless illumination—especially good where there is a minimum of window space or of sunshine.

### WIRING

Don't let inadequate wiring make your workroom old fashioned before it's even built. Plan for wiring that's safe and adequate for all the electrical equipment you want to use and then allow a margin for greater demand in the future.

Wiring must meet state and local code requirements, but these requirements are *minimum* standards. They help prevent hazards from shocks and fires, but they don't necessarily provide adequate wiring for today's deluxe equipment. Even following adequate wiring recommendations may not let you add more equipment or install newer appliances with higher ratings, so be sure that the wiring will be able to handle more than just your present needs.

Each of the major appliances—washer, dryer, water heater, etc.—will need an individual circuit of its own and its own specially located outlet. Each of these appliances also needs to be separately grounded.

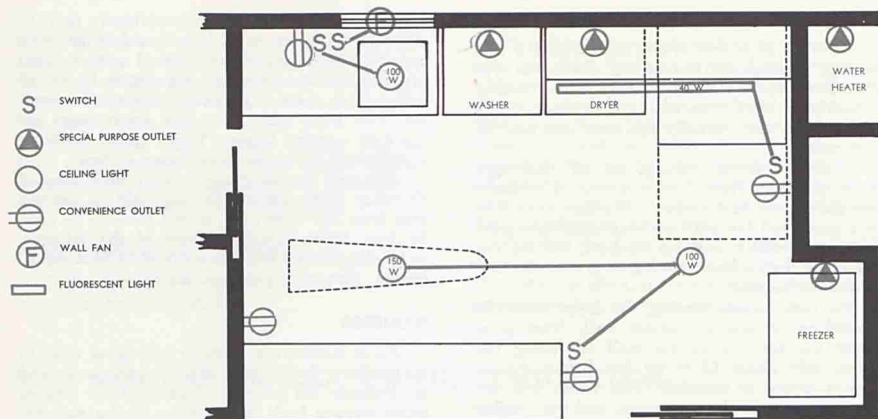
Allow plenty of convenience outlets for portable appliances, too. Locate them on walls or over counters or tables in areas where they will be convenient for the job—ironing, sewing, extra light, etc.

In addition to locating outlets where they'll be convenient, be sure that the circuits behind the outlets will accommodate everything you plan to use—especially the things you want to use at the same time. For instance, while you iron, you might want to dry your hair, have the radio on, and perhaps a fan, too. A 20-ampere circuit has a capacity of 2400 watts; if the total rating of appliances in use is more, the circuit will be overloaded.

Having two or more circuits for convenience outlets will allow more than one heating appliance to be plugged in at the same time. The circuits should have a capacity of at least 20 amperes. Use grounding type duplex outlets on these circuits.

In working with the electrician, list all possible lights and equipment that you might install or plan to use. Indicate those to be used at the same time. Then check the wiring plan to make sure there are outlets where needed—

- *Electric water heater and clothes dryer* will each require 240-volt individual circuits of 30-ampere capacity. Higher capacity cir-



THIS WIRING DIAGRAM is based on Mrs. B's workroom. The overhead fixtures for general lighting also serve as local job lights. Instead of one fixture in the center of the room, there are two located to serve as job lights for ironing and for working at the freezer. There is also a light over the sink and a row of fluorescent tubes to light the sort bins. The fan is wall switched for convenience. The washer, dryer, water heater, and freezer each have individual circuits. Convenience outlets are located over the counter, on the wall near the table, and near the ironing area.

cuts may be necessary if unusually high rated appliances are chosen.

- *Washer and food freezer* each need individual 120-volt circuits of 20-ampere capacity. A red signal light for the freezer may be a good safety precaution. If the current goes off, the light goes out.
- *Wall fan* can connect to a regular 120-volt circuit for convenience outlets. A wall switch for the fan will make it more convenient.
- *Motor driven ironer* can operate from a regular convenience outlet on a 120-volt, 20-ampere circuit—if no other heating appliance is on the same circuit at the same time.
- *Dry and steam iron* plugs into a regular convenience outlet on a 120-volt, 20-ampere circuit. The wall outlet can serve as a natural cord holder if the ironing board is to be used at a right angle to the wall. Locate the outlet 36 to 48 inches above the floor and from 12 to 18 inches ahead of the center of the ironing board.
- *Other portable appliances*—sewing machine, hair dryer, radio, freezer package sealer, floor polisher, etc.—can plug into regular convenience outlets. It will be easy to plug them in if the wall outlets are located 24 to 30 inches above the floor.

## GAS APPLIANCES

A gas supply line of rigid pipe and flexible copper tubing is a standard requirement for each gas appliance. The supply line for each appliance must have a cut-off valve, installed ahead of the flexible tubing.

- *Water Heaters:* The gas burner must be vented to a pipe-vent or a chimney.
- *Clothes Dryers:* The pilot and burner can be vented through the same exhaust vent used to carry moisture and lint to the outside. This combination exhaust duct should not be connected to any vent or chimney for other gas appliances. Check the code for possible changes in requirements. The gas clothes dryer also needs a regular 120-volt electric outlet for the motor, light, etc.

Because gas burners must have combustion air, an adequate venting system includes bringing in outside air as well as exhausting it.

A "100% safe" automatic gas pilot for thermostatically controlled dryers and water heaters will cut off the gas supply when gas line interruptions put out the pilot light. Manual lighting of the pilot will resume service.

Burners, pilots, and venting should be carefully inspected when the appliances are installed and the gas service is turned on.



## VENTING FOR DRYERS

Most *air flow type* dryers should have a vent to carry moisture and lint outside. *Condenser type* electric dryers do not require outside venting. However, most of them need a cold water supply and a drain line—usually the same one used by the washer.

Without outside venting, an air flow type dryer may put from 2 to 4 quarts of moisture into the room with each load. Window ventilation or a good wall fan may accommodate infrequent drying, especially in drier climates, but for frequent, successive loads, it's better to vent the dryer directly outside.

For easy outside venting, the dryer should be located on or near an outside wall. Vent pipes under the floor or in the wall or ceiling can travel only about 12 to 20 feet before the air flow is slowed or retarded. This varies with the dryer, the size of the vent pipes, and the number of turns, however. Avoid facing an outside vent opening into prevailing winds.

An exhaust fan installed in an outside wall will help remove heat, moisture, and odors at laundry time. Size or capacity of the fan should be based on the size of the room for effective ventilation.

## HEATING AND SOFTENING WATER

When locating the water heater, "short runs for hot water" is the rule. The pipe and original installation is comparatively inexpensive. The cost of heating water lost in long runs and in less efficient washing can be more expensive over the years.

On the basis of heat lost on long runs for use in frequent small quantities, the best location for the water heater is near the bathroom or the kitchen.

Two smaller, fast-heat-recovery water heaters may be more practical than a single large one—particularly for the large or spread-out house. One could serve the kitchen and workroom and the other could serve the bathroom. For efficiency, the heater near the clothes washer and dishwasher could be set at a higher temperature; the heater near the bathroom at a safer, lower temperature—especially if there are small children.

When hard water interferes with laundry and housekeeping, an ion-exchange type water softening system may be installed. It may be plumbed ahead of the water heater for softening hot water only or connected in the pipeline for softening parts or all of the cold water as well.

Rental-service softeners, service-yourself soft-

eners, or completely automatic softeners may be chosen from a variety of brands and in different capacities, sizes, and shapes. Rental units or small capacity softeners require only about 18 by 18 inches floor space. Completely automatic softeners, with brine tank, may take about twice the space of a water heater. Check before building a cubbyhole for a water softening system.

Softeners by themselves won't take care of *excessive* iron content. If you need to remove iron from the water, too, it will have to be done by iron filters installed ahead of the softener, or by chlorination and filtration, or by iron stabilization. Get professional advice.

## PLUMBING

Flush installation—washer and dryer close to the wall—is desirable as both a space saver and to eliminate the problem of garments or articles being trapped back there. Space in the wall behind the washer must accommodate the wasteline standpipe, its trap and vent, and the hot and cold water connections with their cut-off valves.

Cut-off valves for the hot and cold water lines are a safety precaution. They reduce the pressure on connecting hoses and on the washer fill controls. They simplify servicing or changing washers, too. Cut-off valves should be installed in the wall 48 inches above the floor to allow clearance over the washer control panel.

Some appliances allow space within their framework for the turns in the water supply and drain hoses. Many, however, require an additional 3 to 6 inches of space to allow the hoses to bend without crimping. If the wall in back of the washer and dryer is left uncovered, the wall space between the studding will take care of 3 or 4 inches of the necessary space for hose turning.

If the washer is to be flush with the wall, the wasteline needs to be in the wall, too. The wasteline may be an open standpipe, 1½ or preferably 2 inches in diameter and 30 inches high, into which the crook end of the drain hose is hooked. A sealed hose-to-standpipe connection may be made if the trap is properly vented.

Every drain must have a trap and every drain should also have a vent to reduce the likelihood of flooding from over-sudsing. To avoid flooding, many people prefer to drain the washer into the laundry sink rather than into an open standpipe in back of the washer.

A floor drain is sometimes desirable in a workroom. Floor drains can be installed easily if the floor is "on-grade" concrete. Proper slanting and seal of the floor to the drain is not feasible when the floor base is wood.

Floor drain traps must be kept filled—or have

a trap primer—to prevent sewer gas odors. The rare overflow or flooding accident will probably not keep sufficient moisture in the drain trap. However, lubricating oil in the trap evaporates less rapidly than water.

If wasteline traps for the washer, sink, or floor drain are below the main sewer line—as sometimes happens in basements—a sump pump and appropriate vent must be installed.

## FLOORS AND FLOOR COVERINGS

If the floor base is concrete, it can be painted or covered with asphalt tile.

To prevent water from leaking to a wood floor base, use sheet linoleum or vinyl floor covering and cove up 2 or 3 inches around the wall base or use a carefully sealed baseboard. Cover the floor under the appliances and move them occasionally to clean and check for leaks. Spills will require wiping up, but the wood floor base need not become soaked. Floor coverings in tile form leave more opportunity for cracks and leaks than floor coverings in sheet form.

Whether the floor is wood or concrete, appliances operate more quietly on sturdy, level floors. They stay in place, maintain proper door swing, and require less servicing, too.

## SORT AND HOLD BIN LOCATION AND CONSTRUCTION

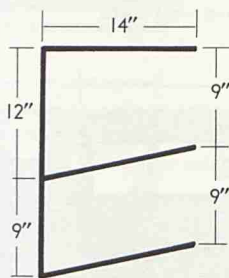
### BIN HEIGHTS

*Women's Height*

*Maximum Distance from Top of Bins to Floor\**

60 inches	61 inches
61 inches	62 inches
62 inches	63 inches
63 inches	64 inches
64 inches	66 inches
65 inches	67 inches
66 inches	68 inches
67 inches	69 inches
68 inches	70 inches
69 inches	71 inches
70 inches	72 inches

\* To find distance from bottom of bins to floor, subtract 12 inches for one row or 21 inches for two rows.

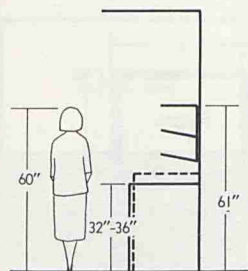


### BIN WIDTH

- 22 inches—5# load
- 26 inches—7# load
- 30 inches—9# load

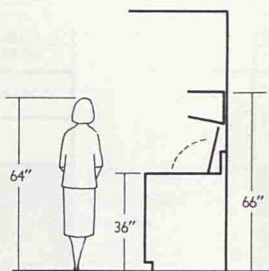
Construct of perforated board to provide ventilation.

SIDE VIEW



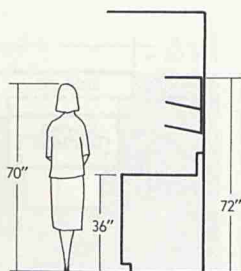
SHORT

Two rows over narrow table or "under-counter" appliances (controls in front)



MEDIUM

Only one row of bins over top-opening washer or two rows over front-opening appliances

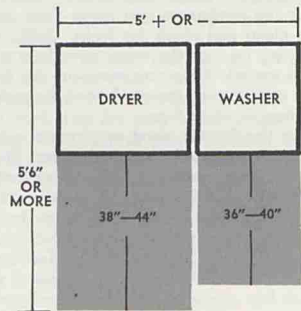


TALL

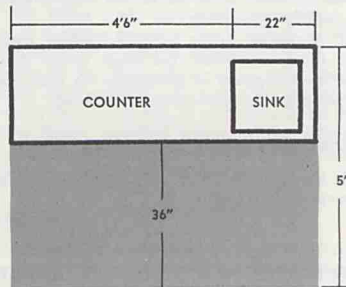
Two rows of bins over dryer, front-opening washer, or table



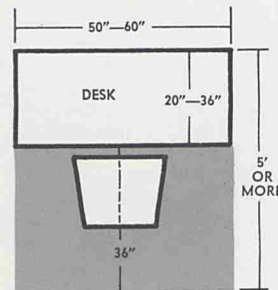
SPACE ALLOWANCES FOR EQUIPMENT AND WORKER—APPROXIMATE SCALE  $\frac{3}{8}$  INCH = 1 FOOT



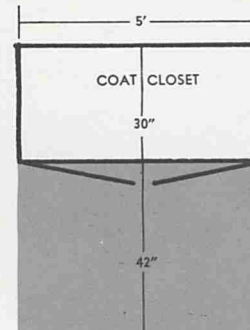
APPLIANCES AND WORK SPACE



SPACE FOR CHILD-CARE CENTER



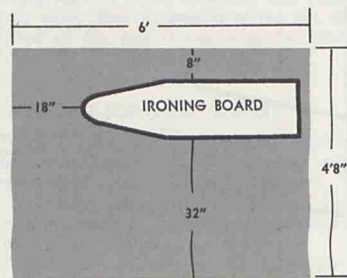
DESK AND SPACE FOR WORKER



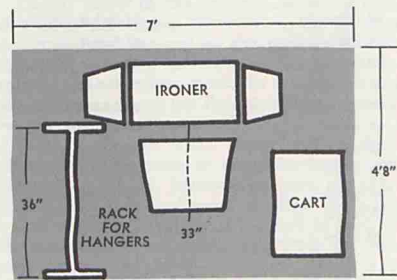
CLOSET AND ACCESS SPACE

COAT CLOSET

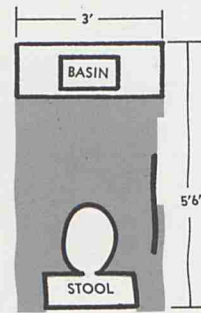
No. of Persons	Closet Width
Two	2'8"
Four	3'
Six	5'



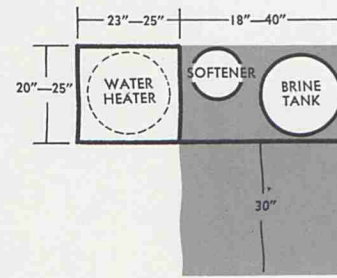
IRONING BOARD AND SPACE FOR WORKER  
allow 6'6" x 7' for complete ironing center



IRONER, EQUIPMENT, AND WORK SPACE

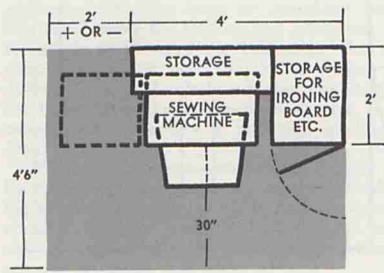


SPACE FOR HALF BATH

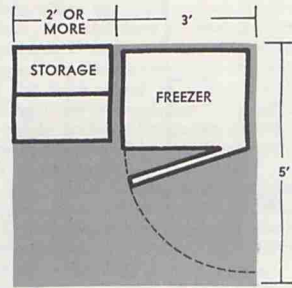


HEATER, SOFTENER, ACCESS SPACE

Space for softener varies with capacity, degree of automatic operation, or the service required.



SEW-MEND UNIT AND WORK SPACE



FREEZER AND WORK SPACE

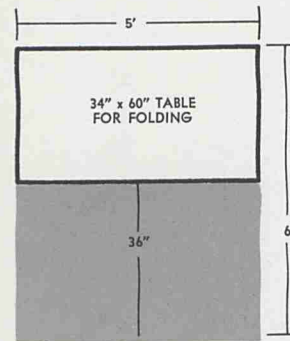


TABLE AND SPACE FOR WORKER

LAUNDRY TABLE HEIGHTS

Women's Height	Table Height
5'0" or below	32 inches
5'1"—5'3"	34 inches
5'4"—5'7"	35 inches
5'8" or above	37 inches

## REFERENCES FOR MORE INFORMATION

Publications available from Washington State University's County Extension Offices:

*Drying Your Laundry Indoors—A Guide for Choosing Between Line or Automatic Drying*, EB 519—Space and spacing for indoor drying lines.

*Planning Your Workroom*, EB 320—Space requirements for nonautomatic equipment, ironing area, planning principles, etc.

*Sewing Centers*, EM 2145—Four centers, from portable to large built-in, based on research recommendations.

*Space Standards for Home Planners*: D-2, Space to Care for Young Children; F-2, Food Preservation; G-2, Laundry (sort bins, table); I-2, Clothing Storage (dimensions for closet design).

*Storage for Your Home*, EB 436—Closet ideas for sewing and cleaning storage and for other areas of the house.

Booklet available from Midwest Plan Service, Iowa State University, Ames, Iowa (\$1.00):

*Home Improvement Plans*, MWPS 4—Storage dimensions for every room; construction details for stairs, cabinets.

HUD-FHA NON-ASSISTED PROGRAM  
FOR SECTION 207 RENTAL HOUSING

SECTION 207 RENTAL HOUSING

WHAT IT IS

- . A program designed to aid in the development of rental housing for moderate- and middle-income families.

ELIGIBLE PROJECTS

- . Projects containing 8 or more units of detached, semi-detached, row, walk-up or elevator-type multi-family structures, designed primarily for residential use in conformance with FHA Property Standards.
- . Projects may vary widely in layout, size, and design, depending on the type of market to be served.
- . FHA will regulate rents, rate of return and methods of operation.

ELIGIBLE MORTGAGORS

- . Individuals, partnerships, corporations, or other legal entities approved by the Commissioner.

PROPERTY REQUIREMENTS

- . The project must be located on real estate held:
  - (a) In fee simple.
  - (b) On a leasehold for not less than 99 years, or having a period of 75 years to run from the date the mortgage is executed.
  - (c) Leasehold for 50 years, provided the lessor is a government agency, Indian, or Indian tribe.

FINANCING

- . FHA approved private lending institutions. (Mortgages eligible for purchase by FNMA)

TENANT OCCUPANTS

- . No income requirements.
- . No restrictions due to race, creed, color or age of the prospective tenant or the composition of his family.

MORTGAGE LIMITS

- . The maximum mortgage cannot exceed the lesser of:
  - (1) \$20,000,000 if executed by a Private Mortgagor.
  - (2) \$50,000,000 if executed by a Public Mortgagor.
  - (3) 90 percent FHA's estimate of the value of the project after the construction of improvements.
  - (4) For such part of the property or project attributable to dwelling use, an amount per family unit, depending on the number of bedrooms which may be within the dwelling:

Elevator type:

\$11,550	no bedroom
\$16,500	one-bedroom
\$19,800	two-bedroom
\$24,750	three-bedroom
\$28,050	four-bedroom or more

All other types:

\$ 9,900	no bedroom
\$13,750	one-bedroom
\$16,500	two-bedroom
\$20,350	three-bedroom
\$23,100	four-bedroom or more

- . The sums mentioned in (4) above may be increased by up to 45 percent in high cost areas.
- . Mortgage term is limited to 40 years.
- . Maximum interest rate is 8 1/2 percent.
- . Repayment-level annuity monthly plan (equal monthly payments to principal and interest).

## HOW SPONSOR SHOULD PROCEED

- . Preliminary conference with FHA insuring office—identifying locality, general site, number of units and rents to be charged.
- . If project appears feasible sponsor will be asked to submit application (FHA Form 2013) for feasibility analysis.
- . After analysis FHA will advise the sponsor of its finding of feasibility and the estimates upon which the feasibility is predicated; such as FHA land value, improvements, general requirements, estimated construction time, etc.
- . Sponsor then submits a formal application with fee and exhibits, and if approved FHA will issue a conditional commitment.
- . After the final submission is made by the sponsor in compliance with the guidelines established at the feasibility conference, a firm commitment will be issued.

## FEEES AND CHARGES

1. FHA
  - application fee (with formal application) is \$1.50 per thousand of mortgage amount applied for
  - commitment fee, \$3.00 per thousand dollars of commitment amount, less application fee previously paid
  - inspection fee, \$5.00 per thousand dollars of commitment amount
  - mortgage insurance premium, first premium collected in advance at rate of 1/2 of 1 percent of the mortgage amount.
2. MORTGAGEE
  - service charge, not to exceed 2 percent of mortgage amount.
3. FNMA
  - 1 1/2 percent of mortgage amount.

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7-70-3M

Misc. Ext. Pub. No. 57a



HUD-FHA ASSISTED PROGRAM  
FOR THE RENT SUPPLEMENT PROGRAM

WHAT IT IS

- . Privately built housing for low-income families and individuals eligible for public housing and who are either displaced by governmental action, 62 years of age (or older), physically handicapped, living in substandard housing, or whose unit was damaged or destroyed by natural disaster.
- . Provides assistance in the form of monthly Federal payment to owner in behalf of low-income tenants.

ELIGIBLE PROJECTS

- . Only new housing projects or existing ones involving major rehabilitation.
- . Five or more units--detached, semi-detached, row, walk-up, or elevator structures.
- . Modest design suitable to the market and location.
- . Must be built in conformity with FHA minimum property standards.
- . Regulated by FHA rents, rate of return, methods of operation, rent supplement payments.
- . Must be either part of a workable program for community improvement or have local official approval.

ELIGIBLE SPONSORS AND MORTGAGORS

- . Private non-profit organization, limited dividend mortgagor, or cooperative housing corporation.
- . Consideration given to qualifications of sponsors--character, integrity, motivation, past successful participation in housing, demonstrable interest in this type of housing, recognition of continuing responsibility, financial ability, capacity to provide competent management.

PROJECT MANAGEMENT

- . Success depends on competent project management.
- . Housing owner expected to assist tenants in application preparation.
- . Management has fiscal responsibilities--monthly statements, re-certifications of incomes.
- . Management program must be approved by FHA at least 30 days prior to initial endorsement.

FINANCED BY

- . Private lenders (mortgagees eligible for purchase by FNMA).

MORTGAGE LIMITS

- . Limits and terms applicable to Section 221 (d) (3).
- . Maximum amount--not in excess of \$12,500,000.
- . Mortgage term--40 years or 3/4 of economic life of property.
- . Repayment--level annuity monthly plan (equal monthly payments to principal & interest).

HOW ONE BEGINS

- . Preliminary conference with FHA--identifying locality, general site, proposed type and number of living units, need for housing, type of people to be served, plans for management.
- . If project appears feasible--sponsor will be asked to submit for pre-application analysis.
- . Pre-application analysis and other forms and exhibits will not be executed until



sponsor has been advised that rent supplement funds have been allocated.

- . Favorable decision resulting from pre-application analysis will result in formal request for rent supplement funds.
- . Formal application will be invited (accompanied by required fee).

#### ABOUT THE TENANTS

- . Eligible tenants described in opening paragraph.
- . Income limits must be within those of public housing locally.
- . Total assets cannot exceed \$2,000 unless applicant is 62 years or older, in which case assets may total \$5,000 (personal property excluded).

- . Supplement for any tenant may not exceed 70% and must represent at least 10% of the FHA-approved rent for the unit.
- . Must enter into lease with housing owner.

#### RENT SUPPLEMENT AMOUNT

- . Difference between 25% of gross income and FHA-approved rental for unit represents rent supplement amount.
- . Re-certification of income required yearly (except for elderly).
- . FHA insuring office will negotiate rent supplement contracts.
- . It will provide that payment of rent supplements for eligible tenants will be made monthly, by voucher initiated by housing owner.

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HUD-FHA ASSISTED PROGRAM  
FOR LOW-RENT PUBLIC HOUSING PROGRAM

#### WHAT IT IS

- . A program to help public agencies to provide decent, safe and sanitary housing for low-income families at rents they can afford.

#### NATURE OF PROGRAM

- . Financial and technical assistance is provided by HUD to local housing authorities (LHA's) to plan, build and acquire, own and operate low-rent public housing projects. These housing projects are provided through a number of methods including construction under the conventional and the Turnkey methods and acquisition with or without rehabilitation. Proposed programs must be approved by the local governing body.

#### CONVENTIONAL CONSTRUCTION

- . The LHA acquire a site and contracts with architects and planners to prepare plans and specifications covering the proposed project.
- . Competitive bidding is done on the LHA plans, and the lowest responsible bidder is awarded the construction contract.

#### TURNKEY CONSTRUCTION

- . A private developer or builder may either approach an LHA with a proposal to build, or respond to an advertisement for proposals published by the LHA. In all cases, LHA's will advertise to ensure fair competition.
- . Proposals are evaluated by the LHA and HUD with respect to site, design and construction plans, the developer's credentials, and costs.
- . If a developer's proposal is acceptable to

the LHA and HUD, the LHA enters into a Contract of Sale with the developer under which it agrees to purchase the completed development when it is finished.

#### COST LIMITATIONS

- . Cost limitations are established on a per-room basis according to regulations established under the United States Housing Act. They differ with respect to elderly and nonelderly projects and with respect to higher and lower cost areas.

#### FINANCING

- . Projects are financed through the sale of bonds and notes by the LHA. Federal annual contributions are provided by HUD and are adequate to cover the debt service on the bonds and notes issued.
- . HUD financial assistance is also provided in the form of preliminary loans to the LHA for planning purposes.

#### MANAGEMENT

- . Overall responsibility for management of projects is with the LHA; however, LHA's may contract with other organizations such as private management corporations for the operation of specific projects.
- . Projects may also be administered under a number of programs which offer the tenants an opportunity for homeownership.

#### TENANTS

- . Occupants must meet specified income limits and one of the following: be a "family" as defined by LHA (there must be concept of family life), or a single person at least 62 years of age, disabled or handi-

capped, or be displaced by urban renewal or other governmental action, or natural disaster.

- Applicants must meet other standards and priorities at admission, as adopted by the LHA; i.e., housing need, assets, displaced status, elderly, disability, etc. Consideration is to be given to achieving social and economic mix.

#### INCOME LIMITS

- Limits are established by the LHA and approved by HUD for admission and continued occupancy. They must meet requirements of local, State, and Federal laws.
- An annual reexamination of the eligibility status of tenants is made; for elderly families at the option of the LHA it may be biennial.

#### RENTS

- Rents are established by the LHA and approved by HUD taking into account factors affecting rent-paying ability of families and financial stability and solvency of the project. Some LHA's establish special rents for welfare recipients and ceiling rents for continued occupancy.
- Income for rent (including allowable deductions and exemptions) is established by the LHA and approved by HUD.
- The HUD Act of 1969 provides that rents shall not exceed 25% of the family income as defined by the Secretary.

#### NATURE OF PROGRAM

- Annual contributions made to authorized local public agencies enable them to work with real estate agencies, owners, and

developers in providing housing for low-income families. Local housing authorities (LHA's) lease dwellings from private owners and make them available to low-income families at rents they can afford. The local governing body must have passed a resolution approving the application of the housing program to the locality.

#### ELIGIBLE HOUSING

- Single family houses, row houses, apartment units in multi-family structures, mobile homes, and, for the elderly or handicapped, congregate housing, or a combination of these may be used.
- All dwellings must be decent, safe, and sanitary, or improved to that condition by the owner prior to leasing and conform to local code requirements.
- Housing must be situated in a satisfactory residential neighborhood accessible to public facilities.

#### MANAGEMENT

- Over-all program management is the responsibility of LHA's; however, arrangements for management and maintenance of specific properties is in accordance with lease terms.
- Properties are to be leased at an amount not higher than their fair rental value.
- Leases are to be for terms of one to five years and may be renewable.

#### TENANTS

- Leases may provide for owner selection of tenants, for owner selection from lists of eligible applicants supplied by an LHA, or for selection by the LHA. Eligibility determinations must be made by the LHA.

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HUD-FHA ASSISTED PROGRAM  
FOR RENTAL AND CO-OP HOUSING FOR LOWER-INCOME FAMILIES

SECTION 236, NATIONAL HOUSING ACT

WHAT IT IS

- . A program for rental and cooperative housing for low- and moderate-income families.
- . Provides assistance in the form of monthly Federal payments to mortgagee, reducing cost to occupant by paying part of interest on market rate project.

ELIGIBLE PROJECT

- . Five or more units-detached (need not be contiguous, semi-detached, row elevator).
- . New or rehabilitated structure (construction only in exceptional cases).
- . May include non-dwelling commercial-must be predominantly residential.
- . Designed so that basic rent is less than 25 percent of maximum income limits.
- . 221(d) (3) projects initially endorsed or commitment outstanding eligible.
- . An insured limited dividend project purchased by non-profit organization or co-op.

ELIGIBLE SPONSORS AND MORTGAGORS

- . Non-profit, limited distribution, or cooperative entity.
- . Preconstruction expenses of planning assistance for non-profit sponsors (Section 106 (b)).
- . Non-profit sponsors may hire housing consultants-expense recognized in mortgage commitment.

PROJECT MANAGEMENT

- . Sponsors must have management program-realistic plan for providing socially oriented management and related human services.

Project mortgagor assigns units, recommended as follows:

BEDROOMS	MINIMUM PERSONS	MAXIMUM PERSONS
0	1	2
1	1*	2
2	2	4
3	4	6
4	6	8

\*Only if no efficiencies are available

TENANTS AND COOPERATIVE OCCUPANTS

- . Must meet specified income requirements and one of the following: be a family (two persons related by blood, marriage or operation of law), or single (at least 62 years of age), or handicapped persons (no age requirement).
- . 10 percent of dwelling units may be for single people under 62 years of age.
- . Priorities to those displaced by urban renewal, government action, national disaster.

INCOME LIMITS

- . Adjusted income cannot exceed 135 percent of limits applicable to public housing locally.
- . Adjusted income is current income from all sources before taxes of all members of the family occupying unit excluding a 5 percent deduction for unusual or temporary income, less \$300 for each minor and less earnings of each minor.
- . Income recertified every two years and needed adjustments in rental charges made.
- . During initial rent-up tenants over income are required to pay fair market rental.

MONTHLY RENTAL CHARGES



- . Eligible tenant pays basic rental over-income tenant pays fair market rental.
- . Basic monthly rental charge is based on operation at 1 percent interest rate mortgage.
- . Eligible tenant pays greater of basic rental charge or 25 percent of adjusted income.
- . Fair market rental (over-income tenants) based on operation at market interest rate.
- . Will include all utilities except telephone.
- . \$12,500,000 (maximum)
- . 90 percent of FHA estimate of cost (100 percent for non-profit or cooperative mortgagor).
- . The sum of the per unit-limit under Section 221 (revised upward in 1969 legislation).

FINANCING

- . By private lenders, (nonprofit mortgagors eligible for GNMA Tandem Plan).
- . By State or local governments through loans, or under State or local program of loan insurance or Tax abatement.

MORTGAGE LIMITS-Lesser of the following:

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HUD-FHA NON-ASSISTED PROGRAM  
FOR RENTAL HOUSING FOR MODERATE INCOME FAMILIES

SECTION 221(d)(4) NATIONAL HOUSING ACT

WHAT IT IS

- . A program designed to aid in providing housing for families of moderate income.

ELIGIBLE PROJECTS

- . Projects containing 5 or more units of detached, semi-detached, row, or walk-up or elevator-type multifamily structures, designed primarily for residential use in conformance with FHA Property Standards.
- . Projects may vary widely in layout, size, and design, depending on the type of market to be served.
- . FHA will regulate rents, rate of return and methods of operation.
- . Rents must include all utilities and parking.
- . Family income limits are not a condition for occupancy.
- . This program provides a 10 percent Builder's and Sponsor's Profit and Risk allowance.
- . Not limited to new construction--considered appropriate for the rehabilitation of projects.

ELIGIBLE MORTGAGORS

- . Individuals, partnerships, corporations, or other legal entities approved by the Commissioner, excluding nonprofit, limited dividend, cooperative, and public mortgagors.

PROPERTY REQUIREMENTS

- . The project must be located on real estate held:
  - (a) In fee simple

- (b) On a leasehold for not less than 99 years, or having a period of 75 years to run from the date the mortgage is executed.
- (c) Leasehold for 50 years, provided the lessor is a government agency, Indian, or Indian tribe.

FINANCING

- . FHA approved private lending institution. (Mortgages eligible for purchase by FNMA).

TENANT OCCUPANTS

- . No income requirements.
- . No restrictions due to race, creed, color or age of the prospective tenant or the composition of his family.

MORTGAGE LIMITS

- . The maximum mortgage cannot exceed the lesser of:
  - (1) \$12,500,000.
  - (2) 90 percent FHA's estimate of the replacement cost of the project:
  - (3) For such part of the property or project attributable to dwelling use an amount per family unit, depending on the number of bedrooms which may be within the dwelling:

Elevator type:

- \$10,925 no bedroom
- \$15,525 one-bedroom
- \$18,400 two-bedroom
- \$23,000 three-bedroom
- \$26,162 four-bedroom or more

All other types:

- \$ 9,200 no bedroom

\$12,937 one-bedroom  
\$15,525 two-bedroom  
\$19,550 three-bedroom  
\$22,137 four-bedroom or more

- . The sums mentioned in (3) above may be increased by up to 45 percent in high cost areas.
- . Mortgage term is limited to 40 years.
- . Maximum interest rate is 8 1/2 percent.
- . Repayment--level annuity monthly plan (equal monthly payments to principal and interest).

#### HOW SPONSOR SHOULD PROCEED

- . Preliminary conference with FHA insuring office--identifying locality, general site, number of units and rents to be charged.
- . If project appears feasible sponsor will be asked to submit application (FHA Form 2013) for feasibility analysis.
- . After analysis FHA will advise the sponsor of its finding of feasibility and estimates upon which the feasibility is predicated; such as FHA land value, improvements, general requirements, estimated construction time, etc.
- . Sponsor then submits a formal application with fee and exhibits, and if approved FHA will issue a conditional commitment.

After the final submission is made by the sponsor in compliance with the guidelines established at the feasibility conference, a firm commitment will be issued.

#### FEEES AND CHARGES

1. FHA
  - application fee (with formal application) is \$1.50 per thousand of mortgage amount applied for.
  - commitment fee, \$3.00 per thousand dollars of commitment amount, less application fee previously paid
  - inspection fee, \$5.00 per thousand dollars of commitment amount
  - mortgage insurance premium, first premium collected in advance at rate of 1/2 of 1 percent of the mortgage amount.
2. MORTGAGEE
  - service charge, not to exceed 2 percent of mortgage amount.
3. FNMA
  - 1 1/2 percent of mortgage amount.

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HUD-FHA NON-ASSISTED PROGRAM  
FOR RENTAL HOUSING IN URBAN RENEWAL AREAS

SECTION 220, NATIONAL HOUSING ACT

(Mortgages eligible for purchase by FNMA)

WHAT IT IS

- . A program to finance the construction or rehabilitation of rental housing projects containing 2 or more units in urban renewal areas.
- . Provides rental units for moderate- or middle-income families.

ELIGIBLE PROJECTS

- . Project must be located in an urban renewal area.
- . Units may be detached, semi-detached, or row houses, or walk-up or elevator-type multi-family structures designed primarily for residential use.
- . Projects may vary widely in layout, size, and design, depending on the type of market to be served.
- . Must be built in conformity with FHA Property Standards.
- . FHA will regulate rents, rate of return and methods of operation.

PROPERTY REQUIREMENTS

- . The project must be located on real estate held:
  - (a) In fee simple.
  - (b) On a leasehold for not less than 99 years, or having a period of 75 years to run from the date the mortgage is executed.
  - (c) Leasehold for 50 years, provided the lessee is a government agency, Indian, or Indian tribe.

FINANCING

- . FHA approved private lending institutions.

TENANT OCCUPANTS

- . No income requirements.
- . No restrictions due to race, creed, color or age of the prospective tenant or the composition of his family.
- . No unit may be rented for a period of less than 30 days.

MORTGAGE LIMITS

- . The maximum mortgage cannot exceed the lesser of:

- (1) \$50,000,000
- (2) 90 percent FHA's estimate of replacement cost.
- (3) For such part of the property or project attributable to dwelling use an amount per family unit, depending on the number of bedrooms which may be:

	Non-elevator	Elevator Structure
0-BR	\$ 9,900	\$11,550
1-BR	\$13,750	\$16,500
2-BR	\$16,500	\$19,800
3-BR	\$20,350	\$24,750
4 or more		
BR	\$23,100	\$28,050

- . The sums mentioned in (3) above may be increased by up to 45 percent in high cost areas.
- . Mortgage term is limited to 40 years.
- . Maximum interest rate is 8 1/2 percent.
- . Repayment-level annuity monthly plan (equal monthly payments to principal and interest).

HOW SPONSOR SHOULD PROCEED

- . The Local Public Agency controls planning and the sale or lease of urban renewal land.



- After the selection of a developer of the LPA, the developer (sponsor) meets with FHA.
- Preliminary conference with FHA insuring office—identifying locality, general site, number of units and rents to be charged.
  - If project appears feasible sponsor will be asked to submit application (FHA Form 2013) for feasibility analysis.
  - After analysis FHA will advise the sponsor of its finding of feasibility and the estimates upon which the feasibility is predicated; such as FHA land value, improvements, general requirements, estimated construction time, etc.
  - Sponsor then submits a formal application with fee and exhibits, and if approved FHA will issue a conditional commitment.
  - After the final submission is made by the sponsor in compliance with the guidelines established at the feasibility conference, a firm commitment will be issued.

#### FEES AND CHARGES

1. FHA
  - application fee (with formal application) is \$1.50 per thousand of mortgage amount applied for
  - commitment fee, \$3.00 per thousand dollars of commitment amount, less application fee previously paid
  - inspection fee, \$5.00 per thousand dollars of commitment amount
  - mortgage insurance premium, first premium collected in advance at rate of 1/2 of 1 percent of the mortgage amount.
2. MORTGAGEE
  - service charge, not to exceed 2 percent of mortgage amount.
3. FNMA
  - 1 1/2 percent of mortgage amount.

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HUD-FHA ASSISTED PROGRAM  
FOR HOUSES BUILT FOR SALE TO LOWER INCOME FAMILIES

SECTION 235, NATIONAL HOUSING ACT

WHAT IT IS

- . A program of homeownership assistance for low-income and moderate-income families.
- . provides assistance in the form of monthly payment to mortgagee, reducing interest cost to as low as 1 percent if the homeowner cannot afford mortgage payment with 20 percent of his adjusted income.

ELIGIBLE HOUSING

- . New or substantially rehabilitated single-family dwellings approved prior to beginning of construction or beginning of substantial rehabilitation.
- . A substantially rehabbed two-family dwelling, one unit to be occupied by owner.
- . A one-family unit in a condominium project.
- . Existing construction (30 percent of assistance allocation available for this).
- . Modest but adequate design and construction quality.

ABOUT THE MORTGAGE

- . \$18,000 (or \$21,000 in high-cost areas).
- . Up to \$3,000 can be added for property consisting of four bedrooms purchased by family of five or more persons.
- . Mortgage made at 8 1/2 percent interest rate (market rate).
- . Half of 1 percent mortgage insurance premium.
- . Thirty-year term (35 or 40 under special circumstances).
- . Minimum investment of \$200 by home-buying family.
- . Three percent cash investment based on FHA appraised value for over-income family.

MORTGAGOR ELIGIBILITY CRITERIA  
FOR SUBSIDY

- . Must be a "family" of two or more persons related by blood, marriage, or operation of law, or
- . A handicapped person, or
- . A single person, 62 years old or older.
- . Families with credit flaws not meeting regular credit standards get priority under Section 237 special credit assistance (counseling).

INCOME LIMITS

- . To be eligible for assistance, the family must have an adjusted family income not exceeding 135 percent of income of the same size family eligible to move into local public housing units.
- . "Adjusted family income" means: income during past 12 months from all sources, before taxes or withholding, of all adult members of family living in unit, but excluding unusual or temporary income, and less \$300 for each minor under 21 and earnings of minors.
- . Twenty percent of assistance payments authorized for families with higher incomes but not higher than 90 percent of income limits for 221 (d)(3) housing.
- . Income recertification required every two years.
- . Assets cannot exceed \$2,000 (\$5,000 for over 62 age). Add \$300 per dependent.

ASSISTANCE PAYMENT CONTRACT  
AND PAYMENTS

- . Mortgage Insurance Certificate constitutes contract between FHA and mortgagee.
- . Issuance of Certificate obligates HUD to pay mortgage assistance payments for mortgagor and requires mortgagee to obtain biennial recertification of income.
- . Assistance payment computation: Lesser of--

(a) Difference between total monthly payment under the mortgage for principal, interest (market rate), MIP, taxes, hazard insurance, and 20 percent of mortgagor's adjusted gross income. Or,

(b) Difference between monthly payment to principal, interest (market rate), and MIP, and the monthly payment to principal and interest that would be required at an interest rate of 1 percent excluding mortgage insurance premium.

• HUD's payment to mortgage will include handling charge \$3.50 per month per mortgage.

#### PROCESSING

- Applications processed in usual way under Sections 203, 221, 220, 234.
- Option of builder or seller to convert to Section 235 when eligible purchaser is processed.
- Application for eligible purchaser is made by mortgagee on FHA Form 3100.
- Commitments outstanding, in process, or properties under construction also eligible.
- Reservation of funds required for more than five units.
- Handled in local FHA insuring office, which makes final decisions on project approvals.

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HUD-FHA PROGRAM  
FOR PURCHASE OF MOBILE HOMES

WHAT IT IS

- . Insurance against loss of loans that banks and other financial institutions make from their own funds to finance new mobile homes.
- . The lender is insured for 90% of loss. The lender pays FHA an insurance premium of 50¢ per \$100 per year of net advance for this protection.
- . This program is provided under Title 1 of the National Housing Act.

AN ELIGIBLE MOBILE HOME

- . Must be at least 10 feet wide and 40 feet long.
- . Must meet FHA's construction standards for mobile homes.
- . Must be new or, if not new, must have been formerly financed with a FHA-insured loan.

AN ELIGIBLE BORROWER MUST

- . Have sufficient funds to make a specified small down payment and sufficient income to make payments on the loan.
- . Intend to use the mobile home as his principal residence.
- . Have an acceptable site on which the mobile home is to be placed. Such site may be rented space in a mobile home park, or it may be land owned by the borrower. The site must meet FHA

standards, and both buyer and seller must certify that there will be no violation of zoning requirements or other regulations applicable to mobile homes.

LOAN CHARACTERISTICS

- . Maximum loan: \$10,000.
- . Maximum term: 12 years and 32 days.
- . Interest rate: from 7.9% to 10.57% depending on amount and term of loan. This is the effective annual interest rate resulting from the stated Title 1 discount rates.
- . These are personal loans secured by conditional sales contracts or chattel mortgages on the mobile home.
- . Loans are repaid in equal monthly installments.

ELIGIBLE LENDERS

- . All financial institutions holding Title 1 contracts of insurance. Application for a contract may be made to any FHA insuring office.

DOWN PAYMENT

- . 5% of total price of mobile home up to \$6,000; 10% on amount, if any, over \$6,000.
- . "Total price" of mobile home may include accessory items, transportation of mobile home to site where it will be occupied, and initial premium for insurance on mobile home.

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# Clothing

## STORAGE

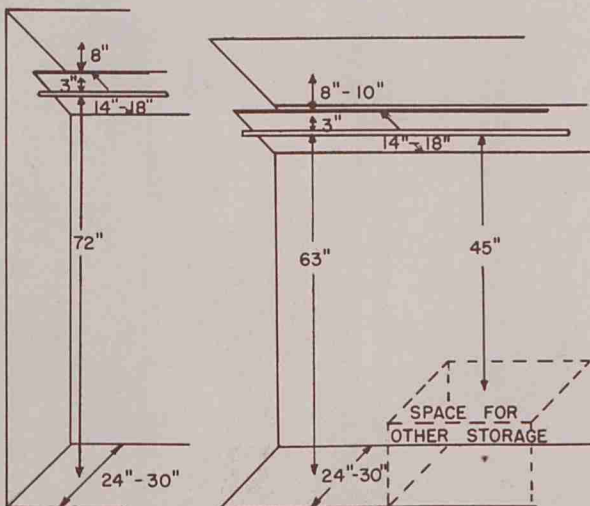


EAE INFORMATION SERIES

# CLOTHING STORAGE

Much consideration should be given to the facility for clothing storage which is generally in a bedroom. Dimensions that have been found by research and by experience to be the most suitable and the most economical should be a guide in planning storage. You will note from the diagram and from the table below that a rod height of 63 inches is the most useful height; yet a rod height of 72 inches is needed by women with special garments, and a height of 45 inches can be used for many garments and would result in space saving. Rod length needed will vary with needs and available space.

A closet depth of 24 inches inside is standard. Research shows that some



garments such as heavy coats or topcoats and evening dresses require 30 inches for adequate depth.

In the table below, the limited allowance as recommended represents the least space that should be provided. The liberal will meet the clothes storage needs of most families.

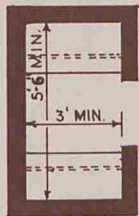
## For Clothing in Bedrooms

## STORAGE AMOUNTS GIVEN ARE PER PERSON.

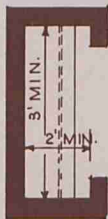
Type of Storage	MEN AND BOYS		WOMEN AND GIRLS	
	Limited	Liberal	Limited	Liberal
ROD length, garments on hangers				
45" between top of rod and floor .....	3'0"	6'0"	1'10"	4'0"
63" between top of rod and floor .....	1'0"	2'6"	2'8"	7'0"
72" between top of rod and floor .....	none	none	0'10"	2'4"
SHELF length				
8" clearance between shelves for hats .....	1'6"	3'8"	1'4"	5'0"
7" clearance between shelves for shoes .....	2'8"	4'6"	4'0"	6'6"

Table from "Space Standards for Home Planners," Western Cooperative Series Research Report No. 2, Western Region Agricultural Experiment Stations.

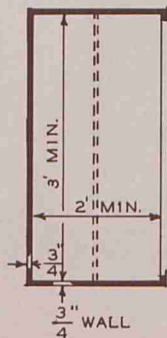
# TYPES OF CLOSETS



**WALK-IN CLOSET.** The walk-in closet is convenient for using storage floor to ceiling. It also saves wall space and door expense because only one door is needed. Usually it is not easy to find space on a floor plan to locate a walk-in closet if maximum use is made of floor plan space. Shelves 7 inches apart at the back of a storage walk-in closet are very convenient for shoes, handbags, and hats. Two shelves above standard rod height are desirable.

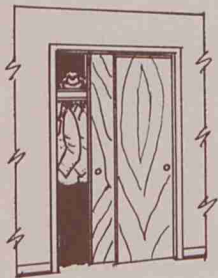


**REACH-IN CLOSET.** The reach-in closet is the most popular closet, and all carpenters know how to build it. Located between rooms, it creates a sound barrier. Where the width is greater than 4 feet, a double door should be provided. Standard equipment includes a hanging rod and one or two shelves above the rod. A shoe rack is also desirable.

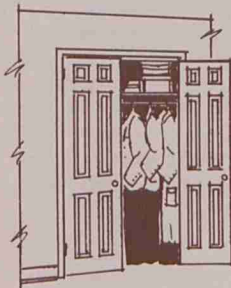


**THIN WALL CLOSET.** Thin wall clothes storage is the most economical use of floor space as the walls are only  $\frac{3}{4}$  inch thick compared to approximately 6 inches for conventional walls. The entire front area of this storage can be opened for 100 per cent accessibility. A closet floor 4 inches above the bedroom floor is more convenient and easier to keep. Doors are usually made of plywood  $\frac{3}{4}$  inch thick. Often the back of the closet can be as thin as  $\frac{1}{4}$  inch plywood. Stock doors,  $\frac{3}{4}$  inch plywood, or metal or wood louvered doors can be used.

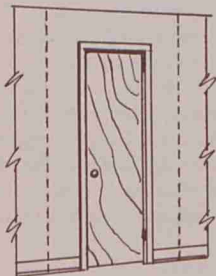
## TYPES OF DOORS



**SLIDING DOORS.** Sliding doors have been popular for many years because of their reputation for saving floor space. Usually they are installed as a pair, with one sliding in front of the other to open the closet. Because one side is always closed, accessibility to the closet interior is limited. Sliding doors are attached to a track fastened to the top of the door frame. Some carpenters recess the track into the door frame for a neater appearance. Rollers are attached to the doors and roll in the overhead track. These rollers are usually plastic for quiet operation. Sliding doors are least troublesome when bought from stock as  $1\frac{3}{8}$  inch doors. Doors of  $\frac{3}{4}$  inch plywood can be used but are more subject to warping. Flush type, panel, or louvered doors work equally well as sliding doors. The use of louvered doors allows the inside of the closet to be ventilated, thereby keeping the temperature the same as room temperature. This reduces condensation and mildew problems.



**DOUBLE SWINGING DOORS.** For good accessibility to a closet and for trouble-free service, double swinging stock doors rank at the top. They will stand hard use and furnish a place on the back that can be used to great advantage. Shoe racks or shoe bags, necktie racks, and full length mirrors can be attached to the back of swinging doors. Even further use can be made by building shelves on the doors. The hardware used should allow both doors to be opened easily. Closet doors equipped with knobs that have to be turned to open the door should have knobs inside as well as outside. Double hung swinging doors are neat in appearance.



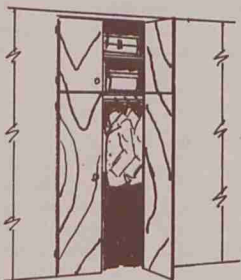
**SINGLE HUNG DOORS.** There are some advantages and disadvantages in every door type. A single hung door has the advantage of economy, and is a wall space saver. When used for a walk-in closet, there is no problem of accessibility, but for a reach-in closet a single door does limit accessibility. For a closet over 4 feet wide, two doors should be used. Naturally the wider the closet door, the more useful the closet will be; yet wide closet doors can be a nuisance, especially when left open. Stock interior doors are available up to 3 feet wide. This width door, of course, requires 3 feet of floor space in the room to swing open and would be particularly undesirable in small bedrooms.

**SHOE STORAGE.** Racks can be provided for use on the closet floor beneath short garments. The rack may be metal or wood. Each pair of men's dress shoes requires a space 9 inches wide by 13 inches by  $5\frac{1}{2}$  inches high. One pair of women's shoes requires space 7 inches wide, 10 inches toe to heel direction, and  $7\frac{1}{2}$  inches high.

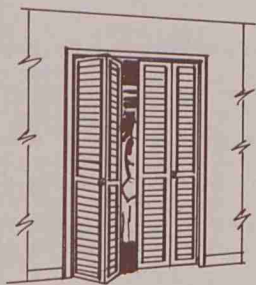




**ACCORDION TYPE DOORS.** Home builders often install accordion type folding doors. Such doors may be of thin wood veneer or of plastic over a metal folding frame. These doors are chosen for architectural effect and for adaptability in locations where swinging doors would require more space. In addition, this type door takes up only a small part of the cased opening when it is pushed back to the open position. Accordion doors may be used between rooms and for large wall openings as well as for closets.



**HINGED PLYWOOD DOORS.** For thin wall closets, that is, closets with walls usually  $\frac{3}{4}$  inch thick,  $\frac{3}{4}$  inch plywood doors are used. These are inexpensive type doors and allow maximum accessibility to the closet area. They can extend from floor to ceiling and from one side of the closet to the other. In practice it is convenient to use a sheet of plywood 4 feet by 8 feet. This sheet is split down the center and then cut across at the shelf line or at 5 feet six inches. These cuts make four doors that can be fitted economically over a closet opening 4 feet wide and from floor to ceiling. The doors may be flush type or may be lipped. "Lipped" means that the edge is rabbeted so as to overlap the closet front. Be sure that all sides and edges are painted the same number of coats to reduce warping.



**BIFOLD DOORS.** These are popular doors for saving space, for greater accessibility to closets, and for architectural effect. They may be louvered wood or steel, and they are available in flush type wood or metal. Either type is available in 6 feet 8 inches or 8 feet height. Probably the most used bifolds are the wood louvered 6 feet 8 inches high. A bifold door is made up of two sections hinged together. The outside of one of these sections is hinged to the door jamb (side of the door frame), and usually the outside of the other section has an anchor at the top which slides in a track fastened to the top of the door frame. Bifolds are used double as in the sketch, or as singles.



Prepared by

W. C. Warrick, *Agricultural Engineering Extension Specialist*  
in Cooperation with Extension Housing and House Furnishings

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## BUILT-INS

### By Housing and House Furnishings Specialists

A major trend in the modern house is built-in conveniences. Old houses usually have larger rooms than the new houses. Therefore, if one is handy with the hammer and saw, good storage can be added to the old as well as to the new house. Many new houses are built without basements and attics. Even if a house has these features, they are no longer considered satisfactory storage. Uncluttered living provides a space for the storage of articles near the space where it is used.

The tendency today is not towards closet catch-alls, but towards built-in storage designed especially for the articles that are to be stored.

#### How to Plan Storage

In designing storage, one should have a list of the articles that are to be stored. The kind and number of articles that are to be stored varies among families. Each individual family should compile a list of articles that are to be stored in each room. The size of the articles should determine height, width, and depth of each storage unit. In many closets, the space is not used to the best advantage because of the poor spacing of shelves, racks, or rods.

#### Storage Wall

The storage wall can be designed so that it will provide a place for everything and leave more space for living. With the high cost of furniture, built-ins can serve a dual purpose--that of furniture and of closets. One advantage of built-ins is that they get rid of dust catching space beneath and behind furniture. Built-ins are especially practical for small homes on tight budgets. Stock storage units can be bought.

Living Room Storage can be tailored to fit the needs of your family. It can be decorative as well as useful. A built-in wall can be designed to include desk, bookshelves, radio or TV shelf, compartments for card tables and games.

Bookcases, with enclosed cabinets in the lower part, can be designed to frame the fireplace or windows or a straight wall.

Space for a TV should be built with enough space to allow for circulation of air.

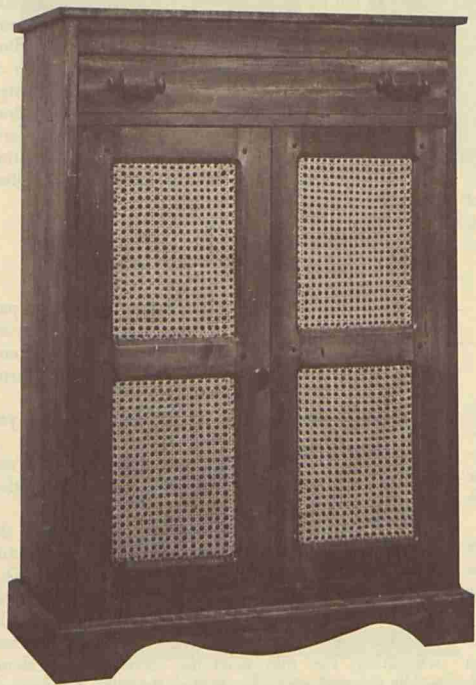
Bedroom Storage can be so designed that it can take the place of all furniture except the bed and some chairs. Of course, the most important is the place for clothes. The clothing unit can be combined with the dressing table or desk. Racks for shoes, ties, belts; shelves; drawers; and rods vary according to individual needs.

Sliding doors are being used to save space. A tract at the bottom as well as at the top is necessary for satisfactory operation of the door.

Room Dividers are one of the new trends in the modern homes. Walls of various heights are used to partly separate such rooms as hall and living room, kitchen and dining areas, etc.

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North Carolina State College of Agriculture and Engineering of the University of North Carolina and the U. S. Department of Agriculture, Cooperating, State College Station, Raleigh, North Carolina, Robert W. Shoffner, Director, Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

# New Furniture



From  
Old





# New Furniture From Old

Take another look at that piece of old furniture before you give it away or junk it. After years of use, most furniture needs refinishing. Well built, sturdy furniture of simple design and good lines is worth refinishing. In fact aged wood has developed a mellowness of color not found in new woods.

Before investing in new furniture it pays to examine the old carefully and to explore possibilities of renovating or simply refinishing.

Reworking old furniture can be an interesting hobby, a family project or a way to earn extra money. You can preserve those family heirlooms which have sentimental value. And you may save dollars to buy fabrics, paints, accessories or other furnishings needed to beautify your home.

## Finding Old Furniture

Attics and storerooms are favorite "resting" places for old furniture. Many pieces are discarded because they need only minor repairs. Others are junked because they are no longer "stylish." Often they can be restored to beauty and usefulness with a little work and imagination.

You may not need to go to the attic or closet for your "treasures-in-disguise." Some of the furniture you now take for granted after years of everyday use may well be worth a face-lifting.

If you're planning to buy and renovate old furniture, don't overlook the second-hand stores. You can often find excellent values there. After renovating a second-hand piece to your liking, you will find it has cost much less and looks as good as a new piece.

## Don't Waste Your Time

Not all old furniture is worth renovating. You should carefully examine the wood, construction, finish, trim and general state of repair of each piece before deciding to work it over. To be worth refinishing, a piece of furniture should be strong, have good shape and design and be pleasingly proportioned. Sometimes good lines in cabinet work are spoiled by flashy ornamental hardware. You may want to remove this type of decoration and substitute simple, functional hardware that gives emphasis to good proportion and line.

## Restyling Furniture

Once you have definitely decided to renovate a particular piece of furniture, sit down and plan your work carefully. Use your imagination freely. There is no end to the interesting possibilities for restyling old furniture.

To help you arrive at a final plan for your work, you might ask yourself:

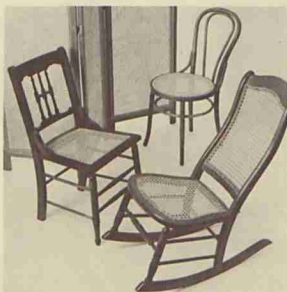
What place will it occupy in the home? Will its size be in good proportion to the room and to the other furniture in the room?

Should I make major changes in the piece? Is the top too large and heavy? Are the legs too long and slender? Can I saw it in half and make two pieces?

After you have planned all the changes for your old furniture, estimate the cost. Before you begin work, be sure that the piece is worth the cost of restyling and refinishing. You may need the services of a cabinet maker for major repairs or alterations. Count yourself lucky if you have someone at home who is skilled in this type of work.

## Chairs

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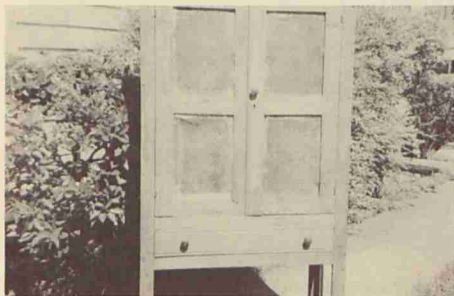
Upholstered chairs often need to have springs retied or replaced and additional padding. However, if the frame is sturdy and the lines good, renovation may well be a good investment of time and money.

New upholstery or slip covers can make upholstered chairs look like new.

Chairs are expensive and make up an important part of the household furniture. Dining or occasional chairs often need new seats as well as refinishing. Cane, rush, or upholstered bottoms can be replaced at little cost.

## Pie Safes

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Don't junk the old pie safe! It can be transformed into a useful piece of furniture. You can make two pieces by sawing it apart just above the drawer. Make the upper part into a chest and the lower into a TV table. Reinforce the legs of the new table with angle irons to make it sturdy.

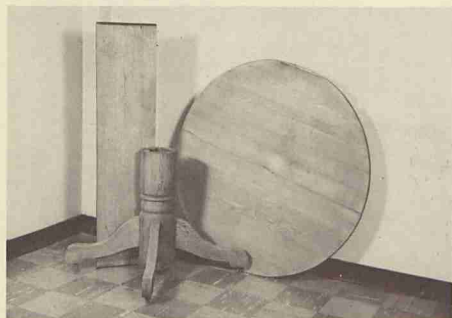
Machine woven or pressed cane can be used to replace the old tin paneling on the pie safe.

Since many old pie safes are rather greasy, they

should be given a good scrubbing before you try to re-finish them. Tri-sodium phosphate or any good grease-cutting commercial cleanser is suitable for this job. It is very important to remove all the grease. No finish will stay on a greasy surface.

The choice of finish will depend on the kind and condition of the wood and your preference. Poor quality wood is often painted. Higher quality furniture is finished to show the natural beauty of the wood.

# Tables



Tables are an important part of modern home furnishings. If you need a new table in your home, check your discarded ones. You will probably find one you can use.

The old oak table with extension boards has come back in style. It is well adapted to the modern kitchen-family room. Even if you have only the pedestal and end boards of the oak table it is worth restoring. Repair all broken places in the top and stand. You can make extension leaves to fit.

Coffee tables, chair side tables and other low tables can often be made from discards. Shortening the legs helps in restyling library, breakfast and round tables. If you have only a top you can buy iron or wooden legs that are easily attached.

With a little imagination old spool boxes are converted to lovely tables or silver chests. You may need a cabinet maker to turn the legs and attach them to the top. Be sure to complete all restyling and cabinet work before you refinish your furniture.

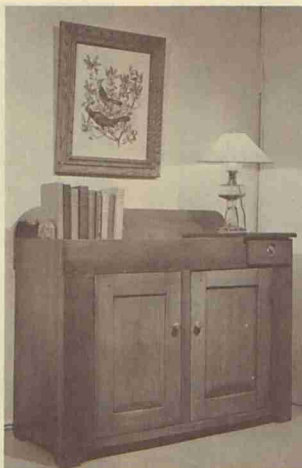
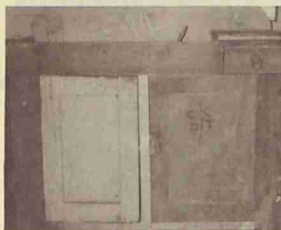
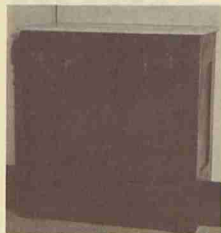
Old sewing machine bases are easily converted into tables. Simply remove the treddle and wheel from the

machine. If the frame is wobbly have it welded together. Scrubbing with rust remover will probably be necessary. After the frame has been cleaned thoroughly, paint it with any good grade of paint.





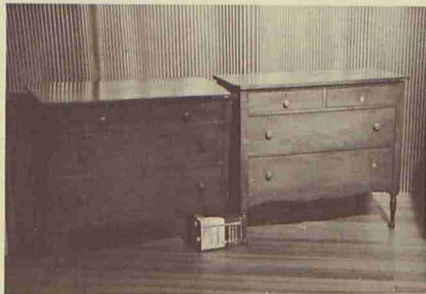
## Dry Sinks and Wash Stands



Dry sinks have staged a comeback in popularity. If you are fortunate enough to have one around it may be restored into a beautiful piece of furniture—and used differently from by-gone days.

Wash stands were made in a variety of styles. Most of them are easily converted into bedside tables, small chests or occasional tables. Remove the towel racks and splash boards before refinishing. Clean marble tops with household bleach or cleanser.

## Chests



A few dollars and plenty of elbow grease is all it takes to convert a discarded bureau into a beautiful chest for your living room or bedroom. Two similar bureaus can be made into a double chest. You can often find two alike in a second-hand store.

If you don't have a person around who's handy with a saw and hammer, you'll probably need the help of a cabinet maker. Have him saw off the legs, build a new base and replace the top. The new top can be made of laminated plastic, plywood or solid wood. After the

cabinet work has been done, stain and finish your new chest as you would any other fine cabinet. Add new hardware and the job will be complete.

Many possibilities exist for variations in chest arrangement. For example, you may want to set the chests far enough apart for knee space between them. You'd then have a dressing table. Or, one chest could have an extended top with table legs attached. One chest could be placed on top of a larger chest for additional variation and to save floor space.



## Other Furniture

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An old family trunk can well be the conversation piece of furniture in any room of the home. It may hold toys or any number of miscellaneous household articles. It can be a luggage rack, serve as a table or be used for seating.

The finish will, of course, depend upon the materials of which the trunk is made. It can be relined or finished on the inside with fabric, contact paper, wall paper or paint.

The old-fashioned churn has several possibilities. A handsome planter is made by attaching legs and re-finishing. A churn with a wooden dasher can be turned into a lamp. Simply replace the old top and install a large rod to support the bulb and shade. Before wiring the churn, finish the wooden parts and replace the outside wire ring binders with copper bands.



## Lest You Forget

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To do a professional job of restyling furniture, you must plan changes carefully before you make them. Be sure that all cabinet work is done before you start the refinishing job.

**For additional information see:**

"Refinishing Furniture at Home" (mimeographed),

Housing and House Furnishings Department, N. C. Agricultural Extension Service, N. C. State University at Raleigh.

"Remaking an Upholstered Cushion," Home Economics Misc., N. C. Agricultural Extension Service.

"Decorating With Slip Covers," Home Economics 20, N. C. Agricultural Extension Service.

Revised by Lillie B. Little, Housing and House Furnishings Specialist



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(Reprint) Home Economics 19

## FURNITURE FINISHES

"While the most obvious function of a furniture finish is to beautify wood, its most important function is to protect it."

Few pieces of furniture exposed to the stress and strain of everyday living escape the need for some type of restoration. This can vary from a minor touch-up to complete refinishing. A new finish can restore beauty and usefulness to many pieces of used furniture - those you have already and those you may acquire.

If it is well built, sturdy, of simple design with good lines and if it suits your needs, it is worth refinishing. Aged wood has developed a mellowness of color that will add to the beauty of the new finish.

Finishing new furniture or refinishing old pieces demands a certain amount of time, careful workmanship and patience, but the results are worth the effort. Millions of amateurs can now take pride in being able to say "I did it myself."

### CLEANING FURNITURE

Work on most used pieces should begin with a good cleaning - inside and out. You may find they do not need refinishing. If only mild cleaning is needed, use a soft clean rag, warm water and pure white soap. Wring the cloth out of the sudsy water and go over the furniture thoroughly. Be careful not to use too much water, as it can weaken glue joints and damage the finish. Great care should be taken when washing veneered surfaces to prevent water from getting to the glue and loosening the veneer. For those badly-soiled pieces, heat in the top of a double boiler: one quart of water, three tablespoons of boiled linseed oil and one tablespoon of turpentine. Use soft cloth wet with hot solution to wash furniture, then polish with a soft dry cloth. Repeat if needed. (The turpentine aids in cutting the dirt; the oil lubricates, feeds and polishes.)

For stubborn spots, try rubbing with a cloth dipped first in oil and then pumice. When piece is clean, remove all traces of oil and pumice.

It is difficult to decide just how much restoration should be done to an antique. True lovers of antiques cherish the evidence of age. According to the U. S. Customs, items must be at least one hundred years old to be classified as antiques.

Where the original finish is still intact and in good condition - it should not be removed. A fine patina (a mellowness of color and texture attained by age, use and repeated polishing) should be guarded carefully.

You do not need to be an expert on identifying antiques or woods. There are many pieces of furniture that are well worth refinishing that do not classify as antiques or contain rare woods.

### PLANNING FOR THE NEW FINISH

Once you decide refinishing is needed you must plan what new finish to use. Those most often used for the wood tones are varnish, lacquer, acrylic, oil and penetrating sealer. To obtain satisfactory results with either type, you

need to make a step-by-step plan for procedure, including the materials needed. The finish stain and undercoat materials must be compatible and are discussed under the sections on staining and finishing.

The actual work of restoration is divided into these four steps for ease of discussion: removing the old finish, preparing the wood for a new finish, staining and finishing.

#### REMOVING OLD FINISHES

Remove the hardware if it can be done without difficulty; however, fine old brasses, including handles, handle plates, keyhole plates and escutcheons, should not be removed when held in place with cotter pins or iron wire bent and driven into the surface of the wood.

A good commercial paint and varnish remover is the safest and easiest way to remove old finishes. There are many removers to choose from. The wax-free, non-flammable type is preferred. Some work faster than others. The action depends upon the number of layers, kind and age of finish. The "rinse-away" type tends to raise the grain of the wood. Lye should be avoided, as it burns the wood and is difficult to counteract.

Apply the remover you choose as directed on the label by the manufacturer. For best results, apply to horizontal surfaces - one section at a time. Brush on the remover freely (usually in one direction). When the finish has softened, lift off the remover and old finish with a putty knife or scraper. Be careful of sharp edges, as it is easy to damage wood. Old toothbrushes and round wooden picks are helpful to clean grooves and carvings. Burlap strips, twine and fine steel wool can be used for legs and rungs. A second or third application may be needed. Stubborn traces can be removed with a fine steel wool pad or cloth wet with remover. It is very important that all traces of the old finish be completely removed.

If the piece was originally well filled and stained, the furniture may retain enough of these so that only finish coats will be needed. Allow at least 24 hours for drying before applying a new finish.

Sometimes, after the top layers of paint and varnish are removed, there is still paint embedded in the grain of the wood. If this is objectionable, apply a liberal coat of three parts shellac to one part of denatured alcohol. Let dry at least 24 hours. Then use the remover as previously directed. Most, if not all, of the buried paint will come off with the shellac. Wash with denatured alcohol and let dry at least 24 hours.

#### PREPARING THE SURFACE FOR A NEW FINISH

After the finish is removed is the time to make needed repairs. If you do not have the necessary tools and skill to do these, you will do well to seek the help of a professional. However, you can do many simple repair jobs. These may include re-gluing joints, mending veneers, removing dark spots, filling small holes and raising dents.

#### Gluing

There are several glues of superior quality on today's market. Some of these are better handled by professionals. The one most generally available that also



provides excellent results is PVA (Polyvinyl Acetate). This is a liquid white glue.

Be sure to remove all old glue, paint, dust, oil, wax or grease. The areas to be glued must be clean and dry. Hot vinegar will soften old glue. The surfaces to be glued should fit perfectly.

Gluing should be done at room temperature. Apply glue to both surfaces of joints and assemble parts. Wipe off excess glue, as this will affect stain absorption. Apply pressure by using clamps or tourniquet to hold glued parts together until dry - 24 to 48 hours.

### Removing Spots and Stains

Stains and dark spots cannot always be entirely removed but they can be lightened by sanding or bleaching.

Commercial bleach or one made by mixing 2 ounces of oxalic acid and 2 ounces of tartaric acid with 2 cups of water may be used. (Caution: oxalic acid is a poison, so be sure to label and keep in covered glass container.) Household bleaches are effective, also. Apply with mop or cloth to entire surface at least once to prevent spotty, bleached look. Re-moisten dark spots as needed to remove stain.

Neutralize bleach by wiping with a damp cloth. Repeat until the foaming effect stops.

### Bleaching Woods

Light tones are popular for many of today's furniture styles. This necessitates bleaching the wood. The same procedure as mentioned for bleaching stains may be used for the entire surface area. When the surface has been bleached and dried, sand to provide a smooth surface. Apply the lightest paste filler possible. When the filler begins to set, rub off - rubbing across the grain. After 24 hours, rub the surface lightly with 000 steel wool and dust. Brush on a coat of flat white lead paint thinned with turpentine; or brush on a coat of white enamel or white firzite. Blond stains and tones in various colors are also obtainable. As it begins to set, rub off the amount desired. Allow to dry and apply finish coats.

### Raising Dents and Bruises

Place a piece of woolen cloth or felt over the dents and bruises and press lightly over the cloth with a warm iron. Be careful that the area steamed is not large enough to raise the level of the wood around the depressed area. Allow 24 hours for drying and sand. This should not be done on veneered wood.

### Filling Small Holes

Fillers for small holes should be used after the first application of finish has been applied and allowed to dry. This will enable you to match the filler and wood more easily and will prevent the wood from absorbing the oils in the filler. Putty is not recommended.



### Sanding

A satin-smooth surface is the secret for any beautiful natural finish. Sanding with an abrasive brings out the beauty of grain and color. It also removes hair-like fibers and permits stain and finish to penetrate the surface uniformly.

The amount of sanding needed will depend on the irregularities in the surface and the finish you plan to use. Always sand with the grain of wood, using straight strokes and even pressure. Begin with an abrasive coarse enough to cut but not to scratch and finish with a very fine grit. It is seldom advisable to use coarser than 2/0 or 3/0 abrasive for the first sanding. The finish grades should be extra fine and may be up to 9/0 or 10/0.

A sanding block, either commercial or a padded wooden block, will assure more even sanding of the flat surface.

Very fine steel wool (000) will also help provide extra smoothness and removes hair grain. It is preferred over abrasives for veneered surfaces.

### STAINING

The appearance of woods that lack beauty of color or grain pattern is improved by the use of stains. They are also used to restore color loss by fading and to provide uniformity of color.

A wide range of colors in ready-mixed stains is available in either oil, water, vinyl or spirit base. Some finishing materials, such as minwax, lacquer tones and tungseal, have color added. Some can be wiped, brushed or sprayed on. The method of application is determined by the type of stain. However, in any case, manufacturers' recommendations should be followed.

Oil stains are a good choice for amateur use, as the penetration is easily controlled. Stains of similar type may be inter-mixed for shades of color and thinned for lighter tones. One coat may be applied over another for a darker color. Allow 24 hours' drying time unless otherwise instructed.

The choice of stain, however, should be compatible with the finish you plan to use. For example, a varnish, penetrating sealer or oil finish may be used over oil stains. A wood toner, vinyl or water stain may be used with a lacquer or acrylic finish.

End grain surfaces and soft woods are porous and will readily soak up stain unless treated with a sanding sealer (1 part white shellac to 6 parts denatured alcohol). Apply stains in a room free from dust and at a temperature of 70° or over.

### FINISHING

A piece of furniture with a good finish has an even, satin luster - a soft mellow sheen. The two types of finishes are (1) penetrating and (2) surface.

Penetrating finishes include penetrating wood sealers and linseed oil. The surface finishes are varnish, shellac, lacquer, polyurethane and paint or enamel. Before applying any type of finish, be sure the surface is free of dust.

### Penetrating Finishes

Penetrating wood sealers soak into the pores of wood, fill the cavities of the wood cells, and saturate the surface. This prevents the absorption of moisture and provides resistance to scratching. They give a satin finish much like the oil finish in appearance without as much rubbing. They require less skill and may be applied under less favorable conditions than some other types of finishes.

Each company has its own tradename but those finishes with a high percentage of tung oil will give good penetration. The sealer may be wiped on freely with a lint-free cloth or applied with a brush. The wood will soak up much of the first application. Wipe off surplus before it becomes too sticky. Allow to dry 24 hours. Rub surface lightly with 000 steel wool. Wipe with dry cloth, then with a tack rag. Apply succeeding coats as you did the first (rub off surplus after each application; steel wool between). Apply at least three or more coats to all pieces of furniture. Dining table tops and other surfaces that receive hard wear need five or six coats for good protection. Allow final coat to dry for about a week. Rub with pumice and oil or 000 steel wool. Dust and wax.

### Oil Finish

The oil finish is the oldest and one of the most beautiful finishes for woods of good color and grain. However, you do need to keep in mind that it darkens the natural colors of woods.

Smooth surface; wipe with dry cloth, then with a tack rag. Apply oil mixture, hot or cold. The hot oil penetrates the wood more quickly than does the cold oil and brings out a richer color. Always heat oil in a double boiler to prevent danger of fire.

Apply oil generously with a soft cloth and then rub it into the wood until the wood has absorbed as much oil as it will. This takes from 5 to 20 minutes, depending upon the condition of the wood and the temperature of the oil and of the room. Wipe off all excess oil. Take care to get all traces out of the crevices; otherwise, the oil will harden like a varnish.

Next, rub each part of the piece well from 10 to 20 minutes with the polishing cloth. A woolen cloth is good because it generates heat with friction. This is essential to bring out the luster. From 4 to 12 coats of oil are needed to bring out a luster that gives a soft, satiny effect. Each coat must be thoroughly soaked into the wood before another coat is applied.

### Drying Time Between Coats of Oil

In dry, warm weather, two days at least between first and second coats and one week between remaining coats should be allowed.

In moist weather allow one week at least between first and second coats, and two weeks and progressively longer between remaining coats.

This process is repeated until no dull spots remain; it should also be repeated once or twice a year to keep the furniture in good condition. Table leaves should be oiled on the underside as often as the top is oiled, to prevent warping. Danger: oiled rags are easily combustible. Destroy or wash them.

### Varnish

Varnish is available in high gloss, medium gloss, satin finish and flat. A good furniture varnish is resistant to water, alcohol and other liquids. The number of coats determine the depth and smoothness of the finish. A good finish requires two, preferably three or more, coats with light sanding between the coats. Varnish should not be applied in a cold or dusty room.

Varnish is best applied with a good-quality bristle brush. Do not stir varnish, as it causes air bubbles. Flow on with parallel strokes, then cross-stroke by brushing at right angles. Finish off by stroking lightly with bristle tips, working parallel to grain only. This helps eliminate brush strokes and helps to assure uniform coating.

Let each coat dry thoroughly and sand lightly before applying another. The sanding is done with a very fine grade of aluminum oxide paper or zinc stearate (9/0 or 320).

### Lacquer

Much of today's new furniture has a lacquer finish. It is fast-drying and provides a waterproof surface finish that is resistant to mars and scratches. The spray-on type must be used under controlled conditions.

The brushing lacquer is easier to apply. It dries almost immediately; therefore, drying time between coats can almost be eliminated. Two or more coats are desirable.

Flow on quickly over a small area, brushing in one direction. Do not try to go back over the area because the brush marks will show. Allow to set and then rub down with rottenstone and oil or water as a lubricant, to cut the gloss and give a satiny appearance.

### Antiquing

An antiqued finish is used to make newly-painted furniture appear old and mellow. Antiquing tends to conceal imperfections in the paint or wood. Painted furniture that has been antiqued will harmonize with most natural-finished woods.

Antiquing involves applying a glaze over a previously painted surface and then wiping off most of the glaze before it dries. Traces of the glaze are left in depressions and around the edges of a piece of furniture. If the first attempt is not satisfactory, the entire glaze can be washed off with turpentine before it dries and another application made.

Antiquing can be done very casually with streaks and irregularities left in the glaze. Or it can be a perfect blending of the glaze from dark to light. It is usually necessary to use a brush to obtain gradations in the glaze.

A large piece of furniture, such as a dresser, is best antiqued a section at a time. Complete the drawers, fronts, sides and top separately.

You can purchase a commercially prepared glaze or make your own. On light colors (white, ivory, etc.) try one of the following colors in oil: raw umber, burnt umber or raw sienna. On dark colors (red, blue, green) use lampblack. For sufficient glaze to do a small table, mix together: one tablespoon of clear



varnish or sealer (do not use the quick-drying type of sealer), three tablespoons of turpentine, and  $1\frac{1}{2}$  teaspoons of raw umber in oil.

To begin with, you should finish the furniture with at least two coats of flat enamel and allow to dry thoroughly after each coat. Apply the antique glaze to the desired shading with a clean cloth before glaze dries. For special effects you might wipe with textured cloth, crushed paper or dry brush. Apply glaze and wipe the remaining sections one at a time. Allow to dry for 24 hours. Smooth very lightly with 000 steel wool or 6/0 (220) abrasive paper, dust and wipe with tack rag. Apply at least two coats of satin varnish, lacquer or a penetrating wood sealer, allowing each coat to dry overnight. Smooth lightly between coats with 000 steel wool or 6/0 (220) paper. Dust and wipe with tack rag before next coat is applied. Allow to dry thoroughly, then rub down finish with either pumice and oil or 6/0 to 8/0 (220 to 280) wet-dry finishing paper lubricated with soapy water, followed when dry by 000 or 0000 steel wool.

#### CARE OF FURNITURE

The life and beauty of good furniture is lengthened by proper care. A thin film of wax should be used over most finishes. It makes dusting easy and protects the finish.

A paste wax is desirable for wooden surfaces. Some waxes come in yellow only, while others are colored to blend with different wood tones.

Apply the wax between two layers of cloth so that a thin layer of wax comes through and coats the surface. Wax only a small area at a time and buff it immediately with a soft cloth until it is hard and dry.

When fine scratches appear, wet fine steel wool (0000) with a little turpentine and rub with the grain until scratches disappear. Then re-wax.

Use trivets or bases under accessories, especially flower arrangements. Use pads, trivets, or coasters to protect dining table tops from heat and moisture.

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## FURNITURE FINISHING SERIES

### 1. USING A PENETRATING SEALER

Penetrating wood sealer finishes are easy to apply and to maintain. They are excellent for a beginner to use and will produce a beautiful finish. They seal the pores of the wood and give a lustrous finish. A penetrating sealer which contains tung oil will give a tough, lasting finish which will not chip or crack and is impervious to water.

The penetrating sealer type of finish is available in grades that range from standard for the average home use to the gym quality used for extremely hard-use surfaces. For furniture finishes the clear, transparent sealer is recommended. The sealer, if enough coats are applied, gives a gloss finish which can be rubbed down to a satin finish if desired. A satin finish sealer or varnish may be used for the final coat if a low gloss is desired.

Because they penetrate into the pores more thoroughly than varnish or a surface finish, penetrating sealers do not scratch so easily. If a worn spot appears, it can be repaired by applying some of the sealer. The patching will never show.

The steps for finishing used or new wood are the same except that the old finish on used furniture must be removed first. Used furniture may be made more attractive and useful if a good refinishing procedure is followed. The furniture should be in good condition. Age is no guarantee that a piece is worth refinishing; nor is the kind of wood.

The beauty of any wood - old or new - depends on its finish. There are, however, no short cuts to obtaining a good finish. It takes time and patience. But remember, the finish applied will improve or ruin the appearance of either a new piece of wood or an old piece which has been reworked.

#### Removing the Old Finish

Before you start work, remove the handles, knobs and any other hardware to make the finishing of the parts easier. Hardware should be cleaned with an appropriate cleaner. Cover floor and table with layers of paper or protective covers. Work in a well-ventilated area and wear gloves to protect the hands.

For the majority of pieces, a commercial paint-and-varnish remover will cut the old finish. Removers are available in liquid and semi-liquid forms. Some are flammable, therefore be sure to observe all precautions. Different removers will require different methods of cleaning the surface afterwards to stop the action of the remover. Manufacturers' directions appear on the containers and should be followed carefully. Some require the use of alcohol, some turpentine. Use only the recommended neutralizer;

otherwise, any new finish applied may not dry or it may peel from the surface or crack in fine lines or checks. If a water-rinse type remover is used, remove the water as fast as possible. Water raises the wood grain which will require more sanding.

Pour some of the paint remover into a small can or saucer; then dip an old paint brush into remover and flow on the paint-and-varnish remover liberally with the grain of the wood. Be careful not to spill it on the skin. Paint remover works best when applied in a thick even coat. Never cover the entire surface in one operation. Do about one-and-a-half to two square feet at a time. Wait until the varnish bubbles, blisters and crumbles. After 10 or 15 minutes, if the remover has not softened the old finish, apply another coat of remover on top of the first.

Remove the softened finish with a broad-blade putty knife, holding it away from the body and pushing firmly with the grain. Do not apply too much pressure or the knife may gouge the wood. Dispose of the loosened varnish at once, as it may be flammable. Apply remover and scrape at least twice or until the wood surface is clear of the old finish. Use scraper for flat surfaces only. To clean carvings, use an old toothbrush, a sharpened lollipop stick or toothpicks. On turned and curved surfaces, use a piece of burlap or crumpled paper to remove the first layer, and steel wool to remove the last. A burlap thread or a piece of twisted steel wool is helpful in removing the finish from the turns and grooves.

Take great care to see that varnish remover does not run onto parts that are not yet cleaned, or onto the areas that have already been cleaned. Careful watching can prevent the varnish remover from staining the wood. A run should be wiped off immediately with a cloth dampened with a neutralizer.

When using a wax-free remover, the final clean-up can be done with steel wool dipped in the remover. However, if the remover has a wax base, the residue must be washed away completely so it will not interfere with the adhesion of the new finish. For this washing, use lacquer thinner, turpentine or denatured alcohol as directed by the manufacturer of the remover. Saturate a cloth with the neutralizer and wash the surface clean. Be sure to clean recessed corners. There may be shiny or sticky spots or places from which a light powder can be scraped; this means that the old finish is still present. All remains of old finish and remover must be cleaned off or the new finish will not dry.

### Preparation for the Finish

Sanding is the most important operation in preparing new wood for the finish. Used furniture which is in good condition may not need as much sanding as the new wood. Begin with medium sandpaper or garnet paper to remove discoloration and surface irregularities. Follow with finer-grit sandpaper. On some old pieces only fine abrasives may be needed. The wood should be sanded until perfectly smooth. A good test is to rub with a nylon hose to see if the surface picks the hose. Sanding should be done in the direction of the grain of the wood. An electric sander may be used on a large flat area. A small strip of sandpaper wrapped around a wooden block makes a good hand-sanding tool.

### Removing Dark Colors and Spots

Dark spots and stains should be removed if they will detract from the final finish. Some stains from the old finish are not removed by the paint-and-varnish remover. If a lighter finish is desired, it is desirable to remove as much of the stain as possible before applying a new finish. To bleach out undesirable color, apply - with cloth or an old brush - a coat of commercial household bleach. Allow to dry. If necessary, apply two or more coats. The residue may be removed with a damp cloth. A final sanding will be needed. Commercial bleaches are available and directions should be followed.

### Raising Dents

Small dents can generally be eliminated by placing several thicknesses of moistened cloth over the dent and then pressing with a warm iron. The steam swells the wood fibers, bringing them back to their original position. The process may have to be repeated several times to remove the dent completely. Sand the surface when it is dry. Small dents and spots are not objectionable, however, since an antique collector would consider these a sign of age. In addition, such defects may add interest to the piece.

### Filling Holes

Small holes should be filled with plastic wood or a dough made of sealer and sawdust. The filler color should match the desired finish. Commercial fillers are available in several colors. Sawdust may be collected from the sanding process, which can be mixed with a small amount of penetrating sealer to make a still dough. Fill the holes with this dough-like filler, allow to dry and sand until smooth.

### Other Repairs

Other needed repairs should be made to the furniture before applying finish.

## Application of the Finish

### Staining

Stain gives color and new life to wood and enhances the beauty of the grain. No other step in finishing brings out as great a change in the appearance of wood. Staining should leave a transparent effect and should not obscure the wood grain as opaque material such as paint does. There are many types of stains for various purposes.

A pigmented oil-wiping stain is convenient and very easy to apply. It dries slowly enough to permit obtaining the desired shades. The colors are non-fading and non-bleeding.

Select the desired color ready-mixed - or mix to the desired shade oil colors from tubes. Make a color test on a hidden area to determine the



color tone. Most oil-wiping stains contain certain amounts of wood filler and should be stirred well before using.

Brush stain on in an even coat and allow to set for a few minutes. The longer the stain remains on the surface the darker the color. When the stain begins to appear dull it is ready to wipe off. Use a soft lint-free cloth. If the pigment becomes set, moisten with additional stain in order to wipe off all the filler from the wood.

A second coat is sometimes needed to obtain the desired color. Color tones may be lightened by rubbing with a cloth dampened with turpentine. Sap streaks and light spots may be touched up by rubbing lightly with burnt umber, burnt sienna or other colors thinned with turpentine. Touching-up is necessary in order to produce a uniform color. The advantage of using a wiping stain is that the desired color can be obtained and controlled before applying the finishing coat. Let this stain dry 24 hours.

### Fillers

A filler should be used on new wood and heavily sanded used wood. The purpose of the filler is to close the cells, or tiny crevices, in open-grain woods such as oak, walnut and mahogany. Close-grain woods are often finished without the use of fillers. Fillers can be obtained in two forms - paste and liquid. Paste fillers, used on open-grain wood, are either semi-transparent or opaque; liquid fillers, normally used on close-grain wood, are transparent. Paste fillers should be colored to match the finish color.

Some oil-wiping stains contain sufficient filler for most refinishing jobs.

When using a filler, follow the directions given by the manufacturer.

### Application of Sealer

Dust the furniture, then apply sealer with a clean soft brush. The sealer will soak into the wood at varying speeds, depending on the hardness of the wood. Keep the surface wet with the sealer for 20 minutes by applying additional coats as it soaks into the wood. Wipe off surplus with a nylon hose or soft lint-free cloth. Check carefully the carvings, under the rounds, etc., to remove any collections of sealer.

Let dry for 24 hours. More time may be required when humidity is very high.

When the finish is thoroughly dry, rub it evenly with No. 000 steel wool. Dust carefully and then apply a second coat. Allow to dry, then use steel wool again. Apply additional coats until the desired finish is obtained - a smooth even gloss over the entire surface. This may require three or more coats. Five or more coats are recommended for table tops which will be in constant use. A satin-finish penetrating sealer or satin varnish may be used for the final coat.

### Polishing

To obtain a satin sheen, which is the true finish of quality furniture,



let the last coat dry for two days or longer to harden and season. Then rub down with fine steel wool and an abrasive.

Pumice stone is the time-honored abrasive for rubbing with water or oil as the lubricant. Water rubbing requires closer inspection and better judgment during use than oil rubbing. Pour a small amount of boiled linseed oil into a saucer or other flat container. Pour a small amount of pumice into a second flat container. Use a No. 000 steel wool pad, dip pad first into the oil and then into the powdered pumice. Rub with the grain of the wood. Try to use even pressure so that some areas will not be duller than others. Repeat the process, using just enough oil to make the pumice stick to the pad, until the entire surface achieves a uniform dull luster. Clean the surface thoroughly so that no oily film remains. Apply a coat of paste wax if desired.

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Prepared by Charlotte Womble, Extension Housing and House Furnishings Specialist. North Carolina State University at Raleigh and the U. S. Department of Agriculture, Cooperating, North Carolina Extension Service, Raleigh, N. C. 27607  
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## ANTIQUING PAINTED FURNITURE

Antiquing is used to make newly painted furniture appear old and mellow. It will help bring out the beauty of carvings and mouldings and will soften or tone down highly decorated surfaces. This type of finish tends to conceal imperfections in the paint or wood. Painted furniture that has been antiqued will harmonize with most natural-finished woods.

Antiquing is done by applying a glaze over a previously painted surface and then wiping off most of the glaze before it dries. Traces of the glaze should be left in depressions and around the edges of a piece of furniture. The technique for wiping will determine the shading of the glaze that remains. If the first attempt is not satisfactory, the entire glaze can be washed off with turpentine before it dries and a different effect tried with another application of glaze.

Large pieces of furniture, such as a chest, are best antiqued a section at the time.

Antiquing can be done very casually with streaks and irregularities left in the glaze. Provincial furniture and objects decorated in the Peter Hunt manner are done this way.

In French antiquing an effort is made to get a perfect blending of the glaze from dark to light. It is usually necessary to use a brush to obtain this gradation in the glaze. Good taste and appropriateness to the total color scheme should be your guide in applying an antique finish to a piece of furniture.

An antique glaze is a mixture of 1 part clear varnish or penetrating sealer (do not use a quick-drying type sealer), 3 parts turpentine, and 1/2 part color-in-oil. The amount of color-in-oil can be varied to get a lighter or darker glaze.

On light colors (white, ivory, etc.) try one of the following colors-in-oil -- raw umber, burnt umber, or raw sienna.

On dark colors (red, blue, green) add lampblack.

For sufficient glaze to do a small table mix together:

1 tablespoon of clear varnish or sealer  
(Do not use the quick-drying-type of sealer.)

3 tablespoons of turpentine

1½ teaspoons of raw umber in oil

## STEPS IN ANTIQUING

1. Finish furniture with at least two coats of flat or semi-gloss enamel.
2. Allow to dry thoroughly.
3. Apply antique glaze with brush or cloth to one section of a piece of furniture.
4. Wipe off most of the glaze before it dries with clean cloth so as to obtain the desired shading. A dry paint brush is often helpful for this.
5. Apply glaze and wipe the remaining sections one at a time.
6. Allow to dry for 24 hours.
7. Smooth very lightly with 000 steel wool or 6/0 (220) abrasive paper.
8. Dust. Wipe with tack rag.
9. Apply a protective finish using either a clear varnish, satin varnish, or satin-finish sealer (do not overbrush).
  - Allow to dry thoroughly.
  - Smooth lightly with 000 steel wool or 6/0 (220) paper.
10. May be rubbed to satin finish with powdered pumice and oil, using either 000 or finer steel or felt.

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By Housing and House Furnishings Specialist, N. C. State University and the U. S. Department of Agriculture, Cooperating, North Carolina Agricultural Extension Service, Raleigh, N. C. 27607

February 1966

## NEW TRUNKS FROM OLD

Trunks can not only give interest and beauty to your home but can also add extra storage for linen, blankets, out-of-season clothes, mementos, silver and of course toys. Their latest rage is for holding trousseaux. Flat-top trunks are perfect for end and coffee tables, night stands, etc. Doll trunks make lovely jewelry, glove and scarf cases.

### STEPS IN RENOVATION

1. Selecting. For your first venture, select a trunk that is in as good condition as possible.

2. Repairing. Make all repairs.

Have a cabinet maker make new runners for the bottom to replace those that may be missing. Replace casters if they are missing. Check handles, hinges and locks for necessary replacement. You can dress a trunk up or down with the handles. Leather works well for handles. Most shoe repair shops are equipped to do leather work. Brass chains are effective. Gold or white rope with tassels on the ends and used through brass rings add glamour. If leather handles are there but are not to your liking, they can be painted or covered with material such as velvet, corduroy or braid. If you replace handles, use care in removing the nails holding the handles, as they may cause the wood to splinter or tear.

If there are chips or tears in the wood, use wood putty to fill the space. If the damaged area is very large, do it in stages and build it up rather than fill the entire hole at once, as wood dough shrinks as it dries. Fill slightly above the surface and sand back level when dry.

To repair metal pieces, purchase metal filler which is carried by auto shops - liquid aluminum or liquid steel can also be used. All can be sanded smooth and painted.

3. Removing Finish. Remove old finish if you wish to finish the wood parts in a natural or stained wood finish.
4. Removing Paper or Leather Lining. To remove paper, sponge it with warm water until saturated. Use a scraper or knife to remove wet paper. Remove leather with a single-edge razor. If the inside has an odor, air or wipe down with a cloth wet with vinegar.
5. Sanding. Sand with medium sandpaper to smooth.
6. Painting. After sanding, the next step is undercoating. Wipe off dust thoroughly with a rag wet with paint thinner. If trunk is rusty, use a coat of metal primer to keep rust from coming through; also paint a semi-circular area on the inside where the trunk hinges, as you will not be able to cover this area with fabric. After drying 24 hours, add top coat, using semi-gloss enamel. Use two coats, drying 24 hours between the two coats. Wipe each time with paint thinner to remove dirt particles before painting. If there are rough spots, sand lightly.



7. Antiquing. This is the fun part. Antiquing is applying a glaze over a previously painted surface and then wiping off most of the glaze before it dries. Antique only a section at a time. To make antiquing glaze:

Mix: 1 part color varnish or penetrating sealer (do not use the quick-drying kind). Use a satin finish.  
 3 parts paint thinner  
 1 part linseed oil

To the above add oil color in the amount desired.

On light colors (white, ivory, etc.) try one of the following colors: raw umber, burnt umber or raw sienna.

On dark colors (red, blue, green) use lampblack. Color on color can be used very successfully, also. Example: dark blue antique over pale blue or oxblood (with raw umber added) over green paint. A coat of varnish must be used after each coat of antiquing, when more than one color of antiquing is used; otherwise, the colors may "lift".

To apply glaze or antiquing: Apply glaze with brush or cloth to one section at a time. Start in a less conspicuous area until you get the knack of the best effects. Be sure to have rags, a clean nylon brush and a can of paint thinner handy before you start the glazing, as it will start to set up in about 15 to 20 minutes.

Now try your hand at getting interesting or unusual effects. Try wiping in a circular motion or wiping in one direction. Try wiping with a steel wool pad instead of a cloth. If you wish a striped effect, dab it with burlap or a crushed newspaper. It seems to work best to wipe it first with one cloth to get most of the liquid off, then change to a cloth or steel wool for the final glazing. If you are not satisfied with the effect, take paint thinner and wipe it off and start again. Do not try to patch up after the antiquing has set. Use dry paint brush to get at corners. Let dry 24 hours.

8. Trimming (Distressing). If you wish to "flyspeck" or distress the furniture, be sure to add a coat of varnish to protect the glazing. Let dry 24 hours.

Then distress the furniture, putting some of the antiquing liquid on a toothbrush and flipping the bristles with your thumb. If specks are too thick or not to your liking otherwise, wipe them off and try again.

To add gold trimming:

- a. Ready-mixed gold is fine for striping and painting. Do not attempt to glaze with ready-mixed gold paint.
- b. Bronzing powder is available and can be mixed with the glazing liquid. However, this will eventually turn dark as a glaze. It works well to paint the metal parts with this and then highlight with gold.
- c. Gold wax is excellent for highlighting the metal portion.

Interesting effects may be obtained by:

- a. Painting metal pieces with flat black and, when dry, rubbing lightly with gold for a real old antique look.
  - b. Painting metal silver. When dry, mix lamp black oil with paint thinner. Paint black over silver and rub off lightly. This gives a pewter effect.
9. Adding a Personal Touch. You may wish to personalize the trunk with initials or to paint designs on it. For best wear, it is good to add two to three coats of clear flat varnish. Light buffing with 000 steel wool or 6/0 abrasive paper should be done between coats, being sure to remove all dust with paint thinner.

Allow to dry a week, then rub down with pumice powder and oil or 6/0 or 8/0 wet-dry finishing paper.

10. Lining the Interior. The interior of the trunk should be as attractive as the outside. The best materials include: velveteen, corduroy, cotton quilted and prints. Wallpaper and silk and rayon fabrics are not very satisfactory.

Step 1. Measure each section of the trunk and cut out pattern from cardboard (use same thickness of cardboard for all pieces). You must allow a space for the arm to close. This will usually require cutting out a semi-circle. (Remember: this little area was painted.) The hinges can be replaced, however, with a chain or strap. Cut the cardboard pattern about 1/4-inch smaller than the actual size.

Step 2. For padding, lay cardboard pieces on cotton batting (1/2 to 1/4-inch thick). Cut to fit or slightly smaller. (Cotton padding is not always needed or desirable.)

Step 3. Cut out fabric. Observe pattern or pile directions. Cut fabric 1/2 to 3/4-inch larger than cardboard on all sides. Fold over edge of cardboard and paste. Cut V's out at the corners so material will not be too bulky in corners. After each piece is glued, place in trunk to see that it fits. If too tight, undo and trim back cardboard and cotton. Then re-glove.

Step 4. Glue all sections into trunk, putting in bottom last. Put most of the glue on the trunk with only a little on the cardboard. If a trunk has a barrel-top, glue in extra cotton padding in the deep curved part to keep the lining from having to bow back too far. When complete, tack or staple lining around all edges. This should be covered with a matching braid, rickrack or velvet ribbon. For a tufted effect in the top and sides, mark out a diamond pattern, loop thread from back of cardboard up through material and back again. Pull tight and tie. It will hold best if a button is used on the back so that the thread will not cut the cardboard. Also, pearl drops, flowers or bright buttons add emphasis on the front.

If the tray is made to fit the trunk exactly, the runners may have to be painted rather than padded.

Add the braid to finish the edges.

Then stand back and admire your work!

## OTHER INTERESTING ITEMS

1. Make an old cedar chest a focal point by antiquing. Do not line inside. If it has lost its cedar odor, sand the inside to open the pores of wood.
  2. Use metallic foil over top of old coffee or end tables, antique legs and add several coats of varnish to top and sides.
  3. Antique picture and mirror frames.
  4. Just look around. The process can be used with almost any wood or metals.
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Adapted by Housing Furnishings Specialist from materials prepared for county workshop use by Mrs. Jane B. Davidson, Home Economics Extension Agent, Forsyth County; and Mrs. Frances C. Wagoner, Home Economics Extension Agent, Alleghany County.

North Carolina State University at Raleigh and the U. S. Department of Agriculture, Cooperating; George Hyatt, Jr., Director; North Carolina Extension Service, State College Station, Raleigh, N. C. 27607

October 1970

## PICTURE FRAME FINISHES - FOR OLD AND NEW

If you have old picture frames that you have stored and not used for a long time, do not throw them away. A good cleaning may be all that is necessary to make them look new and attractive.

Old picture frames that have been made of wood, plaster or a combination of both may show signs of age if they are dusty, have turned dark or have cracked, chipped plaster and/or peeling paint. Many of these frames can be successfully renovated and refinished to make lovely framing for pictures and mirrors.

If the frames are damaged, they will need to be mended and to have the old finish removed and a new finish added in order to make the frames useful and attractive.

### Preliminary Steps

Take out glass, old nails, screws and picture. Take off wire.

If necessary, clean old frames by washing gently with a soft cotton cloth dipped in neutral soap and water (without getting the frame too wet). Dry with a clean cloth. Rub until no dirt comes off.

Mend or strengthen corners (with mitre joint fasteners).

### Cleaning

Wood frames that are in good condition should be treated with a mixture of  $\frac{1}{4}$  cup boiled linseed oil and 2 tablespoons turpentine in 2 quarts of hot water. For stubborn spots rub with a cloth dipped in oil and pumice powder. A clean, medium-soft brush is a help in cleaning carvings and grooves. Wipe dry. Wax.

Gilt frames in good condition should be wiped gently with a cloth that has been dipped in 2 tablespoons of vinegar and 1 cup of water.

### Removing Old Type Finish

From Wood Frames. Use a good commercial paint and varnish remover. Follow the manufacturer's directions. When the wood seems clean, put on a little more remover and wipe dry with a small piece of steel wool (go with the grain of the wood). Wipe with a damp cloth wrung out in cold water. This will remove all traces of old finish and remover. Let dry. Rub with fine steel wool until surface is smooth.



From Plaster Frames. Use a good commercial paint and varnish remover. Apply to only one side of frame at a time. Use old paint brush in a circular motion. This gets the remover into the design. Place absorbent cloth over wet plaster and use a medium-soft brush over cloth. The brush stays clean and the cloth will absorb the old finish and remover that are in the design. Repeat remover treatment. Take off excess with cloth under a brush. Toothpicks (round ones preferred) will aid in cleaning the grooves and small designs.

### Mending

Wood Frames. Holes should be filled with plastic wood filler stained slightly darker than the wood, as it will be lighter when dry.

Splits in the frame should be glued.

Plaster Frames. Use plaster patch to mend plaster frames that have holes, chipped places or broken design. Mix a small amount at the time (approximately one tablespoon plaster patch and one teaspoon of water) to make a soft dough. (You will want it to hold shape and yet work smoothly.) Dampen a small area (2 or 3 inches) with water or glue. Fill in with wet plaster, re-working design as you go. Your fingers, toothpicks or spoon handles will aid in making designs. Moisten top to make plastered design slick and smooth. Let dry.

Recasting the Original Design of Plaster Frames. Jeanne Ware of Rutherford County has had good results with the following method. (Any necessary cleaning and repair, including reinforcing corners, should be done prior to patching.)

#### 1. Materials Needed

Modeling clay---Play dough and other plastic doughs will not work. You need regular modeling clay.

Plaster of paris---Small amounts may be bought at drug stores.

Paring knife or pocket knife.

Fine sandpaper for smoothing and fitting.

#### 2. Steps

- a. Find section of frame to be copied. It is hard to work with a larger than 2- or 3-inch area, so more than one cast may be necessary.
- b. Work modeling clay until pliable. Press clay on to section to be copied, being careful to get clear print. (Use large enough ball of clay to have mold at least a half-inch thick.)
- c. Remove clay, being careful not to bend the shape (may need to repeat to get a good impression).
- d. Mix plaster of paris with enough water to have a thick consistency. This dries quickly, so work fast. (Small individual aluminum pie tins are good for mixing.)
- e. Put plaster mixture into clay mold. Smooth with knife or small spatula. This smooth edge will be glued to frame. Set aside to dry. (Drying time varies according to thickness, temperature and humidity. It may vary from 10 to 20 minutes.)

- f. Clay mold may then be removed from hardened plaster. Gently press clay from around plaster form. Try to remove without breaking. (It may be used even if it breaks.)
- g. Fit the new plaster form into place on the broken frame. Some filling, sanding and chipping away may be necessary to get a good fit. After fitting, glue into place and allow to dry well before continuing with refinishing.
- h. The new piece may then be finished to blend with the old. Extra stain or paint may be necessary to blend with the old finish.

This process takes time and patience but it is worth the trouble.

### Finishes

After the old finish has been removed from the plaster or wood, the mending has been done, the surface has been smoothed and the surface is dry, you are ready to apply a new finish.

#### Wood Frames

1. Stain and Penetrating Seal Finish. Many wood frames will need to be stained. Oil stains are best for beginners. They may be purchased ready mixed or unmixed. The colors are non-fading and non-bleeding and easy to apply with a brush-on, wipe-off technique.

Pointers on when to stain:

- When the wood has no natural beauty.
- When the color is faded.
- When there are several colors and a uniform color is desired.
- When stain, previously applied, needs freshening.
- When darker color is needed.

Application of stain:

Make sure that the color and tone of stain are right before using it by testing on a hidden portion of the piece or on a scrap of the same wood.

Brush on the stain quickly in an even coat and without overlaps.

After applying stain, wipe off all that has not been absorbed. Use a lintless cloth or cloth inside a nylon hose. The longer the unabsorbed stain remains on the surface, the darker will be the effect. Never leave stain on until it sets.

Use penetrating sealer finish after stain.

Most satisfactory finishes can be obtained by application of one or two coats of penetrating sealer. A penetrating sealer, which contains tung oil, will renew the true character of the wood as well as add a tough, lasting protection which will not chip, crack or peel and is impervious to water, heat and acid. Also, because it penetrates into the pores more thoroughly than surface finish, it will not scratch easily.

- a. Dust the wood.
  - b. Flow the sealer on the surface with a clean brush.
  - c. Continue the application for about 20 minutes. Be sure to keep the wood saturated in order to allow as much sealer to penetrate as possible.
  - d. Wipe off all the surface with a lintless cloth or nylon hose. If the surface becomes tacky to the cloth, apply more sealer and wipe off. Check carefully to make sure there are no drips or excess amounts collected in grooves.
  - e. Allow to dry 24 hours.
  - f. Rub lightly with 3/000 steel wool or extra fine sandpaper.
  - g. Dust well with lintless cloth dampened with penetrating sealer.
  - h. Apply second coat following directions used for first coat. Make as many applications as desired.
  - i. After drying, lightly sand the last application of penetrating sealer, wax with a paste wax and polish to get desired finish.
2. Paint. Use an alkyd paint of desired color. If a lighter color of paint is used over a dark frame, an undercoat of shellac will keep the darkness from bleeding through.
  3. Gilt. When applying a gilt finish to your frame, be careful to use one of good color. Some gilt preparations are of a harsh color that you would not be happy with. There are some good gilt paints that are ready mixed, and these are preferable to those you mix yourself.

Plastered Frames. Plastered frames or the plastered areas of combination wood-and-plaster frames can be treated in several ways. (Please refer to Wood Frames for treatment of wooden part.) The plastered areas may be painted gold with gilt or painted other colors with alkyd base paint.

#### Special Effects

Antiquing. Antiquing gives an old and mellow finish to a good picture frame. You may want this type of finish on some of your frames. To antique a frame, use an antiquing liquid over the surface by brushing it on, then wiping off lightly most of it except the part that remains in carvings or depressions. Use burnt umber oil stain mixed with turpentine. Nylon hose should be used to wipe off the excess.

Highlighting the Design. To highlight the carved or molded designs on a picture frame, use a small brush, dipping it lightly in gilt paint or into another desired color of alkyd base. Brush dry on scrap paper. Then brush lightly on desired areas of the painted or gilt dry picture frame.

A combination of finishes may be used on frames. Example: On wood frame use penetrating oil finish and edge inside with gilt.



New Wood Frames

Pickling. The purpose of this finish is to give a faint suggestion of color to the grain of the wood. Take a brush and coat the frame with an oil paint of any color or colors you desire. Then rub with a cloth across the grain of the wood to remove any excess paint. You may apply several coats in this manner to get the desired amount of color. You may find it is necessary to rub the frame with a cloth dipped in turpentine to remove excess paint that has dried. Finish the wood frame with an oil finish.

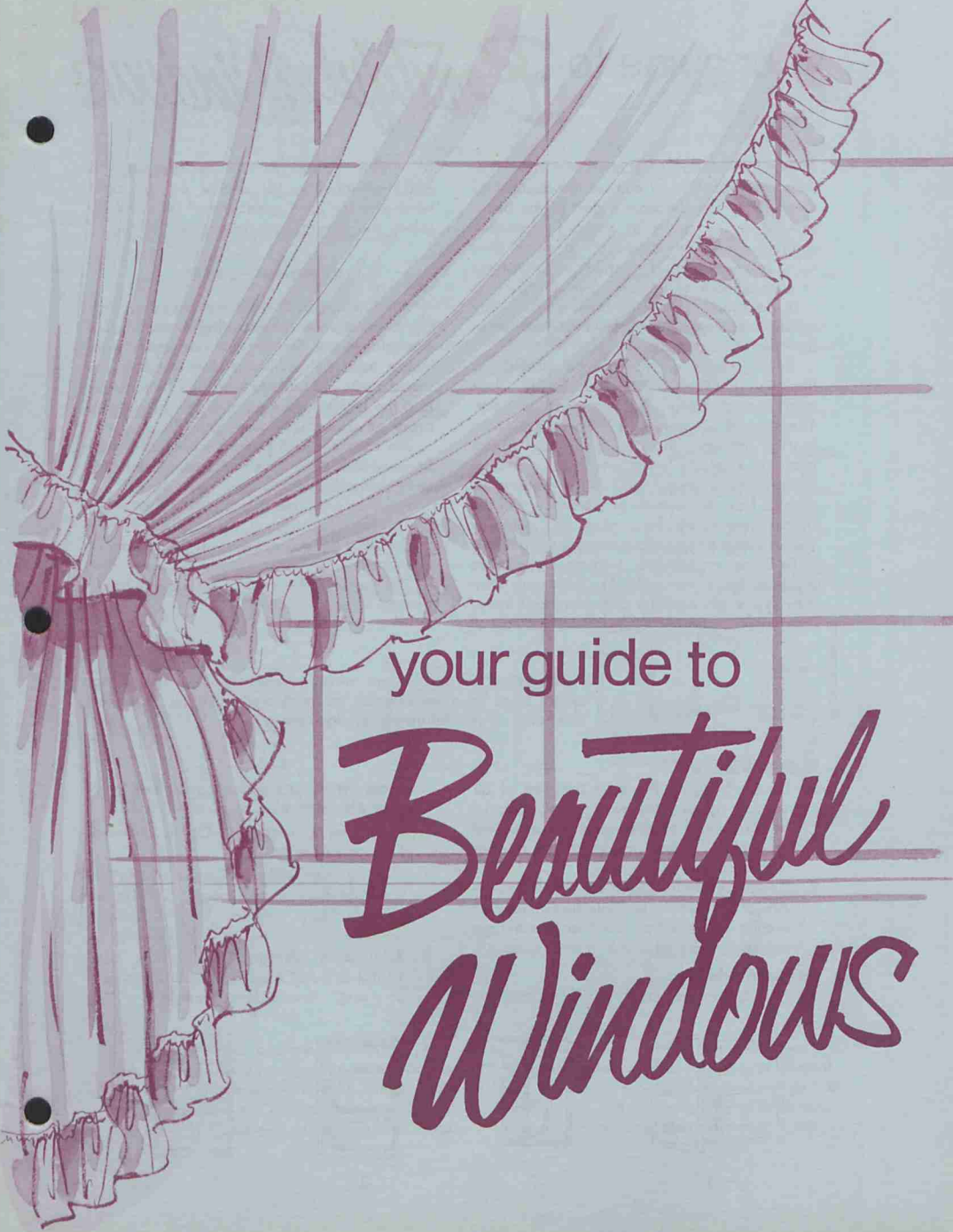
Blond Finishes. Many woods are treated in light colors today. If these are desired, it is necessary to bleach the wood. Use oxalic acid or a commercial bleach. When the surface has been bleached and is dry, sand with the grain. (Apply the lightest paste filler possible.) When the filler begins to set, rub off, rubbing across the grain. After 24 hours rub the surface lightly with No. 3/000 steel wool and dust. Brush on a coat of flat white lead paint, thinned with turpentine, or a coat of white enamel or of white blond stain. (Various colors of stains are available.)

A few minutes after brushing on coat, rub off the desired amount as it begins to set. The final coats may be a penetrating sealer type of finish or a varnish.

Prepared by Edith B. McGlamery, Extension Housing and House Furnishings Specialist, North Carolina State University at Raleigh and the U. S. Department of Agriculture, Cooperating. State College Station, Raleigh, N. C. George Hyatt, Jr., Director.

Revised April 1971





your guide to

# Beautiful Windows

# your guide to *Beautiful Windows*

Beautiful window treatments can work wonders for a room. They can set the decorating mood. They may become a part of the background or the center of interest; dramatize a lovely view or screen off a poor one; complement pleasing architectural features or conceal lack of interesting features.

In addition, window treatments often play an important functional role in sound absorption and insulation.

The windows of your home provide a transition between outside and inside. They may control fresh air, light and privacy. The type of windows and the way the room is used influence the type of window treatments you select. There should be a feeling of harmony or unity for all of the windows as viewed from the outside of the home. On the inside there should be a pleasing feeling of coordination as you move from room to room.

Deciding on window treatments becomes much easier if you will: (1) check your window types, (2) consider different basic types

of window treatments and possible ways to add individuality, (3) decide on the right hardware for each window and (4) carefully select the appropriate fabrics and trims.

## WINDOW STYLES

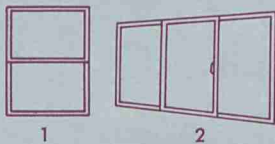
Window styles are usually grouped according to installation or according to shape, size and placement. There are basic styles commonly used by architects and builders the world over. You need to learn the style names and the terms for the parts of the windows in order to discuss window treatments.

The *casing* is that part of the window that fits into the wall structure and around the window itself.

The *frame*, or sash, is the part that holds the glass.

The *sill* is the narrow shelf at the bottom of the window.

The *apron* is the part of the casing below the sill.



According to installation, windows are classified as sliding, swing, fixed or a combination of fixed and movable. These are illustrated in the following window types.

### Sliding Windows

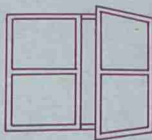
1. Double-hung—Is the most common of all window types. Has two sashes, one or both of which slide up and down. Unless unusual in size or placement, it is easy to decorate.
2. Horizontal sliding windows and doors—Are often used in multiple units with one section fixed. Often used in ranch type houses and called ranch or strip windows.

### Swing Windows

1. In-swinging casement — Opens into the

room. Window treatment must not interfere with operation of window.

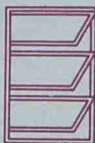
2. Out-swinging casement—Opens outward. Easy to decorate.
3. Awning—Has wide, horizontal sashes that open outward to any angle. Can be left open during a rainstorm. Easy to decorate unless unusual in shape or placement.
4. Jalousie—Is identified by narrow, horizontal strips of glass that open by means of a crank to any desired angle.



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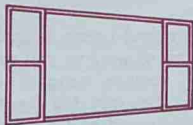
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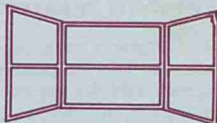
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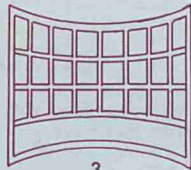
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### Fixed or Combinations of Fixed and Moving Windows

1. Picture window—Is designed to frame a view. It is usually a large fixed pane of glass which cannot be opened. It often has movable sections on both sides of the fixed pane.

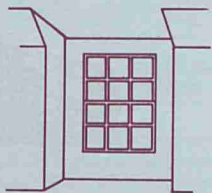
2. Bay windows—Consist of three or more windows set at an angle to each other in a recessed area. May be combination of fixed and movable.
3. Bow window—A curved window often referred to as circular bay. A fixed window area.

### Other Styles Classified According to Shape, Size or Placement

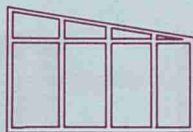
1. Dormer—Usually a double-hung window projecting from the house in an alcove-like extension.
2. Cathedral windows—Characterized by the angle at the top that follows the line of a slanting roof.
3. Clerestory windows—Set near the ceiling.

Sometimes placed in a slope of beamed ceiling. Often not decorated at all.

4. Corner windows—Include any windows that come together at the corner of a room. Easy to decorate with right hardware.
5. Arched windows—Characterized by curved top. Need special decorating.
6. Window wall—Is a group of basic window units fitted together to form a glass wall.



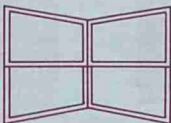
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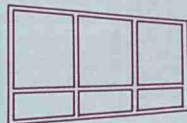
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Windows often become decorating problems because of unusual proportions or because of their placement. For example, they may appear too tall and narrow or too wide and short in proportion to the size and shape

of the room. Or, maybe, the windows are placed too close to the fireplace or a door. With the many types of window treatments available to choose from, there is a satisfactory solution for problems such as these.



## BASIC WINDOW TREATMENTS

Just as a basic dress is simple and primarily suited to your figure and needs, a basic window treatment is simple and appropriate for the particular type of window you are decorating. Start with the basics, then add the extras, such as a valance, swag or tie backs that make your windows distinctive and different. You can also vary the length of curtains and draperies to complement the window or decorating mood of the room.

Different types of windows suggest certain basic types of window treatments.

### Curtains and Draperies

1. Two-way draw traverse—May be used for glass curtains as well as draperies. Open from center and draw toward outer edges of window. Suitable for: double-hung, out-swinging casement, awning, jalousie, bay, bow and corner windows.
2. One-way draw traverse—Drapery draws to one side. Suitable for: windows with no wall space on one side, sections of bay windows, corner and slanting windows, sliding windows and doors.
3. Swinging draw draperies—Drapery and rod mounted on frame to swing with French door or in-swing casement window.
4. Cafe curtains and draperies—Hung from a cafe rod. They may be stationary or traverse. Suitable for double-hung, ranch, picture, dormer, bay and bow windows and glass walls.
5. Sash curtains—Usually cover only the glass section. They are shirred at top and bottom on close-fitting rods. Suitable for: casement and clerestory windows and doors with glass sections.
6. Criss-cross curtains—Are extra wide, ruffled, sheer panels hung so that one overlaps the other. Suitable for: double-hung, bay and picture windows.
7. Stationary curtains and draperies—May hang straight or be tied back. Suitable for double-hung, picture, dormer and bay windows.
8. Arched treatment—May be either stationary, pleated curtains or draperies hung on an arched rod. Designed specifically for curved-top windows.
9. Slanting traverse—Is designed to draw in one direction to follow slanting top windows.



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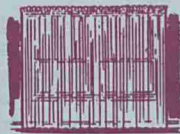
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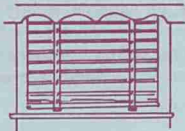


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## Blinds and Shutters

1. Venetian blinds—May be used alone or in combination with curtains and draperies. Available with vertical and horizontal slats. Suitable for most any type window



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except in-swing, corner, slant or arched windows.

2. Shutters—May be used alone or in combination with other types of window treatments. Suitable for same types of windows as Venetian blinds.



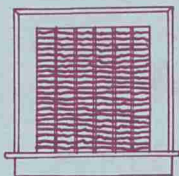
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## Window Shades

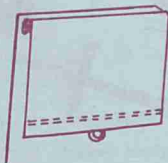
1. Matchstick or bamboo shades—Informal type of window treatment. Especially appropriate for family rooms, porches, informal dining areas.
2. Roller shades—Available for any type window. May be functional, decorative or

serve both purposes.

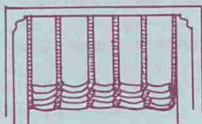
3. Roman shades—Work on the same principle as matchstick shades, except fabric forms pleats as it is raised and lowered. Adds a decorative note.
4. Austrian shades—Are shirred; usually of sheer to medium-weight fabric. Appropriate for more formal decor.



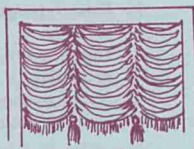
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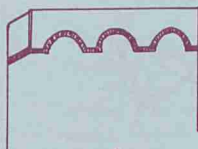
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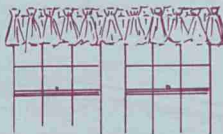
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## OVER-TREATMENTS

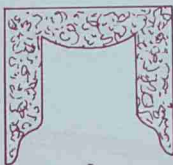
Over-treatments are often used with curtains, draperies, blinds or shades to give a finished appearance to the window. There are several choices, depending on the decorating effect you wish to achieve.



1

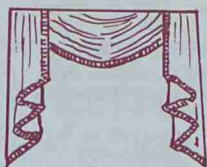


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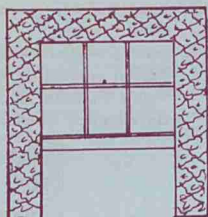


3

1. Cornices—Are made of lightweight wood construction and mounted on top of window facing or wall above window. They may be painted to match the walls, woodwork or covered with fabric to match or contrast with fabric of curtains or draperies.
2. Valances—Are made of fabric. May be pleated or shirred on rod or may be lined with buckram or permette to give body. Shaped to fit rod.
3. Contonnières—Are made in the same manner as cornices, except they are designed to extend across the width of and down the sides of the window.



4



5

4. Swags and jabots—Are draped in sections and fastened to the top of a valance board. They add the soft look which is appropriate for traditional or more formal rooms.
5. Lambrequin—A wooden frame designed to encase the window. It may be painted but more often is covered with fabric. A harmonizing curtain, drapery or shade is used to cover the window area.

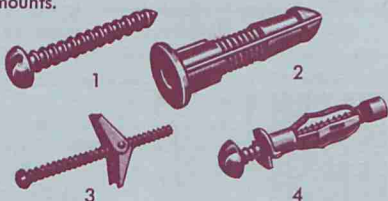
### DRAPERY HARDWARE

Once you have decided on the style of window treatment, you are ready to select and install the hardware best suited to your choice. This should be done before you estimate yardage for curtains and draperies.

The basic types of hardware used for the basic window treatments have been listed in the preceding section.

Fastening devices are available for mounting rods on different kinds of wall materials. Wood screws are used for casing mounts.

1. Plaster screws—Will hold lightweight draperies in plaster or dry walls.
2. Plaster plugs—Hold plaster screws more securely.
3. Toggle bolts—Needed for mounting heavy draperies.
4. Screw anchors or molly bolts—Will hold brackets securely on plaster or dry walls.

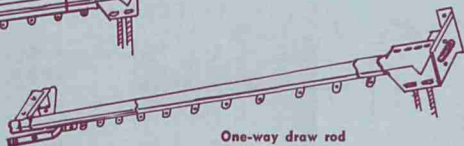


Rods are available in a wide selection of standard models. In addition, they can be custom cut and assembled to any size. They can be mounted on the wall or the window frame, on extenders or inside the casing. Rods for bow and bay windows are custom cut. Decorative rods have become a fashion trend. Many of the basic types are also available in a variety of decorative finishes. The rods then become an important part of the decorating plan.

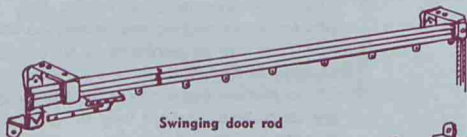
#### ROD TYPES MOST OFTEN USED



Two-way draw rod



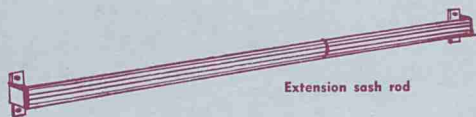
One-way draw rod



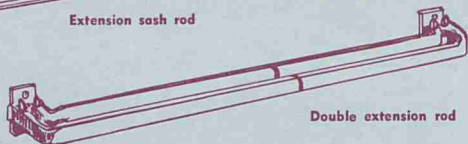
Swinging door rod



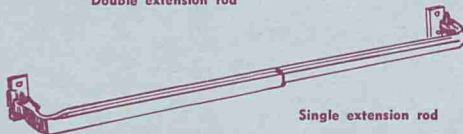
Cafe rod



Extension sash rod



Double extension rod



Single extension rod

### FABRIC SELECTION

Whether you are selecting ready-mades, custom-mades or making your own curtains and draperies, you have a wide range of fabrics to choose from. Color, design and texture will be your first considerations because your window treatments must harmonize with the other furnishings.

The following qualities in fabric will make your choice more satisfactory.

- A good hand—drapes well. Hangs in pleasing folds.
- Fibers that wear well.
- Colorfast dyes.
- Special finishes—stain-resistant, crease-resistant, drip-dry.
- Preshrunk.

Examine the fabric you like under both artificial light and daylight. See how it looks with the sunlight shining through it. If it is to be lined, hold the fabric and lining up together to see how the color or pattern is affected. Take home swatches to try with your other furnishings.

Always allow for enough fabric to insure graceful, full curtains and draperies. Be sure to check and recheck your measurements before you buy.

Braids, fringes, appliques and other types of trim are available to give your window treatments an individual or decorator finish. They can be an important addition to either the draperies you make or to those that you buy ready made.

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Prepared by Mrs. Lillie B. Little, Extension Housing and House Furnishings Specialist

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9-68-10M

Home Economics 100



# Selection and Construction of Window Curtains

Charlotte Womble • Housing and Home Furnishings Specialist

**E**VERY home can have lovely window curtains. Beauty at your window results from careful planning, a smart choice of fabrics, and good workmanship. With the present trend toward simplicity in home decoration, beautiful materials can be obtained which are inexpensive but which give satisfying results. Individuality can be gained by making your own curtains. This will give added charm to your room. It is more economical to stitch your own. Let your windows work wonders for your room. Select and make curtains which make your home both comfortable and attractive.

## What Curtains Can Do For Your Room

**Make a Room Livable**—Bare windows are harsh and cold. Soften them with curtains which hang in graceful folds. Because such large areas of glass are being used in the modern home, the effect of the window treatment is an important consideration. You should be conscious of the appearance of your curtains from the outside as well as the inside.

**Frame a View**—Curtains are effective in framing a nice view . . . or they may screen a less desirable sight.

**Control Light, Air, and Privacy**—A sheer material will permit light to enter the room without producing a glare. A less transparent fabric will give more privacy. Thus, the use of the room and the amount of privacy desired affect the choice of curtains. In homes where there is a baby or where other members of the family will sleep during the day, it is important to choose curtains which will cut out light. If curtains are used in a bedroom without shades or blinds, a fabric should be selected which will give privacy from the outside.



Figure 1. Curtains are effective in framing views.

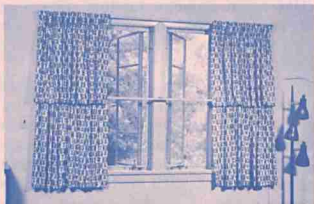


Figure 2a.

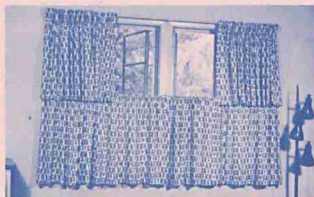


Figure 2b.

Draw curtains or those that slide on a rod are particularly good where flexibility is desired. They may be used opened or closed to suit individual needs. This will help control the amount of air as well as light. Tiered curtains can be used advantageously since either the top or the bottom can be regulated. (As shown in Figures 2a and 2b).

**Complement or Conceal Architectural Features**—A room may be made to look larger by extending the window treatment over a wider area instead of cutting up the space by treating windows individually. Floor length curtains make a ceiling look higher. Poorly shaped or badly placed windows can be improved by changing the proportion of curtains. The placement of the windows may determine the type of treatment a window will have. Do not accentuate undesirable windows with dominant curtains.

## How Curtains Can Have Eye Appeal

### Harmonize with the Furnishings in the Room—

Curtains should harmonize with the other furnishings and fabrics in the room. The character of the room . . . simple or elegant, traditional or modern . . . will influence the type of window treatment. Decide on materials which are harmonious. Beautifully textured fabrics combine nicely with modern furnishings. Satins and brocades call for a more formal setting. A nice design can give unity to the color scheme and reflect the character of the room.

### Relate to the Color Scheme in the Room—

When you are deciding on the right color or colors for your curtains, take stock of the walls, floor, furnishings, size of the room and the exposure. Curtains which are the same color as the wall will make the room appear larger. These are very popular in contemporary decoration. They furnish a nice background for the other furnishings in the room.

**Designed to Correspond with the Lines of the Room—**The line and shape of curtains should correspond with the basic lines and forms of the window and room, unless there is a need to camouflage a certain area. Be wary of criss-crosses and lines which conflict with rectangular windows.

The length should be determined by the architectural division of the walls and windows. Let your curtains stop at the window sill, the apron,



Figure 3. Proper length is important factor.

or just clear the floor. In-between lengths are unattractive.

Apron length curtains have many advantages and can be used in any room. They are more informal than floor length curtains, and they fit in nicely with an Early American or a modern decor. Since they require less material, you may feel that this is a way to make your curtains more economical. With the possible exception of the kitchen, floor length window treatments can also be used in any room. There is no set rule as to which length should be used in a particular room.

The major emphasis is on fullness. This is a "must" for a lovely curtained window. It is better to have generous folds of an inexpensive material than to skimp on a better grade.

Curtains well made and properly installed are as important as the right material.

Clean and fresh curtains are essential for a beautiful, eye-catching window. Consider the care required when you select your window curtains.

## How to Select Fabrics for Curtains

The great variety of inexpensive materials on the market makes curtaining an exciting venture. Any fabric which is thin and drapes well is suitable if it gives the right effect at the window. The fabric must be able to withstand sun, washing, and cleaning. Care should be taken to select fabrics which do not stretch, shrink, or pull out of shape.

You will be interested in the new properties of some fabrics. Finishes which make materials colorfast, resistant to soil, sunlight, gas fumes, and heat are now available. Cotton materials have stood the test of time and continue to be very desirable for curtains. New finishes for cottons permit easier washing and require less ironing.

Choose materials which will do the most for your room. Glass curtains may be obtained in sheer or less transparent materials. Casement cloths come in beautiful textures and colors and are available to any budget.

Thin materials with a design may be the basis for a color scheme in a room and give a nice appearance. The effect of light through the pattern is worthy of consideration. Many designs do not show up to an advantage from the outside. It may be desirable to use a solid color with the addition of a decorative trimming at the top, bottom or down the sides instead of an unlined curtain with a design.

The only way to be sure that a fabric will be satisfactory in a room is to try it. It is a good investment to buy about a yard of the fabric and try it at your windows before you purchase the entire amount.

## How to Measure Windows for Curtains and Estimate the Amount of Material

Often windows in a room are not identical, so measurements of each should be taken for curtains. Carefully measure from the top of the rod which should be installed exactly where it is to be used. (See Figure 4).

Curtains may hang to the sill, the bottom of the apron, or just clear the floor. Allowance should be made for a sufficient heading, raw edge turns, hem widths, casings, and shrinkage. If a material with a design is used, allow for the repeat in pattern. To determine the length of each panel with a repeat design:



## Types of Curtains

Curtains may be ruffled or tailored. There are many variations of each type. The style and material should be determined by the use, appearance, and your personal taste.

### Ruffled Curtains

A gay and charming effect may be achieved by using pretty ruffles, and they can go with appropriate furnishings in any room in the house.

There are many ways in which ruffle curtains can be made. Ruffles may be used across the top as a valance. They may be added down one or both sides of the curtain and across the bottom.

The type of material influences the width of the ruffle. A narrow ruffle can be made from a fabric which will gather nicely. Sheer materials without much stiffness can be used for 1½ or two inch ruffles. Droopy ruffles are never attractive. A crisp material is necessary for wide ruffles. Permanent stiffness in fabrics is desirable but fabrics are not guaranteed to remain stiff after repeated washings. A starch solution will bring new life to ruffles and prevent them from wilting.

There are many variations of ruffled curtains. Some variations are: (1) A solid material may be trimmed in ruffles of a contrasting fabric which repeat the color or design in the room. (2) The top tier of a pair of curtains may be decorated with ruffles and tied back, with straight panels for the bottom tiers permitting more privacy. (3) A ruffled valance may be used over straight panels. (4) Ruffles may be given that extra touch by the addition of rick rack braid, bias trimming, or a decorative stitch. (5) Two pairs of curtains with ruffles down the side may be hung on a single rod to give more fullness.

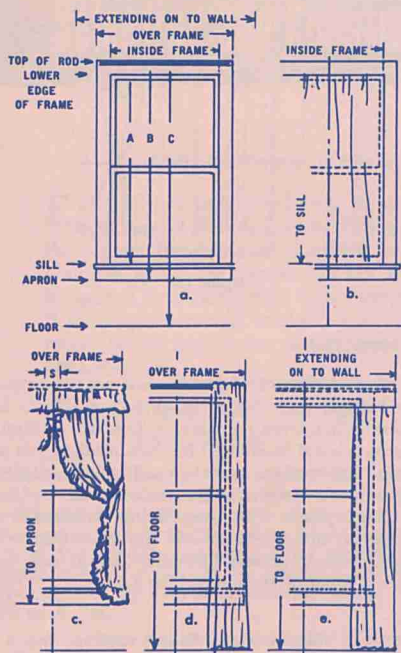
### Directions for Making Ruffled Curtains

(1) In measuring length of curtains allow for casing, heading, and shrinkage tuck. For each panel cut as many widths as necessary to give desired fullness. Trim selvage. Stitch widths together using plain or French seam. Stitch seams in same direction. Hem sides and the bottom of each panel on sewing machine, using 1/8 or 1/16-inch hemmer attachment.

(2) Ruffles may be any width from 1½ inches to 10 inches. The trend in window fashions and the fabric used influence the width of ruffle. Cut ruffles the desired width and 1½ to two times the finished length of the ruffle. Ruffles should be cut crosswise the material.

(3) Sew strips together with a plain seam, press, and pin. For ruffles with a heading, hem both sides of strips using a 1/8 or 1/16-inch hemmer attachment.

(4) Using ruffler attachment, gather strips and attach to body of curtain in same operation (Figure 6a). Follow instructions in sewing machine



S=Space to be covered by ruffles at center  
Figure 4.

Take the measurement for the finished panel and hems. Divide this number by the length of the repeat. Example:

Finished length for panel	83"
Allowance for top and bottom hems	9"
	92"
Length of repeat	15"

To get number of repeats per panel:  
 $92 \div 15 = 6 + 2$  inches

It will be necessary to allow for seven repeats to each pattern.

Multiply this number by the number of desired panels.

The width is measured according to the fixture length and the style of the curtains. Twice the width of the rod is the minimum fullness which should be used. It is better to have 2½ to three times the width. The sheerer the fabric, the fuller the curtain should be.

To cut curtain lengths, spread the material on a large, smooth surface. Measure each piece with a yardstick or steel tape and mark carefully. It is usually safer to pull a thread before cutting.

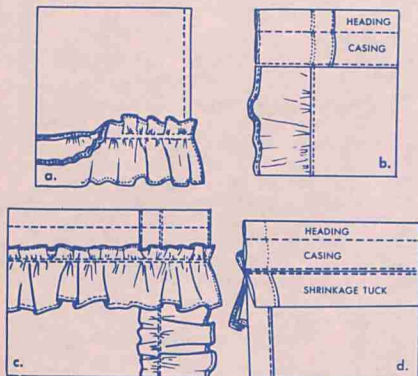


Figure 6.

manual. Stitch about a half inch from hemmed edge, depending on the width of ruffle heading desired. Use plain stitch at the top of the curtain for about eight inches which will form part of the casing and heading.

(5) Turn the allowance for the casing and heading to the wrong side. (Figure 6b).

(6) Hem valance ruffle on all sides. Gather with ruffler and attach to lower stitching line of casing. (Figure 6c).

(7) Shrinkage Tuck—on the wrong side of the curtain make a two to three inch tuck to allow for shrinkage. Baste in below casing. Machine-stitch, using a long stitch and a loose tension. (Figure 6d).

(8) Tie-Back—These may be made in a variety of ways. A plain tie-back made of a double thickness of material is the most simple type. A ruffle may be top-stitched to this for added decoration. Ruffles are sometimes used on both sides of the tie-back. It is important to have the tie-back long enough.

### Tailored Curtains

Many uses can be made of beautifully tailored curtains. They include straight panels which slide on a rod, cafe curtains, panels with a pleated heading, and variations of each. Materials used in tailored curtains may be sheer, semi-translucent, or opaque. The length will be determined by the window, the character of the room, and the effect you wish to achieve.

**Straight Panels**—A simple, but practical curtain, is the straight panel with a casing through which the rod can slide. Glass curtains are often designed in this manner and can be made of any suitable curtain material. Penny-wise prints may be fashioned in tiers for an effective window treatment. The simplicity in construction and ease

of ironing are features which you will appreciate in these curtains.

### Directions For Making Straight Panel Curtains—

- (1) Measure window for length and width.
- (2) Allow at least two inches for the bottom hem. A double hem will make most curtains hang better. A six-inch allowance at the top of the curtain will give a two-inch heading and a  $1\frac{1}{2}$  inch casing. This amount can vary according to the size of the rod and personal preference for the width of the heading. A two-inch shrinkage tuck is desirable for most curtain materials. Two to  $2\frac{1}{2}$  times the width of the space to be covered is usually the minimum amount of fullness if curtains are used without draperies.

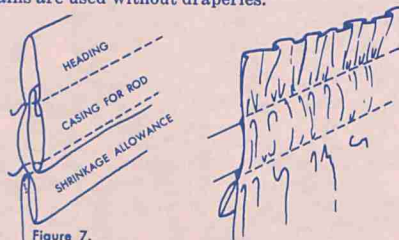


Figure 7.

(3) Cut the number of widths for each panel. Curtains hang better if the selvages are trimmed.

(4) Stitch all seams in the same direction. French seams are desirable for sheer fabrics. Loosely woven fabrics should have finished seams if a plain seam is used.

(5) Turn under side hem one to two inches. Baste, press, and stitch by hand.

(6) Turn under amount for heading and casing. Shrinkage allowance is machine stitched under casing. Figure 7).

(7) Pin bottom hems. Press, and hand stitch.

**Variations of the Straight Panel**—Ball or moss fringe, rick rack braid, bias tape, bands of contrasting materials, appliques, and decorative stitches can be used for gaily-colored panels.

For additional privacy and longer wear, a separate panel can be attached at the heading. Sheer materials are especially desirable made this way. Each piece can be ironed separately below the heading, which is an asset.

**Cafe Curtains**—Cafe curtains are pert, pretty, practical. They can be styled to fit most any setting. They are so versatile, and they can be made in a variety of materials. Rods and rings of different materials are good companions. Fabric loops sometimes replace rings to an advantage. Detachable hooks do not prove too satisfactory.

### Directions for Making Cafe Curtains

- (1) Cafe curtains are often hung in tiers or



designed to cover only the lower part of the window. Attach rod, or rods, to the window facing at a structural part of the window so that the rod is not too conspicuous. This means placing the rod at the top sash, at the top of the lower sash, or parallel to the natural divisions of the window if it is a double hung window.

For the bottom tier, measure from the rod to the sill for the length of the curtain. The top panel should be measured from the top of the rod to the lower rod plus an additional amount to cover the scallop of the bottom tier. An allowance of two to three inches for the hems is the minimum amount. Double hems will allow for shrinkage and will often make the curtains hang better. Measure the width of the rod and make the curtains at least twice this wide.

(2) Cut the number of needed widths. Trim selvages.

(3) Stitch a plain seam and press open.

(4) Turn under one inch side hems. Baste, press, and stitch by hand.

(5) With right side of the curtain turned up, fold back the five inch hem allowance at the top. Divide hemmed curtain into equal parts five to six inches wide and carefully mark with pins. (Figure 8a).

(6) Make a pattern for the scallop by cutting a piece of cardboard four inches wide and as long

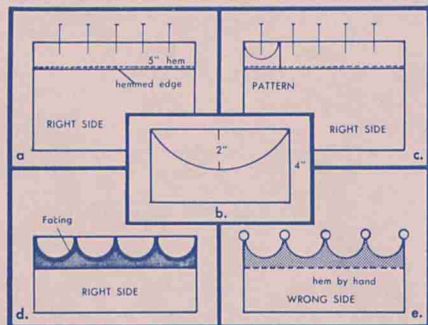


Figure 8.

as the distance between pins. Measure down two inches at the center of the cardboard and mark as it is shown in 8b. A round object the width of the space between the pins may be helpful in drawing the scallop. Carefully cut this pattern.

(7) Place pattern on this hem, with the center on the same grain line as the pin. Carefully mark each scallop allowing  $\frac{1}{4}$  inch for the tab. This amount can vary to suit personal taste. (Figure 8c).

(8) Stitch around scallop and on the sides the width of the hem. Trim seam allowance  $\frac{1}{4}$  inch above the stitching line. Turn to wrong side and press. Turn under hem allowance and stitch by hand. (Figure 8d).

(9) Sew on rings and hang on rod to get the correct length. (Figure 8e). Press hem and stitch by hand.

**Variations of Cafe Curtains**—V-shaped scallops may be used for interest instead of the U-shaped scallop which is more common.

The facing may be used as a decorative feature with a contrasting material stitched on the right side. A repetition of this may also be used at the bottom. Follow the same directions as given for a plain heading with the following exceptions:

(a) Lay a five inch strip of contrasting fabric along the top of the curtain, both wrong sides up. Leave  $\frac{1}{2}$  inch hem allowance at both sides.

(b) Using pattern as described above, draw scallop  $\frac{1}{4}$  inch from the top of the curtain and facing.

(c) Turn in the hem allowance at each side. Press, and stitch along the scallop mark.

(d) Cut, leaving  $\frac{1}{4}$  inch seam allowance. Clip almost to stitching line in several places along each scallop. Turn to the right side and turn under hem allowance. Machine stitch or blind stitch by hand.

Various trimmings can be used for that individual touch. Braids, fringes, appliques, and narrow ruffles can make your cafe curtains unique.

**Pleated Curtains**—Curtains with a pleated heading are nicely tailored and have regulated fullness which makes them hang beautifully. They may be used as curtains to hang just at the side of the windows or to partially cover the window. Very much in style are draw curtains which move on a traverse rod and can be regulated to control light, air, and privacy. Two and a half times the width of the window is the minimum fullness for draw curtains. They may hang to the sill, apron, or floor. Tiered curtains are sometimes made in the same manner.

#### Directions for Making Pleated Curtains

(1) Measure window for the desired length. Allow three to six inches for hems. Double hems are desirable. If three-inch crinoline is used in the heading, allow three and one-half inches for the top hem. Allow more if a wider heading is used.

(2) Cut as many panels as needed for the desired fullness.

(3) Cut the selvages from the edges too. Join two or more widths together with a French seam so that no raw edge is visible. Measure and turn under the side hems,  $1\frac{1}{2}$  to 2 inches. Pin, press and stitch by hand.

For the heading, cut the crinoline  $\frac{1}{4}$  inch shorter than the width of the finished curtain. On the wrong side of the curtain, measure down 1 inch more than the width of the crinoline and mark.

Place the crinoline on this crosswise mark and pin it to curtain (Figure 9). Fold the excess fabric over the edge of the crinoline and machine stitch. Turn under the interfaced hem, pin and stitch by hand (Figure 9).

If you use a sheer fabric, measure down twice the width of the crinoline and mark. Place the crinoline on this crosswise mark and pin. Fold excess fabric over top of crinoline, pin and machine stitch. Turn under interfaced hem—a double layer of drapery covers the crinoline on front. Pin and stitch by hand.

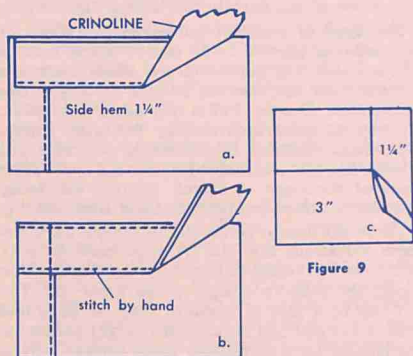
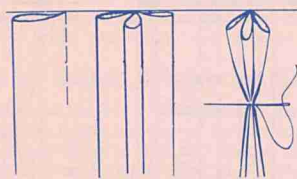


Figure 9

Pin in bottom hems and stitch. Then pleat according to directions.

### Headings

A variety of top finishes are possible. That depends on the effect you want to achieve. The use of pleats is one of the best methods of distributing fullness and making curtains hang in graceful folds. For draw curtains it is necessary to know the exact finished width before you begin pleating (Figure 13).



French pleats

Figure 10

### French Pleats

The number of pleats depends on the amount of fullness to be taken up on the rod. Pleats are usually in uneven numbers, 5, 7, 9, etc. At least 5 inches should be allowed for each pleat. If you are using light weight materials and unlined curtains, 6 inches for each pleat is more desirable.

Mark pleats with pins. Bring stitching lines together. Stitch a tuck from top of curtain to  $\frac{1}{4}$  inch below interfaced hemming. Divide each tuck into 3 small pleats and tack to hold.

### Measuring for Draw Curtains

For draw curtains, the finished width for each section must be determined by the length of the rod plus an overlap and return. Subtract this measurement from the hemmed panel. This will give the amount of material which can be used in pleats.

With the minimum of five inches in each pleat, figure the number of pleats and mark. The distance between the pleats does not have to be a certain amount, but usually ranges from three to five inches. If the pleats are too far apart, the curtain will look skimpy.



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decorating  
with

# SLIP COVERS



# decorating with SLIP COVERS

New slip covers can transform a worn, faded piece of furniture, change your color scheme, allow for seasonal changes of furniture, or sometimes re-style to give more pleasing lines. If you can make your own slip covers, they may also be an inexpensive way to decorate.

## Styles

Plans for any slip cover begin with the style of the chair (sofa or sofa bed) itself. A chair with good lines is easier to work with since the structural breaks can be used as guides for seam lines (figure 1).

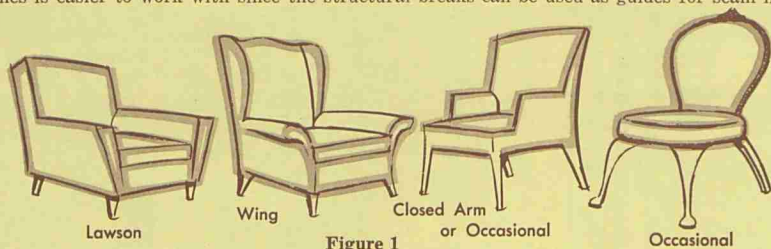


Figure 1

Completely padded chairs are most easily slip-covered. If your chair has wooden trim around the back or on the arms, it is usually best to pad these parts before making the slip cover. Without padding, the material slips and wears along the wooden edges.

The springs and padding on any chair must be smooth and firm if the cover is to look and fit well. If new padding is needed, add it before fitting covers.

A pleated or gathered flounce may be used, depending on the style and finish you prefer. The pleated flounce (single or boxed at regular intervals or pleated only at corners) adds a tailored

finish. A gathered flounce is suitable for lightweight materials or in the less formal rooms such as bedrooms and dens (figure 2).

If you prefer to finish the cover without a flounce, the lower edge may be faced and fastened underneath the chair.

Seams are usually tailored with covered cording to match or contrast with the fabric, but various types of fringes and trims may be used instead of cording. The finish and trim are usually suggested by the lines of the chair and by the general decorating plans for the room in which the cover will be used.

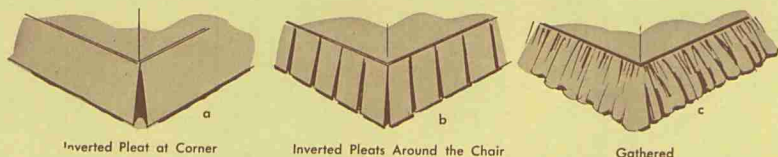


Figure 2

## Fabric Selection

Many colors, textures, designs and weaves are available for making slip covers. Select a fabric which is in keeping with your furniture, your house and the way your family lives.

The following factors should be considered in choosing a slip cover fabric:

1. A firm weave of sufficient weight to hold its

shape and fit snugly is easier to work with and will wear much longer. Loosely woven fabrics ravel easily, stretch, and pull out at the seams.

Materials wear more evenly if the lengthwise and crosswise yarns are about the same in number, size and strength. Long, loose yarns on the right side are likely to catch and pull.



Some of the new stretch fabrics have possibilities for assuring snugly-fitted covers.

2. Think about the colors which fit into your room. For a pleasing effect, all colors in the room must harmonize. Solid colors are often used to blend with other colors or to give contrast or emphasis.

3. A pattern may add interest if no other design is used in the room. Stripes, florals, or geometric designs should be in proportion to the size of the piece of furniture and the room. For example, large patterns generally look best on large pieces of furniture used in the large, formal rooms; small, all-over patterns are more pleasing on small furniture used in informal settings.

Extra care is needed to match and fit designed fabrics. This often means buying extra material to allow for matching. However, the added trouble and expense may be worthwhile since patterned fabrics usually show wrinkles less and soil less quickly than do plain ones.

If the design is printed, not woven in, draw a thread across the width to be sure the motif is straight with the grain.

4. Texture is also important. Nubby textures express the feeling of informality and easy living in contrast to the formality implied by the smooth, shiny-textured fabrics.

5. Fabrics which launder easily without shrinking are desirable. Look for the label which reads "Sanforized" or "Preshrunk," which means the expected shrinkage will not be more than 2%.

6. Colorfastness to light, washing and dry-cleaning is another important characteristic to check. Look for this information on either the label or the selvage.

7. New finishes which repel moisture and soil and resist wrinkles can be found on many fabrics.

8. After selecting your fabric, it is often a good idea to test it at home. Borrow or buy a generous sample that you can tuck over the piece to be covered. This way, you can be sure before much money is invested.

### Estimating the Yardage

The amount of material needed will be influenced by these four factors:

- Style of the slip cover.
- Size of the piece of furniture to be covered.
- Width of the fabric you have selected.
- Design of the fabric. The size of the design, the repeat and length of the repeat will influence the extra yardage needed. You may need to add 1½ to 2 yards extra for loss in centering a design.

If the cord is covered in the same material, you will need a minimum of ¾ yard extra for

the average chair. A tailored flounce (with muslin lining) requires an extra yard. You should also allow for 1½ inches on all seams (except the cushion and flounce, where one-inch seams are enough). Four to 6 inches for tuck-ins at the arms and seat are usually needed.

With these figures in mind, take the lengthwise and crosswise measurement of each section of the piece of furniture. (See figure 3 for diagram showing sections to measure.)

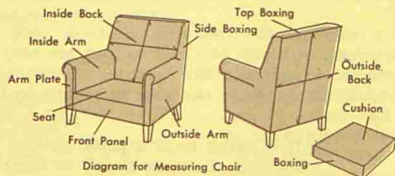


Figure 3

	Lengthwise	Crosswise		Lengthwise	Crosswise
Inside back	_____	_____	Arm plates (2)	_____	_____
Outside back	_____	_____	Front panels	_____	_____
Seat	_____	_____	Flounce	_____	_____
Inside arm	_____	_____	Cushion (2)	_____	_____
Outside arm	_____	_____	Boxing	_____	_____

With the figures recorded (allowing for seams, hems and tuck-ins), decide on the pieces which will fit on the width of fabric you plan to use (figure 4).

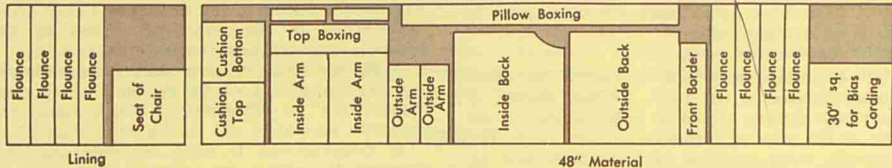


Figure 4

Add the lengths together and divide by 36 inches. This should give you the exact yardage you will need.

The following table is a guide for the average yardage required to make slip covers for some of the types of chairs most often covered.

**Average Yardage for Slip Covers**  
(Allowance made for cushion and founce with kick pleat at each corner—not for cord)

	36" material	48" or 50" material
Average Lawson chair	9 yards	7 yards
Wing chair	10 yards	8 yards
Boudoir chair	8 yards	5 yards
Loveseat (2 cushions)	15 yards	11 yards
Sofa	22 yards	16 yards
Wooden arm chair	7 yards	4½ yards

### Slip Cover Construction

**Making the Pattern.**—Professionals seldom use a pattern, but most homemakers can save time, money and material by using a pattern. Although a muslin pattern is preferable, a heavy paper pattern will do.

Before making the pattern, establish the center of the inside back, seat, front panel and outside back of the chair. Mark these points with pins or chalk so they are easy to see and use.

From the measurements taken to estimate the yardage, cut rectangles from the paper or muslin to match each section of the chair. These pieces can then be pinned on the chair, fitted and shaped to serve as the pattern (figure 5).

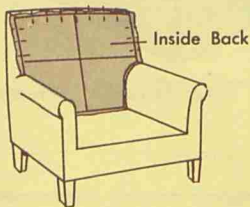


Figure 5

It is easier to fit a paper pattern without seam allowances, but mark each allowance clearly so there will be no mistake in cutting. Also, mark the lengthwise and crosswise grain line on the pattern.

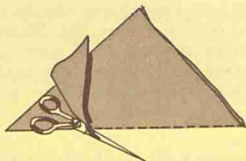
**The Cutting Lay-Out.**—When all pieces of the pattern are cut, pin them to the fabric in the way which will produce the least waste. Check carefully before cutting to see that adequate seam allowances are made for each piece. Mark all allowances (seams and tuck-ins) with tailor's chalk (refer to figure 4).

If there is ample fabric, the inside back and seat may be cut in one piece, allowing for the 4-inch tuck-in. If fabric must be saved, the seat may be cut from less expensive fabric.

**Covering the Cord.**—Covered cording may be purchased or plain cording may be covered with your fabric. If you cover the cord, the material and cord should be preshrunk.

Covering strips must be cut on a true bias. Several yards of bias can be cut in a continuous piece by this method: Take a 30-inch square of material, fold diagonally and cut on the fold (figure 6).

Figure 6



With right sides together, turn the top piece a quarter turn and match the lengthwise edges. Make a  $\frac{1}{2}$ -inch seam and press open (figure 7).

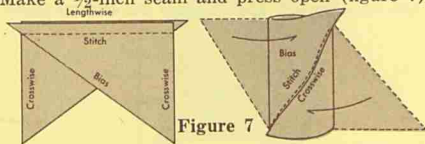


Figure 7

Lay the fabric flat, wrong side down. Fold each triangle in half to form rectangle. Put the crosswise edges together so that the edges extend  $1\frac{1}{2}$  inches at each end. Sew  $\frac{1}{2}$ -inch seam and press open.

You now have a continuous cylinder with a  $1\frac{1}{2}$ -inch extension at each side, which starts and ends the bias strip. Fit this over the end of an ironing board and use a measuring gauge to cut the strip evenly (figure 8).

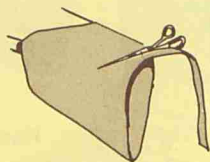


Figure 8

Use an adjustable cording foot to stitch the cord into the bias strip. Keep the edges of the strip together and guide the fabric without either pushing or pulling (figure 9).

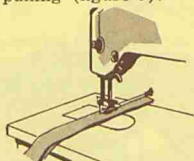


Figure 9

**Steps in Construction.**—With the right side of the fabric up, pin the inside back section in place. Insert pins at right angles to the edge of the chair. Mark around the arm curve. Clip the curved edge to within  $\frac{1}{2}$ -inch of the stitching line for better fit (figure 10).



Figure 10

Pin the covered cord on the front edge of the boxing. (It is often better to omit the cord around the curved seam since this will tuck into the curve.)

After machine-stitching the cord to the boxing, it is fitted on the top of the inside back. Lap cord edge over the chair back, matching seam line, then pin and top stitch (figure 11).

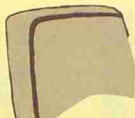


Figure 11

Join the seat section to the inside back, making a plain seam. No cording is necessary since this is the tuck-in. If another fabric is used for the seat, the front panel of the slip cover fabric should extend about 3 inches back under the cushion. No cord is used for this seam (figure 12).

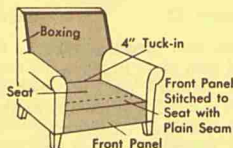


Figure 12

When fitting the arms, begin with the outside arm and pin the cording to the top seam line, then stitch (figure 13).

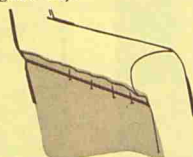


Figure 13

Place the inside arm on the chair and anchor the front on the seam line with the  $\frac{1}{2}$ -inch seam allowance extending over the arm plate. If the arm is overstuffed and fullness cannot be eased in, tucks may be pinned (figure 14a).

The curved arm area is clipped to correspond with the curved area of the inside back, leaving the 3-inch tuck-in. The seam line can then be marked with chalk.

Fit the corded outside arm piece to the seam line of inside arm piece. Pin and top stitch (figure 14b).

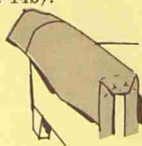


Figure 14A



Figure 14B



Fit the arm plate to the chair and mark the seam line (figure 15).

Pin cord around the piece on the seam line—except across the bottom. Be sure to check the fit of the armplate before stitching.

For a smooth look when you sew the cording to the fabric, pull the fabric slightly while easing the cording. Clip on the curved edge as shown (figure 16).



Figure 15

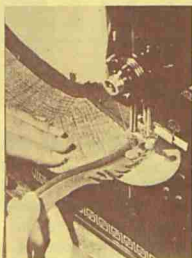


Figure 16

With the arm pieces pinned to the chair, pin the corded arm plate in place. Be sure to keep the grain line straight as you place pins at right angles to the corded edge. Leave the inside edge open below the seat (figure 17).

Remove the entire arm unit and top stitch front arm plate in place (figure 18).

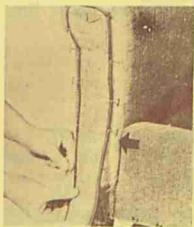


Figure 17



Figure 18

Join the arm units to the back and seat unit. A plain seam or lap seam may be used here (figure 19).

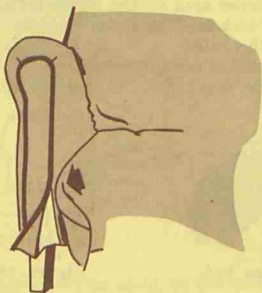


Figure 19

Tuck in and smooth out the fabric along the chair arm crevice (figure 20). There is often no crevice where the top of the arm joins the back. If this is true, stitch to fit. Then anchor the cover to the chair, fitting it carefully.

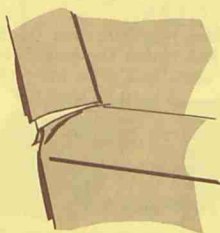


Figure 20

Stitch the cording on the seam line of the outside back. Then pin in place and stitch to the other units (figures 21, 22).

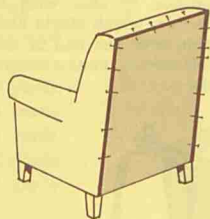


Figure 21

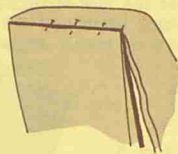


Figure 22

Finish the placket with gripper tape or heavy-duty zippers. If gripper tape is used, unsnap the tape and work first on the corded side of the opening (figure 23).

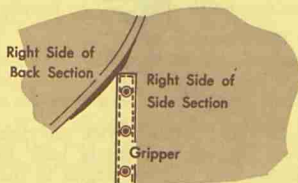


Figure 23

Start at the top and lay strip flat, right side up. Stitch both edges. Snap together, pin and stitch the other side of tape to the uncorded side of the opening. Stitch across top of placket opening.

**The Flounce.**—A tailored flounce hangs much better if it is lined. A pre-shrunk fabric, such as unbleached domestic, will be satisfactory for this



purpose. The depth of the flounce should be in proportion to the chair, usually about 7 inches finished. If the lining is cut 2 inches narrower than the flounce, this allows for a half-inch seam and a 1½-inch hem of fabric on the under side when the two are stitched together, folded and pressed.

**For Tailored Box Pleats at the Corners.**—Begin fitting the flounce at the back corner where the placket is to be made. Leaving 3 or 4 inches to extend toward the back side, make a half pleat. Work toward the front of the chair (figure 24).

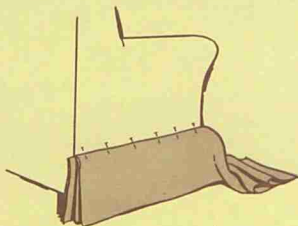


Figure 24

Pin in 4 to 5-inch inverted box pleats at each corner. Being careful to keep the pleats pinned in, remove the flounce from the chair and stitch the cord to the top edge along the seam line (figure 25).

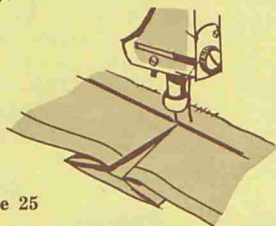


Figure 25

Repin the corded flounce to the slip cover. Turn the seam down as you place the pins at right angles to the cording. Make sure the flounce is pinned on straight and stitch (figure 26).

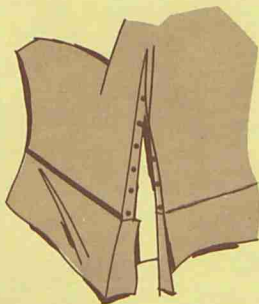


Figure 26

**Covering the Cushion.**—The placket in the boxing extends approximately half way around the pillow for ease in taking the cover off and putting it on (figure 27).

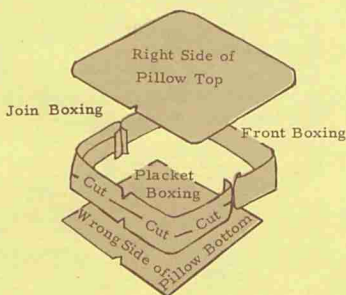


Figure 27

To use gripper tape, the back boxing is cut 3 inches wider than the strip for the front side. It is folded lengthwise down the center and cut in two. Attach one side of gripper tape to the wrong side of the fabric; attach the other side to the right side of the fabric (figure 28).

With gripper-tape strips right side up, stitch on both edges. Snap together. Join the front and placket section so that the boxing fits the cushion snugly.

Pin the cording to the boxing (figure 29).

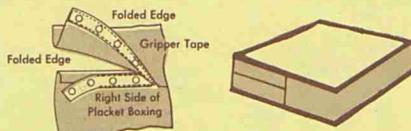


Figure 28

Figure 29

To join the ends of the cording, open the stitching of the cording, clip the cord so that it will come together and overcast to hold it in place. Join the bias strip with a plain seam and press open. Stitch the cording in place. Place boxing around pillow. Put the pillow top in place. Tuck under the corded edge of the boxing. Pin in place and stitch. Attach the bottom in the same manner (figure 30).

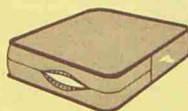


Figure 30

## Materials Needed for Making Slip Cover

Furniture to be covered  
Fabric—for slip cover  
Trimnings—cord or fringe  
For pattern—4 to 5 yds.  
    muslin or heavy brown paper  
Heavy duty thread to match fabric  
Gripper tape or zippers for plackets  
Box of pins  
Tape measure

Yardstick  
Sewing machine  
Sharp shears  
Needles  
Tailor's chalk  
Adjustable cording foot  
Iron and ironing board  
Good work table  
Low table to elevate chair

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# HOUSE PLANNING AIDS



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October 1966

## BEDROOMS AND CLOTHES CLOSETS

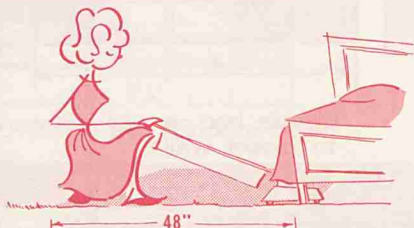
Here are some general reminders to aid you in planning the bedrooms for your home. A three-bedroom house is considered minimal for the average family, and a bedroom on the first floor of a two-story house is very convenient. Locate the bedrooms, if possible, to take

advantage of prevailing breezes. Provide a direct entrance from a hallway to each bedroom. Remember that hallways, closets, and bookshelves help to insulate bedrooms from noisy living areas.

### SPACE REQUIREMENTS FOR

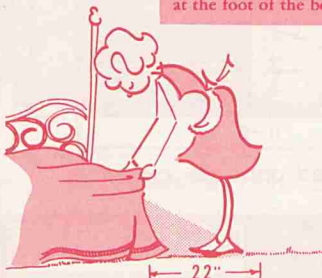
#### CLEANING UNDER THE BED--

48 inches is needed. You may have to move a piece of furniture to provide this amount of space.



#### MAKING THE BED--

Allow 22 inches at either side and at the foot of the bed.



#### USING THE CLOSET--

Allow 36 inches in front of the closet. For dressing, 42 inches is needed.



#### USING THE DRESSER--

Allow 40 inches in front of the dresser.



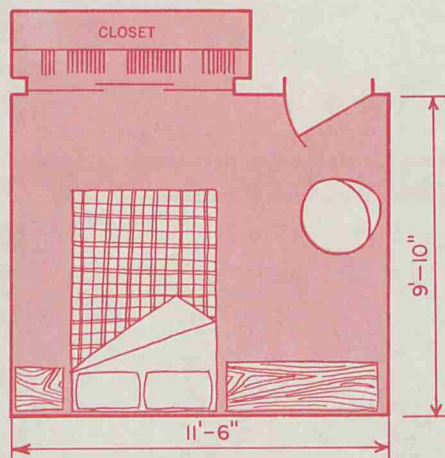
## SUGGESTED BEDRO

The bedroom plans on these two pages show the minimum size rooms, with closet and entrance to the room located as shown, for double beds, twin beds, and single beds. The recommended amount of space has been allowed for using the dresser, making the bed, using the

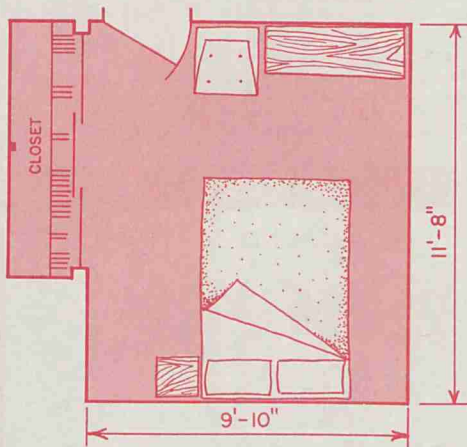
closet, and cleaning.

In a room with parallel twin beds, only one bed should have to be moved for cleaning and making.

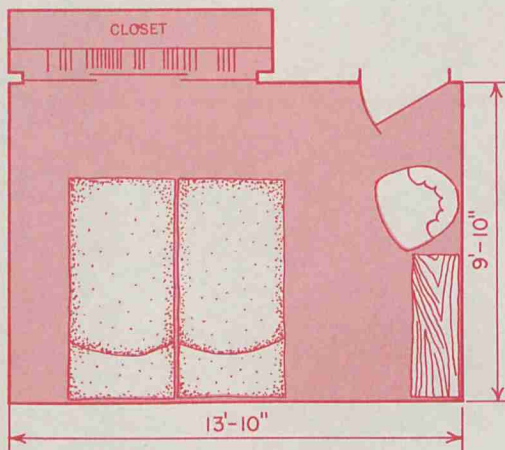
Locate the dresser or chest so you have access to it from the hall door without having to go around the bed



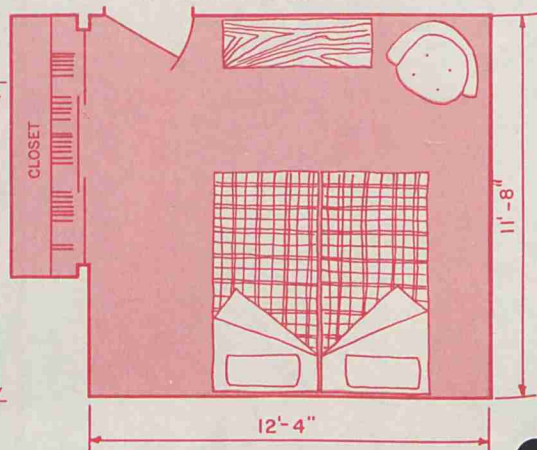
Double bed opposite closet.



Double bed on wall adjacent to closet wall.



Twin beds opposite closet.



Twin beds on wall adjacent to closet wall.

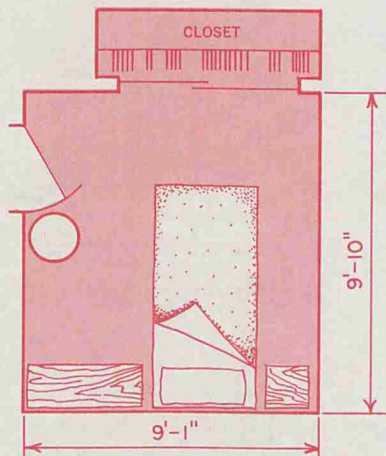


# ROOM ARRANGEMENTS

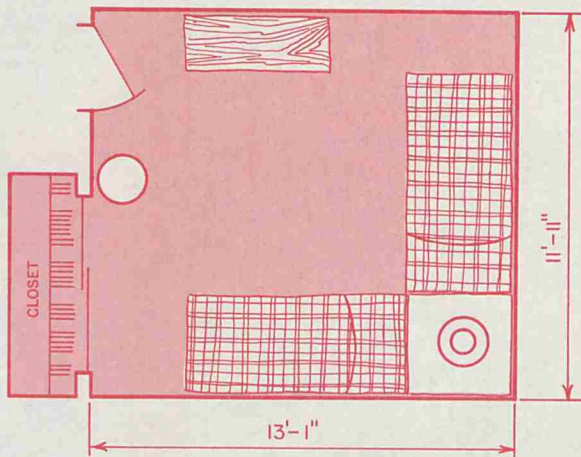
to get to it. Since bedroom furniture is heavy, few pieces should have to be moved when the room is cleaned.

The location of windows and doors in bedrooms should be considered in relation to furniture arrangement. In the planning stage, it is often possible to

relocate windows and doors so that better use can be made of floor space. At least one window in each bedroom should be low enough so that a person can see out from a sitting position. For safety in case of fire, one window should provide easy exit.



Single bed opposite closet.

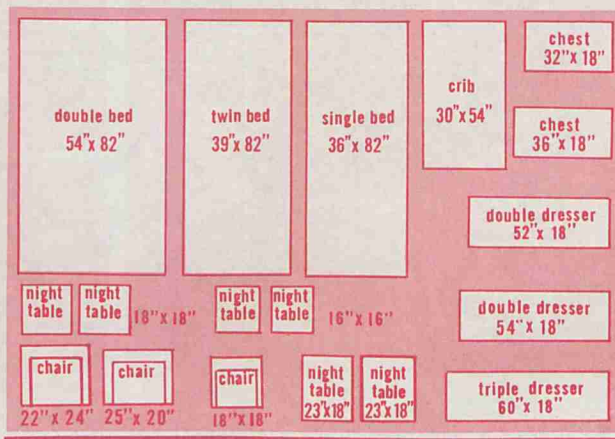


Twin beds at right angles.

## BEDROOM FURNITURE CUTOUTS

Use cutouts like these, drawn to  $\frac{1}{4}$ -inch scale, to try different furniture arrangements on your floor plan. Trace the drawings that most nearly represent the size of your furniture, and cut out your tracings.

OVERALL BED SIZES		
Type	Width/in.	Length/in.
Crib	30	54
Youth	35	68
Cot	30	78
Single	36	82
Twin	39	82
Small $\frac{3}{4}$	42	82
Large $\frac{3}{4}$	48	82
Double	54	82
Queen	60	82
King	78	82

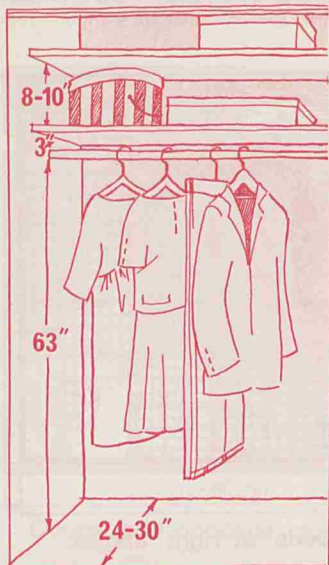


# CLOTHES CLOSETS

Clothing should be stored at or near the place where garments are put on and taken off.

The recommended dimensions for depth (front-to-back) and height (vertical) are more or less standard and

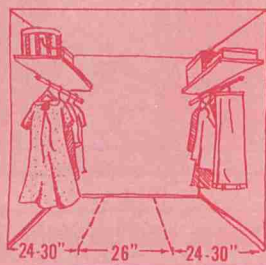
do not depend on the number of garments to be stored. The width or lateral dimension varies with the number and kind of garments.



For accessibility, reach-in closets should have a full-front opening. A closet with a conventional door limits the storage space on the sides and near the ceiling. Doors for full-front closet openings can be sliding, folding (accordion-type), or hinged.



Walk-in closets that have clothing rods on opposite walls should have 26 inches of free floor space for passage. A conventional door is satisfactory for walk-in closets.



## APPROXIMATE ROD SPACE REQUIRED PER GARMENT

Garment	Inches
Men's and Boys' Overcoats	3 1/2
Topcoats, jackets	2 1/2
Suits	3
Trousers, shirts, raincoats	2
Women's and Girls' Coats	4
Suits	3
Dresses, jackets, raincoats	2
Skirts, blouses	1 1/2

## MINIMUM LENGTHS OF RODS FOR BEDROOM CLOSETS 1/2

Bedroom Closet Locations	Closet Used for Storing	
	All Clothing (ft.)	All Except Coats (ft.)
Master	8	7
Second	9	7 1/2
Other	7	6 1/2

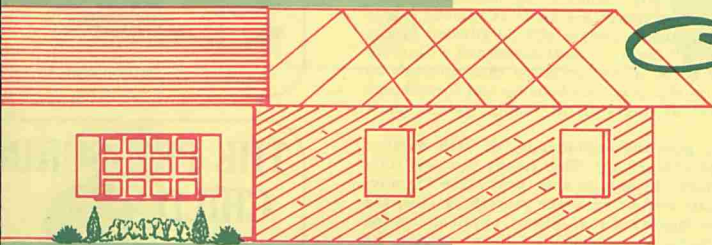
## RODS FOR CLOTHES CLOSETS

Material	Maximum Width Between Supports (ft.)
1 1/8" Wood	3
1 3/8" Wood	4
1 5/8" Wood	5
3/4" Pipe	6
1" Pipe	8
1 1/4" Pipe	10

<sup>1</sup>Chore clothes excluded.

Based on cooperative research with the Southern, Northeastern, North Central, and Western regions.  
Prepared by: Constance D. O'Brien and Genevieve K. Taylor—AGRICULTURAL RESEARCH SERVICE

# Homes CHANGE as Children Grow



The house provides for a child's sleep, play, work, privacy, pleasures, and the formation of his habits and values. Time and thought spent in planning furnishings that will meet his needs pay great dividends.

Select furniture that has several uses and that can be adapted as the child grows from one stage into another. This will help solve the problems of little space and little money. (See illustrations for suggestions.)

In grandpa's day the family lived in the house he was born in or one he had built for his bride. They may have added a bed or two as little ones came along, but furnishings remained much the same throughout that family's span of life.

The offspring had to adjust to a home and set of furniture built for adults. Since children were supposed to be seen and not heard, complaints were few.

Since then much has been learned about how children grow and develop. No longer are they treated as miniature adults, but as maturing individuals whose needs change with each stage of development. In addition to traditional functions, today's house and furnishings should be used in helping to meet these needs. Adaptability is the key.



The developmental stages are generally categorized as follows:

Infancy—birth to 2½ years      School Age—6 to 12 years  
 Preschool—2½ to 5 years      Teenage—13 to 19 years

The trend is toward giving the baby a special place of his own and re-adapting the family housing for the comfort and convenience of the child as he grows older. Values held by the family influence the ways and extent to which changes in the house and its furnishings are made at various stages of the family life cycle. Decisions about these changes will be affected by the family's value orientation. The "economy" family is most concerned with price and durability and would hesitate to spend money on items that wouldn't be useful for several years. They recognize that planning housing and furnishings with the idea of adapting them to several stages of the family cycle is much more economical in the long-run.

The family with "personal" values puts the individuality of each member first, and stresses personal enjoyment and privacy. This family is most likely to provide space for children and make changes as they grow. The "family-centered" group puts the family and its well-being above everything else; the emotional ties of the family are more important than purely physical factors. The "prestige" family regards the house as a symbol of their success; its impressiveness is more important than its usefulness.

Children learn values at home. Provision should be made for developing desired values through the physical arrangements in the house and its furnishings. For example, an appreciation for beauty and a sense of good taste will be fostered if the child is surrounded with rooms which are attractive and well-designed. A child learns responsibility earlier if furnishings are planned so he can share in their care.

Each phase of the child's life is characterized by certain activities and needs which require particular furnishings, equipment, and arrangements. But remember, children develop rapidly. This means there will be constant adaptations made in the use of rooms, and some changes in furnishings and equipment.

Most families will have children in two or more age groups at the same time. It will be necessary in this case, to determine the most important needs of each child and attempt to dovetail them as money and space permit. Both family activities and interests of individual members must be considered.

Don't forget that adults live here too. Adapt the home so that the normal activities of the children at various ages do not violate the parents' values. Parents must continue to find satisfaction in their home, rather than feel it has been turned over to the children completely.

A family with children needs a house and furnishings that are easy to care for and are not easily damaged or destroyed. Consideration of these two factors will save money, time, and energy.

It is important to maintain healthy physical conditions in the home at all times. It should be clean and sanitary, well ventilated, and adequately heated. Since many activities of children take place on the floor, drafts should be directed upward, and the floor warm or carpeted. If a rug or heated floor isn't possible, spread a blanket on which the child can play.

Parents should be on constant watch for hazards that may affect the safety of the children. Home accidents are the leading cause of death in childhood—one-third of deaths between ages 1 and 14, and two-thirds of deaths under age 5. The following are some safety features to look for: handrails on stairs; stairs clear of objects; light at top and bottom of stairs; rugs anchored to floor; floors not too highly waxed; guards around floor furnaces, fireplaces, and open flame heaters; window guards on upstairs windows; medicine, poisons, thin plastic bags, knives, and other sharp objects out of reach.

## THE INFANT



From birth to two years of age the baby is dependent on others. It is a period of rapid change. Following is a list of some developmental needs, characteristics, and activities of infants.

1. Sleeping—sleep periods are longer and more frequent than for other family members
2. Eating—messy
3. Bathing—needs protection and a warm place
4. Elimination—begins to cooperate
5. Playing—learns to control body
6. Socializing—needs to be around people, both children and adults

Housing and furnishings requirements are more specialized than at any other stage. However, this period is short-lived. If money and/or space are

scarce, the family may need to make distinctions between necessities and luxuries. The following are suggestions for adapting areas of the house to meet the infant's needs.

• Living areas (living room, family room): Play space in the living area is important for socialization. It may be a play-pen or fenced-off corner.

Provide low storage for toys in the play area; it may be open shelves or an open toy box. Washable walls are a must. Put away or place out of child's reach "good" objects.

• Kitchen-dining areas: A high-chair or baby tender is needed for feeding. While baby is nursing, mother needs a comfortable chair, which may be in another room.

Rearrange storage space to make room for steri-

lizing and food-warming equipment, baby bottles, baby food, etc.

Find space for play-pen or other play arrangement for infant while mother is working in kitchen.

• Bedroom: A crib with adjustable sides and firm mattress is needed. A basket or bassinette may be used at first. Infant's room should be next to parents' bedroom. (If baby sleeps in the parents' bedroom at first, arrangements should be made to move him by the third month.)

Diapering requires a padded surface at standing height such as a chest top, crib, or bathinette. Shelves above the diapering surface, a chest of drawers, or space under the bathinette provide within-reach storage for diapering supplies. Other requirements include storage for baby's clothes, a night light, and a comfortable chair with arm rest

of proper height for night comforting and feeding.

• Bathroom: Until the infant is big enough to be bathed in the bathtub, use a bathinette, large lavatory, large dishpan, or the kitchen sink. Other essentials for bathing are adequate heat, storage for bath supplies, and a surface for dressing baby.

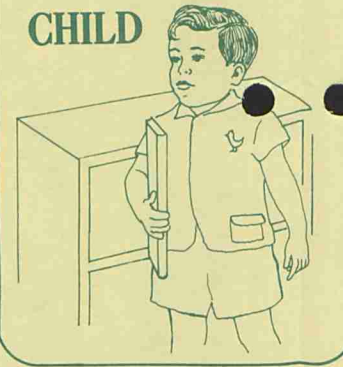
When the infant begins to cooperate in elimination, provide a potty chair or child's toilet seat.

• Laundry area: A large water-proof pail for soiled diapers is the only necessity.

A washing machine may be needed more now than at any other stage in the family cycle. A dryer is also desirable.

Extra storage space for clean and soiled diapers will be needed if a launderette or diaper service is used.

## THE PRE-SCHOOL CHILD



The 2½-to-5-year-old is emerging as a social being who participates in family life. The preschool child's chief developmental tasks and characteristics related to housing are:

1. Acquiring sleep routines
2. Establishing good eating habits
3. Mastering toilet training
4. Playing—both quiet and active play to develop muscles and coordination
5. Establishing identity—needs to experience ownership
6. Learning sex role—imitates adults and likes to "help" parent
7. Learning to assume responsibility
8. Becoming independent in such activities as dressing, eating, toileting, etc.

9. Learning about the environment—curiosity

10. Socializing—needs to be with people, both children and adults

Housing and furnishings should promote growth of the child and allow some privacy and comfort for the parents. Putting out of reach articles the child can't have carries over into this stage. Washable walls are still a good idea.

• Living areas: Play space large enough for more than one child should be located where mother can supervise. A low table and chair are good for quiet games, pasting, crayons, etc. Provide low storage for toys, books, and creative materials.

In some homes, the play area and equipment may be in another room. Every child needs a small chair

that fits him for relaxing with the family or watching T.V.

• Kitchen-dining areas: If the pre-schooler eats at the table with the family, he needs a high-chair, a chair seat, or leg extenders on the regular dining chair. If the child does not eat with the family, a small table and chair are preferred. (This doubles for games, etc., as mentioned above.)

• Bedroom: A junior size or regular size bed replaces the crib. A night light for mother's convenience is still advisable. The preschooler's room is still near the parent's bedroom. He needs a place that is his; if a separate room is not possible, at least a corner should belong to him alone.

A low chest for clothes and low rods and hooks in the closet encourage independence and responsibility. A low mirror fosters good grooming habits.

A child enjoys bright colors, which can be used discriminately in his bedroom. Pictures hung at his eye level encourage appreciation of good art.

• Bathroom: Bathing takes place in the bath tub now. A step to enable him to reach the lavatory is desirable. Provide a low rod for his towel and washcloth, and a low place for his toothbrush. Toileting requires first a potty chair or toilet seat. A step or stool by the commode will enable him to become independent in this routine.

• Outdoors: A large space, preferably fenced-in, is necessary for running and active play. A covered concrete area, such as a breezeway, porch, patio, or carport is desirable. If possible, arrange for outdoor play equipment where the child can get it out and put it away.

## THE SCHOOL AGE CHILD



The elementary school age child develops socially and culturally, as well as physically. This is the "gang" stage, when parents wonder if they have five or six boys (or girls) of this age instead of one. Some developmental needs related to housing are:

1. Playing—active, noisy play and quiet activities
2. Learning basic knowledge and skills
3. Socializing—especially with children of same sex and age
4. Continue learning responsibility
5. Continue developing independence
6. Continue learning sex role—beginnings of

modesty; needs privacy

7. Continue learning about his environment

Wear and tear on the house and its furnishings is at its height during this developmental stage. The child's play is rough and active, and compounded by many friends. On the other hand, he is old enough to appreciate and help preserve the furnishings, and even assist in their care. Needs in specific areas are:

• Living areas: Enough space for active indoor play with a group of friends is needed.

A table for games with friends or family may be a card table or dining table.

• Kitchen-dining areas: A stool or leg extenders for dining chair is needed during the first years of this stage.

There should be a place to sit in the kitchen for after-school snacks.

• Bedroom: Privacy is important at this age. If the child cannot have a room of his own, try to arrange the furniture so that one part of it is his. The room should be shared by children of the same sex. Each child needs his own bed.

Clothes storage requires a chest and closet rods that are within the child's reach. A mirror at the

child's height encourages good grooming.

Hobbies and collections are important at this age. Provide a work surface (table or desk) and shelves or bookcase for storing and displaying them.

Home study calls for a desk or table, book shelves, a place for school supplies, straight chair, and study lamp. Toy and game storage and a bulletin board for school papers, art work, etc., complete the furnishings.

• Bathroom: Storage space for toilet articles and a step if lavatory or mirror are too high are the main considerations.



## THE TEENAGER



The teen years are characterized by interest in personal appearance, the opposite sex, intensive socializing, and food. Some developmental needs are:

1. Accepting changing body
2. Achieving a satisfying and socially acceptable sex role
3. Conforming to expectations of own age group
4. Socializing—both sexes, groups and pairs
5. Assuming more responsibility
6. Achieving independence
7. Selecting and preparing for an occupation

Teen-agers tend to monopolize the family bathroom, the telephone, the television, and the living room. Giggles, shrieks, and loud music are commonplace. The biggest housing need during these years is space for separation and privacy for both the teen-ager and the rest of the family.

- Living areas: Most important is a place where

the teen-ager can entertain groups of friends with some degree of privacy. They like to dance and play semi-active games. A record player is of high priority. Also needed is a place to which parents and younger family members can retreat without vacating the house. The need for two living areas is greatest at this stage.

- Kitchen-dining areas: Provision for eating snacks in the kitchen is still important. Have some cooking equipment the teen-agers can use for preparing food for and with friends.

- Bedroom: More than before, the adolescent needs a room of his own, or share a room with a member of the same sex and compatible age. Partial partitions will give more privacy, and there should be a door that can be closed. A bed is needed for each child; extra sleep space in the room for overnight friends is desirable. Entertaining one or two friends

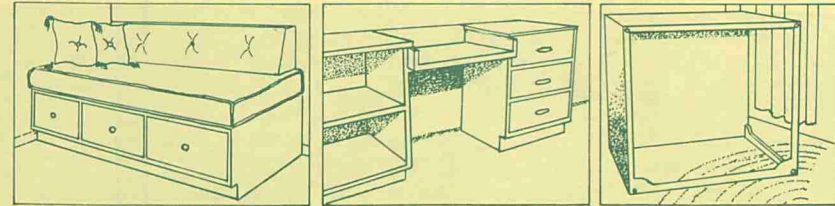
in the bedroom is common. Seating can be improvised from floor pillows or single beds with bolsters. A place to seat snacks can be the study table or desk, or bedside table.

A narrow, full-length mirror on a wall or closet door is better for grooming than a wide high one over a chest. Both would be ideal.

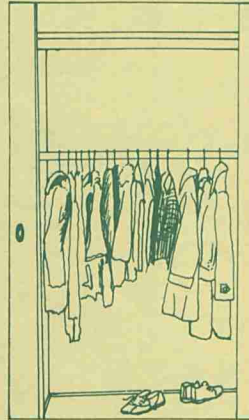
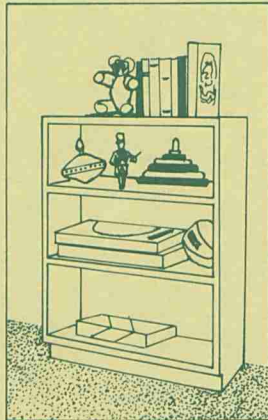
Storage space is needed for clothes, sports equipment, musical instruments, and hobbies. A bookcase or shelves for books, records, and displaying collections is needed. Still needed for study are a desk or table, straight chair, study lamp, and place for school supplies. A comfortable chair for reading and lounging is desirable.

A bulletin board for snapshots, pennants, and mementos saves the walls.

- Bathroom: More storage space for toilet articles is needed. (A second bathroom may be the answer to many problems!)



Left—This single bed with drawers below holds toys, games and extra bedding. Bolsters and throw pillows make it "grow up" for a teen-ager's room; Center—This convertible desk provides a convenient study center from the time the child enters school. The center writing surface is shown at its lower level, suitable for the elementary-age child. For the teen-ager pull it out and turn it over to the center section is at the same level as the rest of the desk. (Plans for desk available from Stanly County home economics agent.); Right—This three-height table for children, developed by the School of Home Economics, University of North Carolina at Greensboro, and the North Carolina Agricultural Experiment Station, has three usable dimensions. Placed on the floor in any one of three positions, the table has a different height. (Small size, 18" x 20" x 22"; large size, 24" x 26" x 28".) The pre-schooler may use it for eating, quiet games, and imaginative play. It may be a place to study, type, play games or work on hobbies for school-age and teen-age children.



Left—Open shelves are useful for every age. Toddlers learn to put toys away. Games and sports equipment are within reach but not under foot. Collections are proudly displayed in shelves high enough baby can't reach; Center—A low rod in the child's closet saves mother time and effort—the small child can hang up his own clothes. Raise the height of the rod as he grows taller. Another idea is to have one low rod and a second rod at the regular height. Use the low one for the pre-schooler and school-age child. Teens use both rods for short garments such as shirts and jackets, doubling hanging space; Right—Even the pre-schooler can brush his teeth and wash his face and hands with little mess or little help if he has a step or stool. Use the same steps at the commode. Having something under his feet makes the toddler feel more secure.

## Suggested Reading

Agaar, Tessie and Elaine Luchsinger, **The House: Principles, Resources, Dynamics**. New York: J. P. Lippincott Co., 1965. Chapter 13—"Housing and Children."

Duvall, Evelyn Mills, **Family Development**. Chicago: J. B. Lippincott Co., 1957.

Day, Savannah, **A Three-Height Table for Children: Design, Use and Space Needs**. Bulletin 417, March 1961, Agricultural Experiment Station, North Carolina State University at Raleigh.

Faulkner and Faulkner, **Inside Today's Home**. New York: Holt, Rinehart and Winston, Inc., 1961.

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# PICTURE PANORAMA:

## *1. Selection*

# PICTURE PANORAMA: 1. Selection

Good pictures add the finishing touch to your home. Just as the right jewelry completes a costume, the right picture or other wall decoration completes a room by enriching and unifying it.

The values of using pictures are many. They often contribute more to a room than any other accessory because they are more permanent and usually more noticeable. Pictures help in creating or carrying out the mood of a room. They add beauty and interest through pleasing variations in line, color, and mass. If well chosen, pictures give enjoyment, culture, and inspiration to the viewer, and stimulate his imagination.

Pictures and wall hangings in your home are a reflection of your taste. They should express the interests of you and your family. Everyone can own good pictures regardless of where he lives or amount of income. And you needn't be an art expert to select them.

The final criterion for selecting a picture is, "Do I like it? Do I really respond to it emotionally?" The picture you choose may appeal to you because of color, style, or subject matter; or it may remind you of a pleasant experience. Certainly it should be good art. But most important, it must be a picture you will enjoy living with over a period of years.

## A Closer Look

An artist draws or paints to express his own reactions, attitudes, or beliefs and to communicate his ideas to those who look at his work. Whether or not he chooses to paint objects in a realistic manner will depend on what he is trying to express and communicate. A good artist doesn't imitate nature; he interprets a subject.

When considering a picture for use, think about both subject-matter appeal and esthetic appeal. Subject matter is the object that the work of art represents. The most important aspect of a painting is the content—the idea, feeling, or mood expressed by the way lines, colors, and textures are combined. Art can express joy or tragedy, delicacy or vigor, calmness or excitement, or any other human reaction. In looking at the picture, determine what the artist is trying to communicate. Is the message significant? Is the painting sincere and profound, or is it shallow and dishonest? Is it creatively original, or is it weak and imitative? Does it give you a new experience, or merely tickle your memory?

The idea alone does not make a picture good or poor. Its worth lies in the way color, form, line, texture, and space have been organized into a design. This organization, or planned arrangement, is often referred to as the "composition." In a good composition there is a center of interest, one area which receives most emphasis and attracts the most attention. There should be dominating lines or forms that guide the observer's eye into the picture, around in it, and finally to the center of interest; that is, the lines and shapes produce rhythm through movement and repetition. Usually strong lines leading to corners are considered poor because they carry the eye out of the picture.

Forms and colors in the picture must be unified; they seem to belong together. At the same time, there should be some interesting variety so that it won't become monotonous in a short time. Weight and interest should be evenly distributed in the picture for good balance.

Colors help establish mood and vitalize forms in a picture. They should be clear and interesting. Muddy or chalky colors are unpleasant, but are not to be confused with clear grays and other neutrals which have beauty and character.



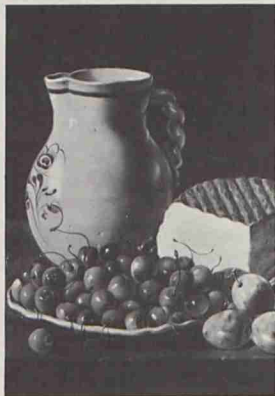


Figure 1.

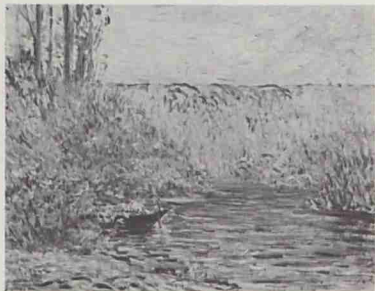


Figure 2.

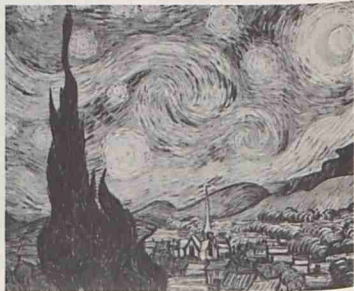


Figure 3.

Figure 1. "Still Life with Fruit, Cheese and a Pitcher," Luis Meléndez.

Figure 2. "Borders of the River," Alfred Sisley.

Figure 3. "The Starry Night," Vincent Van Gogh.

Figure 4. "Young girl," Robert Motherwell.

## Styles in Art

The style refers to the way the artist interprets the subject matter. The following descriptions of styles will aid in the selection of pictures you like.

*Realism* is the presentation of things as they are in life without idealizing them. It is imitative; any subject is considered suitable. The still life by Meléndez in Figure 1 is an example of this style.

*Impressionism* aims at recording what the artist first sees as he looks at a subject. It is especially concerned with the effects of light and atmosphere. Many impressionist artists use broken color in small dots or brush strokes which blend together. Sisley's "Borders of the River" is a good example. (Fig. 2) Other well-known French impressionists include Renoir, Monet, and Degas.

*Expressionism* is art in which the emphasis is on inner emotions, sensations, or ideas rather than actual appearances. Subject matter and color may be distorted and textures exaggerated to express how the artist felt about the subject. Van Gogh depicts his intense wonder of the night sky in "The Starry Night." (Fig. 3)

*Abstract art* portrays a basic shape without imitating appearances. The shapes may be simplified, exaggerated, or rearranged. The emphasis is on the relationship of shape, pattern, color, and texture instead of subject matter as such. A good example of abstraction is Motherwell's "Young Girl." Close study reveals the shape of a girl. (Fig. 4)

*Primitive art* is the art of tribal peoples who do not read or write. Form is starkly revealed. Emphasis is on color, texture, material, and related masses and shapes. There is good rhythm and much simplification. Closely related is *folk art*, which has apparent simplicity and naturalness.



Figure 4.



## How Pictures Are Made

The artist has many choices of ways to produce a picture. The word "medium" refers to the material used.

*Oil* paintings are done with oil paints on canvas or wood. They may be any size and vary from smooth to coarse in texture. They have considerable depth and often appear heavy. (Figs. 1-4)

*Water colors* are painted with brush and water paints on special paper. They have a transparent quality and can be comparatively delicate.

*Drawings* may be done with pencil, ink, charcoal, pastels, or crayons on paper. They may be very fine and intricate or very simple.

*Etchings* and *engravings* are ink impressions taken from copper or steel plates on which the artist has drawn the lines of the design.

*Lithographs* are impressions made from a greased pencil drawing on porous stone. They have a seemingly soft appearance.

*Wood cuts* are impressions taken from blocks of wood into which the design is cut. The surface of the block is inked and pressed on paper. Usually there is a separate block for each color. (Fig. 5)

*Silk screens* are made by applying color through screen stencils. Generally, separate stencils are made for each color. (Fig. 6)

*Photo* reproductions of oil or water color paintings can be done in color. The remarkable reproduction, including the effect of the brush strokes, provides a good substitute of the original work at a much lower cost.



Figure 5.



Figure 6.

Figure 5. Woodcut, "Three Wise Men," Mary Jane Ould.

Figure 6. Swedish silkscreen on linen.

## Selecting Suitable Pictures

When selecting a picture, keep in mind where it will be used. It should harmonize with the room and its furnishings in mood, style, color, and proportion.

Formal rooms require pictures having stately elegance; portraits are an example. Also appropriate are the richly colored and heavily textured oil paintings (and their reproductions). Informal rooms require simpler pictures.

Paintings of colonial life, pastoral scenes, etchings, water colors, florals, and birds go well with traditional furniture. In Early American settings maps, engravings, still lifes, or reproductions of plain genre pictures (realistic paintings of everyday life) look well. Folk art is particularly appropriate. Contemporary rooms require bold, bright colors. Expressionistic and abstract art, folk art, and that with a Chinese, Japanese, Mexican, or Indian flavor all feel at home in the modern house.

Pictures should contain some of the same colors used elsewhere in the room.

If the picture is selected after other furnishings are in place, keep your color scheme in mind. Or, the picture may be selected first and be the source of the color scheme for the entire room. Brightly colored pictures are most effective on neutral walls, while black and white pictures show up best on walls with a clear or strong color. It is recommended that dark pictures be selected for dark walls, and light pictures for light walls.

The size and shape of the picture or other wall decoration should harmonize with the size and shape of both the wall area and the furniture it accompanies. There should be some variety in size and shape of pictures. (See Home Economics 39 "Picture Panorama: 3. Placement.")

Use pictures or wall hangings only where *needed*. They should be used to complete a furniture grouping, not just to fill up space. Patterned walls usually do not need any additional ornaments.

Limit the number of pictures in a room. One important picture with one or two smaller ones is sufficient. It enables you to enjoy each picture for itself and gives it emphasis.

Combining pictures in a room must be done carefully. All should be friendly in color, texture, and scale. Subjects need not be alike, but they should be harmonious, not extreme opposites. Different media, such as prints, water colors, and oils, can be combined only if they are equally vigorous and if they go well together in subject, color, and mood.

## Pictures for Particular Rooms

Subjects of pictures for a particular room will depend on the age, sex, and interests of those who use the room. In addition, activities which take place and the size of the room will help determine how much emotional force the pictures should have.

*Living rooms* and *entrance halls* require pictures with general appeal so that all family members and guests can enjoy them. In most cases, they should be restful and not too unusual in composition, color, or subject matter. Suitable pictures include landscapes, seascapes, still lifes, and flowers.

*Dining room* pictures can be gay and colorful. Good choices are still lifes, flowers or flowering trees, fruits, birds, and landscapes.

*Family or recreation rooms* require spirited pictures with bold lines, bright colors, and unusual textures.

*Bedrooms* are more personal and individual. This is the place for family photographs and religious pictures. Pictures should reflect the occupant's interests and sex.

*Children's rooms* should have colorful, simple pictures which are suitable for the child's age. They should reflect his current interests. There may be pictures of both a permanent and temporary nature.

*Guest rooms* are more public; pictures should be of general appeal, similar to those suggested for the living room.

## Other Wall Decorations

A definite trend toward using substitutes for pictures is evident. The variety of possible wall hangings is limited only by your imagination. Guides for selecting these are the same as those discussed for pictures.

*Decorative textiles* make excellent wall hangings. They may be embroidered, block-printed, or woven. Use a rod at top and bottom to keep the hanging straight.

*Mirrors* are often used over tables, sofas, buffets, and chests. They can be effec-

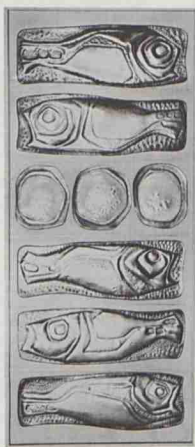


Figure 7. Wall panel, enamel on copper repoussé, "Leaves and Fishes," Helen Worrall, Cincinnati, Ohio. The enamelled pieces, gold shading into green with accents of white and brown, are inlaid in birch background stained platinum.

tive in small rooms to create an illusion of space. It is well to visualize what you will see in a mirror before you hang it.

*Wall plaques* of metal, wood, and other materials can add beauty and interest to a room. They may be of any style. (Fig. 7)

*Decorative maps, scrolls, and travel posters* may make good wall hangings for children's rooms, family rooms, and dens. The maps may be framed.

*Hobbies and collections* provide interesting and personal wall decorations. These may be displayed in shadow boxes or on shelves attached to peg board. They may also be mounted and framed.

*Good photographs* may be enlarged and mounted and framed. These may be only mounted and changed frequently.

*Decorative trays* are sometimes effective in the proper setting.

*Wallpaper panels* may be framed or used within architectural molding to give the effect of a picture.

*Planters* filled with plants or fruit often make attractive wall decorations, particularly in a dining room or kitchen.

*Bulletin boards* are effective in kitchens, dens, halls, and children's rooms. Interesting colors and personal items make arrangements that are unusual and which can be changed frequently. It is an effective method of temporarily displaying children's achievements and family snapshots.

## Buying Pictures

You will enjoy your pictures more if you do not see them in the homes of all your friends. A lesser known painting by a great artist or the original of a young artist will express far better your independent taste and personality. If possible, visit art galleries and museums to look at a variety of pictures before making a selection. This will help you discover what type of picture you like best. (See list of North Carolina museums on the last page of this publication.)

Prices for good reproductions may run from a few cents up. Valuable originals can cost thousands of dollars. However, many young artists do good work, and their paintings are often reasonably priced.

Good reproductions of worthwhile pictures are much better than poor originals. However, they vary greatly in quality. The better reproductions show the brush strokes of the original and follow the true colors exactly.

Many of the large department stores and furniture stores carry reasonably priced reproductions. They may also be found at book or stationery stores, decorator shops, paint stores, and hobby shops. Originals of unknown artists are available at art stores and art shows. Art exhibits at county fairs and other special events often show good pictures which are for sale.

Good reproductions are available at most large art galleries and museums. They will supply lists of their available reproductions upon request:

Art Institute of Chicago, Chicago, Illinois  
Boston Museum of Art, Boston, Massachusetts  
The Metropolitan Museum of Art, New York 28, New York  
Museum of Modern Art, 11 W. 53rd St., New York 19, New York  
National Gallery of Art, Washington, D. C.  
New York Graphic Society, 10 West 33rd St., New York 1, New York

## Acknowledgments

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Figure 3 is courtesy of the Museum of Modern Art, New York.  
Figure 7 is courtesy of the artist.

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(Reprint)

Home Economics 37

## Museums in North Carolina

Arts and Science Museum, Statesville  
Biltmore House and Gardens, Asheville  
Charlotte Children's Nature Museum, Charlotte  
Greenville Art Center, Greenville  
Henderson County Artists League, Hendersonville  
Hickory Museum of Art, Hickory  
Mint Museum of Art, Charlotte  
North Carolina Museum of Art, Raleigh  
Rocky Mount Children's Museum, Rocky Mount  
Weatherspoon Art Gallery, University of North Carolina at Greensboro  
William Hayes Ackland Art Center, University of North Carolina at Chapel Hill

## Suggested Reading

Books on art:

Faulkner, Ray, Edwin Ziegfeld, and Gerald Hill, *Art Today*. New York: Henry Holt & Co., 1954.  
Beitler, Ethel Jane and Bill Lockhart, *Design for You*. 1st ed. New York: Wiley, 1961.  
Seiberling, Frank, *Looking Into Art*. New York: Holt, 1959.

Publications of the North Carolina Agricultural Extension Service:

Picture Panorama: 2. Framing, Home Economics 38  
Picture Panorama: 3. Placement, Home Economics 39





**PICTURE PANORAMA:**  
*2. Framing*



# PICTURE PANORAMA: 2. Framing

Good pictures properly framed add much to the beauty of a home. It is important that the frame be selected to go with a particular picture; don't attempt to fit the picture to the frame.

A frame is used to enclose a picture, to give it emphasis, and to add to its beauty. It ties together the picture and the wall, and often serves to stop the movement of lines within the picture.

The frame and mat should be kept subordinate to the picture. Make the frame enhance the picture; elaborate moldings and important textures may overshadow it.

Select the frame and mat to harmonize with both the picture and the room in which it will be used. If it is a wood frame, it need not be identical to other woods in the room, but it should be in character. Colored frames and mats must be in harmony with the colors of the room. The mood of the room and style of its furnishings should be reflected in the style of the frame and mat.

## Selecting Frames

**Harmonize the frame with the picture.** The color of the frame should be in harmony with both picture and wall. A guide is to select a frame that is not quite as dark as the darkest colors in the picture. However, it is all right to select a lighter shade, (Fig. 1) Usually the frame should be darker than the mat. Repeating a picture color in the frame places emphasis on the picture and ties the two together.

Figure 1. "Portrait of a Lady," Jean Baptiste Perroneau.



Figure 2.

The lines of the frame should emphasize those of the picture. If the dominant lines of the picture are simple, complex, straight, curved, etc., they should be repeated in the frame. (Figs. 1 and 2)

The subject of the picture influences choice of a frame. Simple frames are appropriate with pictures of distant scenes and with elaborate, colorful, or detailed pictures. (Fig. 3) Frames that look worm-eaten or weathered are suitable for nature subjects used in an informal room. Sporting pictures might have boldly colored or black frames of flat wood molding.

Traditional portraits may have elaborate, carved frames, usually finished with dull gilt. (Fig. 1)

Subjects that suggest strength, such as buildings, peasants, men, or animals, require heavier frames (Fig. 2) than pictures with more delicate subjects, such as children or flowers (Fig. 3). Strong colors or diagonal lines in pictures call for heavier frames than do weak colors or placid, horizontal lines.

The frame should be of the same period in which the picture was painted. For example, if it is by a Dutch artist of the seventeenth or eighteenth century, the frame should be simple, with no carving, and painted black. Pictures from the French Impressionistic era call for

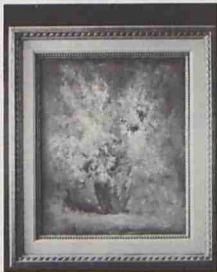


Figure 3.

elaborately carved frames which are dull gilded. Most modern paintings look best with simple wood frames which harmonize well with contemporary furnishings. Flat abstracts are often hung unframed, with just a strip of wood tacked to the edges of the canvas. (Fig. 4) It is wise to visit a museum to see how pictures from the same period are framed. Note particularly the style of frame, the width, and the trim, if any.

Oil paintings require heavier frames than other pictures because the canvas and paint suggest weight. The deep molding may be plain or with bold carving. Dull gilt is the traditional finish, but painted or natural wood is often used today. (Fig. 5) Frames for all paper pictures (water colors, pencil sketches, etc.) are usually made from fairly narrow, simple moldings. They are smooth textured, shallow, with little grain or carving, and no deep carving. (Fig. 6)

The width of the frame may be determined by the size of the picture. Narrow frames are usually best on small pictures, while wider ones are used on large or heavy-looking pictures. Sometimes a narrow frame combined with a wide mat may be used on a fairly large picture.

**Buying frames.** Picture moldings come in a variety of shapes and sizes. They may be wide or narrow, deep or shallow, plain or carved, elaborate or simple. (Fig. 5) Be sure to try several different frames with your picture before making a final selection.

Ready-made commercial frames may be purchased at paint, art supply, department, hardware, and variety stores. They may be obtained either finished or unfinished. Used furniture stores sometimes have good buys. These frames come in standard sizes.

If the picture will not fit in a standard size frame, you can have one made to order or make it yourself. Picture molding, either finished or unfinished, is available at furniture and hardware stores, picture framing shops, and building supplies.

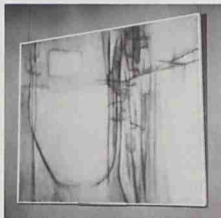


Figure 4. "Broken Trail," J. Bardin.

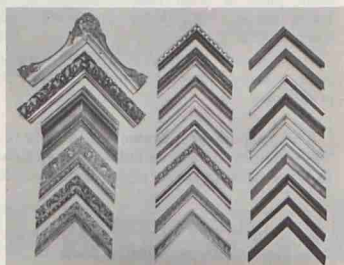


Figure 5.



Figure 6.

## Selecting Mats

A mat is a border around the picture, separating it from the frame. Sometimes a double mat is used—a narrow one outlining the picture with gilt or color, and then a wider plain one. Mats are used on water colors, woodcuts, etchings, and lithographs. Oils do not need mats. Prints of oils may be framed with or without mats.

There are several reasons for using a mat. It ties the picture and frame together. It may be used to enlarge a small or medium-sized picture, giving it more importance and character. (Fig. 6) A mat often gives a picture proper balance and proportion. Use a wide mat if the picture shows decided line movement, especially if the lines of the picture tend to carry the eye out of the frame. If the picture seems crowded with action or objects, leaving little background, a mat is needed. But if a drawing has a large expanse of white or paper around it, a mat may not be necessary. When a picture is hung against a patterned wallpaper a wide mat must be used to separate the picture from the wall.

**Materials for mats** are many. The ones most used are regular matboard or cardboard. They may be plain, colored, decorated, or textured. Cardboard is often covered with fabric, such as burlap, shantung, linen, raw silk, pongee, velvet, or theatrical gauze to get a desired texture. Grass-cloth wallpaper gives an interesting texture. Unusual materials such as marbelized wallpaper, metallic paper, wallboard, leatherette, thin wood, cork, mirror, or metal would make appropriate mats for certain pictures and certain rooms. Good judgment must be used in selecting the material for a mat.

**Harmonize the mat with the picture.** The color of the mat should harmonize with both the picture and the wall color. A guide is to choose a mat that is darker than the lightest colors in the picture. (Fig. 6) White or off-white is fine for most pictures, but it may improve the decorative scheme of the room to use a color. White mats accentuate the colors in the picture; a light gray or buff mat will give a subdued color effect. Black-and-white prints are usually matted in white, off-white, cream, or gray.

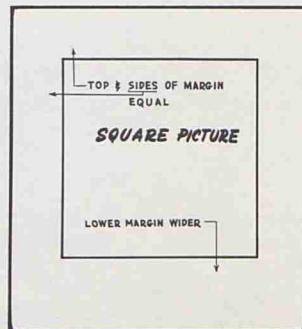
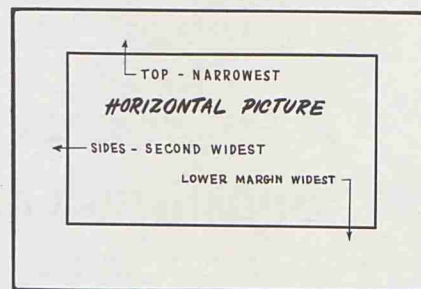
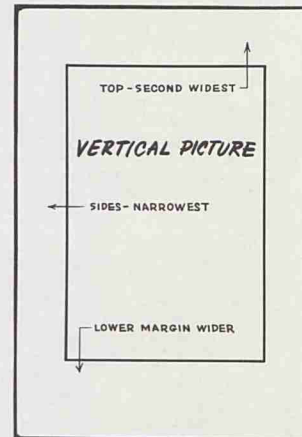
The size of the mat depends on the size and type of picture, the space where it is to be hung, and the scale of furnishings in the room. On an average size picture, a 2" to 4" top margin is reasonable. Woodcuts and etchings require wider mats than other types of pictures.

The texture of the mat should harmonize with the picture. Strong, large pictures can take coarse-textured mats of burlap or linen. Small, delicate pictures need fine-textured mats such as silk.

Delicate pictures are attractive with moderately wide, fine-textured mats in light tones. A mat that is wide, rough-textured, bold, heavy, glossy, or very dull in color adds apparent weight to a picture.

**The Law of Margins** determines the widths of the side, top, and bottom margins of a mat. Figure 7 shows the relationship of top, side, and bottom margins for vertical, horizontal, and square pictures. For a vertical rectangle the bottom margin should be the widest, the top next, and the sides the narrowest. For a horizontal rectangle the bottom should be the widest, the sides next, and the top the narrowest. A square has top and side margins equal, and the bottom margin widest. On all pictures, the bottom margin is always the widest; if it isn't, the picture will seem to be falling. This extra width gives a feeling of balance and stability.

Figure 7.



### **Mounting Pictures**

Mounting is the placement of a picture upon a backing. Water colors, sketches, reproductions, maps, and other paper pictures are usually mounted to prevent buckling after framing.

A picture may be mounted by taping it at the top with masking tape to regular mounting board, pressed wood, good cardboard, or beaverboard. A watercolor can be mounted successfully by laying a cardboard backing under the mat. It must fit tightly against the picture. Another method uses rice-paper hinges attached with wheat paste or library paste.

Dry mounting should be done professionally. A thin, gummed paper is placed between the picture and the cardboard; then heat and pressure are applied. This method results in a non-glossy and very smooth surface. It is used for photographs and sometimes for prints. The method is not recommended for originals or valuable prints.

### **Inserts**

Inserts are narrow strips of wood or paper placed on the inner edge of the frame, which separate the picture from the frame. They are often used with pictures that do not require mats. Their purpose is to make the molding appear heavier and wider, and to form a decorative border next to the picture.

The inserts are narrow, ranging from  $\frac{1}{4}$ " to 2" wide. All sides are the same width. A rolled edge protects the painting more than a plain edge. Inserts can be covered with fabric.

### **Using Glass**

Use glass over pictures which cannot be easily cleaned. Prints, water colors, pastels, and pencil sketches need protection. Oils do not need glass because they clean well. All types of pictures done on paper are usually framed with glass to keep the paper from warping or discoloring. If glass is not used, these pictures should be mounted.

Be sure to use picture glass; it is thin, durable, free from defects, and has no green tint. An objection to glass is glare from light reflection. A non-glare glass is available. It may be considered if the picture will hang where there is much light. Because of the density of the non-glare glass it has to be placed directly against a picture; therefore, it cannot be used with a mat. Also, it will make the picture appear photographic.

An even coat of plastic spray or lacquer will protect many prints almost as well as glass, and it eliminates the glare and danger of breaking.

## ***Substitutes for Frames***

For pictures that have only temporary interest, other means of displaying them may be more suitable than the conventional method of framing. In these cases they are usually mounted, as described above.

Two strips of molding can be attached to the wall to serve as top and bottom frames for a group of pictures. (Fig. 8)



Figure 8.



Adjustable clamps are available in plastic and metal. With these at top and bottom, the picture can be hung with or without glass.

An interesting arrangement can be made by covering a wall or section of a wall with cellulose fiberboard or cork, which may be left plain or covered with a textured fabric like burlap. Mounted pictures are thumbtacked to it.

## How To Assemble a Picture

Assembling a picture includes attaching the picture to the mat if one is used, fitting the picture into the frame, and attaching the backing and hanging devices.

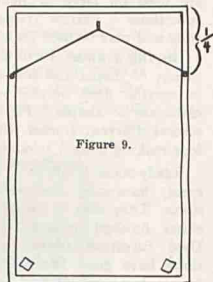
With the frame wrong side up, lay the clean cover glass in place (if glass is used). Tape the top of the picture to the back of the mat. Lay picture and mat face down on cover glass. Place a backing of heavy cardboard or corrugated paper, cut to fit, on top of mat.

Brads or very fine nails are used to hold the glass, mat, and backing securely in place. Drive one into the edge of the frame in the middle of each side. After checking to see that the margins are correct, continue with the brads or nails, using enough to keep the picture tight.

Apply a dust cover of wrapping paper to seal against moisture and dust. Apply glue to back of frame along edge; then lay it against slightly dampened paper. Turn frame over; smooth the paper from center out to make it dry taut. When dry, cut away excess paper. Another method of applying the dust cover is to use double-faced adhesive tape.

Place the screw eyes within the upper one-fourth of the frame edge so the picture will hang flat. Stretch picture wire through the screw eyes and fasten it securely. Place a thumb tack or a small piece of foam rubber or cork at each lower corner. This helps the picture hang straight. (Fig. 9)

If the picture is valuable, it would be wise to have it matted, mounted, and/or framed by a professional.



The purpose of a frame and mat is to add to the beauty of the picture. They should always be subordinate to the picture. Select frames and mats to harmonize in color, style, and size with the picture and with the room.

## References

Other publications in this series:

Picture Panorama: 1. Selection, Home Economics 37

Picture Panorama: 3. Placement, Home Economics 39

## Acknowledgements

Figures 1 and 4 courtesy of the North Carolina Museum of Art, Raleigh.  
Figures 3 and 5 courtesy of Clark Art Shop, Raleigh.

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Home Economics 38







# PICTURE PANORAMA:

## *3. Placement*

# PICTURE PANORAMA: 3. Placement

Beautiful pictures can be a joy to use and can enhance any room if they are properly located and correctly hung.

Art principles cannot be ignored when arranging pictures. There must be:

- Emphasis
- Harmony of line and shape
- Scale, or harmony of size
- Harmony of color
- Balance

Limit the number of pictures in any one room, so that each picture will be appreciated for itself and walls won't look over-decorated. A guide is to use no more than one important picture or grouping, and one or two smaller ones in one room. A picture on every wall is not necessary; it is restful to have a few bare walls, and the bare walls lend emphasis to the decorated ones.

## Where To Hang

The current trend is to hang pictures in relation to furniture groupings. The pictures should be close enough to the furniture that they appear to belong together—seen as a unit, not separately. Don't hang pictures on just any empty wall with nothing near them; they need furniture for support. (See illustrations on this page.) A fireplace gives this support, too.

Keep the size of the picture or group of pictures in scale with the size of the furniture it accompanies. Large furniture calls for large pictures (Fig. 1); small pieces require smaller pictures.

The shape of the picture should harmonize with the shape of the wall space on which it hangs and the shape of the furniture it accompanies. A broad picture is suited to a horizontal wall space and furniture (Fig. 2a). A

Figure 1



Figure 2a

vertical wall space needs a tall picture (Fig. 2b). The picture should also be in scale with the room and the wall space. A large room requires a massive wall hanging. But in a small room, such as the bathroom, or on a small wall area, keep the picture small.

■ Pictures should be hung so that the center or center of interest of the picture is at eye level. In most cases, this means the standing eye level of the average adult. However, if the picture will be viewed mainly while sitting, hang the picture low, as in the case of pictures over a desk (Fig. 3a).



Figure 2b

Hang pictures in a child's room at his eye level rather than the adult's (Fig. 3b). If they are brought down, he can enjoy them more. As the child grows, you can raise the pictures.

■ Hang pictures in relation to architectural lines. If there is more than one picture in a room, all should form an even line at the top, bottom, or centers (Figs. 4a and 4b).

The height of furniture and the sizes of the pictures will determine which line is best. Grouped pictures of varying sizes should follow the line of the furniture above which they are hung. If the piece of furniture forms a straight line, as pictured on the right in Fig. 5, keep the bottom of the frames on the same line; if the furniture creates an uneven line, as pictured on the left, it is better to hang pictures so the tops are on the same line.



Figure 4a

The only time it is correct to stairstep pictures is when they follow a stairway. Even then, it should not be done if the stairway is in a living area. The diagonal line would attract the eye and carry it up and away from the conversation group.

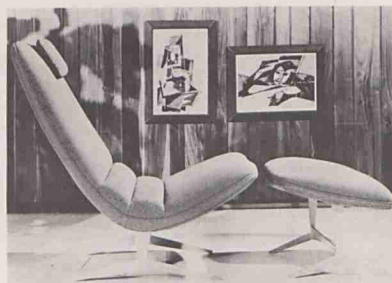


Figure 4b

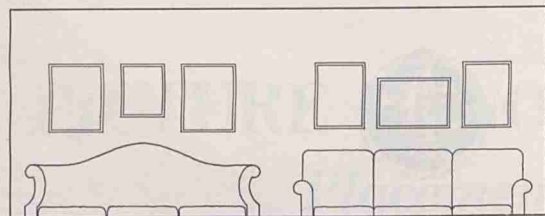


Figure 5

■ Consider the background against which the picture will be seen. Plain walls are best because the design in the picture is seen clearly. It is difficult to hang pictures on patterned walls—the designs of the picture and wall tend to run together. Patterned walls must have either a wide mat around the picture or a very wide frame (Fig. 6).

A general rule is to hang light pictures on light walls and dark pictures on dark walls. However, for balance, a dark picture looks better with dark furniture, and vice versa, regardless of wall shade.



Figure 3a



Figure 3b

## Grouping Pictures

An important picture should hang alone to give it emphasis.

■ Small pictures are often hung in groups. The total size of the group should be in scale with the room, the wall space, and the furniture.

Pictures grouped together should be similar in subject matter, color, and character (Fig. 7). The art methods used should be closely related. Don't place a delicate ink drawing beside a heavy oil painting. Similar mats and frames should be used to tie the group together (Fig. 7).

Figure 7



Any number of pictures in a variety of sizes can be combined if the whole creates a pleasing shape and a balanced effect. When small and large pictures are grouped together, place the smaller ones either to the side or at the bottom of the larger one (Fig. 8). If pictures seem to be of unequal weight because of different sizes or varying degrees of lightness and darkness, be sure they are arranged for good balance. Pictures that have strong line movement should be hung so their lines carry the eye toward the group. Portraits, for example, should face each other.



Figure 8

The space between grouped pictures should be less than the width of any one picture. If there is more space between them they will be seen separately instead of as a group. (See Figs. 7 and 8.)

It may be helpful to use a large piece of paper to decide how to place a group of pictures. Lay the paper on the floor. Move the pictures around on the paper until you have a pleasing, well-balanced arrangement. Draw around the pictures. Then place the paper on the wall to find the spot for hanging each picture (Fig. 9).

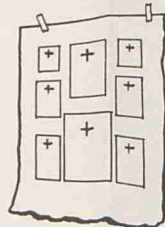


Figure 9

■ A picture can be grouped with other accessories. These other objects may rest on a piece of furniture, or they may hang on the wall with the picture(s). The picture can be centered over the furniture with accessories on each side for formal balance (Fig. 10a). Interesting arrangements are made by placing the picture to one side for informal balance (Fig. 10b).



Figure 10a



Figure 10b

Every decorative object near the picture must be considered as a part of the group and take its proper place for balance. It must also harmonize in color, proportion, and mood. (Figs. 10a and 10b)

■ Other objects can be hung on walls in place of pictures. If mirrors, plates, plaques, or decorative textiles are used, follow the same principles for placing them as for framed pictures.

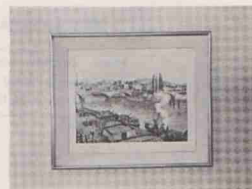


Figure 6

## How To Hang

Use a piece of paper cut the size of the picture to help determine the best location for the picture in relation to the furniture and other items of the grouping. To find the right spot for the nail or hook, measure from the bottom of the picture to the wire. Mark this point on your paper, then through the paper a picture onto the wall (Fig. 11).

A picture is less likely to slip out of place if it is hung with two nails or hooks instead of one. If the walls are plastered, place scotch tape on the wall before driving the nail. Drive nails at a downward angle instead of straight. At an angle, nails are not as likely to come out and plaster is not as likely to crack.

Pictures should hang as flat as possible against the wall. In this way they seem like part of the wall and do not throw shadows. The picture won't tip forward if the screw eyes that carry the picture wires are placed within the upper one fourth of the frame. Place pieces of foam rubber, cork, or thumb tacks at the lower corners to help pictures lie flat and hang straight. Hang pictures blind, with no wires showing.

While it is better to hang pictures blind, sometimes it is impossible because picture hooks cannot be nailed to the wall, or because the picture is too heavy for wall hooks. In these cases, the picture may be hung with two parallel wires from the moulding at the ceiling (Fig. 12). Wires should not form a triangle.

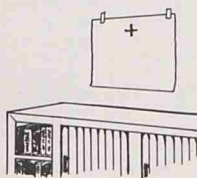


Figure 11

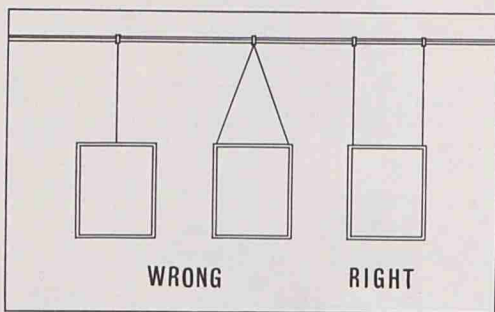


Figure 12

wires must show, keep them subordinate to the picture. Paint them the same color as the wall. Avoid using heavy cords and tassels; they are decorative but are often more conspicuous than the picture.



■ Check the placement of your pictures:

- Do pictures harmonize in size and shape with wall space and furniture?
- Do pictures form pleasing units with furniture?
- Are pictures hung at eye level?
- Do all pictures form an even line around the room?
- Are grouped pictures similar?
- Are grouped pictures arranged in an attractive way?
- Are pictures placed against an attractive background?
- Do pictures hang flat and straight, with wires concealed?

## References

Other publications in this series:

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Picture Panorama: 2. Framing, Home Economics 38



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Home Economics 39

# MAKE YOUR OWN MATTRESS

Mattress making may be considered a skill, but it involves making many decisions before the skill can be put into action. The mere decision to make rather than purchase a foam mattress is one of the greatest decisions that has to be made.

A hand-made foam mattress may cost from \$15 to \$20. This is 25 to 35% cheaper than those made commercially.

A tailored mattress made at home will have a professional look, will help to save money, will improve sleeping conditions in the home, and if given proper care, will last a long time.

Any person who has the interest and desire may be able to make a mattress. However, ability and skill in handling tools and equipment play a great part in the homemaker's ability to make a tailored mattress with a professional look in a reasonable length of time.

It is hoped that as a result of this publication homemakers can be helped to solve problems of overcrowded sleeping conditions and improve health and sanitation conditions in the home. Also, family members will be encouraged to sleep on clean, comfortable beds.



Fig. 1

## MATERIALS AND EQUIPMENT\*

To make a mattress, you will need (See Figure 1):

--1 slab of urethane foam (any thickness from 4 to 6 inches is good), the size you want the bed.

--6 1/4 yards of closely woven durable mattress ticking 56 inches wide.

--yardstick

--hem gauge

--tape measure

--box of "T" pins and a few dressmaker pins

--pin cushion

--one 4-inch square point curved needle, 18 gauge

--sharp scissors

--one spool of heavy-duty thread

--heavy duty home sewing machine with regular pressure foot and cording (zipper) foot attachments

--one 4-fluid-ounce bottle rubber cement

--5/8 yard unbleached muslin

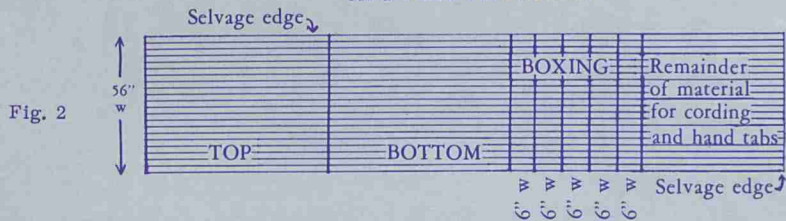
--15 yards cotton cord and wax, preferably beeswax

--tailor's chalk; iron and ironing board; large table the size of mattress on which to work.

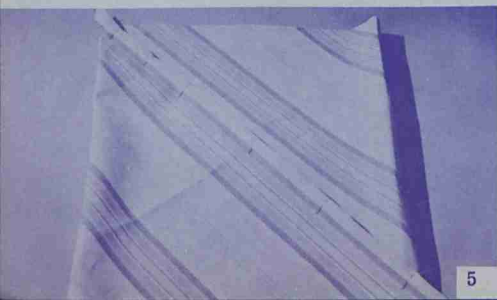
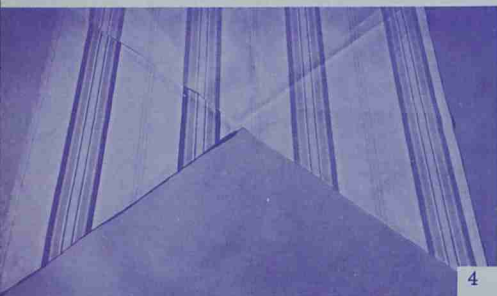


\*Consult the county Extension office or housing and house furnishings specialists for further information on obtaining supplies.

## DIAGRAM FOR CUTTING STRIPE MATTRESS TICKING for a 4-inch thick mattress



- Lay out  $6\frac{1}{4}$  yards of mattress ticking fabric for a double bed.
- Spread mattress ticking on a long wide table for ease in cutting.



### STEP-BY-STEP PROCEDURE

#### I. Cut Mattress Ticking

A. First, press mattress ticking, if necessary.

B. Using the diagram as a guide (Figure 2), cut two pieces of mattress ticking 3 inches longer than the mattress foam. This allows  $1\frac{1}{2}$  inches for seam at the head and foot ends of the mattress. One piece is for the top of the mattress and one for the bottom.

C. Cut 5 strips 6 inches long across the width of the fabric, this gives the necessary boxing for a foam mattress 4 inches thick. A mattress 6 inches thick requires a boxing 8 inches wide.

D. Cut one 30-inch square of mattress ticking for cording.

E. Cut a 4-inch strip of ticking 24 inches long for hand tabs.

#### II. Cording

A. Use the 30-inch square of ticking fabric to make a bias tubing for cording.

1. Fold the square of material diagonally and cut on the fold. (Figure 3.)

2. With right sides together, turn the top piece a quarter turn and match the lengthwise edges. Make a  $1\frac{1}{2}$ -inch seam and press open. (Figure 4.)

3. Lay the fabric flat, wrong side down. Fold each triangle in half to form a rectangle. Put the crosswise edges together so edges extend  $1\frac{1}{2}$  inches at each end. (Figure 5.) Sew  $1\frac{1}{2}$ -inch seam and press open. You now have a continuous cylinder with a  $1\frac{1}{2}$ -inch extension at each side, which starts and ends the bias strip.

B. Fit the cylinder over the end of an ironing board, mark 1 1/2-inch strips, and cut bias cording strip. (Figure 6.) This will be enough fabric for 15 yards of bias cording.

C. Stitch cord into bias strip using a cording foot sewing machine attachment. (Figure 7.)

### III. Make Hand Tabs

A. Press a crease down the center of the 4-inch strip of mattress ticking 24 inches long.

B. Open and fold cut edges to the crease line.

C. Fold in half along the crease line to form one-inch strip. Press.

D. Edge stitch both sides of the one-inch strip and cut into four equal pieces. This will make 4 hand tabs.

### IV. Make Mattress Boxing

A. Stitch mattress boxing pieces together using 1/2-inch seams. Press seams open.

B. Pin-fit boxing firmly around the foam with "T" pins. Make sure the arrangement of stripes at head and foot ends will match the stripes on top and bottom covers.

C. Trim off extra ticking.

D. Pin hand tabs for boxing 24 1/2 inches from the head and foot ends of the foam mattress.

E. Remove boxing and pin two rows of covered cording 4 inches apart to the fitted mattress boxing. Place the cording on the right side of the boxing with the cut edge turned toward the cut edge of the boxing. (Figure 8.)

F. Stitch the cording and hand tabs to the boxing on the right side. Use cording foot attachment to stitch covered cording on the right side. Figure 9 shows this step completed.

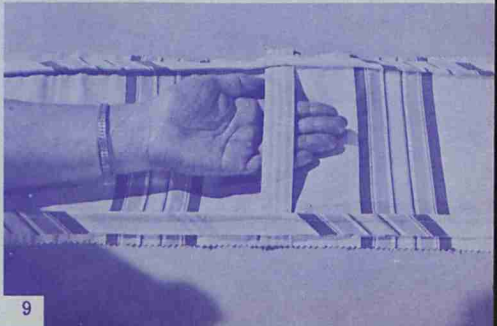
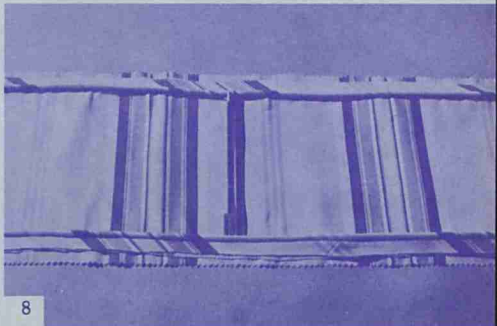
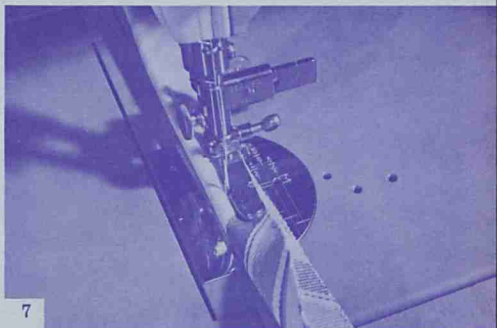
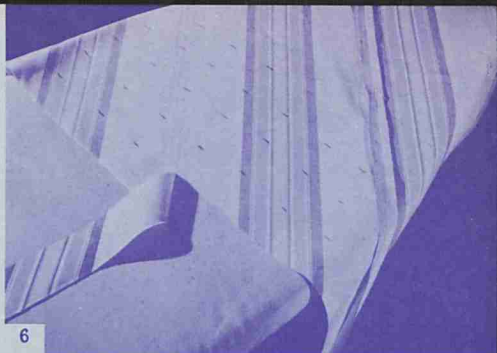
### V. Join the Boxing to Top Piece of Mattress Cover

A. Place the boxing around the foam, right side out.

B. Tuck the top cover under the corded edge of the boxing.

C. Pin the boxing to the top cover with "T" pins - do not pin to the foam. Pin short ends first and match stripes, then pin the sides. Keep the grain line straight and pin cording on the edge of the foam.

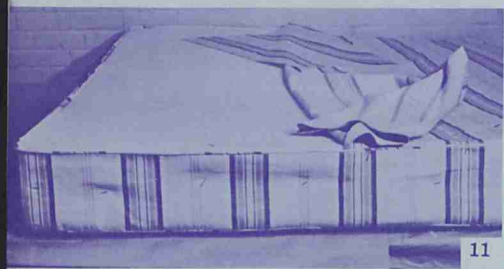
D. Ease ticking smoothly at the corners. Ticking should be pinned firmly and fit smoothly around the corners to keep it from



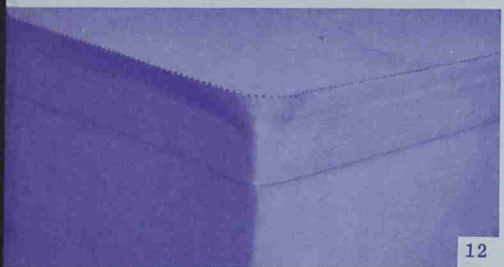




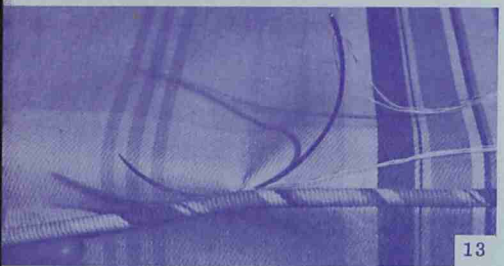
10



11



12



13



14

slipping. Pins may be placed horizontal to cording from 1 to 2 inches apart for ease in stitching. (Figure 10.)

E. Remove the top mattress cover that has been pinned to the boxing and top stitch on the right side to the boxing. Stitch as close to the cording as possible using a cording foot attachment.

VI. Join Boxing to Bottom Piece of Mattress Cover

A. Place the cover on the foam. Pin-fit bottom cover to one-half of the boxing beginning at center of one end and continuing to center of opposite end. (Figure 11.)

B. Remove shell and top stitch as you did in step V above.

VII. Make Unbleached Muslin Mattress Tape

A. Cut a strip of unbleached muslin 1 1/2 inches wide 7 1/2 yards long to make mattress tape. Press a 1-inch crease on one side of the 1 1/2-inch strip.

B. Put rubber cement on the one-inch portion of the strip. Paste the strip a little at a time to the edge of the head, foot and sides of the foam mattress. This will leave 1/2 inch of mattress tape extending beyond the foam to be hand-sewn when completing the mattress. Figure 12 shows the muslin tape glued to the mattress.

VIII. Complete Mattress

A. Replace the cover on the foam and pin-fit the remaining half of the cover.

B. Hand sew with 4 strands of heavy-duty thread that has been waxed. Use a 4-inch square point curved needle 18-gauge. (Figure 13.) Hand sew to complete mattress. Remove all "T" pins. Your mattress is completed. (Figure 14.)

References:

"Better Bedding for Better Sleep," Home Economics 7, North Carolina Agricultural Extension Service.

"Selection of Household Linens," mimeographed, Housing and House Furnishings Department, North Carolina Agricultural Extension Service.

Prepared by Mrs. Genevieve K. Greenlee, Extension House Furnishings Specialist

Published by

THE NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

North Carolina State University at Raleigh and the U. S. Department of Agriculture, Cooperating, State College Station, Raleigh, N. C.; George Hyatt, Jr., Director, Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

5-67-10M

(Reprint)

Home Economics 42



# HOUSE PLANNING AIDS



Reprinted from U. S. Department of Agriculture Misc. Publication No. 938 and published by the North Carolina Agricultural Extension Service as **Home Economics 46**. Available from Housing and House Furnishings Dept. North Carolina Agricultural Extension Service

North Carolina Agricultural Extension Service, North Carolina State University at Raleigh and the U. S. Department of Agriculture Cooperating, State College Station, Raleigh, N. C., George Hyatt, Jr., Director. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

October 1966



## U-SHAPED KITCHEN ARRANGEMENTS

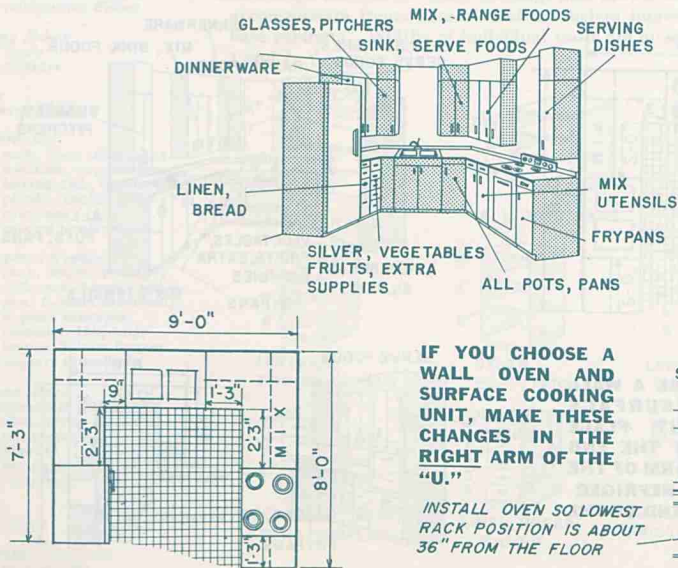
Illustrated are three U-shaped kitchen arrangements. Two of them have the sink in the center and one has the range in the center. When developing these arrangements, the recommended amount of counter space for each area was considered and storage was planned for all the items listed on page 3.

No special cabinets are shown for the corner base area, but in order to have sufficient base storage you must use part of it.

Select the arrangement which fits best into your house plan. Compare the list of items on page 3 with what you would like to store in your kitchen. Increase the widths of the areas where you need more storage or plan to store some seldom-used items in a less accessible place.

Provide 4 feet 6 inches to 5 feet 4 inches between facing counters and equipment—the space needed for two people to work and pass by each other.

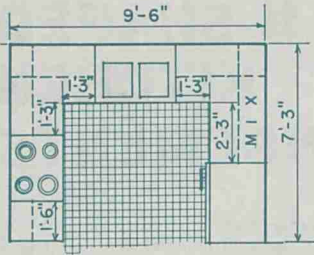
### ARRANGEMENT "A"



SERVING DISHES

FRY PANS

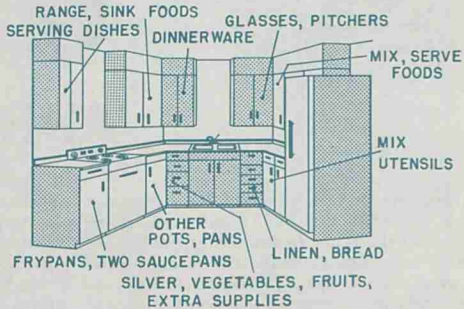
## ARRANGEMENT "B"



SERVING DISHES



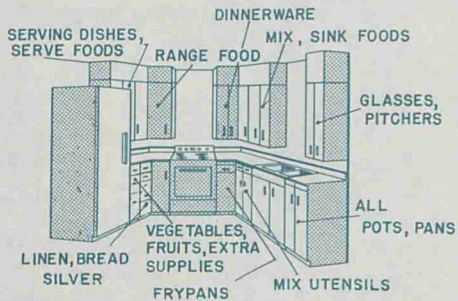
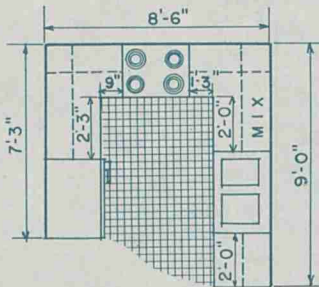
INSTALL OVEN SO LOWEST  
RACK POSITION IS ABOUT  
36" FROM THE FLOOR



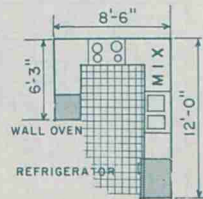
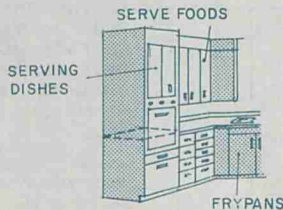
IF YOU CHOOSE A WALL OVEN AND SURFACE  
COOKING UNIT, MAKE THESE CHANGES IN  
THE LEFT ARM OF THE "U."

FRYPANS, TWO SAUCEPANS

## ARRANGEMENT "C"



IF YOU CHOOSE A WALL  
OVEN AND SURFACE  
COOKING UNIT, PLACE  
THE OVEN AT THE END  
OF THE LEFT ARM OF THE  
"U" AND THE REFRIGERATOR  
AT THE END OF THE  
RIGHT ARM.





## ITEMS STORED

### Mix foods

- 3 canisters (flour, sugar, meal)
- 1 each, cake flour, cornstarch, raisins, salt, cocoa, soda, dessert mix, vinegar, sirup, shortening, baking powder
- 2 sugars
- 3 flavorings
- 5 spices

### Range foods

- 1 coffee, 1 tea
- 2 uncooked cereals
- 1 each, macaroni, rice, spaghetti

### Sink foods

- 1 dried fruit
- 2 dried beans/peas
- 6 canned foods

### Ready-to-serve foods

- 1 cereal
- 2 cookies/crackers
- 4 spreads/relishes

### Dinnerware (service for 8)

- 1 stack each, dinner plates, salad plates, saucers, sauce dishes
- 2 stacks soup bowls
- 4 stacks cups

### Glasses, pitchers, etc.

- 8 juice, 8 water glasses
- 1 large, 1 small pitcher
- 2 relish dishes
- 1 creamer and sugar
- 4 refrigerator dishes

### Serving dishes

- 4 bowls
- 2 platters

### Silver

- Service for 8

### Mix utensils

- 1 each, flour sifter, pint measure, cup measure, baking dish, biscuit pan, piepan, muffin pan
- 2 cakepans
- 3 mixing bowls

### Pots, pans, frypans

- 1 each, double boiler, coffeepot, 2-quart saucepan, 1-quart saucepan, 4-quart saucepot, colander, 10½-inch frypan, 9-inch frypan
- 2 3-quart saucepans

### Kitchen linens

- 16 hand and dish towels
- 6 dishcloths
- 4 pot holders
- 4 aprons
- 1 box paper napkins
- 1 tablecloth

### Bread

- 2 loaves

### Vegetables and fruit

- 10 lb. potatoes
- 3 lb. each, vegetables, fruits

## SHELF SPACINGS AND DRAWER DEPTHS

**WALL CABINETS**—Shelves in wall cabinets are 12 inches deep and if spaced as shown will store the items listed. The top shelf will be within reach of the homemaker of average height, if the clearance between the counter top and the cabinet is not more than 15 inches. Adjustable shelves are recommended.



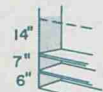
DINNERWARE



GLASSES, PITCHERS



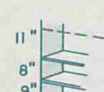
SERVING DISHES



SERVING DISHES,  
SERVE FOODS



MIX, SERVE FOODS



MIX, RANGE OR  
MIX, SINK FOODS



RANGE, SINK OR  
RANGE FOODS

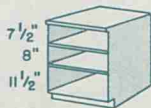


SINK, SERVE FOODS

**BASE CABINETS**—All base cabinets are 36 inches high and have a 4-inch-high toe space. Shelf spacings and drawer depths suggested will accommodate items listed. Sliding shelves increase the usability of base cabinets. Widths of individual units are given on plans on pages 1 and 2.



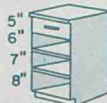
MIX UTENSILS



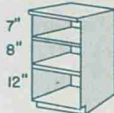
ALL POTS, PANS



FRYPANS



FRYPANS,  
TWO SAUCEPANS



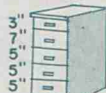
OTHER  
POTS, PANS



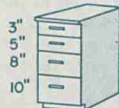
LINEN, BREAD



VEGETABLES, FRUITS,  
EXTRA SUPPLIES



LINEN, BREAD,  
SILVER



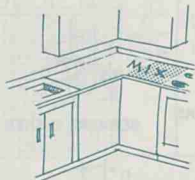
SILVER, VEGETABLES,  
FRUITS, EXTRA SUPPLIES



## CLEARANCES AND COUNTER WIDTHS

The following recommended clearances and counter widths were used in developing the arrangements illustrated on pages 1 and 2. You will find them helpful in adjusting these arrange-

ments to your needs and your house plan. Counter areas between equipment can serve two purposes. For instance, a mix counter next to the sink can also be used for stacking dishes.

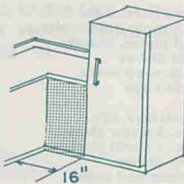
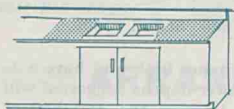


When the mix center extends around the corner, one arm of the counter should be 24 to 36 inches wide.

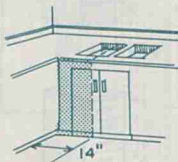


Provide 12 to 24 inches at both sides of the surface cooking area.

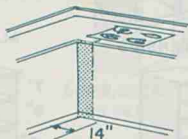
Provide 18 to 36 inches of counter to the left and 24 to 36 inches to the right of the sink. If a dishwasher is desired, allow 24 inches for it either to the left or to the right of the sink. Provide elsewhere for base storage lost.



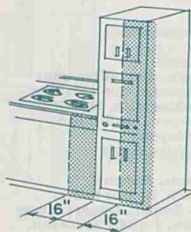
Provide at least 16 inches of clearance between the latch side of the refrigerator and the turn of the counter. Provide counter space near the refrigerator for foods taken from it.



Provide at least 14 inches of clearance between the center of the sink bowl and the turn of the counter for standing.



Provide at least 14 inches of clearance between the center of the front unit or burner and the turn of the counter for standing.



Provide at least 16 inches of clearance between the center of the front unit or burner and a wall or high equipment and between the center front of the wall oven and the adjoining wall.

Prepared by:  
Mildred S. Howard, Genevieve K. Tayloe, and W. Russell Parker  
CLOTHING AND HOUSING RESEARCH DIVISION  
AGRICULTURAL RESEARCH SERVICE

# HOUSE PLANNING AIDS



Reprinted from U. S. Department of Agriculture Misc. Publication No. 936 and published by the North Carolina Agricultural Extension Service as Home Economics 48. Available from Housing and House Furnishings Dept. North Carolina Agricultural Extension Service

North Carolina Agricultural Extension Service, North Carolina State University at Raleigh and the U. S. Department of Agriculture Cooperating, State College Station, Raleigh, N. C., George Hyatt, Jr., Director. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

September 1971

(Reprint)

## PARALLEL-WALL KITCHEN ARRANGEMENTS

These are examples of efficient parallel-wall arrangements for kitchens. The recommended counter widths as given on page 4 and the cabinet space needed to store the items listed on page 3 were considered in the development of these arrangements. Foods are grouped by and stored near the area at which they are usually used first—mix center, sink, range, or serve center.

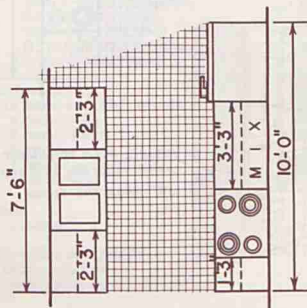
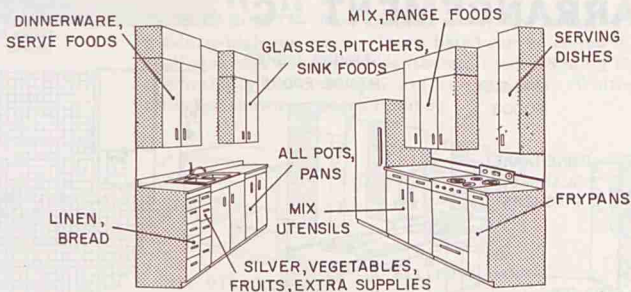
Select the arrangement that best suits your house plan. Compare the items you wish to store with the list on page 3.

Provide storage elsewhere for seldom-used equipment and extra supplies if you need more storage.

Allow 4 feet 6 inches to 5 feet 4 inches between facing equipment—the space needed for two people to work and pass by each other.

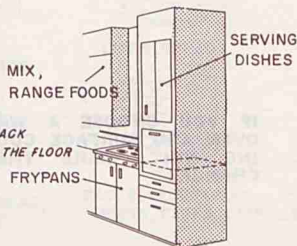
Locate doors so that a major traffic lane does not go through the work area of the kitchen. If possible, avoid placing the refrigerator or oven so that they open across a frequently used doorway.

### ARRANGEMENT "A"

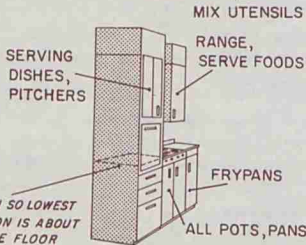
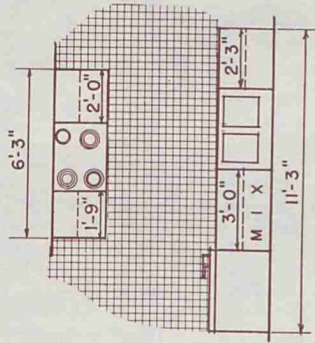
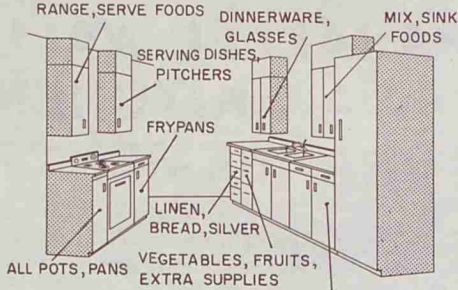


**IF YOU CHOOSE A WALL OVEN AND SURFACE COOKING UNIT, MAKE THESE CHANGES.**

*INSTALL OVEN SO LOWEST RACK POSITION IS ABOUT 36" FROM THE FLOOR*



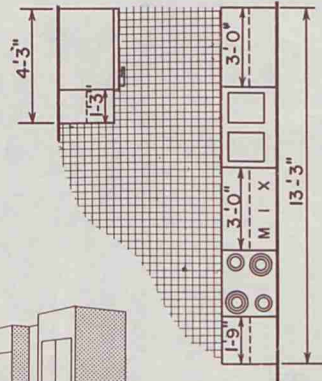
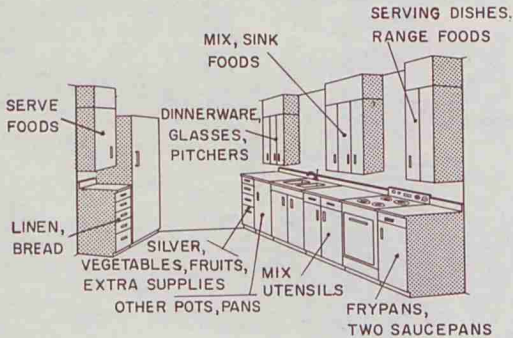
## ARRANGEMENT "B"



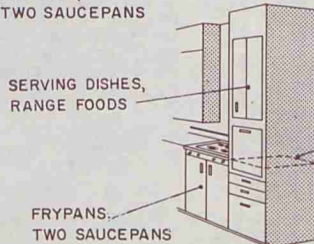
INSTALL OVEN SO LOWEST RACK POSITION IS ABOUT 36" FROM THE FLOOR

IF YOU CHOOSE A WALL OVEN AND SURFACE COOKING UNIT, MAKE THESE CHANGES.

## ARRANGEMENT "C"



IF YOU CHOOSE A WALL OVEN AND SURFACE COOKING UNIT, MAKE THESE CHANGES.



INSTALL OVEN SO LOWEST RACK POSITION IS ABOUT 36" FROM THE FLOOR



## ITEMS STORED

### Mix foods

- 3 canisters (flour, sugar, meal)
- 1 each, cake flour, cornstarch, raisins, salt, cocoa, soda, dessert mix, vinegar, sirup, shortening, baking powder
- 2 sugars
- 3 flavorings
- 5 spices

### Range foods

- 1 coffee, 1 tea
- 2 uncooked cereals
- 1 each, macaroni, rice, spaghetti

### Sink foods

- 1 dried fruit
- 2 dried beans/pas
- 6 canned foods

### Ready-to-serve foods

- 1 cereal
- 2 cookies/crackers
- 4 spreads/relishes

### Dinnerware (service for 8)

- 1 stack each, dinner plates, salad plates, saucers, sauce dishes
- 2 stacks soup bowls
- 4 stacks cups

### Glasses, pitchers, etc.

- 8 juice, 8 water glasses
- 1 large, 1 small pitcher
- 2 relish dishes
- 1 creamer and sugar
- 4 refrigerator dishes

### Serving dishes

- 4 bowls
- 2 platters

### Silver

Service for 8

### Mix utensils

- 1 each, flour sifter, pint measure, cup measure, baking dish, biscuit pan, piepan, muffin pan
- 2 cakepans
- 3 mixing bowls

### Pots, pans, frypans

- 1 each, double boiler, coffeepot, 2-quart saucepan, 1-quart saucepan, 4-quart saucepot, colander, 10½-inch frypan, 9-inch frypan
- 2 3-quart saucepans

### Kitchen linens

- 16 hand and dish towels
- 6 dishcloths
- 4 pot holders
- 4 aprons
- 1 box paper napkins
- 1 tablecloth

### Bread

2 loaves

### Vegetables and fruit

- 10 lb. potatoes
- 3 lb. each, vegetables, fruits

## SHELF SPACINGS AND DRAWER DEPTHS

**WALL CABINETS**—Shelves in wall cabinets are 12 inches deep. Items listed can be stored if the suggested space between shelves is used. The top shelf will be within reach if the cabinet is hung not more than 15 inches above the base cabinet. Adjustable shelves are recommended.



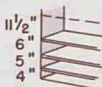
DINNERWARE, GLASSES OR  
DINNERWARE, GLASSES, PITCHERS



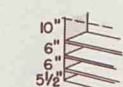
SERVING DISHES



SERVING DISHES,  
PITCHERS



DINNERWARE,  
SERVE FOODS



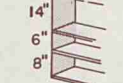
GLASSES, PITCHERS,  
SINK FOODS



SERVING DISHES,  
RANGE FOODS



MIX, SINK OR  
MIX, RANGE FOODS



SERVE FOODS

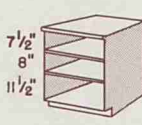


RANGE, SERVE FOODS

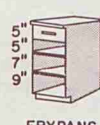
**BASE CABINETS**—Base cabinets shown are 36 inches high and have a 4-inch-high toe space. Items listed can be stored if the suggested shelf spacings and drawer depths are used. Sliding shelves increase the usability and convenience of base cabinets. Widths of individual units are shown on pages 1 and 2.



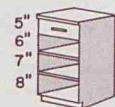
MIX UTENSILS



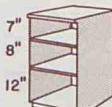
ALL POTS, PANS



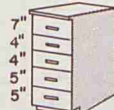
FRYPANS



FRYPANS,  
TWO SAUCEPANS



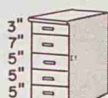
OTHER  
POTS, PANS



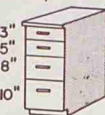
LINEN, BREAD



VEGETABLES, FRUITS,  
EXTRA SUPPLIES



LINEN, BREAD,  
SILVER



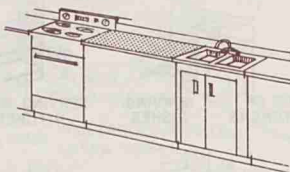
SILVER, VEGETABLES,  
FRUITS, EXTRA SUPPLIES



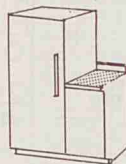
# CLEARANCES AND COUNTER WIDTHS

The following clearances and widths of counters were used in developing the arrangements illustrated on pages 1 and 2. You will find them helpful in adjusting these arrangements to your

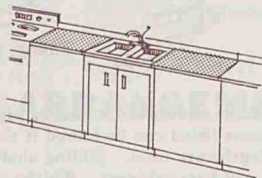
needs and your house plan. Counter areas between equipment can serve two purposes. For instance, a mix counter next to the sink can also be used for stacking dishes.



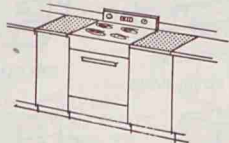
Provide a mix counter 36 to 42 inches wide, preferably between equipment; range and sink, sink and refrigerator, or range and refrigerator.



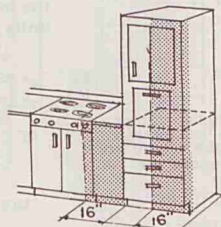
Provide a counter 15 to 18 inches wide at the latch side of the refrigerator for convenience when placing and removing foods from the refrigerator.



Provide a counter 24 to 36 inches wide to the right of the sink for stacking dishes to be washed and a counter 18 to 36 inches wide to the left for stacking clean dishes. If a dishwasher is desired, allow 24 inches for it either to the left or to the right of the sink. Provide elsewhere for base storage lost.



Provide counters 12 to 24 inches wide on both sides of the surface cooking area.



Provide at least 16 inches of clearance between the center of the front unit or burner and a wall or high equipment and between the center front of the wall oven and the adjoining wall.

Prepared by:  
Mildred S. Howard, Genevieve K. Tayloe, and W. Russell Parker  
CLOTHING AND HOUSING RESEARCH DIVISION  
AGRICULTURAL RESEARCH SERVICE

# HOUSE PLANNING AIDS



Reprinted from U. S. Department of Agriculture Misc. Publication No. 935 and published by the North Carolina Agricultural Extension Service as **Home Economics 47**. Available from Housing and House Furnishings Dept. North Carolina Agricultural Extension Service

North Carolina Agricultural Extension Service, North Carolina State University at Raleigh and the U. S. Department of Agriculture, Cooperative State College Station, Raleigh, N. C., George Hyatt, Jr., Director. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

October 1966

## L-SHAPED KITCHEN ARRANGEMENTS

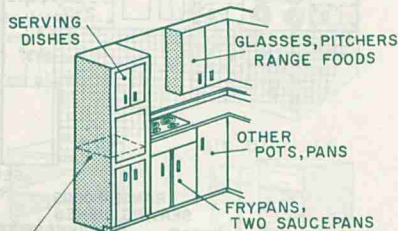
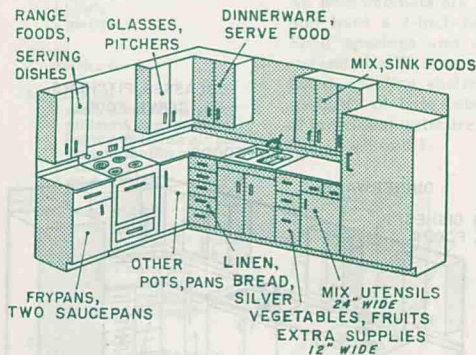
These are examples of efficient L-shaped arrangements for kitchens. The width of each work area is based on the recommended counter widths given on page 4 and the cabinet space needed above and below the counter to store items listed on page 3. Foods are grouped by area at which they are stored, such as range foods. In some arrangements, two types of items are stored together, such as mix and sink foods.

Select the arrangement that fits best into your house plan. Compare the list of items you want

to store with the list on page 3. If you need more storage space, increase the width of the area where you need it, if your plan permits, or provide space elsewhere for extra supplies and seldom-used utensils. If you use a single wall oven, you will have extra storage space in the base cabinet below the oven.

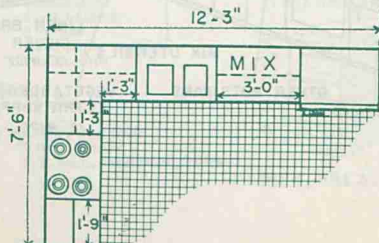
On page 3 you will find sketches of the wall and base cabinets used in the arrangements illustrated. Shelf spacing shown will make the best use of the cabinet.

### ARRANGEMENT "A"



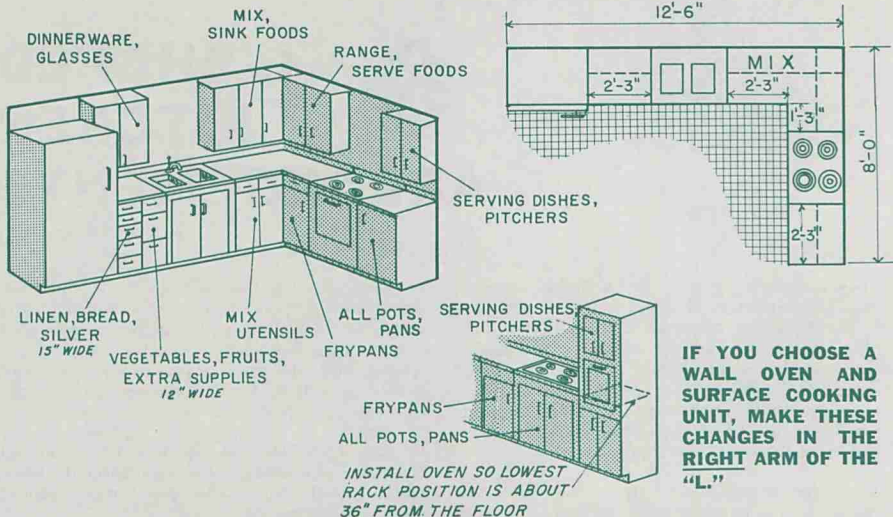
INSTALL OVEN SO LOWEST RACK POSITION IS ABOUT 36" FROM THE FLOOR

**IF YOU CHOOSE A WALL OVEN AND SURFACE COOKING UNIT, MAKE THESE CHANGES IN THE LEFT ARM OF THE "L."**

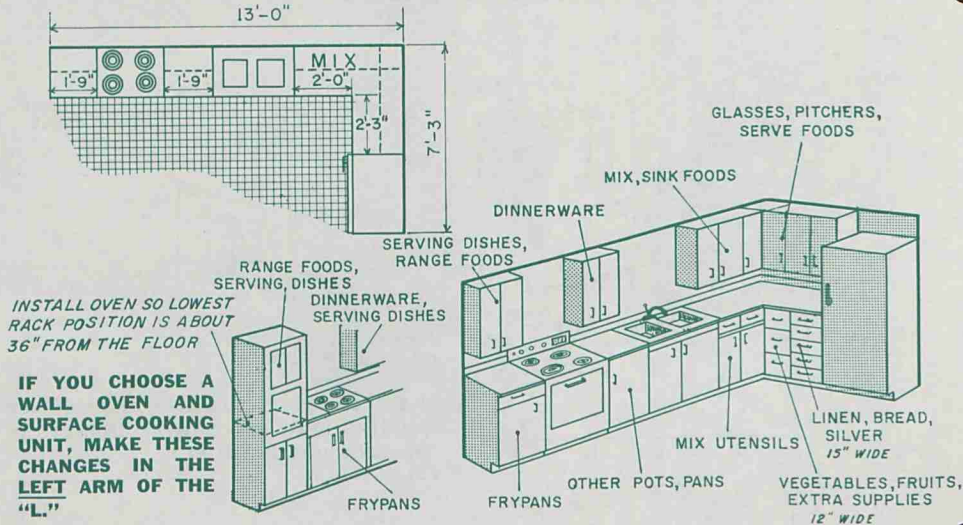


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AGRICULTURAL RESEARCH SERVICE

## ARRANGEMENT "B"



## ARRANGEMENT "C"





## ITEMS STORED

### Mix foods

- 3 canisters (flour, sugar, meal)
- 1 each, cake flour, corn-starch, raisins, salt, cocoa, soda, dessert mix, vinegar, sirup, shortening, baking powder
- 2 sugars
- 3 flavorings
- 5 spices

### Range foods

- 1 coffee, 1 tea
- 2 uncooked cereals
- 1 each, macaroni, rice, spaghetti

### Sink foods

- 1 dried fruit
- 2 dried beans/peas
- 6 canned foods

### Ready-to-serve foods

- 1 cereal
- 2 cookies/crackers
- 4 spreads/relishes

### Dinnerware (service for 8)

- 1 stack each, dinner plates, salad plates, saucers, sauce dishes
- 2 stacks soup bowls
- 4 stacks cups

### Glasses, pitchers, etc.

- 8 juice, 8 water glasses
- 1 large, 1 small pitcher
- 2 relish dishes
- 1 creamer and sugar
- 4 refrigerator dishes

### Serving dishes

- 4 bowls
- 2 platters

### Silver

- Service for 8

### Mix utensils

- 1 each, flour sifter, pint measure, cup measure, baking dish, biscuit pan, piepan, muffin pan
- 2 cakepans
- 3 mixing bowls

### Pots, pans, frypans

- 1 each, double boiler, coffeepot, 2-quart saucepan, 1-quart saucepan, 4-quart saucepot, colander, 10½-inch frypan, 9-inch frypan
- 2 3-quart saucepans

### Kitchen linens

- 16 hand and dish towels
- 6 dishcloths
- 4 pot holders
- 4 aprons
- 1 box paper napkins
- 1 tablecloth

### Bread

- 2 loaves

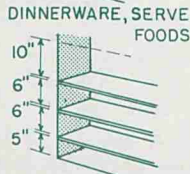
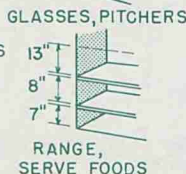
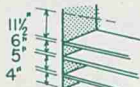
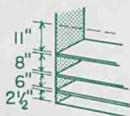
### Vegetables and fruit

- 10 lb. potatoes
- 3 lb. each, vegetables, fruits

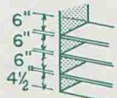
## SHELF SPACINGS AND DRAWER DEPTHS

### WALL CABINETS

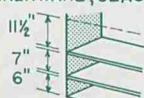
Shelves in wall cabinets are 12 inches deep and if spaced as shown will store the items listed. The top shelf will be within reach of the homemaker of average height, if the clearance between the counter top and the cabinet is not more than 15 inches. Adjustable shelves are recommended.



### MIX, SINK FOODS



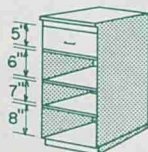
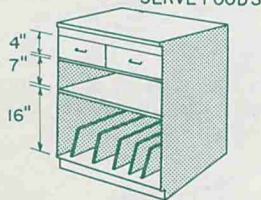
### DINNERWARE, GLASSES



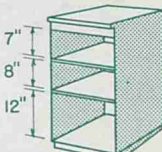
### SERVING DISHES, PITCHERS

### BASE CABINETS

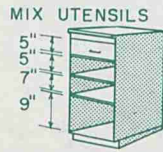
All base cabinets are 36 inches high and have a 4-inch-high toe space. Shelf spacings and drawer depths suggested will accommodate items listed. Sliding shelves increase the usability of base cabinets. Widths of individual units are given on plans on pages 1 and 2.



### FRYPANS, TWO SAUCEPANS

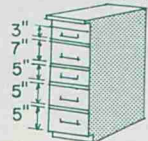


### OTHER POTS, PANS

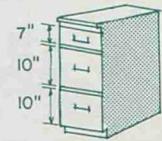


### MIX UTENSILS

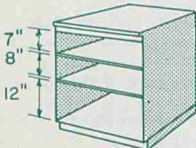
### FRYPANS



### LINEN, BREAD, SILVER



### VEGETABLES, FRUITS, EXTRA SUPPLIES



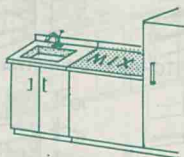
### ALL POTS, PANS



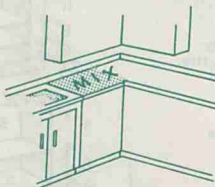
## CLEARANCES AND COUNTER WIDTHS

The following recommended clearances and counter widths were used in developing the arrangements illustrated on pages 1 and 2. You will find them helpful in adjusting these

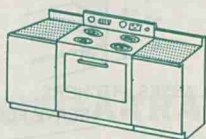
arrangements to your needs and your house plan. Counter areas between equipment can serve two purposes. For instance, a mix counter next to the sink can also be used for stacking dishes.



Provide 36 to 42 inches for mixing if the counter is between two pieces of equipment.



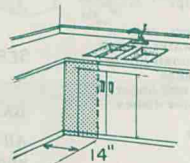
Provide 24 to 36 inches for mixing if the counter extends into the corner.



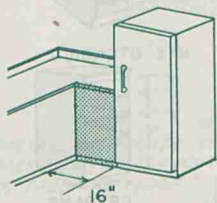
Provide 12 to 24 inches at both sides of the surface cooking area.



Provide 18 to 36 inches of counter to the left and 24 to 36 inches to the right of the sink. If a dishwasher is desired, allow 24 inches for it either to the left or right of the sink. Plan elsewhere for base storage lost.

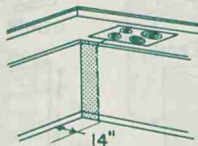


Provide at least 14 inches of clearance between the center of the sink bowl and the turn of the counter for standing.

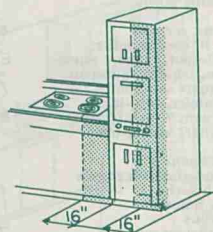


Provide at least 16 inches of clearance between the latch side of the refrigerator door and the turn of the counter.

Provide counter space near the refrigerator on which to place foods taken from it.



Provide at least 14 inches of clearance between the center of the front unit or burner and the turn of the counter for standing.



Provide at least 16 inches of clearance between the center of the front unit or burner and a wall or high equipment and between the center front of the wall oven and the adjoining wall.

# HOUSE PLANNING AIDS



Reprinted from U. S. Department of Agriculture Misc. Publication No. 934 and published by the North Carolina Agricultural Extension Service as **Home Economics 50**. Available from Housing and House Furnishings Dept. North Carolina Agricultural Extension Service

North Carolina Agricultural Extension Service, North Carolina State University at Raleigh and the U. S. Department of Agriculture Cooperating, State College Station, Raleigh, N. C., George Hyatt, Jr., Director. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

October 1966



## BROKEN-U KITCHEN ARRANGEMENTS

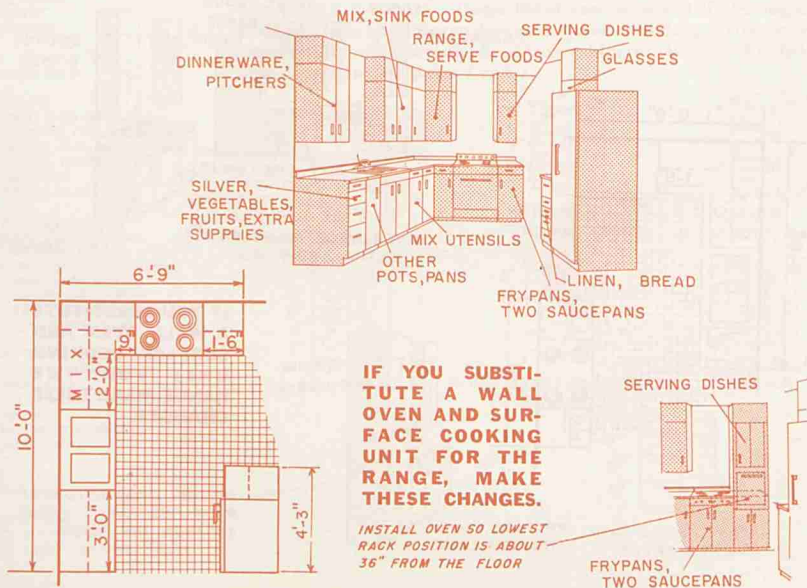
Broken-U arrangements for kitchens usually fit well into combination rooms such as kitchen-dining, kitchen-family, or kitchen-work rooms.

Three arrangements are shown. In the first the refrigerator is in the island; in the second the sink is; and in the third the range is. In each arrangement at least the minimum amount of counter spaces, as shown on page 4, has been provided, and storage space for the items listed on page 3. Foods are grouped by and stored at or near the area at which they are usually used first—mix center, sink, range, or serve center.

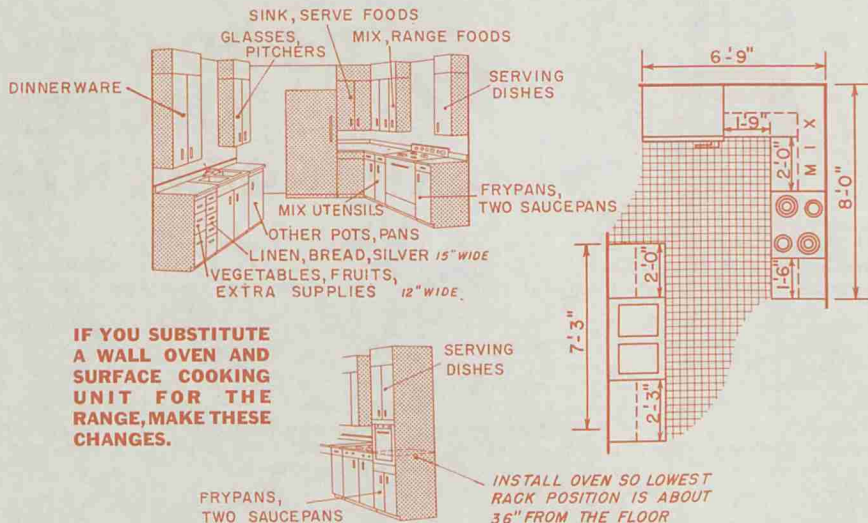
Compare this list with what you want to store in your kitchen. If you want more storage space and you can't increase the widths of the areas where the storage is needed, plan storage elsewhere for extra supplies and the utensils that you don't use very often.

Allow 4 feet 6 inches to 5 feet 4 inches between facing equipment—the space needed for two people to work and pass by each other. The passageway at the end of the island should be at least 3 feet 6 inches wide.

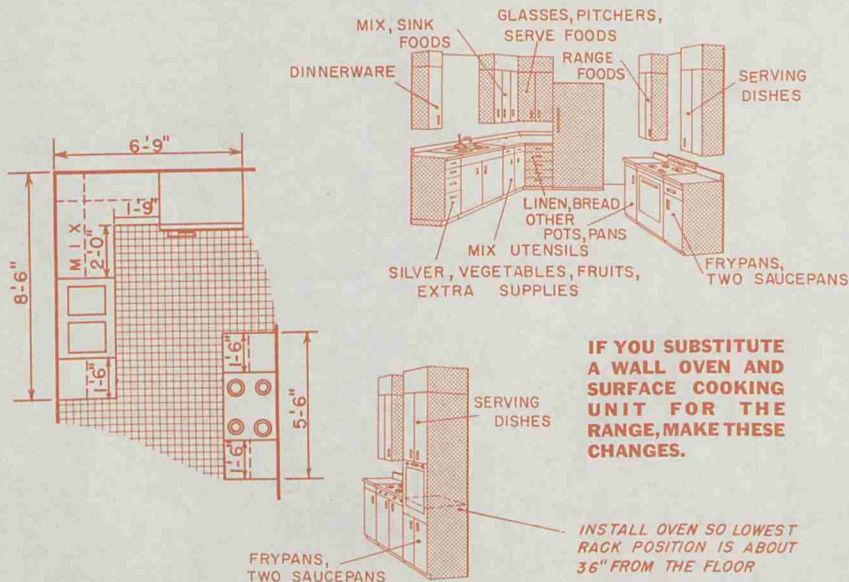
### ARRANGEMENT "A"



## ARRANGEMENT "B"



## ARRANGEMENT "C"





## ITEMS STORED

### Mix foods

- 3 canisters (flour, sugar, meal)
- 1 each, cake flour, corn-starch, raisins, salt, cocoa, soda, dessert mix, vinegar, sirup, shortening, baking powder
- 2 sugars
- 3 flavorings
- 5 spices

### Range foods

- 1 coffee, 1 tea
- 2 uncooked cereals
- 1 each, macaroni, rice, spaghetti

### Sink foods

- 1 dried fruit
- 2 dried beans/peas
- 6 canned foods

### Ready-to-serve foods

- 1 cereal
- 2 cookies/crackers
- 4 spreads/relishes

### Dinnerware (service for 8)

- 1 stack each, dinner plates, salad plates, saucers, sauce dishes
- 2 stacks soup bowls
- 4 stacks cups

### Glasses, pitchers, etc.

- 8 juice, 8 water glasses
- 1 large, 1 small pitcher
- 2 relish dishes
- 1 creamer and sugar
- 4 refrigerator dishes

### Serving dishes

- 4 bowls
- 2 platters

### Silver

- Service for 8

### Mix utensils

- 1 each, flour sifter, pint measure, cup measure, baking dish, biscuit pan, piepan, muffin pan
- 2 cakepans
- 3 mixing bowls

### Pots, pans, frypans

- 1 each, double boiler, coffeepot, 2-quart saucepan, 1-quart saucepan, 4-quart saucepot, colander, 10½-inch frypan, 9-inch frypan
- 2 2-quart saucepans

### Kitchen linens

- 16 hand and dish towels
- 6 dishcloths
- 4 pot holders
- 4 aprons
- 1 box paper napkins
- 1 tablecloth

### Bread

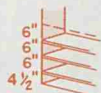
- 2 loaves

### Vegetables and fruit

- 10 lb. potatoes
- 3 lb. each, vegetables, fruits

## SHELF SPACINGS AND DRAWER DEPTHS

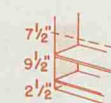
**WALL CABINETS**—Shelves in wall cabinets are 12 inches deep. Items listed can be stored if the suggested space between shelves is used. The top shelf will be within easy reach of the homemaker of average height if the cabinet is hung not more than 15 inches above the base cabinets. Adjustable shelves are recommended.



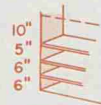
DINNERWARE



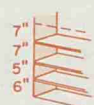
GLASSES, PITCHERS



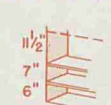
SERVING DISHES



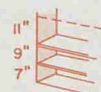
DINNERWARE, PITCHERS



GLASSES



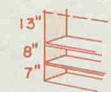
GLASSES, PITCHERS, SERVE FOODS



RANGE FOODS



MIX, RANGE OR MIX, SINK FOODS

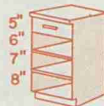


SINK, SERVE OR RANGE, SERVE FOODS

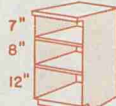
**BASE CABINETS**—Base cabinets shown are 36 inches high and have a 4-inch-high toe space. Items listed can be stored if the suggested shelf spacings and drawer depths are used. Sliding shelves increase the usability and convenience of base cabinets. Widths of individual units are shown on pages 1 and 2.



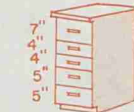
MIX UTENSILS



FRYPANS, TWO SAUCEPANS



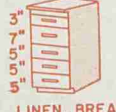
OTHER POTS, PANS



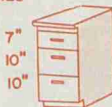
LINEN, BREAD



SILVER, VEGETABLES, FRUITS, EXTRA SUPPLIES



LINEN, BREAD, SILVER



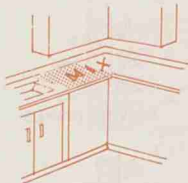
VEGETABLES, FRUITS, EXTRA SUPPLIES



## CLEARANCES AND COUNTER WIDTHS

The following clearances and widths of counters were used in developing the arrangements illustrated on pages 1 and 2. You will find them helpful in adjusting these arrangements to your

needs and your house plan. Counter areas between equipment can serve two purposes. For instance, a mix counter next to the sink can also be used for stacking dishes.



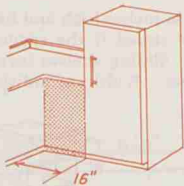
When the mix center extends around the corner, one arm of the counter should be 24 to 36 inches wide.



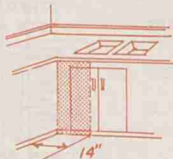
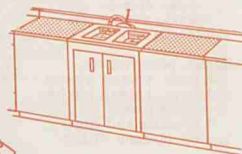
Provide a counter at the latch side of the refrigerator for foods being placed in or taken from it.



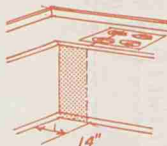
Provide counters 12 to 24 inches wide at both sides of the surface cooking area.



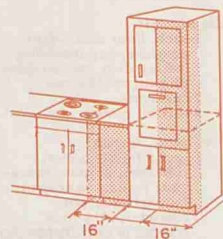
Provide a counter 18 to 36 inches wide to the left and 24 to 36 inches to the right of the sink. If a dishwasher is desired, allow 24 inches for it either to the left or to the right of the sink. Provide elsewhere for base storage lost.



Provide at least 14 inches of clearance between the center of the sink bowl and the turn of the counter for standing.



Provide at least 14 inches of clearance between the center of the front unit or burner and the turn of the counter for standing.



Provide at least 16 inches of clearance between the center of the front unit or burner and a wall or high equipment and between the center front of the wall oven and the adjoining wall.

Prepared by:  
Mildred S. Howard, Genevieve K. Tayloe, and W. Russell Parker  
CLOTHING AND HOUSING RESEARCH DIVISION  
AGRICULTURAL RESEARCH SERVICE

# HOUSE PLANNING AIDS



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North Carolina Agricultural Extension Service, North Carolina State University at Raleigh and the U. S. Department of Agriculture Cooperating, State College Station, Raleigh, N. C., George Hyatt, Jr., Director. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

July 1969

## CORNER STORAGE IN KITCHENS

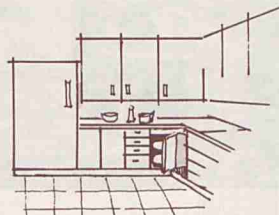


Special planning is needed to make corner spaces in kitchen wall and base cabinets convenient for storage.

One of the best ways to make maximum use of corner space is to install revolving cabinets. Excellent hardware that insures trouble-free operation is available from building suppliers.

Study the U-shaped, broken-U, and L-shaped kitchen arrangements in Miscellaneous Publications 933, 934, and 935, respectively. The amount of convenient storage in these arrangements can be increased considerably by using some of the ideas presented in this leaflet. It is ~~also~~ particularly important in small kitchens not to waste corner storage space.

### REVOLVING BASE CABINET



#### UTENSILS STORED ON REVOLVING SHELVES

##### TOP SHELF

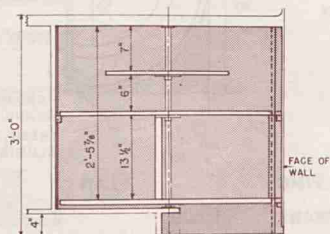
3-quart, 2-quart, and 1-quart saucepans; flour sifter

##### SECOND SHELF

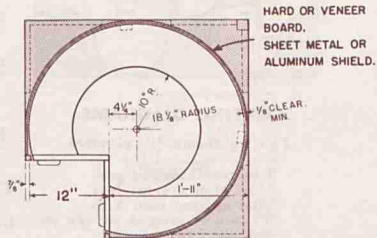
3½-quart, 2-quart, and 1-quart mixing bowls; coffeepot; pint and cup measures; 10½-inch and 9-inch frypans; baking dish

##### THIRD SHELF

3-quart saucepan; 4-quart saucepot; double boiler; colander; biscuit pan; piepan; muffin pan; 2 cakepans



SECTION



PLAN

# FLOOR-TO-CEILING CABINET



## ITEMS STORED

Utility pan, square cakepan, jelly mold, loaf pan, cooling racks, cookie sheets, piepans, cakepans, muffin pans; quart, pint, and cup measures

Spices, flavorings, dessert mixes, cream of tartar, coconut

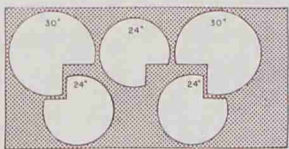
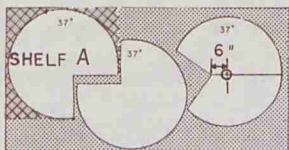
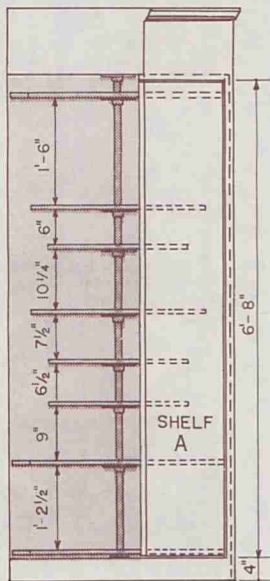
Packaged flours, sugars, sir-ups, macaroni, dried fruits, baking powder, salt, soda, salad oil, shortening, cornstarch, vinegar, chocolate, tea, coffee, cocoa, uncooked cereals

4 mixing bowls

3 casseroles, 6 custard cups

3-pound box of oats, Dutch oven, food mill, flour sifter, colander, double boiler, and mixing bowl and juicer for electric mixer

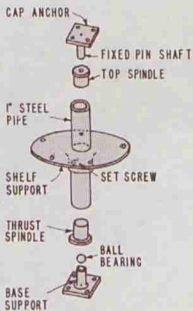
1 gallon of vinegar, water-bath canner, pressure canner, canning kettle, and blancher



## CUTTING DIAGRAMS

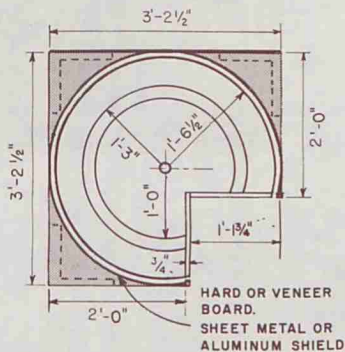
2 - 4' x 8' sheets, 3/4" plywood

Use crosshatched portion of material left after cutting shelf A to fill corners around second shelf from bottom (shelf A)



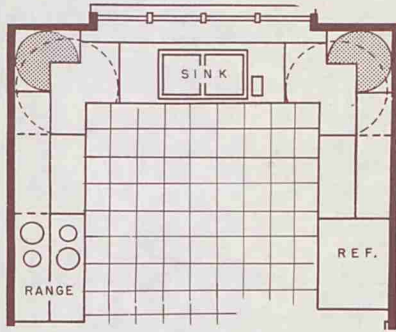
## TYPICAL REVOLVING CABINET HARDWARE

## SECTION

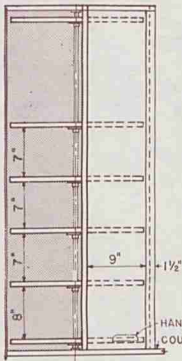


## PLAN

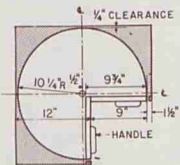
# REVOLVING WALL CABINETS



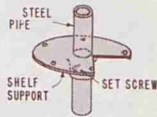
**PLAN OF KITCHEN**  
SHOWING LOCATION OF THE CORNER CABINETS



**SECTION**



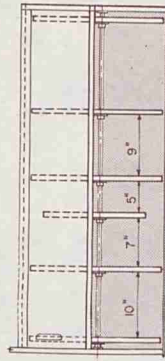
**PLAN**



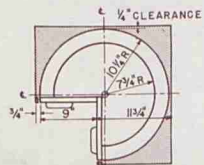
## REVOLVING WALL-CABINET HARDWARE

Select hardware first. Modify construction of cabinets to conform to requirements of hardware selected.

3/4" plywood suggested for shelves.



**SECTION**

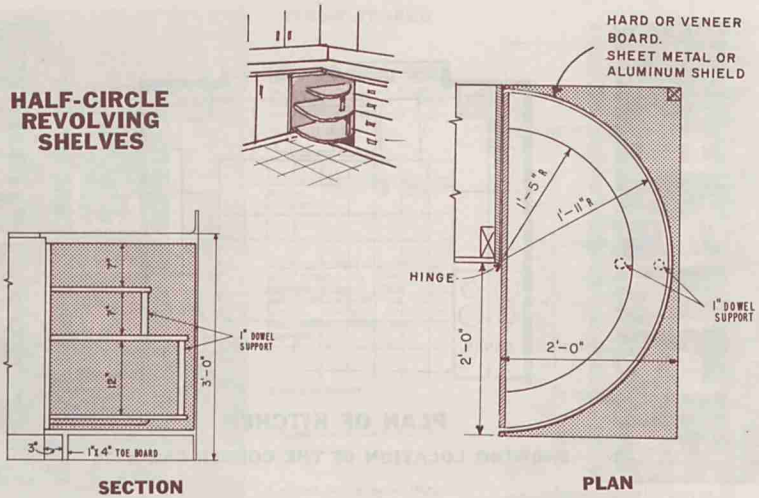


**PLAN**



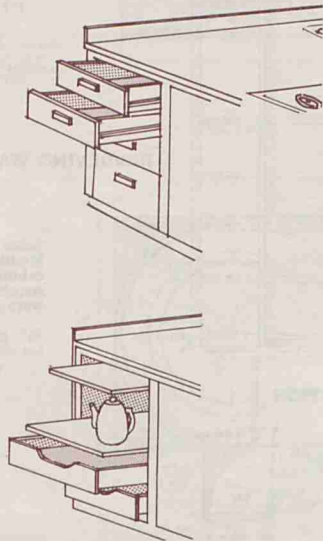
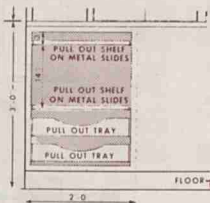
## OTHER SUGGESTIONS FOR USE OF CORNER SPACE

### HALF-CIRCLE REVOLVING SHELVES



### DRAWERS OR PULLOUT TRAYS AND SHELVES USED FROM ADJOINING DINING AREA

FOR STORAGE OF TABLE LINENS, SILVER, AND TABLE  
APPLIANCES



# HOUSE PLANNING AIDS



Reprinted from U. S. Department of Agriculture Misc. Publication No. 960 and published by the North Carolina Agricultural Extension Service as **Home Economics 49**. Available from Housing and House Furnishings Dept. North Carolina Agricultural Extension Service

North Carolina Agricultural Extension Service, North Carolina State University at Raleigh and the U. S. Department of Agriculture Cooperating. State College Station, Raleigh, N. C., George Hyatt, Jr., Director. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

June 1967



# DINING AREAS

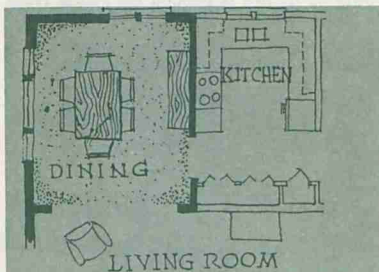
The number of persons you wish to serve, the type and amount of entertaining done, and your preferences for style of service and furniture will determine the number, size, and location of your dining areas.

Plan at least one major dining area large enough for family sitdown meals. It should be

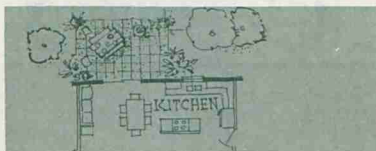
attractive, have a window if possible, be convenient to the food preparation area, and be directly accessible from the living room.

Secondary dining areas, such as counters and booths, also need to be carefully planned for adequacy and convenience.

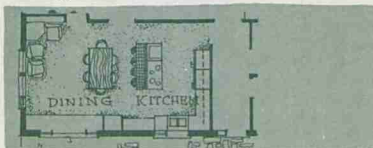
## DINING AREA LOCATIONS



- ... IN A SEPARATE DINING ROOM accessible from both kitchen and living room.



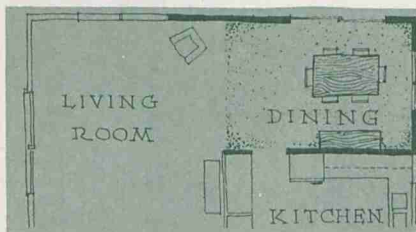
- ... ON A PATIO OR PORCH near entrances to kitchen and living area of the house.



- ... IN A MULTI-PURPOSE ROOM where table may also be used for games, homework, and sewing.



- ... IN THE KITCHEN convenient to, yet out of the work area and passageways.



- ... IN AN "L" OFF THE LIVING ROOM where dining space may be expanded to accommodate large groups.

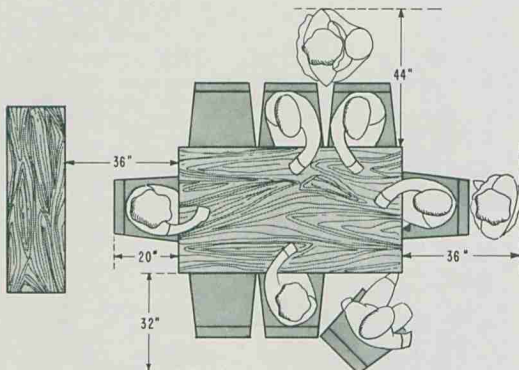
# SPACE REQUIREMENTS FOR DINING

The size of the dining space you will need is determined by the number of people to be served; furniture including table, chairs, buffet, cabinet, and serving table; and the amount of clearance required for passage and serving.

Allow 21 to 24 inches of table space for each adult. The minimum size table at which eight

adults can sit comfortably, three on each side and one at each end, is 40 inches by 72 inches. The minimum size for six adults with two on each side and one at each end is 36 inches by 60 inches. A round table 42 inches in diameter is minimum for four people, and 48 inches in diameter for six people.

## TABLES



### FREE-STANDING

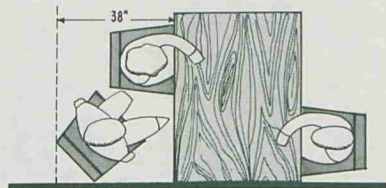
Regardless of the size or shape of your dining table, there are certain minimum clearances around it for which you should provide.

Allow 36 inches between the wall or a piece of furniture and the table to edge past a seated person. Serving requires 44 inches from table to wall, whereas only 32 inches is needed for rising from a chair at the table.

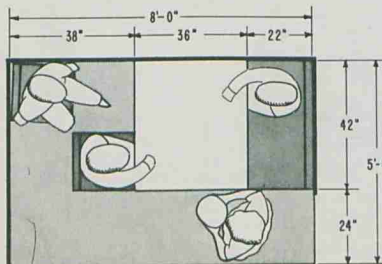
If armchairs are used, all space clearances should be increased 2 inches.

### ONE END AGAINST WALL

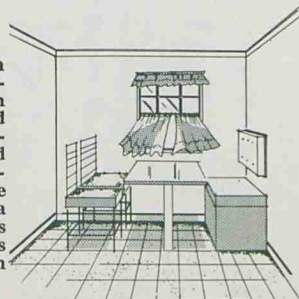
When a table is placed with one end against the wall, 38 inches is needed for rising from a chair in this confined position.



## BOOTHS



Built-in tables with benches in an alcove require less space than free-standing tables and chairs, but are less convenient for serving and seating. An arrangement with chairs on one side of the table and a built-in bench 22 inches deep on the other is preferable to one with two built-in benches.



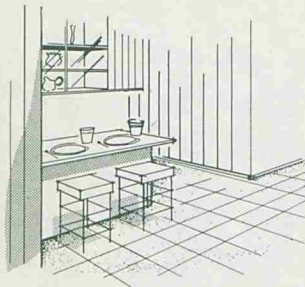
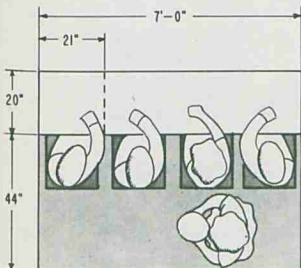
## COUNTERS

A snack or dining counter may be considered for informal meals, although its shape and resulting seating arrangement may make mealtime con-

versation awkward. The surface of the counter should be uncramped and related to the height of the chairs or stools used with it.

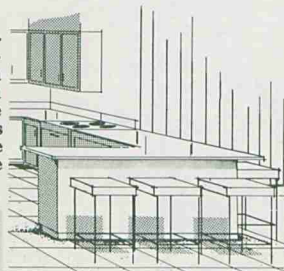
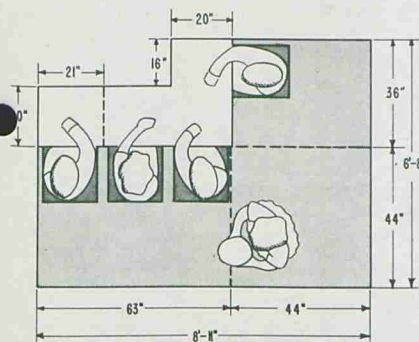
### STRAIGHT

The number you wish to seat and serve should determine the length of your counter. Multiply 21 inches (minimum width of each cover) by the number of persons to be seated to find the length of the counter.



### L-SHAPED

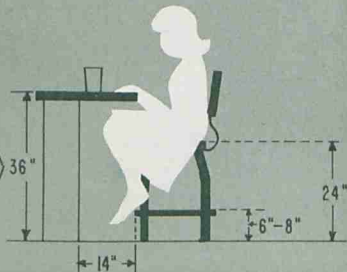
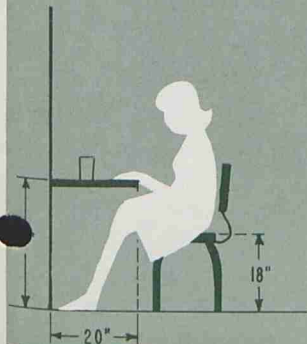
If you desire an L-shaped counter, remember to allow space in which to serve on both arms of the L. The length of the counter is again determined by the number of people to be seated at it.



### COUNTER HEIGHTS

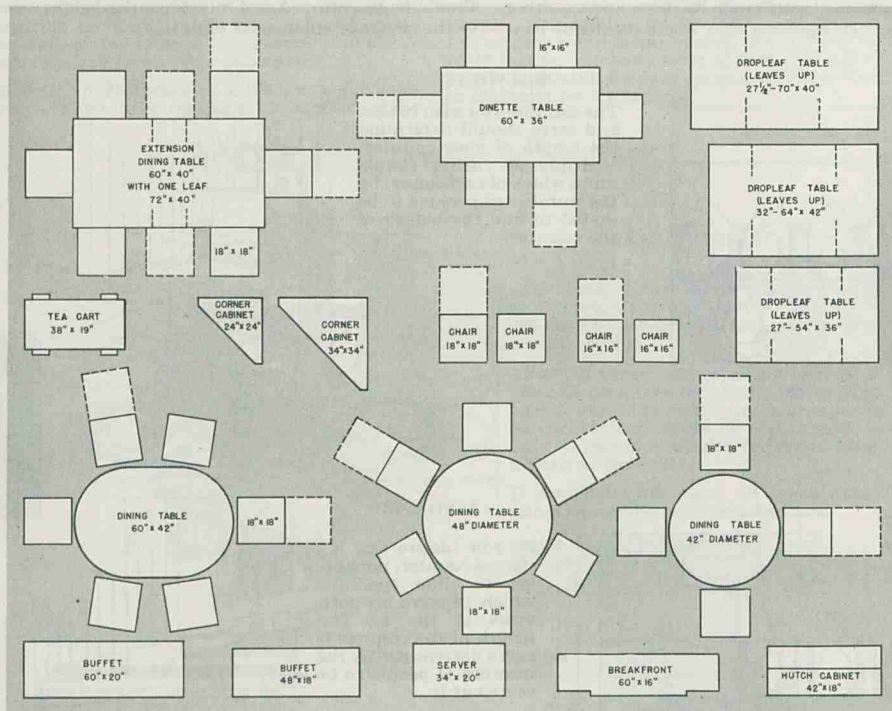
A counter should be 30 inches high if a chair with a seat 18 inches high is to be used. A depth of 20 inches should be allowed for leg room.

If a counter is 36 inches high, a 24-inch-high stool should be used. The stool should have a footrest 6 to 8 inches from the floor. At least 14 inches of knee space is needed for this higher counter.





# DINING FURNITURE CUTOUTS



Use these cutouts drawn to 1/4-inch scale to try different furniture arrangements on your floor plan. Trace, then cut out the pieces most nearly the same size as your furniture. Use the

recommended clearances for passage and serving, as minimum space allowances. Chair extensions indicate the amount of space needed for rising from the table.

The chart to the right gives the dimensions of the area needed for dining tables and chairs of typical sizes. In limited areas, space has been allowed for serving on two sides of the table; in liberal areas, on four sides.

To determine the overall dimensions of your dining area, add the depth of other furniture placed against walls—servers, buffets, chairs—to either the length or the width of the space selected from the chart.

*Based on cooperative research with the Southern, North-eastern, North Central, and Western regions.  
Prepared by: Genevieve K. Taylor, Constance D. O'Brien and W. Russell Parker  
CLOTHING AND HOUSING RESEARCH DIVISION  
AGRICULTURAL RESEARCH SERVICE*

DIMENSIONS OF SPACE REQUIRED FOR A DINING AREA WITH TABLE AND CHAIRS

SIZE OF TABLE	AREA DIMENSIONS	
	LIMITED	LIBERAL
	SERVING FROM TWO SIDES	SERVING FROM FOUR SIDES
54" x 36"	11'-2" x 9'-8"	11'-10" x 10'-4"
60" x 36"	11'-8" x 9'-8"	12'-4" x 10'-4"
60" x 40"	11'-8" x 10'-0"	12'-4" x 10'-8"
60" x 42"	11'-8" x 10'-2"	12'-4" x 10'-10"
64" x 42"	12'-0" x 10'-2"	12'-8" x 10'-10"
72" x 40"	12'-8" x 10'-0"	13'-4" x 10'-8"
42" DIAMETER	10'-2" x 10'-2"	10'-10" x 10'-10"
48" DIAMETER	10'-8" x 10'-8"	11'-4" x 11'-4"

# HOUSE PLANNING AIDS



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October 1966

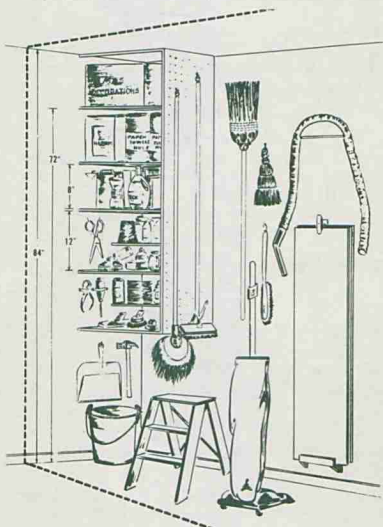
## STORAGE FOR CLEANING EQUIPMENT

Well-organized closets for your cleaning and ironing supplies and equipment save time and energy in the daily routine of caring for the home.

A closet for equipment and supplies that are used in all parts of the house for general clean-

ing should be centrally located, as in a work-room or off a hallway. In a two-story house, it may be convenient, if space permits, to store duplicates of certain cleaning supplies and equipment on each floor.

### SIZES and SHAPES ...for cleaning supplies

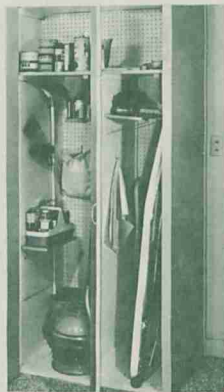


Use the table below as a guide for planning a cleaning closet that best fits into your floor plan and accommodates the supplies and equipment you have to store.

MINIMUM INSIDE DIMENSIONS FOR CLEANING CLOSETS		
Equipment stored	Width (inches)	Depth (inches)
Basic equipment Broom, wet and dry mops, pails, small equipment and supplies	24	12
Basic equipment PLUS Upright vacuum and attachments Canister vacuum Tank vacuum, stored on end stored horizontally	28 32 24 28	16 20 16 16
Basic equipment PLUS Upright vacuum, attachments, ironing board, 2 table leaves, carpet sweeper	36	16
Basic equipment PLUS Step stool, 3 table leaves, upright vacuum and attachments	48	21
Basic equipment PLUS Ironing board, step stool, 3 table leaves, upright vacuum and attachments	55	21

Based on cooperative research with the Southern, North-eastern, North Central, and Western regions.  
Prepared by: Genevieve K. Taylor and Constance D. O'Brien  
AGRICULTURAL RESEARCH SERVICE

## ... for ironing equipment



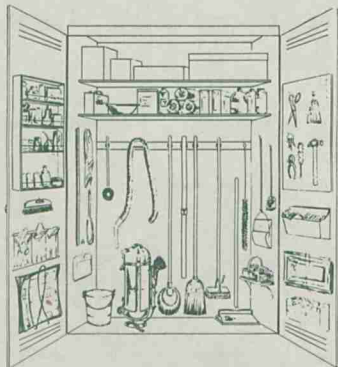
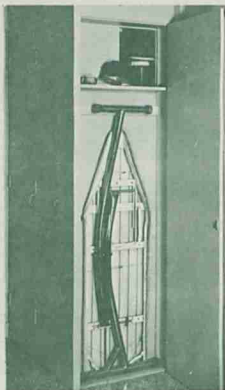
### DEEP AND NARROW CLOSET

An ironing board might be filed either in a partitioned section of a large cleaning closet or in a closet all its own near where it will be used. This section should be at least 8 inches wide, 25 inches deep, and 65 inches high.

### SHALLOW AND WIDE CLOSET

A closet 6 inches deep, 25 inches wide, and 80 inches high will accommodate an ironing board rolled in broadside. A metal ironing board can be anchored with two magnetic catches which are fastened to the back wall and grip the upper foot.

A shelf 65 inches from the floor provides storage for ironing equipment.



## ARRANGEMENT

Store each article so it can be seen and removed without moving another item. Keep the floor free for cleaning by hanging as many things as possible from hooks or clamps on one or more walls and the door. Hooks on perforated hardboard make it easy to rearrange articles as needs change.

A vacuum cleaner is easily removed if stored near the latch rather than the hinge side of the closet door. Store an upright vacuum with handle and bag toward the door. Attachments fit on shelves or hooks, or in pocketed bags; the cord and hose might hang on a wall or the door.

Provide space for a covered metal box or can for oily rags.

## CONSTRUCTION

The doorway should be the total width of the closet. Unlike sliding or bifold doors, hinged doors provide additional storage space for hanging items, shallow shelves, pockets, and bins. If the closet is more than 24 inches wide, use more than one door. Openings or louvers at the top and bottom of the door provide good ventilation.

Avoid door sills and raised floors in the clean-

ing closet so heavy equipment can be rolled or pushed into place without lifting.

The doors and walls of your cleaning closet should be strong enough to support the weight of hanging items. Tempered perforated hardboard  $\frac{1}{8}$  inch thick mounted  $\frac{1}{4}$  inch from the wall will hold cleaning equipment hung from hooks.

Smooth, washable finishes are easy to clean.



# HOUSE PLANNING AIDS



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## HOUSEHOLD LINEN STORAGE

For convenience, household linens should be stored at or near the place where they are most likely to be used—table linens in the dining area, sheets and pillowcases near the bedrooms, and bath towels in or near the bathroom.

Dimensions and clearances have been established through research. It was found that bath towels store best on shelves 12 and 16 inches deep (front-to-back measure). Sheets and pillowcases store best on shelves 16 and 20 inches deep.

For spaces 20 or more inches front to back, sliding shelves or drawers are more convenient than fixed shelves. Two inches less clearance

is needed between movable surfaces than between surfaces that do not slide.

Shelves that can be adjusted make the best possible use of available space and accommodate changing needs.

On the following pages are given the widths and depths of shelves needed to store a limited number of specified items.

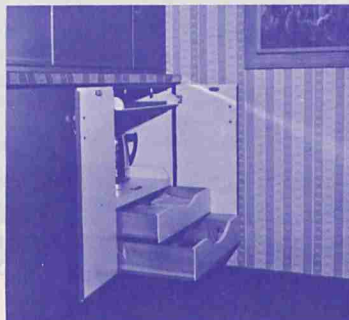
Designs for storage units that provide the necessary space are shown. You can develop other designs by using the interior dimensions given and making allowances for the type of construction you plan to use.

### TABLE LINENS

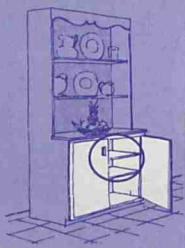
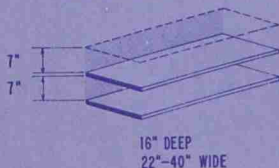
THESE UNITS PROVIDE SPACE FOR THE FOLLOWING:

ARTICLE	NUMBER OF PILES
6 TABLE CLOTHS	2
12 NAPKINS	2

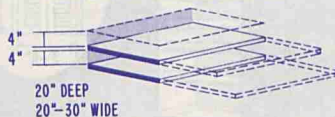
Two shelves or two drawers are needed to store the linens listed. Plan to use the corner space in the kitchen cabinet that opens from the dining-area side, by installing drawers or sliding shelves. Illustrated below is a unit for a dining area with fixed shelves for linens.



FIXED SHELVES



DRAWERS OR SLIDING SHELVES

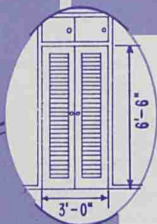




# BEDDING



Bedding fits well into full-length closets. The dimensioned sketches on this page show how much space is needed, and how these space requirements can be incorporated into storage designs.

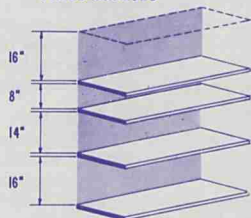


Features of this design are adjustable shelves, two louvered doors that open the entire width of the closet, and a separate storage area above the doors.

THESE UNITS PROVIDE SPACE FOR THE FOLLOWING:

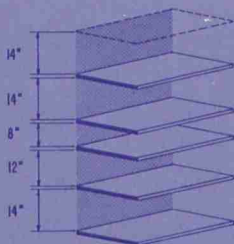
ARTICLE	NUMBER OF PILES
4 BLANKET SHEETS	2
3 BEDSPREADS	2
6 SHEETS	1
7 PRS. PILLOWCASES	2
6 DRESSER SCARVES	1
4 BLANKETS, QUILTS	2

## FIXED SHELVES

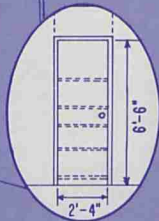
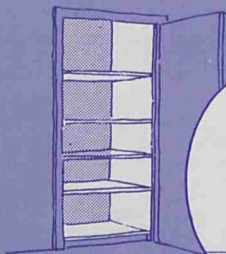


16" DEEP  
34"-41" WIDE

## FIXED SHELVES

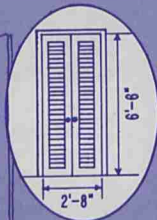
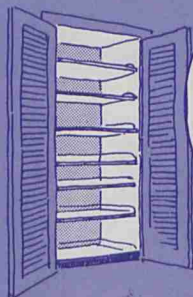


20" DEEP  
26"-32" WIDE

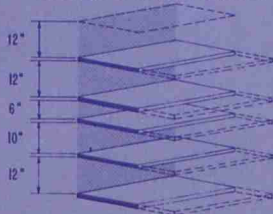


This closet—20 inches deep and not as wide as the one illustrated above—is designed with a stock door, 2 feet 4 inches wide, and a raised floor for protection from dust.

## DRAWERS OR SLIDING SHELVES

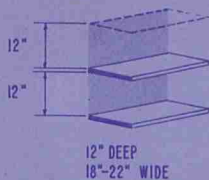


This closet has five sliding shelves needed for linen, and two fixed shelves for extra bedding.



20" DEEP  
26"-32" WIDE

## FIXED SHELVES



In a small bathroom, the only available space for a towel cabinet may be above the water closet. There should be enough space between the top of the tank and the bottom of the cabinet for servicing the tank. The cabinet can be built into the stud space to provide additional depth if the location of the soil stack permits.

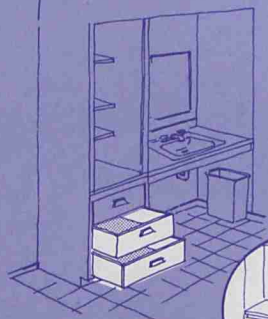
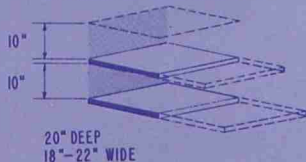


## BATH LINENS

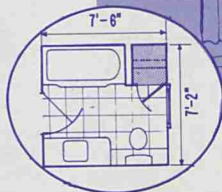
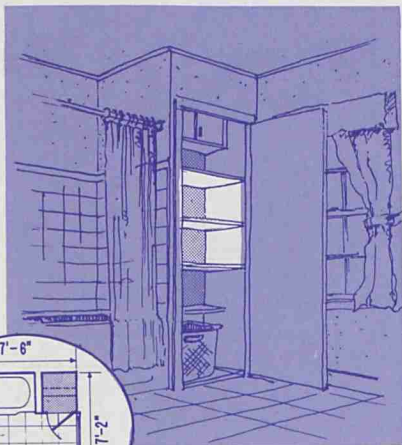
THESE UNITS PROVIDE SPACE FOR THE FOLLOWING:

ARTICLE	NUMBER OF PILES
12 BATH TOWELS	2
12 WASH CLOTHS	2

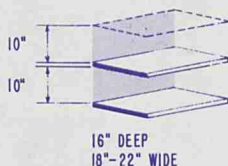
## DRAWERS OR SLIDING SHELVES



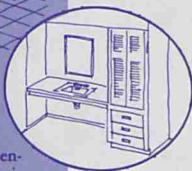
In this arrangement, bath linens are conveniently stored in drawers. Extra storage is provided on the shelves in the top of the cabinet for bathroom supplies.



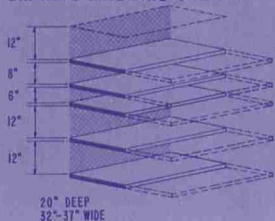
## FIXED SHELVES



A closet at the end of the tub provides storage not only for bath linens but for other articles as well. The closet shown here has a basket on the floor for soiled clothing, and a locked medicine cabinet at the top. Shelves could be put on the door for storage of toiletries, such as shampoos and soap.



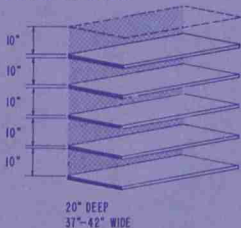
### DRAWERS OR SLIDING SHELVES



A combination of drawers and shelves can be used for linen storage. In this design, the drawers plus the pullout shelf will accommodate the articles listed. Shelves above provide extra storage.



### FIXED SHELVES

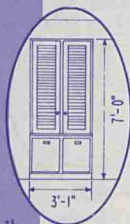
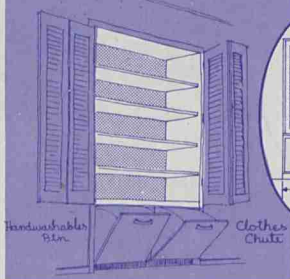


## BEDDING AND BATH LINENS

When bedding and bath linens are stored together, the closet should be convenient to bedrooms and bath.

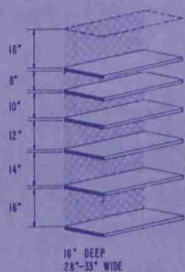
THESE UNITS PROVIDE SPACE FOR THE FOLLOWING:

ARTICLE	NUMBER OF PILES
12 BATH TOWELS	2
12 WASH CLOTHS	2
3 BEDSPREADS	2
4 BLANKETS, QUILTS, COMFORTERS	2
4 BLANKET SHEETS	1
6 DRESSER SCARVES	1
7 PRS. PILLOW CASES	2
6 SHEETS	1

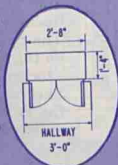


The bin at the bottom of this closet is for hand washables. The chute for soiled clothing is a convenient feature if the closet can be located above the laundry area.

### FIXED SHELVES



This design could easily fit at the end of a hall. Note the 4-inch toe space at the bottom of the closet.



Prepared by:  
Mildred S. Howard, Genevieve K. Taylor,  
and W. Russell Parker  
AGRICULTURAL RESEARCH SERVICE



# HOUSE PLANNING AIDS



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5-68-5M



## LAUNDRY AREAS

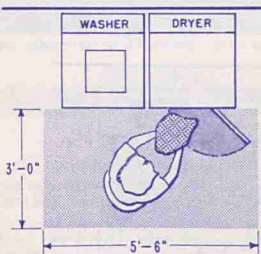
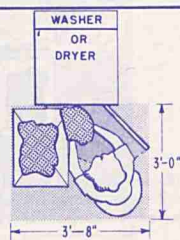
Choose a laundry area that best suits your needs and your house plan. The space requirements and arrangements illustrated will help you to plan an adequate and convenient laundry area.

The dimensions given in the sketches are for the minimum space needed to operate laundry equipment. To determine the overall dimensions for your laundry area, add the space needed for the equipment selected.

### MINIMUM RECOMMENDED WORKSPACE TO USE LAUNDRY EQUIPMENT

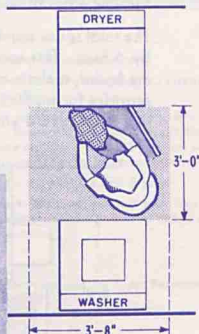
#### WASHER OR DRYER

The depth of the workspace needed in front of a washer, dryer, or combination washer-dryer is 3 feet; the width is 3 feet 8 inches. This includes space for a laundry basket or cart.



#### WASHER AND DRYER SIDE BY SIDE

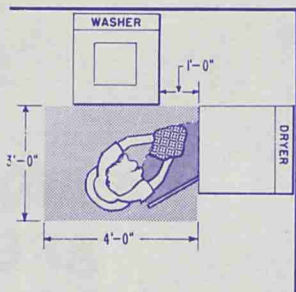
When the washer and dryer are installed side by side, the depth of the space needed in front of the equipment remains 3 feet, but the width should be increased to 5 feet 6 inches.



#### WASHER AND DRYER OPPOSITE EACH OTHER

If the washer and dryer are placed opposite each other, 3 feet of workspace is needed between the two appliances. The width needed is the same as that for using a washer or dryer by itself—3 feet 8 inches.



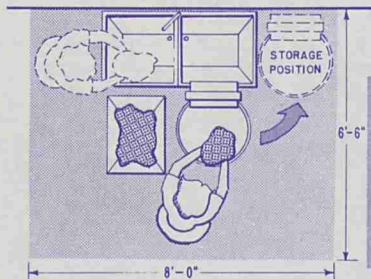
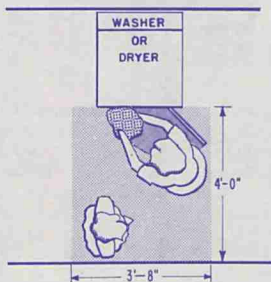


### WASHER AND DRYER AT RIGHT ANGLES

Arrangements with the dryer to the right and at an angle to the washer were found, through research, to be the most convenient. If the dryer is placed at right angles to the washer, allow 1 foot of space between equipment. The depth of the workspace required in front of the washer is 3 feet, and the width is 4 feet.

### WASHER AND DRYER IN A PASSAGEWAY

If laundry appliances are placed in a passageway, the depth of the space in front of the equipment must be increased to 4 feet. This allows space for one person to pass while another is working.

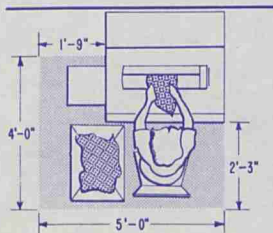
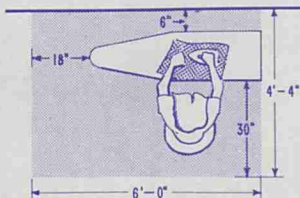


### NONAUTOMATIC WASHER

A space 6 feet 6 inches by 8 feet is needed for the use of a nonautomatic washer with stationary laundry tubs. If space permits, place tubs away from walls so you can work from three sides of the tubs.

### HAND IRONING

The total space required for ironing is 4 feet 4 inches by 6 feet. This space will accommodate the ironing board, a chair, and a clothesbasket or cart, and provides for working efficiently. Additional space will be needed if you want a clothesrack.



### IRONERS

A space 4 feet by 5 feet is adequate for using an ironer. Increase the space to 4 feet 6 inches by 7 feet 9 inches if you want a table on which to place the finished articles or a rack on which to hang them.

## EQUIPMENT SIZES

Sizes of laundry equipment vary greatly. Ranges in dimensions of current models are:

Automatic washers.....	Widths.....	26 to 30 inches
	Depths.....	25 to 29 inches
Automatic dryers.....	Widths.....	26 to 32 inches
	Depths.....	26 to 29 inches
Combination washer-dryers.....	Widths.....	26 to 35 inches
	Depths.....	26 to 29 inches
Wringer washers.....	Widths.....	24 to 28 inches
	Depths.....	24 to 31 inches

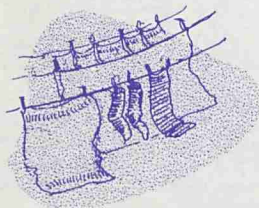
A space 32 inches wide and 31 inches deep will accommodate a washer or a dryer. Regardless of the size of your present equipment, allow at least this amount of space for equipment placed between built-in cabinets or walls. If you place your equipment under a window, the sill should be at least 3 inches above the back panel of the appliance. Washers and dryers vary in height from 36 to 46 inches.

### DRYING LINES

Lines for drying clothes should be at least 4 inches apart. In humid climates, 8-inch spacing is recommended. Allow 2 feet of passageway in front of your lines.

The total length of line needed for one, two, and three washer loads is:

1 load.....	40 feet
2 loads.....	90 feet
3 loads.....	130 feet



### SORTING TABLE OR COUNTER

A surface 3 feet by 6 feet is required for sorting clothes. The most convenient height for a homemaker of average height is 32 inches. Taller women will find a higher table—up to 37 inches—more convenient.

### LAUNDRY BASKET OR CART

A laundry basket or cart is a necessity for efficient laundry operations. Sizes and shapes vary. Remember to plan storage for your laundry cart or basket.

## INSTALLATION OF AUTOMATIC EQUIPMENT

Check the requirements in your local electrical and plumbing codes, and follow the instructions of the manufacturer.

**WATER CONNECTIONS**—Separate hot and cold water faucets with standard hose connections are required adjacent to the washer.

Water shutoff valves should be within easy reach. Turn water off after each wash period to relieve the pressure on the connecting hose and valves.

**WATER PRESSURE**—Most automatic washers require pressures of at least 10 p.s.i. (pounds per square inch) but will stand pressures up to 120 p.s.i. without damage.

**DRAINAGE**—A stationary tub, sink, or open drainpipe close to the washer is required. The pipe opening should be a minimum of 25 inches above the floor and at least 1¼ inches inside diameter. Consider installation of a floor drain in the laundry area.

**ELECTRICAL CONNECTIONS**—Use 115-volt, 60-cycle, AC circuit of 15- or 20-amp. capacity for the washer.

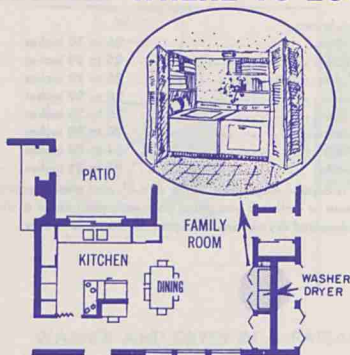
Most electric dryers are designed to use 230-volt, 3-wire, 60-cycle, AC circuits of 30-amp. capacity. Some high-speed dryers (8,000- to 9,000-watt) require greater capacity circuits. Some dryers are available or can be converted to operate on 115-volt, 60-cycle currents.

Grounded outlets should be used for all washers and dryers.

**GAS CONNECTIONS**—If the dryer is gas fired, consult your local gas supplier for installation requirements. Be sure to have a cutoff valve installed at the dryer for ease of servicing.

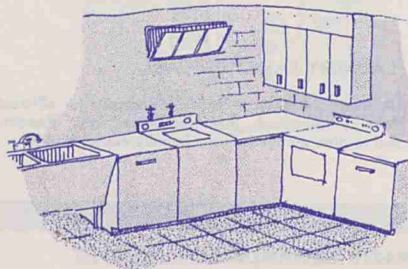
For additional information on connecting to the plumbing, see "Planning the Electric Water System and Plumbing for Your Farmstead," USDA Miscellaneous Publication No. 674

## WHERE TO LOCATE LAUNDRY AREAS



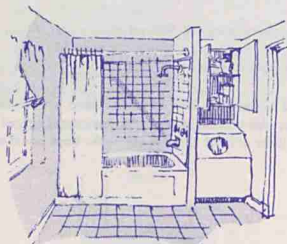
### IN THE KITCHEN OR FAMILY ROOM

This location is convenient because you can organize your work and save time and energy. But remember that heat and noise are associated with the use of laundry equipment. Be sure to vent your dryer to the outside.



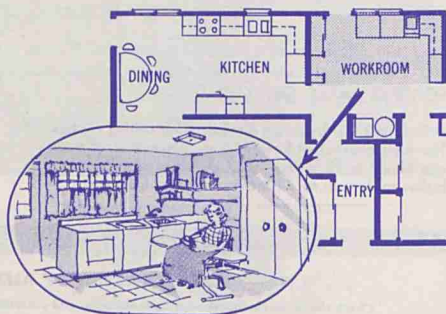
### IN THE BASEMENT

The basement is the traditional location for the laundry area. Laundry clutter, heat, moisture, and noise are isolated from the living areas of the house. Usually the laundry area in this location can be generous in size.



### IN THE BATHROOM

This location is a good choice for economy in plumbing and is convenient to the source of soiled clothing and to storage of clothing and household linens. Finish on bathroom walls can usually withstand the increased moisture in the air associated with laundering.



### IN THE WORKROOM

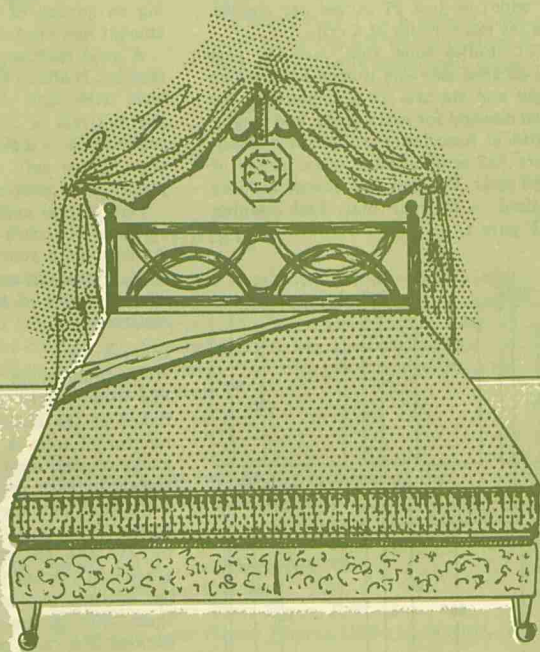
If you want your laundry area on the main floor of your house but away from other activity areas, plan a separate workroom. Laundry activities can then be combined with canning and freezing, sewing, or hobbies.

Based on cooperative research with the Southern, Northeastern, North Central, and Western regions

Prepared by: Genevieve K. Tayloe, W. Russell Parker, and Mildred S. Howard  
CLOTHING AND HOUSING RESEARCH DIVISION  
AGRICULTURAL RESEARCH SERVICE



# BEDDING BUYMANSHIP





# BEDDING BUYMANSHIP

"If you live to be 75 and sleep eight hours a day, you will spend 25 years of your life sleeping or resting."

To feel fresh and rested each morning, you need a clean, comfortable bed. A good bed and the right bedding also contribute to good general health and posture.

Sleeping comfort is based on having a firm, level spring and mattress for the bed; plump, resilient pillows; smooth, clean sheets and pillowcases; sufficient, lightweight coverings and plenty of room in which to turn.

## Bedding Size

Each person needs at least 38 inches of bed width and a length of 9 inches longer than he is. Is it any wonder a 72-inch man in a 75-inch space jams his pillow between the headboard and mattress and turns into a blanket-grabber? Yet a large majority of married couples sleep in double beds 54-inches wide; or just 27 inches per sleeper. That is the exact width of a crib.

Recent studies show that over the past several decades men and women have grown in height and stature. To accommodate the need and demand for extra width and length, the National Association of Bedding Manufacturers has established a wider range of standard sizes. You can now choose bedding items sized to fit your individual sleeping needs. Figure 1.

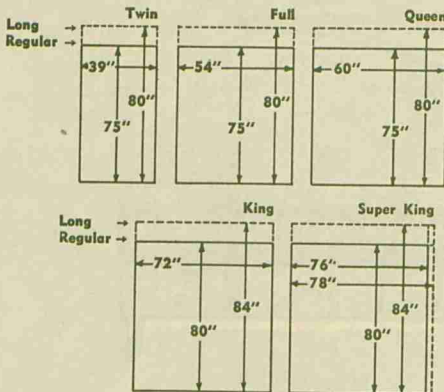


Figure 1

## Mattress Types

The basic types of mattresses are: inner-spring with many different kinds of upholstery padding, such as cotton, foam, hair, or a combination of these; latex or urethane foam without innerspring constructions and solid upholstered construction. These are made in many different price ranges, depending on quality of materials used, size, and amount and kind of workmanship.

A good mattress will offer firm, buoyant support. It allows the body to float on an even level with each change of position. When the mattress is too stiff to "give" to body contours, it is difficult to relax. If the mattress is too soft, the body is not aligned properly for sleeping comfort.

Test several mattresses by stretching out on them. You can't tell much by pressing the mattress with your hand or even by sitting on it. Overall balance is the crucial test. You have a choice of firmness in each type of mattress.

### Innerspring

An innerspring mattress is constructed like a sandwich, beginning with the coils linked as the basic element. Figure 2. The number of coils is not so important as the gauge of steel used, the number of turns or spirals of each coil and how the coils are made and put together. The coils and a border wire, if the innerspring is designed to have one, are joined together by helical wires into a complete innerspring unit. Number of coils may range from 180 to more than 1,000. In some mattresses each coil is encased in a cloth pocket and then sewed or clipped together.

Gauge of coils, number of coils and type and amount of upholstery help determine whether a mattress is soft, medium or firm.

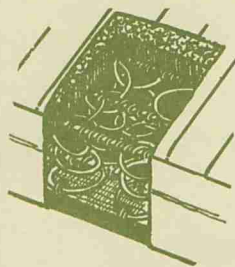


Figure 2

The coil unit is covered top and bottom with insulating material; usually a stitched sisal pad and/or steel wire mesh. This holds the coils in place and keeps padding from dropping down into the coil area. Two or more thicknesses of cotton felt, top and bottom, complete the inner construction. The padding gives a softer surface to the mattress. Some mattresses have an extra layer of padding in the center third, where most of the sleeper's weight is concentrated. A layer of foam latex or urethane over the cotton padding or in place of it is sometimes used to give an individually-different feel to the mattress surface.

The finished innerspring mattress is 6½ to 8 inches in height.

The smooth-top mattress and the quilted-top have to some extent replaced the once-common tufted top. Quality construction of a smooth-top innerspring mattress will have the inner materials secured firmly to the innerspring unit. This prevents shifting and helps keep the surface firm and tightly drawn. Tufting may be hidden under the top layer of padding. The top layer of inner materials of a smooth-top mattress may also be secured by a quilting process which machine-applies a decorative design to the cover at the same time.

If you feel the coils of an innerspring mattress, you can be sure construction is inferior.

#### Foam

Both latex foam and urethane foam are used to make mattresses without innersprings. Figure 3. While the method for producing each is different, the end products have similar characteristics. Each is light-

weight, non-allergenic, and mildew- and mold-proof.

Foam latex or urethane provides a "feel" totally different from the surface of an inner-spring mattress. Both are actually composed of 80 to 95 per cent air, having interconnected cells that differ from most sponge rubber and breathe with every turn of the body—even quiet sleepers turn from 40 to 65 times a night.

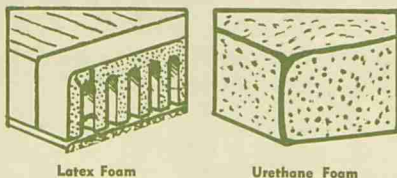


Figure 3

Density or compression determines firmness. Compression may not be easy to determine, though some mattresses are actually stamped with the compression number and it is possible that the shipping carton also carries this information. Compressions range in latex from 13 to 38. Anything below 17 is not recommended by quality manufacturers as they are too soft to provide support and compress to a point where you are literally hitting bottom. Most manufacturers feel a mid-range compression of 25 is suitable for the average person. Urethane producers are also developing compression numbers.

Just as the innerspring mattress offers different constructions, the manufacturers of foam mattresses offer different constructions. Some units are so molded that the center third provides greater support than either end. Other units are molded with a solid slab of latex sandwiched between core holes (open areas). Urethane foam is considerably lighter than foam latex.

While foam mattresses can be found in 4½- and 6-inch heights, don't let the height confuse you. The shorter unit can be excellent; if the spring foundation is resilient.

#### Solid Upholstered

Felted cotton, hair or rubberized hair are used in making solid upholstered mattresses. Figure 4. These fillings provide a firm mat-



Solid Upholstered

Figure 4

ress with less resilience than either the innerspring or foam mattress. A good hair mattress, made of tail or mane hair, is very expensive and must be a special order. There are very few craftsmen left who know how to work with this material.

An all-cotton mattress varies according to the quality of cotton used. A fiber-filled mattress tends to become lumpy and needs to be aired and turned regularly. They are not widely used in today's homes.

The mattress cover for each type mattress should be tailored carefully out of firmly-woven fabric. It should be anchored firmly to the base or filling material. It should have firmly attached handles for ease in handling.

## Springs

The bedspring, the foundation for the mattress, provides one-third or more of the total resilience. There are three kinds of spring construction: the box, open-top coil and flat-link. Figure 5.

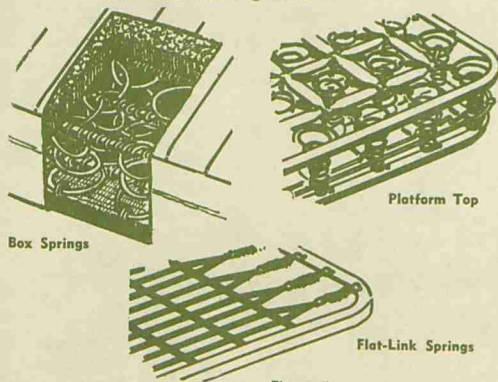


Figure 5

Box springs, the most commonly used, have steel spring-wire coils mounted to a wood-frame base and are padded and covered with ticking. The best ones have coils tied securely to each other and to their base and border.

Most bedding experts strongly recommend that mattress and springs be purchased at the same time. In the coil-on-coil units there are the same number of coils in both box-springs and mattress. Other springs are specially engineered for the foam mattress.

The cover used on the spring should be of a firmly-woven, durable fabric. Since the same type of fabric is used to cover both spring and mattresses, they make an attractive set when purchased together.

Metal coil springs may also be purchased without the covering. Some have steel bands placed over the top of the coils to form a semi-closed surface over which either an innerspring or solid upholstered mattress may be used. Stabilizers are needed to prevent sagging and squeaking. This type of spring is difficult to keep clean.

Link springs are used primarily on cots and fold-away beds. They are inexpensive and tend to sag with use.

## Mattress Maintenance

A quality mattress should last 10 to 15 years, depending on the kind of use it gets.

Always use a pad or pad and cover on the mattress and, if you prefer, a cover on the boxspring. These help protect bedding from dust and soil.

The major purpose of the mattress pad is to absorb the moisture your body produces during a night's sleep. Without the pad, this moisture goes directly into the mattress.

When the pad and mattress cover are combined into a single unit, the pad is held firmly in place and does not shift on the bed.

## Bedstead

If you must budget, most of your money should go into the purchase of good springs and mattress. These can be mounted on inexpensive legs or a frame until you can purchase the headboard or bedstead of your choice.

This may be one of a variety of attractive designs in wood to match or complement other bedroom furniture. Or, you may wish



to consider one of the other materials, such as brass, rattan, woven cane or wicker and wrought iron.

There is no rule that says you must have a headboard. There are any number of imaginative and attractive backdrops you can use for the bed, such as oversized bolsters, colorful pictures, swags of fabric, wallpaper and similar materials.



Figure 6

## Pillows

A good pillow is light-in-weight, resilient, odorless and free from stiff quills and lumpiness. It should spring back to a plumpness readily and hold its shape when balanced on the outstretched hand. Figure 6.

The filling materials may be down, feathers, foam or one of the man-made fibers. Down and goose feathers are the best of the feather fillings. Foam may be either molded or shredded. Like mattresses, foam pillows vary in firmness.

Man-made fiber fills have become increasingly popular. The Textile Fiber Products Identification Law provides helpful information as to content and care. Foam pillows and man-made fiber fillings are recommended for persons with allergies.

Ticking should be a closely-woven fabric, feather-proof, free from sizing and fast in color.

Pillows should be protected with a cover over which the pillowcase is slipped. In this way the pillow is easily kept clean.

## Summary

A good night's sleep is a necessity for your personal sense of well-being and attractiveness. Keep in mind that the most important constant factor that determines how well you sleep is your sleep equipment. The selection of just the right comfort is a personal matter. Buy the best bedding you can afford because it is an investment that will pay big dividends for every family member through the years.

Acknowledgment: Manuscript was reviewed by members of the National Bedding Association

Other References: Linens for Bed and Bath, H.E. 106  
Bedspreads You Can Make, H.E. 6  
Furnishing Your First Home, H.E. 76  
Furnishing Your Home: Buying Case Goods, H.E. 78



Four - window type, especially with screen  
This is a very popular type of window  
which allows light to come in from  
behind the window. It is especially  
suitable for use in a room where  
the light is desired from behind the  
window. It is also suitable for use  
in a room where the light is desired  
from the front of the window.



The window is a very important part of  
the room. It allows light to come in  
and air to circulate. It is also a  
very important part of the room's  
decor. The window should be chosen  
carefully to fit the room's style and  
color scheme. The window should also  
be chosen to fit the room's needs.  
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4-69-5M

Home Economics 107

# ● LINENS for

Bed

and

Bath



With the present emphasis on individuality and coordinated interiors, it is only natural that the most private rooms in the house--the bedrooms and baths, should be given special consideration. The right linens for these rooms can play an important role in the total decorating plan.

Choice is sometimes difficult because of the variety of fibers, sizes, qualities, colors, decorative features and styles now available. Important factors to consider in the selection of all linens are the use, beauty, quality, cost and the care required.

A good label will help you to know the kind of merchandise you are buying. Learn to read labels for such information as:

- . Size
- . Fiber content
- . Construction--the length, width and thread count
- . Special finishes
- . Expected service--the amount of shrinkage to expect and the strength of the yarns
- . Care required
- . Name of the manufacturer

#### SHEETS AND PILLOWCASES

Sheets and pillowcases are no longer routine household fabrics. Exciting colors, interesting decorative designs and new styles influence their selection. However, the need for durability and comfort remains basic.

#### What about sizes?

Before you shop for sheets, you need to know what sizes to buy. Size of sheets needed is determined by the length and width of the bed they will be used on.

Mattresses have been standardized in size. Dimensions for cot or studio couch, single or twin, three-quarter and double beds have been established for some time. More recently, extra length and width have been added for the "queen" and "king" size beds. Except for children's beds, mattresses are 74 inches long for standard beds and 80 inches long for the larger ones. Standard innerspring mattresses are 6 or 7 inches deep and foam mattresses are between 4 1/2 and 6 inches in depth.

Sheets are designed to fit standard mattress sizes. Under sheets should be long enough to tuck under the mattress securely. Top sheets should tuck in at the foot and sides and should be long enough to turn back over bed coverings at the top.

In order to buy the right size in contour sheets, it is important to know the exact size of the mattress. Both top and bottom contour sheets are available. Those designed for use as top sheets have corners fitted at only one end.

Flat sheets are not preshrunk. The label on them indicates length before hemming. This means a finished sheet is about 5 to 7 inches shorter than the label indicates. In addition, it may shrink about 5 to 8 inches when laundered.

The following table will guide you in choosing correct sheet sizes:

Type of Bed	Mattress Sizes (in inches)		Flat Sheet Sizes (in inches before hemming)	
	Width	Length	Width	Length Preferred
Cot or Studio Couch	30	74	54	108
Single or Twin	39	75	72	108
Long Twin	39	80	72	120
Three-quarter	48	75	81	108
Double	54	75	81 or 90	108
Long Double	54	80	81 or 90	120
Queen Size	60	80	90	120
King Size	72	84	108	120

Pillowcases are made from the same fabrics as sheets. You usually select the

same quality to use together. Pillows vary in size, but the standard is 21 by 27 inches.



Pillowcases should fit the pillow neatly but not too closely. The ideal pillowcase is 1 1/2 to 2 inches wider than the pillow to avoid strain during use and 6 to 10 inches longer to protect the pillow from soiling.

#### What about Fabrics?

Cotton is the most popular fiber used for sheets and pillowcases. However, nylon, nylon blends and more recently the "no iron" blend of Fortrel polyester and combed cotton

are being used.

Quality of cotton sheets depends upon the quality of the cotton fiber, the length of the fibers and the amount of twist in the construction of the yarn. Cotton sheets have been standardized into fiber classifications. They are identified as muslin or percale and by "thread count" which indicates the number of lengthwise yarns plus the number of crosswise yarns in a square inch of sheeting.

Minimum Standards for Cotton Sheets

Types	Thread Count (per square inch)	Weight (ounces per square yard)	Breaking Strength (pounds per inch)
<u>Muslin</u>			
lightweight	112	3.7	40 Either Direction
mediumweight	128	4.2	55 Either Direction
heavyweight	140	4.6	70 Either Direction
-----			
<u>Percale</u>			
utility	180	3.7 to 4.0	60 Either Direction
combed or original	200 square	3.8 maximum	60 Either Direction

Many stores do not ordinarily stock lightweight muslin sheets. A good quality of muslin sheeting is strong and durable. It may be coarse or fine, depending on the weave and quality of fiber. A medium-weight muslin is suitable for average household wear. A heavy muslin is recommended when sheets will receive hard wear.

Percale is made of longer-staple combed cotton, and the yarns are finer and lighter in weight. Therefore, percale sheets are softer, smoother and more luxurious. The new "no iron" sheets and pillowcases made of polyester and combed cotton are lighter in weight and softer than percale. This fabric blend is stronger than regular cotton and has greater tear strength.

Polyester and cotton are being blended in muslin-type sheeting. This blending provides better appearance than 100 percent cotton, better abrasion resistance and no-iron qualities. These blends are lower in price than combed cotton sheeting.

The appearance and touch of sheeting is also improved by the blending of polynosic (high modulus) rayon with cotton. There seems to be little indication that the wearing quality is affected significantly by the addition of rayon.

#### What about style?

Sheets and pillowcases are now available in a wide selection of solid colors, woven stripes, all over prints and feature a variety of decorative borders. If chosen carefully, they can make a pleasing contribution to the bedroom decor.

Both the color scheme and the general effect of the bedroom should be considered in the selection of linens.

#### What about Quality?

The price of sheets can vary considerably. Regular sizes in staple (standard size white) cotton sheets are the least expensive. The price increases with the quality of the fiber, the decorative detail and extra-large sizes.



There are some very simple tests for judging the quality of the fabric. Hold the fabric to the light to see if the weave appears even and firm. Rub the fabric between your fingers to see if it has been heavily sized. If it has, it will be sleazy after it is laundered. A good sheet has strong, tape-like selvages with no loose threads. The hems should be straight and neatly sewn.

Since size makes a difference, the amount of shrinkage is important. Sometimes a label will read "preshrunk" with no indication as to further shrinkage. However, many manufacturers do guarantee the maximum amount of shrinkage. Read the label.

#### How Many Do You Need?

The supply of sheets and pillowcases should allow frequent changes for each bed. This will vary with your laundry practices and equipment. A good rule to follow is to have six sheets for each bed and three pairs of pillowcases for each pair of pillows: two on the bed, two in the wash and two on the shelf.

It is a good practice to replace a pair of sheets and pillowcases for each bed every year.

#### What about Care?

The life of a sheet depends to a great extent on the type care it receives.

Sheets should be removed from a bed carefully. Watch for any needed repairs and make them before washing. Mattress pads on the beds not only protect the mattress; they also protect sheets from rubbing against the mattress.

Change beds often so sheets do not become too soiled. Take care in removing spots and stains before laundering. Use plenty of soap or detergent. Rinse thoroughly. Strong bleaches damage cotton, but a mild bleach may be needed occasionally.

If you dry sheets out-of-doors, hang them so as to avoid strain. A recommended method is to fold the sheet with the two hems together and pin carefully to the line. Unironed sheets last longer, but if you do iron them, use the proper temperature to avoid damaging the fiber.

For longer wear, rotate sheets and pillowcases by putting freshly laundered ones at the bottom of the pile. If sheets are used regularly, reverse the top and bottom to

distribute wear.

Launder "no iron" sheets according to the manufacturer's directions. Less ironing is required due to quick washing, drying and long life of the sheet. "No iron" sheets retain smoothness after multiple launderings.

### BLANKETS

A warm blanket has a fine, even, springy nap that retains heat. Weight of a blanket is not always a true indicator of its warmth. The lighter the weight of the blanket, the more comfortable it is.

#### Which Fiber?

The most commonly used fibers are cotton, wool, rayon, nylon, Dynel modacrylic and acrylics such as Orlon, Acrilan or Creslan.

Blends of two or more fibers are often used to reduce cost or in some instances to improve service qualities. For example 15 percent nylon blended with 85 percent wool in a blanket fabric helps control shrinkage. The fiber present in the largest percentage will give the predominant characteristics to the blanket.

Cotton, rayon, acetate and nylon bindings are usually used. All are attractive, but the nylon will wear best. Bindings should be neat, strong and securely stitched. They often match the blanket or provide a decorative accent.

#### What Size?

Size affects wear. A blanket which is too small wears out quickly from being pulled here and there in order to tuck it in or to cover the sleeper.

A 90 inch length is needed for use on standard length beds with innerspring mattresses. A 72 inch width may be used on either a three-quarter or double bed. The 80 inch width is needed for double or king-size beds.

Electric blankets are widely used. They are practical, easy to use and safe if properly chosen and if manufacturer's instructions are followed.

Be sure to choose one with an Underwriters' Laboratory seal (UL). A good blanket will be well-labeled. Read instructions carefully so you will know how to use and care for it.

For a bed shared by two persons, you need dual controls. It is wise to choose a control that you can easily see at night.

### BEDSPREADS

Bedspreads may be functional, decorative or serve both purposes. There is a wide variety of ready-made styles to choose from and also a growing trend to use the custom-tailored type.

Some factors that influence choice are: taste and age of the occupants, size of the room, other furnishings and the way the room will be used.

Fabrics used may be light, medium or heavy but should be strong and wrinkle resistant. They may vary from organdy for a young girl's room to heavy corduroy or quilted fabrics. Quality fabrics mean good wear. Firmly-woven fabrics wear better than those that are loosely-woven.

Many of today's fabrics are soil-resistant. They also resist fading and are easy to care for.

### BATH TOWELS

A variety of beautiful terry towels are available for you to select the kind, size and color to suit your particular needs. To be satisfactory, a towel must meet two requirements. It must absorb moisture readily, and it must wear well in use and in laundering.

#### How Do You Judge Quality?

Turkish toweling is woven on a special loom which forms loops on both sides of the cloth. The pile adds bulk and absorptive power to the towel. Thus, the more loops per square inch, the better the towel will absorb moisture.

The weave itself gives strength and provides the best indication as to how the towel will wear. Hold towel to the light. If the light shows through in tiny, regular pinpoints; the weave is uniform and good.

Notice the selvage edges. They may be: (1) a fast selvage, which should be closely woven, (2) an over-edged selvage, or (3) a hemmed selvage. Any of these, when properly made, will give satisfactory wear.

Hems should be neatly turned back and stitched with small stitches using strong, fine thread. They should be backstitched at the corners to prevent stitches from pulling out.

Sizing, such as starch or other filling material, is generally used to hold the yarn in place during weaving. This is usually removed before the towel is marketed. However, some lower-quality towels are given a better appearance by sizing after they are woven. Sizing will come out during washing and leave a thin, sleazy fabric.

All towels will shrink some in laundering due to the loose construction of the yarns necessary for proper absorption. Therefore, it is important that the border selvage and main section of the towel be woven with the same tension to prevent puckering. By observing, pulling and feeling the different sections, you can check the evenness of the tension throughout the towel.

When buying colored towels, it is always wise to inquire about their color fastness to washing. This information should be on the label.

Since there are a wide variety of colors and designs available, towels have become decorative as well as functional. They should be a planned part of your bathroom color scheme. Bath ensembles to harmonize with the shower and window treatments are becoming increasingly popular.

#### What about Sizes?

Towels are made in many sizes to fit a wide variety of personal preferences and household needs. When deciding on the sizes, consider:

- Who will use the towels?
- For what purpose will it be used?
- How will it be laundered?

Face and guest towels are often made out of other fabrics such as huckaback and crash. Both of these may be purchased in linen, linen and cotton, or all cotton fabrics.

### SUMMARY

With the current trend to plan coordinated interiors, color and design as well as quality will influence your choice of linens for the bedroom and bath. Many manufacturers are offering coordinating colors and designs for sheets, pillowcases, blankets, bedspreads, bath sets and accessories. Retail sources are displaying and showing these items in such appealing ways that you have little difficulty finding many beautiful combinations. In fact, the eye appeal is so great you must be careful not to overlook quality.



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Prepared by Mrs. Lillie B. Little, Housing and House Furnishings Specialist

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(Reprint)

Home Economics 106

# remaking an UPHOLSTERED CUSHION

## Renovating the Old Cushion . . .

Repair the cushion springs if the cushion appears to be lumpy. Usually the old springs and cotton padding may be used again after they are cleaned and straightened. New cotton at the top, bottom, and sides may be necessary.

Open the cushion cover and remove the filling.

FIGURE 96. Measure across the widest part of the coil with a firm tape measure or ruler. Proceed as shown in the following example:

Width across widest part of coil . . .	3 inches
Add 1 inch for seam . . . . .	4 inches
Add 3 inches for boxing . . . . .	7 inches
Double this amount . . . . .	14 inches

FIGURE 97. Fold torn edges of the strip together and stitch in  $\frac{1}{2}$  inch from the selvage on one end. Measure across the widest part of the coil again and add 1 inch. Pin a seam this width parallel to the selvage. Now flatten the spring and slip it into the pocket you have just made. Pin pocket closed with a seam 2 inches from the raw edge.

FIGURE 98. Turn the spring inside the pattern pocket. Let the spring stand  $2\frac{1}{2}$  to 3 inches high. Re-pin the top seam of the muslin as needed until the height is correct.

Let the spring sides touch the pocket easily. If it is too tight and stretches against the wire, it will cut the material. If the pocket is too loose the spring will tend to turn in the pocket. Reset the pins until the spring remains in the correct position.

Remove the pins along the top of the pocket and take out the spring. Reset pins along the side seam so they follow the thread of the goods.

Remove the pins along the top of the pocket and take out the spring. Reset pins along the side seam so they follow the thread of the goods.

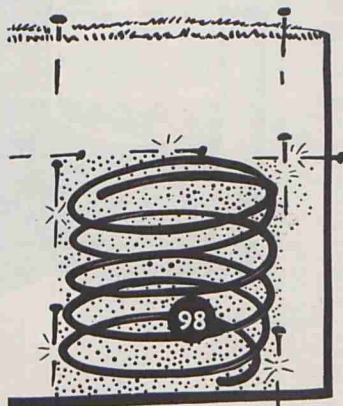
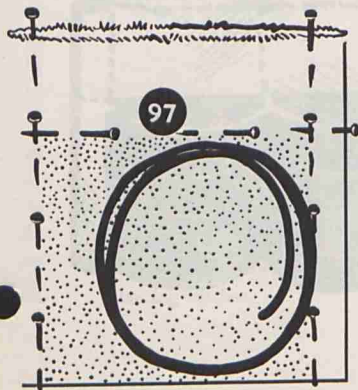
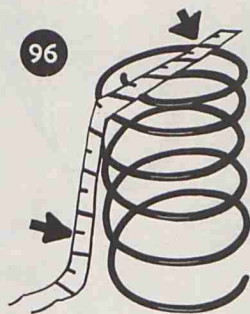
\* For parts of this section the author is indebted to Lois A. Lutz, author of "Renovating Innerspring Cushions," Oregon State College Extension Bulletin 643.

Cut cover and seam lines so the old cover may be a guide in cutting your new one.

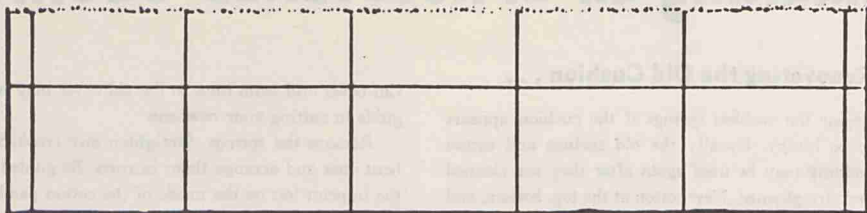
Remove the springs. Straighten any crooked or bent ones and arrange them in rows. Be guided by the imprint left on the inside of the cotton padding for correct arrangement and the number of rows used in the original cushion.

Fourteen inches is the width of the muslin strip needed for each row for this particular size of spring. Length of strips = number of springs  $\times$  width of spring + seam allowance.

Tear enough strips to make the required rows of pockets.

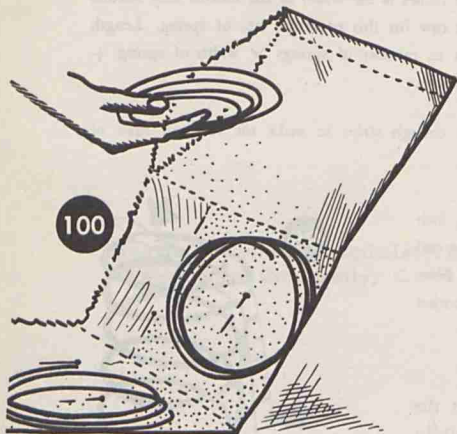






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FIGURE 99. With a pencil and ruler mark along the pins. Now remove the pins. Make a measure guide and mark all the pockets required in each pocket strip. Leave all pockets in a series with one row of stitching to separate each two pockets. Follow the thread of the fabric when marking and stitching.



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FIGURE 100. Fill all the pocket rows. Crush a spring and slip it as far into a pocket as possible. Place one pin close to the spring and one pin in the center to hold each spring in place until the pockets are stitched closed. Pin all of the springs in place. Stitch pockets closed along the line marked, 2 or more inches down and parallel with the torn edges of the pocket strips.

FIGURE 101. Remove the pins and turn each spring around inside its pocket. The filled rows will seem much shorter. They should be firm and straight.

Arrange the completed rows into a unit with all the 2 inch seams up (see Figure 7). This will be the top side of the unit. Clip seams to 1 inch.

101

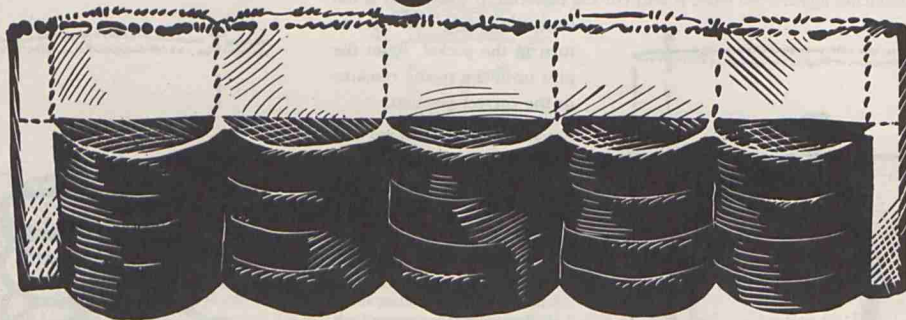


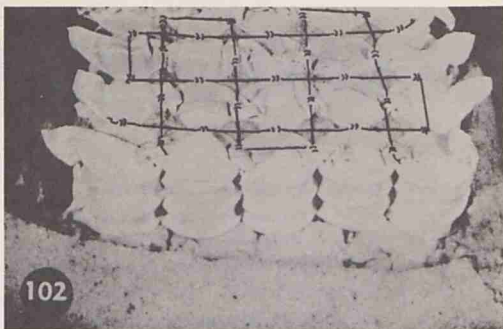
FIGURE 102. With twine or warp sew the rows together with a curved needle, a sack needle, or a darning needle. Sew with a short stitch, taking up the top wire in the two rows that touch. Pass the needle under each wire, draw up the thread until it is taut, and tie it firmly. Now make a stitch over the two top wires. Draw the stitch rather tight, then sew two stitches over the top wires in adjoining springs. Continue along the row to the end.

For the other rows, make a long stitch across the top of the spring to the new two rows, and sew back. Continue until all rows are sewed together. Sew in opposite direction so the springs may be held in position.

Turn the unit over and sew the rows together the same way. Tuck a small ball of cotton in each space formed between the springs. This will help to prevent the springs from overlapping.

FIGURE 103. If all new padding has been used in repairing your chair, do not cut the new cushion casing (cover) by the old one. You may find that the size of the cushion will vary slightly with the change in padding. It is safe to cut your new cover by the old one if the padding in the arms and back has not been disturbed in any way.

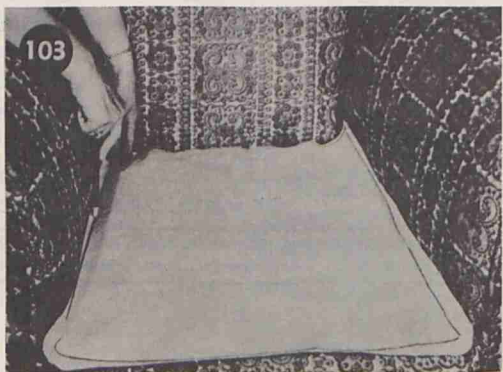
Using a firm paper, mark the cushion top for shape as shown in Figure 103. Now, use this pattern, allowing ample for seams, to cut your new cover. *Match any design to the back and front seat section.* Lay the fabric piece in the chair, and chalk the exact new stitching line. Cut the cushion boxing the width of the original one, adding a seam allowance.

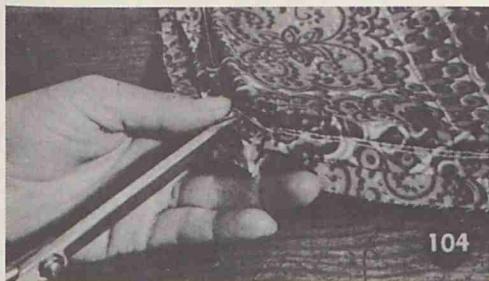


The cushion inner-spring stitched in muslin pockets, with cotton felt on the bottom and sides. The size of the inner-spring should be about 2 inches smaller than the outside casing, to allow for the cotton along the sides.

Place cotton over the top of the springs, and reinforce the stuffing in the corners as needed. Place any moss or hair used in the original cushion *under* the solid layer of cotton felt. A sheet of rubberized hair 1 inch thick may be laid on top and bottom and around edges of spring unit. Cut pieces to fit together exactly as shape of cushion. Use 2 inch strips of muslin and rubber cement to hold edges together. Cover completely with solid layer of cotton to give desired thickness.

Fit unit into a muslin cover made exactly like outside cover, omitting the cording. Use plain seams.





## Re-covering the Cushion . . .

FIGURE 104. Make and apply a covered welt cord to the top and bottom sections of the cushion following steps given for the arm construction (Figures 68 to 70). Place the final stitching line on the cord *exactly* over the chalked stitching line on the cover. A variation here will affect the final size of the cushion. Clip the corners as shown.

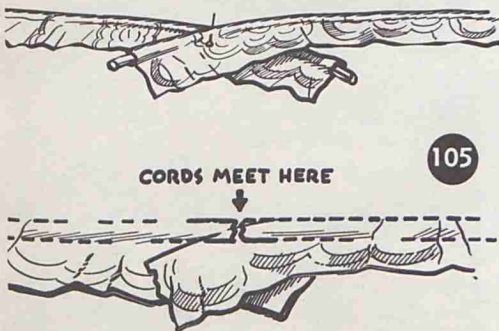
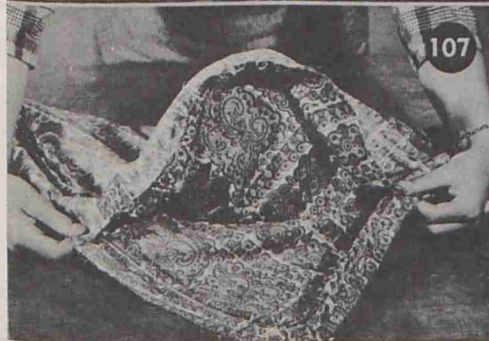


FIGURE 105. To avoid bulkiness do not let the cord overlap and extend down into the seam. With a pin, mark the point where the cord should meet at the back. Measure the length of each cord extending beyond this point. Now pull the cord out from the bias cover. Measure and cut it back to the pin so that the cords will just meet. Join bias with seam.



Seam boxing strips together and press the seams open. Avoid placing any seams along the front of the cushion. Match any design along the front boxing.

FIGURE 106. Smooth out the fabric. Let the raw edges of the bias strips extend down into the seam as shown.



The cover is ready to be applied to the boxing.

FIGURE 107. Match the four center points of the boxing to the cover as shown. Pin and baste the boxing to the cover, working from the center to the corners. Ease any extra fullness around each corner.



FIGURE 108. Machine stitch the boxing very close to the cording. Trim off any excess fabric until the seams are even.

Stitch the boxing to the bottom cover along the front and around each front corner. Leave the two sides and back open to get the cover around the loose padding. Restitch close to the cording around this loose section if the cording seems loose.



FIGURE 109. Place the spring unit in the new cover, taking care not to tear the cotton.

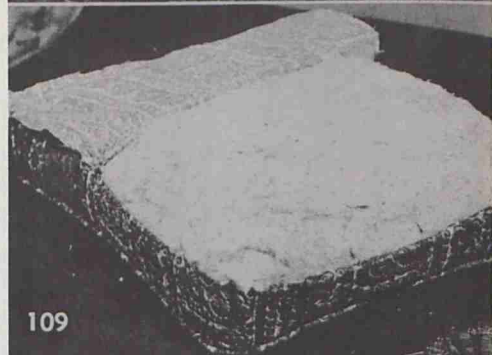


FIGURE 110. Turn down the seam allowance along the loose section of the boxing. With upholstery pins, close the cover as shown. The cover should fit snugly.

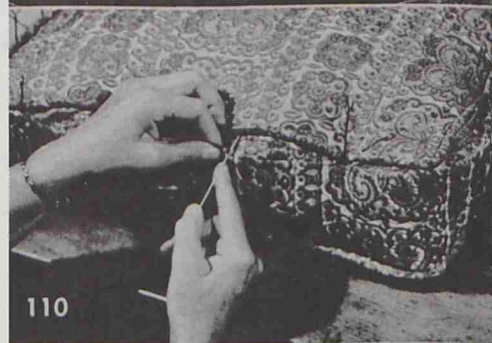


FIGURE 111. Place the upholstery pins 1 inch apart, easing in any fullness at the corners. With a curved needle and strong thread, sew with long slanting stitches.





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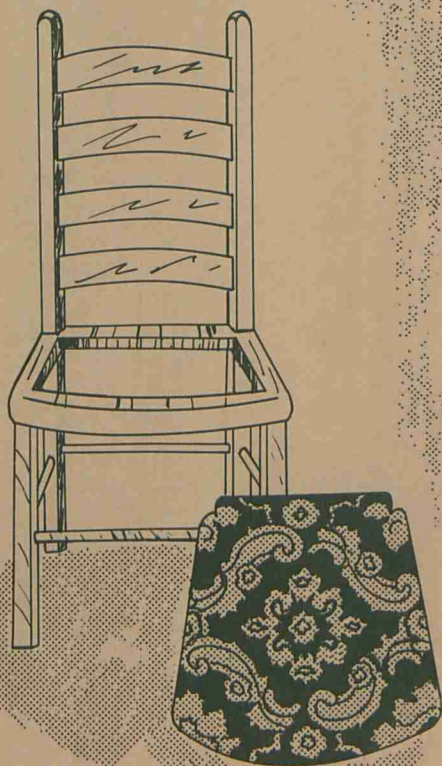
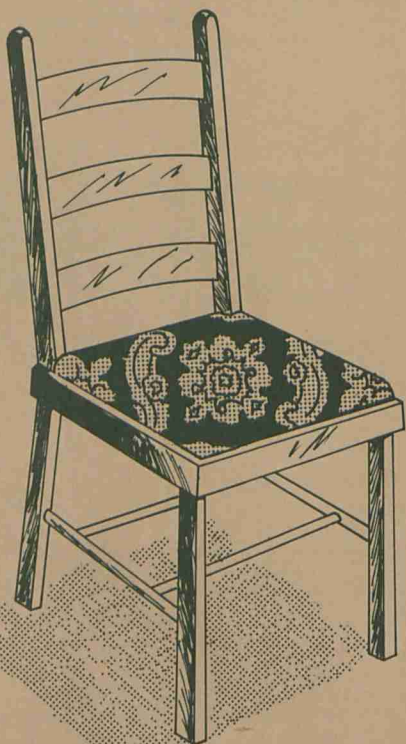
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Home Economics Misc.

# How To Reupholster Simple Chair Seats



## How to Reupholster Simple Chair Seats

You can give your room a new look by re-covering frayed chairs. The easiest type of chair to upholster is the dining-room or kitchen chair which has a thin padded seat without springs. The seat padding for these chairs is usually supported by either a wood base or webbing.

Before you begin, decide whether the chair is worth your time. A chair often can be completely restored with good quality new fabric at one-fourth to one-half the cost of a new one.

## Tools and Supplies

Simple upholstery can be done with tools that are available in most homes. However, a few professional tools make the job easier. As you check your chair for fabric, also plan for your tools and supplies.

### General tools

1. Sharp shears
2. Medium-weight hammer
3. Yardstick or ruler
4. Tack puller or screw driver
5. Pins
6. Soft pencil and paper for pattern
7. No. 3 upholsterers' tacks
8. Fabric for outer cover
9. Decorative braid or tacks
10. Dark cambric for dust cover on bottom

### For work with webbing

1. Jute webbing, 3½ to 4 inches wide
2. Webbing stretcher or a substitute such as:
  - a. A block of wood about 1 x 2 x 5 inches

- b. Pliers
3. No. 8 or No. 10 tacks

### For work with foam padding

1. Plastic or rubber foam
2. Ball point pen or indelible pencil
3. Adhesive tape
4. Rubber cement

### For work with other padding

1. New padding as needed:
  - a. Upholsterers' rubberized curled hair
  - b. Upholsterers' felted cotton
2. Burlap or cotton mesh to use between webbing and loose moss
3. Muslin for undercover, if you wish

## Fabric Selection

Select fabric for covering chair. The fabric should be:

1. Firm and easy to work with.
2. Colorfast, resist soiling, be easy to clean and not shrink.
3. Right color or pattern for your color scheme. Chair pads may be brighter, more intense in color than walls.
4. A width which will cut to good advantage without extreme waste. Upholstery fabrics may be bought in 48-, 50-, and 54-inch widths.

When new seat padding is foam rubber and plastic is chosen for the outside cover, plan to use a layer of muslin over the foam rubber. Foam rubber in direct contact with some plastics will fall apart or become brittle. If the cover is a very firm, closely woven, non-plastic fabric, a layer of muslin is not necessary, but it will help in getting a good smooth cover and the cover will last longer.

## Prepare the Frame

Notice how the original cover and padding are put on the chair. Take off all old upholstery. Smooth corners and any rough edges that might cut the new cover. Reglue, reinforce or refinish the frame if needed. If there are many tack holes in the wood frame, fill them with plastic wood. Dry plastic wood overnight.

## Re-Cover a Slip Seat

A slip seat has a padded wood base attached to the chair frame with screws put in from the bottom. It is used on both wood and metal chairs. (Fig. 1). Turn chair upside down on a table and take off old seat by removing screws that hold it. (Fig. 2). Use tack puller or screw driver to take out tacks that hold old cover and padding. Save the old cover for a pattern.

If the old padding is lumpy, matted or flattened, you should renovate or replace it. Add to or replace cotton if it seems thin. Sisal or tow (a light tan fiber) is usually broken and matted in an old chair and should be discarded. If you use new padding, consider getting urethane (plastic) or rubber foam or rubberized curled hair. These are easy to use, comfortable and resilient and will not mat or lump. A 1- to 1½-inch thickness is usually used for a slip seat. Use a layer of cotton over rubberized curled hair.

Make a paper pattern to cut foam or rubberized hair padding. Make the pattern ¼-inch larger on all sides than the wood base. Anchor the pattern to foam with tape. Mark cutting line on foam with ball point pen or dampened indelible pencil. Cut with scissors dipped in water.

A wood base for foam should have holes in it. This allows for air passage which is needed for comfort and longer wear for the fabric. Drill holes ¼-inch to ⅜-inch in diameter



Fig. 1—Slip seats



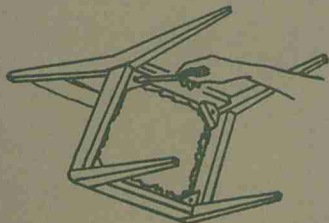


Fig. 2—Take out screws to remove seat.

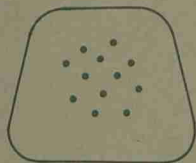


Fig. 3

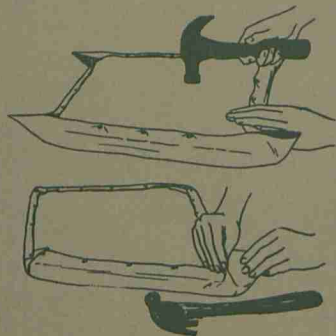


Fig. 4—Covering the slip seat.

- A. Tack seat cover on bottom in center of each side.  
 B. Lay corners in uniform pleats and tack down.

and space 3 inches apart. (Fig. 3). To anchor foam or rubberized hair to base, spread rubber cement around edges of both, and in a "X" through the center. Let dry until "tacky." Then press firmly together.

You may use a muslin undercover over moss and cotton padding to help shape the seat. Put it on like the outer cover.

Cut the new cover large enough to go over the padding and turn it back  $1\frac{1}{2}$  to 2 inches on the bottom of the seat. (Fig. 4 A). Place the padded seat upside down on the wrong side of the outer cover. Center the seat on the cover. Draw the fabric over the back of the seat and put three or four tacks, one inch apart, midway between the corners and one-half inch from the edge of the covering. (Fig. 4 A). Pull the cover to the front and back in the same way. Then do each side.

Leave corners until last. Lay fullness at corners in uniform pleats and pull until smooth and wrinkle free. Cut away excess fabric and tack down (Fig. 4 B).

Put seat back in the chair and fasten in place with screws.

### Seat With Jute Webbing Base

Put the chair upside down on the work surface with the front next to you. Measure and mark the location of webbing strips on the bottom of the seat frame. Strips should be no more than 2 to  $2\frac{1}{2}$  inches apart—2 inches is better. When possible, locate webbing so two pieces cross where a spring is to be placed.

Begin with a back-to-front webbing strip which is near the center of the seat. Place end of webbing on the back of the seat frame with 1 inch extending beyond the frame edge. Place five No. 12 or 14 webbing tacks as in Fig. 5 A. Don't use old tack holes. Fold the short end of webbing over the five tacks and put four more a little below the first ones. (Fig. 5 B). Stretch the webbing straight across the seat to the front edge. Hook the stretcher into the webbing as in Fig. 6. Then press it down to pull the webbing very tight. While it is held with the stretcher, put in five tacks as

before. Cut webbing 1½-inch beyond the tacks. Fold over and fasten with four tacks. Put on the rest of the front-to-back strips in the same way.

Next stretch and tack the side-to-side webbing strips. As you place these strips, interlace them over the front-to-back strips.

To stretch a short piece of webbing, pin it to an extra piece of webbing with a mattress needle until it is tacked. If you cannot get a webbing stretcher, you can stretch webbing by wrapping it around a block of wood. Brace the wood against the chair and pull the webbing as tight as possible. Also, one person can stretch webbing with a pair of pliers while another tacks it.

Replace padding and outer cover. (Fig. 7). The cover may be tacked on the bottom, or on the top or edge of the seat. You may trim an exposed fabric edge with ornamental nails, covered cord or trimming braid. (Fig. 8). Tack dark cambric on the bottom of the chair as a dust cover for protection.

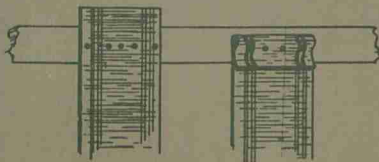


Fig. 5—Tack on webbing.

A. Step 1

B. Step 2

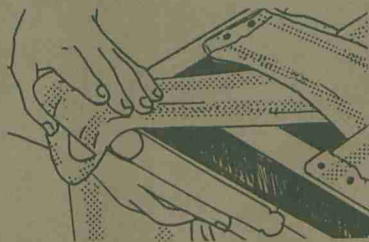


Fig. 6—Stretch webbing with a webbing stretcher.

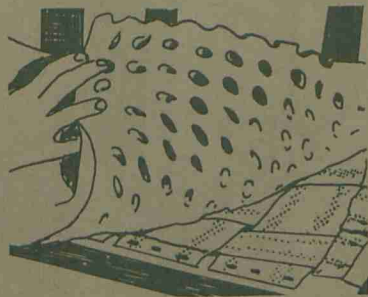
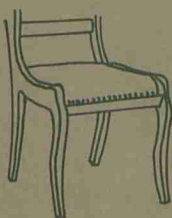


Fig. 7—A webbing base for foam.



Dining room chair with webbing base. Cover is tacked under the seat. Decorative tacks outline the edge.

Chair with fabric tacked at the top of wood seat frame. Gimp braid is glued on to cover tacks and edges of fabric.



Decorative tacks across front attach fabric of slip seat to frame of chair. Gimp or covered cord could be used, but would get more wear.

Cording and fabric boxing cover the edge of upholstered slip seat.



Fig.8—Kinds of trim for seat edges.



Prepared by Mrs. Edith B. McGlamery  
 Extension Housing and House Furnishings Specialist  
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## DIRECTIONS FOR BUILDING A DOOR CLOSET

### TOOLS NEEDED:

Carpenter square, hammer, saw, screwdriver, three-inch paint brush

### CUTTING:

Cut six pieces 1' x 4' x 22 1/2''--for shelf, top and floor cleats.

Cut one piece 1' x 4' x 46 1/4''--for top support at back.

Cut four shelf boards 1' x 12' x 48''--two boards are for shelf; two for top.

Rip one board to make two boards 22 1/2'' deep.

### NAILING:

Nail top boards to 1' x 4' cleats; then nail in 1' x 4' support at back.

Bore holes for rod in shelf cleats.

Nail shelf board to shelf cleats and install rod.

Nail floor cleats to bottom of doors as shown in plan.

Nail and glue top and shelf on side panels.

Nailing can best be done with side panels lying with back edge to the floor.

### HINGING DOORS:

With top assembly and shelf assembly nailed and glued in place, you are ready to hinge doors.

Lay door on face edge of shelf and support bottom end of doors with a piece of scrap 1' x 4' nailed temporarily across the bottom of doors and side panels, or use any support 22 1/2'' high to support the doors while hinging only.

Measure and place hinges in place, mark holes and use 4 D nail to make screw starter holes.

Install hinges.

Measure three feet from floor for door pulls. Install door pulls.

### INSTALLING CLOSET:

Raise closet in upright position.

A temporary support 1' x 4' nailed in front across doors and across back will keep closet together until it is anchored to a wall and to the floor. Some wedging may be necessary to anchor the side panels firmly to the floor.

### PAINTING:

Paint the closet with semi-gloss acrylic enamel the same color as the room walls.

Available from Extension Housing and House Furnishings Department

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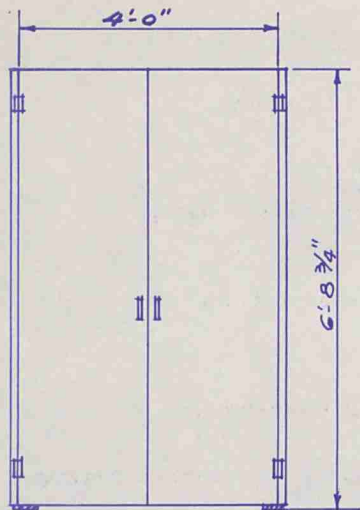
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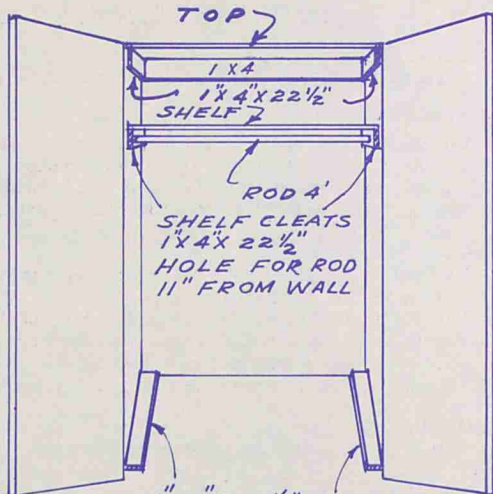
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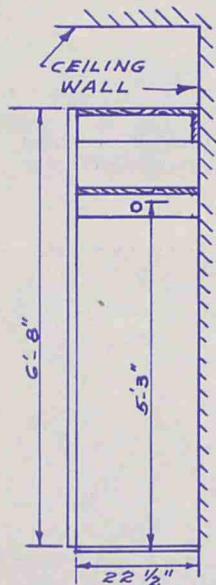
**FRONT VIEW**  
SCALE:  $\frac{1}{2}'' = 1'-0''$

SET FLOOR  
CLEAT IN  $\frac{1}{4}''$ .



1" X 4" X 22 1/2" NAILED  
TO BOTTOM OF SIDE DOOR  
PANELS. NAIL TO FLOOR  
WHEN PANELS ARE RAISED  
INTO POSITION.

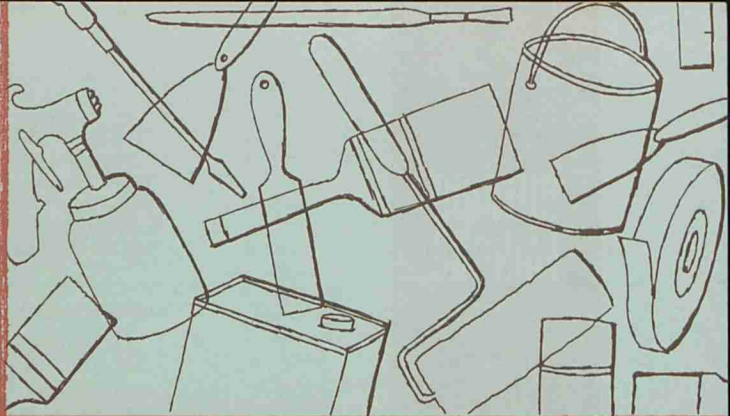
**INSIDE VIEW**



**SECTION VIEW**  
SCALE:  $\frac{1}{2}'' = 1'-0''$

**MATERIALS ORDER LIST**

- 4 HARDBOARD DOORS 2'-0" X 6'-8" X  $1\frac{3}{8}''$
- 2 PIECES #2 PONDEROSA PINE 1" X 4" X 8'
- 2 " " " " 1" X 12" X 8'
- 2 ROLLER DOOR CATCHES.
- 2 PAIR FLUSH CABINET DOOR HINGES
- 1 PIECE FULL ROUND 1 5/16" X 4'
- 2 CABINET DOOR PULLS.
- 1 POUND 6 D FINISHING NAILS.
- 1 QUART SEMI-GLOSS PAINT.



# INTERIOR PAINTING

# INTERIOR PAINTING

*Give your home a new personality—easily, quickly and inexpensively—with the aid of the eye-catching and mood-making colors available in paints today. Giving almost any room this color treatment—from top to bottom—can be accomplished with a small expenditure of money.*

*An even more important reason for painting is for protection of the wood or other surfaces.*

## REPAINT ONLY WHEN NECESSARY

Too frequent repainting builds up an excessively thick film that is more sensitive to the deteriorating effects of moisture and use. Delay, when repainting is needed, can mean extra work and expense when you finally do paint. Old paint that blisters, cracks and peels will have to be removed before the new paint can be applied.

## TAKE TIME TO DO A GOOD JOB WHEN YOU PAINT

—First, use good quality paint. It will give longer and better protection.

—Second, prepare the surface properly for painting. Even the best paint won't last on a poorly prepared surface.

—Third, apply the paint correctly. Improper application can be as damaging as a poorly prepared surface.

## TYPES OF PAINT

Paint is a solid pigment in a liquid vehicle. There are two types—oil- and water-emulsion. These terms also give us some information about what to use as thinner and what to use for cleaning brushes.

### *oil-base paints*

The vehicle of oil-base paint consists usually of linseed oil plus turpentine or mineral spirits as the thinner. Oil-base paints are used less today for inside painting. They may be used on most all surfaces except masonry. Oil-base paints are made for both a primer coat and a finishing coat.

Oil-base paints are slow drying. At least 24 hours should be allowed between coats. They are available in three finishes—gloss enamel, semi-gloss and flat.

Enameled surface is hard and shiny, is durable and can be washed.

Semi-gloss surface has less shine, can be washed. This is more pleasing to the eye because it doesn't produce a glare. Semi-gloss is recommended for kitchens, bathrooms, doors, windows and trim.

Flat finish is soft and easy on the eyes. It can be washed some but is not so resistant to scrubbing as semi-gloss or enamel finishes.

### *water-emulsion paints*

Water-emulsion paints are new and easier to use. One type consists of fine particles of resin emulsified or held in suspension in water. Another type of water-base paint has a vehicle consisting of a soluble linseed oil dissolved in water. This paint has the properties of both oil-base and water-base paints.

New water-base paints are made in semi-gloss and flat finish. Semi-gloss water-base paint should not be applied over oil-base semi-gloss or enamel.

The advantages of water-emulsion paints include easier application and resistance to alkali and blistering. Also, they can be applied in humid weather and to damp surfaces. Brush and tool clean-up is simpler because it can be done with water.

Use the chart on back page as a guide in selecting paint. Your paint dealer can help you also.



## GOOD TOOLS ARE NEEDED

Good quality brushes are expensive but worth the money. You will get better results with less effort. A 3 inch or 4 inch is fine for walls and large areas. A 1½ inch or 2 inch width is needed for trim and "cutting in" corners and edges. Look for length and density of bristle with "flagged," not square-cut, bristle ends.

On a large flat area, rollers are easier and faster to paint with than brushes. Tray-fed

rollers are the most popular. Short-nap rollers are suitable for most paints and surfaces. Lambswool is recommended for flat finishes on rough or imperfect surfaces. A long-handle roller is recommended for ceiling and high walls.

Check and assemble other supplies you may need from this list:

Ladder	Sandpaper	Wiping-up cloths
Patching plaster	Mixing pails	Drop cloths or paper
Screwdriver	Water bucket	
Putty knife	Abrasive cleaner	

## PREPARING FOR PAINTING

Before beginning the make-over, there are some preparations to remember for a professional-looking paint job. First, examine walls for cracks and mars. Carefully fill small hairline cracks and holes with spackling materials, using a putty knife, kitchen utensil or even your thumb and finger. Large cracks should be filled with special patching plaster.

To insure adhesion of the plaster fillers, it is sometimes best to chisel out a triangular channel in the wall, narrow on the surface and wider inside. Feed the plaster into the channel through the narrow opening. When the patching is thoroughly dried, simply sand the surface smooth, and you're ready to apply undercoating or primer.

Next, remove covers from light switches and receptacles, also hardware from doors and windows. Loosen your lighting fixtures, or cover these areas with masking tape and scraps of paper or cloth. This will make your painting job easier and will give you a chance to clean and polish the metal until it looks like new.

Dust the walls thoroughly with dry mop, except in the kitchen or bathroom, where walls are likely to have grease or steamed-on dirt. These walls will need washing with household cleansers before they are painted.

If your ceiling is quite high, it will be necessary to rig a raised platform from which you can easily reach its surface. Two sturdy ladders and a wide plank will serve your purpose. Always place your plank so it extends at least a foot beyond the step of the ladder on which it rests. Always make sure that the side spreaders of the ladders are completely open and locked in position.

Before beginning to paint, cover floors and furnishings with drop cloths. Old sheets or heavy paper will do. Plastic covers are available from paint stores at very low cost. No matter how well you "cover up," some splatter will always appear. Incidentally, paint is easier to remove when it is wet, so clean up as you go along.

Before starting work with the painting materials, rub protective cream on your arms and hands. A film of this cream makes it easy to remove paint from skin when the job is finished.

You're ready to paint, but before even prying the lid off your finishing material, read label instructions thoroughly. The paint manufacturer knows his product and its best method of application. Follow every suggestion on the label.

Using a wooden paddle, stir paint until you are positive no color pigment is left at the bottom of the can. Most paint dealers have a mixing machine and will stir paint for you at time of purchase.


Often manufacturers will suggest that you pass up this pre-painting stir, so be sure to check the label instructions. Stirring some latex paint could create air bubbles in the paint and ruin an otherwise professional-looking paint job. So read the label.





# PROCEDURE

## Paint the ceiling first



You can use either a roller or brush, but most people find a roller easier and faster. In either case you will need a small brush to get into the corners between ceiling and wall. Paint in two- or three-foot strips across the shortest dimension of the ceiling. This will enable you to paint the next strip before the last edge is dry. Joining on a dry edge sometimes leaves a lap mark that will show later. Light strokes help eliminate lap marks.

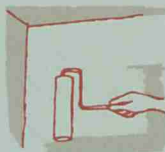
When you begin a wall, start at the upper lefthand corner and work down toward the floor. Follow the same procedure whether using a brush, roller or both. If you are lefthanded work from right to left.

## How to use a brush



Dip bristles only one-third their length inside of can to release dripping paint. Starting at the ceiling line, paint down in three-foot strips, brushing from the unpainted area into the painted area. Flat paint should be applied in wide overlapping arcs. When a few square feet have been covered, "lay off" with parallel upward strokes.

## How to use a roller

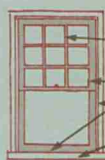


Pour a little paint into the deep end of the tray. Work the paint into the roller by moving it back and forth in the tray until paint is evenly distributed around roller.

Move the roller across the wall in slow, smooth strokes, working first in one direction, then in another. Quick strokes and heavy, uneven pressure may cause bubbles or splatters. Apply paint from top to bottom as recommended for brushing.

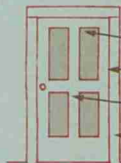
## Protecting window glass

Painting window sashes calls for patience and a steady hand. Make the job easier by stretching painters' masking tape along edges of window panes before painting. When paint is dry, tape can be pulled off, leaving a clean edge. Splatters on glass can be wiped off when wet, or removed with razor blade.



### When painting window

1. Paint mullions
2. Paint horizontals of sash
3. Paint verticals of sash
4. Paint verticals of frame
5. Paint horizontal frame & sill



### When painting paneled door

1. Paint panels, starting at top.
2. Paint edge of door, top, back and front.
3. Paint frame, starting at top.
4. Paint inside of frame.

## Paint baseboard last



A cardboard or plastic guard held flush against the bottom edge of the baseboard will protect the floor and prevent picking up dirt in the brush. Do not let paper or drop cloth touch baseboard before paint is dry.

## CLEANING BRUSHES AND ROLLERS

Consult the paint can label for proper cleaning solution. Tools used in latex or water-thinned paints can be washed in warm, soapy water immediately after use. Rinse well under faucet and allow to dry before storing. It's a good idea to rinse out brush or roller in soapy water before—and occasionally during—painting, squeezing out excess water before using again.

Tools used in most other paints should be washed in turpentine or mineral spirits. Wipe off as much paint as possible, then immerse in a generous amount of the correct solvent. Work solvent well into brush or roller until it seems quite clean. Wipe and wash again in soap and water. Rinse in clear water and allow to dry. Hang or lay brushes in dry, cool place.

## START YOUR PAINTING WITH A PLAN

Painting is easy if you plan ahead. Everything goes quicker if you have all your supplies at hand and follow your plan step by step. Whether you're a novice or an old hand, always read container label directions and cautions carefully before using paint products.

## TEN TIPS FOR INDOOR PAINTING

1. Select the paint product best suited for the job.
2. Follow directions on can.

3. Use good quality brushes or roller.
4. Protect floors and furniture.
5. Prepare the surface properly.
6. Paint at comfortable temperatures in a dry, well-ventilated room.
7. Wipe up splatter and spills immediately, before they harden.
8. Clean brushes, rollers and other tools as you finish using them.
9. Wear rubber gloves while painting and cleaning brushes or rollers to protect your hands and hasten clean-up time.
10. Consult a reliable paint dealer if you have any questions.

### additional information

"Exterior Painting," Home and Garden Bulletin No. 155. U. S. Department of Agriculture. Superintendent of Documents, U. S. Printing Office, Washington, D. C. 20402. Price 10¢.

### Wood Finishes

Series on Exterior Paint Problems:

Mildew on House Paints, Misc. Ext. Pub. No. 35a.

Painting Outside Wood Surfaces,  
Misc. Ext. Pub. No. 35b.

Cross-Grain Cracking of Oil-Base House Paints,  
Misc. Ext. Pub. No. 35c.

Temperature Blistering of House Paints,  
Misc. Ext. Pub. No. 35d.

Weathering of Wood, Misc. Ext. Pub. No. 35e.

Discoloration of House Paints by Water-Soluble  
Extractives in Western Redcedar and Redwood,  
Misc. Ext. Pub. No. 35f.

Discoloration of House Paint by Blue Stain,  
Misc. Ext. Pub. No. 35g.

Intercoat Peeling of House Paints,  
Misc. Ext. Pub. No. 35h.

Do you wish to make the most of the natural and artificial light within a room? Or—do you wish to soften the skylight that sometimes enters through large glass areas? Remember, dark colors absorb light while light ones reflect it. This chart will help you determine the colors that will best serve your purpose.

	Percent		Percent		Percent
White	80	Light buff	56	Light green	41
Ivory (light)	71	Peach	53	Pale blue	41
Apricot-beige	66	Salmon	53	Deep rose	12
Lemon yellow	65	Pale apple green	51	Dark green	9
Ivory	59	Medium gray	43		

\* Recommendation of National Paint, Varnish and Lacquer Association.

THE LIGHT  
REFLECTANCE  
OF VARIOUS  
COLORS

Plaster Walls & Ceiling	X	X	X									X		
Wall Board	X	X	X									X		
Wood Paneling	X	X	X		X	X	X	X						
Kitchen & Bathroom Walls			X	X								X		
Wood Floors						X	X	X	X	X				
Stair Treads						X	X	X	X	X				
Stair Risers		X	X		X	X	X	X						
Wood Trim	X	X	X		X	X	X					X		
Steel Windows	X	X	X									X	X	
Aluminum Windows	X	X	X									X	X	
Window Sills					X									
Steel Cabinets		X	X										X	
Heating Ducts	X	X	X								X	X		
Radiators & Heating Pipes	X	X	X								X	X		
Old Masonry	X	X	X								X	X		
New Masonry	X	X	X									X		
		Latex Types	Flat Paint	Semi-Gloss Paint	Enamel	Interior Varnish	Shellac	Stain	Wood Sealer	Floor Varnish	Floor Paint or Enamel	Aluminum Paint	Sealer or Undercoater	Metal Primer

## WHAT TO USE AND WHERE

X

Black dot indicates that a primer or sealer may be necessary before the finishing coat (unless surface has been previously finished.)



Prepared by Charlotte Womble, Extension Housing and House Furnishings Specialist

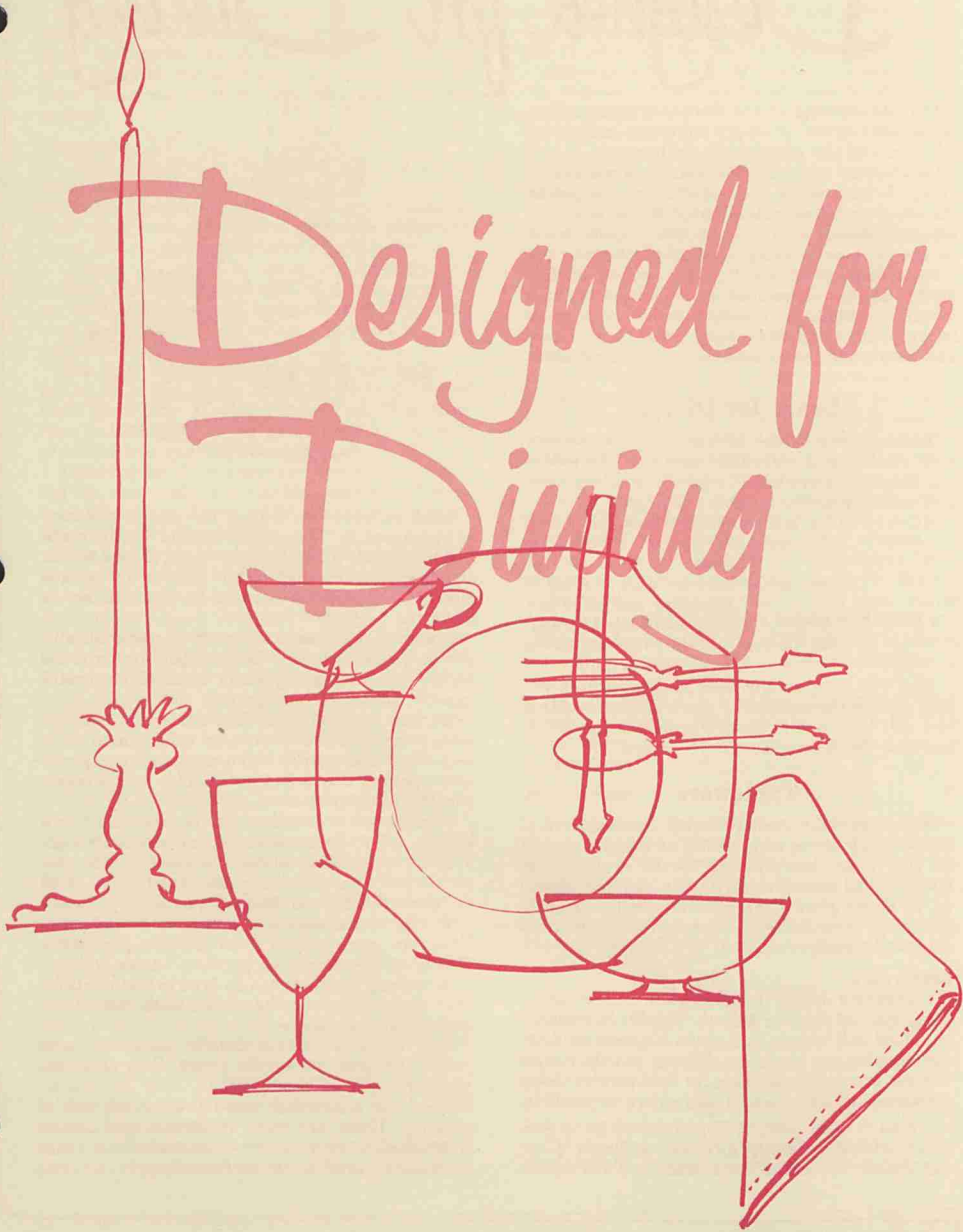
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Designed for Dining

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The atmosphere of the dining area and how meals are served strongly influence individual behavior and the pleasure of dining.

In keeping with today's trend toward casual living, family meals and entertaining of guests are often informal. Meals may be served in a separate dining area, the kitchen, family room, on the patio or in other areas of the house.

Regardless of location or the degree of formality, always serve food in an attractive way; keeping in mind that dining furniture, decorative background, china, silver, glassware, table linens and decorations all contribute to dining pleasure.



## Space for Dining

Dining space should be adequate for comfortable seating and convenient serving. The following dimensions are basic in planning eating areas and selecting and arranging furniture.

- Allow: 21-24 inches of table space per person  
32 inches to rise from chair at table  
36 inches between wall or piece of furniture and table to edge past seated person  
44 inches between table and wall to serve comfortably.

The way your family lives and entertains will help dictate the amount of space needed, whether you will have one or more planned eating areas, and also the type of furniture needed.

## Tableware

Since tableware will probably be used several times a day for a long period of time, it should be functional and pleasing to the eye. Various items should harmonize with one another, should be in keeping with the general spirit and background of your home and should complement the way your family lives.

### Dinnerware

Choosing a design in dinnerware from a beautiful display of china is difficult. It helps to visualize how food will look on each plate. Elaborately decorated plates are lovely for display, but the simple designs are more adaptable for food service. Some embossed designs require extra care in washing.

China is often bought in place settings. A five-piece setting generally includes: 1 dinner plate, salad plate, bread and butter plate, cup and saucer.

Some patterns are sold by the set; others may be purchased in "open stock." China usually costs less by the set. Open stock, however, allows you to add pieces over a period of time or to replace pieces as long as the manufacturer continues to make the pattern.

Dinnerware comes in a variety of materials and a wide range of prices. Most widely used are the ceramics including porcelain, bone china, earthenware, stoneware and pottery.

Because porcelain was first made in China, all dinnerware is often incorrectly called china. Porcelain is a fine type of china made from a special white pottery clay called kaolin. It is partly transparent and nonporous.

When bone is added to kaolin, the result is a strong, highly transparent china especially suitable for decoration under the glaze. These materials are used in some of the finest china, such as Spode, Wedgwood, Royal Doulton and others.

Earthenware ceramics are not transparent. They are more porous than the fine porcelains. However, the degree of porosity varies widely.

Some clay mixtures can be fired to temperatures that make them very hard and nonporous. Ironstone is an example.

The term pottery is usually associated with rough textures and earthy colors. It is also used in referring to all ceramics.

There is a growing trend toward the use of plastics. These are light in weight and almost unbreakable. They are now available in a range of pleasing solid colors and designs.

Traditionally, most families have at least two sets of dinnerware; one for family use and another for special occasions. In selecting two or more patterns, decide if you will wish to combine them occasionally. If so, will they look well together?

### Glassware

The formality or informality of your dining should help determine the glasses you choose for table use. Design of glassware should harmonize with other table appointments. Simple china and plain silver suggest simplicity in glassware.

Glasses are made in a variety of sizes and shapes. The amount and kind of entertaining you do will help determine your needs. In keeping with today's mode of living, glasses are often adaptable to different uses.

Tall, long-stemmed water goblets are lovely in full-sized dining rooms where there is plenty of table space. The short-stemmed glass of another type is less likely to tip and, therefore, is more practical and suitable for most uses.

Different kinds of glass are produced by varying the raw materials and the methods of heating and cooling. Three general types of glass are lime, lead and borosilicate.

The first type, lime glass, is used for window panes, jars, bottles and inexpensive tableware. It is low in cost and high in durability. Basic ingredients are sand, soda and lime.

Lead glass is expensive and beautiful. It has luster, sparkle and a bell-like tone when tapped. These qualities are produced from a mixture of sand, potash and lead.

When boric oxide is added to sand and soda, glass takes on a heat-resistant quality. This type of glass, called borosilicate, is useful for cooking utensils.

A piece of sparkling glass beautifully formed needs little or no additional decoration. However, there are a number of processes often used to add decorative qualities. These include the addition of color or bubbles; the application of enamels or metals, such as gold, platinum and silver; frosting; etching and cutting. Decoration usually adds to the cost.

### Flatware

Flatware refers to the knives, forks, spoons and other pieces of silver used in eating and serving meals. Sterling, silverplate and stainless steel are the most usual types. However, there are other variations, such as Dirilite or Vermeil, gold-colored flatware, and combinations of wood, ivory and other materials.

The most expensive and treasured flatware is sterling silver. Over the years beautiful silverware

has reflected family sentiment and prestige. Selecting a pattern of silver is usually considered one of the first steps toward furnishing the home.

Actually, silver is a soft metal and depends on the addition of another metal, usually copper, to add strength. A product marked sterling must have 925 parts of pure silver in every 1000 parts. This is required by law.

Plated ware is made by using a base metal of nickel, copper and zinc. A coating of silver is deposited on the base material. Durability of silverplate depends on the thickness of the coating and how carefully it is applied.

With proper use, a high-quality of silverplate will give satisfactory service for many years. Since there is wide variation in quality, it is wise to deal with a reputable firm.

Stainless steel has developed wide popularity for table use. It has some very practical advantages, even though it does not have the sentimental or prestige value of silver. Since it does not tarnish and resists stains from foods, it requires little care. It is made in a wide range of patterns and costs less than sterling silver.

There are several ways to purchase flatware. You can buy individual place settings or you can buy a set of four, six, eight or twelve settings.

Basic plate settings vary in number and types of pieces. A five-piece setting usually includes a knife, fork, teaspoon, soup spoon and butter spreader. In some patterns, knives and forks are offered in both dinner size and a smaller luncheon size. Most designers now make one all-purpose size.

Choice of design is a matter of individual preference; however, silver should harmonize with other tableware. Handle pieces to be sure they are well-balanced for use.

### Hollow ware

Hollow ware includes bowls, pitchers and serving dishes. As a rule, they do not match flatware in design. Silver, silverplate and stainless steel are used. Sometimes these are combined with crystal. You would use the same criteria in selecting hollow ware as you use for flat silver. It, too, should blend pleasingly with other table appointments.

## Table Linens

The term "linen" is used to describe any fabric used for the table regardless of fiber content. Linen has long been the favorite even though a variety of other fibers are in popular use.

Your needs for table linens vary according to the way you live and entertain.

Table linens serve as the background for china, silver and crystal and thus should be selected care-



fully. They are chosen to completely cover the table or to serve for one or more place settings.

Every family needs at least one good, preferably linen, tablecloth. It is durable, beautiful and makes a handsome background for almost any occasion. This can be supplemented with less formal cloths, mats or more elaborate cloths, according to variations in family entertaining.

To get the greatest satisfaction from any of these, there are certain factors to keep in mind:

- The label should tell fiber content and care the linens will need. Labels often give you some indication as to the service you can expect.
- A firmly woven fabric will usually give more satisfactory wear than a loosely woven one. Amount of sizing is also an indication of quality. Some low-quality linens are given a better appearance when sizing is left in. However, this will come out during laundering, leaving a thin, sleazy fabric.
- Examine hems to see if they are hand- or machine-sewed. Mitered corners and neatly finished hems are an indication of quality.

For dining, a tablecloth should cover the table and hang over the sides 10 to 12 inches. The same amount of overhang is desirable for a round cloth. However, the cloth for a party table may have a larger overhang.

Colored cloths have become popular and make a smart background for table settings. Attractive designs made by printing, weaving, embroidering or appliqueing often add beauty and individuality to a table. It is important that table linens should be colorfast since they will be laundered often.

Since most persons serve meals quite informally, placemats have become popular. They are appropriate for breakfast, luncheon and informal dinner settings. They should be made of fabrics that launder easily.

Size of mats is an important consideration. In order to accommodate the china, glassware, silver and napkin for one place setting, the mat should be at least 13½ by 20 inches.

Napkins often are of the same fabric as the tablecloth or of a harmonizing fabric. When choosing, consider the same construction features as for tablecloths.

Size of napkins should be checked carefully, as the size needed may vary according to when it is used. For breakfast, a napkin 13½ by 13½ inches will be sufficient. Luncheon napkins should be at least 16 inches square. However, for formal dinners the napkin should be 18 to 24 inches square.

The new no-iron and soil-resistant finishes for table linens are becoming increasingly important.

## Centerpiece

An arrangement of fresh flowers, greenery, fruit, berries or other interesting materials can be used to make the table setting complete. Colors, design and material should be in keeping with other table appointments. The arrangement should fit the space without crowding and be low enough to permit easy conversation by those seated at the table. If the arrangement is for a special occasion, rather than dining, a much taller centerpiece may be used.

Candles are often added for evening meals and for late afternoon and evening entertaining. Fresh flowers and candles add a festive feeling and a pleasant touch of hospitality.



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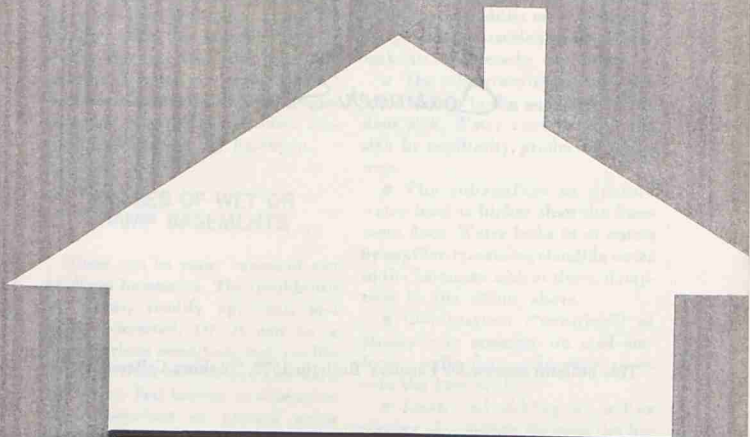
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# MAKING BASEMENTS DRY



U.S. DEPARTMENT OF AGRICULTURE  
HOME & GARDEN BULLETIN NO. 115



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# Making Basements Dry

By RICHARD H. RULE, *Architect*<sup>1</sup>

*Agricultural Engineering Research Division, Agricultural Research Service*

A dry, bright basement can provide space for a storage, workshop, laundry, or recreation room, or for additional bedrooms. It can lengthen the life of the house and furnishings, and add greatly to the value of the house.

Basements should be made watertight at the time of construction. Correcting wet or damp conditions after construction is completed can be very difficult and expensive.

To build a dry basement or to correct wet or damp conditions in an existing one, you must be familiar with the causes of wet or damp basements. The possible sources of water or dampness must be determined before work is begun in order to take the measures necessary to insure a dry basement.

## CAUSES OF WET OR DAMP BASEMENTS

There can be many causes of wet or damp basements. The trouble can be minor, readily apparent, and easily corrected. Or, it can be a more serious condition, not readily detected from the surface and hard to correct. Test borings to determine the sub-surface or ground water level should be taken during the wet season.

Following are some of the more common causes of wet or damp basements:

- The land is flat or slopes toward the house, permitting surface water (rain and melting snow) to drain down against the basement walls. Water leaks through cracks or other openings in the walls and causes wet spots on the walls or standing water on the floor.

- No gutters and downspouts (or defective ones) to handle roof water from rain and snow. The free-falling water forms puddles or wet soil near or against the basement walls. Water leaks in or enters by capillarity.

- The subsurface or ground water level is close to the underside of the floor slab. Water rises through the slab by capillarity, producing dampness.

- The subsurface or ground water level is higher than the basement floor. Water leaks in or enters by capillarity, causing standing water in the basement and, at times, dampness in the rooms above.

- Condensation ("sweating") of atmospheric moisture on cool surfaces—walls, floor, cold-water pipes—in the basement.

- Leaky plumbing or other sources of moisture increase the humidity of the basement air. Dense shrubbery and other plantings around the basement walls prevent good ventilation.

<sup>1</sup>Retired

## SELECTION OF BUILDING SITE

An important consideration in selecting the site for a new house is proper drainage. This includes not only drainage of surface water, but also drainage of any subsurface or

ground water that may be present or that may accumulate over a period of time and be blocked from its normal course of flow by the new construction.

The highest point on the property is often the best site (fig. 1, A). It will provide the best surface drain-

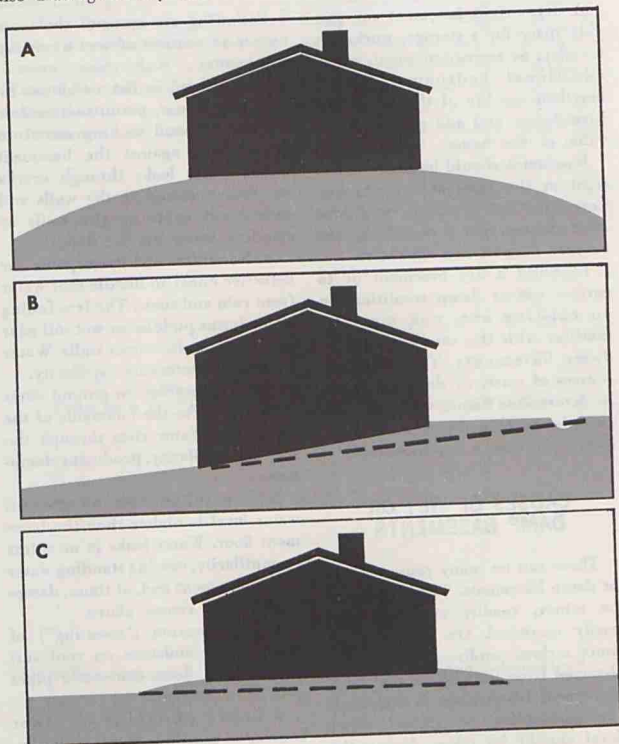


Figure 1.—House sites: (A) An elevated site provides good surface drainage away from the house in all directions. (B) Drainage can be routed around a sidehill-located house (note drainage ditch on uphill side). (C) On a flat site, the ground around the house must be built up to drain water away from the basement walls.

age away from the house in all directions, and the subsurface or ground water will be at the greatest depth.

Second choice might be a hillside (fig. 1, B). The advantage of such a location is that drainage water can be routed around the high side of the house for runoff at the ends and low side.

If the site is flat, the ground around the house must be built up or graded to drain surface water away from the basement walls (fig. 1, C).

The surface soil and subsoil should be open and porous so that air and water are admitted readily. Desirable soils include sands, loams, and gravels, all of which provide good, deep, natural drainage. Under ideal conditions, the soil is so well drained that during the rainy season the subsurface or ground water level is at least 10 feet below the finished grade. Water at that level is well below the level of the average basement floor.

## ROOF WATER

Houses should have gutters and downspouts to take care of roof water from rain and snow. Keep the gutters and downspouts free of debris. Where leaves and twigs from nearby trees may collect in a gutter, install a basket-shaped wire strainer over the downspout outlet. Repair gutters and downspouts as soon as the need appears. Keep them painted.

Downspouts usually have an elbow or shoe on the lower end to discharge the water slightly above the ground and away from the basement wall. To prevent concentration

of water at the point of discharge, use a concrete gutter or a splash block to carry the water away. The gutter or block should slope 1 inch per foot, and its edges should be flush with the grade.

Disposal of roof water as shown in figure 2 makes it easy to clear clogged downspouts. Roof water can also be piped underground to a storm water drain, dry well, or surface outlet, 15 feet or more from the house (fig. 3). The bottom of a dry well should be lower than the basement floor and in earth or rock that drains rapidly.

## SURFACE DRAINAGE

Basements can become wet or damp when surface water drains down the walls. Drainage down

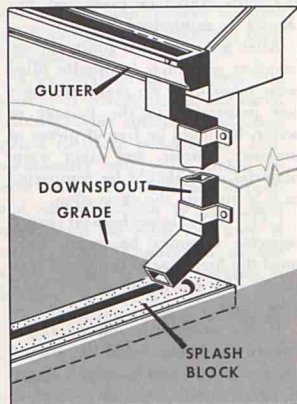


Figure 2.—Correctly installed gutters and downspouts prevent roof water from forming wet or damp conditions around basement walls.



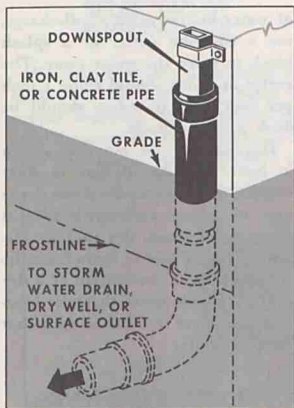


Figure 3.—Roof water can be routed to a storm water drain or other outlet.

the walls cannot be prevented, but should be minimized.

After a basement is built, the excavation around it is usually filled with loose dirt. To make this dirt less permeable to the passage of water, it should be free of pieces of masonry, mortar, and other waste material, and should be compacted as it is put into the excavation.

**CAUTION:** Do not backfill against concrete masonry basement walls until the first floor of the house is in place. Any movement of the walls may crack them.

If the ground is flat or slopes toward the house, build the ground up and grade it to a smooth, sharp slope that will drain away surface water. Extend the slope for at least 10 feet. Seed it with a good lawn grass, and rake and roll it. Sodding is a common practice and prevents

the washing away of a newly graded area during heavy rains.

If possible, the basement windows should be entirely above the finished grade for maximum light and ventilation (at least 8 inches from the grade to the tops of the window sills). Windows or parts of windows that must be below grade should be protected by metal or masonry window wells. The bottom of a well should consist of gravel to permit good drainage.

Where a large area of land slopes toward the house, surface drainage should be intercepted and rerouted some distance from the house. Dig a shallow, half-round drainage ditch or depression designed to route the water around the house (fig. 1, B). Sod the ditch or plant grass in it. If a ditch is objectionable, draitile, with one or more catch basins at low spots, may be installed.

## SUBSURFACE DRAINAGE

Deep, thorough drainage of the house site is important. In poorly drained soil or where the basement will be below the subsurface water level, draitile should be installed around the footings or at least on the sides where trouble may occur (figs. 4 and 5). This drain should be installed even though the walls and floor receive special waterproofing.

Good, 4-inch draitile should be used. It should be laid parallel with, and at the bottom of, the footings. *The bottom of the tile must not be lower than the bottom of the footings. If the drain is below the footings, the footings may be undermined.* The drain should slope very

little—about  $\frac{1}{2}$  inch per 12 feet. Joints between sections of the tile should be open about the thickness of a knifeblade, and the top half should be covered with building felt or similar material to keep out dirt.

In normal, porous soil, the tile should be covered with 18 inches of screened gravel. In heavy, non-porous soil, the gravel should extend almost to the top of the excavation. In either kind of soil, fine gravel should be placed immediately over and around the tile to provide a good bedding and protection.

This footing drain and belt of gravel around the basement walls should drain off all seepage water and prevent the accumulation of water around the walls. This method is especially suitable on the upper side of a house located on a hillside, because a drainage outlet can usually be located within a short distance.

Under abnormal conditions, it may be necessary to drain deeper than the foundation. The draintile should be placed 4 to 5 feet away from the footings to prevent undermining

them. Branch drains may be laid to take care of any springs that may appear when the excavation is completed.

## WALL AND FLOOR CONSTRUCTION

Construction required for the basement walls and floor depends largely upon soil drainage conditions. In well-drained soil, good, water-resistant construction may be adequate. In poorly drained soil or where the basement floor will be below the sub-surface water level, watertight construction is required.

### General Construction

Cost and availability generally determine the material of which the walls will be built. Poured concrete and hollow-masonry units are most commonly used.

In well-drained soil, concrete that is properly mixed, placed, and cured should provide sufficient protection against moisture penetration.<sup>2</sup> Hollow-masonry unit walls should receive two  $\frac{1}{4}$ - or  $\frac{3}{8}$ -inch coats of portland cement mortar to help shed water down the walls and keep it out of joints. Application of the mortar, which is called parging, is discussed on page 9.

The walls should have, or should

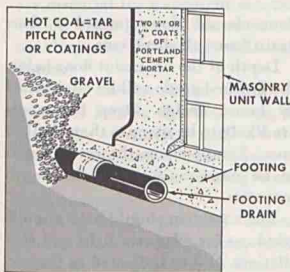


Figure 4.—A footing drain prevents the accumulation of water around basement walls.

<sup>2</sup> Farmers' Bulletin 2203, "Use of Concrete on the Farm," gives detailed information on mixing, placing, and curing concrete. For a free copy, send a post card to the U.S. Department of Agriculture, Washington, D.C. 20250. Be sure to include your ZIP code.

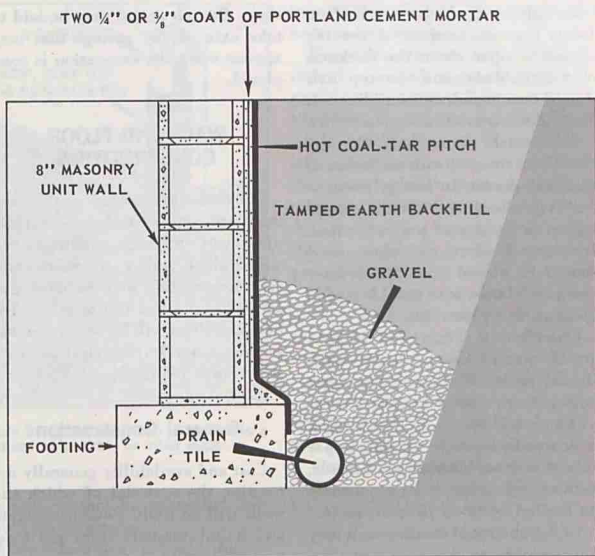


Figure 5.—Waterproof construction of masonry unit walls. In very poorly drained soil, the gravel should extend almost to the top of the excavation.

be started on, substantial concrete footings. Properly designed footings prevent uneven settlement and possible cracking of the wall.

The floor should be an even concrete slab about 4 inches thick. A vapor barrier of polyethylene or 55-pound roll roofing should be placed under the slab. The floor should have a slight slope in one or two directions to aid in the removal of water that may enter the basement.

A floor drain can be installed to drain water, and will be useful for draining appliances or fixtures. The

floor should slope toward a floor drain from all directions.

Depth of the basement floor below the finished grade will be established by house design. Deep basements are likely to be damper than shallow ones. Temperature, however, tends to be more uniform as the depth increases.

The basement should have enough windows for adequate light and ventilation. And as indicated in the section on "Surface Drainage" (p. 3), all windows should be above grade for maximum light and ventilation.

## Watertight Construction

Poured concrete is recommended for watertight construction of the basement walls and floor, but hollow-masonry units are often used for the walls.

Choose one of these methods of waterproofing:

- Close, compact, watertight construction of the walls and floor themselves. This is called the integral method and is applicable only to poured-concrete construction.

- Application of a bituminous membrane to the exterior surface of the walls and under the floor slab.

- Application of two coats of portland cement mortar to the exterior surface of the walls. This is called parging.

- Application of polyethylene film, a vapor barrier material, to the exterior surface of the walls. Manufacturers' instructions should be followed in applying the material.

### Integral Method

Good materials (cement, sand, and gravel) and first-class workmanship are essential for watertight concrete. Follow these general instructions in building the basement walls and floors:<sup>3</sup>

- Do the work in mild, dry weather. Fall is the best time, because the subsurface water level is usually low and temperatures are more favorable for making watertight concrete.

- Use fresh portland cement; clean, coarse sand; clean, sound gravel not over  $\frac{3}{4}$  inch in diameter;

and the smallest quantity of water that will give a smooth, workable mix. Do not use more than 6 gallons of water per sack of cement.

- Mix the concrete thoroughly. Thorough mixing increases the strength and watertightness.

- Pour the floor in one continuous operation and the walls in as nearly a continuous operation as possible. Leakage can occur at construction joints and at seams between pourings.

- Work (vibrate or spade) the concrete in the forms only enough to eliminate honeycombing. Overworking it can cause a nonuniform mixture and reduce its strength and watertightness.

- Properly protect and cure the concrete immediately after placing it. Freezing or rapid drying of the concrete by sun or wind can damage it and make it worthless.

Figure 6 shows under-the-floor construction details. In compact or clay-like soil, lay a 5-inch layer of compacted gravel. Follow with a 1-inch layer of tamped sand. Cover the sand with a vapor barrier such as polyethylene or 55-pound roll roofing. Pour the floor slab on the vapor barrier. Be careful not to break the material, because it will be ineffective at that point.

In very poorly drained soil, lay a 4-inch layer of clay tile or hollow-masonry units. Follow with the vapor barrier.

Roll roofing vapor barrier (but not polyethylene) should be turned up on the inside surface of the basement walls. A 1-inch space, formed as is shown in figure 7, should be left between the floor slab and walls. After the slab has cured, the two pieces of

<sup>3</sup> See footnote 2, p. 5.



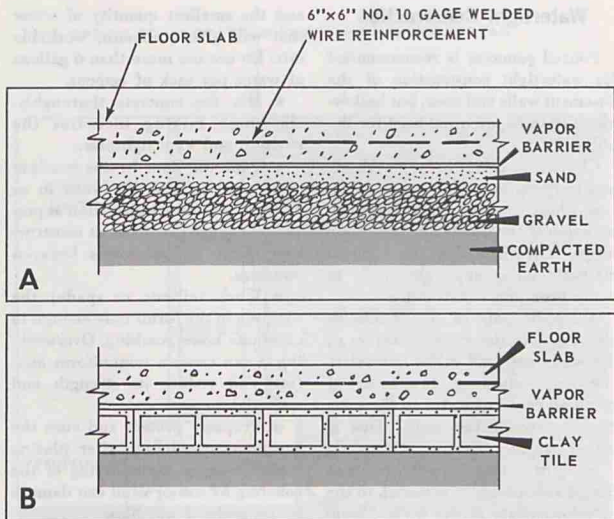


Figure 6.—Waterproof construction of basement floor in compact or clay-like soil (A) and in very poorly drained soil (B).

siding are removed and the space is filled with hot coal-tar pitch.

### Membrane

Overlapping layers of a prepared waterproofing felt or fabric are applied to the exterior surface of the walls and under the floor slab. The layers are coated and cemented together with hot coal-tar pitch.

The wall surface should be smooth, clean, and dry. Fill in holes and depressions with mortar. Knock off projections that could puncture the membrane. A coat of cement mortar may be applied over the membrane to protect the exterior

surface against abrasions and puncture.

The floor membrane may be laid on a thin concrete subfloor or over hollow-tile or concrete units covered with a coat of mortar. The membrane should be turned up against the inside surface of the walls. After the floor slab has cured, the space between it and the walls is filled with hot coal-tar pitch.

If properly applied, the membrane is a very effective method of waterproofing. However, it is one of the more expensive methods, and, if leaks develop, they may be difficult to locate and costly to repair.

## Parging

Two  $\frac{1}{4}$ - or  $\frac{3}{8}$ -inch coats of portland cement mortar are applied to the exterior surface of the walls (fig. 5). The mortar should be mixed in the proportion of 1 part portland cement to  $2\frac{1}{2}$  parts sand.

The wall surface should be thoroughly cleaned to remove dirt and loose material. Just before the first mortar coat is applied, the wall should be moistened and given a brush coat of neat portland cement grout. The second mortar coat should be applied before the first one sets firmly, and the first one should be lightly scratched with a stiff brush to obtain good bond between coats.

The surface of the second, or outside, coat should be steel-troweled to a smooth, impervious finish. Do not overwork the surface.

In very wet soils, the parged wall surfaces below grade may be given two coats of hot coal-tar pitch. The mortar must be dry when the coal-tar pitch is applied.

**CAUTION:** Any movement or other disturbance to the walls can crack the walls and mortar coating.

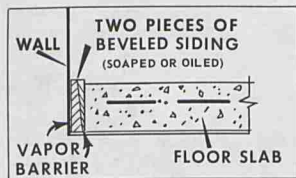


Figure 7.—The 1-inch joint between the basement walls and floor is formed with pieces of siding. After the floor slab has cured, the pieces of siding are removed, and the joint is filled with hot coal-tar pitch.

Do not backfill dirt against the walls until the first floor of the house is in place.

## CONDENSATION

Condensation is a frequent cause of dampness in basements. It occurs when moisture in the basement air condenses on cool surfaces—walls, floor, cold-water pipes. It may be prevented or eliminated by preventing or removing excess moisture in the air.

Avoidable sources of moisture, such as leaky plumbing, should be eliminated. Exposed cold-water pipes should be insulated.

The basement should be well ventilated—sunlight and free movement of air can quickly dry out a basement. Trees and shrubbery around the basement should be pruned or thinned out to prevent heavy shading and to permit better air circulation.

Ventilation should be governed by weather conditions. In general, windows should be open night and day during fair weather and when it is cooler outside than inside the basement. During hot, humid weather or long rainy spells, windows should be closed because the outside air will probably contain more moisture than the basement air.

Laundrying is the most common cause of excess humidity in basements. Washing clothes and drying them either on lines or in a mechanical dryer adds considerable moisture to the air. This excess moisture may be removed by use of a dehumidifier or an air conditioner.

Two types of dehumidifiers are available—chemical and mechanical

refrigeration. Chemical types use silica-gel or other chemical to absorb moisture from the air. The chemicals must be replaced or dried out periodically. Mechanical-refrigeration types draw the air over a refrigerated coil (called a condenser), where the moisture condenses and drains off into a drain or a collection pan.

A window-installed air conditioner will cool the basement and remove moisture at the same time. Even better is a type of air conditioner designed to dehumidify as well as to cool. It will cool to a predetermined temperature and then automatically switch over to dehumidifying until the desired setting on a humidistat is reached.

### IMPROVEMENT OF OLD BASEMENTS

Waterproofing the exterior surface of existing basement walls is usually more effective than interior treatment. Waterproofing methods would be the same as for new basements (see "Wall and Floor Construction," p. 5). If outside work is done, installation of a footing drain is recommended, if one is not already installed (see "Subsurface Drainage," p. 4).

Because of the labor or cost involved, or because of the presence of trees and shrubbery, it may not be practical to dig the trench required for outside waterproofing. In such case, draitile can be laid along the inside bottom of the footings. The tile should be embedded in coarse gravel and should lead to a drainage outlet. (If a drainage

outlet cannot be provided, use of a sump pump and pit should be considered.) A drain installed inside the footings is not as effective as one installed outside, but it should eliminate water pressure.

A variety of commercial compounds are available for waterproofing or dampproofing both the exterior and the interior of existing basement walls. They vary in effectiveness. Manufacturers' directions should be followed in applying them.

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### SUMP PUMPS

Where gravity drainage is impossible or impracticable, or where a serious water problem arises after completion of the house, a sump pump or cellar drainer may be used to raise the water to a level where it can be carried off through a drain line.

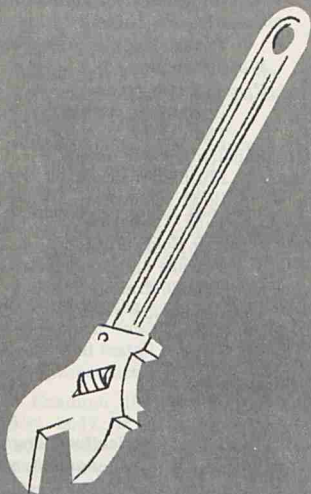
Sump pumps are small, simple, compact units and are installed in a sump, or pit, at the low corner or other wet spot in the basement. To prevent caving in of the sides, line the sump, or pit, with a length of large draitile or with concrete or metal. Inlets, or holes, should be provided in the lining material to admit ground water. Manufacturers of sump pumps specify the size of sump, or pit, required for a particular pump.

Sump pumps are designed for automatic operation. If correctly installed and not abused, a pump requires very little attention. Dirt, lint, trash, and other waste can clog the strainer and should be kept out of the pit.

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# SIMPLE PLUMBING REPAIRS

■ for the Home  
and Farmstead



Farmer's Bulletin No. 2202  
U.S. DEPARTMENT OF AGRICULTURE



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**Prepared by**  
**Agricultural Engineering Research Division**  
**Agricultural Research Service**

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# SIMPLE PLUMBING REPAIRS

## ■ for the Home and Farmstead

You can save money and avoid delays by making minor plumbing repairs yourself.

Jobs that a farmer or homeowner can do with a few basic tools include:

- Repairing water faucets and valves.
- Repairing leaks in pipes and tanks.
- Thawing frozen pipes.
- Repairing water closets.
- Cleaning clogged drains.

Extensive plumbing repairs or alterations in the plumbing system usually require authorization from local authorities and possibly inspection of the completed work. Therefore such work should be done by a qualified or licensed plumber.

### REPAIRING WATER FAUCETS AND VALVES

Faucets and globe valves, the type of shutoff valves commonly used in home water systems, are very similar in construction (fig. 1) and repair instructions given below apply to both. Your faucets or valves may differ somewhat in general design from the one shown in figure 1, because both faucets and valves come in a wide variety of styles.

Mixing faucets, which are found on sinks, laundry trays, and bathtubs, are actually two separate units with a common spout. Each unit is independently repaired.

If a faucet drips when closed or vibrates ("sings" or "flutters") when opened, the trouble is usually the washer at the lower end of the spindle. If it leaks around the spindle when opened, new packing is needed. To replace the washer—

- Shut off the water at the shutoff valve nearest the particular faucet.

- Disassemble the faucet—the handle, packing nut, packing, and spindle, in that order. You may have to set the handle back on the spindle and use it to unscrew and remove the spindle.

- Remove the screw and worn washer from the spindle. Scrape all the worn washer parts from the cup and install a new washer of the proper size.

- Examine the seat on the faucet body. If it is nicked or rough, reface it. Hardware or plumbing-supply stores carry the necessary seat-dressing tool. *Hold the tool vertically when refacing the seat.*

- Reassemble the faucet. Handles of mixing faucets should be in matched positions.

To replace the packing, simply remove the handle, packing nut, and old packing, and install a new packing washer. If a packing washer is not available, you can wrap stranded graphite-asbestos wicking around the spindle. Turn

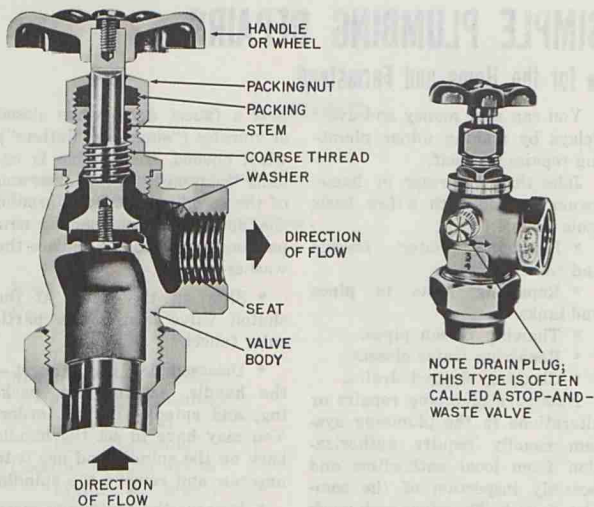


Figure 1.—Globe-type angle valve. Faucets are similar in construction.

the packing nut down tight against the wicking.

Other faucet parts may be replaced as necessary.

Complete faucet inserts in which the washer does not turn on the seat are available. This feature prolongs washer life indefinitely.

Several new faucet designs aimed at easier operation, eliminating drip, and promoting long service life, are on the market. Instructions for repair may be obtained from dealers.

If a shower head drips, the supply valve has not been fully closed, or the valve needs repair.

After extended use and several repairs, some valves will no longer give tight shutoff and must be replaced. When this becomes necessary, it may be advisable to upgrade the quality with equipment having better flow characteristics and longer-life design and materials. In some cases, ball valves will deliver more water than globe valves. Some globe valves deliver more flow than others for identical pipe sizes. Y-pattern globe valves, in straight runs of pipe, have better flow characteristics than straight stop valves. Figure 2 shows the features of different types of valves.

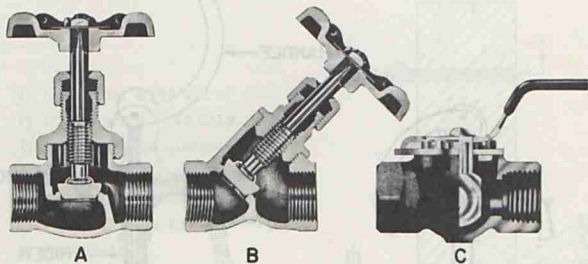


Figure 2.—Different types of valves: *A*, Straight-thru globe valve; note large passages for water. *B*, Y-pattern globe valve; the flow is almost straight. *C*, Ball valve; some makes are available with the port in the ball the same diameter as the pipe.

### PRECAUTIONS

Polluted water or sewage may carry such diseases as typhoid fever and amoebic dysentery. If you do your own plumbing work, be sure that—

- There are no leaks in drain-pipes through which sewage or sewage gases can escape.

- There are no cross connections between piping carrying water from different sources unless there can be reasonable certainty that all sources are safe and will remain safe.

- There can be no back siphonage of water from plumbing fixtures or other containers into the water-supply system.

Once a pipe has become polluted, it may be difficult to free it of the pollution. For this reason, building codes do not permit the use of second-hand pipe. All ini-

tial piping and parts and subsequent replacements should be new.

Since a plumbing system will require service from time to time, shutoff valves should be installed at strategic locations so that an affected portion can be isolated (water flow to it cut off) with minimum disturbance to service in the rest of the system. Shutoff valves are usually provided on the water closet supply line, on the hot- and cold-water supply line to each sink, tub, and lavatory, and on the water heater supply line. Drain valves are usually installed for water-supply piping systems and for hot-water storage tanks.

A pressure-relief valve should be installed for the water heater storage tank to relieve pressure buildup in case of overheating.



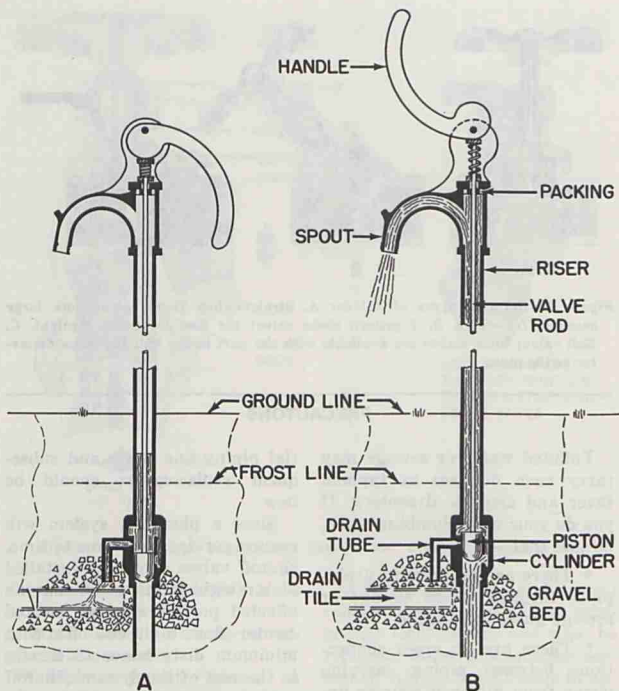


Figure 3.—Frostproof hydrant; A, Closed; B, opened. As soon as the hydrant is closed, water left in the riser drains out the drain tube as shown in A. This prevents water from freezing in the hydrant in cold weather.

## FROSTPROOF HYDRANTS

Frostproof hydrants are basically faucets, although they may differ somewhat in design from ordinary faucets.

Two important features of a frostproof hydrant are: (1) The valve is installed under ground—below the frostline—to prevent

freezing, and (2) the valve is designed to drain the water from the hydrant when the valve is closed.

Figure 3 shows one type of frostproof hydrant. It works as follows: When the handle is raised, the piston rises, opening the valve. Water flows from the supply pipe into the cylinder, up

- ① 1/2" OR 3/4" GATE VALVE
- ② 1/2" OR 3/4" SCH. 40 GALV.
- ③ 1/2" OR 3/4" VACUUM BREAKER
- ④ 1/2" OR 3/4" ELL. M.I. GALV.
- ⑤ EXTERIOR BUILDING WALL
- ⑥ 1" SLEEVE, SCH. 40
- ⑦ HANDWHEEL
- ⑧ IPS HOSE ADAPTER
- ⑨ COUPLING M.I. GALV.
- ⑩ 1/2" OR 3/4" NIPPLE GALV.

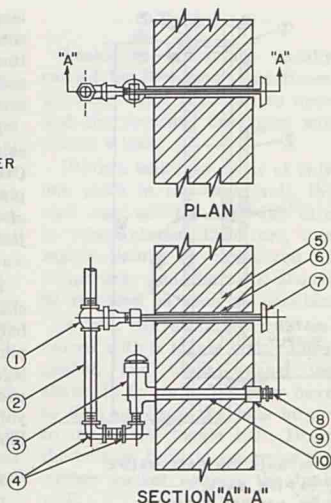


Figure 4.—Vacuum breaker arrangement for outside hose hydrant.

through the riser, and out the spout. When the handle is pushed down, the piston goes down, closing the valve and stopping the flow of water. Water left in the hydrant flows out the drain tube into a small gravel-filled dry well or drain pit.

As with ordinary faucets, leakage will probably be the most common trouble encountered with frostproof hydrants. Worn packing, gaskets, and washers can cause leakage. Disassemble the hydrant as necessary to replace or repair these and other parts.

Frostproof yard hydrants having buried drains can be health hazards. The vacuum created by

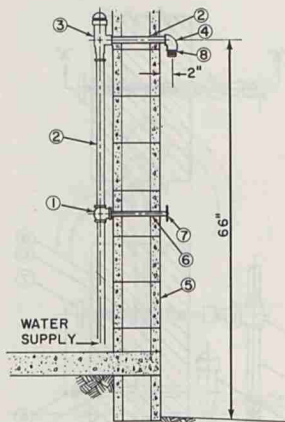
water flowing from the hydrant may draw in contaminated water standing above the hydrant drain level. Such hydrants should be used only where positive drainage can be provided.

Frostproof wall hydrants (fig. 4) are the preferred type. For servicing sprayers using hazardous chemicals, hydrants having backflow protection should be used (fig. 5).

## REPAIRING LEAKS IN PIPES AND TANKS

### Pipes

Leaks in pipes usually result from corrosion or from damage to the pipe. Pipes may be dam-



- ①  $\frac{3}{4}$ " BALL OR GATE VALVE
- ②  $\frac{3}{4}$ " PIPE, GALV.
- ③  $\frac{3}{4}$ " VACUUM BREAKER
- ④  $\frac{3}{4}$ " ELL. M. L. GALV.
- ⑤ EXTERIOR BUILDING WALL
- ⑥ 1" SLEEVE
- ⑦ VALVE HANDLE
- ⑧ HOSE ADAPTER

Figure 5.—Protected wall hydrant suitable for filling agricultural sprayers.

aged by freezing, by vibration caused by machinery operating nearby, by water hammer, or by animals bumping into the pipe. (Water hammer is discussed on p. 8)

### Corrosion

Occasionally waters are encountered that corrode metal pipe and tubing. (Some acid soils also corrode metal pipe and tubing.)

The corrosion usually occurs, in varying degrees, along the entire

length of pipe rather than at some particular point. An exception would be where dissimilar metals, such as copper and steel, are joined.

Treatment of the water may solve the problem of corrosion.<sup>1</sup> Otherwise, you may have to replace the piping with a type made of material that will be less subject to the corrosive action of the water.

It is good practice to get a chemical analysis of the water before selecting materials for a plumbing system. Your State college or university may be equipped to make an analysis; if not, you can have it done by a private laboratory.

### Repairing Leaks

Pipes that are split by hard freezing must be replaced.

A leak at a threaded connection can often be stopped by unscrewing the fitting and applying a pipe joint compound that will seal the joint when the fitting is screwed back together.

Small leaks in a pipe can often be repaired with a rubber patch and metal clamp or sleeve. This must be considered as an emergency repair job and should be followed by permanent repair as soon as practicable.

Large leaks in a pipe may require cutting out the damaged

<sup>1</sup> Information about water treatment may be obtained from your county agricultural agent or from the U.S. Department of Agriculture, Washington, D.C. 20250.

section and installing a new piece of pipe. At least one union will be required unless the leak is near the end of the pipe. You can make a temporary repair with plastic or rubber tubing. The tubing must be strong enough to withstand the normal water pressure in the pipe. It should be slipped over the open ends of the piping and fastened with pipe clamps or several turns of wire.

Vibration sometimes breaks solder joints in copper tubing, causing leaks. If the joint is accessible, clean and resolder it. The tubing must be dry before it can be heated to soldering temperature. Leaks in places not readily accessible usually require the services of a plumber and sometimes of both a plumber and a carpenter.

## Tanks

Leaks in tanks are usually caused by corrosion. Sometimes, a safety valve may fail to open and the pressure developed will spring a leak.

While a leak may occur at only one place in the tank wall, the wall may also be corroded thin in other places. Therefore, any repair should be considered as temporary, and the tank should be replaced as soon as possible.

A leak can be temporarily repaired with a toggle bolt, rubber gasket, and brass washer, as shown in figure 6. You may have to drill or ream the hole larger to insert the toggle bolt. Draw the bolt up tight to compress the rubber gasket against the tank wall.

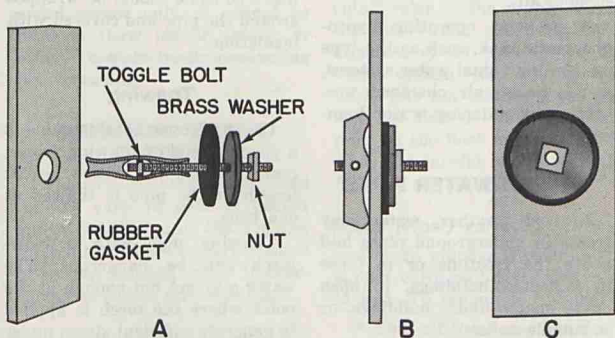


Figure 6.—Closing a hole in a tank: A, The link of the toggle bolt is passed through the hole in the tank (hole is enlarged if necessary). B, Side view of tank edge (nut is drawn up tightly to compress washer and gasket against tank). C, Outside view of completed repair.



## WATER HAMMER

Water hammer sometimes occurs when a faucet is suddenly closed. When the flow of water is suddenly stopped, its kinetic energy is expended against the walls of the piping. This causes the piping to vibrate, and leaks or other damage may result.

Water hammer may be prevented or its severity reduced by installing an air chamber just ahead of the faucet. The air chamber may be a piece of air-filled pipe or tubing, about 2 feet long, extending vertically from the pipe. It must be airtight. Commercial devices designed to prevent water hammer are also available.

An air chamber requires occasional replenishing of the air to prevent it from becoming waterlogged—that is, full of water instead of air.

A properly operating hydro-pneumatic tank, such as the type used in individual water systems, serves as an air chamber, preventing or reducing water hammer.

## FROZEN WATER PIPES

In cold weather, water may freeze in underground pipes laid above the frostline or in pipes in unheated buildings, in open crawl spaces under buildings, or in outside walls.

*When water freezes it expands. Unless a pipe can also expand, it may rupture when the water freezes. Iron pipe and steel pipe*

*do not expand appreciably. Copper pipe will stretch some, but does not resume its original dimensions when thawed out; repeated freezings will cause it to fail eventually. Flexible plastic tubing can stand repeated freezes, but it is good practice to prevent it from freezing.*

## Preventing Freezing

Pipes may be insulated to prevent freezing, but this is not a completely dependable method. Insulation does not stop the loss of heat from the pipe—merely slows it down—and the water may freeze if it stands in the pipe long enough at below-freezing temperature. Also, if the insulation becomes wet, it may lose its effectiveness.

Electric heating cable can be used to prevent pipes from freezing. The cable should be wrapped around the pipe and covered with insulation.

## Thawing

Use of electric heating cable is a good method of thawing frozen pipe, because the entire heated length of the pipe is thawed at one time.

Thawing pipe with a blowtorch can be dangerous. The water may get hot enough at the point where the torch is applied to generate sufficient steam under pressure to rupture the pipe. Steam from the break could severely scald you.

Thawing pipe with hot water

is safer than thawing with a blowtorch. One method is to cover the pipe with rags and then pour the hot water over the rags.

When thawing pipe with a blowtorch, hot water, or similar methods, open a faucet and start thawing at that point. The open faucet will permit steam to escape, thus reducing the chance of the buildup of dangerous pressure. Do not allow the steam to condense and refreeze before it reaches the faucet.

Underground *metal* pipes can be thawed by passing a low-voltage electric current through them. The current will heat the entire length of pipe through which it passes. Both ends of the pipe must be open to prevent the buildup of steam pressure.

**CAUTION:** This method of thawing frozen pipe can be dangerous and should be done by an experienced person only. It cannot be used to thaw plastic tubing or other non-electricity-conducting pipe or tubing.

## REPAIRING WATER CLOSETS

Water closets (commonly called toilets) vary in general design and in the design of the flushing mechanism. But they are enough alike that general repair instructions can suffice for all designs.

### Flushing Mechanism

Figure 7 shows a common type of flushing mechanism. Parts that usually require repair are the

flush valve, the intake (float) valve, and the float ball.

In areas of corrosive water, the usual copper flushing mechanism may deteriorate in a comparatively short time. In such cases, it may be advisable to replace the corroded parts with plastic parts. You can even buy plastic float balls.

### Flush Valve

The rubber ball of the flush valve may get soft or out of shape and fail to seat properly. This causes the valve to leak. Unscrew the ball from the lift wire and install a new one.

The trip lever or lift wire may corrode and fail to work smoothly, or the lift wire may bind in the guides. Disassemble and clean off corrosion or replace parts as necessary.

Most plumbing codes require a cutoff valve in the supply line to the flush tank, which makes it unnecessary to close down the whole system (fig. 7). If this valve was not installed, you can stop the flow of water by propping up the float with a piece of wood. Be careful not to bend the float rod out of alignment.

### Intake (Float) Valve

A worn plunger washer in the supply valve will cause the valve to leak. To replace the washer—

- Shut off the water and drain the tank.
- Unscrew the two thumb-screws that hold the levers and push out the levers.

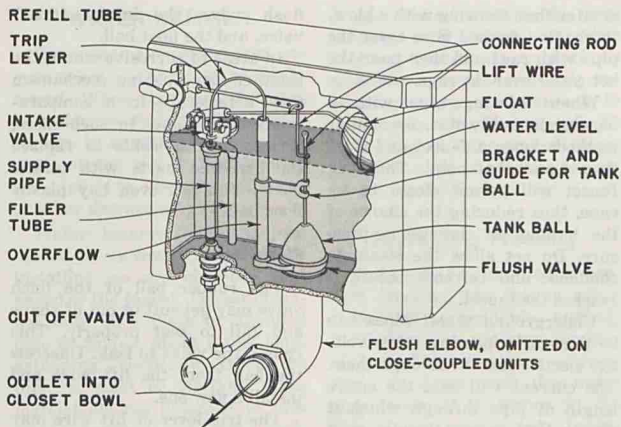


Figure 7.—Water closet (toilet) flush tank.

- Lift out the plunger, unscrew the cup on the bottom, and insert a new washer. The washer is made of material such as rubber or leather.

- Examine the washer seat. If nicked or rough, it may need refacing.

If the float-valve assembly is badly corroded, replace it.

#### Float Ball

The float ball may develop a leak and fail to rise to the proper position. (Correct water level is about 1 inch below the top of the overflow tube or enough to give a good flush.) If the ball fails to rise, the intake valve will remain open and water will continue to flow. Brass float balls can sometimes be drained and the leak soldered. Other types must

be replaced. When working on the float ball, be careful to keep the rod aligned so that the ball will float freely and close the valve properly.

#### BOWL REMOVAL

An obstruction in the water closet trap or leakage around the bottom of the water-closet bowl may require removal of the bowl. Follow this procedure:

- Shut off the water.
- Empty the tank and bowl by siphoning or sponging out the water.
- Disconnect the water pipes to the tank (see fig. 7).
- Disconnect the tank from the bowl if the water closet is a two-piece unit. Set the tank where it cannot be damaged. Handle tank and bowl carefully;

they are made of vitreous china or porcelain and are easily chipped or broken.

- Remove the seat and cover from the bowl.

- Carefully pry loose the bolt covers and remove the bolts holding the bowl to the floor flange (fig. 8). Jar the bowl enough to break the seal at the bottom. Set the bowl upside down on something that will not chip or break it.

- Remove the obstruction from the discharge opening.

- Place a new wax seal around the bowl horn and press it into

place. A wax seal (or gasket) may be obtained from hardware or plumbing-supply stores.

- Set the bowl in place and press it down firmly. Install the bolts that hold it to the floor flange. Draw the bolts up snugly, but not too tight because the bowl may break. The bowl must be level. Keep a carpenter's level on it while drawing up the bolts. If the house has settled, leaving the floor sloping, it may be necessary to use shims to make the bowl set level. Replace the bolt covers.

- Install the tank and con-

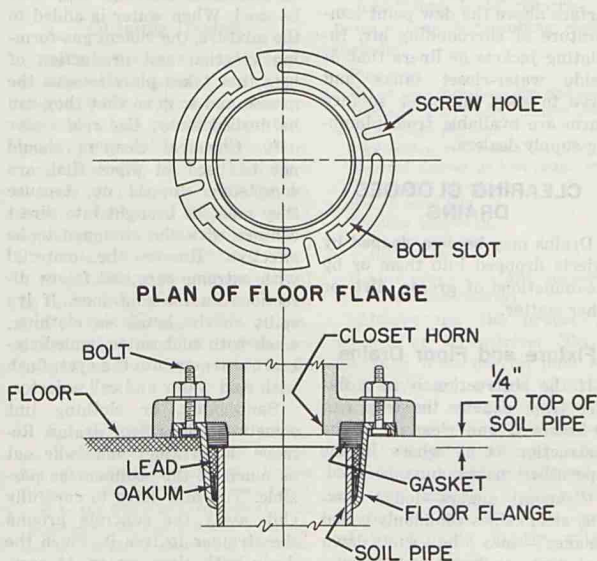


Figure 8.—Connection of water closet to floor and soil pipe.



nect the water pipes to it. It is advisable to replace all gaskets, after first cleaning the surfaces thoroughly.

- Test for leaks by flushing a few times.
- Install the seat and cover.

### Tank "Sweating"

When cold water enters a water closet tank, it may chill the tank enough to cause "sweating" (condensation of atmospheric moisture on the outer surface of the tank). This can be prevented by insulating the tank to keep the temperature of the outer surface above the dew point temperature of surrounding air. Insulating jackets or liners that fit inside water-closet tanks and serve to keep the outer surface warm are available from plumbing-supply dealers.

### CLEARING CLOGGED DRAINS

Drains may become clogged by objects dropped into them or by accumulations of grease, dirt, or other matter.

#### Fixture and Floor Drains

If the obstruction is in a fixture trap, usually the trap can be removed and cleared. If the obstruction is elsewhere in the pipe other means must be used.

Cleanout augers—long, flexible, steel cables commonly called "snakes"—may be run down drainpipes to break up obstruc-

tions or to hook onto and pull out objects. Augers are made in various lengths and diameters and are available at hardware and plumbing-supply stores. (In some cases, you may have to call a plumber, who will probably have a power-driven auger.)

Small obstructions can sometimes be forced down or drawn up by use of an ordinary rubber force cup (plunger or "plumber's friend").

Grease and soap clinging to a pipe can sometimes be removed by flushing with hot water. Lye or lye mixed with a small amount of aluminum shavings may also be used. When water is added to the mixture, the violent gas-forming reaction and production of heat that takes place loosens the grease and soap so that they can be flushed away. *Use cold water only.* Chemical cleaners should not be used in pipes that are completely stopped up, because they must be brought into direct contact with the stoppage to be effective. Handle the material with extreme care and follow directions on the container. If lye spills on the hands or clothing, wash with cold water immediately. If any gets into the eyes, flush with cold water and call a doctor.

Sand, dirt, or clothing lint sometimes clogs floor drains. Remove the strainer and ladle out as much of the sediment as possible. You may have to carefully chip away the concrete around the strainer to free it. Flush the drain with clean water. If pres-

sure is needed, use a garden hose. Wrap cloths around the hose where it enters the drain to prevent backflow of water. You may have to stand on this plug to keep it in place when the water is turned on.

Occasional flushing of floor drains may prevent clogging.

**CAUTION:** Garden hoses, augurs, rubber force cups, and other tools used in direct contact with sewage are subject to contamination. Do not later use them for work on your potable water supply system unless they have been properly sterilized.

### Outside Drains

Roots growing through cracks or defective joints sometimes clog outside drains or sewers. You can clear the stoppage temporarily by using a root-cutting tool. However, to prevent future trouble, you should re-lay the defective portion of the line, using sound pipe and making sure that all joints are watertight.<sup>2</sup>

If possible, sewer lines should be laid out of the reach of roots. But if this is impossible or impracticable, consider using impregnated fiber pipe which tends to repel roots.

<sup>2</sup>For information on laying sewers, see Agriculture Information Bulletin 274, "Farmstead Sewage and Refuse Disposal." For a free copy, send a post card to the Office of Information, U.S. Department of Agriculture, Washington, D.C. 20250. Include your ZIP Code in your return address.

## TOOLS AND SPARE PARTS

Basic tools that you should have on hand to make simple plumbing repairs include:

Wrenches, including pipe wrenches, in a range of sizes to fit the pipe, fittings, fixtures, equipment, and appliances in the system.

Screwdrivers in a range of sizes to fit the faucets, valves, and other parts of the system.

Ball peen hammer or a 12- or 16-ounce clawhammer.

Rubber force cup (plunger or "plumber's friend").

Cold chisel and center punch.

Cleanout auger ("snake").

Friction tape.

Adjustable pliers.

Additional tools required for more extensive plumbing repairs include:

Pipe vise.

Set of pipe threading dies and stocks.

Hacksaw and blades (blades should have 32 teeth per inch).

Pipe cutter, roller type.

Tapered reamer or half-round file.

Carpenter's brace.

Set of wood bits.

Gasoline blowtorch.

Lead pot and ladle.

Calking tools.

Copper tube cutter with reamer (if you have copper tubing).

Always use the proper size wrench or screwdriver. Do not use pipe wrenches on nuts with flat surfaces; use an adjustable or open-end wrench. Do not use pipe wrenches on polished-surface tubings or fittings, such as found on plumbing fixtures; use a strap wrench. Tight nuts or fittings can sometimes be loosened by tapping lightly with a hammer or mallet.

When cutting pipe with a hacksaw, insert the pipe through a block of hard wood as shown in figure 9. A slot sawed in the block guides the saw during the cutting.

It should not be necessary to stock a large number of spare parts. Past plumbing troubles may give some indication as to the kind of parts most likely to be needed. Spare parts should include:

Faucet washers and packing.

One or two lengths of the most common type and size of piping in the plumbing system.

Several unions and gaskets or unions with ground surfaces.

Several couplings and elbows.

A few feet of pipe strap.

An extra hose connection.

## EMERGENCIES

Grouped below are emergencies that may occur and the action to take. The name, address, and phone number of a plumber who offers 24-hour service should be posted in a conspicuous place.

*Burst pipe or tank.*—Immediately cut off the flow of water by closing the shutoff valve nearest to the break. Then arrange for repair.

*Water closet overflow.*—Do not use water closet until back in working order. Check for and remove stoppage in closet bowl outlet, drain line from closet to sewer, or sewer or septic tank. If stoppage is due to root entry into pipe, repair of pipe at that point is recommended.

*Rumbling noise in hot water tank.*—This is likely a sign of

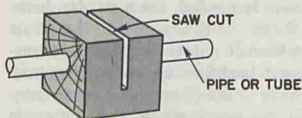


Figure 9.—Wood block for cutting pipe or tubing.

overheating which could lead to the development of explosive pressure (Another indication of overheating is hot water backing up in the cold-water supply pipe.) Cut off the burner immediately. Be sure that the pressure-relief valve is operative. Then check (with a thermometer) the temperature of the water at the nearest outlet. If above that for which the gage is set, check the thermostat that controls burner cut-off. If you cannot correct the trouble, call a plumber.

*Cold house.*—If the heating system fails (or if you close the house and turn off the heat) when there is a chance of sub-freezing weather, completely drain the plumbing system. A drain valve is usually provided at the low point of the water supply piping for this purpose. A pump, storage tank, hot-water tank, water closet tank, water-treatment apparatus, and other water-system appliances or accessories should also be drained. Put antifreeze in all fixture and drain traps.

Hot-water and steam heating systems should also be drained when the house temperature may drop below freezing.



# EXTERIOR PAINTING



# EXTERIOR PAINTING

Information for this publication was furnished by the  
Agricultural Engineering Research Division,  
Agricultural Research Service

Some people enjoy painting the house; for others it's a chore. But it must be done occasionally. One reason is for appearance. An even more important one is for protection of the wood or other surfaces.

Delay, when repainting is needed, can mean extra work when you finally do paint. Old paint that blisters, cracks, and peels will have to be removed before the new paint can be applied.

If you wait too long, there could be costly damage. Wood rots when not fully protected. It also allows moisture to reach the interior where it can cause damage. Some metals rust when not protected; others develop a corrosive wash that stains surrounding surfaces.

Take time to do a good job when you paint:

- First, use good quality paint. It will give longer and better protection.

- Second, prepare the surface

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Grateful acknowledgment is given the National Paint, Varnish and Lacquer Association for their technical review of this publication.

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properly for painting. Even the best paint won't last on a poorly prepared surface.

- Third, apply the paint correctly. Improper application can be as damaging as a poorly prepared surface.

## SELECTION OF PAINT

There are a number of different types of paint. Selection need not be too much of a problem however.

First consider the type of surface. Are you painting wood, metal, or masonry? Some paints can be used on all three; others on two. Condition of the surface may be important also. Old chalky surfaces, for example, are not generally a sound base for latex or water-base paints.

Next consider any special requirements. For example, nonchalking paint may be advisable where chalk rundown would discolor adjacent brick or stone surfaces. Or mildew may be a problem in your area; mildew-resistant paint is available. Lead-free paints may be used in areas where sulfur fumes cause staining of paints containing lead pigments.

Color is a third consideration, but it is mostly a matter of personal preference. Some colors are more

durable than others, and some color combinations are more attractive than others. Your paint dealer can help you on color durability and combinations.

"House paint" is the commercial term for exterior paints mixed with many different formulations. It is the most widely used type of paint. Formulations are available for use on all surfaces and for all special requirements such as chalk or mildew resistance. White is the most popular color.

The paint comes in both oil-base and latex (water-base) paint. The vehicle of oil-base paint consists usually of linseed oil plus turpentine or mineral spirits as the thinner. Latex paint contains water as the vehicle thinner—its vehicle consists of fine particles of resin emulsified or held in suspension in water.

Another type of water-base paint has a vehicle consisting of a soluble linseed oil dissolved in water. This paint has the properties of both oil-base and water-base paints.

Advantages of latex paints include easier application, faster drying, usually better color retention, and resistance to alkali and blistering. Also, they can be applied in humid weather and to damp surfaces. Brush and tool cleanup is simpler because it can be done with water.

Use the chart on page 4 as a guide in selecting paint. Your paint dealer can help you also. Here are some specific suggestions:

● *Wood siding.*—Oil-base house paint is still first choice. However, latex paint is preferred by many users.

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### Repaint Only When Necessary

Too-frequent repainting builds up an excessively thick film that is more sensitive to the deteriorating effects of the weather. Ordinarily, every 4 years will be often enough to repaint a house.

Sheltered areas, such as eaves and porch ceilings, may not need repainting every time the body of the house is repainted; every other time may be sufficient.

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● *Wood trim, windows, shutters, and doors.*—Exterior trim (or trim-and-trellis) paint is the favorite finish. It is an oil-alkyd-resin base enamel. Its properties include rapid drying, high gloss, good color and gloss retention, and good durability. House paint may be used, but it does not retain its gloss as long. Also, any chalking may discolor adjacent surfaces.

● *Masonry.*—Exterior latex masonry paint is a standard paint for masonry. Cement-base paint may be used on nonglazed brick, stucco, cement, and cinder block. Rubber-base paint and aluminum paint with the proper vehicle may also be used.

● *Metal (copper, galvanized, and iron).*—Ordinary house or trim paints may be used for the finish coats on gutters, downspouts, and hardware or grilles. A specially recommended primer must be used on copper or galvanized steel. Use house paint, aluminum paint, or exterior enamel on steel or aluminum windows. Paint window screens with a special screen enamel.

● *Concrete or wood porches and*

## PAINT SELECTION CHART

	Aluminum Paint	Cement Base Paint	Exterior Clear Finish	House Paint	Metal Roof Paint	Porch-and-Deck Paint	Primer or Undercoater	Rubber Base Paint	Spar Varnish	Transparent Sealer	Trim-and-Trellis Paint	Wood Stain	Metal Primer
<b>WOOD</b>													
Natural finish.....			X						X			X	
Porch floor.....						X							
Shingle roof.....												X	
Shutters and trim.....				X●			X				X●		
Siding.....	X			X●			X						
Windows.....	X			X●			X				X●		
<b>MASONRY</b>													
Asbestos cement.....				X●			X	X					
Brick.....	X	X		X●			X	X		X			
Cement and cinder block.....	X	X		X●			X	X		X			
Cement porch floor.....						X		X					
Stucco.....	X	X		X●			X	X		X			
<b>METAL</b>													
Copper.....									X				
Galvanized.....	X●			X●			X		X		X●		X
Iron.....	X●			X●							X●		X
Roofing.....					X●								X
Siding.....	X●			X●							X●		X
Windows, aluminum.....	X			X●							X●		X
Windows, steel.....	X●			X●							X●		X

Black dot (X●) indicates that a primer or sealer may be necessary before the finishing coat or coats (unless the surface has been previously finished).

*steps.*—Porch-and-deck paint may be used on both concrete and wood. On wood, a primer coat is applied first. On concrete, an alkali-resistant primer is recommended. Rubber-base paints are excellent for use on concrete floors. Hard and glossy concrete surfaces must be etched or roughened first.

### SURFACE PREPARATION

In general, a surface that is to be painted should be firm, smooth, and clean. With oil-base paint, it must also be dry. Latex or water-base paint can be applied to a damp surface (but not to a wet one).

The paint-can label may contain additional or special instructions for preparing the surface.

## Wood Surfaces

Wood siding preferably should not contain knots or sappy streaks. But if new siding does, clean the knots and streaks with turpentine and seal with a good knot sealer. The knot sealer will seal in oily extractives and prevent staining and cracking of the paint in the knot area.

Smooth any rough spots in the wood with sandpaper or other abrasive. Dust the surface just before you paint it.

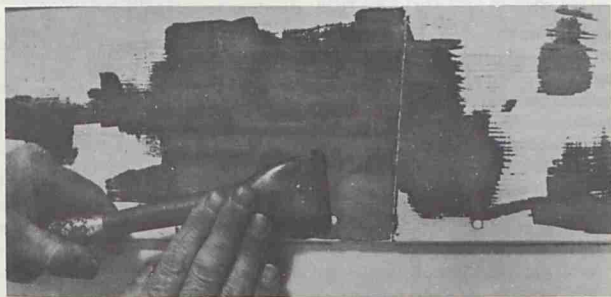
Old surfaces in good condition—just slightly faded, dirty, or chalky—may only need dusting before being repainted. Very dirty surfaces should be washed with a mild synthetic detergent and rinsed thoroughly with water. Grease or other oily matter may be removed by cleaning the surface with mineral spirits.

Remove all nail rust marks. Set nailheads below the surface, prime them, and putty the hole. Fasten loose siding with non-rusting-type nails. Fill all cracks. Compounds for that purpose are available from paint and hardware stores. Sand the area smooth after the compound dries.

Remove all rough, loose, flaking, and blistering paint. Spot-prime the bare spots before repainting. Where the cracking or blistering of the old paint extends over a large area, remove all old paint down to bare wood. Prime and repaint the old surface as you would a new wood surface. Sand or "feather" the edges of the sound paint before you repaint.

### CAUTION

Correct the condition that caused the blistering, cracking, or peeling of the old paint before you repaint. Otherwise, you may run into the same trouble again. It may be a moisture problem. See "Paint Failures," page 9.



Scrape off—or otherwise remove—all loose paint before you repaint.



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### Home-Mixed Masonry Paint

For an inexpensive, attractive masonry paint—

Mix 1 part of hydrated lime with 5 parts of white portland cement. Add water until the mixture has the consistency of condensed milk. High-grade mineral coloring may be added to obtain light tinting. (Add 2 parts of fine sand to the mix if you will need to completely fill the pores of rough cinder block. Excellent block fillers are available in paint stores also.)

Dampen the surface before applying the paint. Brush or spray the paint on. A short, stiff-bristled brush will help fill pores.

The paint should dry slowly for proper curing. After it becomes firm, keep it damp with sprayed water for about 48 hours.

Surfaces painted with this paint will require a sealer before they can be repainted with other types of paint.

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Old paint may be removed by sanding, scraping, or burning, or with chemical paint remover. Scraping is the simplest but hardest method. Sanding is most effective on smooth surfaces. Chemical paint remover can be expensive for large areas. *Only experienced persons should attempt burning.*

### Metal Surfaces

New galvanized steel surfaces should weather for about 6 months before being painted. If earlier

painting is necessary, first wash the surface with a vinegar solution and rinse it thoroughly. This will remove any manufacturing residue and stain inhibitors.

Apply a special primer before painting.

Rust and loose paint can usually be removed from old surfaces with sandpaper or with a stiff wire brush. Chipping may be necessary in severe cases. Chemical rust removers are available.

Oil and grease may be removed with a solvent such as mineral spirits. Rinse the surface thoroughly.

### Masonry Surfaces

New concrete should weather for several months before being painted. If earlier painting is necessary, first wash the surface with a solvent such as mineral spirits to remove oil or grease. Fresh concrete may contain considerable moisture and alkali, so it is probably best to paint with latex paints.

Patch any cracks or other defects in masonry surfaces. Pay particular attention to mortar joints.

Clean both new and old surfaces thoroughly before painting. Remove dirt, loose particles, and efflorescence with a wire brush. Oil and grease may be removed by washing the surface with a commercial cleaner or with a detergent and water. Loose, peeling, or heavily chalked paint may be removed by sandblasting.

If the old paint is just moderately chalked but is otherwise "tight" and nonflaking, coat it with a recommended sealer or conditioner before

you repaint with a water-base paint. Some latex paints are modified to allow painting over slightly chalked surfaces. Follow the manufacturer's directions.

After cleaning the surface, wash or hose it—unless efflorescence was present.

## APPLICATION

Exterior paint may be applied by brush, roller, or spray. Most homeowners use a brush.

Paint the windows, trim, and doors before you paint the body of the house. Paint wood porches and steps last.

Read the paint-can label carefully before you start to paint. It will contain specific directions for applying the paint.

## When To Paint

Latex or water-base paints allow more freedom in application than oil-base paints; they can be applied in humid weather and to damp surfaces. But for best results with either type of paint—

- Paint when the weather is clear and dry and the temperature is between 50° and 90° F. Never paint when the temperature is below 40° F.

- Do not paint in windy or dusty weather or when insects may get caught in the paint. Insects are usually the biggest problem during fall evenings. Don't try to remove insects from wet paint; brush them off after the paint dries.

- Start painting after the morning dew or frost has evaporated.

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## Rolling and Spraying

You can paint faster with a roller than with a brush. However, a brush may give better penetration on wood surfaces. With a roller, you still need a brush for "cutting in." This means extra tools to clean.

Rollers work well on masonry and metal surfaces. Proper depth of the pile on the roller cover is important and varies from one surface to another. Follow the manufacturer's recommendations.

Spraying is the fastest method. But you may not get proper penetration on wood surfaces. On masonry surfaces, voids that are difficult to fill with a brush or roller can be coated adequately by spraying. Surrounding surfaces must be well protected when spray painting.

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Stop painting in late afternoon or early evening on cool fall days. This is more important with oil-base paint than with latex paint.

- In hot weather, paint surfaces after they have been exposed to the sun and are in the shade.

## Number of Coats

Three coats of paint are recommended for new wood surfaces—one primer and two finish coats. (Two-coat systems are sometimes used and give long service when properly designed and properly applied.)

On old surfaces in good condition, one top coat may be sufficient. But if the paint is very thin, apply two top coats.

On bare surfaces or surfaces with

very little paint left on them, apply a primer and two top coats. Do the same on very chalky surfaces.

Use a good-quality oil-base exterior primer with solvent-thinned paint. Most manufacturers recommend use of a solvent-thinned primer with latex or water-base paint. A solvent-thinned primer may be applied to a dry surface only. Prime after you clean and repair the surface, but before you putty cracks or other defects.

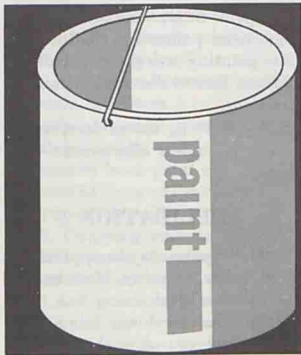
Allow the primer coat to dry according to the manufacturer's label instructions. Allow longer drying time in humid weather. Apply the finish coats as soon as the primer has dried sufficiently. (If you must wait a month or more, wash the surface thoroughly before applying the top coats.) Allow about 48 hours' drying time between oil-base finish coats. Two coats of latex paint may be applied in 1 day.

On metal surfaces, prime both new metal and old metal from which the paint has been removed. Good primers usually contain zinc dust, red lead, zinc yellow, blue lead, iron oxide, or some rust-inhibiting pig-

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The Forest Products Laboratory recommends applying a water-repellent preservative before priming new wood that has not been so treated. The preservative contains pentachlorophenol or some other preservative and should be allowed to dry for two warm, sunny days before the primer is applied. Ask your paint dealer about the recommendations of the paint manufacturer.

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A wire across the top of the paint can or paint bucket is convenient for holding the brush.

ment as one of the ingredients. After the primer has dried sufficiently, apply one or two finish coats of paint.

## How To Paint

Stir or shake oil-base paint thoroughly before you start to paint. Stir it frequently while painting. Latex or water-base paint should not be shaken—it foams.

If you are using a gallon of paint, transfer it to a larger container or pour about half into another container. It will be easier to handle and there will be room for the brush.

Dip your brush about one-third the length of the bristles. Tap off excess paint on the inside of the can; do not scrape the brush across the rim.

On windows, paint the wood dividing the glass first. Then paint the frame, trim, sill, and apron in that order. Shutters and storm sash are easier to paint if removed from

the house and laid flat on supports. Wipe off dust and dirt before painting them.

On siding, start painting at a high point of the house—at a corner or under the eave. Paint from top to bottom and then begin again at the top. Complete one sidewall before starting another.

Paint along the grain of the wood. Use long sweeping arm strokes, keeping an even pressure on the brush. Apply both sides of each brushfull. End each stroke with a light, lifting motion.

Apply paint to an unpainted area and work into the wet edge of the previously painted portion. When you finish an area, go over it with light, quick strokes to smooth brush marks and to recoat any thin spots.

## PAINT FAILURES

Following are some of the more common paint failures. Some can be avoided by simply following the di-

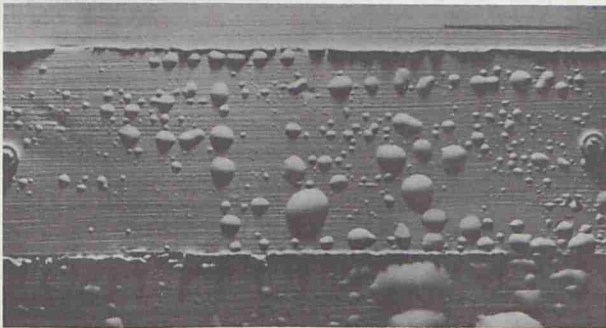
rections on the paint can label. In fact, some of the newer paints are guaranteed against specific failures if applied according to directions.

### Blistering and Peeling

Excessive moisture in the wood behind the paint will cause blistering. Outside water may be coming in, inside water may be working out, or it may be cold weather condensation. (Water vapor inside the house passes through the interior walls, condenses, and soaks into the outer walls.) Blisters appear first; cracking and peeling follow.

### Prevention

Correct possible sources of moisture before you paint. Repair leaks in roofs and sidewalls. Ventilate a damp basement or crawl space. Get rid of moisture originating in the house by means of vents and fans. For instance, vent clothes driers to the outside. Repair leaky plumbing.



Blistering paint.



## Correction

Correct the cause of the moisture before you repaint.

Remove all loose paint. Apply a water-repellent preservative to joints that show damage from rain or dew; allow it to dry 2 days (or as directed on the label). Prime bare surfaces and repaint. Consider using blister-resistant paint.

## Cross-Grain Cracking

Cross-grain cracking may be caused by too-frequent repainting. The thick paint coating built up by many paintings becomes too hard to stand the constant expansion and contraction of the wood and eventually cracks.

### Prevention

Repaint only when necessary.

### Correction

Remove all of the paint, down to the bare wood. Prime the bare wood properly and repaint.

## Mildew

Mildew may occur where continuous warm and damp conditions prevail.

### Prevention

Use mildew-resistant paint or add a mildew resistant compound to the paint.

### Correction

To remove mildew, wash the surface one or more times with a solution of—

$\frac{2}{3}$  cup of trisodium phosphate  
(like Soilax)

$\frac{1}{3}$  cup of detergent

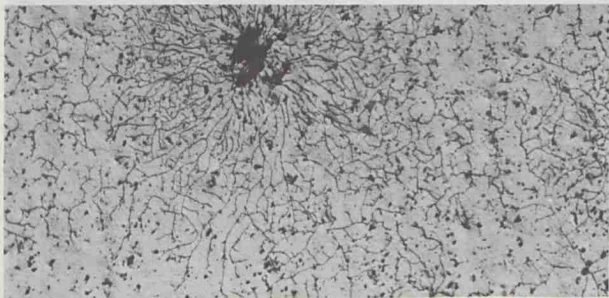
1 quart of household bleach

Enough water to make 1 gallon

**Caution:** Wear rubber gloves when applying mildew-resistant paint or when using the trisodium-phosphate solution.

## Intercoat Peeling

Peeling usually is caused by lack of adhesion between the top and under coats. The primer and top



Mildew.



Chalking.

coat were incompatible, the surface was too smooth or glossy, or oil or grease was not removed.

#### **Prevention**

Use primer and top coats of the same brand. Remove gloss with a strong detergent, steel wool, or sandpaper. Remove oil or grease with mineral spirits.

#### **Correction**

Remove all loose paint, sand the edges, properly prime the bare surfaces, and repaint.

### **Excessive Chalking**

Chalking may occur where poor quality paint was used, the paint was improperly applied, or the paint was thinned excessively.

#### **Prevention**

Use non-chalking paint.

#### **Correction**

Remove the chalk by brushing the surface or washing it with mineral spirits. Apply two coats of good quality paint. Allow 3 days drying time between coats.

### **NATURAL FINISHES AND STAINS**

Other types of exterior finishes are natural finishes and stains.

Natural finishes come as surface-coating finishes and as penetrating finishes. Surface coating is not very durable, and the surface may have to be refinished every 1 or 2 years. Clear coatings containing ultraviolet absorbers usually last a little longer.

Some penetrating finishes are somewhat more durable. FPL (Forest Products Laboratory) natural finish is one of the more durable types. It has a linseed oil vehicle and contains ingredients to protect against mildew and excessive water entry at siding joints. It also contains enough durable pigment to provide color, but not enough to hide the grain of the wood. One initial brush application should last about 3 years.

Good shingle stains are inexpensive and more durable than clear finishes. They should last at least 5 years on rough surfaces. On smooth

surfaces, they may last as long as paint. They do not crack, curl, flake, or blister; but they may contribute an undesired "painted" look to the wood.

Stains penetrate and color the wood. Common colors are dark brown, green, red, and yellow. Some contain creosote which may discolor light-colored paint applied over them later.

## SAFETY PRECAUTIONS

Working on a ladder or on scaffolding is always dangerous. Observe these precautions:

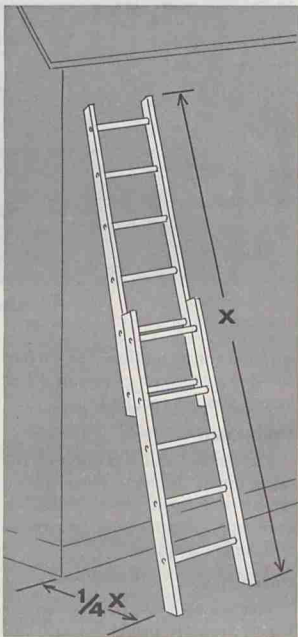
- Make sure that the ladder is not defective. Check the rungs and side rails carefully. Check any ropes and pulleys also to make sure that they are securely fastened and work properly.

- Be sure that the ladder is positioned firmly—both on the ground and against the house. Set the foot of the ladder away from the wall one-fourth of the distance to the point of support. If you use scaffolding, make sure that it is secure.

- Always face the ladder when climbing up or down. Hold on with both hands. Carry tools and supplies in your pocket or haul them up with a line.

- Be sure that the paint bucket, tools, and other objects are secure when you are on a ladder or scaffolding. Falling objects can injure persons walking below.

- Do not overreach when painting. Move the ladder frequently



Set the ladder at a safe angle when you paint.

rather than risk a fall. A good rule is to keep your belt buckle between the rails.

- Lean toward the ladder when working. Keep one hand free—ready to grab the ladder just in case.

- Watch out for and avoid any electrical wiring within the area of work. This is especially important if you are using a metal ladder.

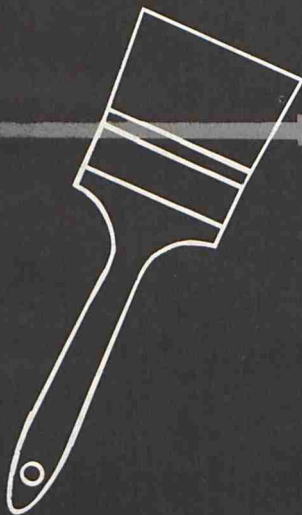
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# INTERIOR PAINTING

IN HOMES AND AROUND  
THE FARM





# INTERIOR PAINTING

## IN HOMES AND AROUND THE FARM

Information for this publication furnished by the Agricultural Engineering Research Division Agricultural Research Service<sup>1</sup>

For an attractive, long-lasting paint job, you need to—

1. Use good-quality paint,
2. Properly prepare the surface for painting, and
3. Apply the paint correctly.

Preparation of the surface—cleaning and patching—may take the most time in painting, but it is the most important part of the job. Even the best paint will not adhere well to an excessively dirty or greasy surface or hide large cracks or other mars.

### PAINT SELECTION

#### Kind

Many different kinds and formulations of paints and other finishes are available for interior use. And new ones frequently appear on the market.

Use the chart on page 3 as a general guide in making your selection. For a more specific selection consult your paint dealer. Reputable paint dealers keep abreast of the newest developments in the paint industry and stock the newest formulations.

“Dripless” paint is an example of a fairly recent development. It

<sup>1</sup> Robert G. Yeck, Chief, Livestock Engineering and Farm Structures Research Branch, was technical adviser. Grateful acknowledgement is given the National Paint, Varnish, and Lacquer Association for their review and permission to use the illustrations.

has a jelled consistency in the can, but it loses that form when picked up on a brush or roller and spreads evenly and smoothly. It is particularly convenient when painting a ceiling.

The usual interior paint job consists of painting wallboard or plaster walls and ceilings, woodwork, and wood windows and doors. For these surfaces you need to choose first between solvent-thinned paint (commonly called oil-based paint) and water-thinned paint (commonly called latex paint, but not necessarily latex), and then between a gloss, semigloss, or flat finish.

[Enamels, which are made with a varnish, or resin, base instead of the usual linseed-oil vehicle, are included under the broad oil-paint grouping.]

Oil-based paints are very durable, are highly resistant to staining and damage, can withstand frequent scrubblings, and give good one-coat coverage. Many latex paints are advertised as having similar properties.

The main advantages of latex paint are easier application, faster drying, and simpler tool cleanup. The brushes, rollers, and other equipment can be easily cleaned with water.

Both oil-based paint and latex paint are now available in gloss, semigloss, and flat finishes. Glossy

## GUIDE FOR SELECTING PAINT

	Aluminum paint	Casein	Cement base paint	Emulsion paint (including latex)	Enamel	Flat paint	Floor paint or enamel	Floor varnish	Interior varnish	Metal primer	Rubber base paint (not latex)	Sealer or undercoater	Semigloss paint	Shellac	Stain	Wax (emulsion)	Wax (liquid or paste)	Wood sealer
<b>Floors:</b>																		
Asphalt tile																		X•
Concrete																	X•	X•
Linoleum							X						X				X	X
Vinyl and rubber							X	X									X	X
Wood							X•	X•									X	X
<b>Masonry:</b>																		
Old	X	X	X	X	X•	X•				X	X	X•						
New			X	X	X•	X•				X	X	X•						
<b>Metal:</b>																		
Heating ducts	X				X•	X•			X	X		X•						
Radiators	X				X•	X•			X	X		X•						
<b>Stairs:</b>																		
Treads							X	X					X	X				
Risers					X•	X•		X		X		X•	X	X				
<b>Walls and ceilings:</b>																		
Kitchen and bathroom				X	X•					X	X	X•						
Plaster	X		X	X	X•					X	X	X•						
Wallboard	X		X	X	X•					X	X	X•						
Wood paneling			X•	X•	X•		X					X•	X	X				
Wood trim			X•	X•	X•		X		X	X	X•	X	X				X	X
<b>Windows:</b>																		
Aluminum	X				X•	X•			X	X		X•						
Steel	X				X•	X•			X	X		X•						
Wood sill					X•			X			X				X			

Black dot (X•) indicates that a primer or sealer may be necessary before the finishing coat (unless the surface has been previously finished).

finishes look shiny and clean easily. Flat finishes show dirt more readily but absorb light and thus reduce glare. Semigloss finishes have properties of both glossy and flat finishes.

Because enamel is durable and easy to clean, semigloss or full-gloss enamel is recommended for woodwork and for the walls of kitchens, bathrooms, and laundry rooms. For the walls of nurseries

and other playrooms, either oil-based or latex semigloss enamel paint is suggested. Flat paint is generally used for the walls of living rooms, dining rooms, and other non-work or non-play rooms.

### Color

Paints are available in a wide range of colors and shades. Dealers usually carry color charts showing the different possibilities. Some of the colors are ready mixed; others the dealer has to mix by adding or combining different colors.

Color selection is mostly a matter of personal preference. Here are some points to keep in mind in selecting your colors:

- Light colors make a small room seem larger. Conversely, dark colors make an overly large room appear smaller.
- Bright walls in a large room detract from otherwise decorative furnishings.
- Ceilings appear lower when darker than the walls and higher when lighter than the walls.
- Paint generally dries to a slightly different color or shade. For a fast preview of the final color, brush a sample swatch of the paint on a piece of clean, white blotting paper. The blotting paper will immediately absorb the wet gloss, and the color on the paper will be about the color of the paint when it dries on the wall.
- Colors often change under artificial lighting. Look at color swatches both in daylight and under artificial lighting.

### Quantity

For large jobs, paint is usually bought by the gallon. The label usually indicates the number of square feet a gallon will cover when applied as directed. To determine the number of gallons you need:

1. Find the area of the walls in square feet by multiplying the distance around the room by the height of the walls. (This figure will include door and window space.)

2. From this figure, subtract *one-half* of the total area, in square feet, taken up by doors and windows. To find this area, multiply the height of each unit by its width; then add the results.

3. Divide the figure obtained in step 2 by the number of square feet a gallon will cover. Then multiply by the number of coats to be applied. The result is the number of gallons needed.

Ceilings are frequently painted a different color or shade (usually white) than the walls and need to be figured separately. To find the square-foot area of the ceiling, multiply the length by the width.

Keep in mind that unpainted plaster and wallboard soak up more paint than previously painted walls and, therefore require more paint or primer.

Some paints are guaranteed to give one-coat coverage over all or most colors if applied as directed at a rate not exceeding the number of square feet specified on the label of the paint container.

## SURFACE PREPARATION

In general, walls, ceilings, woodwork, and other surfaces to be painted should be clean, dry, and smooth. But read the label on

### If You Have the Painting Done

You may prefer to have all or part of your painting done by a professional painter. Painting contractors usually offer three grades of paint jobs—*premium*, *standard*, and *minimum*. The difference is in the quality and cost of the work.

When you hire a contractor, it is a good idea to get a signed agreement specifying—

- The specific price for the job.
- Exactly what areas or surfaces are to be painted.
- The types, brands, and quality of paints to be used and the number of coats, including primer coats, to be applied.
- The measures to be taken to protect the floors, furnishings, and other parts of the house.
- A complete cleanup guarantee.
- A completion date (allowing for possible delays—because of bad weather for example).

Check the contractor's work with friends or neighbors who may have hired him in the past. Be sure that he is fully insured (Workmen's Compensation and Employer's Liability Insurance, Public Liability, and Property Damage Insurance). Otherwise, you could be held liable for accidents that occurred on your property.

the paint can before you start painting; it may contain additional or special instructions for preparing the surface.

## Plaster and Wallboard

### New Surfaces

New plaster walls should not be painted with oil-based paint until they have thoroughly cured—usually after about 2 months. And then a primer coat should be applied first.

If necessary to paint uncured plaster, apply *one coat only* of a latex paint or primer. Latex, or water-base, paint will not be affected by the alkali in new plaster and will allow water to escape while the plaster dries. Subsequent coats of paint—either oil based or latex—can be added when the plaster is dry.

Unpainted plaster readily picks up and absorbs dirt and is difficult to clean. The one coat of latex paint or primer will protect it.

For new drywall, a latex primer or paint is recommended for the first coat. Solvent-thinned paints tend to cause a rough surface. After the first coat of latex paint, subsequent coats can be of either type.

Clean or dust new surfaces before you apply the first coat of primer or paint.

### Old Surfaces

The first step is to inspect the surface for cracks and mars. Fill small hairline cracks with spackling compound and larger cracks with special patching plaster. Follow the directions on the con-



tainer label when using the patching material. When the patch is completely dry, sand it smooth and flush with the surrounding surface.

Nailheads tend to "pop out" in wallboard walls and ceilings. Countersink the projecting heads slightly and fill the hole with spackling compound. Sand the patch smooth when it is dry. It is desirable to prime newly spackled spots, particularly if you are applying only one coat.

Next, clean the surface of dirt and grease. A dry rag or mop will remove dust and some dirt. You may have to wash the surface with a household cleanser to remove stubborn dirt or grease.

Kitchen walls and ceilings are usually covered with a film of grease from cooking (which may extend to the walls and ceilings just outside the entrances to the kitchen), and bathroom walls and ceilings may have steamed-on dirt. The grease or dirt must be removed—the new paint will not adhere to it. To remove the grease or dirt, wash the surface with a strong household cleanser, turpentine, or mineral spirits.

The finish on kitchen and bathroom walls and ceiling is usually a gloss or semigloss. It must be "cut" so that the new paint can get a firm hold. Washing the surface with the household cleanser or turpentine will dull the gloss, but, for best results, rub the surface with fine sandpaper or steel wool. After using sandpaper or steel wool, wipe the surface to remove the dust.

## Woodwork

Woodwork (windows, doors, and baseboards) usually has a glossy finish. First, wash the surface to remove dirt and grease, and then sand it lightly to "cut" the finish so that the new paint can get a good hold. After sanding, wipe the surface to remove the dust.

You can buy liquid preparations that will soften hard, glossy finishes to provide good adhesion for the new paint.

If there are any bare spots in the wood, touch up with an undercoater or with pigmented shellac before you paint.

## APPLICATION

Read the label on the paint can before you start painting. It will contain general application instructions and may contain special instructions.

## Equipment

Interior painting is usually done with brushes or with brushes and rollers. Indoor spray painting is not generally done by the homeowner, except for small jobs using pressurized cans of paint.

For speed and convenience, use a roller on the walls, ceilings, and other large surfaces, and then use a brush at corners, along edges, and in other places that you cannot reach with a roller. Woodwork is usually painted with a brush.

Special-shaped rollers and other applicators are available for painting woodwork, corners,

edges, and other close places. Some may work fine; others, not so well. You may find that a small brush is still best for such work.

Different kinds of brushes and rollers are recommended for use with different kinds of paint. For example, short-nap rollers are best for applying gloss enamel on smooth surfaces. Check with your paint dealer on what kind of brush or roller to buy.

Other equipment needed for indoor painting includes a stepladder, drop cloths, and wiping rags.

### Safety Tips

For a safer paint job—

- Never paint in a completely closed room, and use caution when painting in a room where there is an open flame or fire. Some paints give off fumes that are flammable or dangerous to breathe or both.

*Avoid prolonged exposure to paint fumes for a day or two after painting. Such fumes can be especially harmful to canaries or other pet birds.*

- Use a sturdy stepladder or other support when painting high places. Be sure that the ladder is positioned firmly, with the legs fully opened and locked in position.

- Face the ladder when climbing up or down it, holding on with at least one hand. Lean toward the ladder when painting.

- Do not overreach when painting. Move the ladder frequently rather than risk a fall. And, to avoid spilling the paint, take the few seconds required to remove

the paint can from the ladder before you move it.

- When you finish painting, dispose of the used rags by putting them in a covered metal can. If left lying around, the oily rags could catch fire by spontaneous combustion.

- Store paint in a safe, but well-ventilated, place where children and pets cannot get to it. A locked cabinet is ideal if well ventilated. Unless needed for retouching, small quantities of paint may not be worth saving.

### Painting Tips

For an easier and better paint job—

- Do the painting when the room temperature is comfortable for work—between 60° and 70°F. And provide good cross ventilation both to shorten the drying time and to remove fumes and odors.

*Note:* Check the label on the paint can for any special application and drying instructions.

- Preferably, remove all furnishings from the room. Otherwise, cover the furniture, fixtures, and floor with drop cloths or newspapers. No matter how careful you may be, you will spill, drip, or splatter some paint.

- Remove all light-switch and wall-plug plates. Paint the plates before you replace them after painting the room.

- Dip your brush into the paint no more than one-third the length of the bristles. This will minimize splattering and dripping.

- When using latex paint, wash your brush or roller occasionally with water. A buildup of the quick-drying paint in the nap of the roller or at the base of the bristles of the brush could cause excessive dripping.

- Wipe up spilled, splattered, or dripped paint as you go along. Paint is easier to clean up when wet.

- Do not let the paint dry out in the can or in brushes or rollers between jobs or during long interruptions in a job. After each job, replace the can lid, making sure that it is on tightly, and clean brushes or rollers. During long interruptions in a job, also replace the can lid, and either clean brushes or rollers or suspend them in water.

### Procedure

Paint the ceiling first. Don't try to paint too-wide a strip at a time. The next strip should be started and lapped into the previous one before the previous one dries.

If you are putting two coats on the ceiling, apply the second coat, and "cut in" at the junction with the walls, before you paint the walls.

Start painting a wall at the upper left-hand corner and work down toward the floor (left-handed persons may find it more convenient to start at the upper right-hand corner). See drawing on page 9.

Paint the woodwork (windows, doors, and baseboards) last—preferably after the walls are completely dry.

Flush doors can be painted with a roller. On panelled doors, some parts can be painted with a roller, other sections will require a brush. (You may prefer your doors and other trim in natural color. See page 9.)

Paint the parts of a window in the order shown in the drawing on page 10. Windows are easier to paint and to clean afterward if the glass is masked. Both masking tape and liquid masking are available at hardware and paint stores.

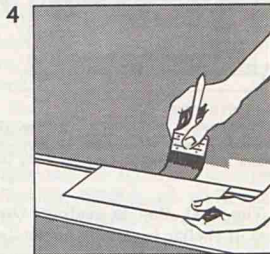
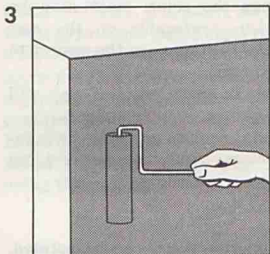
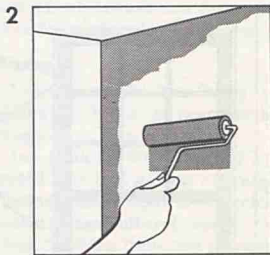
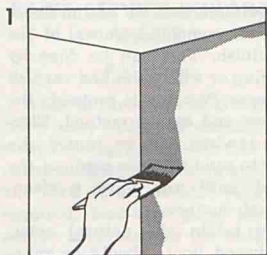
A simple way to protect the glass is to cover it with a piece of wet newspaper. The moisture will paste the newspaper to the glass and also prevent paint from soaking into the absorbent paper. When you strip the paper from the glass after painting, the paint will come with it.

### CLEANUP

Brushes, rollers, and other equipment should be cleaned as soon as possible after use.

Equipment used to apply latex paint can be easily cleaned with soap and water. Rinse thoroughly.

Equipment used to apply oil-base paint may be a little harder to clean. Soak brushes in turpentine or thinner long enough to loosen the paint. Then work the bristles against the bottom of the container to release the paint. To release the paint in the center of the brush, squeeze or work the bristles between the thumb and forefinger. Rinse the brush in the turpentine or thinner again, and, if necessary, wash it in mild soap-suds. Rinse in clear water.



Painting walls with a roller: (1) Starting at the upper left-hand corner, brush a strip just below the ceiling line for a width of 2 feet. Also paint a strip along the left edge from the ceiling to the floor. (2) Starting in an unpainted area, roll upward toward the painted area. (3) Complete an area about 2 feet wide and 3 feet deep at a time. (4) At the bottom of the wall, "cut in" with the brush where you couldn't reach with the roller. Use a cardboard guard to protect the woodwork.

After you clean a brush, comb the bristles to straighten them out, wrap the brush in heavy paper, and hang it up or store it flat. Never stand the brush on its bristles.

## RELATED JOBS

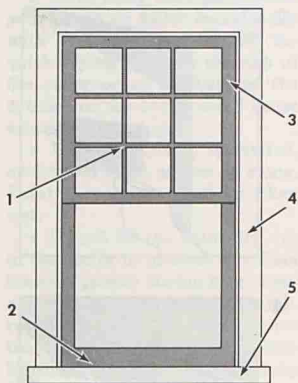
### Natural Finishes for Trim

Some doors, particularly flush doors, are attractive in their natural finish. However, they will discolor and soil easily unless protected. Your paint dealer can of-

fer suggestions on how to finish and protect your doors. Many kinds of products are now on the market and new ones often appear.

The first step in finishing doors is to obtain the proper color tone. This is usually acquired by staining. However, sometimes no staining is required—the preservative finish is enough to bring out the desired color tone. With new doors, to help you make a decision, you can experiment on the trimmings or shavings.





Paint windows in this order: (1) Mullions, (2) horizontal of sash, (3) verticals of sash, (4) verticals of frame, (5) horizontal frame and sill.

The next step is sealing. One coat of shellac is usually adequate. When the shellac is dry, the surface should be sanded smooth, wiped free of dust, and varnished. Rubbing the surface with linseed oil, as is done in furniture finishing, provides a nice soft finish, but requires more work. Also, surfaces so finished collect dust more readily.

For a natural finish of other interior trim, you need to specify the desired kind and grade of wood at the time of construction. This can add substantially to the construction costs.

### Wood Floors

You may want to refinish your wood floors to complement your paint job. This should be done before you paint.

Complete renewal of the floors requires complete removal of the old finish. This can be done by sanding or with paint and varnish remover. Sanding is probably the fastest and easiest method. Electric sanders can be rented. Be sure to sand with the grain of the wood until you have a clean, smooth surface.

To retain the natural color, hardwood floors should be refinished with varnish or shellac. To change the color, stain may be applied—preferably on the raw wood. Oil stains are the easiest to work with.

One or more coats of wax will help protect your new floors.

Paint dealers generally have instruction pamphlets on re-doing floors.

### Concrete Floors

Concrete floors can be painted, but it is important to use an enamel that has good alkali resistance. There are good rubber-based, epoxy, and urethane types available. Also available and recommended are latex paints made especially for concrete floors.

Clean dirt and grease from concrete floors before you paint them. Trisodium phosphate is a good cleaner to use.

Slick concrete floors should be roughened slightly before they are painted. To roughen or etch the floor, treat it with a solution of 1 gallon of muriatic acid mixed in 2 gallons of water. After treating, rinse the floor thoroughly and allow it to dry completely before you paint it.

## FARM SERVICE BUILDING WALLS

### Painting

Walls in farm-service buildings often must withstand almost constant rubbing by animals and frequent washings to remove manure and dirt. While durable paint is required, lead-base paint should not be used because the animals may lick the paint.

For these walls, use a catalyzed enamel—epoxy, polyester, or urethane type. Such paint costs more than ordinary paint, but it is more durable and washable. The ingredients usually come in two containers and must be mixed. Label instructions should be followed carefully for mixing and using the paint.

### Whitewashing

Whitewashing is a relatively simple and inexpensive way to brighten the interior of livestock buildings. The whitewash may be applied with either a brush or a spray gun.

### Surface Preparation

Remove all dirt, scale, and loose material by scraping or brushing with a wire brush. Many whitewashing jobs have been quite satisfactory without further surface preparation. However, for the best job, wash off as much of the old coat of whitewash as possible with hot water and vinegar or a weak hydrochloric acid solution.

Dampen the walls before applying whitewash. Unlike most paints, the application and adher-

ence of whitewash are improved when the surface is slightly damp.

### Mixing

Lime paste is the basis of whitewash. It may be prepared by either—

(a) Soaking 50 pounds of hydrated lime in 6 gallons of water. (Refined limes such as chemical hydrate, agricultural spray hydrate, finishing lime, and pressure hydrated lime, have fewer lumps and will make a smoother paste.)

(b) Slaking 25 pounds of quicklime in 10 gallons of boiling water. Cover and allow to slake at least 4 days.

Each of these preparations makes about 8 gallons of paste.

Different whitewash mixes are suggested for different surfaces. (Smaller batches of whitewash may be prepared by reducing the ingredients by an equal proportion in the formulas given below.)

### For general woodwork

Dissolve 15 pounds of salt in 5 gallons of water. Add this solution to the 8 gallons of paste, stirring constantly. Thin the preparation to the desired consistency with fresh water.

To reduce chalking, use 5 pounds of dry calcium chloride instead of the salt.

### For brick, concrete, or stone

Add 25 pounds of white Portland cement and 25 pounds of hydrated lime to 8 gallons of water. Mix thoroughly to a thick slurry. Thin to the consistency of thick cream. Mix only enough for a few hours' use.

To reduce chalking, add 1 to 2 pounds of dry calcium chloride dissolved in a small amount of water to the mix just before using.

#### **For plastered walls**

Two formulas are recommended:

(a) Soak 5 pounds of casein in 2 gallons of water until thoroughly softened (about 2 hours). Dissolve 3 pounds of water softener (trisodium phosphate) in 1 gallon of water, add this solution to the casein, and allow the mixture to dissolve. When the lime paste and the casein are thoroughly cool, slowly add the casein solution to the lime, stirring constantly.

Just before use, dissolve 3 pints of formaldehyde in 3 gallons of water, and add this solution to the whitewash batch, stirring constantly and vigorously. *Do not add the formaldehyde too rapidly.* If the solution is added too fast, the casein may form a jelly-like mass, thus spoiling the batch.

(b) Dissolve 3 pounds of animal glue in 2 gallons of water. Add this solution to the lime paste, stirring constantly. Thin the mixture to the desired consistency.

#### **General-use, long-life mix**

The first formula, or mix, given for use on plastered walls, above, is a time-tested, long-life mix also

suitable for general use. The following is also:

Dissolve 6 pounds of salt in 3 gallons of boiling water. Allow the solution to cool, and then add it to the lime paste. Stir 3 pounds of white Portland cement into the mix.

#### **Coloring**

Pigments may be added to whitewash to provide color. The following have proved satisfactory:

Black: Magnetic black oxide of iron

Blue: Ultramarine or cobalt blue

Brown: Pure precipitated brown oxide of iron or mixtures of black oxide of iron with turkey or Indian red

Green: Chromium oxide, opaque, or chromium oxide, hydrated

Red: Indian red made from pure ferric oxide

Violet: Cobalt violet and mixtures of reds, whites, and blues

White: Lime itself

Yellow: Precipitated hydrated iron oxides

#### **Application**

Some surfaces may require two coats of whitewash. Two coats are better than one coat that is too heavy.

Strain the mix through three layers of cheesecloth before using a spray gun.

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Selecting  
and financing  
a **HOME**







# Selecting and financing a **HOME**

This bulletin has been prepared primarily to help families make financial decisions about housing. Analyzing housing needs—deciding whether to rent or buy—and fitting housing expenses into family budgets are topics discussed. It also describes different types of mortgage loans, gives sources of mortgage loans, and suggests ways to hold down mortgage costs.

Choosing and financing a home is a challenging undertaking in the life of any family. Providing a home for your family costs a lot of money each year; it represents a big investment over the years.

The cost of housing may be in the form of rent or mortgage payments plus the other expenses associated with ownership, such as property taxes, insurance, and specific assessments.

As a homeowner, you also pay for utilities, repairs, and the cost of redecorating. As a renter, these additional expenses may or may not be covered by the rent you pay. When all the expenses of housing are lumped together, they comprise a major expense in every family budget.

Many decisions have to be

made, often in unfamiliar areas. The satisfaction derived from a home depends largely on how well prepared a family is to make these decisions.

This publication aims to help you with some of these decisions. It discusses the pros and cons of renting and buying. It gives some guidelines on how much you can afford to spend on housing and related costs.

For the prospective home buyer, there are suggestions on how to locate a house and judge its location and neighborhood. Information is also included on the different types of home mortgage loans, the sources of mortgage loans, and how to apply for a loan. Some possible ways to reduce the cost of a home mortgage loan are also shown.

## ANALYZING YOUR HOUSING NEEDS

Consider the needs and wants of your family. Set some priorities before you look for a place to live. This is important because the "just right" place is seldom found. It usually is necessary to make some concessions to find a home that suits your family and budget.

It is a good idea to make a list of the things that you consider important and essential in a home. This way you won't be swept off your feet by features that are eye catching but unimportant. They may have been put there for that very purpose! You may also want to list other things you would like to have but do not consider of first importance. Then if you need to make a choice you will know whether or not you want to include them as extras.

You will not only want to consider your family's needs and circumstances today, but what these will be in the years ahead. If you are thinking of buying a home, you will want to look farther ahead than if you are renting.

How your family feels about a home may be quite different from the way another family reacts. For some families, a home is simply a place to hang hats, while for others, it is the center of all living.

The importance placed on housing in your family's scheme of things will play a big part in the choices you make. For exam-

ple, is space important to you? Efficiency? Easy maintenance? How much importance do you put on how a house looks? Do you entertain often and want a separate dining room or recreation room? Do you want a bedroom for each child? Do you need lots of storage space or do you keep possessions to a minimum? Do you want a yard and patio for outdoor living?

You will think of other questions that apply to your family, but the ones listed here can start you thinking about your housing needs and wants.

## RENT OR BUY?

How can you get the type of housing your family wants at a reasonable cost? Should you rent or buy? You likely will want to give some serious thought to the question of renting versus buying before making your decision.

Both renting and owning have advantages—and disadvantages. In deciding which is right for your particular family you will want to consider such factors as: The size and age of your family,



your finances, your job, your family's likes and dislikes, and the housing available in your community.

Some reasons frequently cited for renting and for owning a home follow.

#### **For renting a home:**

- The family has more control over living expenses. Rent is a fixed amount and may include utilities, decorating services, and so on.
- The family usually will spend less on a home it rents than on one it owns.
- Renting obligates the family only for the length of time specified in the lease. If the family finds too much is being spent for housing, other arrangements can be made when the lease expires.
- There is no chance for loss on investment and no commitments for payment on a mortgage, if conditions change.
- Renting tends to be more flexible than ownership. It is easier for a family to move.
- There is a limited amount of responsibility. You are not concerned with real estate taxes, special assessments, major repairs and replacements. If you live in an apartment, you can go away and shift most of the responsibility to the landlord. The furnace will be tended and things in general looked after while you are away.
- The family has time to build

up funds to use to buy a home later or for a reserve.

- Renting gives an opportunity to learn about different areas, and enables the family to be a better judge if it decides to buy.
- The housing needs of your family in the future are uncertain.
- Renting suits the temperament of your family. After all, renting is a way of life that your family may enjoy.

#### **For owning a home:**

- Money put into a home instead of rent is a fairly safe form of investment. If you make a good choice, the property will likely increase in value and you can sell for a profit. If the property does not increase in value, this is not really important as long as you continue to live in the home.
- Owning is a hedge against inflation. If inflation comes, the value of the property will rise. If you have a mortgage you will be paying it off in inflated dollars. However, in time of deflation the dollars paid on a mortgage are worth more than at the time of the contract.
- Homeownership offers some advantages on income tax. Real estate taxes and the interest charged on the mortgage are proper deductions, if you itemize deductions.
- Buying a home encourages the family to save. A family

that otherwise might be unable to save is forced to do so when mortgage payments must be met.

- Homeownership gives the family a feeling of security. This is especially true after a home is paid for.
- Buying a home gives the family greater opportunity to provide a desirable environment for the children.
- Money invested toward paying off the mortgage may be used as security for an emergency loan.
- Homeownership is a symbol of achievement.
- Ownership improves the family's credit rating.
- Owning enables the family to make any alterations to the house and yard it can afford. If the family enjoys painting, decorating, yardwork, and other tasks associated with caring for the home, these activities can be a diversion and at the same

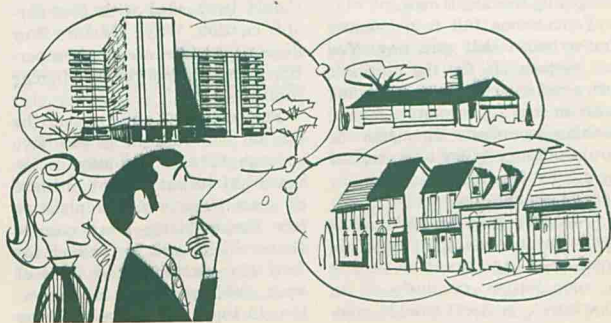
time increase the value of the property.

### Rental selections

If you decide to rent a home, you may have a choice of an apartment; an attached house, townhouse, or duplex; or a detached house. Various types of housing offer different features and one type may appeal to you more than another.

An apartment provides the most service and requires the least responsibility on your part. Someone else takes care of the heating, yardwork, redecorating, and repairs. Some, if not all, of the utilities are included in the rent payment. A coin-operated washing machine and dryer usually are available in the building or nearby.

An attached house, townhouse, or duplex differs from an apartment mainly in two ways—you have a yard—although sometimes only a very small one—and you assume some responsi-





bility for the operation of the place. The care of the yard, the heating, and the general upkeep of the home fall on your shoulders. The utilities may or may not be included in the rent.

In a detached house, as a rule, you have more house space, a larger yard, perhaps a carport or garage, and more privacy than in either of the other two types of housing. You assume responsibility for the upkeep of the home. You pay for the usual expenses involved in running a home, such as utilities, trash collection, grass cutting (if you hire it done), in addition to your rent.

### **Buying selections**

If you decide you want to buy a home, the type of housing you select will depend to a large extent on what is available in your particular area. Detached houses—either new or used—are the most common type available to most families, although attached houses or townhouses are not uncommon in some communities, especially the larger ones.

You assume full responsibility for a house that you buy. You are responsible for the purchase price whether it means paying cash or having a mortgage and making payments. You bear the brunt of the regular expenses for operating the home and you pay for upkeep and repairs.

Owning a home doesn't necessarily mean owning a house. In some areas, apartment ownership in cooperatives (a share of an apartment project) and condo-

miniums (title to a specific unit) is available. When you buy into a cooperative or a condominium, you are sharing with others the responsibilities, obligations, and maintenance costs. On a monthly basis, the cost of buying an apartment generally is considered to run less than renting comparable space.

### **HOW MUCH TO SPEND**

Financing a home brings up many questions that need to be answered. Near the top, if not at the very top, of any list of questions is how much you can afford to spend.

Certain rules of thumb are sometimes used as guides in helping the family decide what price home to buy. One such rule is that a family should spend no more than two to two and one-half times its total annual income for a home. Another rule is to limit housing expenses to one week's pay out of each month's salary.

These are general guides and should be heeded with considerable caution. Why? Because they do not take into account the pertinent facts about your particular family.

For example, what about the size of your family? If you have a large family, you may decide you want to put a smaller share of your income into a place to live, because larger-than-average shares likely will be needed for food and clothing. The ages of your children make a difference, too. If they will be going away

to college in a few years, you will certainly want to keep this in mind in arranging for a mortgage. To commit yourself to mortgage payments beyond your ability to pay during the years you have heavy school expenses would be unwise.

Other exceptions to these rules of thumb may apply to you more directly. For example, you may have parents that you help support; you may have heavy debts; or your job situation may be such that you need to cut down on the cost of housing for the time being.

To give you some idea of how spending for a home varies, here are some estimates based on studies of spending by owner families. These figures show the percent of income after taxes that these families with mortgages spent on housing.<sup>1</sup>

	<i>Income after taxes</i>	
	<i>Under \$5,000</i>	<i>Over \$5,000</i>
	<i>Percent</i>	<i>Percent</i>
Age of head:		
Under 35 years.....	26	22
35 to 44 years.....	26	20
45 to 54 years.....	32	21
55 years and over..	39	15

<sup>1</sup> Included in cost of housing are payments on mortgage principal and interest, taxes, insurance, repairs, and fuel, light, refrigeration, and water.

These estimates show that to allow a flat percent of income for housing would not fit every family, because of differences in income and age of head. And these are only two of the many factors that need consideration.

Another way to determine how much to spend on a home is to

make an analysis of your ability to buy—a special, personal kind of analysis that only applies to you and your family. Families too often become discouraged and disillusioned, and even suffer financial loss, because they failed to make a realistic analysis of their ability to buy. Once you know what is a safe amount for you to put into a home, you can start hunting a house or apartment in your price range.

Your ability to buy is determined mainly by three estimates: (1) the amount of your income you can budget for housing, (2) your cash reserves, and (3) your future financial prospects.

To find out how much of your income you can use to provide a roof over your head, first take stock of present use of your income. You may find the form on page 8 helpful in accounting for your income and current expenses.

Then consider what changes you could make without undue stress and strain. Also consider any changes you foresee. Take into account the stability of your income. If it fluctuates, can you manage during the low as well as the high periods? If part of the family income comes from the wife's employment, give careful thought as to whether you should build it into long-term plans.

You now have an estimate of the approximate amount of your income that you can allow for housing. This is the amount that you have for renting or buying a home. It is the *first* important estimate in determining your abil-

ity to buy a home. If you buy a home with a mortgage, the allowance will need to cover the monthly payments as well as other expenses associated with owning a home, such as taxes, insurance, maintenance, and repairs.

Although monthly payments on a mortgage should be as large as possible, at the same time the family needs to guard against getting in too deep. Families sometimes find out too late that

they are house poor. They have fine homes, manage to meet their payments on time, and take care of household operating expenses, but all this is done at the expense of other joys of family living. They never seem to have money for a family vacation, music lessons for the children, or even an occasional round of golf for dad.

The purchase price of a home can be met by paying cash, if you have the wherewithal to do it.

### Estimating Your Housing Allowance

	Income and expenses	Amount
<b>Income:</b>		
Wages, salary .....	\$ _____	
Net profit from business, farm, profession .....	_____	
Interest, dividends .....	_____	
Other income .....	_____	
Total .....	\$ _____	
<i>Deductions withheld for:</i>		
Income taxes .....	\$ _____	
Social security, retirement.....	_____	
Insurance (life, health, etc.).....	_____	
Other .....	_____	
Total .....	\$ _____	
Total take-home pay.....		\$ _____
<b>Housing expenses:</b>		
Rent, mortgage payments .....	\$ _____	
Utilities, fuel .....	_____	
Housefurnishings .....	_____	
Other .....	_____	
Total .....	\$ _____	
<b>Nonhousing expenses:</b>		
Food, beverages .....	\$ _____	
Clothing, personal care.....	_____	
Medical care .....	_____	
Recreation, education .....	_____	
Car expense, transportation .....	_____	
Gifts, contributions .....	_____	
Installment payments .....	_____	
Income taxes, insurance <sup>1</sup> .....	_____	
Savings .....	_____	
Other .....	_____	
Total .....	\$ _____	
Total expenses .....		\$ _____

<sup>1</sup> Include additional payments.

Even if all or most of the purchase price can be paid in cash, it is still necessary to consider costs in relation to income. Usually, the higher the price of the house the higher will be taxes, insurance, repairs, and operating expenses. This may be particularly important to the older family that may have the resources to pay cash but also faces a tight income situation.

Go over the estimate of your allowance for housing carefully. Do it more than once. Be sure it takes its proper place in the overall plan of spending for the family.

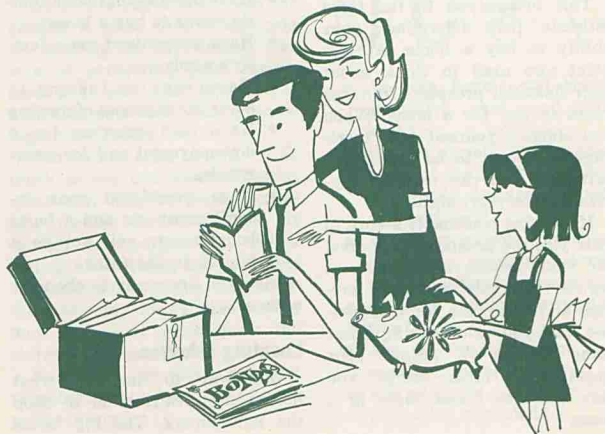
Your cash reserves are the *second* important estimate in determining your ability to buy a home. Although the major cost may be covered by the mortgage, there are other expenses that will require cash. You probably will

need cash for a downpayment; for closing the deal; to cover moving costs; for new curtains, carpeting or rugs, furniture, and other expenses related to the establishment of a new home. You will also want to have enough reserves for the unexpected expenses that are bound to arise like a repair job on the car or replacing a leaking roof after a bad storm.

### Your Cash Reserves

Source	Amount
Cash on hand.....	\$ _____
in checking account.....	_____
in savings account.....	_____
Government bonds .....	_____
Other bonds, stocks, etc. ....	_____
Other investments .....	_____
Sale of present home.....	_____
Other .....	_____
<b>Total.....</b>	<b>\$ _____</b>

The minimum acceptable downpayment depends on the purchase





price. Other costs will vary—from community to community, with the size of the house, and with the number of niceties and conveniences the family demands.

If the house is not air-conditioned and the family decides this is a must, you may need some cash to get the job done. If you decide to put a second telephone in the recreation room or your teenager's room, an extra charge will likely show up on your first month's bill. Or, you may decide you need to add to or change the landscaping. When properly done landscaping adds to the beauty of a home. If you do not have the know-how to do the job, you may have to hire someone who does. This could take more cash. In short, be prepared. To see what cash you can raise for a downpayment and other costs involved make a list of your reserves. A form is provided on page 9.

This brings you to the *third* estimate that determines your ability to buy a home. At this point you need to think about your financial prospects. It takes years to pay for a home. When you obligate yourself to a mortgage you want to be reasonably sure that you can manage payments in the years ahead.

If you feel reasonably secure in your job, the prospects look good for your income to increase at regular intervals, you have savings and insurance for emergencies, and you value having a fine home enough to adjust your spending on other things, you may want to invest more in a home.

On the other hand, if you are not sure of your job, you are due for a transfer, you expect your income to decrease, you have very little insurance and savings, and your family is unwilling to cut back on other expenses—clothing, recreation, entertainment, travel, and the like—the sensible thing for you may be to invest less in a home.

## SHOPPING FOR A HOUSE

Now you have done your basic thinking about the general principles involved in financing a home. You have thought about your family's needs, weighed the advantages of renting and buying, and figured about how much you can afford to spend based on your own budget and situation. What have you concluded, so far?

If you:

- Have decided that your family wants to buy a house
- Have determined your family's needs
- Have regular income to cover the expenses of owning
- Have cash reserves for a downpayment and for emergencies
- Have considered your income prospects and a home bought now will not be a burden in the future

—then you are ready to shop for a house.

### Locating a house

One way to find out what houses are available is to shop the newspapers. The big house

displays usually appear in the weekend papers. Study these advertisements to find out the kinds of houses on sale and how much they cost. Look at the classified section of "homes for sale" too. People selling their homes themselves advertise this way.

Also, you may want to talk with people in the real estate business. When you know what you want, they can often find it for you. As a rule these firms do not advertise every house they have for sale.

Another way is to get the word around to your friends that you are in the market for a house. This may lead to a good buy. Watch for "open house" signs. A sign in the most unlikely spot may produce exactly what you want for your family.

### Judging a neighborhood

When you buy a house you are getting a place to live and you are making an investment. One way of protecting your investment is to pick a location that is desirable now and looks promising for the future.

You will be wise to find out as much as you can about different areas and neighborhoods before you decide on one. Look at enough neighborhoods to get a feeling about them; ask questions of responsible persons who know the answers; locate the zoning map and study it; shop in the stores; visit the schools.

As you consider different neighborhoods, here are some points to check:



- Are the houses and lawns attractive, neat, and well kept?
- Do the streets fit the contours of the land? Are they adequately drained, curbed, and surfaced?
- Are there schools, churches, play areas, shops, and stores within reasonable distances?
- Is there public transportation?
- Are the water mains and sewers in place?
- Are adequate police and fire protection provided?

- Is the area zoned against undesirable uses?
- Is there anything in the area to produce excessive smoke, odors, and fumes; heavy traffic; or unpleasant noises?
- Are the incomes and interests of the families in the area similar to yours?

## Judging a house

Keep in mind when house hunting that there is no such thing as the perfect house. There are, however, certain factors that need to be considered from the point of view of your personal needs and the resale value of any house you are considering. Some factors to check are listed here.

*Design.*—The house design should be attractive, practical, and comfortable; it should save steps and provide privacy. The type of design may be a rambler, split-level, or two (or more) story—with or without a basement.

*Size.*—Check all rooms for size. Are the rooms of adequate size for usual furnishings? Are closets plentiful and big enough? At least 5 to 6 feet of rod space in each bedroom closet is desirable; 7½ feet is better. Bear in mind, if you should ever want to sell, that a medium-size house is usually more in demand than a very small or a very large one.

*Construction.*—Check to see if suitable building materials are used throughout the house. Check: Walls (inside and outside) for cracks that indicate poor construction; floors to see if they are level and free of

squeaks; trim around windows and doors for good fit; insulation for adequacy; basement for dryness; roof and gutters for leakage; weather stripping around doors and windows; and number and placement of electrical outlets.

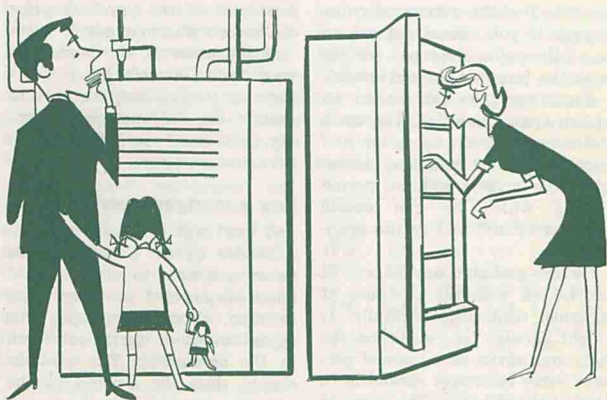
To avoid trouble later, carefully check plumbing, electrical, heating and cooling systems for adequacy. Make sure there is enough water pressure by turning on several faucets at once.

Also check for termites. Termite damage can be expensive.

*Equipment.*—Check all equipment. Make sure the equipment that goes with the house—refrigerator, stove, washer, dryer, and so on—is in good working condition. Electrical circuits and wiring need to be adequate for present equipment and allow some leeway for additional equipment, if you decide you need to add more or heavier appliances at some later date.

*Lot.*—Lot should be the right size and shape for the house and garage (or carport), and suited to the natural surroundings. Location of house on lot should conform with deed and zoning regulations. Check distances between houses, drainage of the lot, window exposure of each room, and condition of lawn, shrubbery, and trees. Properly placed trees add value to a property.

You also may want to ask a qualified engineer or home builder to make an inspection. A fee is normally charged for this service, but it might save heavy ex-



pense later. The names of people who make this type of inspection can be obtained from the mortgage department of your bank or from a reliable real estate broker.

The price of a used house should relate to its condition. If a house is not in good condition but is priced accordingly, it may still be a good buy. Before deciding to buy you will be wise to find out the cost of repairs and improvements necessary to put the house and equipment in condition acceptable to you.

## AGREEING TO BUY

You have found a home you want to buy. You are ready to complete the transaction and arrange for financing. What is the next step?

You may be asked to sign a sales contract or an agreement to

buy, and make a deposit. In this contract you agree to buy at a stated price, subject to certain conditions.

The agreement should specify the purchase price, amount of cash downpayment, method of financing, delivery date of property, right to inspect property, delivery of a clear title and survey. If certain items in the house are to be included as part of the sale—for example, carpeting or draperies—these need to be listed.

Usually you are asked to put up a deposit, sometimes called "earnest money," as evidence of good faith. The amount will vary depending on the price of the home. The contract should state that it is effective only if the seller can show satisfactory evidence of title and you can qualify for a loan. The contract should also



provide for the return of your deposit if you cannot get a loan or if the seller does not comply with the terms of the agreement.

Sometimes you can obtain an option from the seller. The main difference between an option and a sales contract is that an option gives the buyer a specified period during which he can decide whether or not to buy the property.

Before you sign any papers in connection with the purchase of a home, read them carefully. It might be wise for you to get the help and advice of a trained person. Some attorneys specialize in this type of work. The cost of consulting an attorney may actually save you money in the long run.

## SHOPPING FOR A MORTGAGE

You very likely will need a mortgage loan to finance your home. Most families do finance a

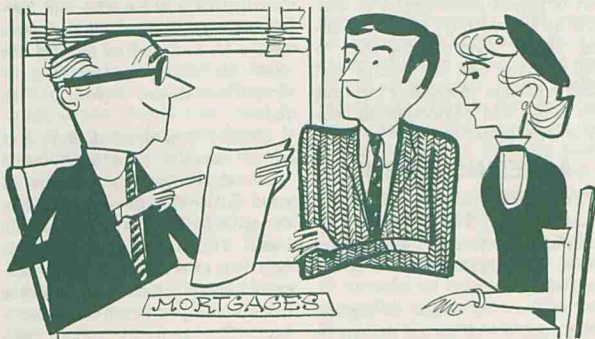
good part of the purchase price of a home with a mortgage.

If the seller of the home you want to buy already has a mortgage on it, you may be able to assume the old mortgage. Usually, however, you will need to get a new mortgage.

## How a mortgage works

A mortgage is a loan contract. A lender agrees to provide the money you need to buy a specific home or piece of property. You, in turn, promise to repay the money based on terms set forth in the agreement. The contract should state the amount of the loan, the interest rate, the size of the payment, and the frequency of payments. The contract also may include other provisions, such as penalties and prepayment privileges and any special conditions agreed upon by the lender and you.

As the borrower, you pledge your home as security. It remains pledged until the loan is



paid off. If you fail to meet the terms of the contract, the lender has the right to foreclose, that is, obtain possession of the property. To exercise his right of foreclosure, however, a lender must follow the formalities of law.

Today most mortgages are amortized loans. This means you are required to make a fixed periodic payment, usually monthly, that includes the interest (and in some instances, taxes and insurance). This payment also reduces the principal of the mortgage debt after each payment.

During the early years of repayment, a large share of each payment is for interest. As you keep paying, a smaller share of each payment is for interest and a larger share is available for repayment of principal. It works this way because as your payments reduce the amount you owe on the principal of the loan, the interest charges are also reduced.

You build up equity or investment in your home as the outstanding principal is reduced. When the last payment on an amortized loan is made the loan will be completely paid off. All amounts due for principal and interest have been repaid in full.

The size of the monthly payment depends on three factors: The amount borrowed, the interest rate, and the number of years taken to pay off the loan. The following table shows the monthly payments for each \$1,000 borrowed at different interest rates

and repayment periods. To figure the cost per month of a mortgage, find the appropriate payment period and interest rate and multiply the amount shown by the number of thousands of dollars borrowed.

#### Monthly payments for each \$1,000 borrowed

Interest rate (Per-cent)	Payment period				
	10 yrs.	15 yrs.	20 yrs.	25 yrs.	30 yrs.
5	\$10.61	\$7.91	\$6.60	\$5.85	\$5.37
5½	10.86	8.18	6.88	6.15	5.68
6	11.11	8.44	7.17	6.45	6.00
6½	11.36	8.72	7.46	6.76	6.33
7	11.62	8.99	7.76	7.07	6.66
7½	11.88	9.28	8.06	7.39	7.00
8	12.14	9.56	8.37	7.72	7.34
8½	12.40	9.85	8.68	8.06	7.69
9	12.67	10.15	9.00	8.40	8.05
9½	12.94	10.45	9.33	8.74	8.41
10	13.22	10.75	9.66	9.09	8.78

Any overpayment is adjusted in the last payment. If taxes and insurance are included, monthly payments will be proportionally higher.

#### Terms to know

Before shopping for a mortgage loan, familiarize yourself with the terms of the lending business. Here are some you may encounter.

*Open-end mortgage.*—This allows you to borrow more money in the future without rewriting the mortgage. It is a convenient arrangement should you want to repair, modernize, or expand your home at some later date. You need to use the arrangement with caution, however, or it can keep you in debt indefinitely.

*Packaged mortgage.*—This covers the cost of household appliances, for example, a refrigerator or stove; furniture, and carpeting, along with the house. To include these items in the mortgage may seem like an easy way to acquire them, but it makes them cost more. You pay interest as long as the mortgage runs and they will likely be worn out long before the mortgage is completely paid off.

*Prepayment.*—This permits you to pay off the mortgage before maturity without penalty (a waiting period may be specified). You may find you want to refinance at lower rates or to pay off the mortgage in full before it is due.

*Deed.*—This is a legal paper transferring the title of property from seller to buyer. There are two kinds of deeds—the warranty deed and the quitclaim deed.

The warranty deed gives title to the buyer and the seller warrants that he will defend title against any outside claims. If it develops later that someone else still had title to the land or a mortgage claim against it and the seller did not have a clear title, the buyer may sue the seller for breach of warranty to recover what he paid and to pay for the resultant damages. The quitclaim deed gives the buyer whatever title the seller may have had and the buyer assumes the risk. A warranty deed is preferred to any other type.

*Abstract (or search) of title.*—

This is a method of checking the safety of the title to a piece of property. It consists of a brief history of the ownership of the property prepared by a lawyer or other trained person. The abstract lists all former transactions affecting ownership, such as liens or claims, deeds, mortgages, sales, and any other matter that bears on the title to the property. An abstract makes the buyer reasonably sure that the title is free from defect.

*Title insurance.*—This is a policy of insurance issued by a title insurance company for a fee. It protects against any title defects. Title insurance gives added protection against outside claimants.

The lender may require title insurance to protect his interest. You, the home buyer, may also want to purchase an owner's title insurance policy for your protection in case a defect in the title develops.

*Escrow agreement.*—This provides that insurance and real estate taxes be paid by the lender. The monthly payment is increased by the necessary amounts to pay these costs. If the amount of taxes and insurance changes, an adjustment is made.

*Mortgagee.*—The person to whom the mortgage is given, that is, the lender.

*Mortgagor.*—The person who mortgages his property, or the borrower.

*Ground rent.*—A price per year or term of years paid for the right to occupy and improve a piece of land.

## Sources of mortgage loans

An important part of buying a home is raising the money. Where do you go for a home loan? If the seller has mortgaged the property, you may be able to take over his mortgage. In this case, consider these points:

- **The interest rate.** The interest rate on an existing mortgage may be lower than current rates on mortgages.
- **Size of unpaid balance on the mortgage.** Is the difference between the unpaid balance and the purchase price larger than the downpayment you planned to make? If so, can you get a second mortgage at an interest rate that will not wipe out your savings from assuming the existing mortgage?

More likely, you will have to arrange for new financing. The usual sources of home mortgage credit are: Savings and loan associations, commercial banks, savings banks, insurance companies, mortgage bankers, individuals, and builders. It is wise to find out as much as you can about terms and payment plans of as many different lending sources as possible. Then you can decide on the source that best suits your needs.

As you study, consider:

- Differences in interest rate.
- Differences in method of making payments.
- Length of time given to repay the loan.
- Effect of a large cash downpayment.

## Types of mortgage loans

Various types of mortgage loan plans are available, such as the conventional loan, the VA (Veterans Administration) loan, and the FHA (Federal Housing Administration) insured loan. In rural areas, the Farmers Home Administration loan may be available.

**Conventional loans** are made strictly between you and a private lender. You offer your home and your credit as security. There is no other backing such as Government insurance or guarantee. Conventional loans vary widely in form, and are the most common type used to buy and build homes. You can get information about conventional loans from the lender. If you are buying through a real estate firm that arranged for financing with a lender, get the facts on the loan from the real estate office. You may find also that it pays to do some shopping on your own.

**VA-guaranteed loans** are made to eligible veterans by private lenders. The Veterans Administration adds security by guaranteeing repayment of 60 percent of the outstanding balance on the loan. The amount guaranteed cannot exceed \$12,500, however. VA does not make a charge for guaranteeing a loan for World War II or Korean conflict veterans. Post-Korean veterans pay a small fee—one-half of 1 percent of the amount of the loan.

The amount of the downpayment and the length of the repayment period are agreed on by the



veteran and the lender. Although the VA does not require a downpayment, the lender may. Because of the extra safety provided the lender by the VA system of guarantee, the cost of these loans is generally less than for the other types.

If a veteran plans to build rather than buy an existing home, he usually will need to arrange for interim financing during construction.

**VA direct home loans** also are made by the Veterans Administration to eligible veterans in areas where there is a shortage of credit for housing. Funds for VA direct loans are furnished by the Veterans Administration rather than by a private lender as in the case of VA-guaranteed loans.

If you are a veteran, check with the Veterans Administration for information on home-financing benefits available to you. A local bank also can tell you what you are entitled to under the law.

**FHA loans** are made by private lenders and insured by the Federal Housing Administration. FHA does not make loans. It agrees to insure the private lender against loss in case you, the borrower, fail to repay the loan in full.

FHA-insured home loans are available to buy a new or existing home or to refinance the completed home if the home is built by the owner.

To pay expenses and cover possible losses, FHA charges an insurance premium of  $\frac{1}{2}$  percent

per year on the unpaid balance of the loan. The charge is included in the borrower's monthly mortgage payment.

This system of loan insurance by FHA has made it possible for a family to finance a home on more liberal terms. Lenders, by being insured against loss, are often willing to accept smaller downpayments.

Other differences between FHA and conventional loans are:

- FHA loans usually have longer repayment periods.
- FHA loans have interest rates fixed by the Department of Housing and Urban Development.
- FHA appraises each home to determine its value and to determine that it is structurally sound and does not present conditions that endanger the health, safety, and well-being of the occupants.

The Farmers Home Administration makes housing loans to rural families. These loans are available to farm families and to other families in rural areas and small communities (5,500 population or less) not associated with an urban area. Low- and moderate-income urban residents who work in the rural area may qualify for assistance. Special provisions apply to low-income families.

A family may use money obtained from a Farmers Home Administration housing loan to: Buy an existing house; buy a lot and build a home; build or re-

pair a home on land already owned; refinance debts owed on a home under certain conditions. A farmer may borrow funds to provide buildings for his use or for the use of his tenants and laborers.

Since Farmers Home Administration housing loans are closed before building starts, the work may be paid for as it goes along or when it is completed. To help you get sound and acceptable construction, the Farmers Home Administration inspects the work as it progresses.

Housing loans are available to rural families who cannot obtain the credit they need from other sources. If a family is eligible for a loan in other respects, but does not have enough income to repay the proposed loan, it may still be able to qualify under one of the programs available through the Farmers Home Administration or through the Federal Housing Administration with the assistance of the Farmers Home Administration.

Other loan programs designed to help provide housing for rural families are also offered by the Farmers Home Administration. One program is based on the self-help principle. Individual homes are built under supervision of a construction expert by a group of families that exchange labor. Funds are used to pay for material and for skilled labor the families cannot do themselves. If necessary, loans may be used to buy building sites.

Another program is designed

to provide rental and cooperatively owned housing in rural areas for senior citizens who are 62 years of age and over, and for other rural residents. Low- or moderate-income families living in an urban area but working in a rural area may be considered eligible occupants.

These loans make it possible for senior residents to continue to live in the area where they have spent their working years and be independent. The loans also increase the supply of adequate rental housing for low- to moderate-income rural families. The type of housing covered under this program consists of apartment buildings, duplex units, and individual houses or cottages.

For more information on housing loans available in rural areas, contact the Farmers Home Administration office in your area.

### **Applying for a loan**

You can apply for a conventional, FHA, or VA home mortgage loan at a bank, savings and loan association, mortgage firm or any of the other usual sources mentioned on page 17.

At the lending institution, ask to talk with the mortgage loan officer. Tell him of your desire to buy a home and how much you want to borrow. If the lender wants your business, he will suggest that you file an application.

You will be asked to give information on the type of loan you wish, the property you want to buy, and your financial situation. The lender will supply the

forms and assist you in making them out. He will then submit your application to the proper office for a thorough review. If you want an FHA-insured home loan, your application will be sent to the FHA office servicing the area in which the property you want to buy is located. If you are eligible for a VA loan, your application will be sent to the office servicing VA loans.

In filling out the forms you will have to answer questions about the property you wish to buy and about yourself as a prospective homebuyer.

You will need to indicate the location and selling price of the property. You will be asked where you work; how much you earn; how long you have worked there; the size of your family; the cost of your present housing; how many debts you have; what installment contracts you are carrying; how much you have in the bank; and so on.

After a few weeks, you will be notified whether or not your application has been approved. If your application is approved, the lender will arrange the closing of the loan with you.

For a rural housing loan, you may apply at the local county office of the Farmers Home Administration. The county supervisor will get the necessary information from you and submit it to the proper officials.

### **Mortgage costs**

Shopping for the best mortgage credit available can save

you money. Home mortgage loans differ in rate of interest, length of repayment period, and size. Because these are the factors that can make a big difference in the ultimate cost of your home, it is worthwhile to shop for the type of loan and the terms that best suit your needs.

For each individual family, there is a particular set of arrangements for downpayment and length of time to repay the loan that will prove best. A desirable contract provides for payments as large as you can afford at the present time, with the right to repay the loan at a faster rate than originally agreed upon, if you find that you want to later on.

Interest rates on conventional loans tend to follow general conditions in the money market. If money is plentiful for lending and the demand for loans is low, interest rates will be forced down. If money is scarce and the demand for loans high, interest rates will be forced up.

The interest rates on FHA and VA loans, on the other hand, are set by the administering Government agencies. As of October 15, 1970, the maximum rate of interest charged on FHA-insured loans is  $8\frac{1}{2}$  percent. In addition there is the insurance charge of  $\frac{1}{2}$  of 1 percent making a total charge of 9 percent. The rate of interest charged for VA-guaranteed loans is  $8\frac{1}{2}$  percent.

The interest rates on Farmers Home Administration loans, as of October 15, 1970, are  $7\frac{1}{4}$  percent

for loans to families with low or moderate income and  $8\frac{1}{2}$  percent plus  $\frac{1}{2}$  percent insurance charge (total 9 percent) for above-moderate-income families.

When money is scarce or tight, a lender may charge a discount or points to make a loan. A point is a one-time charge equal to 1 percent of the loan. Charging points is a way for the lender to make up the difference between the legal ceiling on interest rates and the yield he can get elsewhere in the market. Thus, the cost of financing a home may be higher because of discount points.

The interest rate you agree to pay affects the total cost of your home. Because the amount borrowed is large and repayment extends over a number of years, a variation of one-half of one percent can make a big difference in the total amount you pay. For example, on a 25-year, \$20,000 mortgage you would pay about \$2,020 more in interest on a loan at 9 percent than on an  $8\frac{1}{2}$  percent loan as the following table shows.

**Effect of interest rate on cost of a \$20,000 loan over a 25-year period**

Interest rate (percent)	Monthly payment (principal and interest)	Total interest (over 25 years)
6	\$129	\$18,600
$6\frac{1}{2}$	135	20,440
7	141	22,390
$7\frac{1}{2}$	148	24,330
8	154	26,280
$8\frac{1}{2}$	161	28,200
9	168	30,220
$9\frac{1}{2}$	175	32,370
10	182	34,460

NOTE: Monthly payment rounded to nearest \$1; total interest rounded to nearest \$10.

The length of time you take to repay a loan also has a bearing on the amount of interest you pay. The shorter the time taken to repay the loan, the lower the total cost of interest to you; the longer the time to repay, the higher the total cost. The advantage of spreading payments over a long period of time is the smaller monthly payment which may make financing easier for you, because it leaves more for current living. The disadvantage is the larger amount paid out in interest for the loan.

The amount of interest paid over the years is shown in the following table. When the annual rate is 9 percent, the total interest paid on a loan repaid in 15 years is about four-fifths the amount of the original loan and in 20 years it is more than the original loan. If you take as long as 30 years to repay, the amount you pay in interest far exceeds the amount of the original loan.

**Effect of repayment period on cost of a \$20,000 loan at 9 percent**

Payment period (years)	Monthly payment (principal and interest)	Total interest
5	\$415	\$4,910
10	253	10,400
15	203	16,490
20	180	23,160
25	168	30,220
30	161	37,820

NOTE: Monthly payment rounded to nearest \$1; total interest rounded to nearest \$10.

Your ability to make a large downpayment can save you money on the cost of your mortgage.



A large downpayment usually has these advantages:

- You may find it easier to obtain a loan.
- You may be able to get a loan at a more reasonable rate of interest.
- Your total interest expense will be lower.
- Your equity in your home will be greater.

The table below shows combinations of downpayments and repayment periods in which you might pay for a \$20,000 home at 9 percent interest.

On a 25-year 9 percent loan, every \$1,000 of downpayment decreases the amount of total interest paid by about \$1,510. For example, if you make a downpayment of \$2,000, the cost of interest over the 25-year period amounts to about \$27,200. If you make a downpayment of \$3,000 the total cost of interest is about \$25,690.

A large downpayment may not always be possible, especially if you are a young family with little cash. You can still profit by paying off a loan in the shortest time possible. Suppose \$500 is as

large a downpayment as you can manage. If you plan to repay the amount borrowed in 25 years instead of 30 years, you will pay about \$7,420 less in interest. So the more money you put down and the less time you take to repay, the lower the total cost of the loan.

All of your savings should not be used for a downpayment. You need to hold back some money for:

- Closing costs on the loan.
- Moving expenses.
- Reserve for unexpected emergencies.

### Closing procedures and costs

Buying a home and getting a loan to finance it involves the completion of a number of papers before the property officially becomes yours.

Between the signing of the sales contract and the closing of the loan, three things usually need to be done. (1) The property will have to be appraised, (2) evidence of title obtained, and (3) a survey of the land made. At the time the loan is closed, the note and mortgage will need to be

**Effect of size of downpayment on cost of a \$20,000 home, with interest at 9 percent**

Down- pay- ment	Monthly payment (principal and interest)			Total interest		
	20 years	25 years	30 years	20 years	25 years	30 years
\$0	\$180	\$168	\$161	\$23,160	\$30,220	\$37,820
500	176	164	157	22,580	29,460	36,880
1,000	171	160	153	22,000	28,710	35,930
2,000	162	151	145	20,850	27,200	34,040
3,000	153	143	137	19,690	25,690	32,150
4,000	144	134	129	18,530	24,180	30,260
5,000	135	126	121	17,370	22,670	28,370

NOTE: Monthly payment rounded to nearest \$1; total interest rounded to nearest \$10.

signed, and the deed transferring title to the buyer executed and then recorded.

Costs involved in the closing procedures can amount to several hundred dollars. So you will want to find out the approximate amount of the closing costs ahead of time. Costs will vary according to price of property, area, and kind of financing involved.

Some charges that are likely to show up on your settlement statement are: Fee for survey, appraisal, title search, title insurance, recording and notarizing fees, mortgage tax, attorney's fees, lender's service charge. You may not have to pay all these expenses—or you may have others. The point is you need to be prepared to pay whatever costs are not covered in your mortgage loan.

At closing, you may also be asked to make payments in advance for such items as property insurance and taxes. If the insurance and taxes on the property have already been paid for by the seller, they will be prorated at this time.

A lender will require that you have insurance to protect his loan in case the property is damaged by fire, wind, explosion, falling aircraft, or other hazard.

If there is no transfer of insurance from the seller to you, you will have to get your own insurance and pay the premium. If you want to include the insurance in your regular monthly mortgage payment, you will be asked to make an advance payment. The

amount will depend on the price of the property and the lender. You probably will be asked to pay the premiums for at least 2 months. In fact, it is not uncommon to pay the premium for a full year plus an additional month. The extra month's premium is held in deposit (escrow) and the premium for each following month is added to it. In this way enough money accumulates during the year ahead to pay for the insurance premium for the next year when the premium comes due.

Although you are required to have hazard insurance when you obtain a loan, you do not have to take what is offered by the lender. You can arrange for coverage on your own. You may be able to get the necessary coverage at less cost through an agent or firm of your own choice.

If you elect to pay property taxes directly, you will pay what is due for the remainder of the current tax period. If the taxes are to be included as part of your monthly mortgage payment, you will make an adjustment payment at the time of settlement to put you on a current basis.

## **INSURING YOUR HOME**

Protection for your home and personal property is available in various kinds of insurance policies. To help you decide on the kind and amount of coverage to have on your home and its contents, discuss your situation with a qualified insurance agent in your area. Be sure to ask about the cost

of different policies. Then you can select the policy (or policies) that best suits your needs at the least cost to you.

A *standard fire insurance* policy protects you against losses from damage caused by fire and lightning on the house or structure itself. Fire insurance can be extended to protect against losses caused by hailstorm, tornado, wind, explosion, riot, aircraft damage, vehicle damage, and smoke damage. This is known as *extended coverage*. The extra protection of the extended coverage is well worth the small additional cost.

A *personal liability insurance* policy may be desirable as well as fire and extended coverage insurance. With a liability policy, you are protected in the event someone is injured on your property. Injuries or damage resulting from activities of members of your family are also covered. Some policies have special provisions to pay medical costs within certain limits, regardless of your liability.

A *theft insurance* policy protects your personal property against robbery, burglary, and larceny. Property theft policies vary widely. It is, therefore, important to select a policy carefully and to be sure the policy in-

cludes against the conditions that you want it to. You can get a policy in a broad form that protects your possessions both in the home and away from home but it costs more than the more limited form.

A *homeowners'* policy combines insurance on the house, garage, and other buildings and on personal property, with personal liability. Policies for renters also are available. You can buy a homeowners' policy for less than coverages bought separately. Insurance companies usually have more than one homeowners' policy to choose from. The policies differ in the extent of coverage. Some package policies may include more protection than you need.

Sometimes *extra life insurance* is carried on the head of the family to make sure there will be money to pay off the mortgage should he or she die or become disabled before the loan is paid. There are special policies for this purpose—a type of term insurance. You will want to investigate the cost of this type of policy, especially before deciding whether or not to have the extra protection. What you decide is an individual family matter and will depend on your own particular situation.

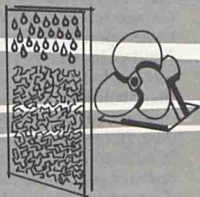
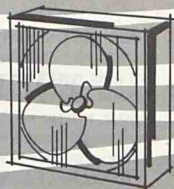
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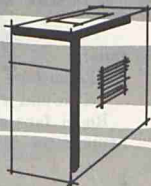
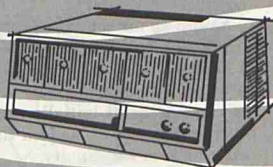
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# Equipment for Cooling Your Home





# EQUIPMENT FOR COOLING YOUR HOME

It has been a hot, summer day—and since early afternoon the inside of your house has been hot. Now the sun has gone down, and outside the temperature has dropped a little. Inside, though, your house remains just as hot as it was—hotter now than outside.

You open windows, but that doesn't help much because the air is calm and there is practically no circulation, no exchange of inside air for outside air.

If you had some type of air cooling, you think, it would be better. And you decide to do something about that. You decide to cool your home mechanically—so it will stay comfortable during the day and be cool at night.

There are four ways, you learn, to cool your home:

- With fans.
- With an evaporative cooler (cooling with water).
- With an air conditioner.
- With a heat pump.

Which way you choose will depend on how much you are willing to invest, both initially and in operating expenses, and on the climate of your community.

## Cool With Fans

You can buy two types of cooling fans:

- Room fans.
- Attic and window fans.

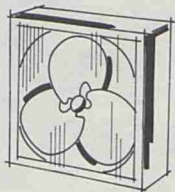
Room fans stir up the air. The temperature inside your house can

be several degrees cooler than outside, but it can seem warmer if the air doesn't move. Also, air movement increases moisture evaporation, and moisture evaporation cools the body, or skin surfaces.

A good room fan has large blades, turns at about 1,000 r.p.m. (it may have a speed adjustment), operates quietly, and has an oscillating mechanism. It will cost from about \$20 for a small table model to \$60 for a 7-foot pedestal floor model. (Price ranges given in this bulletin are based on typical 1969 retail prices.)

Attic and window fans exchange inside air for outside air. You can use them for night cooling, or whenever the temperature inside your home is greater than the temperature outside. A time switch can be installed in the electrical circuit to your fan to cut it off automatically at any time you desire. When you have cooled your house at night, keep the windows and doors closed during the next day as long as it is cooler inside than out.

You will find that window fans are easier to install than attic fans—



no construction is required—but you will also find that they are usually noisier.

Fans are rated by the amount of air they move in cubic feet per minute (c.f.m.). Fans rated by an Association are more likely to deliver approximately the quantities of air stated.

For best results, you will need the help of an engineer in determining the size of attic or window fan needed for your house (some retail firms provide the services of a trained technician). The air inlets and outlets, the horsepower of the fan motor, and the revolutions per minute of the fan blade all should be taken into consideration. However, you can determine the approximate size yourself and probably get satisfactory results.

To determine the size fan you will need—

- Find the volume of the area you want to cool. Multiply the length of

the rooms by the width. Then multiply that by the height.

- If you live in the dotted area of the map (fig. 1), divide the volume by 1.5. This will give you a minimum c.f.m. requirement. If you live in the undotted area, your minimum c.f.m. requirement will be the same as the volume you want cooled.

- Pick a fan that has a c.f.m. rating larger than your c.f.m. requirement—a larger rating will allow for slight differences in test procedure and efficiency.

If you choose a fan that is driven with pulleys and a belt, rather than one that is driven directly by the motor, the size of the pulleys can be varied slightly to adjust the amount of air moved. Models with two- and three-speed motors are also available.

Normally, a  $\frac{1}{3}$ -horsepower, 36-inch attic fan will provide 40 air changes per hour for the average 3-bedroom house. This is sufficient

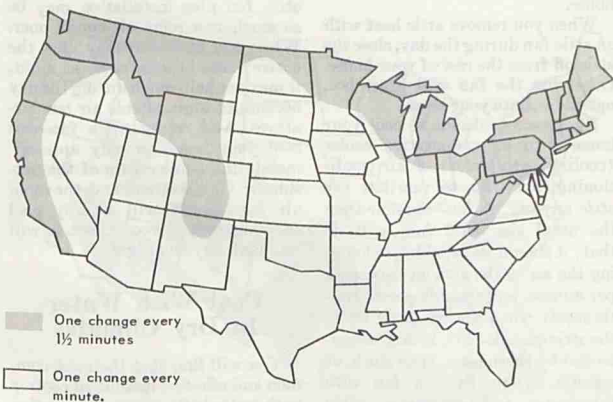


Figure 1.—Minimum air changes recommended for fan cooling.

ventilation in the dotted area. Such a fan will cost about \$100.

A larger attic fan is required in the undotted area—a  $\frac{1}{3}$ - or  $\frac{1}{2}$ -horsepower, 42-inch fan that will normally provide 60 air changes per hour for the average 3-bedroom house. It will cost about \$120.

Window fans are usually smaller. They range in size from 20 to 30 inches. The 20-inch size is the most popular. It will generally provide about 15 to 20 air changes per hour for the average 3-bedroom house. Twenty-inch window fans cost from \$25 up.

When cooling with a fan, you should close off any portion of the house that you do not wish to cool; otherwise, the fan will not provide the proper number of air changes per unit time.

You can also remove accumulated attic heat during the day with an attic fan. Often an attic is 25° or more hotter than outside; even if the ceiling of your house is insulated, this additional heat will warm your house.

When you remove attic heat with an attic fan during the day, close the attic off from the rest of your house. Otherwise the fan will draw hot, outside air into your house.

Suppose you decide to cool your home with an evaporative cooler (cooling with water) or air conditioning, but wish to ventilate the attic anyway. A fan—smaller than the usual size attic fan—will do that; it should be capable of changing the air in the attic at least once per minute, and should operate continuously when the temperature in the attic exceeds 110°. It may be controlled by thermostat, time clock, or manual switch. Such a fan with thermostat and automatic gable shutter will cost about \$60.

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## House Design

Good design and construction are as necessary to keeping your house cool in the summer as they are to keeping it warm in the winter. The house should be tightly constructed and well insulated. In the summer, the windows should be shaded from the direct rays of the sun.

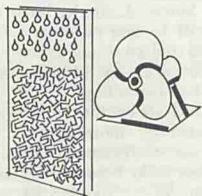
A more comprehensive discussion of house design, insulation, and cooling equipment appears in USDA Agriculture Handbook 241, "Farmhouse Design and Equipment for Summer Comfort." This publication is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, at 15 cents per copy.

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Cooling with fans has some disadvantages. Dust and pollen are likely to be drawn into your home. Fans are noisy. The cost of a good attic fan plus installation may be as much as a room air conditioner. While the attic fan may cool the entire house in some areas at night, it may not help much during the day because of high outside air temperatures. And remember, a fan will cool your house to only approximately the temperature of the outside air. On the other hand, the room air conditioner will usually cool only one or two rooms, but it will cool both day and night.

## Cool With Water In Dry Climates

You will find that the most common and effective method of cooling with water is the water-evaporation method.



Cooling by water evaporation is satisfactory only when the humidity is low. It is used extensively in hot, dry climates. Figure 2 shows the areas of the United States where water-evaporation cooling is satisfactory.

Water is sprayed on excelsior (or some other good water-absorptive material). A fan then draws air through the excelsior. The water in the excelsior evaporates and cools the air; the cooled air, in turn, cools your home.

An air velocity of 150 feet per minute through the excelsior provides maximum cooling. Slightly higher velocities keep the circulated air from becoming saturated. Twenty to 40 house-air changes per hour are necessary.

Water-evaporation cooling requires 5 to 10 gallons of water per hour to cool an average-size house.

Installation and operation costs for a water-evaporation cooling unit that is large enough to cool an average-size house will depend on your locality. A single-room unit costs from \$30 up.

## Cool With an Air Conditioner

Is air conditioning the answer to cooling your house? Certainly it is the best way to keep your house at a constant, cool temperature. But it is also more expensive than other methods of cooling.

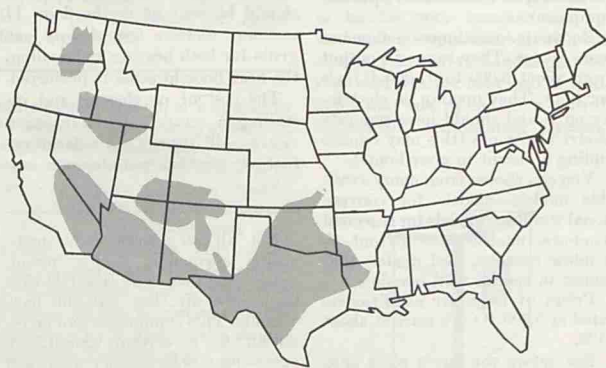
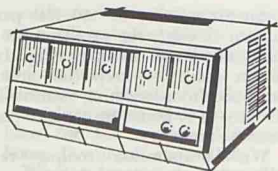


Figure 2.—Shaded areas indicate where water-evaporation cooling is effective.





There are two types of air conditioners—

- Room units.
- Central-system units.

The cooling operation of both types of air conditioners is the same. Air passes through filters that remove large dust particles, and over a series of refrigeration coils where it is cooled and dehumidified. A fan then blows the cooled air into your home.

Most air conditioners have either built-in thermostats or provisions for wiring the conditioners to remote temperature controls. Some of the small units are not thermostat equipped, but you may find that a thermostat is available as optional equipment.

Room air conditioners cool one or more rooms. They range in output from about 5,000 to 32,000 B.t.u.'s per hour. They operate on electricity only, and should have separate electrical circuits (this may require adding a circuit to your home).

You can choose from many available models—models for conventional windows, models for casement windows, models for in-front-of-window consoles, and models that mount in special wall openings.

Prices of room air conditioners rated at 5,000 B.t.u.'s start at about \$130.

But before you buy a room unit, think. You will probably need several small units to cool your

whole house. A single, large room unit will be less expensive, but it will not cool your home evenly.

A central air-conditioning system might be a better buy.

Central air-conditioning systems are generally more efficient than room air conditioners. They also seem less noisy because they are located out of the living area.

Central air-conditioning systems can be separate systems with their own ducts, or they can be combined with forced-air heating systems.

Cooling requires a greater amount of air flow than heating. If you choose an add-on system it will probably be necessary to increase the fan capacity of your furnace, and it may be necessary to enlarge and even relocate the distribution ducts. Larger ducts also decrease the velocity of the cooled air and reduce the noise of air conditioning.

For greatest uniformity in room comfort conditions, cold air supply grilles should be high in walls or in the ceiling and hot air supply grilles should be near or in the floor. If economy dictates use of only one grille for both heating and cooling, the near floor location is preferred.

The cost of purchasing and installing a central air-conditioning system will depend, to a large extent, on whether you choose a sep-

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Not all air conditioners dehumidify adequately during humid, muggy weather. The result is that the cooled air they put out feels clammy. This clamminess can be reduced, to a certain extent, by operating a dehumidifier when you operate your air conditioner.

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Air conditioners are rated by heat-removing capacity in British thermal units (B.t.u.'s). Where temperatures do not usually exceed 95°, an air conditioner rated at 6,000 B.t.u.'s per hour will cool a room with 100 to 230 square feet of floor space. Where temperatures exceed 95° but do not exceed 100°, an air conditioner rated at 6,900 B.t.u.'s is required to cool the same area.

Approximately 1 kilowatt-hour of electricity is required to remove each 6,500 B.t.u.'s with an electrical air conditioner. This is the same amount of electricity that is required to operate ten 100-watt light bulbs for 1 hour.

A water-cooled gas air conditioner requires about 13 cubic feet of gas (plus a small amount of electricity) to remove each 6,500 B.t.u.'s. An air-cooled gas air conditioner requires 21 cubic feet of gas (plus a small amount of electricity) to remove each 6,500 B.t.u.'s.

Central-system air conditioners are sometimes rated in "tons." One ton of refrigeration equals 288,000 B.t.u.'s per 24 hours, or 12,000 B.t.u.'s per hour.

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arate central system, or a system to be added to your heating system. A central air conditioner rated at 34,000 B.t.u.'s that can be added to your forced-air furnace usually costs from \$600 before installation.

Most room air conditioners have air-cooled condensers. This means that the condenser must be outside the cooled room, that it must have unrestricted air circulation over the condenser coils, and that it should be shaded from the sun.

Some air conditioners have water-cooled condensers. They require

large quantities of water to disperse the heat—approximately 75 to 150 gallons per hour for each 12,000 B.t.u.'s of cooling capacity. This water can be cooled in a cooling tower and reused. Locate the tower outdoors, away from your house; it is noisy.

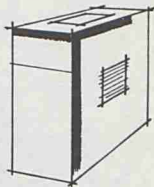
Air-cooled units require more electric energy than water-cooled units. This increased cost is usually offset by water supply and disposal (or cooling tower) costs.

## Cool With a Heat Pump

Another method of air cooling you will want to consider is the heat pump. The heat pump is a single unit that replaces the conventional furnace-air conditioner system. It removes heat from your home in the summer and supplies heat to your home in the winter.

The heat removed in the summer is discharged to the outside air.

Usually, the heat pump is sized to handle your summer cooling load and is supplemented with an auxiliary heater to handle part of your cold-weather heat load. A heat pump may cost more than a central furnace-air conditioning system.



Operation costs, over a year's time, will depend on how much supplemental resistance heat is needed in the winter. In areas where little supplemental heat is needed, or where

the cost of electricity is low, operation costs may be less than for conventional central furnace-air conditioning systems. In other areas, it may be higher.

*Prepared by*

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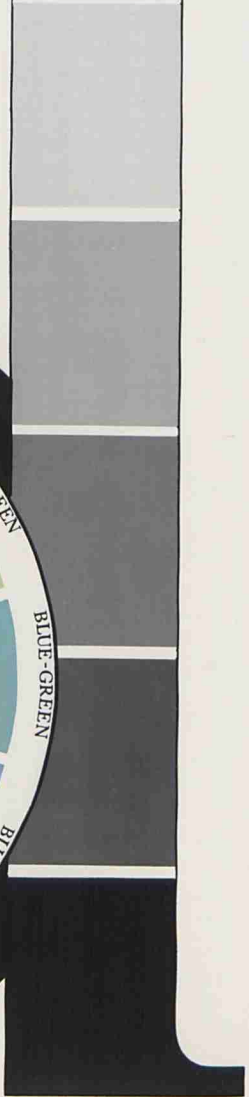
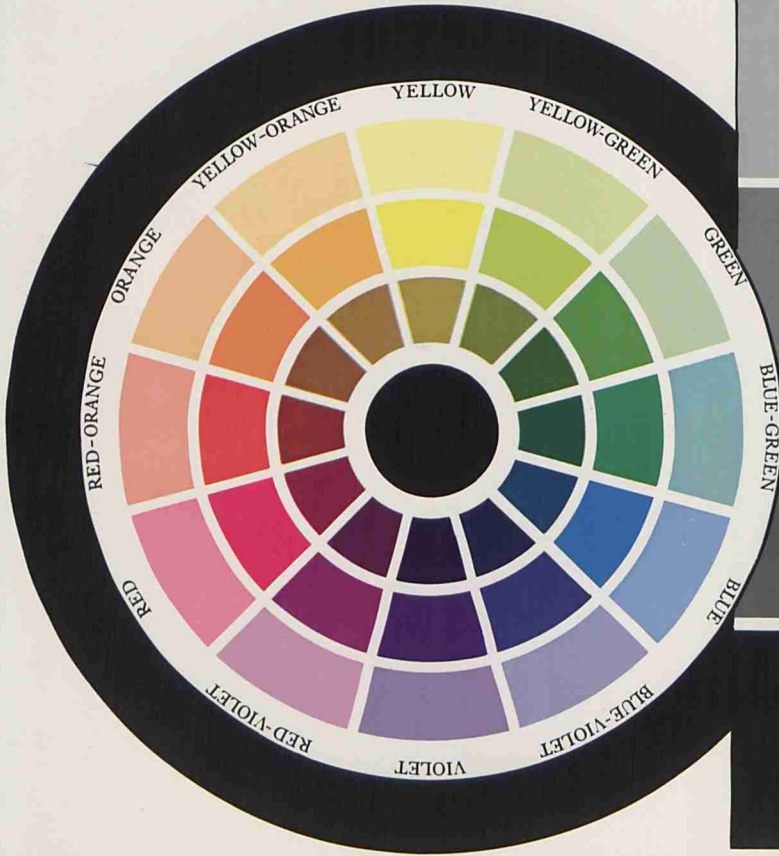


*design in your home*



A GRAY SCALE

A COLOR WHEEL



Creating good design in the home is not always easy. Open your eyes. Look, observe, study, experiment and analyze. If you do this, it will help you to better understand and apply design principles to your own home.

## *design in your home*

Design is everywhere. You see it in nature, in buildings, the market place, your home and in the everyday objects around you. Good design is functional and beautiful.

Furnishing the home is a creative and inspiring form of art. It is a challenge to select good design in each item of furnishings and then successfully combine all parts into a unified whole.

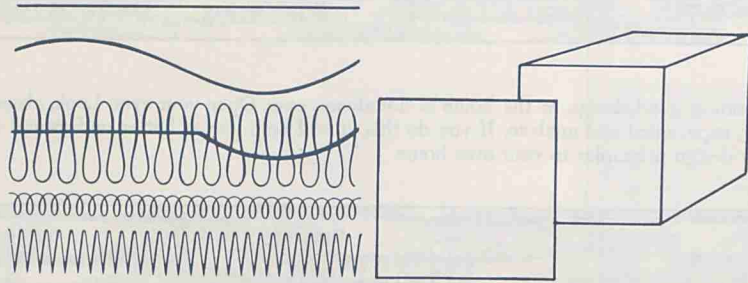
Each time you make a choice you exhibit, consciously or unconsciously, your taste and ability to choose. Good design need not be expensive nor impractical. But, it is necessary in creating beautiful interiors.

What is design? One author describes it as the selecting and arranging of materials with two aims—order and beauty. In interior design this is your goal. How do you obtain order and beauty? How do you know when you have attained it? This is not easy for the untrained eye; but through studying, observing, experimenting and practicing, you will know when you have achieved your goal.

A basis for making decisions begins with an understanding of the terms used to judge and discuss design.

Line, form, space, texture and color are the tools often referred to as the elements of design. The way these tools are used determines whether the design is good or inferior. Balance, emphasis, rhythm, proportion and harmony are referred to as the principles of art.

The terms good taste and good design are often used to mean the same thing. Furnishings of good taste are always good in design and have lasting value.



#### ELEMENTS OF DESIGN

- Lines are a basic element of all design. They may be straight, curved or a combination of both. When you look at a design, it is the line that causes your eye to move from one part to another.

Lines have emotional quality. Curved lines suggest a feeling of softness. Straight lines appear to have strength and stability. Vertical lines tend to increase the apparent height of an object or room. Horizontal lines tend to increase width.

- The outlines of shape and form are created by joining lines together. Items of furnishings are round, square, rectangular or irregular in shape. In addition to length and width, there is also depth. This third dimension is referred to as form. Shapes and forms occupy space. As you combine objects, consider how their shapes and forms look together and how they relate to the space and lines of the room. One line or form should predominate, but some variety will add interest.

- Space is what you begin with. Ceilings, walls and floors form the boundary for the space contained in a room. The amount of space you have will help you decide on your furnishings. It will determine the size and number of items to be used. You need enough space to place and use the things for daily living plus those that give added pleasure. Some empty space is needed to give a feeling of restfulness.

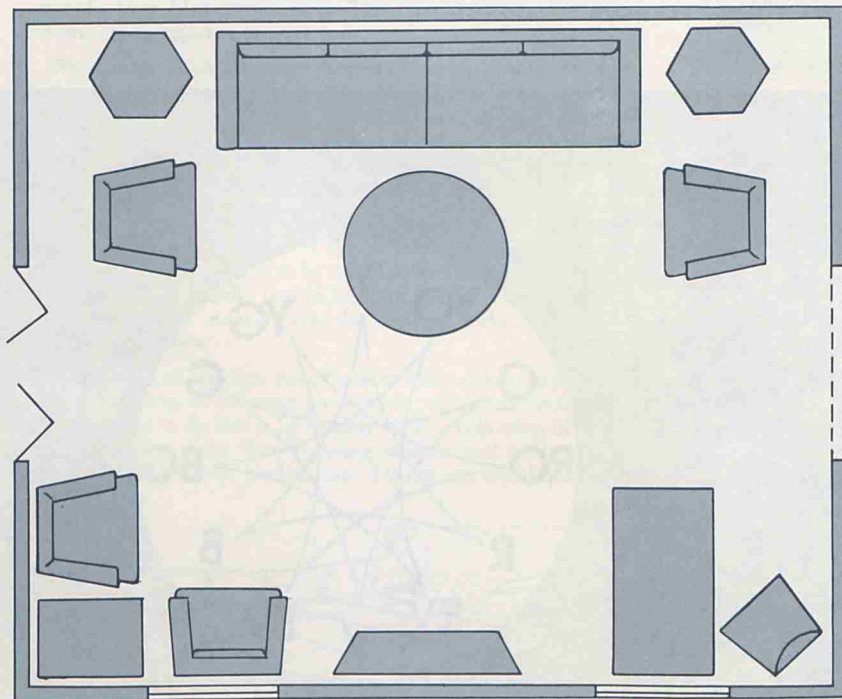
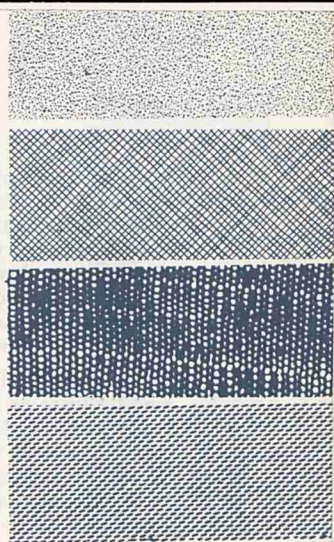
- Texture is the surface quality of a material. It may be seen as well as felt. Observe the differences you can see in the texture of wood, metal, fabric or masonry surfaces. Certain textures seem



to belong together. Smooth textures may be used with moderately rough or intermediate ones, but not with very coarse ones. Coarse, nubby fabrics and dull surfaces go well with oak or pine furniture, wooden bowls and copper. Soft, silky, smooth textures are appropriate with traditional furniture, polished silver and fine china. Smooth, soft textures suggest more formal activities; rough, springy, bristly textures are less formal.

A shiny, smooth surface reflects light. This causes the color to appear clear and bright. Rough textures cast small shadows and absorb light making the color appear deeper and duller. The object may also look larger and heavier.

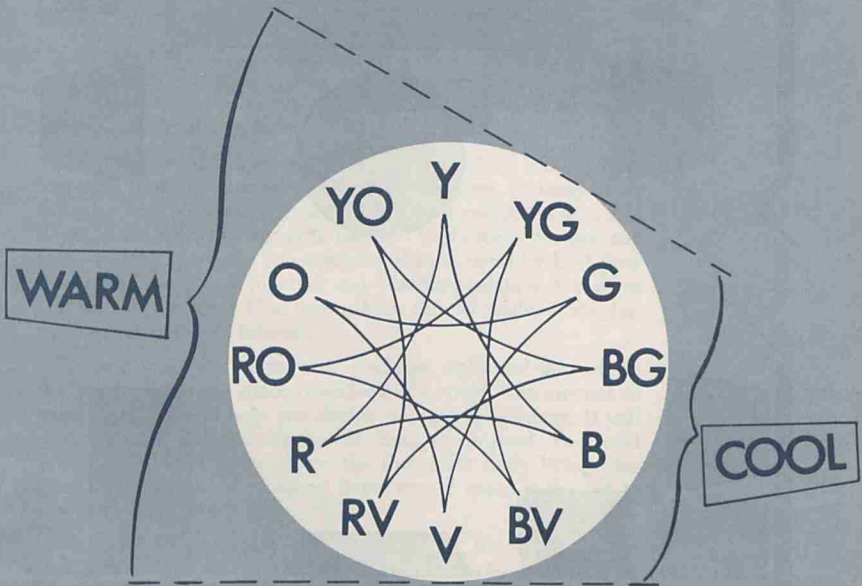
There are no hard and fast rules for combining textures. We must develop a *feeling* for pleasing combinations. Let one predominate.





• Color can accomplish more at less cost than any other element of design. You can use it to set the mood or feeling of a room, unify all of the other elements, disguise flaws, create centers of interest or change the apparent size and shape of form and space. More than anything else it expresses personality. Color is usually referred to in terms of hue, value and intensity. In order to see color to best advantage, either alone or in color combinations, these properties must be considered.

Hue is the family name of a color. Just as your family name may be Jones or Smith, colors have names that indicate their family such as red, yellow or blue. Value is the lightness or darkness of a color as compared to black and white. Intensity is the strength of a color—its brightness or dullness. Hue relationships are usually shown on a color chart.



People react to color in different ways. The way you select and combine colors depends on your color preferences, where color is to be used and the effect or mood you wish to create.

The warm colors—orange, yellow, red—are gay, exciting and active. They are often chosen to make a room appear cozy and comfortable. The blues and greens are cool, serene and restful.

Black, white and gray are considered neutrals. They can be used to lighten, darken or gray the hues.

If the right value and intensity are used, any of the hues can be combined. Many persons learn to combine hues successfully by using color plans that have been tested and accepted.

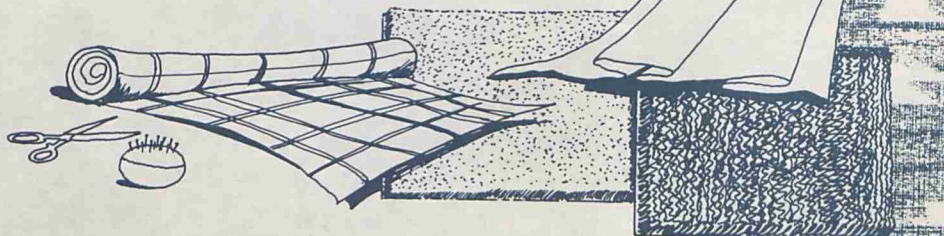
The one hue or monochromatic color plan uses one color in different values and intensities.

Hues next to each other on the color chart are friendly and easy to combine because they have one hue in common; for example, blue, blue-green, green. This type of harmony is often referred to as adjacent or analogous.

When hues which are opposite each other are combined, they harmonize. Because of the contrast, they work best if used in different values and intensities. For example, one hue could be used in a light value or dull intensity for the large areas of a room; the more intense or brighter hues could be reserved for the small areas.

Before you start a color scheme, decide on the mood you wish to express. Select a key color. It will probably be the one you like best. Decide if the color is to be used for backgrounds or accents. Backgrounds are usually best in medium to light values and dull or soft intensities. Accents may be used in darker values and brighter intensities.

If you wish to combine two, three or more colors, experiment with using them in different proportions, values and intensities. The best way to do this is by working with a collection of fabric swatches, paint chips, floor covering samples and wall material samples. Let one color predominate. Do not use equal quantities of colors.



## PRINCIPLES OF ART

You may have been in a room where you had a sudden urge to turn an object around or move it. Do you know why you felt that way? There were probably too many lines, forms, spaces, textures or colors at one end of the room; and it seemed out of balance.

### BALANCE

Balance is the feeling of equal weight. There are two types of balance—formal and informal. Most individual pieces of furniture are an example of formal balance; the lines and forms on each side of the central point are exactly alike.

The structural and decorative lines of both the commode and mirror (Fig. 5) illustrate the symmetry of formal balance. The placement of candlesticks at equal distance on either side of the mirror and flower arrangement further emphasize the formality.

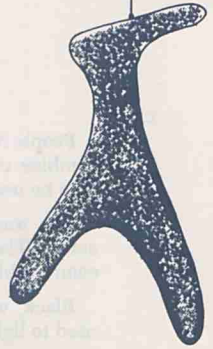
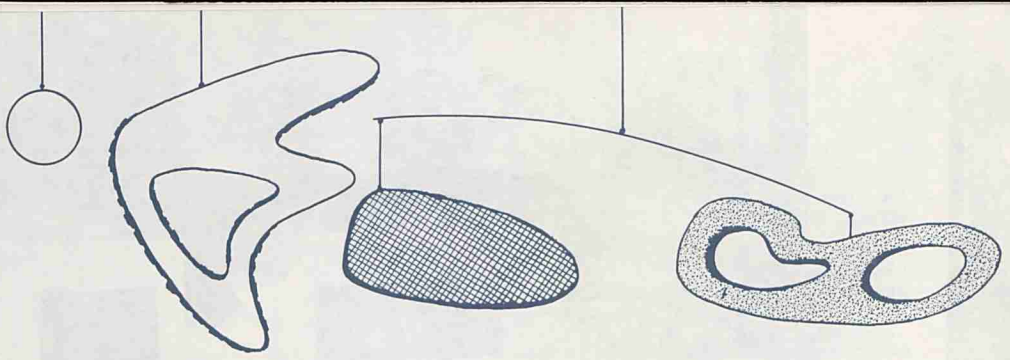


Figure 5







Pieces of furniture may be arranged in the room to create formal or informal balance. For example, by using identical tables and lamps at the ends of the sofa, you have established a formal grouping.

Fig. 6. The major accessories, sconces and pictures, hung over the sofa further express the feeling of formality. The choice and placement of small accessories add the only variation.

Figure 6







Figure 7

Informal balance gives the feeling of equal weight, but the objects are not alike. Let's start with a sofa with similar lines and design. Fig. 7. Again we can use identical lamps but place them on end tables that are quite different in style—one is of the low-closed chest type and the other has a low open shelf. The open shelf above the sofa holds a variety of accessories that add a further note of informality.

A room is usually more interesting when both formal and informal groupings are used, but one type predominates. Formal balance provides harmony and order; informal balance adds interest.

Balance of form, space and color is basic to arranging furniture. Furniture pieces represent the forms in the design; walls and floors between groupings are the spaces. Fig. 8. In arranging furniture, you would not put all of the furniture on one side of the room and leave the rest of the room bare. Neither would you place all of the large pieces of furniture at one end of the room and all of the smaller ones at the other.

Often, because of doors, windows or other architectural features, it is necessary to place most heavy pieces of furniture on one side of the room. If you have to do this, it may be best to keep the colors of these objects subdued and use brighter colors in the smaller pieces of furniture. A small area of bright color can be used to balance a larger area of a lighter or duller color.

Figure 8



## RHYTHM

Rhythm is movement. It is all around. Even your name has movement as you write it using an easy flowing rhythm. There are several types of rhythm. Let's illustrate them. We take for granted the rhythm of seasons—spring, summer, fall and winter. They always appear in the same order—the seasons never change. In homes, rhythm can work in the same, easy flowing way to keep the eye from darting from one article to another. To accomplish this you need to plan repetition. If every article you choose is exactly the same pattern, style or color, you would soon find the result tiring.

Figure 9





Rhythm can be created by repeating with variation. You do this by making the elements of design—line, form, space, texture and color work for you. You can vary these elements by changing the size and direction. For example, articles displayed on open shelves become more interesting when there is variation in color, line, form, texture and placement. Fig. 9.

Rhythm can be created by radiation. This means the eye starts from a central point and travels from that point back and forth.

For example the eye tends to encircle the octagonal shape of the dining table top. Fig. 10. The center pedestal and placement of the chairs follow the same general lines of radiation and add to the feeling of rhythm.

Rhythm can also be created by progression. This suggests that the eye is drawn from the most important article or grouping to the least important. Again, this can be done by varying size, form, space, color, texture and/or direction.

An important architectural feature or piece of furniture is often the starting point or center of interest. If a room has a fireplace this often becomes the focal point. Fig. 11. The furniture and accessories are chosen and arranged so that the eye naturally travels from the fireplace to the sofa grouping to the left of the fireplace, across the coffee table which has been effectively placed in front of the fireplace, to the pair of chairs on the right, and back to the fireplace.

Rhythm and emphasis are closely related. In fact, we could say rhythm has two parts—repetition and climax or emphasis. It can be repeated with regular accents or with variation. The variations of the elements of design can flow, progress, radiate from a central point or they can march in regular rhythm.



Figure 10



Figure 11





## EMPHASIS

Every arrangement needs something of interest that catches the eye and holds the attention. This quality may be referred to as the *center of interest, point of emphasis, or dominant area*. The eye sees the most important part of the room first and then travels to the less important areas.

There are several ways to attract attention to the important part of a room. They are: use of (1) contrasts in hue, value and/or intensity; (2) contrasts in lines and directions; (3) unusual detail; (4) unusual grouping or placing of objects; (5) contrast or variation of texture.

The eye is quickly attracted by strong contrasts of dark and light, bright and dull. Contrasts of hues, especially if they are also different in value is an easy way to create a center of interest or focal point in an arrangement of any type.

This principle is often used in selecting backgrounds to show items of furnishings to best advantage. For example, deeper colors for walls and floors form a striking background for light tones of furniture and floral pattern in carpeting. Fig. 12.

Figure 12



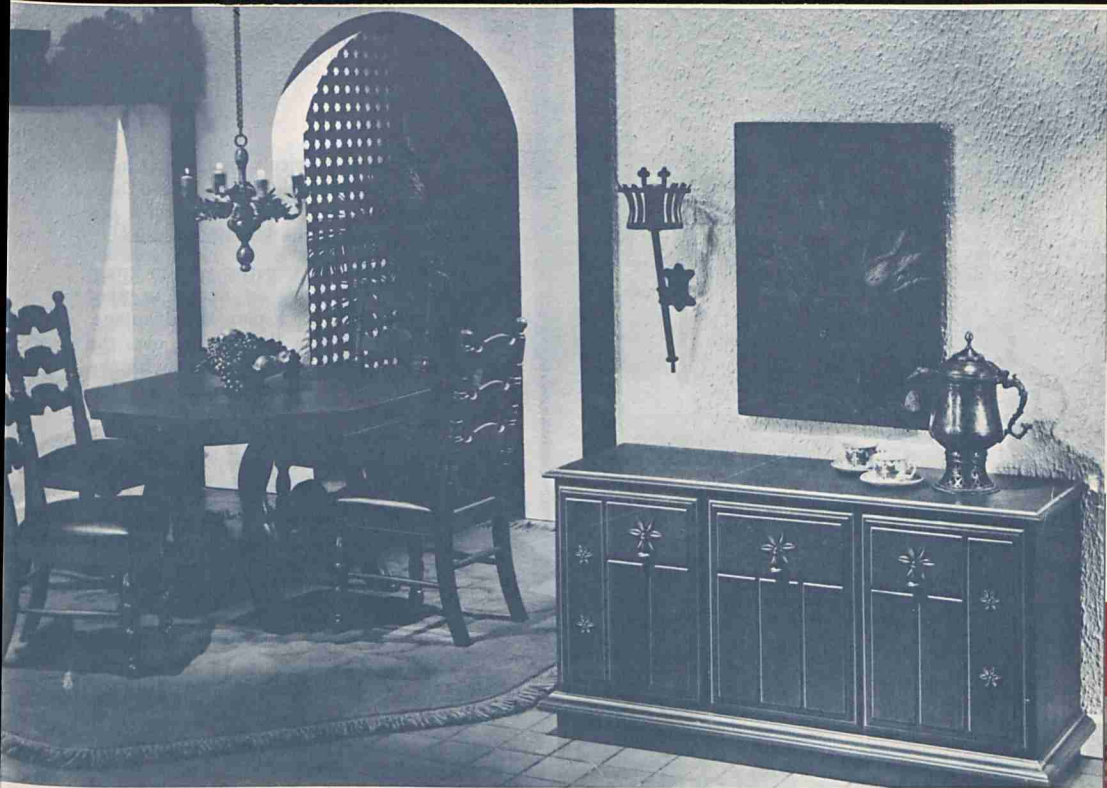


Figure 13

Contrast in line gives interest and variety to the room and keeps the observer from being bored. The dining area (Fig. 13) has a pleasing combination of curved and straight lines. Straight lines predominate in the architectural features of the room and furniture. However, the curved line of the doorway is repeated in the chair backs, in the area rug and in the accessories. The decorative motifs of the buffet also combine curved and straight lines with pleasing variation.

No doubt you have had the experience of passing a window where something unusual attracted your attention. It may have been a color, picture, accessory or other item. You turned to take a second and longer look. You were attracted strongly because the object was unusual—different.

A decorating plan might effectively begin by taking advantage of an unusual feature as shown with an attic apartment room. Fig. 14. The sloping wall has been enhanced with beams that extend across part of the ceiling. The furniture has been selected and arranged to complement the architectural features of this wall.



A grouping of objects may attract more attention than a single article. Group them so that the eye leads from the most important article to the least important.

This is often an effective way to group several small pictures, art objects, or other items you wish to display to advantage. Fig. 15. Notice how the pictures over the chest have been grouped along with the accessories on the chest so that they become one composition. Your attention is also drawn to the grouping of sculpture in the window and the grouping of accessories on the coffee table.

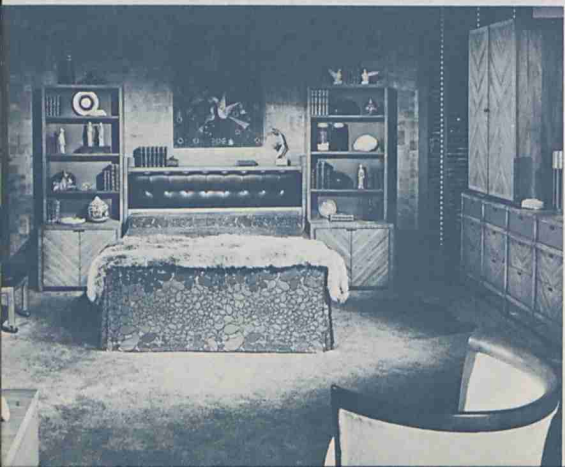
Figure  
15



You can create interest in a room by contrasting textures such as combining brick with a paneled wall. Several methods might be combined in a single room. Fig. 16. However, if there are too many points of emphasis, the effect may be confusing. The answer to "how much" is "keep it simple" or "when in doubt—leave it out."

The bedroom (Fig. 16) illustrates a combination of interesting contrasting textures. The textures of brick in the walls, wood and leather suggest both smooth and rough textures. These are softened by the soft piled texture of the carpet and bed cover.

Figure  
16



Backgrounds should be less conspicuous than the objects, forms or colors seen against them. If you do not wish to emphasize an object, shape or color, blend it into the background. Emphasis may be removed from an unattractive piece of furniture by blending it with the wall and using a contrasting accessory over or on the piece of furniture.

Some rooms have a natural center of interest such as a fireplace, picture window or bay window. Maybe you have both a picture window and a fireplace. If so, let seasons guide your furniture arrangement. In the cooler months, group the furniture around the fireplace. As the seasons change



the outdoor scenes to colorful pictures, group the furniture around the window to take advantage of nature's beauty.

If your room does not have a center of interest, make one. One way to create a center of interest is to play up one important object. A good picture with beautiful colors or an interesting wall hanging can be used together with your most important grouping of furniture.

You can also use an important piece of furniture to create emphasis, such as a bookcase or table. If you have an unattractive view or poorly designed windows, cover them with a lovely fabric and well-designed draperies. This can become your center of interest.

#### PROPORTION AND SCALE

Proportion is the principle of design that involves the relationship of objects to space. This refers to all parts of an object as well as its relationship to the space it occupies. Scale refers to measurement (size)—large, medium or small—light or heavy. If an object or a group of objects is out of proportion, the relationship of its size to its space is not pleasing. Its scale needs to be changed.

There are no rigid laws in applying the principles of scale and proportion. One suggestion, however, might be to introduce enough variety to add interest. In general, shapes that are just as wide as they are tall are not so pleasing as those which vary in width and height. How you plan to use an article and where you will put it may determine to a great extent the ways in which you apply the principle of proportion. For example, in selecting a chair you would need to decide if you want a lounge chair, a medium-sized living room chair, a small "pull-up" or "side" chair. Body measurements, the way the chair will be used and space available may help you make this decision.





You should be especially conscious of scale when selecting furnishings for a room. Because the chair on the top is upholstered almost to the floor and has no lines to give it height, it appears even more heavy and bulky than it really is. Bulky pieces of furniture tend to make a small room look crowded because they are out of scale. The center chair is medium in scale. The tall back and curved arms contribute to the "lighter" look. The openness of the bottom chair as well as the actual size make it light in scale. Fig. 17.

In choosing sizes of articles for an arrangement, such as a grouping of pictures on a wall, accessories on a table or open shelf, or parts of a centerpiece, each part must be considered in relation to the others and to the whole. Observe and experiment, and you will increase your awareness of good proportion and scale.

Very often you can seemingly change the appearance of an area without actually doing so. This is known as optical illusion. For example, lines running in a vertical direction tend to slenderize and make an object appear taller. Lines running in a horizontal direction seem to make an object shorter and broader. As mentioned earlier, color and texture also affect proportion.

Scale may play an important role in creating optical illusions. Too many large or heavy pieces of furniture combined with patterned upholstery, draperies, wallpaper and/or floor coverings tend to make a room look smaller than it really is. But the same room will appear larger if the background colors and heavy pieces of furniture are light in value and grayed in intensity and if the bright intensities or dark values are used in small amounts.

In order to evaluate the principle of proportion and scale correctly, an entire room arrangement must be visualized. Each part is dependent upon every other part. One part may seem correct when seen by itself, but it may be entirely out of proportion when seen with other parts.

## HARMONY

Harmony may be defined as "fitting together" or a feeling of "oneness." This is your goal in applying the elements and principles of design. If you have failed to apply any one of the principles of design, then the result may be lack of harmony.

Let's use the arrangement in the picture to consider the way in which the various principles of design have been applied.

Informal balance has been used in arranging the furniture for the living and dining activities. Fig. 18. The large window area with its handsome patterned draperies is a center of interest. Dark values predominate in wood tones and are used to balance the light wood tones in the dining area. The floor is medium to light in value and gives a feeling of unity to the background and furnishings.

Rhythm has been created by the use of dark and light values, repetition of color and lines. Observe how the eye moves from the draperies around the room to the fireplace, across the sofa area and back to the window and dining area.

Emphasis has been created by the use of the hue—red and by the window treatment and grouping for the dining area.

The furniture is in scale for the room and activities. Accessories are in good proportion and arranged to complement the furniture groupings. Because all of the principles of design have been applied appropriately, there is harmony in this room.

Harmony is achieved when the elements are combined according to the principles of art. Elements might be compared to the ingredients of a cake. The principles are the directions for mixing the ingredients. If the ingredients for the cake are correct, measured properly and combined according to the directions of the recipe; the product should be successful. Planning a room is much the same. If you understand the elements properly and combine them according to the principles of art, then you can expect the results to be successful. If you are not pleased with the result, you may need to think about each element and principle of design and determine where and how the mistakes occurred.

Generally, the personality of each family member is considered when planning rooms to be used by the entire family. Strong likes and dislikes may be confined to an individual's bedroom or other personal room. However, as a family, you should strive to create a feeling of oneness or unity throughout the house.

Figure 18



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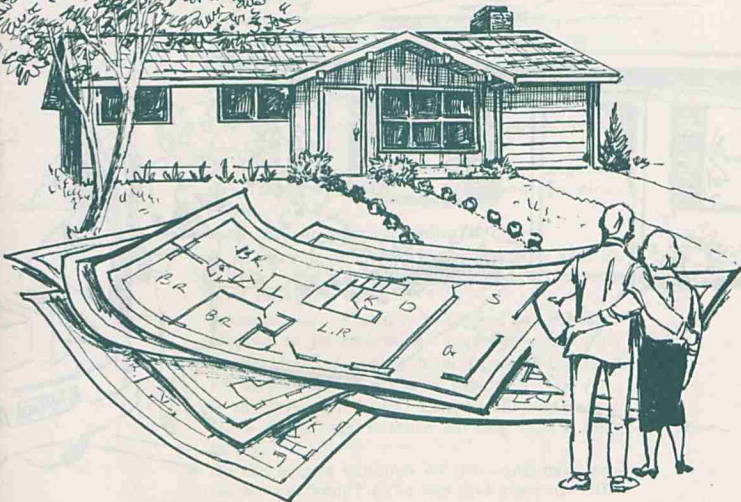
Marian Bartlett, Kentucky

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HOUSING, FURNISHINGS & CREATIVE CRAFTS  
AGRICULTURAL EXTENSION  
N. C. STATE UNIVERSITY, RALEIGH, N. C.



# Homes for Senior Citizens

-- A Check List --

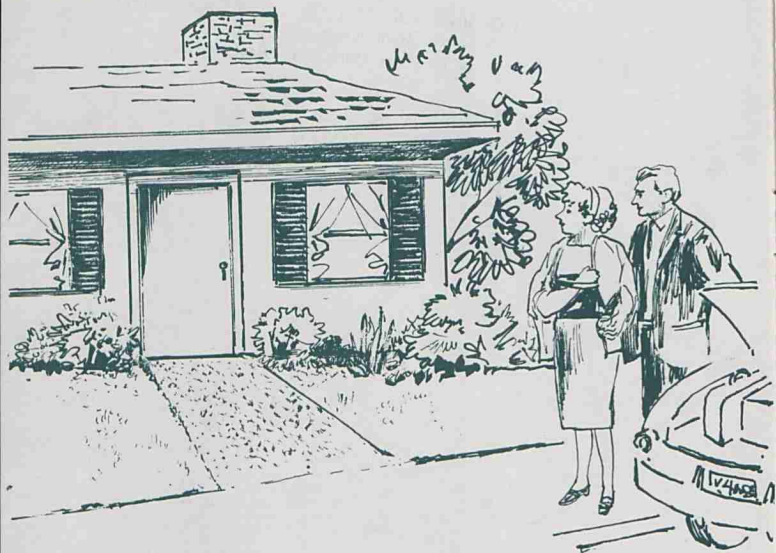
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## *Safety, Comfort, and Convenience*

When planning or remodeling a home where you will live after retirement, safety, comfort, and convenience are more important than ever before. The points listed below are as near ideal as possible and are based on available research. For most people, economy of maintenance is essential and some compromises are to be expected.

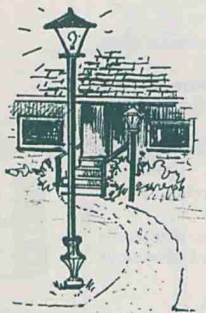
Checking the points listed in this circular should help you to decide about the suitability of the home where you now live, changes to consider, the selection of a new house, or the choice of a retirement home. Do not overlook the fact that retirement is a changing state which may alter your housing needs.

## LOCATION AND ORIENTATION

- Is the home in a residential neighborhood close to friends?
- Is the environment pleasant with private quarters where visitors can be received without embarrassment?
- Are the ages of other people in the neighborhood acceptable to you?
- Are transportation, shopping, churches, parks, and community centers convenient?
- Is the area free from heavy traffic, dangerous street crossings, excessive noise, and obnoxious odors?
- Is there an area for gardening?
- Is it possible to have a private sitting area on the protected side (preferably not west) for outdoor living?
- Is the amount of lawn to be mowed and the landscaping to be maintained reasonable for you?
- Is the land reasonably level to avoid the need for steps or steep walks or ramps?
- Is the driveway direct? Can the car be removed from the garage without backing into a busy street?
- Do the largest windows on the south have protective overhang? (The sun and glare are difficult to control in west and east windows.)
- Is there a pleasant view from the living areas? Can you see the activity of other people?

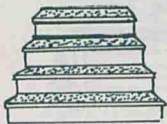
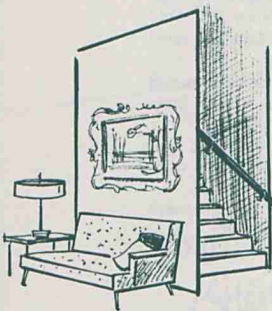


*Too many stairs  
for older people?*

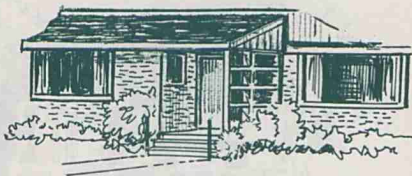


## STEPS AND WALKS (Eliminate steps if possible)

- Are steps, walks, and street well lighted? (It is a good idea to check these points at night.)
- Do walks, steps, and patio have a rough finish to reduce slipperiness when wet?
- Have precautions been taken to locate walks away from downspouts and eaves to avoid accumulation of water or ice in freezing weather?
- Is there an outside platform, undercover, at least 5 feet square, between the top step and the door?
- Are all indoor risers and treads of uniform size? (Seven inches high and an 11-inch step recommended.)
- Do ramps for wheelchairs have a satisfactory incline? (Between  $\frac{1}{4}$  inch per foot and 1 inch per foot.)
- When outdoor steps are necessary, are three or more risers included? (Six inches high and a 12-inch step.)
- Are living, sleeping, and work areas on the same level to save climbing stairs?
- Are abrasive treads or carpet used on stairs to prevent slipping?
- Is the slope of land and paving a minimum of 2 percent to allow for good drainage? (One-fourth inch per foot.)

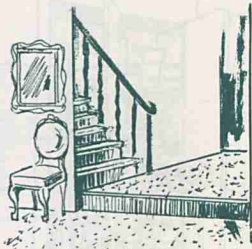


*Rough finish on  
steps and walks*

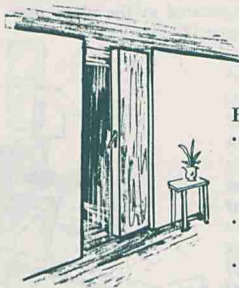


## FLOORS

- Are there changes in floor level or obstructions on the floor which might cause accidents?
- Do sliding doors and partitions have tracks at the top only and not on the floor?
- Have door thresholds been eliminated? (Weather stripping can be put on the bottom of the door, not on the floor.)
- Are kitchen and bathroom floors of easily cleaned skid-resistant materials, such as unglazed ceramic mosaic tile or unwaxed vinyl or vinyl asbestos?
- Do floors in living areas provide sure footing and comfort? (Wall-to-wall carpet, cork, and vinyl are suitable. Floor covering should be non-allergenic and not create static electricity.)

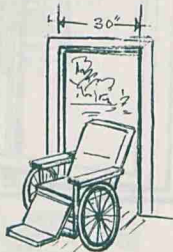


*Not this—one step is a hazard*



## HALLS AND DOORS

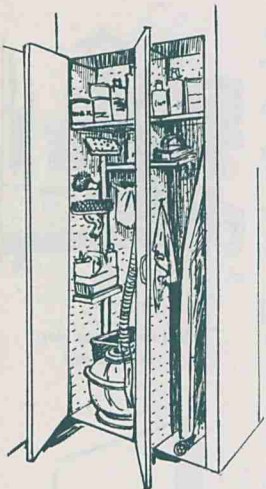
- Does the width of door openings provide a minimum of 30 inches clearance for a wheelchair? (This would require a 32-inch door—a 36-inch door is desirable.)
- Are the halls straight, at least 3 feet, 4 inches wide, and free of projections?
- Do doors close slowly to avoid hazards? (Spring-activated doors or those that swing in two directions should be avoided.)
- Do hinged doors open into the room rather than into halls or toward a flight of stairs?
- Do sliding doors have easily grasped pulls?
- Do interior doors with locks have a safety release so that the door can be opened from either side in an emergency?
- Can doors for walk-in closets be opened from the inside?
- Are handles on bi-fold doors positioned to avoid pinched fingers?





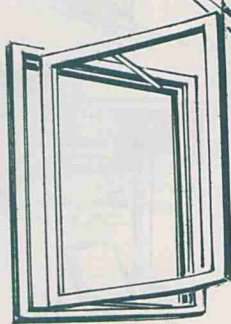
## STORAGE

- Is there sufficient storage space which can be reached without stooping?
- Is storage space accessible without climbing on a chair or stool? (Kitchen and closet shelves should have a maximum height of 72 inches and the lowest fixed shelf should be 26 inches above the floor in cabinets with doors. Drawers below the 3-foot level are desirable.)
- Has storage been provided for garden equipment and tools?
- Is there storage for hobby supplies at a convenient location?
- Are wardrobe closets at least 28 inches deep inside the doors?
- Is there a cleaning closet about 24 inches wide and 20 inches or more in depth (front to back)?
- Are the storage areas located at the place near where supplies will be used?

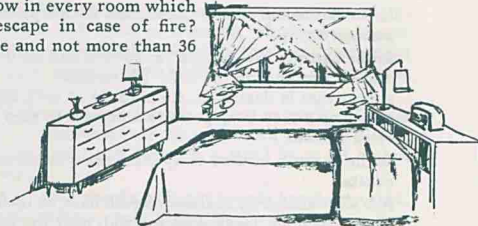


## WINDOWS

- Is the window area in each room at least 10 percent of the floor area—preferably 20 percent for the living area?
- Are window walls a light color and sunlit walls a darker shade to reduce contrasts of brightness?
- Do windows open and close easily? (Crank-operated hardware is desirable.)
- Are all windows cleanable on both sides while safely standing inside? (A casement window with each section a maximum width of 2 feet and equipped with a casement adjustment-type opener is one kind that meets this requirement. The adjuster permits the window sash to stand at right angles to the wall in the middle of the opening, allowing a person to reach both sides of the glass while standing inside.)
- Has hardware, such as cranks on casement windows, been selected so that it does not project into the room?
- Are screens removable from the inside?

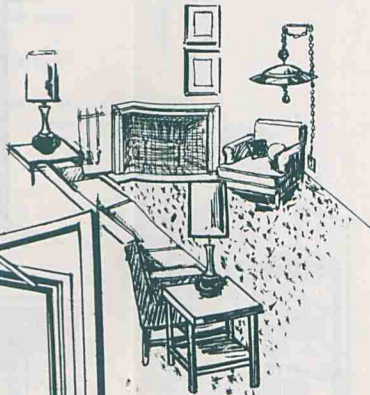


- Is there at least one window opening in every room that is visible from a low seat or from the beds?
- Is there at least one window in every room which opens enough for easy escape in case of fire? (Minimum, 24 inches wide and not more than 36 inches above the floor.)



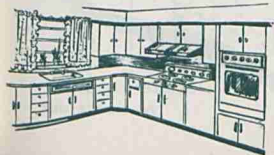
## LIGHTING AND WIRING

- Are there lights inside the front part of closets and storage areas? (Not over shelves or clothes poles.)
- Are convenience outlets 28 to 32 inches above the floor and placed so they do not interfere with furniture?
- Have night lights been provided in the bedroom-bathroom area?
- Are lights for general illumination in all rooms controlled by a switch located directly inside the door?
- Do rooms with more than one entrance have three-way switches or low voltage switches at each door? (These make it possible to turn the light on or off at each door.)
- Do wall switches which control lights have luminous cover plates?
- Are convenience outlets in the bathroom located out of reach of the tub or shower?
- Are there convenience outlets and switches near the bed for heating pad, electric blankets, lights, radio, and so forth?
- Are there enough wall outlets for portable lamps so that ceiling lights, which require use of a stool to change bulbs, can be avoided? (Pull-down ceiling lights or wall brackets are also possibilities.)
- Are there at least three light sources in the kitchen to light the sink, work counters, and range, in addition to general light?



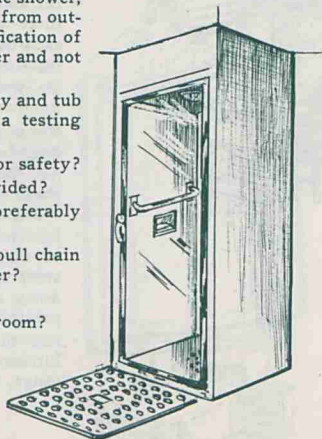
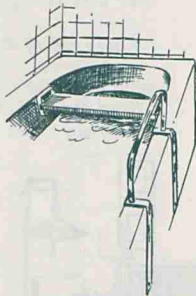
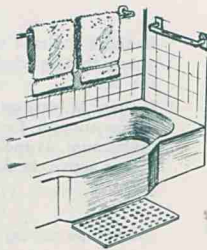
## KITCHEN

- Is there a single-lever mixing faucet at the sink for easy control?
- Are frequently used appliances, such as refrigerator and oven, at a height which permits use with minimum bending? Is there counter space beside the oven and latch side of the refrigerator door?
- Is there a provision for sitting to work? (This is more convenient if the undersink opening allows knee room and there is a stool 24 to 28 inches high.)
- Are there sturdy pull-out boards beside the sink, refrigerator, and range to increase work surfaces and for sit-down work?
- Is garbage removal simplified to save trips outdoors?
- Are work counters well lighted, without shadows, and at a convenient height?
- Are wall cabinet interiors well lighted (either natural or artificial light)?
- Are edges and corners of cabinet doors and appliances rounded? (Wall-cabinet doors, when open, should not project beyond the edge of the work counter.)
- If gas equipment is used, is it vented to the outside?
- Is adequate work counter space provided, including at least 12 inches at either side of the range so that pans will not be accidentally knocked off?
- Is the gas range located away from curtains and windows that open?
- Are range switches easy to use and identify with the burner or unit they control? (Switches at the front are more easily seen and safer than those on the back splash.)
- Is storage at a safe and convenient height?
- Are supplies and equipment stored at the point of first use?
- Is the dining area close to the cooking area and sink?



## BATHROOM

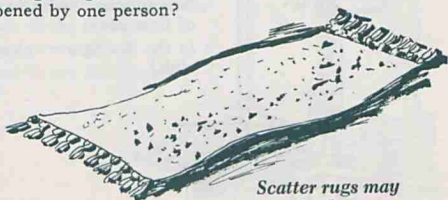
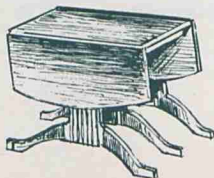
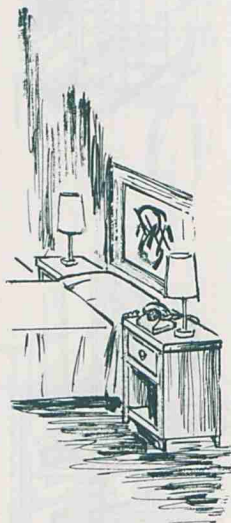
- Is there sufficient space for a second person to assist another?
- Is the bathroom close to bedrooms with a private passageway?
- Is the bathtub low, with a flat bottom and built-in seat at the end of the tub? (A nonskid floor or rubber mat is desirable. A standard 14 inch high tub, 5 to 6 feet long permits a person to step in for a shower.)
- Is the bathtub located away from the window and drafts?
- Are well-anchored horizontal grab bars, 40 inches above the floor, located on the wall over the tub? (A portable grab bar can be installed over the edge of the tub to help a person getting in and out.)
- Are the towel bars sturdy enough to use for a grab bar in an emergency? (The height should be about 40 inches above floor.)
- Is the shower stall adequate in size (about 3 feet by 4 feet)? Does it have a seat, a nonskid floor, and a well-anchored horizontal grab bar 40 inches above the floor?
- Are faucet handles easy to grip and turn? Are they free from sharp-pointed edges?
- Is there an automatic mixing valve in the shower, located so that it can be easily reached from outside? Is it well marked for easy identification of direction to turn for hot and cold water and not directly under the shower head?
- Are there mixing faucets in the lavatory and tub arranged to deliver mixed water to a testing point?
- Are all clothes hooks above eye level for safety?
- Has safe storage of medicine been provided?
- Is mechanical ventilation provided, preferably with a timer switch?
- Is there an emergency push button or pull chain for a call bell within reach of the bather?
- Is there some one to answer the bell?
- Is there supplemental heat in the bathroom?





## FURNISHINGS

- Have throw rugs and rugs with free edges been eliminated?
- Do tables and other furniture have rounded edges?
- Do chairs, sofa, and tables stand firmly on the floor without sliding when leaned upon?
- Is furniture light enough in weight for moving if necessary?
- Are seats of chairs and sofas the right height and depth for the person using them to easily sit down or get up?
- Are foot stools no higher than 12 inches? (Higher stools can cause back strain and are a safety hazard.)
- Are the arms of chairs made of wood to save wear and tear or else padded with fabric which is easy to care for and easily replaced?
- Are upholstery fabrics the sturdy and tightly woven type which will shed dirt and take hard wear?
- Do drawers and doors of storage chests open and shut easily and have stops to prevent pulling them all the way out?
- Are chests shallow in depth so that contents are visible and accessible?
- Are beds firm with plenty of free space around them? (In general, avoid convertible beds because of the strength and agility required in making them up.)
- Is there room for a bedside table by the bed with a telephone and pull-cord alarm in case of emergency?
- Is there space and connection for a television in a desirable location in relation to other furniture?
- Is there space for a small dining table to seat four, such as a drop leaf, gateleg, or extension table which is easily opened by one person?

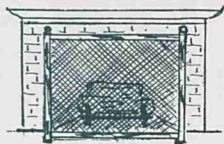


*Scatter rugs may be dangerous*



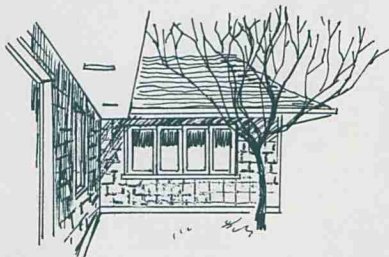
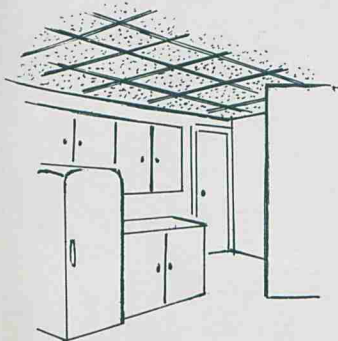
## HEATING

- Will the heating system maintain an even temperature of 75 to 80 degrees in every room?
- If there is only one thermostat, is it located in the room where temperature is most important? Is it away from windows, lamps, television, and located where the sun will not shine on it in winter?
- Are thermostat dials easily read?
- Does the heating system require a minimum of attention and maintenance?
- If electric, kerosene, or gas room heaters are used, have they been checked by a service man each year for overheating?
- Is a screen provided for use with an open fire?



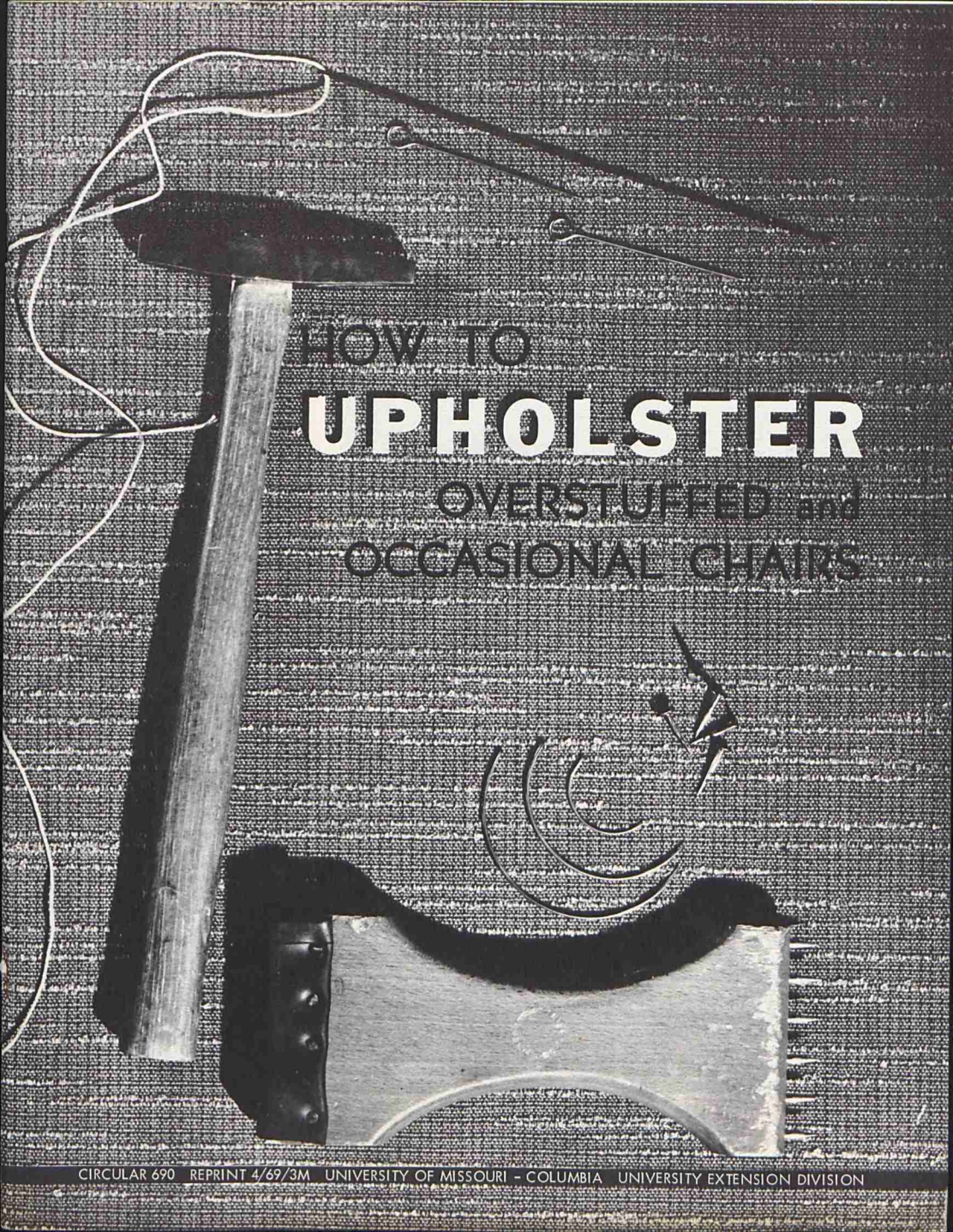
## MISCELLANEOUS

- Is noise reduced by acoustical materials?
- Do exterior materials need little or no upkeep?
- Have dust-catching interior trims been avoided?
- Is there a fire alarm system?









HOW TO  
**UPHOLSTER**  
OVERSTUFFED and  
OCCASIONAL CHAIRS





## HOW TO

# UPHOLSTER

OVERSTUFFED and OCCASIONAL CHAIRS

Louise Woodruff  
and  
Alice Mae Alexander\*

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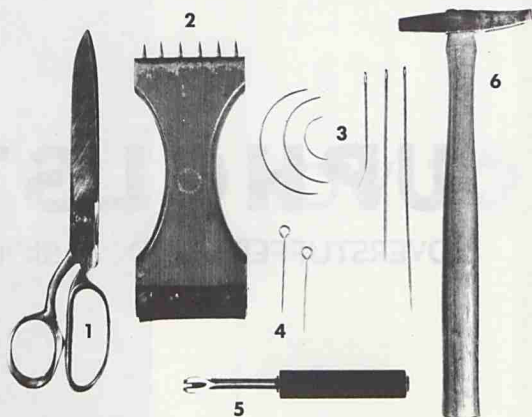
THE BASIC UPHOLSTERING PROCESSES shown in this bulletin are easy to learn. You can find how to adapt the basic processes to different styles of chairs by noticing how they are used as you take off the old cover and padding.

The beginner should learn on a simple article such as a stool or chair seat. To get good results, you must work carefully and use your artistic judgement. It helps if two persons can work together.

Before you begin, decide whether the chair is worth the time and expense necessary to do a good job. Costs depend on the kind of materials used. A chair can often be completely restored with good quality new materials at from one-fourth to one-half the cost of a new one.



## GETTING READY TO UPHOLSTER



**Fig. 1—Professional tools**

1. Large shears
2. Webbing stretcher
3. Upholsterer's needles

4. Upholsterer's pins
5. Tack puller
6. Magnetic hammer

### Tools and Supplies

You can do simple upholstery with the tools available in most homes. A few professional tools help make the work easier. (Fig. 1) You can buy most tools and supplies from mail-order companies (Fig. 2). Local upholsterers may sell what you need.

### For Most Upholstery Work You Will Need:

Heavy, sharp shears

#### Hammers

1. Medium weight claw hammer
2. Magnetic tack hammer (optional)
3. Upholsterer's mallet (optional)

#### Yardstick, ruler, and tape measure

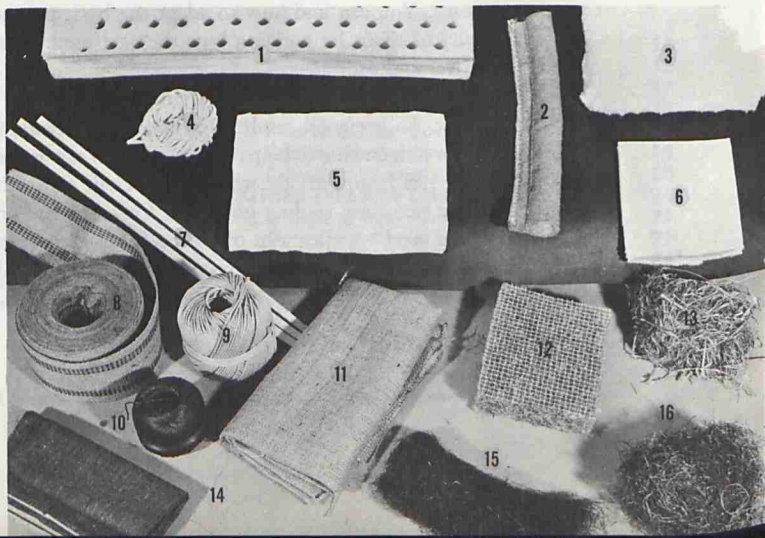
Pins, large pin cushion, needles, and thimble

A carpenter's apron (good to hold tools)

A means for raising the chair about 22 inches off the floor (You can use boards on saw horses.)

**Fig. 2—Upholstering supplies**

1. Cored rubber
2. Hard front roll
3. Cotton felt
4. Cable cord
5. Slab foam rubber
6. Muslin
7. Cardboard strips
8. Webbing
9. Spring tying twine
10. Sewing twine
11. Burlap
12. Rubberized hair
13. Tow
14. Denim
15. Hair
16. Moss



## Other Supplies You Will Need For Special Processes:

### A. To prepare the chair:

1. Screw driver with a thin blade to remove tacks.
2. A tack puller or ripper (optional).
3. Pliers to remove tacks with broken heads.
4. Screws, glue, angle irons, corrugated fasteners, or plastic wood for repairing the frame.
5. Supplies for refinishing wood.

### B. To put on webbing:

1. Jute webbing,  $3\frac{1}{2}$ " to 4" wide. Measure the number and length of strips. Add  $1\frac{1}{2}$ " at each end for tacking.
2. Webbing stretcher—buy or make (optional). Make from  $\frac{1}{2}$ " hard wood as shown in Fig. 3. Drive ten-penny nails in one end. Cut off heads and file to tapering points. Cover the other end with felt, rubber, or leather.

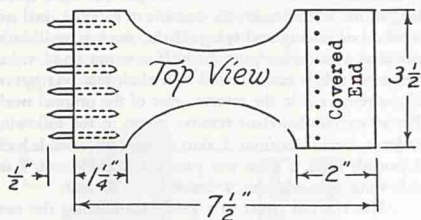


Fig. 3—Homemade webbing stretcher.

3. A block of wood, about 1" x 2" x 5" for a substitute webbing stretcher.
4. No. 12 or 14 webbing tacks.

### C. To work with springs and moss or hair padding:

1. Springs—Re-use springs which are in good condition. Buy for replacement the type and size originally used. Springs from old automobile seats may be suitable.  
Kinds of springs used in chair frames are:
  - a. Cone springs on band or bar. (Fig. 4). Sold by length of bar. Don't use on webbing.
  - b. Hourglass shape (Fig. 4) heavy for seat, and light for back.
  - c. Zig-zag Springs (Fig. 5) with clips, connecting links and cement coated nails to apply.
2. Twine
  - a. Waxed linen or cotton mattress or upholsterers' sewing twine. A half-pound ball will do several chairs.

- b. Six ply no. 60 hemp, jute, or flax tying twine. Flax wears best but costs most. A one-pound ball will do several chairs.

### 3. Tacks (Fig. 6).

- a. No. 14 for webbing and springs. (About  $\frac{1}{2}$  to  $\frac{1}{2}$  lb. for a large chair)
  - b. No. 3 or 4 for light use—no. 6 for heavy use with fabric. (About  $\frac{1}{2}$  lb. for a large chair.)
4. Heavy burlap or cotton mesh to cover springs and edge rolls.
  5. Upholsterers' moss or sheets of rubberized, curled hair. (About 4 or 5 lbs. for a club or wing chair).
  6. Upholsterers' cotton (felted padding). About 3 to  $3\frac{1}{2}$  yards for club or wing chair (not including cushion).
  7. Needles.
    - a. Straight upholsterers' needles, 6", 8" or 10" for springs and padding.
    - b. Curved upholsterers' needles, 4", 5", or 6" to sew burlap to padding and springs and cushion units.
    - c. Five or six-inch sack needles can be substituted for upholsterers' needles for an easy project.
  8. Muslin for undercover
  9. Prebuilt edge rolls (if used)

### D. To use foam padding:

1. Plastic or rubber foam of the type and thickness needed.
2. Adhesive tape, 1" to 3" wide.
3. Ball point pen or indelible pencil.
4. Muslin for tacking strips or self-adhesive tacking strips.
5. Rubber cement.
6. Tacks, no. 3 or 4, or stapler gun.
7. Water for scissors.
8. Paper for pattern.

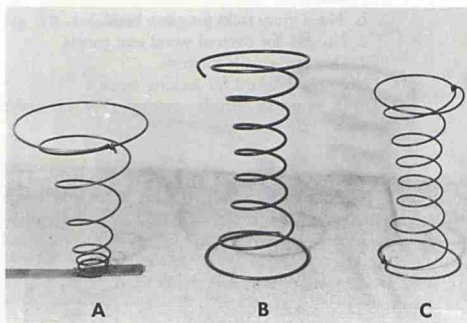


Fig. 4—Springs—  
(A) Spring on metal bar. (B) Hour-glass shape for seat. (C) Hour-glass shape for back.

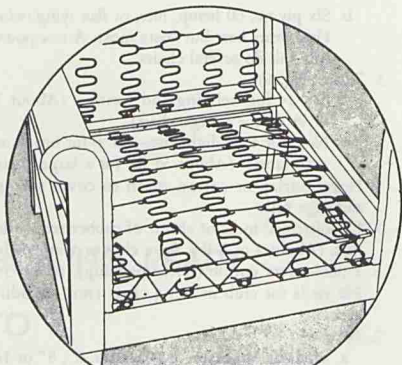


Fig. 5—Zig-Zag springs.

**E. To put on outer covering:**

1. Covering material (see yardage table).
2. Heavy duty sewing thread to match cover (About 3 spools).
3. Muslin for undercover (see yardage table).
4. Black cambric for dust cover on bottom.
5. Welt cord, fringe, or gimp braid for trim.
6. Large pins or upholsterers' pins for temporary fastening.
7. Ice pick or regulator to correct lumps under muslin.
8. Dressmaker's chalk.
9. Cording foot for sewing machine.
10. Cutting table.
11. 1½" to 3" curved needle for invisible joining of fabric.
12. Tacks.
  - a. No. 3 or 4 for light tacking and no. 6 for heavy.
  - b. No. 4 gimp tacks for gimp braid.
  - c. No. 1½ for covered wood arm panels.
  - d. Decorative nails for trim.
13. Eight oz. cardboard for tacking strips.
14. Denim to match outside covering. (For seat under separate cushion).

**Your Work Place**

You will want a cleared working place where you can leave the chair until finished. Good light and ventilation are important. Provide space for laying out tools and

Fig. 6—Upholstery tacks commonly used.

supplies. Raise the chair to a comfortable working height (about 22" off the floor).

**Preparing the Chair**

Examine the chair to see what repairs you must make. If padding is lumpy or sagging it probably means that the foundation needs repair. By removing the cloth from the bottom of the chair you can see what repairs the springs, webbing, or padding may need. To repair springs or webbing you usually must strip entirely the parts of the chair involved. You can repair the seat without taking padding from arms and back. Don't take apart more of the chair than is necessary. Before you take the chair apart measure the length of new cording you will need.

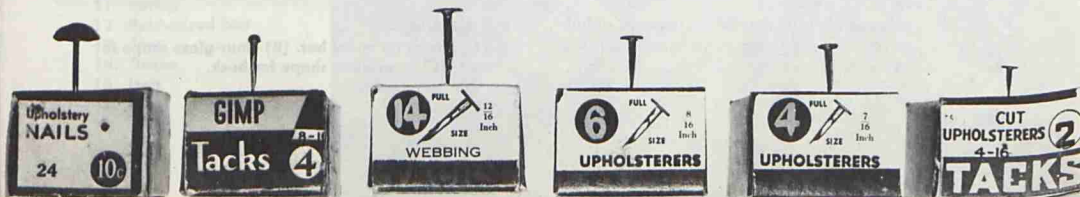
Use tack puller, screw driver, or ripper to remove tacks. Drive the tool under the tack head with a hammer or upholsterer's mallet. If you knock tacks out lengthwise of the grain of the wood, you are less likely to split it.

As you remove the old covering, padding, and springs note exactly how they were put on. Note spring height, the size of tacks, the amount of padding used and method of sewing and tying. If the work is well done, use it as a guide for your work. If it is not good, try to improve it. It is easier to tell how the cover was put on if you remove it in the reverse order of the original work. For an overstuffed chair remove pieces in the following order: 1. cambric bottom, 2. skirt (if used), 3. outside back, 4. outside wing, 5. front arm panels, 6. outside arm, 7. inside wing, 8. inside arm, 9. inside back, 10. seat.

Use the old cover as a guide for cutting the new cover. Of course, if you add more padding, the new cover will have to be larger. Clean and label each piece, as some of it may be reused. Don't wash pieces to be used as a pattern, since they may shrink.

You may save for reuse rolls of padding from the front of the seat. Leave edge rolls tacked to the wood if possible. Other good padding may also be reused. Tow or sisal padding (a fiber that looks like excelsior) is usually broken and matted and should not be reused. Remove the dust from moss or hair by beating it outdoors. Pull it apart to fluff it.

Remove all tacks from the frame, even those with broken heads. Clean, repair, reglue, reinforce, or restyle the frame if needed. See bulletin, "How to Glue Furniture," available at your county Extension office. If there are a great many tack holes from previous upholstering fill them with plastic wood. Refinish exposed wood if it is marred. (See Missouri bulletin on refinishing furniture.) Clean the springs. Remove rust from them with steel wool. Pull and stretch them to straighten.





# UPHOLSTERING A WING CHAIR

## Tack On Jute Webbing

Put the chair upside down on the work surface with the front next to you. Measure and mark the location of webbing strips on the bottom of the seat frame. Strips should be no more than 2 to 2½ inches apart—2 inches is better. When possible, locate webbing so two pieces cross where a spring is to be placed.

Begin with a back-to-front webbing strip which is near the center of the seat. Place end of webbing on the back of the seat frame with 1 inch extending beyond the frame edge. Place five No. 12 or 14 webbing tacks as in Fig. 7-A. Don't use old tack holes. Fold the short end of webbing over the five tacks and put four more a little below the first ones (Fig. 7-B). Stretch the webbing straight across the seat to the front edge. Hook the

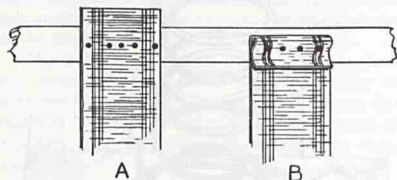


Fig. 7—Tack on webbing.  
(A) Step 1  
(B) Step 2

stretcher into the webbing as in Fig. 8. Then press it down as in Fig. 9 to pull the webbing very tight. While it is held with the stretcher (Fig. 9) put in five tacks as before. Cut webbing 1½" beyond the tacks. Fold over and fasten with four tacks. Put on the rest of the front-to-back strips the same way.

Next stretch and tack the side-to-side webbing strips. As you place these strips, interlace them over the front-to-back strips as in Fig. 10.

To stretch a short piece of webbing, pin it to an extra piece of webbing with a mattress needle until it is tacked (Fig. 11). If you cannot get a webbing stretcher you can stretch webbing by wrapping it around a block of wood. Brace the wood against the chair and pull the webbing as tight as possible (Fig. 12). Also one person can stretch webbing with a pair of pliers while another tacks it. Next put webbing on the chair back (Fig. 10).

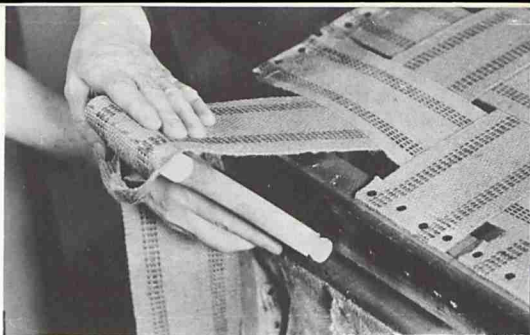


Fig. 8—Stretch webbing with a webbing stretcher.

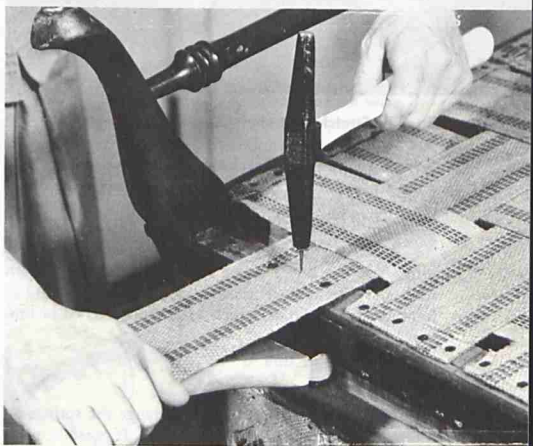
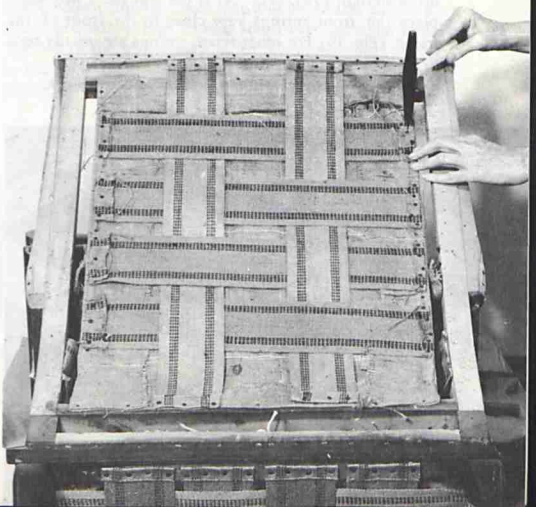


Fig. 9—Hold tension and put in tacks.

Fig. 10—Interlace webbing.





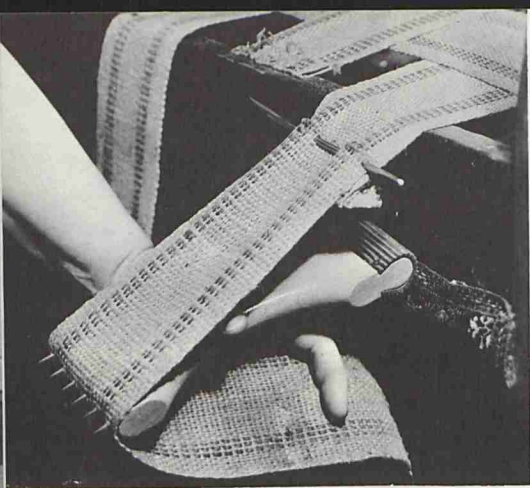


Fig. 11—Stretching a short piece of webbing.

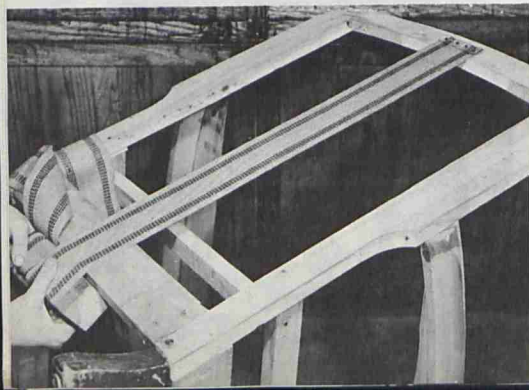
Stretch two pieces of webbing up and down and one piece across the inside arm frame. The webbing here supports the burlap and padding even though springs are not used. No webbing is needed on the wings.

*Metal webbing* can be used in place of jute webbing. You can buy a repair kit of metal webbing with tools and directions. You can also use metal webbing to reinforce jute webbing which has been stretched or broken.

### Sew Springs

Turn the chair right side up. Arrange the springs on the webbing as they were placed before. If possible, place each spring where two pieces of webbing cross but move them if necessary for a better arrangement. From three to twelve springs may be used in a seat. Add springs if too few were used originally. When possible line them up in straight rows. (Fig. 14) If the seat has a wire edge, place the front springs very close to the front of the frame. (Fig. 19) For other types, springs are usually back

Fig. 12—Stretching webbing with a wooden block.



about 2 inches from the front.

Mark the position of each spring on the webbing. Remove all but one of the corner springs which you will sew first. Be sure this spring is right side up. On top, the spring wire is either bent down or twisted around the first coil (Fig. 4). This is to keep the sharp end of the spring from working through the padding. Place the loose end of the spring on the side toward the center of the seat. Thread about 36 inches of mattress or upholsterers' sewing twine into a straight upholsterers' needle or sack needle. Fasten the twine with a heavy knot on the bottom of the webbing. Take three or four closely spaced stitches over the bottom spring coil and very close to it, in four different places. (Fig. 13) Carry the twine under the webbing to the next spring. Space stitches so you can move from one spring to another without cutting the twine. When new twine is needed, tie it on the end of the first piece. When all springs are sewed, tie the twine to fasten.

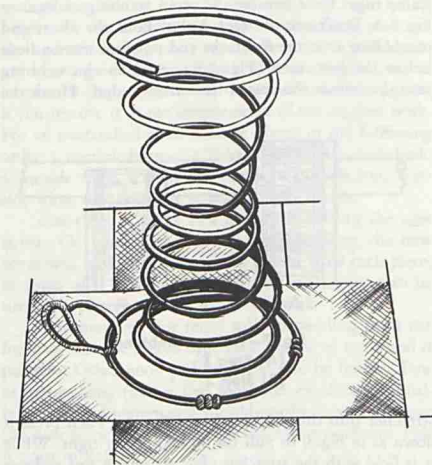


Fig. 13—Sewing spring to webbing.

### Tie Springs

The shape, comfort and durability of the chair depend a great deal on how well you tie the springs. Various knots are used for this purpose. Professional workers select a method because of its speed or quality or both. The knot shown here is strong and easy to do.

The way you tie seat springs depends on how high the springs are to stand above the frame, whether the finished seat will be round or flat on top, and whether it has a wire edge or a hard stuffed edge.

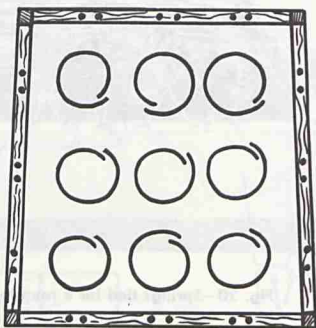


Fig. 14—Locate a pair of tacks at each end of a row of springs.

**Flat Top Seat**—We will first show how to tie springs on the wing chair which has a flat top seat with a hard stuffed front edge. You tie each row of springs exactly through the center, first from back to front, then from side to side. Then tie them in both directions diagonally. That means that each spring will be tied in 8 places. (Fig. 18) In cheap construction, diagonal ties are often omitted. When redoing a chair of that kind always add the diagonal tie.

Use 6-ply, No. 60 tying twine. As an anchor for tying twine, drive a pair of no. 12 or 14 webbing tacks, about one-half inch apart, partially into the seat frame, straight in line with the end of each row of springs (Fig. 14). Leave tacks high enough so twine can be wrapped around them.

Measure and cut off the amount of twine you need for one row of springs from *front to back*. This will depend on the number of springs in the row and whether or not you use a return tie. For this chair which has a row of three springs and a return tie, cut off a length about three times the distance across the seat from back to front over the top of the springs.

Tie first the center row of springs from back to front. About 20" from one end of the twine, loop the twine over the pair of tacks on the back rail as in Figure 15A. The short end will be used for the return tie. Pull

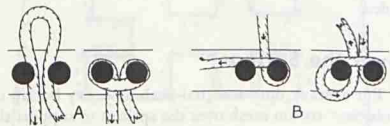


Fig. 15—Fasten ends of cord to frame.

- A. At back of chair.
- B. At front of chair.

the twine to draw it very tightly around the tacks, well under the tack heads. Otherwise the edge of the head may cut the twine. Drive the tacks down firmly.

With the long end of twine, tie across the row of springs at points 2, 3, 4, 5, 6, and 7 as in Fig. 17. Use the knot shown in Fig. 16. Press the springs down to

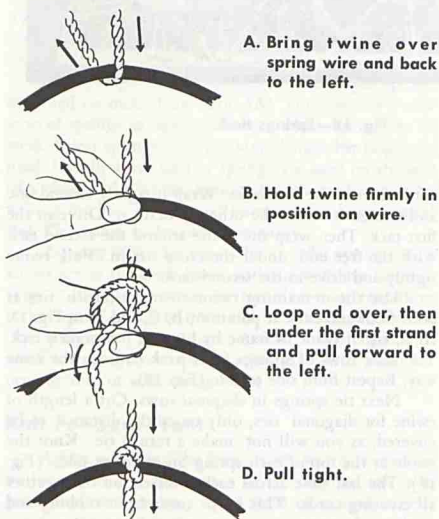


Fig. 16—Knot used to tie springs.

the correct height as they are tied. The height and spacing of spring ties will determine the shape of the seat. For a chair with a removable cushion you usually tie springs down slightly lower than the lower arm and back stretchers. All springs should stand vertical when tied. The top of the seat should be flat, sloping slightly down to the back. Next fasten the twine to the front seat rail (Point 8, Fig. 17). Fasten as shown in Fig. 15B. Bring the

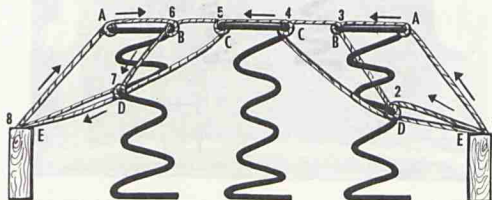


Fig. 17—Return tie method for three springs in a row.



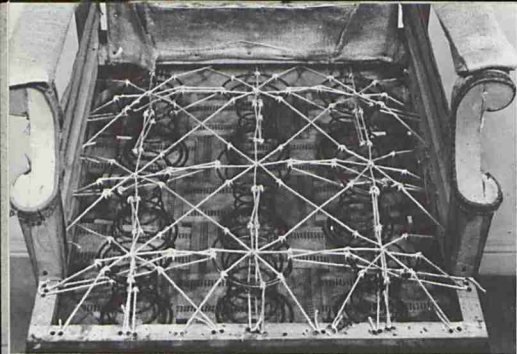


Fig. 18—Springs tied.

cord between the two tacks. Wrap it tightly around one and stretch it across the other to brace it. Drive in the first tack. Then wrap the twine around the second tack with the free end under the cross strand. Pull twine tightly and drive in the second tack.

Use the remaining twine to make return ties at both front and back at points A, B, C, and D in Fig. 17. At E, fasten twine to frame by looping it around a tack. Tie other rows of springs from back to front the same way. Repeat from side to side (Fig. 18).

Next tie springs in *diagonal* rows. Cut a length of twine for diagonal ties, only twice the distance to be covered, as you will not make a return tie. Knot the twine at the top of each spring on opposite sides. (Fig. 18). The last time across each intersection tie together all crossing cords. This keeps cords from rubbing and cutting.

The only difference in tying springs for a seat with a wire edge is that the front row of springs is pulled forward so their top coil can be attached to tie together (Fig. 19). Sometimes the top coil of front springs is spread to a larger circumference than on the other springs.

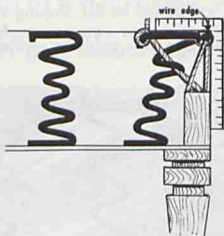


Fig. 19—Anchoring spring to wire edge at front of seat.

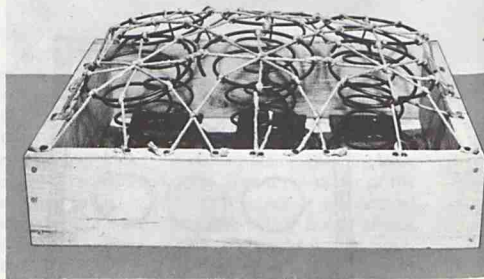


Fig. 20—Springs tied for a rounded seat.

**Round seat**—For a rounded seat top a return tie is usually not used. For this kind of seat all springs are tied directly to the top coil (Fig. 20). Cut length of tying twine from  $1\frac{1}{2}$  to  $1\frac{3}{4}$  times the distance across the seat. Tack one end of twine to the back of the seat frame as in Fig. 15A. As you loop the twine around the top coil of the first spring, press the spring down to the height of the seat frame. (It will be higher when released). Hold the spring in position while you complete the knot. Tie the top coil of the same spring on the opposite side. When tied, all springs should stand straight (not pulled to one side), but the top coil of the spring next to the rail will tip slightly toward the rail. (Fig. 20).

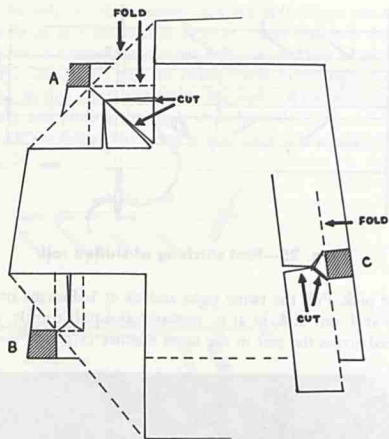
Continue to tie other springs in the same row across the chair as you did the first one (Fig. 20). Have another person press springs down to the proper level as you tie them. Springs will be about the same distance apart at the top as at the bottom. The length of twine you leave between the springs determines the height of the finished seat. Be guided by the height of the original seat. Too much twine lets the springs stand too tall. If springs are tied too low, the seat is too hard. At the opposite side of the chair tack the twine to the seat frame as in Fig. 15B. Study spring height and make needed adjustments before you tack twine permanently.

Tie from side to side in the same way. Make diagonal ties as described for the flat seat.

**Chair Back**—Tie springs in the chair back like those in the seat. Use a return tie only when the chair has a flat back with a square edge. Diagonal ties are not needed.

## Cover the Springs

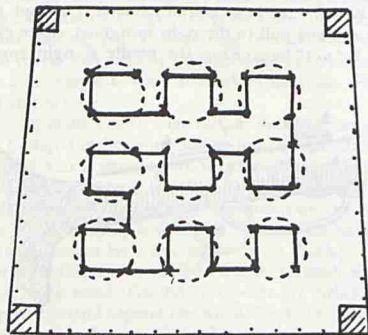
Put a heavy duty material such as heavy burlap or upholsterers' cotton mesh over the springs to support the padding. Tack to the top of the seat frame turning under 1" on each edge. Start to tack in the center of each side and work toward the corners. Space tacks about  $1\frac{1}{2}$ " apart. Pull the material firmly, but not tight enough to



**Fig. 21—Fitting material at posts.**  
**A. Corner post not covered with fabric.**  
**B. Corner post with fabric to cover post.**  
**C. Side post not covered.**

depress the springs. If necessary, cut and fit material around the posts (Fig. 21).

Sew the burlap to the top of the springs. This is an important step that is often omitted in cheap construction. It cuts down wear by reducing friction on the cloth. Use a 4-6 inch curved or sack needle and sewing twine. Take two stitches at three or four places on each spring. Locate stitches so you can go from one spring to another without breaking the twine (Fig. 22).



**Fig. 22—Sew burlap to springs.**

Cover the back springs as you covered the seat springs. If the springs are wired together and encased in burlap which is still in good condition, re-tack it to the frame. Or you can re-cover such a unit with burlap before tacking it on.

### Other Types of Springs

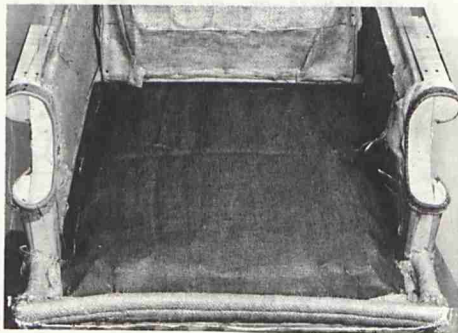
It is usually better for the amateur to repair a chair with the same type springs originally used, but springs can be added to some chairs which did not have them originally.

**Bar Springs**—Some chairs have cone shaped springs mounted on metal bars. (Fig. 4A) You can buy a new strip of springs to replace old ones which are broken or weak. Select springs with the same length bar originally used. Usually three bars of springs are used on the seat of a chair and nine on a sofa. Attach to the chair by nailing the bar to the wood frame with a large headed nail. Tie springs as described previously.

**Zig-Zag Wire Spring**—This is a flat spring which arches across the chair frame without webbing support. (Fig. 5) Place strips across the frame no more than three inches apart. Attach to front and back frame with metal clips and cement coated nails. Attach to side frame with small springs. Join strips of spring crosswise with connecting links or with spring twine.

### Roll For Seat Front

A firm roll along the front of the seat is needed for both comfort and appearance. If the original roll is in good condition, you may use it again by tacking or sewing it to the wood frame or spring covering. As you put on the old roll, keep the outer edge flush with the front edge of the chair. (Fig. 23) If a new roll is needed, you can save time and labor by buying one ready made.



**Fig. 23—Cover springs with burlap and tack hard roll to seat frame.**



There are various ways to form and hand stitch a roll on the chair. We shall explain one method to use for a seat with a wire edge and one for a seat without.

**Hard-Edge Seat**—Sew an extra strip of burlap across the front of the chair to cover the extra edge padding. If the chair has a rectangular cushion, sew the burlap on a line drawn through the center of the front row of springs. If it has a "T" cushion, attach the burlap on a line drawn about 2 inches back of the front edge of the front posts. Mark this line with chalk on the spring covering.

Measure the chair to get the size of the burlap covering for the roll. Cut the burlap as long as the distance from the chalk line on the seat to the bottom of the front chair rail plus 3 inches (about 10-12 inches on most chairs). Cut it 6 inches wider than the chair seat. Note the *length* in this case is the shorter dimension. *Length* in upholstery always means the up and down measurement (vertical to the floor) Center the burlap over the chalk line on the chair seat. Sew in place with the curved needle and mattress twine. Lay a thick pad of moss under the burlap. (Fig. 24) Use enough moss so that when compressed firmly the roll will be about 1 1/4 inches high and flush with front seat rail. Distribute the moss evenly across the seat. Pull the burlap tightly over the moss and baste tack it to the front seat frame (Baste tacking is driving tacks part way in to hold material temporarily). Use an ice pick to distribute moss evenly. Add more moss at each end if needed. When the roll is firm and smooth, you are ready to hand stitch it.

Draw a dotted chalk line across the front curve of the seat. (Fig. 24). Draw lines C and D, one inch on each side of the dotted line. Draw line E and B 1/2 inch beyond C and D. Draw lines A and F, 2 inches beyond B and E.

Do the *first row* of stitching on lines E, F, A and B as shown in Fig. 25. Begin at the left side of the seat. Put the needle in at 1, out at 2, in at 3 and out at 4. Work the padding well into the roll with the needle or

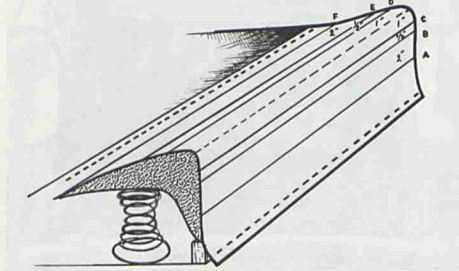


Fig. 24—Moss stuffing for edge roll with guide lines drawn for stitching roll.

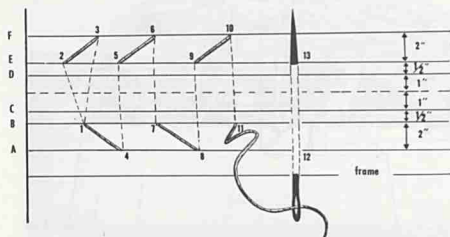


Fig. 25—First stitching of stuffed roll.

ice pick. Pull the twine tight and tie at 1. Put the needle in at 4, out at 5, in at 6, out at 7 and pull tightly. Proceed across the seat in the same manner (Fig. 26)

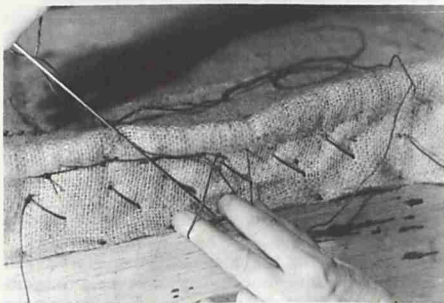


Fig. 26—Second row of stitches for edge roll.

Next make a *second row* of stitching on lines D and C (Fig. 27). Put needle in at 1, out at 2, in at 3 and out at 4. Now tie the loose end of twine at 1 around the twine at 4 and pull to the right to tighten. Make each stitch 3/4" to 1" long. Keep the needle at right angles

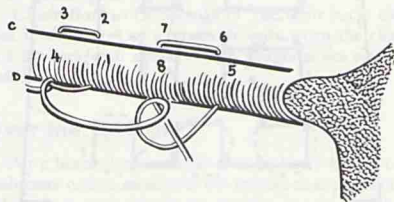


Fig. 27—First stitching in place. Second row being done.

to the roll and draw moss into the roll. Next put the needle in at 5 and out at 6, in at 7 and out at 8. Loop the twine hanging at 4 around the needle at 8 as shown in Fig. 26 and 27. Pull the twine firmly to the right. Continue in this same way across the front of the seat, regulating and pulling the moss into the roll.

**Wire-Edge Seat**—Sew a wire-edge seat as shown in Fig. 28.

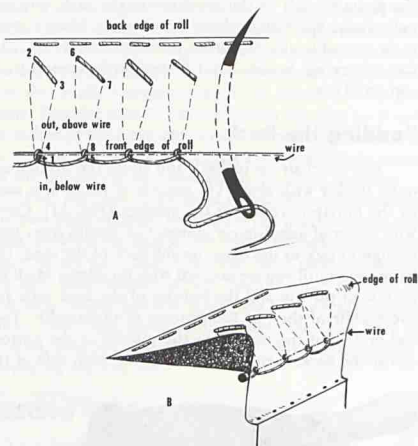


Fig. 28—Stitch for roll with wire edge.

### Edge Roll For Wood Frame

A small roll of padding should be tacked on the edges of the frame of the arms, back and wings which will be covered. This roll (1) keeps stuffing from working away from the edges, (2) gives a firm foundation for other padding, and (3) keeps edge of wood from wearing the cover. You can buy prebuilt edge rolls, make them on a chair or make them and tack to the chair. (Figs. 29, 30 and 31).

To make a small edge roll on the chair, cut a piece of burlap 2 inches wide and as long as the edge to be padded. Cut it straight with the thread for straight edges and bias for curved. Use wider burlap strips for larger rolls. Place  $\frac{1}{2}$ " of one edge of burlap on the edge of the wood, covering it with a  $\frac{1}{2}$ " strip of cardboard. On outside curves lay a few pleats in the burlap to give needed fullness. The cardboard must be flush with the edge of the wood (Fig. 29). The other  $1\frac{1}{2}$  inches of burlap will extend beyond the wood. Tack the burlap and cardboard to the wood. Pack some moss into a very firm even roll about  $\frac{3}{4}$ " to 1" in diameter—tapered to  $\frac{1}{2}$ " at the ends (Fig. 30). Lay the roll of moss on the

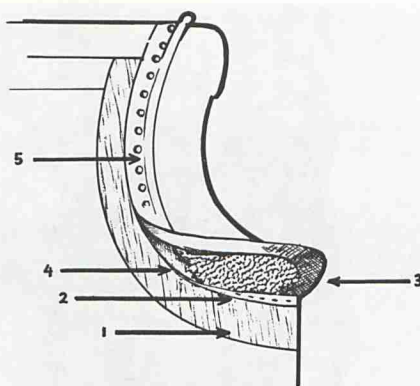


Fig. 29—A stuffed edge roll for front of arm.

1. Wood frame
2. Cardboard strip
3. Burlap strip
4. Moss
5. Completed roll

cardboard, pull the burlap very tightly over it, and tack to the frame with a second row of tacks just outside the first (Fig. 29).

You can make a separate edge roll by sewing a firm packed roll of moss into a strip of burlap with upholsterers' twine. Tack this roll onto the edge of the wood as for a commercially made roll.

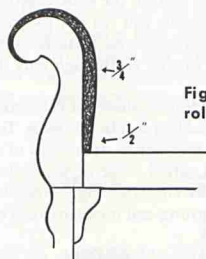


Fig. 30—Shaped edge roll on curved arm.

### Padding Seat With Moss or Hair

You are now ready to put moss or hair padding on the seat, inside back, inside arms and wings. You will need about 4 to 5 pounds of moss for this wing chair. Over this padding, cotton felt is used to give a smooth surface.

**Moss Padding on Seat Springs**—Fluff about one pound of moss and spread it over the burlap covering the

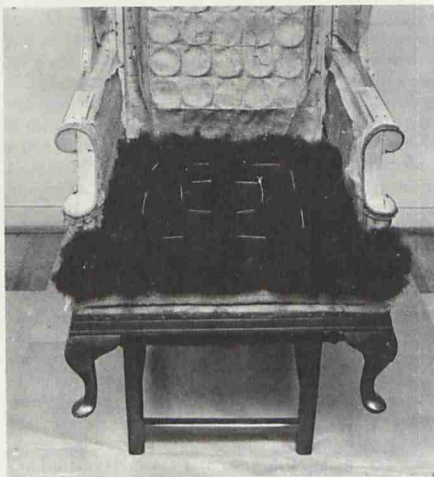


Fig. 31—Sew moss padding to seat.

seat springs. Use enough so you cannot feel the springs through it. This is a layer of loose moss about 2 inches thick which can be compressed to  $\frac{3}{4}$  inch. Pack the moss evenly and firmly over the entire seat area (Fig. 31). Padding for a seat with a loose cushion is thinner than for one without. Sew the loose moss to the burlap base with a large curved needle and a long strand of mattress twine (Fig. 31). Tighten the twine and tie the ends together. If you have no long curved needle you can sew the moss with a straight needle. Put it back and forth between the springs and webbing so stitches go through only the moss and burlap.

**Rubberized Hair Padding**— Sheets of rubberized curled hair may be used as padding in place of moss. This is sold in  $\frac{3}{4}$  inch or 1 inch thicknesses. It consists of an even layer of rubber coated curled horse or winter hog hair attached to a firm mesh backing. (See Fig. 2—No. 12) It is lightweight, resilient, strong and inexpensive. You can cut it easily with scissors.

For an even flat layer of padding simply cut rubberized hair to the desired size and cement, sew or tack it in place. Have hair side up. At places where you need thicker padding simply put extra pieces of hair padding under the top layer. You can bevel the edges of the sheets of rubberized hair by trimming with scissors.

**Cotton and Muslin Cover**—Always put a layer of cotton felt padding over the moss or hair. Cut so cotton comes just to the sides of the seat frame. Simply lay cotton over the seat. You may have to use a few tacks to hold it on the arms and back.

At this point a professional worker would stretch the outer covering over the padding. It is easier, however, for the beginner to shape each part if he first puts on a muslin undercover. Cut muslin large enough to turn under 1 inch and baste tack to the frame all around (drive tacks in only part way), so you can later make needed adjustments. Fasten muslin first in the center back, then center front, then center of each side. Work toward the corners. Keep the threads of the muslin straight each way and pull evenly. Space tacks about 1 inch apart. Miter corners to fit smoothly around corner posts and arms (Fig. 21). Cut out excess material and fit smoothly around front corners of seat.

### Padding the Back

Lay the chair on its back and cover the inside back quite thickly with about  $1\frac{1}{2}$  pounds of moss. Sew moss to the burlap covering of the springs (Fig. 32). Cover with a layer of upholsterers' cotton. Cut muslin cover large enough to tack to the frame on the back of the chair. Use baste tacks until you are satisfied with the shape. Mark the middle of the top and the bottom of the back rails and the middle of the top and bottom of the muslin. Tack the middle of the muslin to the middle of the bottom rail at the back, then again 5 inches on each side of the

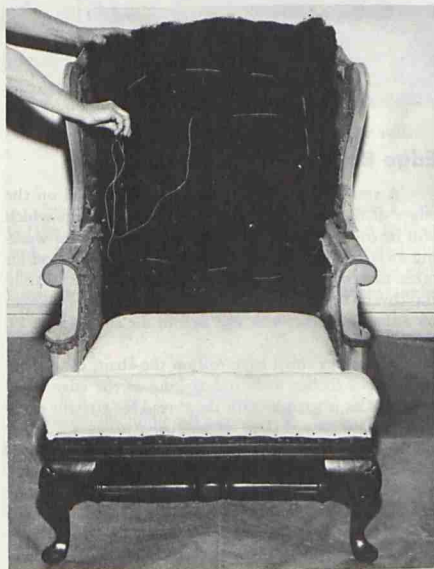


Fig. 32—Tack muslin on seat and sew padding on chair back.



center. Pull the muslin tightly up over the inside back while you compress the filling. Tack the muslin at the middle of the top rail, then again 5 inches on each side of the middle. Cut muslin to fit around the bottom corner posts. Leave a strip of muslin at the corner called a "string" which you pull down between the bottom rail and seat rail and tack on the front edge of the rear post. Baste tack across bottom rail. You must remove these tacks when you put the outer cover over the seat and back. Next, cut the inside back muslin to fit around the arms. Make two cuts on the weave of the muslin from the edge toward the arm. Locate them about 2 inches below the finished upright top of the arm and  $\frac{3}{4}$  inches apart. Pass the muslin "string" under the arm so it can be tacked at the extra rail. You will make this same cut in the outer covering. A cutting error you might make on the muslin can be corrected on the outer covering.

Pull the muslin which is below the arms between the two back rails and tack. Pull the muslin above the arms, between the rails to the back and tack on the rear edges of the back post. Continue baste tacks across the top rail. Have another person compress the padding as you tack. Work fullness at corners into evenly spaced pleats that face downward. When the chair back is smooth, firm and shaped as desired, drive tacks in completely on top and sides.

### Padding the Arms

Tack burlap or cotton mesh tightly over the webbing on the inside of the arm frame. (Fig. 32)

Cover the inside and top arms with moss and cotton as you did the back. (Figs. 33 and 34). Make the moss thickest at the front of the arms and pack very tightly. The amount you use governs the shape of the arms. You can make the top of the arms more firm and durable if you pad and cover them before you pad the inside arms (Fig. 35).

Cut muslin to cover arms. To find the size, measure the length from the outside of the bottom arm rail up over the filling on the inside arm to the outside edge of the tack rail, under the top

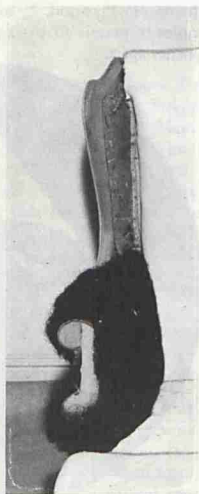


Fig. 33—Stitch padding to burlap on inside arm.

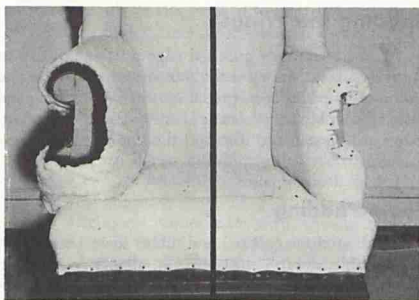


Fig. 34—Finish inside arm.  
Left—Cover moss with cotton.  
Right—Fit and tack muslin.

arm rail. For the width, measure from center of the front post to the back of the back post. Add two inches extra to both length and width.

Keep the grain of the muslin straight. Baste tack until you are satisfied with the shape of the arms. Tack first at the top of the front of the arm. Next tack at the front of the wing where it joins the arm. Cut muslin here to fit around the wood. Next pull the muslin over the edge roll on the front of the arm. Stretch around front curve and tack. (Fig. 34) Stretch muslin through the point where arms join seat at the front and cut to fit around the wood post, and tack. Stretch and tack top outside arm along the bottom arm rail (Fig. 35). Next cut muslin to fit around the point where the bottom arm rail meets the bottom back rail. Leave a "string" here to attach to inner side of rear post below the bottom back rail. Study shape of both arms, make needed adjustments, finish driving tacks and trim the muslin. Leave baste tacks where muslin is tacked to side seat rail. You must take out these tacks when you put on the outer covering.

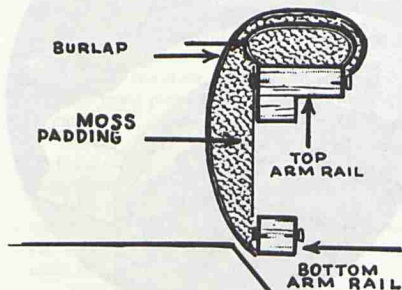


Fig. 35—Cross-section of arm with two-compartment padding.



## Padding the Wings

You have already attached edge rolls and burlap to the wings. Next put on moss and cotton padding as you did on other parts. Then stretch muslin over padding and baste tack on back and outside of wing frame. When both wings are smooth and firm and the same size, tack permanently.

## Foam Padding

Both urethane (plastic) and rubber foam are resilient, comfortable, durable, lightweight, allergy-free and resistant to moth, mildew and bacteria. They never lump, mat, shift, or sag, and can be washed. They are easy to use for upholstery.

They respond differently to pressure, however. Urethane has a slower "bounce back" than rubber. This reaction is not a disadvantage. Urethane combines excellent support with easy response to pressure. You have the sensation of sitting "in" rather than "on" urethane.

Urethane is not damaged by dry cleaning solvents, is resistant to oils, ultra-violet light, and abrasion. Rubber must be protected from all of these. Urethane can be used in direct contact with plastic while rubber deteriorates plastic unless they are separated by a layer of fabric. Urethane is more slip-retardant than rubber. This means that with urethane, cushion welting stays in place and fabric covering is not likely to creep or wrinkle. Urethane is tough and can stand tacking that would tear rubber. Urethane is about half the weight of rubber and is also less expensive.

In upholstery, the two foams are used much alike.

Any difference is due to greater toughness of urethane which requires less protection from strain.

**Urethane Foam**—is sold in sheets of different thicknesses and densities. Sheets are uniform throughout. Molded cushions with open inside pores are made. Urethane has various trade names such as: polyfoam, polyurethane, polyether, polyester, etc.

**Rubber Foam**—Types used for upholstery include solid slab, cored stock, and molded cushions. Use firm or medium density on plywood seats, medium on spring and webbing seats and soft on arms or back of chairs.

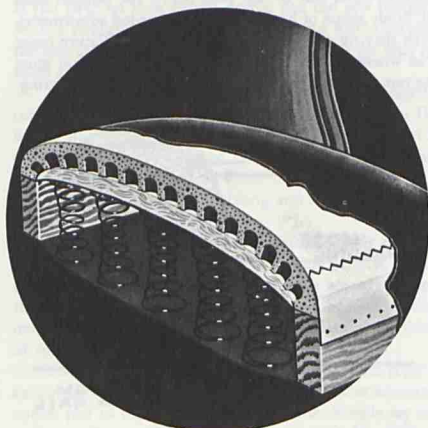
**Solids slabs** or sheets are used for thin padding on wood or metal bases, over other padding or on back or arms of chairs. It is from  $\frac{1}{4}$  to 2 inches thick.

**Cored stock** has molded openings on the underside (See Fig. 2, No. 1) Usual thicknesses are  $1\frac{1}{2}$  to  $4\frac{1}{2}$  inches. Use it where deeper cushioning is needed over plywood, webbing, coil springs or zig-zag spring. You can cement two layers together to make a loose cushion.

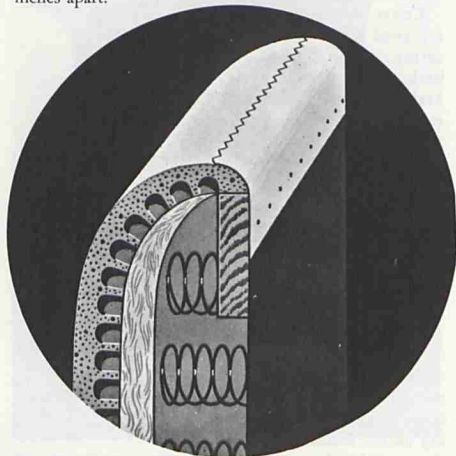
**Molded cushions** in a variety of sizes and shapes can be bought already shaped and ready to use.

## Bases for Foam

Both Urethane and rubber foam may be used over any of these bases: (1) Coil or zig-zag springs covered with burlap or with webbing and a thin layer of padding (Fig. 36). (2) Interlaced strips of jute webbing about 1 inch apart and tacked to the top of chair frame (Fig. 37). If webbing must be spaced wider, use burlap under the foam. (3) Plywood,  $\frac{3}{8}$  to  $\frac{3}{4}$  inches thick with  $\frac{1}{4}$  inch holes to permit air passage. Space holes about  $3\frac{1}{2}$  to 4 inches apart.



A. On seat.



B. On back

Fig. 36—Foam over springs and padding.



Fig. 37—Webbing base for foam.

## Steps in Using Foam

1. **Make a Pattern** as a guide for cutting foam. Fit paper on area to be covered. Mark exact size, fitting it carefully around arms and posts (Fig. 21). Next draw an oversizing allowance on all sides of pattern. This extra size is needed to make the covering material fit snugly and stay in place. Amounts to add to all sides of the pattern are: (a) for slab foam on small pieces,  $\frac{3}{4}$  inch all around; (b) for cored foam on chairs, and love seats,  $\frac{1}{2}$  inch all around; (c) for larger two-cushioned davenport and built-ins,  $\frac{3}{4}$  inch on all sides; (d) for full length davenports  $2\frac{1}{2}$  inches on the length.

This oversizing allowance should be a little more for soft densities of foam and a little less for firm densities. For a rounded "cushion" edge (Fig. 39B) add an extra  $\frac{1}{2}$  inch. Mark openings for arms and posts  $\frac{3}{4}$  inch smaller than actual measurements to get a snug fit. Cut out pattern.

2. **Cut Foam**—Fasten pattern to smooth side of foam with adhesive or masking tape. Mark around pattern with an indelible pencil (first dampen the foam on the cutting line) or a ball point pen. Cut on

the outside of the marked line with sharp shears (6-inch blades preferred). Dampen shears for easy cutting.

Cut clear through foam which is  $1\frac{1}{2}$  inches or less thick. To cut thicker pieces hold shears vertically and cut through the top inch only. Move to the edge of the table, spread, and cut through the lower part. For a beveled edge cut vertically first, then trim to desired contour. Smooth with sand paper if needed.

Reinforce rubber foam with strips of adhesive tape before making curved cut-outs for arms or posts. This is not needed on plastic foam. Lay strips of tape to extend at least 1 inch inside cutting line. Re-mark from pattern and cut through tape. For inside cuts with straight edges, reinforce cut edges with 1 inch strips of tape.

3. **Test Foam**—Put foam on chair to try out for comfort and appearance. Fasten to frame with adhesive tape where needed. If you want a more rounded or shaped effect you can add an extra piece of foam or other padding under the regular piece (Fig. 38). Cement or sew insert in place.

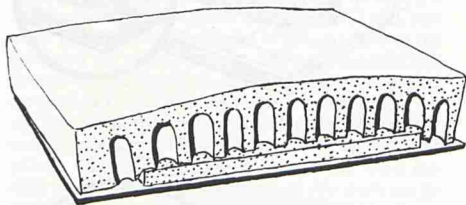
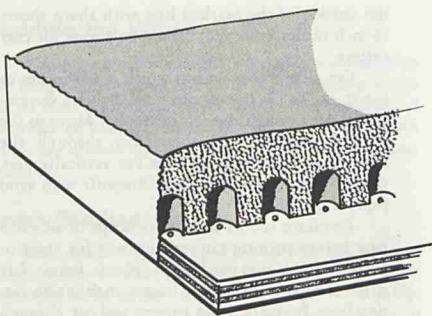


Fig. 38—Insert extra piece of foam to shape.

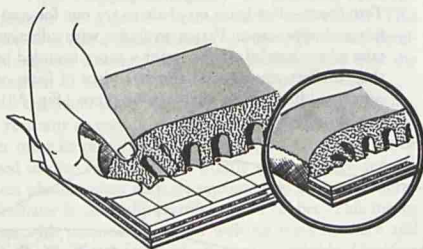
Save left-over pieces. They can be cemented together and used. Reinforce joinings with tape. You can use scraps for cushion stuffing or toys.

4. **Use a Tacking Strip**—A tacking strip is used on the edge of foam to reinforce it, to attach it to the frame or to shape the edge. A tacking strip can be used any of the three ways shown in Figure 39. You can buy a pressure sensitive tape or use strips of muslin 2, 3, or 4 inches wide attached with rubber cement. Spread a 1 inch band of cement on both the edge of the muslin and the edge of the foam. When the cement is tacky, put the two bands together. Pull the muslin slightly to keep it from wrinkling. If the edge of the foam is curved, snip the muslin to fit flat. Don't put the cemented edges under strain for several hours.

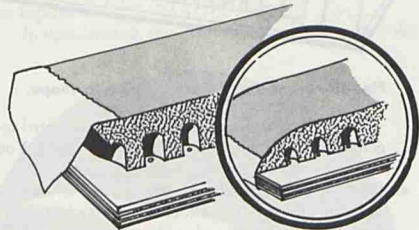
Tack foam to frame through tacking strips (Fig. 36, 37, 39, 40, and 41) using no. 3 or 4 tacks. Baste tack until shape is satisfactory.



A. Square edge



B. Cushion edge



C. Feathered edge

Fig. 39—Using tacking strip.

5. **Cement to Frame**—Flat pieces of foam may be cemented directly to chair. Spread a cross of cement in the center of the piece then a band of cement entirely around the edge. Apply cement to both edges, let set until tacky then press together. Press lightly until properly located then press firmly into place.
6. **Apply Cover**—Avoid fabrics that stretch excessively. Put a muslin cover over the foam if the outside cover has a high pile or is loosely woven. Plastic

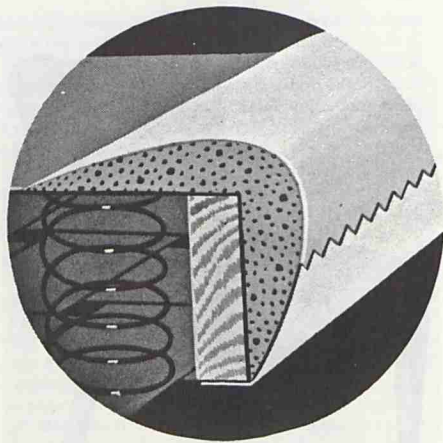


Fig. 40—Foam edge roll on seat.

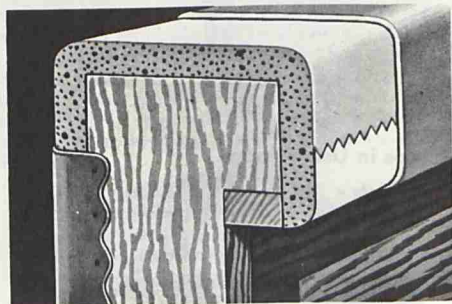


Fig. 41—Foam on chair arm.

covering deteriorates in direct contact with rubber padding. If plastic covering does not have a fabric back, use muslin between it and rubber foam. Other covering materials may be put directly over foam.

### Using Separate Foam Cushions

Molded cushions may be bought in many sizes and shapes. If you are replacing a spring filled cushion, buy a new foam one  $\frac{3}{4}$  to 1 inch longer and wider than the cord cushion measurement. Make a fabric cover for a foam seat cushion  $\frac{3}{4}$  to 1 inch smaller than the cushion.



## Plan the Outer Cover

Before you start the outer cover, examine the chair and make any needed adjustments in the padding or muslin. Smooth or add extra filling if needed.

Lay old cover on the chair to check for size and for location of designs in the fabric. Plan to change the size or shape of the new cover to provide for changes you made in the thickness or shape of padding. An amateur will find it a little easier to cut the new cover a little larger than the old to give a margin of safety in fitting.

If you use a pile fabric, cut it so the direction of pile on the finished chair is from top to bottom and from back to front.

Block out on the new material all the main pieces so you can avoid waste in cutting. If you are to cover cording for seams, plan where you will cut strips for this use. If cording is to fit around curves it must be cut on the bias. If all seams are straight you can cut cording on the straight of the grain. Cut strips  $1\frac{1}{2}$  inches wide.

Join strips for cording with a 45-degree angle seam as in Fig. 42. This lessens bulk at the seam. Press seams open. Stitch the strip over cotton welt cord. Use a cording foot on the sewing machine and stitch as close as possible to the cord.

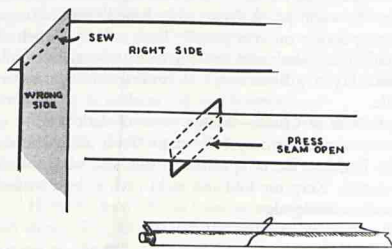


Fig. 42—Joining strips for cording.

When using the old cover for a pattern, match the lengthwise and crosswise grain on the new material. Draw the cutting line on the new material with chalk. Mark slashes from the old cover with chalk. Check them on the chair before you slash the new material.

If the new material has a stripe or design, be sure that both arms are alike, that large designs are centered on major pieces and that stripes on joining pieces match.

## Putting On the Cover

Use the following method for putting the outer cover on a chair which has wood exposed around the bottom and a cording finish. Methods of putting covers on

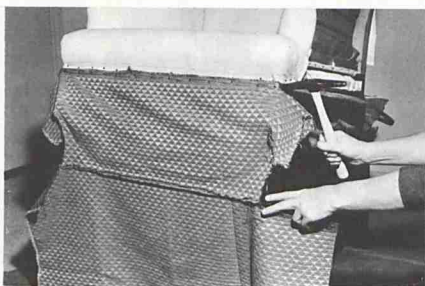


Fig. 43—Blind tack front seat edge.

other styles of chairs are described on pages 21 and 22.

**Seat**—First, tack cording just above the wood frame all around the bottom of the chair. Have the finished edge of the cording against the finished wood.

You can use denim or lining material for the part of the seat which is always covered with a cushion. You will need from  $1\frac{1}{2}$  to 2 yards of this material so you can also use it for piecings and "stretchers." To fit the piece on the front of the seat, pin and then sew in darts at the front corners. Machine stitch the front to the back seat piece. Blind tack the lower edge of the seat front to the frame over the cording (Fig. 43). Use no. 6 tacks and tack through cardboard strips to make a smooth edge. Release the baste tacks that hold the inside arm and back to the seat frame. Pull the covering smoothly over the seat and tack it to the frame (Fig. 44). Begin to tack on the center of each side and move toward corner posts. Slash material to fit smoothly around posts. If you don't cut far enough you can't stretch the material smoothly. If you cut too far you may leave a hole. Slashing and fitting material is one of the arts of upholstery that you learn from experience.

Fig. 44—Turn seat cover back and tack to frame under arms and back.







Fig. 45—Blind tack lower outside arm to frame.

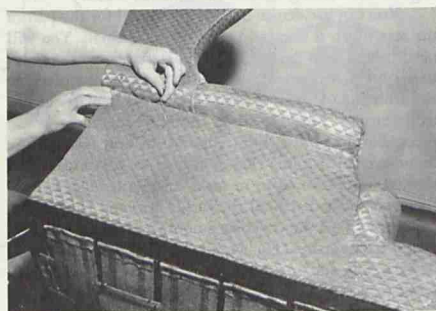


Fig. 46—Sew top of outside arm in place.

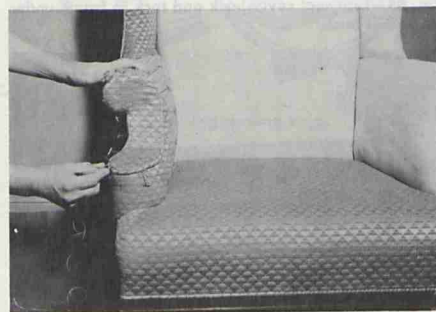


Fig. 47—Sew shaped panel on front of arm.

*Inside Back, Arms and Wings*—Put on the same way as you did the muslin undercover.

*Outside Wing*—Tack cording around the outer edge of the wings. Place cardboard in the lip of the cord to hold it in place. Bend cardboard and cording around gentle curves but snip them to lie flat around sharp corners. Locate outside wing cover and baste tack at two or three places to hold it temporarily. Trim and turn under  $\frac{1}{2}$ " at the front edge where it joins the cord. Slip stitch this at the front edge where it joins the cord. Slip stitch this edge to the cord using a small curved needle and heavy duty sewing thread. Tack the back edge of the wing on the outside back of the chair and on the bottom edge where it will be covered by the outside arm. Repeat on the other wing. (Fig. 45)

*Outside Arm*—Test the fit of the outside arm pieces and mark the turn-under allowance at the bottom with pins. Blind tack the bottom with a cardboard strip as you did seat front (Fig. 45). Pin top and front edges in place. Sew with the small curved needle and heavy duty sewing thread (Fig. 46). Slash and cut away excess material to fit around curves. Tack back edge on the back of the frame.

*Outside Back*—Put on like the outside arm. You can attach the back with gimp tacks instead of sewing it.

*Front Arm Panel*—Tack cording around the edge of the front arm panel. Baste tack shaped piece of covering temporarily on arm panel. Turn under  $\frac{1}{2}$  inch all around. Trim, slash and cut out to fit smoothly around curves. (Fig. 47) Blind stitch to cording with the curved needle.

*Bottom of Chair*—Tack a piece of dark cambric or denim over the bottom of the chair. Turn under the raw edges. Begin in the center of each side and work toward the corners. Keep the fold and tacks back at least  $\frac{1}{4}$  inch from the outside edge.

## Covering Separate Cushions

Directions for rebuilding the inner unit in a separate cushion are given in another Missouri bulletin. If you are to make only a new outer covering for the cushion use the old cover as a pattern. If the inside has been changed, the size of the outer covering may have to be changed also. Unless material ravel badly, use a  $\frac{1}{2}$  inch seam allowance. Measure around the four sides of the cushion to find the length of the boxing you need. Cut boxing the depth of the cushion plus a  $\frac{1}{2}$  inch seam allowance on both sides.

Cut the cushion on the straight of the material and center any design in the fabric. Mark the seam lines with chalk. Mark the center of each side of both the cushion top and bottom.

Baste the cording to both the cushion top and bottom, exactly on the marked seam line. Start at the mid-

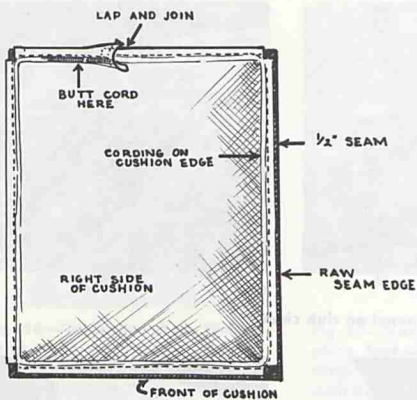


Fig. 48—Sew cord to cushion top and bottom.

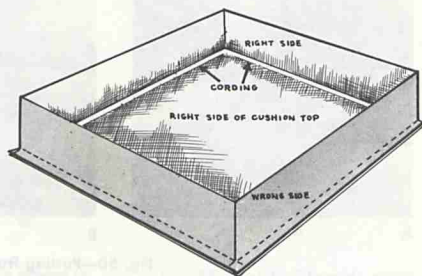


Fig. 49—Join boxing to cushion top.

dle of the back. Place the finished edge of the cording toward the inside of the cushion piece (Fig. 48). Clip cording to fit around sharp corners. To join ends of cording, rip open about 2 inches at each end. Cut off ends of inner cord so they butt where they meet. Pull one strip of cover over the joining. Fold other end back about  $\frac{1}{2}$  inch and sew the two ends together (Fig. 48). Machine sew cording to cushion top and bottom.

Seam boxing strips together and press seams open. Check length of boxing by laying it around the cushion. Mark on the boxing the center point of each side of the cushion.

Have both cover and boxing wrong side out as you join them. (Fig. 49). Match the four center points of the boxing to the top of the cushion on the cording seam

line. Pin and baste boxing to the cover, working from the center to the corners. Ease in extra fullness at each corner. Machine stitch the boxing very close to the cording.

In the same way pin, baste and stitch the boxing to the bottom cover along the front and about  $\frac{1}{3}$  of the way down each side. Leave the rest of the side and back open to insert the cushion unit. Turn the cover right side out, shaping corners from the inside. Press.

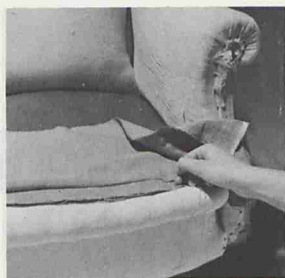
Place the cushion unit in the new cover. Turn down the seam allowance along the open section of boxing. Pin boxing to the seam line on cushion top with upholsterers' pins spaced about 1 inch apart. Ease in fullness at the corners. Blind stitch opening with heavy duty thread.

## OTHER TYPES OF CHAIRS

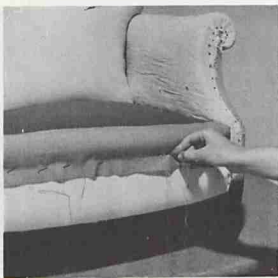
### A Club or Easy Chair

The springs and padding for a club or easy chair are put on like those of the wing chair just described. Use the original method as a guide for putting on the outer cover. When there is *no* exposed wood around the bottom of the chair you attach covering on the outside of the chair at the *top* first. Fig. 50 shows how to put on front seat panel. Put on *inside* arm and back like the wing

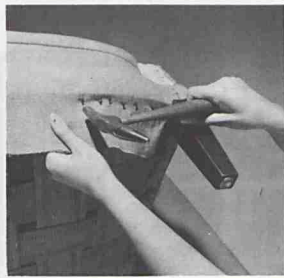
chair. Put on *outside* arm and back as follows: (1) tack trimming cord where needed on edges (Fig. 51), (2) blind tack sections of cover at top (Fig. 52 and 53), (3) turn down and stitch to cording on each side (Fig. 54), (4) tack under bottom of chair, (5) cover and attach front arm panel as in Fig. 47. Fig. 55 shows the completed chair.



A



B



C

Fig. 50—Putting front seat panel on club chair.

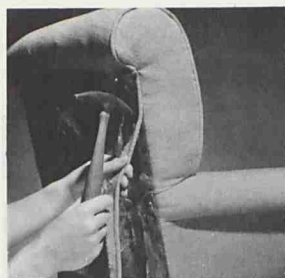


Fig. 51—Tacking cording on the back edge.

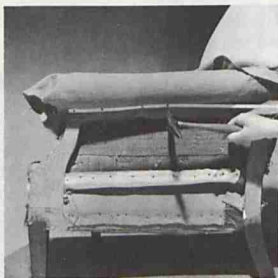


Fig. 52—Blind tacking outside arm.



Fig. 53—Blind tacking outside back at top.

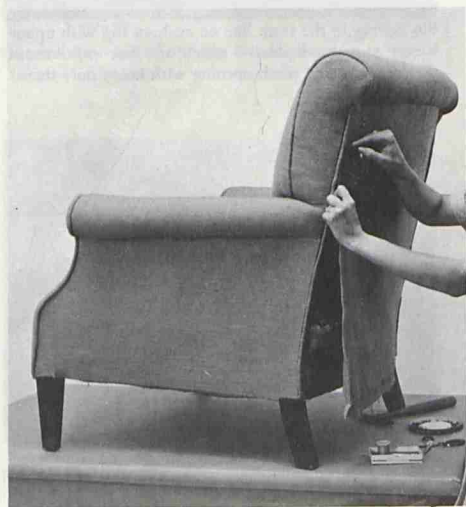


Fig. 54—Slip stitch outside back to cording.



Fig. 55—The finished club chair.



**Fig. 56**—The fireside chair. Webbing and springs in place, covered with burlap and hard edge roll put on.



**Fig. 57**—Moss padding sewed in place. Seat ready for cotton padding. Back webbing covered with burlap.



**Fig. 58**—Finished fireside chair.

## Occasional Chairs

When you upholster occasional, Victorian or platform chairs use the basic processes described for putting on webbing and springs, tying and covering springs, making rolled edges or using moss, hair or foam padding. In general follow the original method used as you reupholster a chair. You may wish to add springs to chairs which did not have them. Or you may want to use foam padding on chairs that previously had spring cushions.

*The fireside chair* in Figs. 56, 57, 58 has a seat with springs on webbing. Springs are tied for a round top as in Fig. 20. The back is padded with a thick layer of moss

covered with upholsterers' cotton.

*The Victorian chair* (Figs. 59, 60, 61) has springs tied with return ties for a flat seat as in Figure 17. A hard edge roll is made on the seat. A gimp finishing braid will be used to cover the raw edge on the outside of the cover where it is tacked to the seat rail. When the outer cover is heavy and firm it is not necessary to turn the outer edge under when the gimp is used. Begin seat gimp at one back corner post. Begin gimp on the chair back at the center bottom. Begin gimp for the arm at the inside center of arm pads. You can tack gimp on with



**Fig. 59**—Burlap is slip tacked over the padding before stitching the hard roll around seat edge.



**Fig. 60**—Hard roll stitched on all four sides. Seat is flat.



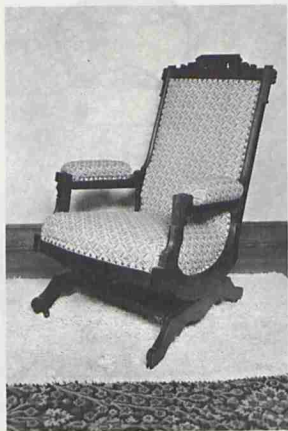
**Fig. 61**—Cotton padding over burlap is covered with muslin. Seat is ready for outside covering.





**Fig. 62—The platform rocker with webbing in place and springs completely tied for a flat seat.**

**Fig. 63—The finished platform rocker, showing gimp trim with brass upholstery nails.**



evenly spaced gimp tacks. Gluing gimp on makes a smoother joining. Use gimp tacks at the start and at sharp corners. You can use a few baste tacks to hold gimp in place until the glue sets. Keep glue back from the edges of the gimp so it won't show from the top when it spreads.

Remove the platform from a *platform rocker* while you put on webbing. The rocker in Figs. 62 and 63 has a hard stitched edge roll on the seat. The original edge padding was saved and reused. Moss and cotton padding are used on the arms and back. Edges are finished with hammered brass upholstery nails. When you use decorative nails, baste tack the edge of the covering. Mark the spacing of the nails on a piece of cardboard. Hold the cardboard on the edge of the cover to find if any baste tacks must be moved so as not to interfere with the placing of the decorative nails. Use this same cardboard marker as a guide when you drive the decorative nails.

## OUTER COVERING

### Fabrics

In selecting an upholstery fabric consider where and how the chair will be used. The amateur must also decide whether he has the skill and equipment to use the kind of material desired.

Chairs which will have hard wear should be covered with material that is very durable and will resist soil or be easily cleaned. Wool, mohair and some of the man-made fibers such as nylon and the acrylics are very durable. Blends of these fibers with cotton may give satisfactory service at a reasonable price. Cotton wears well but needs a soil resistant finish if it is to be most serviceable. Rayon, acetate and silk are usually rather fragile. Plastic and leather, when properly put on, can be very durable and easily cleaned. They are hard for the inexperienced person to use if seams or cording must be sewed. Plastic must be properly cut and fit to prevent tearing.

Fabrics with a silicone or other water repellent finish resist water soluble soil. A patented finish put on by the manufacturer also resists oily soil. Soil resistant finishes are most effective when applied by the manufacturer. Some kinds can be put on by the dry cleaner, the upholsterer or at home.

The weave of the material affects its durability. Firm, closely woven materials made from tightly twisted yarns wear well. Loose weaves with long threads on the surface are easily pulled and soil more readily. Very heavy fabrics with special backing may be too heavy to sew with home sewing machines. Popular material for gener-

al use are tapestry, rib weaves, tweed, flat textures, novelty weaves, frieze and matelasse. More formal fabrics include brocades, satin weaves, damask and brocatelle.

Color fast materials are always to be preferred.

Color, design and type of weave should be in character with the size and type of chair, kind and color of wood and use and decoration of the room. Choose sturdy or formal fabrics to blend with the chair or place it is used. Consider the amount of pattern already in the room in deciding between a plain or patterned fabric. Patterned material shows soil less than plain. Tweeds and textures also resist soil without adding pattern which may be undesirable in a room.

FABRIC YARDAGE TABLE

| Chair Style            | No. of Loose Cushions | 36" Fabric | 50" to 54" Fabric |
|------------------------|-----------------------|------------|-------------------|
| Wing                   | 1                     | 9 yards    | 5 yards           |
| Wing                   | 0                     | 7 yards    | 4 yards           |
| Club                   | 1                     | 8 yards    | 5 yards           |
| Club                   | 0                     | 6 yards    | 4 yards           |
| Wooden Arm             | 0                     | 2 yards    | 1½ to 2 yards     |
| Occasional (seat only) | 0                     | 7/8 yards  | 7/8 yards         |
| Boudoir                | 1                     | 5½ yards   | 3 yards           |
| Boudoir                | 0                     | 4 yards    | 2½ yards          |

Amounts of material given can be only approximate as types of chairs vary in size. You need a good cutting plan to avoid waste.

## Plastic

Plastic upholstery materials are durable and easy to keep clean. Plastic may tear under strain, however, unless it is properly cut and applied. Home sewing machines often will not sew heavy plastic. Therefore, the home worker may be limited to using plastic for furniture covers which can be tacked on. If you are inexperienced

in handling plastic you should begin with a piece of furniture which has simple lines and few fitting problems.

You can get upholstery plastics with or without a fabric backing and in different weights. Those with a fabric backing are less likely to tear or puncture than those without. Backing may be either woven or knit fabric. Those with the knit backing are often called "elastic" plastic. This type stretches in both directions and is easier to tailor than the kind with a woven backing. Another kind is porous so that air can pass through it. The texture of this kind is similar to fabric.

Upholstery plastics come in many attractive colors and interesting textures, in heavy, medium and light weights. Heavy weights are usually used for public seating. Medium weights can be used over springs or deep cushioned padding. Light weights should be used only for flat work where high tear strength is not needed.

## Steps in Using Plastic

*Preparing the Foundation*—Pad or round all sharp corners or edges of the furniture frame. This is necessary on leg or arm posts or back and seat corners. Padded surfaces should be fairly flat. It is hard to fit plastic on a high rounded crown without wrinkling. If you put a muslin cover over the padding it is easier to fit the outside plastic cover.

*Cutting*—Block out a paper pattern for each piece, adding a 1-inch seam or tacking allowance. Don't skimp the size. Mark around pattern pieces on the back of the plastic with a soft pencil or tailor's chalk. Instead of basting or pinning plastic, anchor it with adhesive or cellophane tape.

When cutting around an inner curve or recess always make a smooth curved cut. A pointed or angular cut will tear easily when stretched.

*Always punch a hole at the end of a cut into plastic.* The hole must be round and clean-cut and as large in diameter as practical (about 3/16 to 1/4 inch).

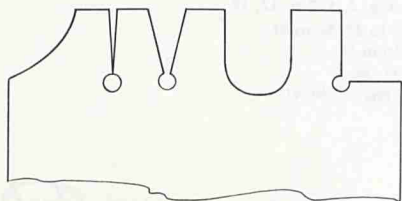
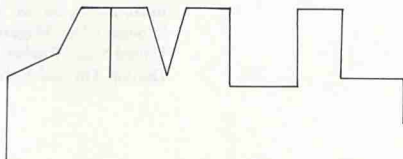


Fig. 64—Cut plastic like this . . .



Not like this . . .

Use a paper punch or an upholsterer's punch. Stop the cut back from the end. Punch the hole where the cut will end. Put the point of the scissors into the hole and cut out toward the first cut, don't try to cut into the hole as you may nick the opposite edge. Such a nick can start a tear. With unbacked plastic, reinforce points of unusual stress with fabric tape on back.

**Fitting**—Apply plastic upholstery in a warm room (65 to 80 degrees). Fit just tightly enough to remove wrinkles. Don't overstretch. Plastic with a woven fabric back stretches from selvage to selvage. Elastic plastic or the kind without a backing stretches both ways.

**Tacking**—Use tacks with round shanks and large flat heads. Drive tacks straight down. Don't let one edge of the head cut into the cover. Place tacks  $\frac{3}{8}$  inch or more from the cut edge and keep in a straight row. On a straight edge keep tacks about 1 inch or more apart. To ease material into place on corners, space tacks  $\frac{1}{4}$  to  $\frac{1}{2}$  inch or more apart.

On plastic without a fabric back it is best to tack through a double thickness by folding material over at the edges. If you baste-tack (temporary tacking) be sure tacks are driven into a part that will be hidden.

**Sewing**—Do not sew by hand. Adjust sewing machine to 6 to 8 stitches per inch. Use a fine needle. Loosen tension and lighten pressure on the foot. Use mercerized or heavy duty cotton thread. Sew at least  $\frac{3}{8}$  inch from the edge. Never backstitch or sew one row on the top of another. Stitch slowly. If plastic doesn't slide easily in the machine, dust with talcum powder.

**Loose Cushion**—Since most plastic is air tight you need to allow for intake and escape of air in cushions. The best way is to use fabric on two thirds of the bottom of the cushion. If you want a reversible cushion, use fabric for the boxing across the back of the cushion.

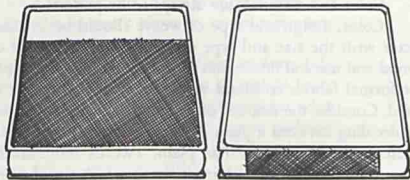


Fig. 65—Air intake for plastic covered cushions.

## Plastic and Varnish

Some varnish and lacquer soften plastic. You can rest the finish on your chair by tying your upholstery plastic on an inconspicuous place and leaving it for several days. If the plastic becomes sticky you should cover the wood with shellac at any point where it will touch the plastic.

## Plastic With Rubber

Rubber discolors plastic and makes it brittle. If plastic covering does not have a fabric back, use cloth between it and foam rubber padding.

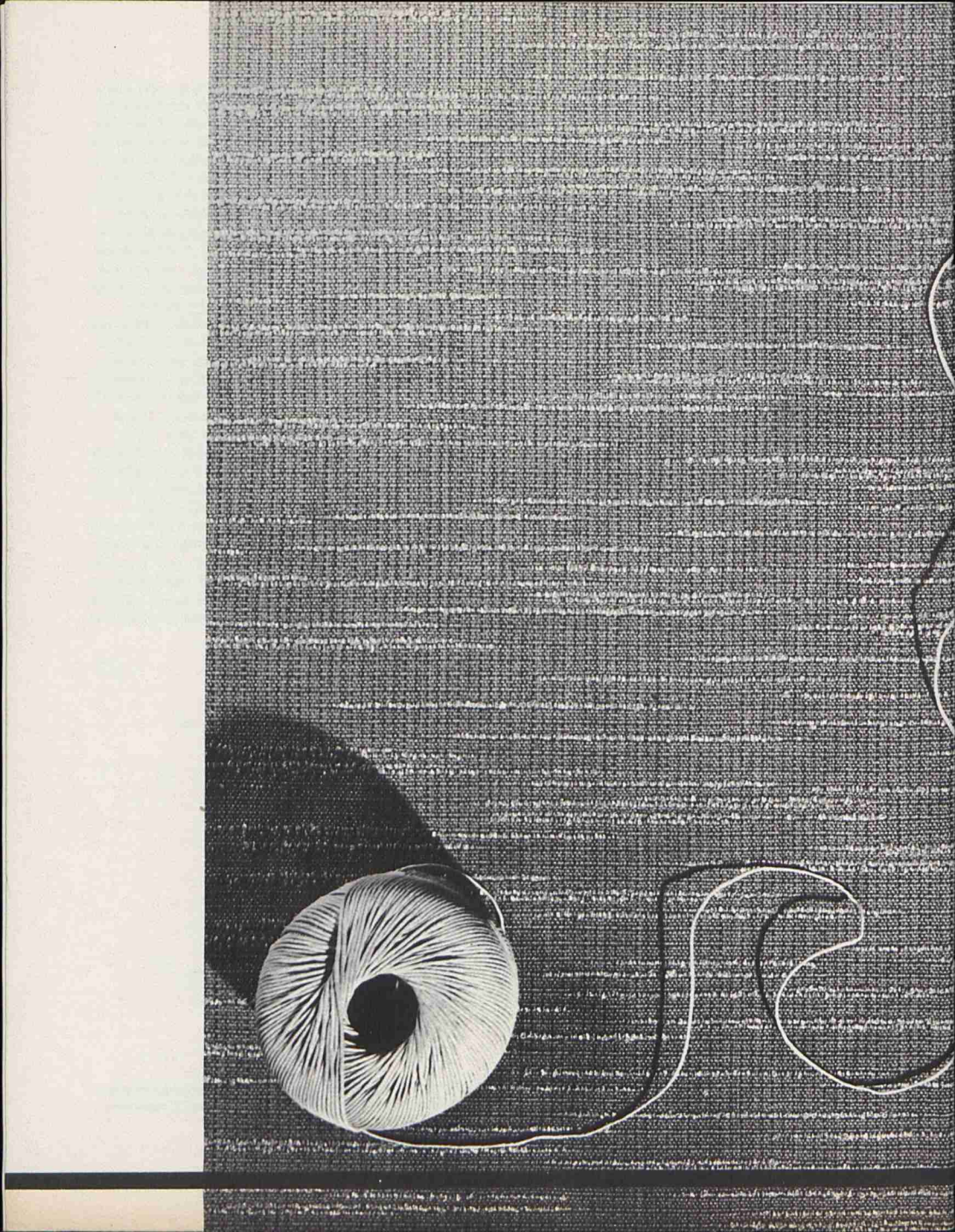
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Woman's Day Magazine—Figs. 50 to 55.  
United States Rubber Co.—Fig. 37, 38.  
Dunlop Tire and Rubber Corp.—Fig. 36, 40, 41.



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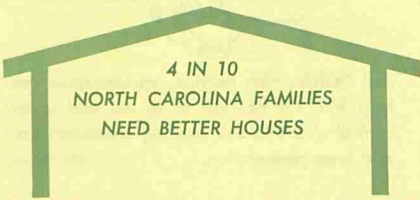


# CREDIT

FOR

# BETTER HOUSING

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4 IN 10  
NORTH CAROLINA FAMILIES  
NEED BETTER HOUSES

# Need Assistance?



Your county extension agents can help with:

Site selection

Credit sources

Plan selection

Homestead planning

Free house plans

Landscaping advice

Remodeling problems



Local house designers can assist with site selection and custom plan service.

Local architects can assist in complete planning service for expensive houses and large apartment buildings.



Commercial mail order plan service can furnish stock blueprints.

Local builders and building supply houses often supply plans.



Soil Conservation Service representative can help with site analysis as to soil and water control and use, soil bearing characteristics, and lawn preparation.

Housing and Urban Affairs Specialist, State Planning Task Force, 116 W. Jones St., P. O. Box 1351, Raleigh, N. C., 27603, has information on governmental subsidized housing.

State extension specialists in housing can assist county extension agents with difficult housing problems.

## Who Loans Money?

| <u>Source</u>                     | <u>Location</u>                                                                                 |
|-----------------------------------|-------------------------------------------------------------------------------------------------|
| Savings and Loan Associations     | Local                                                                                           |
| Banks                             | Local                                                                                           |
| Insurance Companies               | Local                                                                                           |
| Production Credit Associations    | County Office                                                                                   |
| Federal Land Bank Associations    | County Office                                                                                   |
| Farmers Home Administration       | County Office                                                                                   |
| Federal Housing Authority         | 221 S. Ashe St.,<br>Greensboro,<br>N. C. 27401                                                  |
| Veterans Administration           | Local Veterans Office                                                                           |
| Assistance Housing Administration | Room 737,<br>Peachtree-Seventh Building, 50 Eleventh Street,<br>N.W., Atlanta,<br>Georgia 30309 |
| Credit Unions                     | Some areas                                                                                      |



# Steps to Home Building

1. Locate a creditor that will make you the best loan.
2. Select your building site.
3. Select a plan to fit your needs and building site.
4. Make a plot plan (locate house on lot).
5. Fill out standard specification forms (description of materials).
6. Submit plans and specifications for bids.
7. Apply for a loan to the loan agency you have selected.
8. Get loan approved.
9. Sign building contract.
10. See that plans and specifications are followed during construction.
11. Close the loan after final inspection and approval.

Prepared by

Woodley C. Warrick—Biological and Agricultural Engineering Extension Specialist

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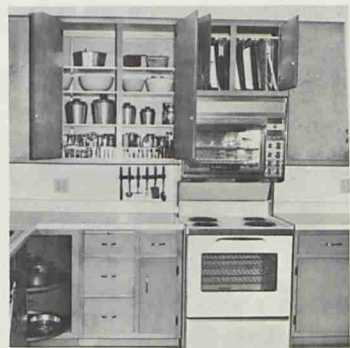
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# HOME KITCHENS

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September 1966



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## HOME KITCHENS

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*The kitchen, the heart of the home, is the most important room in the house. It is the homemaker's workshop, where she spends most of her working hours. When it is attractive and efficient, it promotes pride and contentment in the entire family.*

*Kitchens vary considerably in size, shape, and purposes. Small kitchens may have only enough space for preparing and serving meals, while larger kitchens may include a dining area and space for various other family activities. Regardless of the total room size or shape, the kitchen work area should be convenient, attractive, and arranged according to recommendations based upon research.*

*Recent trends favor making the kitchen a center for family living. The larger area required for this type of kitchen-family room permits a mother to keep a young child in view while she works. It sometimes gives several family members opportunity for companionship while they engage in separate activities in different areas of the room.*

*Any well-planned kitchen makes work easier and more satisfying; saves time, steps, and energy; is easy to keep clean; eliminates confusion; is attractive; meets needs of the family; and encourages family cooperation.*



# TO PLAN OR IMPROVE A KITCHEN

**1** Plan for convenience in preparing, cooking, and serving foods, and for cleaning up afterward.

**2** Plan for dining space, at least for breakfast, lunch, or snacks.

**3** Plan for other desired family activities, if extra space is available.

Know the features of a really convenient kitchen

1. The major equipment, the work space and storage space, for supplies and small equipment needed for different kinds of jobs or activities.
2. A specific work center organized for each type of job or activity
3. Work or activity centers arranged in the room for easy flow of work and to save energy
4. Smooth surfaces for easy care
5. Good lighting by day and night

Review current trends in:

1. Appliances and equipment, types and sizes.
2. Kitchen-family room.
3. Cabinet styles, designs, and finishes.
4. Counter-top materials and floor and wall coverings.
5. Lighting, wiring, and ventilation.



## YOUR WORK CENTERS



Activities carried on in home kitchens vary among households according to family situations and preferences, and the space available. For easy and satisfactory performance of each activity, a special area or center should be established.

A work center consists of appropriate major equipment, adequate counter or work surface, and necessary storage space. Good planning requires well-organized work centers for food mixing or preparation, cooking and serving, and dishwashing. The 3 basic work centers are usually called the mix center, the cook and serve center, and the sink center.



## MIX CENTER

At this center you prepare breads, salads, desserts, and other foods to be cooked. For this work you need counter or work surface, storage cabinets, and the refrigerator.

Counter width needed for mix center is 36 in. to 54 in. Counter heights usually are 36 in. but may be 32 in. to 36 in. for women of different heights.

To work seated at this center it is helpful to have either

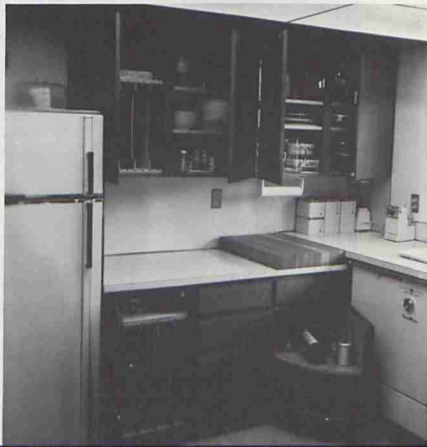
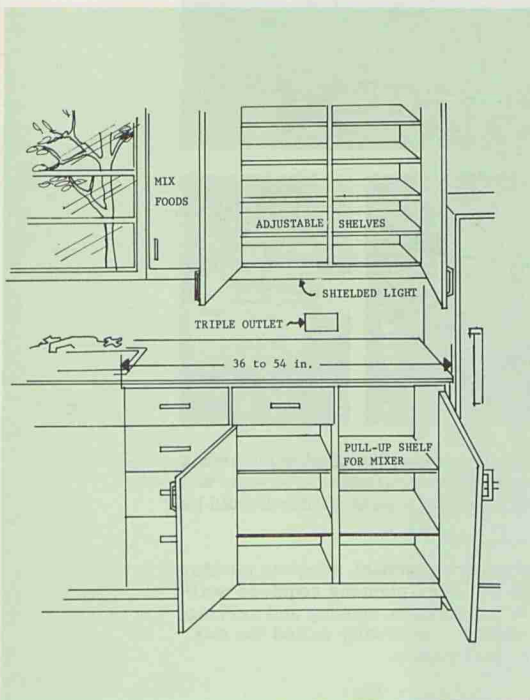
- (1) knee space below counter, for using a work stool comfortably, or
- (2) a pull-out lapboard, 25 in. to 28 in. from the floor, for use with a chair.

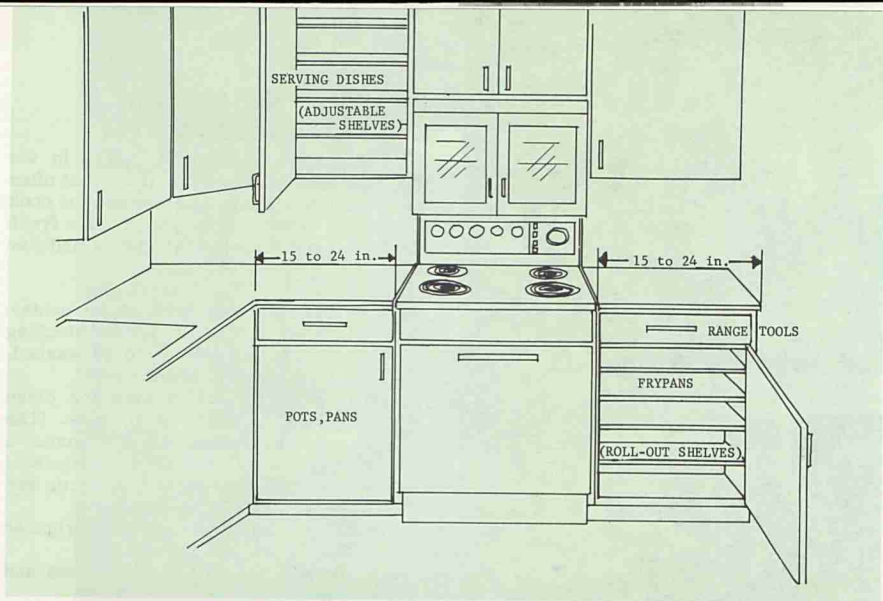
Cabinets above and below this counter usually provide enough storage space for this center. Store here all supplies, small equipment, food mixer, and utensils for preparing foods mentioned above.

The refrigerator is the major equipment item essential to the mix center. It should always open next to the mix counter or another at least 15 in. wide within easy reach of the mix counter. Provide at least 16 in. between the latch side of the refrigerator and the turn of a counter.

Locate the mix counter, if possible, between the refrigerator and the sink. Alternate locations may be between the refrigerator and the range, or between the range and the sink.

A home freezer should be installed as near the mix center as possible. It may be located in the kitchen, utility room, family room, or basement, according to space available.





## COOK & SERVE CENTER

The final preparation and serving of food is done here. This center includes the range or surface units, certain portable cooking appliances, work counter, and storage space.

Choose a complete range, or surface units with a separate oven, to fit your own needs and the space available. The complete free-standing or drop-in range, with oven below and/or above surface units, is the most practical for small kitchens or limited space. Separate ovens and surface units reduce counter space by at least 4 sq. ft. and therefore require larger kitchens.

A separate oven should not block the flow of work from one counter to another, nor

become a safety hazard in a traffic lane. A separate built-in oven should be installed with the lowest rack position about 36 in. above the floor.

Counter space required on each side of a range or surface unit, and on one side of a separate oven is 15 in. to 24 in.

Wall cabinets above the required counters furnish convenient storage for range supplies and serving dishes. Base cabinets below the required counters provide storage for range tools, fry pans, griddles, and pan covers.

An exhaust fan over the range, and one over a separate oven, are recommended to remove odors, moisture, smoke, and heat.



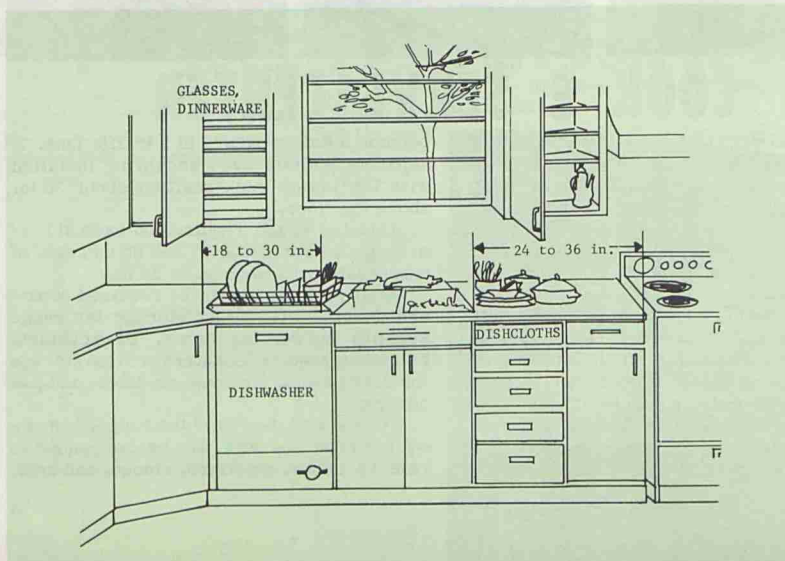
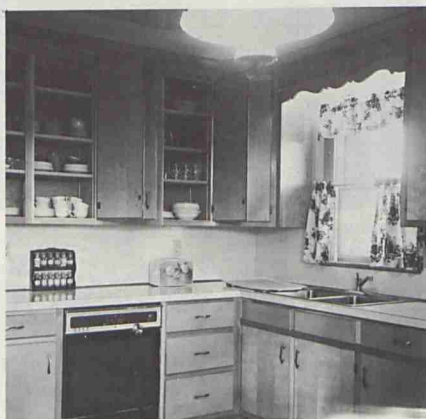


## SINK CENTER

This is the most-used center in the kitchen. For this reason, it is most often placed between the mix center and the cook and serve center. Here you prepare fresh fruits and vegetables, wash dishes, and dispose of garbage and trash.

It is important to provide at this center:

- (1) Counter to right of sink for stacking utensils and dishes to be washed, 24 in. to 36 in. wide.
- (2) Counter to left of sink for clean dishes, 18 in. to 30 in. wide. (The counter widths given assume a right-to-left dishwashing sequence; for a left-to-right sequence, reverse the counter widths.)
- (3) Space for dishwasher, either right or left of sink, 24 in. wide.
- (4) Drawer space for dish towels and aprons.
- (5) Towel rod or rack for drying used towels.
- (6) Storage space close to sink for items requiring use of water, such as fruits, vegetables, and other foods; coffee pot, sauce pans, and related tools; cleaning and dishwashing supplies; and everyday dishes (alternate storage in dining area).
- (7) Food waste container or disposer, and a trash can.





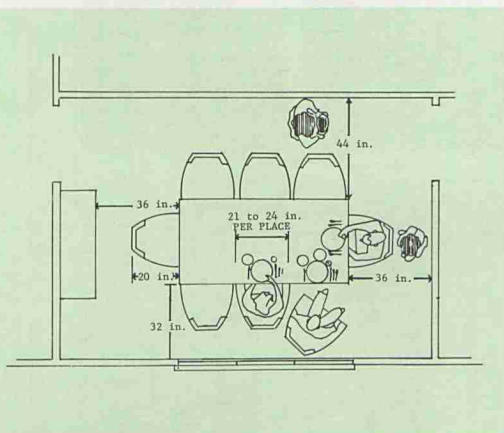
## THE DINING AREA

Serving some or all family meals in the kitchen is a time and energy-saving practice, and popular whenever space permits. For this purpose a suitable table and chairs are usually selected for comfort and adaptability. For quick meals or snacks, a bar or counter with chairs or stools is sometimes provided.

The floor area needed for dining is determined by the number of persons to be served and size of table. Space required between the table and a wall or furniture for ease in being seated and for serving is 32 in. to 44 in. Width of table space needed for each person is 21 in. to 24 in.

For convenience, locate your dining area near the cook and serve center or near the sink center. Also if possible, locate it close to a window with an attractive view.

A nearby serving counter with storage below is handy for using and storing small appliances used at the table.

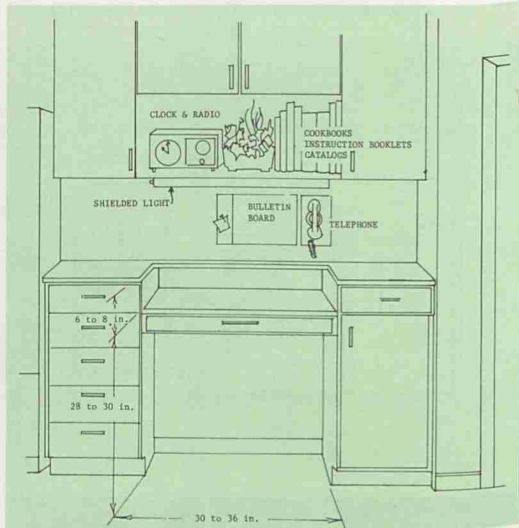


Family needs and interests determine additional centers that might be in a large kitchen or kitchen family room. Centers most often established are those for planning or home business and for laundry. Some families may want or need spaces for study, sewing, or children's play. A closet for outdoor wraps near the backdoor is useful and desirable. A cleaning closet in or near the kitchen should be provided for storing the equipment and supplies required for cleaning the house. None of the extra centers, however, should be allowed to interfere with or crowd the three basic work centers of the kitchen.

# other activity areas

## PLANNING CENTER

The kitchen or closely related family room is a good location for a planning or home business center. A counter about 24 in. deep, 30 in. wide, and 28 in. to 30 in. from the floor, or a desk, will serve this purpose. Space should be provided for storage and use of records, cook books, instruction booklets, and catalogs. It may be convenient also to have a bulletin board, clock, radio, and telephone.

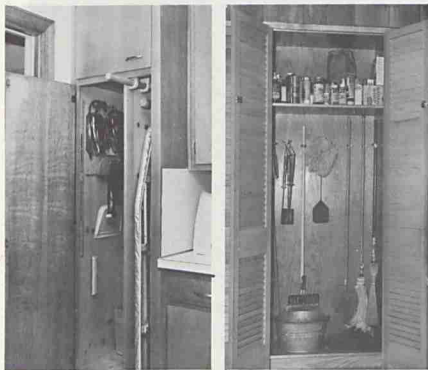


# LAUNDRY CENTER

It is an advantage to have the laundry center on the main floor of a house. It may be located in the kitchen, family room, or utility room; in a hallway or a large bathroom; or in a basement if necessary.

A washing machine or a washer and a dryer in the kitchen, family room, or hallway may be enclosed in a special closet or alcove by accordion-type or bi-fold louvered doors. Shelves or cabinets above or beside this laundry equipment provide convenient storage for laundry supplies. Counter space and a sink in this center, when possible, are useful for sorting laundry and pre-treating stains.

An ironing board and related equipment may be stored in a tall cabinet or closet in the laundry center. But if ironing is more conveniently done in some other work center or part of the house, this equipment should be kept close to where it is used.





# ARRANGEMENT OF WORK CENTERS

The three basic work centers are interrelated and should be arranged so work flows easily from one to the other.

In a continuous arrangement of centers, one counter will serve two centers. The width of such a double-purpose counter should be the width required for the larger one, plus 12 in. to 15 in.

Total base cabinet frontage should be at least 6 ft. but may be 10 ft. or more in a larger kitchen. Do not count space under sinks, but include storage space below built-in surface units and ovens if it is at least 20 in. high.

Total wall cabinet frontage should be at least equal to base cabinet frontage. It may be from 6 ft. to 14 ft. or more. Do not count

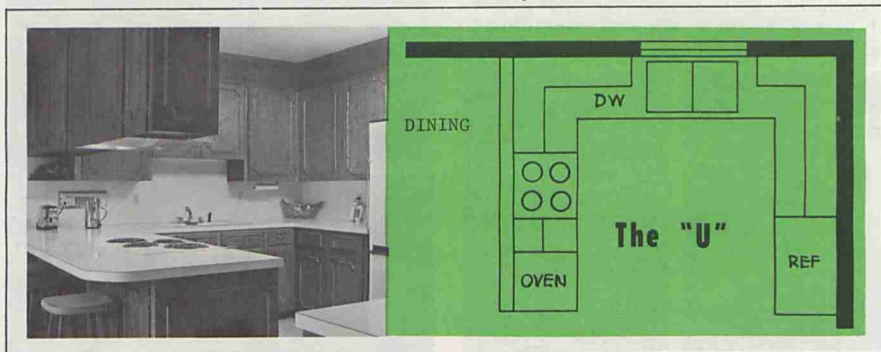
cabinets above sink, refrigerator, or cooking units.

Total counter frontages should be at least 6 ft., but may be 10 ft. or more. Count only the front edges of all usable counters.

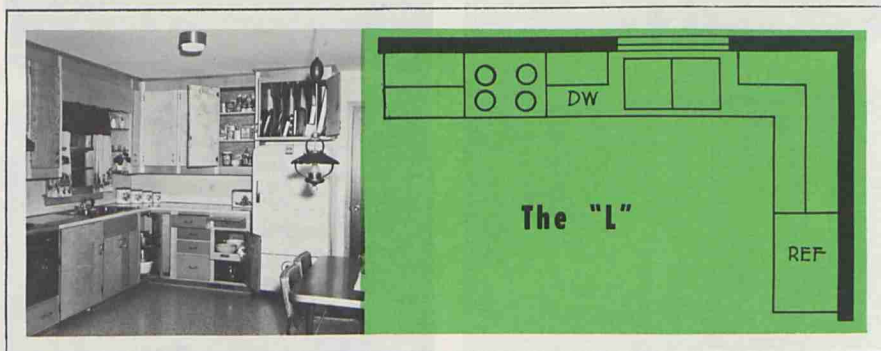
Wall cabinets about 12 in. deep are most accessible when placed 15 in. or 16 in. above counters that are 36 in. high.

The 4 basic shapes for kitchen arrangements are U-shape, L-shape, 2 wall or corridor, and one wall. Common variations are the broken-U and broken-L, in which one center is separated from the other two.

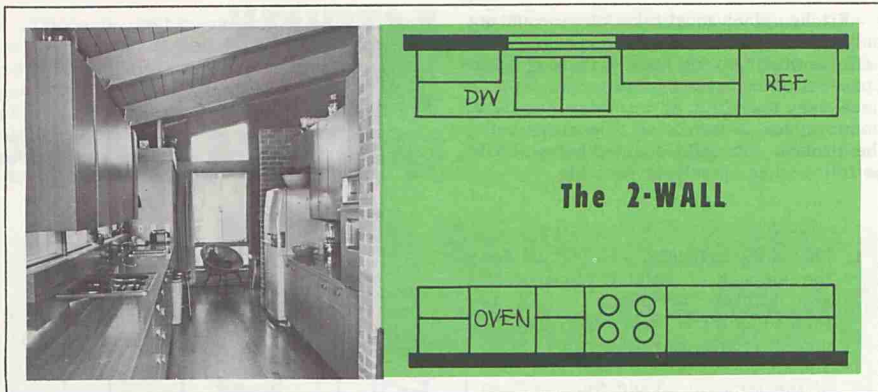
An "individual center" kitchen has all three centers separated. This is necessary sometimes when remodeling an old kitchen where wall spaces do not permit 2 centers to be joined.



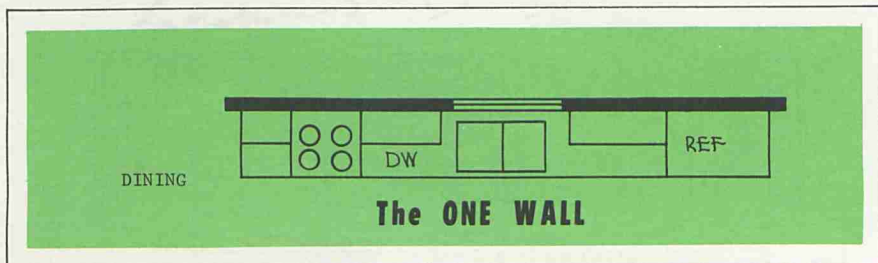
The U is compact, saves most steps, and allows no traffic through the work triangle.



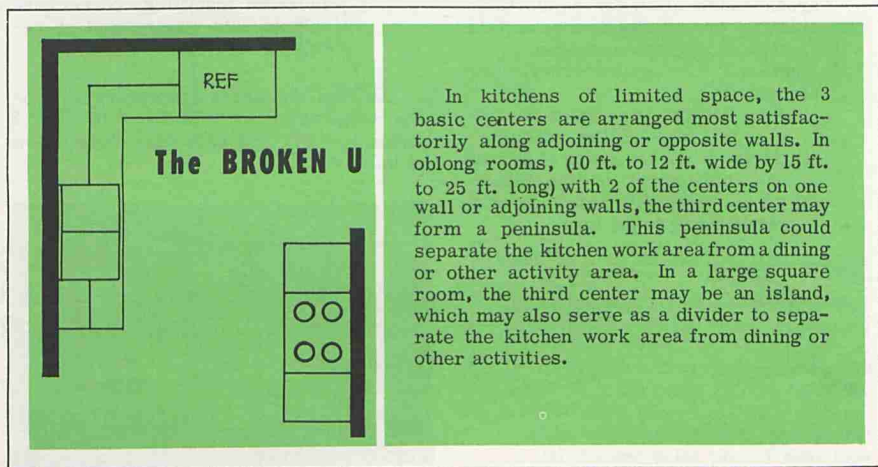
The L allows some traffic control, and has more space for dining or other activities. It has advantages when remodeling.



THE 2-WALL OR CORRIDOR. This presents traffic problems if open at both ends.



THE ONE-WALL is least desirable. Its use is best limited to small apartments.



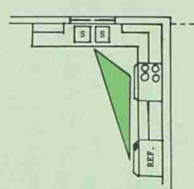
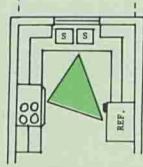
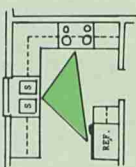
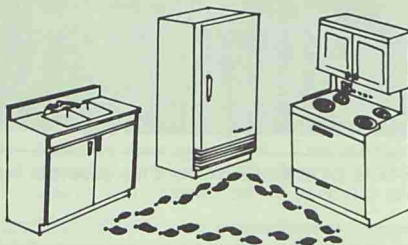
In kitchens of limited space, the 3 basic centers are arranged most satisfactorily along adjoining or opposite walls. In oblong rooms, (10 ft. to 12 ft. wide by 15 ft. to 25 ft. long) with 2 of the centers on one wall or adjoining walls, the third center may form a peninsula. This peninsula could separate the kitchen work area from a dining or other activity area. In a large square room, the third center may be an island, which may also serve as a divider to separate the kitchen work area from dining or other activities.

A BROKEN U or a BROKEN L can be satisfactory if the separate center is complete with its major equipment, counter and storage space.

Kitchen plans must take into account not only the organization and arrangement of definite work centers, but also some specific space allowances and clearances. This is necessary for efficiency, and for the safety, comfort, and satisfaction of persons using the kitchen. The guides listed below should be followed as closely as possible.

# ACTIVITY AND SPACE STANDARDS

1. The work triangle. This indicates the amount of walking required by any kitchen arrangement. It is formed by three lines connecting the center fronts of refrigerator, sink, and range or surface unit. The sides of the triangle should total 15 ft. to 23 ft., but never be less than 12 ft. nor more than 26 ft.

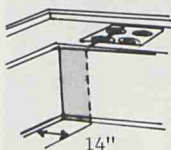


2. Activity space clearances. For better-planned counter and storage areas which allow for comfortable standing or activity space, certain clearances are recommended. Where a counter turns a corner, allow at least:

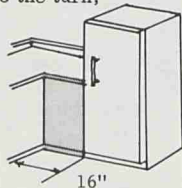
- (1) 9 in. between the edge of the sink and the turn of the counter;
- (2) 14 in. from the center of a front unit or burner to the turn;
- (3) 16 in. from the latch side of a refrigerator to the turn;

- (4) 12 in. to 14 in. on each side of the corner turn from any fixed appliances for installing a corner base cabinet with either fixed or revolving shelves.

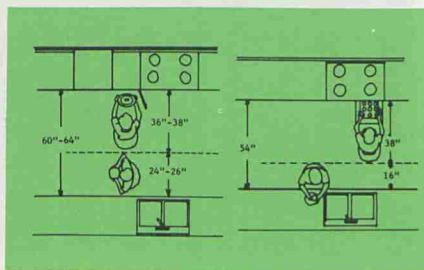
Between appliances or counters on opposite walls allow not less than 4 ft. For 2 people to work and pass each other, allow 54 in. to 60 in.



(2)



(3)



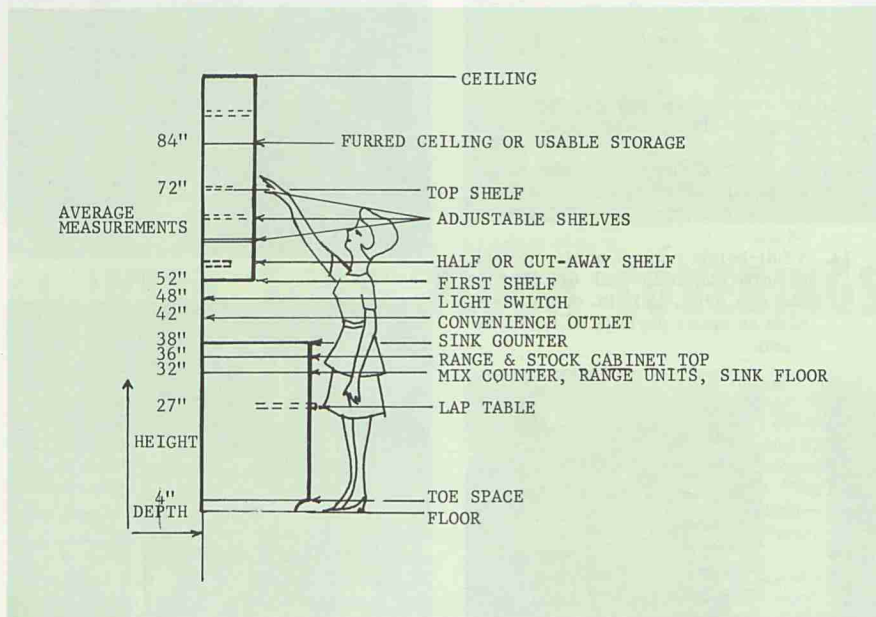
Doors in the kitchen should be: limited to 2 or 3, and located to direct traffic away from the work triangle; hinged so that none will swing in front of counters or appliances to interfere with work; pocket, sliding, bi-fold, or accordion doors where possible or suitable to avoid interference.

3. Kitchen plan related to house size. Consider the house size when developing its kitchen plan. For the small house, it is necessary to choose minimum widths recommended for base cabinets, wall cabinets, and counters. More generous widths are suitable for larger houses.

## STORAGE AND WORK HEIGHTS

Work heights need to be adapted, when possible, to the height of the worker and type of job. Indicated below are heights of

appliances and cabinets standardized as reasonably satisfactory for women of average height.



## CABINETS AND STORAGE UNITS

Cabinets and other storage units may be custom-built or selected from commercially built stock units.

Interiors of all storage spaces should be designed to keep items in plain view, easily reached, removed, and replaced.

Some features of good kitchen storage are:

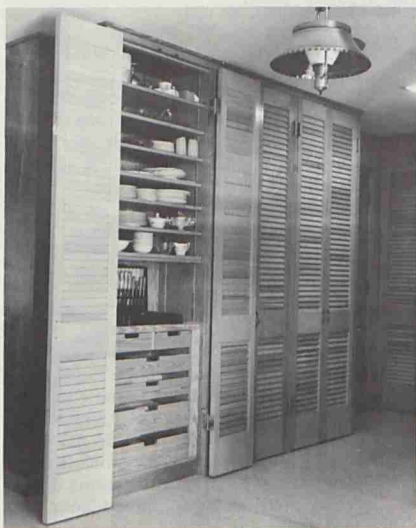
1. Doors which open separately, with no frame support where the opening edges of two doors come together.
2. Wall-cabinet doors not more than 12 in. to 14 in. wide and 36 in. long.
3. Door pulls placed low on wall cabinets, and high on base cabinet doors; and drawer pulls placed near tops of drawers.



4. Wall cabinets preferably equipped with adjustable shelves.
5. Drawers of different depths instead of shelves in some base cabinets.
6. Shallow top drawers with dividers for cutlery and small tools.
7. Metal-lined drawers for bread, cookies, flour etc.
8. Easy-glide hardware for drawers and sliding trays or shelves.
9. Cabinet doors with magnetic catches for easy opening and quietness.
10. Vertical file sections on top or upper shelf of wall cabinet, and on bottom shelf or in deep drawer of base cabinet, for filing baking pans and dishes.
11. Shelves in base cabinet built full-, not half-depth, and sliding when possible.
12. Removable in-between or half-shelves used for keeping unlike items separated.
13. Revolving shelves in the corner of a base cabinet when each side of the right angle along the wall is at least 36 in.
14. A full-height cabinet or storage wall to provide additional or reserve storage, 12 in. to 15 in. deep, and as wide as space permits or needs demand.



Example of 3, 11, in dining area.



Example of 14.



Example of 10.



Examples of features 1, 3, 6, 7, 11, 13.



Example of 6, 11.



## COUNTER TOPS, FLOOR COVERINGS, & FINISHES

The easy care and attractiveness of a kitchen depend greatly upon choices of surface coverings and finishes. Light colors and smooth surfaces contribute much to easier work.

Counter top materials should be durable, easy to clean, and resistant to moisture, stains, scratches or cuts, and heat. Flexible vinyls and laminated plastics, available in many colors and at different prices, are widely used for this purpose. Other materials sometimes chosen for limited or special areas are stainless steel, ceramic tile, marble, and wood.

Floor coverings should resist wear, stains, solvents, grease, and moisture. They also should be resilient under foot, quiet, nonslippery, and restful to the eye. Recommended for long wear and other qualities desirable in the kitchen are vinyl asbestos, inlaid linoleum, and solid vinyls of medium or standard gauge. Other materials satisfactory in particular situations

include grease-resistant rubber tile and ceramic tile. Enamel or vinyl coated floor coverings are less expensive and also less durable. There are new developments in "kitchen carpeting". None is "the best" floor covering for every situation--choose a kind recommended for kitchens, in the price range you can afford.

Cabinets of any suitable wood may be given a transparent or natural wood finish, or finished with enamel paint. Some cabinets are now finished with laminated plastics. Others made of steel are produced with a baked-on enamel finish.

Walls in kitchens are most often finished with semi-gloss or gloss enamel, but may be covered with vinyl-coated fabric which is grease- and moisture-resistant. Wood-paneled walls are usually given a transparent finish, but may be painted.

Ceilings painted off-white or a very light color give maximum reflection of light.



## WIRING AND LIGHTING

Wiring for light and power in the kitchen should be planned for present and future needs. Include plenty of circuits for lighting and for small appliances. Individual equipment circuits are needed for the range, dishwasher, freezer, clothes washer, dryer, and other special equipment. When several cooking appliances are to be used at one time, outlets for them must be supplied on more than one circuit. Follow electrical engineering recommendations when planning the number of circuits and wire size.

Good lighting makes the kitchen more pleasant and efficient. It is recommended that window area equal at least 10% of floor area. For artificial light, plans should include general lighting, plus lighting for basic work areas, the dining area, and other activity areas. Light rather than dark colors used on walls, ceiling, cabinets, and counters reflect more light and increase the efficiency of both natural and artificial light.

Your county Cooperative Extension representatives or local power suppliers can help plan adequate wiring and lighting.

## VENTILATION

Mechanical ventilation of the kitchen is desirable to remove odors, moisture, smoke, and heat, without undue loss of coolness in summer or heat in winter. Smaller houses and the open design of many homes make it even more essential to keep cooking odors from spreading through the house.

To have efficient ventilation, select the right type of fan and place it to exhaust as directly as possible to the outside. The hood-fan is the best type since it traps and prevents the escape of greasy smoke and odors to other areas. It should be placed

20 in. to 24 in. above the cooking surface. Hood-fans for built-in ovens remove odors, heat, and smoke from baking or broiling.

An exhaust fan for ceiling or wall is less expensive but also is less efficient. When located directly over the range it does a fairly good job.

Non-ducted fans are recommended only when it is impractical to use duct work for discharging the air to the outside. They do not remove heat or moisture. Removable filters partially clean the air and return it to the room.



# TEN STEPS IN MAKING & CHECKING YOUR PLANS

Whether you are planning a new kitchen or remodeling an old one, you follow the same planning principles. When remodeling, you must begin with what you have and consider possible improvements.

1. List first all your needs and wishes, but underscore the "must haves." You and your family should consider the activities to be provided for, amount of space needed, and any special features wanted.
2. Locate your kitchen with easy access to both a service entrance and the rest of the house. It should also have an attractive outlook, if possible, and a clear view of children's play area.
3. Make a floor plan of your proposed kitchen, using a scale of 1/4 in. or 1/2 in. to 1 ft. To test the arrangement you have in mind, use paper cut-outs of the same scale to represent all equipment and cabinets on hand or to be acquired. Apply given recommendations in working out your plan.

If you do not have or know widths of appliances to be installed, for tentative planning you may use:

- 36 in. for refrigerator.
- 36 in. for twin-bowl sink.
- 20 in. for single sink.
- 24 in. for dish washer.
- 30 in. for range or surface units.
- 24 in. for a built-in oven.

4. If you are planning to eat in the kitchen, use cut-outs to represent dining table and chairs to determine if space allowed is sufficient for comfortable use. If your kitchen includes a family living area, use appropriate furniture cut-outs to show arrangement of other activity centers.
5. Decide upon types, styles, and sizes of any new equipment or cabinets to be installed and what improvements might be made in storage units on hand.
6. Choose kinds and colors of counter tops, floor coverings, and other finishes.
7. Determine what you need for good light and ventilation.
8. If you wish assistance with your plans or would like to have them reviewed, consult a Cooperative Extension or other home economist, a qualified engineer, or an architect.
9. When your plans are complete as possible, get estimates of costs from at least 2 reliable builders or contractors.
10. Your final step is to decide whether you can carry out your plans all at one time, or gradually. If you must make changes to meet your budget, avoid violating the basic planning principles you tried to follow.

Information in this bulletin is based chiefly upon research by the Clothing and Housing Research Division of the U. S. Department of Agriculture, the cooperating Experiment Stations, and the land-grant universities in the various states.

Special acknowledgment is made for illustrations in this publication. These were obtained chiefly through the Cooperative Extension Services of Kentucky, Louisiana, South Carolina, and Virginia, with photos selected from homes in these states. Others came from regional research of Agricultural Experiment Stations cooperating with ARS, U. S. Department of Agriculture, and one from the General Electric Lighting Institute.



# My Clothing Storage Area

Home Improvement II

Every individual wants a compact, comfortable convenient, and beautiful bedroom. Proper storage facilities help make this possible, so there will be "a place for everything and everything in its place."

Space is needed to store clothing, accessories, and other personal possessions. For these items, well-arranged closets, chests of drawers, and storage nooks should be provided.

Good storage has much to do with one's appearance and poise. Girls and boys who keep their clothes in order will have a neat appearance. Clothes will look better and last longer.

Requirements for a "Storage Area" project are found in "Wake Up! Furnish an Area," a 4-H Home Improvement Project Manual and Record Book for Early Teens.

## Making Closets Up-to-Date

All bedrooms should have a clothes closet. The musty, dark, space-wasting closets in many older houses should be improved to make them compact, light and airy. Sturdy racks, rods and shelves may be added easily and inexpensively.

### Closet Requirements

Different types of clothing are usually kept in separate groups according to size, length, and material. This makes it possible to set up general standards for the various kinds of storage needed. For example, clothes on hangers, even heavy coats, can be hung in a closet 24 inches deep. So 24 inches is the minimum depth recommended for storage areas in which clothes will be hung. A 12-inch shelf will hold most hats, folded garments, shoes, and clothing accessories, but the best widths for closets and shelves depend on individual needs. However, one recommendation is that bedroom closets ought to have at least 48 inches of rod space.

Closets should be well-built and should have doors. Walls should be sealed, papered, or painted.

Light-colored walls are best for closets, since they help reflect the light to the farthest corners—making them brighter and more pleasant to use. Choose a paint that is washable and will not rub off on clothes stored. The walls should be

washed two or three times a year, when you put away each past season's clothing. Choose a color that will harmonize with the other furnishings in your room.

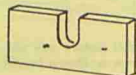
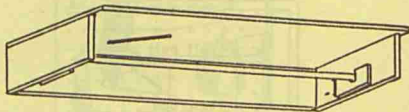
A smooth, easy-to-care-for floor is preferred. Floors should be waxed to make them easy to clean. Rough, splintery floors may be painted with deck enamel or, better still, covered with linoleum. Linoleum prevents dust from seeping up through the cracks and getting on the clothes.

To help keep things in order and to use all the space, closets built with divisions are an advantage. Size and shape are the two most important factors to consider when making a division plan. Modern closets have sturdy, adjustable rods for clothes of various lengths, shelves for hat boxes and other storage, shoe racks or bags, laundry bag or hamper for soiled clothes, and a shelf or small chest for clothing not on hangers. A small closet well-equipped and fitted is better than a large one that is poorly planned.

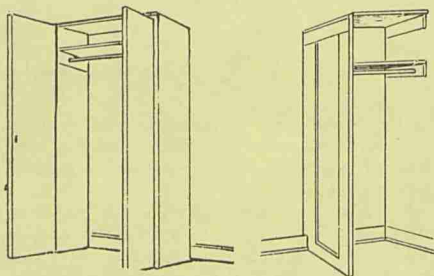
### Closets You Can Make

Here are suggestions for making a closet if you do not have one. There are many arrangements that you may use in building a closet, but only a few are suggested here.

*Build a shelf and anchor it to a corner of the room.* Prepare blocks of wood (as shown) to hold your rod. Make a gathered or pleated curtain of plastic or preshrunk cotton fabric and hang from or under the edge of the shelf.



**Plywood closets.** A convenient closet may be built of fir plywood. The large sheets go up fast and make a neat job. Closet plans can usually be obtained from the hardware stores or lumber dealers from whom the plywood is bought.



A Plywood closet placed in the corner of a room. (Add wood door or fabric to protect clothing.)

### Closet Rods

The size of clothes rods varies, depending on how you want to use them. If you're adding rods as a part of your project, think about these four things:

1. Length. The length will determine the diameter of the rod you will use.
2. Weight the rod must carry. A smaller rod can be used if you plan to hang only light articles. For heavy coats and such you must use a heavier rod.
3. Diameter of the rod. Plan the size of the rod so your coat hangers will slide easily on it. Coat hangers vary, so it's best to measure several types.

#### 4. Types of rods—

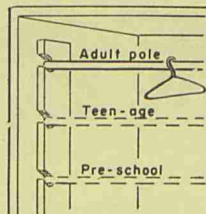
Galvanized pipe:

For a 3-foot length, use a  $\frac{3}{4}$ -inch pipe.

For a 4-foot length, use a 1-inch pipe.

Wooden doweling:

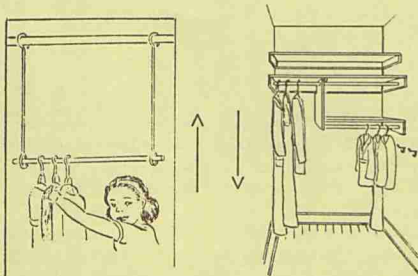
1 to  $1\frac{1}{4}$ -inch diameter (outside measurement).



Adjustable Clothes Rod—In this picture you can see that hanging rods can be adjusted as you grow. Plan a height that is convenient for the person using it.

### Junior Clothes Rod

For small children, suspend a rod 23 inches from grown-up level. It is easy for children to hang up their own clothing with this rod, and, with short garments hanging above, closet space is doubled.

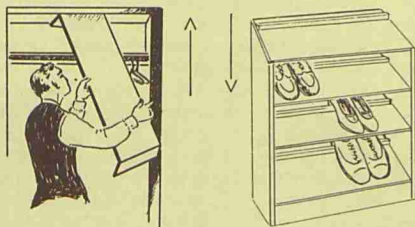


**Use space effectively.** Plan tall spaces for long garments and shorter spaces for shirts, skirts, jackets, and blouses. The sketch shows a shelf added below the standard rod and shelf. This gives usable storage space above the floor where dust will be less likely to harm articles.

For a young man, there should be a tall space for an overcoat, bathrobe, and trousers (if hung by cuff). Shorter spaces are sufficient for jackets and folded trousers.

### Shelves for Closets

To use "waste space" on your closet shelf, make a stepshelf. This may be as long as the entire shelf, as shown in drawing, or it can be shorter, wider, or narrower, depending on your needs.



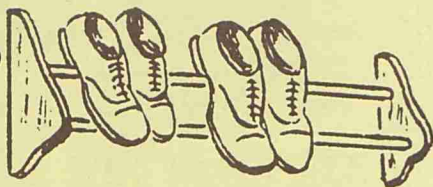
### Space Requirements for Shoes

Shelf for Men

9" wide  
13" deep  
 $5\frac{1}{2}$ " high

Shelf for Women

7" wide  
10" deep  
 $7\frac{1}{2}$ " high



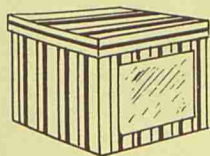
Shoe Storage: Shoe racks can be used when wall space is available inside the closet. Also, plastic or fabric shoe bags can be hung on the door.

### Closet Accessories and Fittings

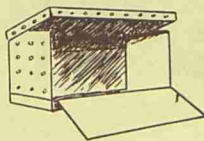
Garment bags, shoe bags, hat boxes, laundry bags, and other boxes for storage are usually considered closet accessories. They are necessary to give protection to the articles and to keep clothes neatly separated. You can easily find the right container for each type of clothing if you have correctly planned your fittings. Whether you buy ready-made accessories or make them yourself, try to keep in mind a definite color plan and design. Choose a fabric that will harmonize with the color scheme of your room. Select simple bindings and trimmings that are easy to clean; ruffles tend to collect dust.

Save hat, shoe, and suit boxes. These may be painted, covered with paper or material, and used in your closet. It is a good idea to label each container. Or, a sweater, for example, may be pictured on the outside of a sweater box.

*Hat Boxes* may be covered with adhesive-backed plastic materials, wallpaper, fabrics, or painted to blend with your planned color scheme. Or you can buy them ready made. Note from the pictures that they are all easy to see into; and the hats can be removed easily. Covered boxes protect your hats from dust and soil. Take care not to crush hats in the boxes.



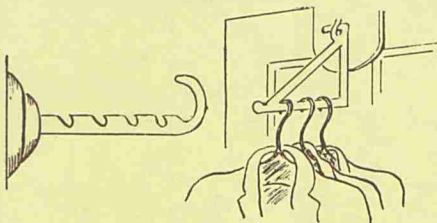
Front and top open.



A plastic "window" lets you see inside.

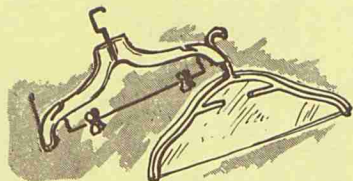
*Garment Bags* protect clothing against dust and provide excellent storage for out-of-season clothing. They can be purchased or made at home. They can hold up to six garments.

### Hangers:

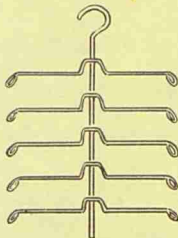


This is a door hanger for four garments.

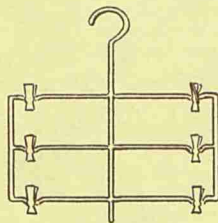
This is a portable door hanger.



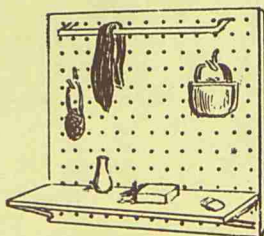
Here are two common types of garment hangers. The top one is a suit or dress hanger (notice the notches for gown or dress straps). The other hanger comes with a plastic cover to protect top of a coat (where most dust would settle).



This rack holds five blouses, but takes only the space required for one.

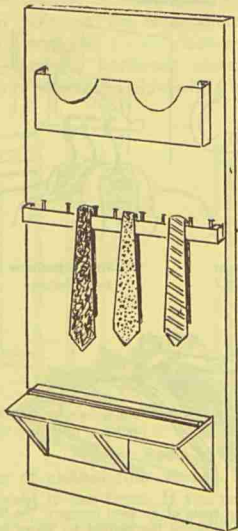


This hanger takes three skirts.

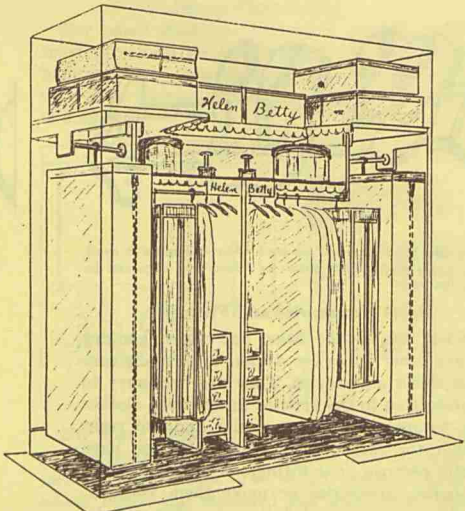


Perforated hardboard may be added to closets or other walls for convenient storage. You can buy many adjustable fixtures to use with this board.





Boys, this is for you. This unit fits on the closet door and has racks for hats, ties and shoes.



A Closet Planned for Two—This closet is planned for two girls. (Two boys may share in same way.) Garments are stored in duplicate garment bags. Boxes are marked by name. Each side has a complete set of accessories—hat boxes, hat racks, shoe boxes, and blanket cases.

### How To Plan Storage For Your Room

- Make a list of things that need to be stored in your room.
- Sort out things not often used. Store these elsewhere or discard them.
- Store articles near the place they are used.
- Store together similar items or articles of similar use.
- Store frequently used items within easy reach.
- Use all available storage spaces before building any new ones. Try to arrange flexible spaces that can be changed easily for new uses.
- Plan built-ins or portable storage if all available space is being used.
- See that storage space has good lighting and ventilation.
- Plan storage unit for easy cleaning.
- Try to store each item in an appropriate place.
- For major work on closet space, check with your leader for additional suggestions and references.



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