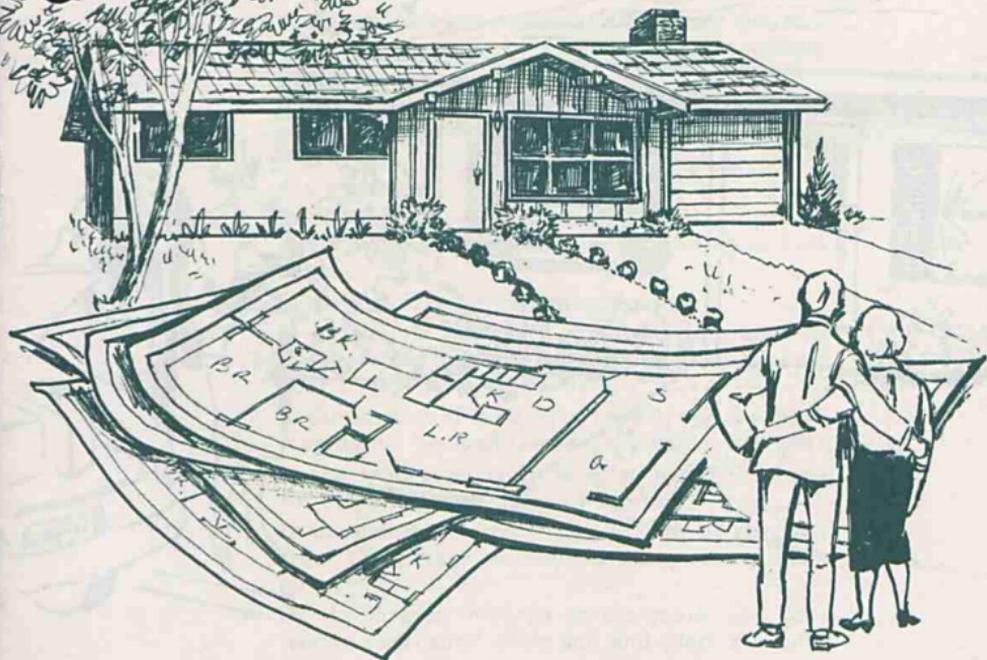


HOUSING, FURNISHINGS & CREATIVE CRAFTS
AGRICULTURAL EXTENSION
N. C. STATE UNIVERSITY, RALEIGH, N. C.



Homes for Senior Citizens

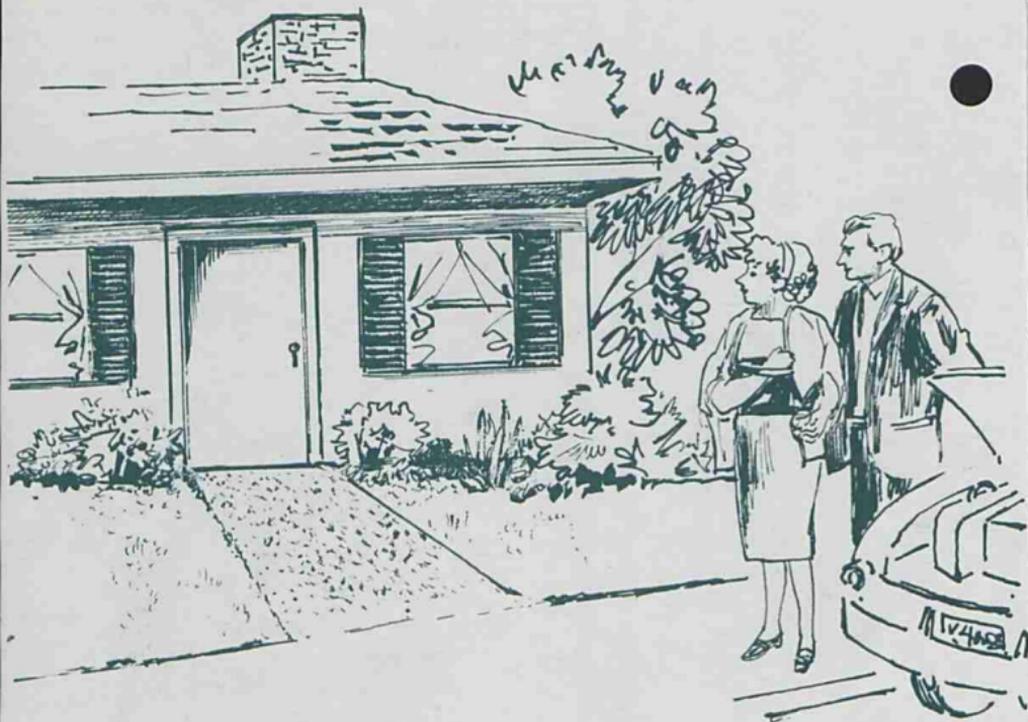
-- A Check List --

PNW 93

October 1967

A COOPERATIVE EXTENSION PUBLICATION

OREGON • WASHINGTON • IDAHO



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.

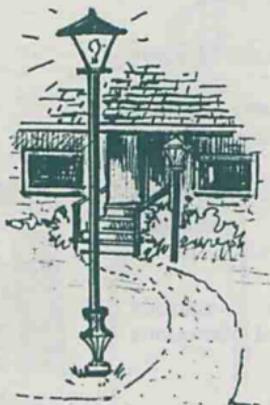
Checking the points listed in this circular should help you to decide about the suitability of the home where you now live, changes to consider, the selection of a new house, or the choice of a retirement home. Do not overlook the fact that retirement is a changing state which may alter your housing 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?

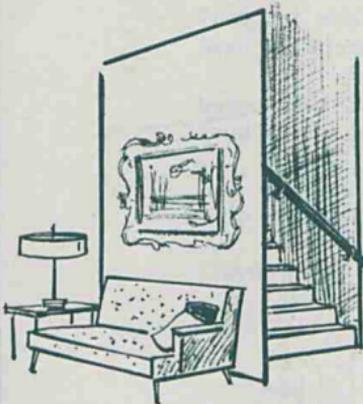


*Too many stairs
for older people?*



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.)

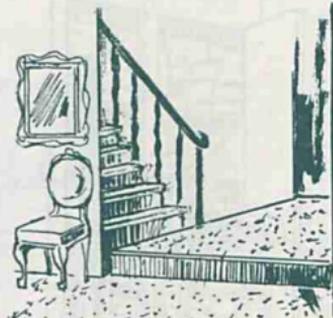


*Rough finish on
steps and walks*

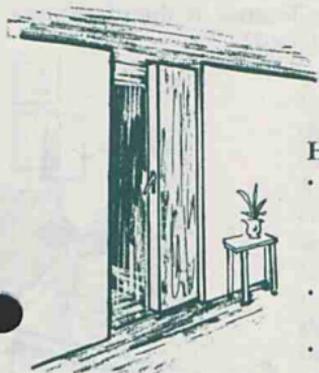


FLOORS

- 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*



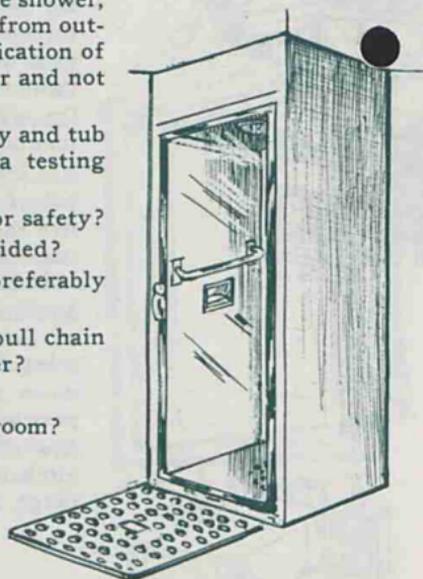
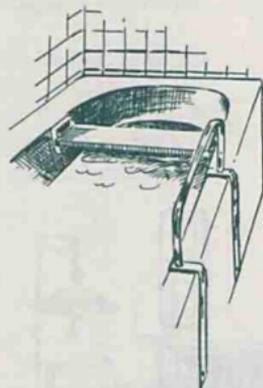
HALLS AND DOORS

- 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?



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?



KITCHEN

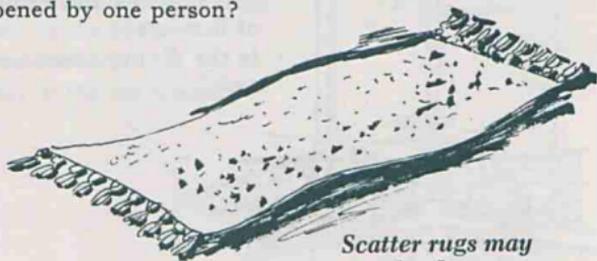
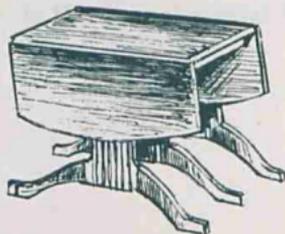


- Is there a single-lever mixing faucet at the sink for easy control?
- Are frequently used appliances, such as refrigerator and oven, at a height which permits use with minimum bending? Is there counter space beside the oven and latch side of the refrigerator door?
- Is there a provision for sitting 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?



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?

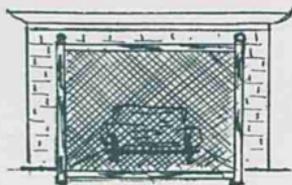


Scatter rugs may be dangerous

HEATING

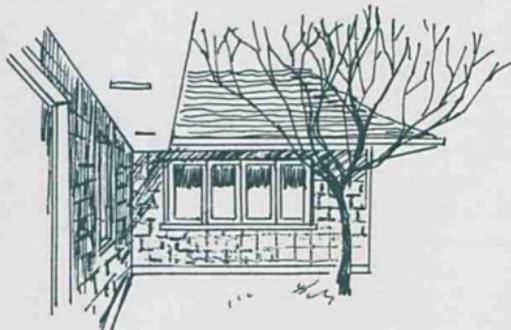
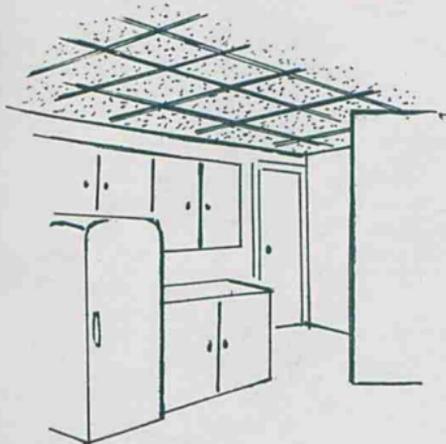
Will the heating system maintain an even temperature of 75 to 80 degrees in every room?

- 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?





Faint, illegible text, likely bleed-through from the reverse side of the page.



Prepared by Bernice Strawn, Extension home management and equipment specialist, in conjunction with H. R. Sinnard, chairman, Department of Architecture, and Harriet K. Sinnard, assistant professor of home management, Oregon State University; and in cooperation with Washington State University and the University of Idaho.

Published and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914, by the Cooperative Extension Service, Oregon State University, Gene M. Lear, director; the Washington State University Extension Service, John P. Miller, director; the University of Idaho Agricultural Extension Service, James E. Kraus, director; and the U. S. Department of Agriculture, cooperating. OSU—10M; WSU—5M; U of I—2M.

1 9 6 5

RESOURCE PERSONNEL FOR HOUSING

AMERICAN PLYWOOD ASSOCIATION

Mr. Gifford Vernon
3221 Woodlea Drive
Greensboro, N. C.

MR. PHILLIP BENFIELD

Old Fort Mill Road
Pineville, N. C.

AMERICAN WOOD PRESERVATIVES INSTITUTE

P. O. Box 933
Columbia, S. C.

CAROLINA OIL FUEL INSTITUTE

Mr. Gerald Matthews
P. O. Box 9601
Raleigh, N. C.

BRICK AND TILE SERVICE, INC.

P. O. Box 6305
Greensboro, N. C.

N. C. CONCRETE MASONRY ASSOCIATION

P. O. Box 10533
Raleigh, N. C.

NATIONAL PAINT, VARNISH AND LACQUER ASSOC.

1500 Rhode Island Avenue, N. W.
Washington, D. C.

PORTLAND CEMENT ASSOCIATION

Mr. Hugh Roberts, District Farm Engineer
State Planners Bank Bldg.
Richmond 19, Va.

NATIONAL LUMBER MFG. ASSOCIATION

619 Massachusetts Ave., N. W.
Washington 6, D. C.

SOUTHERN PINE ASSOCIATION

New Orleans, La.

1966
HOUSING BIBLIOGRAPHY
N. C. STATE UNIVERSITY AT RALEIGH

BOOKS

- Agan, Tessie and Elaine Luchsinger. The House--Principles/Resources/Dynamics, J. B. Lippincott Co., New York, N. Y. \$5.95.
- Burbank, Nelson L. and Oscar Shaftel. House Construction Details, 5th edition, Simons-Boardman Publishing Corporation, 30 Church Street, New York 7, N. Y.
- Carvay, Raymond and Harry Plummer. Principles of Clay Masonry Construction, Student's Manual, Structural Clay Products Institute, Washington, D. C.
- Commery, E. W. and C. Eugene Stephenson. How to Decorate and Light Your Home, Coward-McCann, Inc., New York, N. Y.
- Faulkner and Faulkner. Inside Today's Home, Henry Holt & Co., New York, N. Y.
- Helper, Donald and Paul Wallach. Architecture, Drafting and Design, Webster Division, McGraw-Hill Book Co., New York, N. Y.
- Lighting--Keyed to Today's Homes, Illuminating Engineering Society, 1860 Broadway, New York 23, N. Y. \$1.50.
- Rogers, Kate. The Modern House, U. S. A., Harper and Row, Publishers, New York, N.Y.
- Simons, Marion J. Your Solar House, Simon and Schuster, New York, N. Y.
- Sleeper and Sleeper. The House for You. 1957.
- Sunset Books, Lane Magazine and Book Company, Menlo Park, California
Ideas for Remodeling, \$1.95.
Modern Bathrooms. \$1.95.
Modern Kitchens. \$1.95.
- Tilling, Nicholas and Mabel B. Design Your Home for Living. J. B. Lippincott and Co., E. Washington Square, Philadelphia, Pa. 19105.
- U. S. Department of Agriculture. Consumers All, Yearbook of Agriculture, 1965, Superintendent of Documents, Washington, D. C.

HOUSING BULLETINS

North Carolina and Regional Publications, etc. Order from: Housing and House Furnishings Department, N. C. State University, Raleigh, N. C. 27607.

Bathrooms, Home Economics No. 28.

Bedrooms and Clothes Closets, Home Economics No. 33.

Clothing Storage, Miscellaneous Pamphlet No. 214.

Dining Areas, Miscellaneous Publication No. 960.

Floor Finishes (mimeographed).

Home Sewing Areas, Southern Cooperative Series Bulletin No. 58.

Household Linen Storage, Miscellaneous Publication No. 980.

Kitchen Plans: U-Shaped Kitchen, Misc. Pub. No. 933.
Broken-U Kitchen, Misc. Pub. No. 934.
L-Shaped Kitchen, Misc. Pub. No. 935.
Parallel-Wall Kitchen, Misc. Pub. No. 936.
Corner Storage, Misc. Pub. No. 944.

Laundry Areas, Miscellaneous Publication No. 961.

My Clothing Storage Area, Club Series No. 143.

Painting Interior Walls, 4-H Misc.

Plan a Workroom for Laundry and Other Activities, Washington State University Extension Bulletin No. 562. (For agents' use only)

Planning Your Kitchen for Easier Work (mimeographed).

Resilient Floor Coverings, Home Economics No. 5.

Storage for Cleaning Equipment

Walls and Wall Finishes (mimeographed)

You Can Plan Kitchens With Confidence

U.S.D.A. Bulletins. Order from: U. S. Department of Agriculture, Government Printing Office, Washington, D. C. 20402.

Beltsville Energy-Saving Kitchen, Design No. 2, Leaflet No. 463.

Beltsville Energy-Saving Kitchen, Design No. 3, Leaflet No. 518.

The Beltsville Kitchen-Workroom With Energy-Saving Features, Home and Garden Bulletin No. 60.

Equipment for Cooling Your Home, Home and Garden Bulletin No. 100.

U.S.D.A. Bulletins(continued).

Control of Direct Sunlight for Comfort, Miscellaneous Publication No. 995.

F.H.A. Financing for Home Purchases and Home Improvements. 5¢.

Farmhouse Design and Equipment for Summer Comfort, Agricultural Handbook No. 241, 1963.

Fireplaces and Chimneys, Farmer's Bulletin No. 1889.

Housing for Elderly, ARS #63-1.

Minimum Property Requirements for One and Two Family Dwellings. \$1.75.

Multi-Unit Retirement Housing for Rural Areas, Agricultural Information Bulletin No. 297.

Painting on the Farm, Farmer's Bulletin No. 1452.

Planning Bathrooms for Today's Homes, Home and Garden Bulletin No. 99. 15¢.

Planning the Kitchen and Workroom, Home and Garden Bulletin No. 12. 25¢.

Selected Bibliography on Building Construction and Maintenance, Report 40. 30¢.

Subterranean Termites--Their Prevention and Control in Buildings, Home and Garden Bulletin No. 64.

Wood Siding, How to Install It, Paint It, Care for It, Home and Garden Bulletin No. 53.

Others: Refer to 9th Annual Inventory of Available U.S.D.A. Popular Publications, 1966, Federal Extension Service, Washington, D. C.

Other U. S. Agencies.

Housing Definitions, Norman Mason, Superintendent of Documents, Washington 25, D. C. 30¢.

Housing for the Aged; a Reading List for Architects, Housing and Home Finance Agency, Office of the Administrator, Washington 25, D. C.

Insulation; Where and How Much, same address as above.

Low Rent Public Housing Project for the Elderly, U. S. Department of Health, Education and Welfare, Special Staff on Aging, Washington 25, D. C.

The Public Housing Program for Senior Citizens, Housing and Home Finance Agency, Public Housing Administration, Washington 25, D. C.

Senior Citizens Housing Loan Programs, same address as above.

Research Bulletins.

Church, K. E., Engineer. N. C. Uniform Residential Building Code,
N. C. Department of Insurance, Raleigh, N. C.

Exterior Latex Paints, National Paint, Varnish and Lacquer Association,
1500 Rhode Island Avenue, N. W., Washington, D. C. Write for other
information.

Family Activity Patterns Basic to Farm House Planning, Bulletin No. 678,
Agricultural Experiment Station, University Park, Pennsylvania.

Home Improvement Plans, Midwest Plan Service, Iowa State University,
Ames, Iowa. \$1.00.

Hug, H. M. Feasibility Study on Low-Cost Housing, Phase I, Final Report,
Research Triangle Institute, P. O. Box 490, Durham, N. C.

McCullough, Helen E. Space Design for Household Storage, University of
Illinois, Agricultural Experiment Station, Urbana, Illinois. \$1.50.

Planning a Home in the Country, Extension Bulletin No. 547, Washington
State University, Pullman, Washington.

Planning Kitchens in Community Buildings, Special Circular 25, Pennsylvania
State University, College of Agriculture, Extension Service, University
Park, Pennsylvania.

Simonds, J. W. A Comparison of Wear Resistance and Other Physical Charac-
teristics of Counter Surface Materials and Finishes, Bulletin N. S. 125,
Georgia Agricultural Experiment Station, University of Georgia, Athens, Ga.

Small Homes Council, Building Research Council, University of Illinois,
Urbana, Illinois. Write for list of publications.

Stewart, B. R., O. K. Keenze and Price Hobgood.
Durability of Materials and Methods of Constructing Tub and Shower
Enclosures

Indentation and Recovery Tests of Common Resilient Floor Coverings
A & M College of Texas, Texas Agricultural Experiment Station, College
Station, Texas.

Scrub-Resistance Characteristics of Kitchen and Bathroom Wall-Surfacing
Materials, same address as above.

Space Standards for Household Activities, Bulletin No. 868, University of
Illinois Experiment Station, Urbana, Illinois.

Storage Walls, Home Economics Research Series No. 1, Agricultural Experiment
Station, Auburn University, Auburn, Alabama.



AGRICULTURAL EXTENSION SERVICE

COOPERATIVE EXTENSION WORK IN AGRICULTURE & HOME ECONOMICS
NORTH CAROLINA STATE COLLEGE · RALEIGH, NORTH CAROLINA

Housing Books

October 11, 1963

Dear Co-Workers:

For your use and information, I am sending you the following. Please see that this information is made available to the agents working with housing in your county.

Study Plan Sheets for:

- 5928 - Cabin, 24' x 24', frame, slab on grade (USDA)
- 7139 - 3-bedroom farm house, masonry, with basement (USDA)
- 7141 - 3-bedroom farm house, masonry, slab on grade (USDA)
- 7155 - 2-bedroom farm house, masonry, slab on grade (USDA)
- 5929 and 5930 - farm garages (USDA)

Sketches representing blue prints available (study plans will be mailed when available):

- 7148 - Solar type farm cottage (USDA)
- 7151 - 4-bedroom farm house with basement (USDA)
- 7153 - 4-bedroom farm house, brick on block (USDA)
- 7163 - 3-bedroom farm house, basement, frame, flat roof (USDA)
- 7161 - 3-bedroom farm house, frame on slab (USDA)
- 7154 - 1-bedroom farm house, frame on slab (USDA)
- 7165 - 3-bedroom farm house, frame (USDA)
- 7166 - fallout shelter for 6 people, to be built in basement of house under construction (USDA)
- 7167 - 3-bedroom farm house, masonry, alternate frame (USDA)
- 77 - 3-bedroom farm house, frame, 960 sq. ft. (NC)

Bulletins:

- "How to Insulate Your Home for Electric Heat" (NRMJIA)
- "Clothing Storage" (NC Miscellaneous Pamphlet 214)

Information Leaflet on Result Demonstration House

Randolph County

I am also enclosing a list of all house plans available from this office.

Very truly yours,

W. C. Warrick

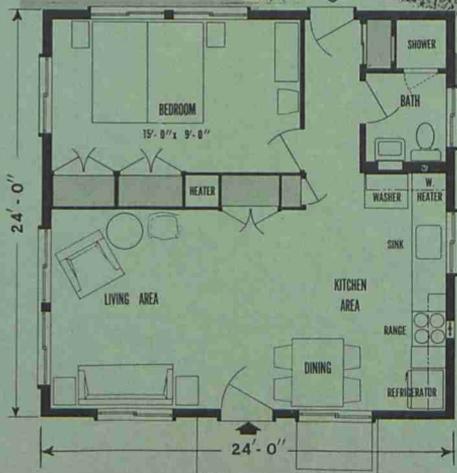
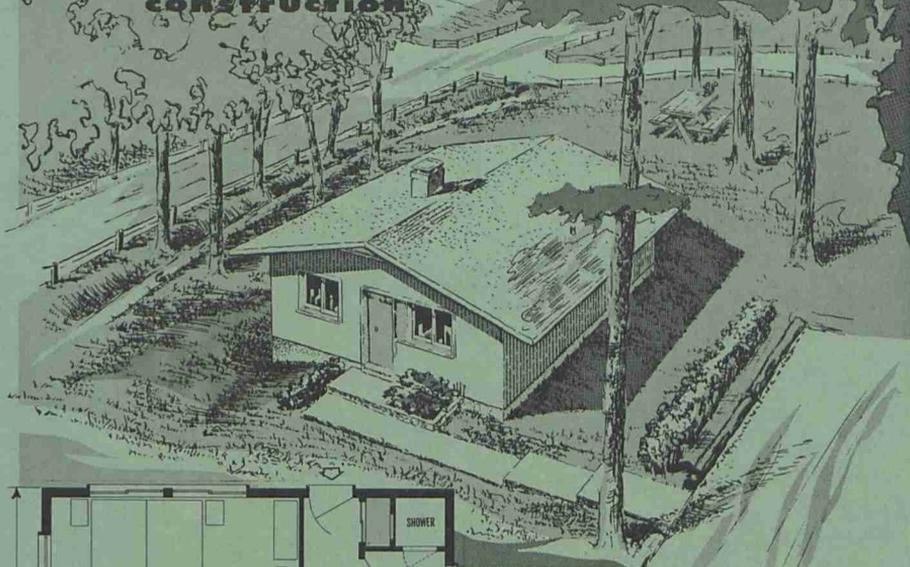
W. C. Warrick
Extension Agricultural Engineering Specialist

WCW:s
Enc.

Cabin

... frame,
slab-on-grade
construction

COOPERATIVE
FARM BUILDING
Plan No. 5928
(3-SHEETS)
PLAN EXCHANGE



You can build the exterior shell of this cabin and rough-in the plumbing at a reasonably low cost. Interior finish, storage walls, and an addition can be added later.

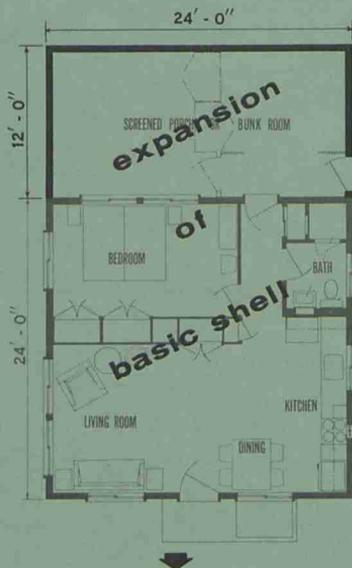
The simple, flexible interior arrangement makes the design adaptable to many uses, such as a beach, lake, or mountain cabin; a low-cost home (1, 2, or 3 bedrooms); or a temporary home shelter. The outside may be rustic or the finest modern siding. The inside may have rough framing and concrete floor exposed or may be highly finished. Thus, the design fits a wide variety of needs.

Washington, D.C.
Issued March 1963

UNITED STATES DEPARTMENT OF AGRICULTURE

Miscellaneous Publication No. 924

flexibility in arrangement and use



This cabin offers ideas for a farmer considering income from a developed recreational area. The basic building can be arranged in several different ways to accommodate the needs and price ranges requested by vacationers.

Expansion of the basic shell provides a pleasant screened porch, a bunk room, or two additional bedrooms.

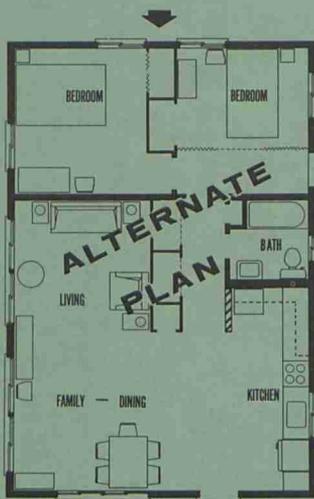
The working drawings show construction details for storage walls 2 feet wide, 4 feet long, and 8 feet high; they may be built from standard 4 x 8 feet sheets of material. If the walls are to be relocated at a later date, they should be slightly lower than ceiling height to facilitate moving. The walls may be located where desired, as roof trusses eliminate any need for interior load-bearing walls.

If the cabin is to be used for permanent living, storage space is needed outside. The space should be large enough to accommodate paints, hand and garden tools, lawn mower, outboard motor, gasoline, and similar equipment and supplies for present and future needs. A spacious shed that permits handy-man activities on rainy days is most desirable.

Careful consideration should be given to the heating system. If expansion is planned, the system must be capable of heating the larger unit.

The alternate plan shown below is one of several possible ideas for arrangement and expansion. It is less restricted on living, sleeping and storage space than is the basic plan, but it also requires outdoor storage for permanent living. The working drawings show only the expanded building with storage walls.

The roof trusses used in the design are simple lap-nailed construction and have been load tested. The truss members can be nailed together and trimmed later to eliminate precision marking and cutting. Follow the details of the working drawings and you can easily and quickly construct a reliable roof support.

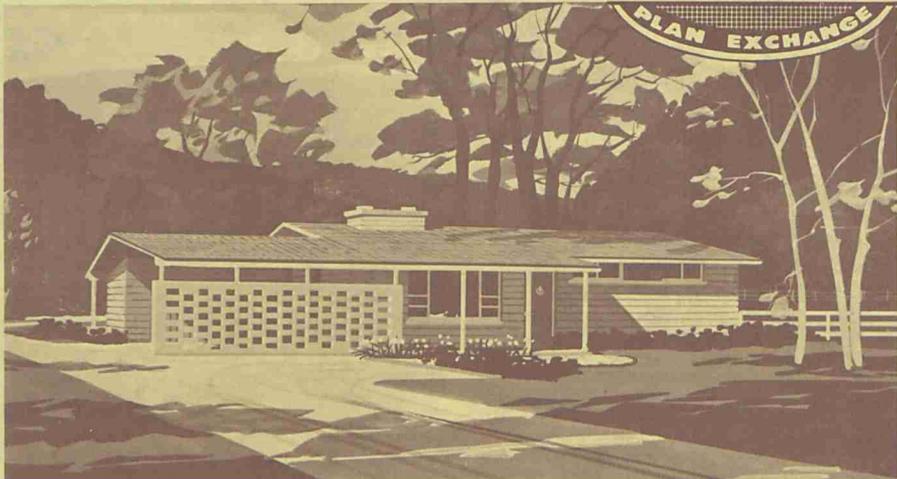


Complete working drawings may be obtained through your county agent or from the Extension agricultural engineer at most State agricultural colleges. There is usually a small charge.

ORDER PLAN NO. 5928, CABIN

If working drawings of this plan are not available in your State, write to the U.S. Department of Agriculture, Agricultural Engineering Research Division, Plant Industry Station, Beltsville, Md. The U.S. Department of Agriculture does not distribute drawings, but will direct you to a State that does distribute them.

3 Bedroom FARMHOUSE ... masonry, with basement

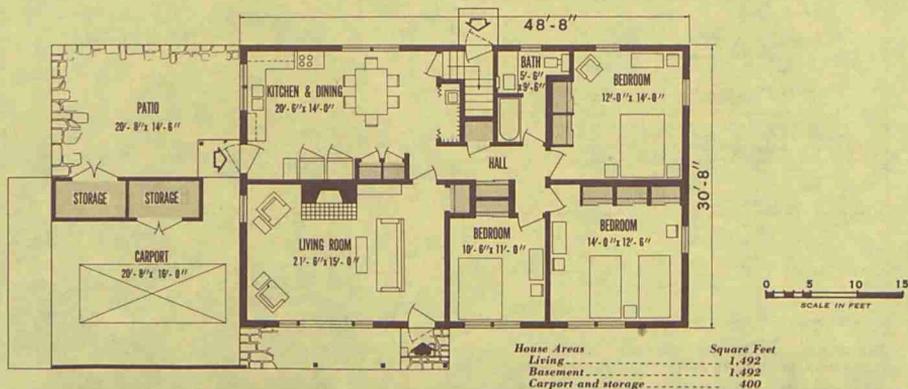


Plans for this masonry house were adapted through the cooperation of the Portland Cement Association from House Plan 7143, which is of frame construction. No changes were made in the floor plan.

The rectangular shape of the house is economical and permits good use of all interior space. Rooms and storage areas are generous in size. A coat closet opens from

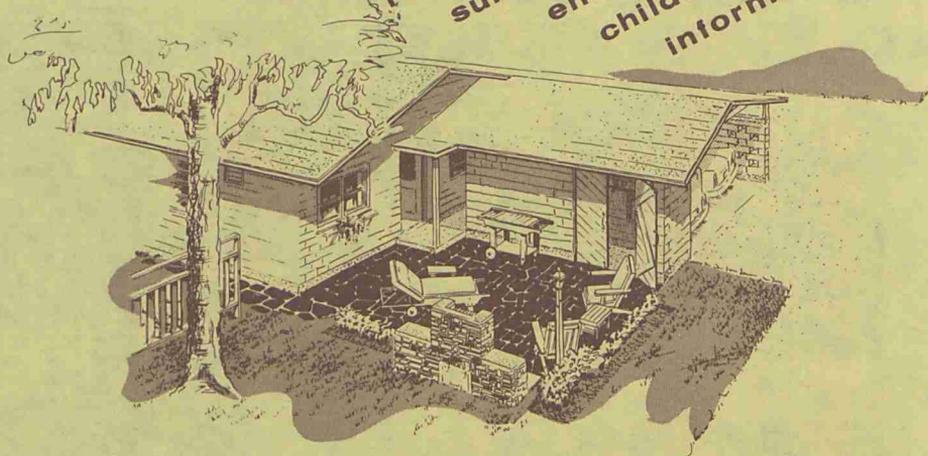
the living room. The closet for chore clothes opens from the kitchen. This closet, equipped with a lavatory as shown, is convenient for cleaning up after work or play. The double storage area in the kitchen next to the freezer is planned for cleaning equipment and supplies and for extra utensils and food supplies.

Laundry facilities are located in the basement.



outdoor living ...

**relaxation
sun bathing
entertaining
children's play
informal dining**



The patio area adjoining the kitchen and carport is located for privacy and is handy for serving outdoor meals and for supervising children at play. The storage room at the end of the carport can be used for outdoor furniture and cooking and sports equipment.

farmstead ...

If possible orient the house on the site so that you will have a pleasant view from the rooms with large windows. Accessibility to the highway and service roads must be considered. Also, prevailing breezes should carry barnyard odors and road dust away from the house.

Complete working drawings may be obtained through your county agent or from the Extension agricultural engineer at most State agricultural colleges. There is usually a small charge.

ORDER PLAN NO. 7139, 3-BEDROOM FARMHOUSE

If working drawings of this plan are not available in your State, write to the U.S. Department of Agriculture, Agricultural Engineering Research Division, Plant Industry Station, Beltsville, Md. The U.S. Department of Agriculture does not distribute drawings, but will direct you to a State that does distribute them.

Washington, D.C.

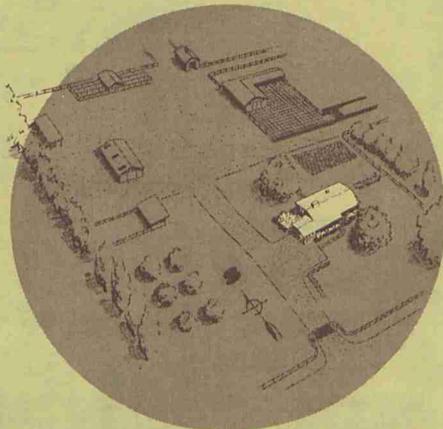
Issued December 1962

Developed by:

**AGRICULTURAL ENGINEERING RESEARCH DIVISION
CLOTHING AND HOUSING RESEARCH DIVISION
AGRICULTURAL RESEARCH SERVICE**

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington 25, D.C. - Price 5 cents

U.S. GOVERNMENT PRINTING OFFICE: 1962 O-64723



Extension Agricultural Engineering Information Leaflet

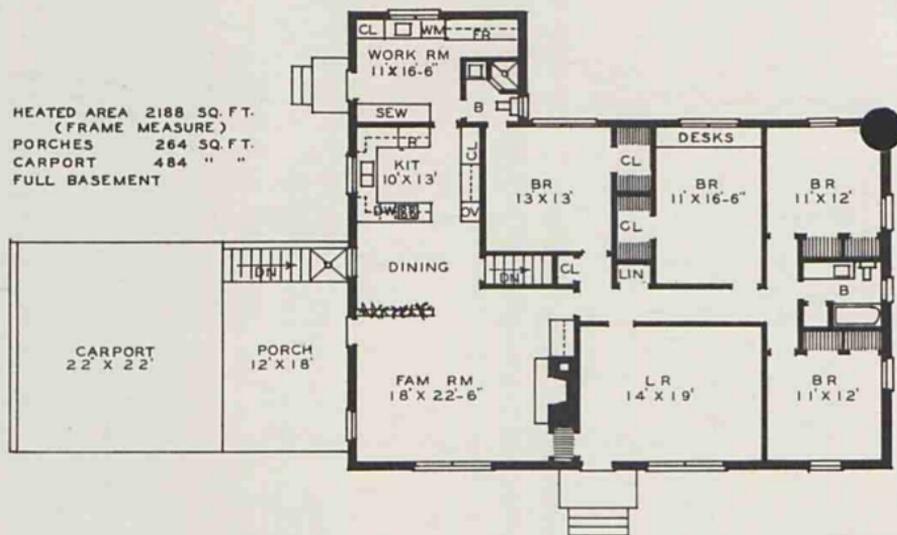


RANDOLPH COUNTY

Demonstration Housing

EXTENSION
AGRICULTURAL ENGINEERING

HEATED AREA 2188 SQ. FT.
 (FRAME MEASURE)
 PORCHES 264 SQ. FT.
 CARPORT 484 " "
 FULL BASEMENT



RANDOLPH COUNTY DEMONSTRATION HOUSE

By

W. C. Warrick

Extension Agricultural Engineering Specialist

Mr. D. S. Davis, RFD, Randleman, is a full-time farmer, and he is making it pay. His family moved into a fine new home on February 11, 1963 - a house with 2275 sq. ft. in the floor plan, a full basement, a large screened porch, and a double carport. The house was built with hourly wage labor plus some sub-contract work. The total cash cost was \$23,221. Mr. Davis estimated that the value of his timber furnished was \$1,000 additional, and the labor he did himself must also be added. He worked along with the builders in procuring materials, and he also did some actual labor on the house.

Planning for the house was begun in July 1961, and construction was begun in September 1962. The entire project was done in cooperation with the County Extension office and State Extension specialists.

The house has most of the features that can be included in a modern home for comfort, convenience, and low up-keep - and in addition it has beauty. Wall-to-wall carpeting in bedrooms, hall, and living room is a key to the completeness of this house. The family room-kitchen has roll vinyl flooring, and baths are done in durable ceramic tile.

Walls and ceilings are economical and easy to keep. Gypsum wallboard was used for walls and ceilings in all rooms except the everyday work areas. The walls in the family room-kitchen are birch plywood paneling. Kitchen cabinets and other built-ins in this room are birch plywood.

Some itemized costs were:

Electrician, for wiring and heat units	\$ 960.00
Insulation material	449.00
Electric fixtures, including attic fan and range hood	492.66
Plumbing, labor and materials, including pump	1,425.00
Tiling baths	740.00
Finishing gypsum wallboard	600.00
Painting	600.00
Cabinets (contracted)	1,420.00
Floor covering (labor and material)	1,967.84
Guttering (labor and material)	100.00
Metal post and railing	180.00
Building material, carpenter and mason labor	13,527.18
Well drilling (190 ft.)	760.00



The house is insulated by the all-weather comfort standard, which means that it is insulated well enough to use resistance electric heat economically. There are aluminum awning windows with no storm windows, although there are storm doors. The Davises' electric bill has been less than anticipated. The highest total monthly electric bill since they moved has been \$46. All thermostats are set and kept at a comfortable sitting room temperature.

The three Davis daughters are Kay, 18, Janie, 14, and Rita, 13. The sons are Jerry and Terry, who are 11. All are 4-H'ers. Kay has won a \$100 scholarship for FHA work.

Mrs. Davis was formerly Bernice Millikan of nearby Sofia Community. She was elected president of the Home Demonstration County Council for 1963, and also president of her local Home Demonstration Club. The family attends Cedar Square Friends Church, where Mrs. Davis is a leader.

The Davis farm contains 288 acres, plus 35 rented. Mr. Davis raises mostly feed for his 50-cow dairy herd. Mr. Davis, affectionately called "Preach", has "lived on this land all his life". In fact, the farm has been in the family for three generations. He inherited some of the farm and bought some.



North Carolina State College of Agriculture and Engineering of the University of North Carolina and the U. S. Department of Agriculture, Co-operating. State College Station, Raleigh, N. C., R. W. Shoffner, Director. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

3-Bedroom FARMHOUSE ...

masonry, slab on grade

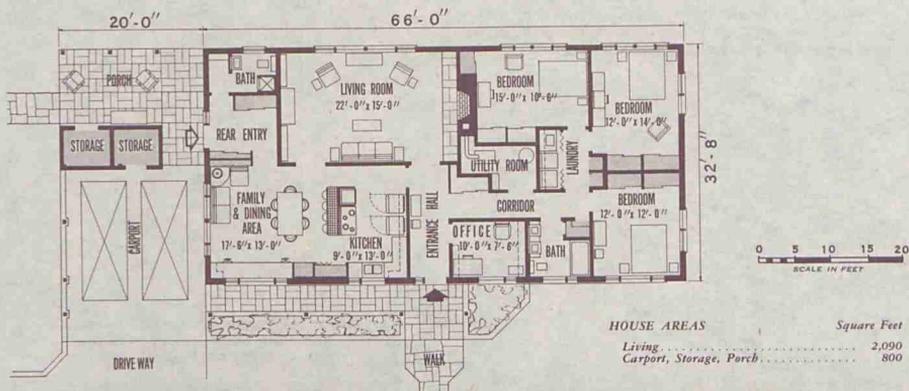


Plans for this masonry farmhouse were prepared through the cooperation of the Portland Cement Association.

Plan No. 7140 has a similar floor plan but features frame construction.

The rooms and closets are generous in size. The laundry center, located next to the sleeping area, is con-

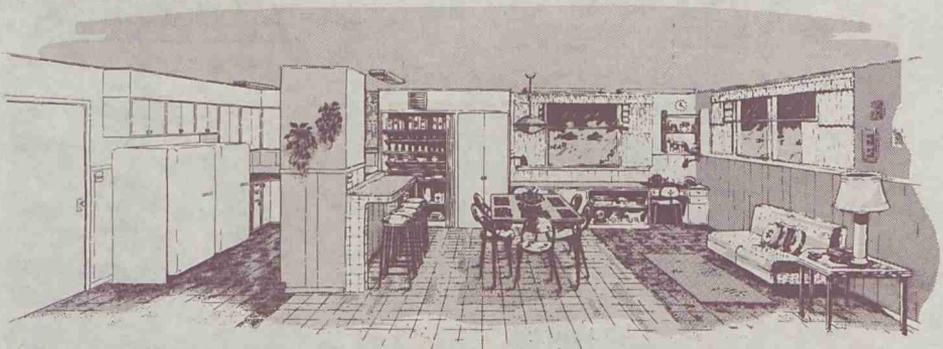
venient to the source of most soiled clothing and linen. There is an office for farm and household record keeping, and a family room planned for a number of activities including dining. The storage area at the end of the carport is useful for storing outdoor furniture, garden tools, and children's wheeled toys.



UNITED STATES DEPARTMENT OF AGRICULTURE

Miscellaneous Publication No. 914

INTERIOR :

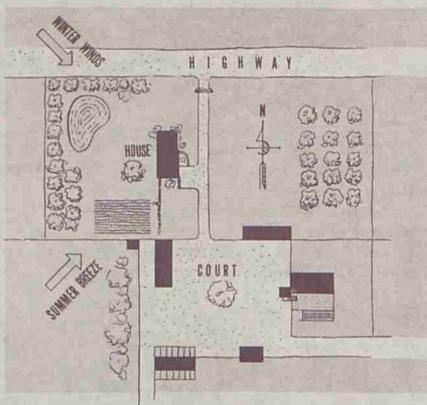


...kitchen, dining & family room

This view, looking toward the front of the house, shows the efficient and comfortable arrangement of the area devoted to family activities. The homemaker can easily supervise all activities while engaged in her usual household tasks. A desk for planning meals, a toy storage cabinet, and a sewing center are near the front window. Play space is adequate.

PLOT PLAN

The plot plan shows the position of the house in relation to a farm court. The house is located to take advantage of summer breezes and to avoid odors from the livestock area and dust from the lane. A wind-break provides protection from winter winds.



Complete working drawings may be obtained through your county agent or from the Extension agricultural engineer at most State agricultural colleges. There is usually a small charge.

ORDER PLAN NO. 7141, 3-BEDROOM FARMHOUSE

If working drawings of this plan are not available in your State, write to the U. S. Department of Agriculture, Agricultural Engineering Research Division, Plant Industry Station, Beltsville, Md. The U. S. Department of Agriculture does not distribute drawings, but will direct you to a State that does distribute them.

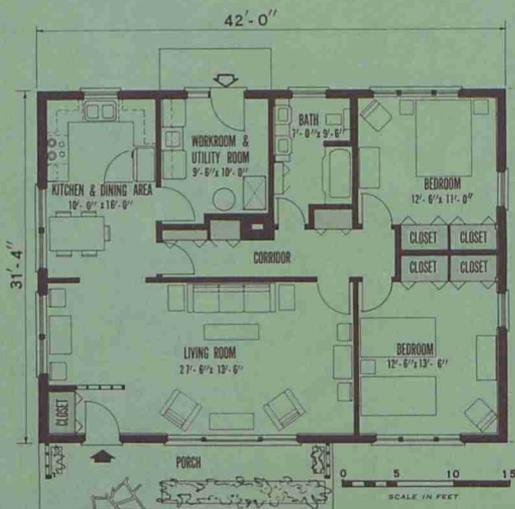
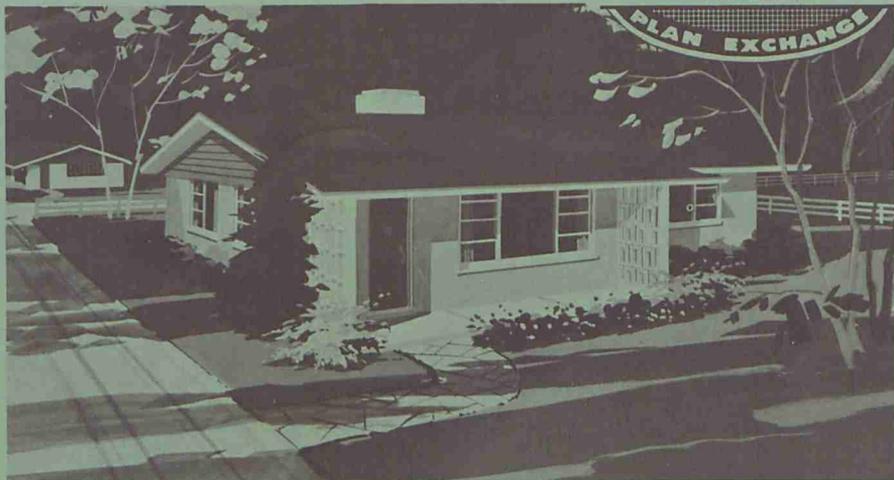
Developed By:

AGRICULTURAL ENGINEERING RESEARCH DIVISION
CLOTHING AND HOUSING RESEARCH DIVISION
AGRICULTURAL RESEARCH SERVICE

2 - Bedroom FARMHOUSE...

masonry construction

COOPERATIVE
FARM BUILDING
Plan No. 7155
(3-SHEETS)



This floor plan is identical to House Plan No. 7158, a two-bedroom house on slab, except details shown here are for masonry wall construction developed through the cooperation of the Portland Cement Association.

The U-shaped kitchen is convenient and popular. Double windows in the dining area and one over the sink provide excellent natural lighting. There is dining space in the kitchen for family meals. Company meals can be served in the large living room.

Storage areas are generous and conveniently located. To the left of the front entrance is a closet for outdoor wraps. Storage for chore clothes is provided near the rear door in the workroom. Wall hooks are suggested for economical and convenient storage.

Along the hallway that leads from the kitchen to the bedrooms are three storage units—one for canned foods, one for cleaning equipment and supplies, and near the sleeping area, one for linens.

House Area:	Square Feet
Living.....	1316
Porch.....	200

Washington, D.C.

Issued December 1962

UNITED STATES DEPARTMENT OF AGRICULTURE

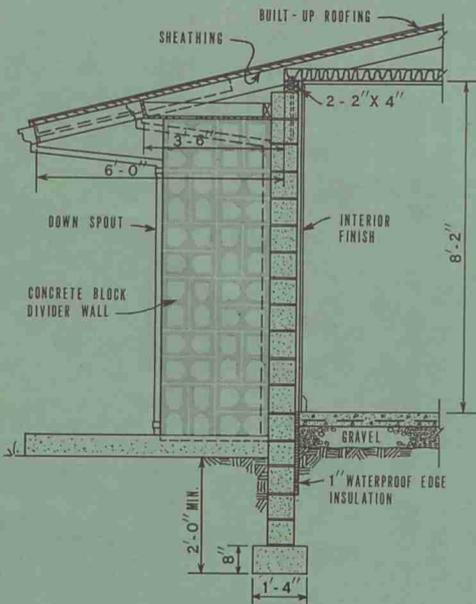
Miscellaneous Publication No. 916

This house can be completed in stages over a period of time. The completed shell of the house would be a weatherproof space in which to live while working on the interior partitions, and finishes. Bathroom, kitchen, and laundry equipment should be installed as soon as feasible after completion of the shell to permit reasonably comfortable living while work progresses on the interior.

Plumbing, electric service, and heating need to be planned before construction is started. All water and waste-disposal piping should be placed and tested before the slab is poured. For a hot-air perimeter heating system the warm-air ducts are cast in the concrete; similarly, piping for a hot water system, if used, must be roughed in and tested before the floor is poured.

Proper attachment of the plates and trusses to the top of the masonry wall should be made with wind-resistant fastenings. The type of window and door frames selected will determine when and how they are installed.

The block walls should be weatherproofed to prevent moisture movement through to the inside face.



Wall section ...

Complete working drawings may be obtained through your county agent or from the Extension agricultural engineer at most State agricultural colleges. There is usually a small charge.

ORDER PLAN NO. 7155, 2-BEDROOM FARMHOUSE

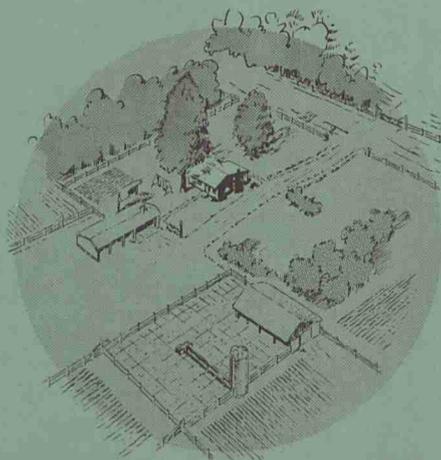
If working drawings of this plan are not available in your State, write to the U.S. Department of Agriculture, Agricultural Engineering Research Division, Plant Industry Station, Beltsville, Md. The U.S. Department of Agriculture does not distribute drawings, but will direct you to a State that does distribute them.

Developed by:

**AGRICULTURAL ENGINEERING RESEARCH DIVISION
CLOTHING AND HOUSING RESEARCH DIVISION
AGRICULTURAL RESEARCH SERVICE**

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington 25, D.C.—Price 5 cents

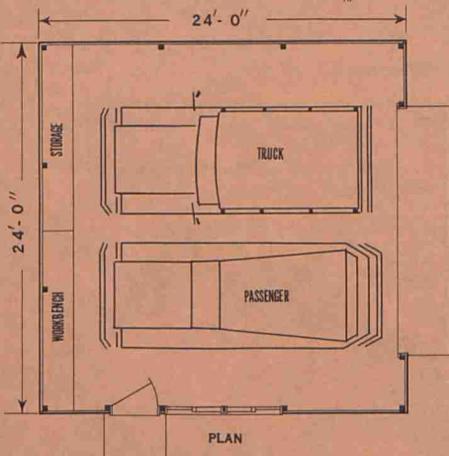
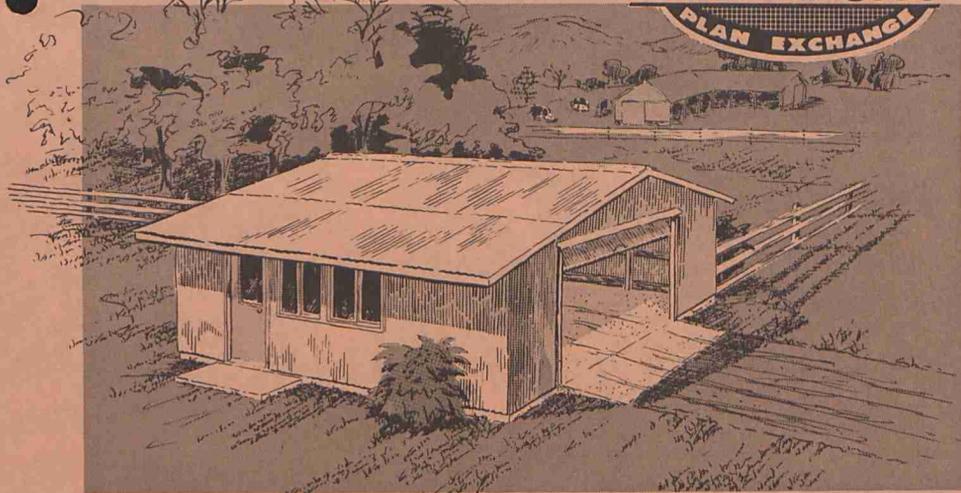
U.S. GOVERNMENT PRINTING OFFICE : 1942 OP—663143



Site ...

Farm Garages

COOPERATIVE
FARM BUILDING
Plan No. 5929
(2-SHEETS EACH) 5930
PLAN EXCHANGE



Trusses used in both garages described here, eliminate lintel problems over the wide doors. Trusses are easily built and connected with nails. They require less material than ordinary rafters and give a stronger roof. Try them.

Use composition roofing on 1-inch solid sheathing for Plan 5929, and metal roofing on 2 x 4 strip sheathing for Plan 5930.

Foundations, either continuous or post, can be placed and the garage completed with a dirt floor. Later, the dirt floor may be replaced with concrete.

Check the overhead door for proper clearance and hardware connections before you build the garage.

Complete working drawings may be obtained through your county agent or from the Extension agricultural engineer at most State agricultural colleges. There is usually a small charge.

ORDER PLANS BY NUMBER AND TITLE

If working drawings of this plan are not available in your State, write the U.S. Department of Agriculture, Agricultural Engineering Research Division, Plant Industry Station, Beltsville, Md. The U.S. Department of Agriculture does not distribute drawings, but will direct you to a State that does distribute them.

Washington, D.C.

Issued June 1963

UNITED STATES DEPARTMENT OF AGRICULTURE

Miscellaneous Publication No. 928

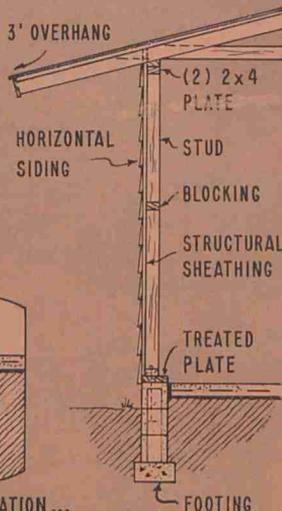
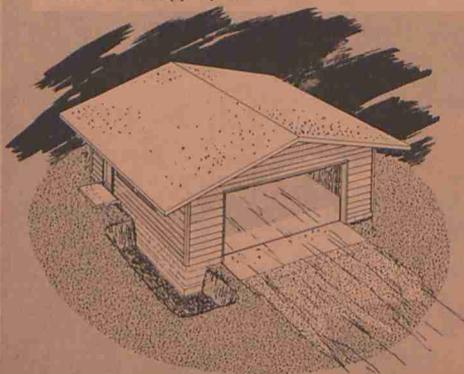
For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. - Price 5 cents

Plan No. 5929

FRAME CONSTRUCTION . . .

Either a masonry or a cast foundation can be used for the conventional stud wall. Siding may be vertical or horizontal.

Bolt the sill plate down. Securely fasten studs to the plates, and trusses to the upper plate.



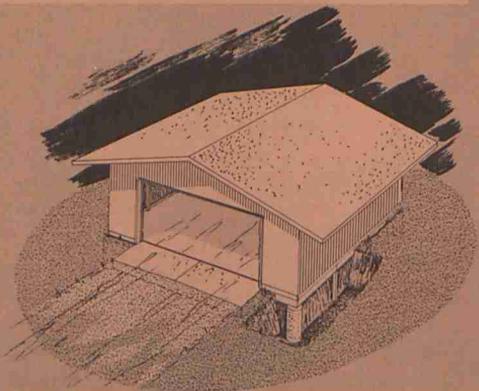
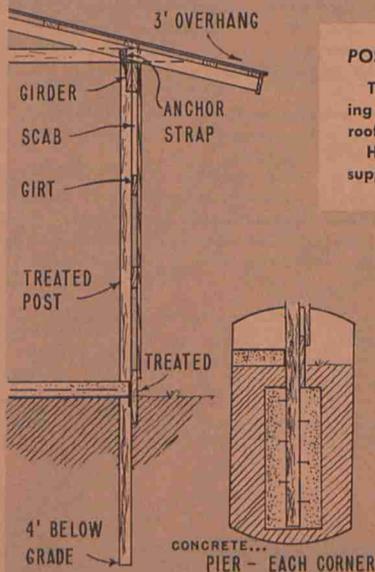
ALT. FOUNDATION...
(CAST CONCRETE)

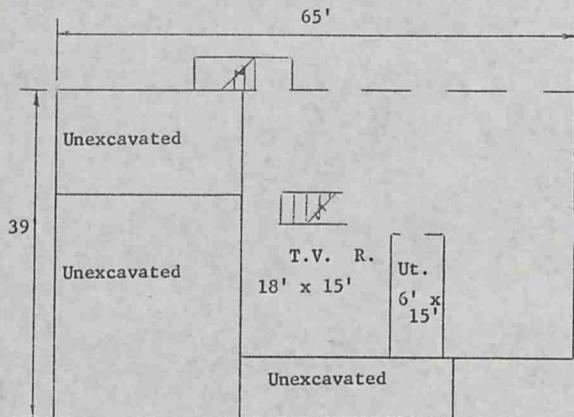
Plan No. 5930

POST CONSTRUCTION . . .

This type of construction is more wind resistant than stud framing and requires less material. Corner piers and posts anchor the roof to the ground.

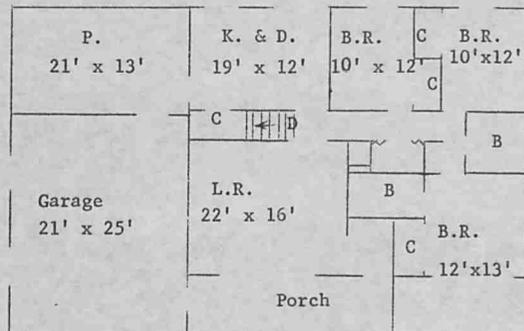
Horizontal nail ties and the pressure-treated foundation board support vertical siding material.



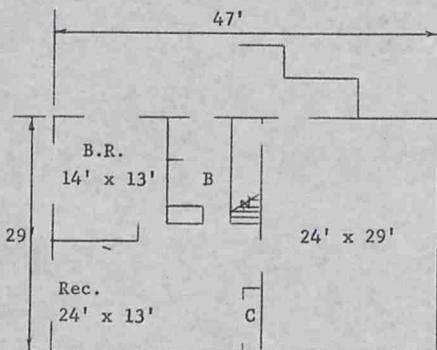


Basement
Plan No. 7163

Frame wall, flat roof

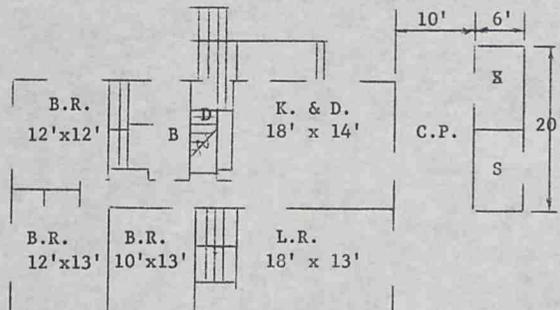


First Floor
Plan No. 7163

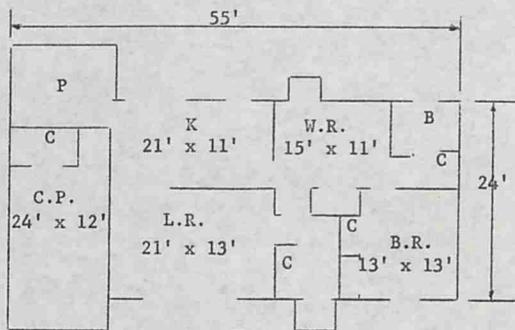


Basement - Plan No. 7151

Brick veneer on 4" block
backup, furred inside

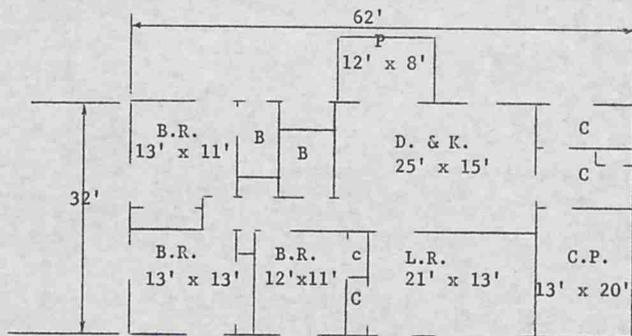


First Floor - Plan No. 7151



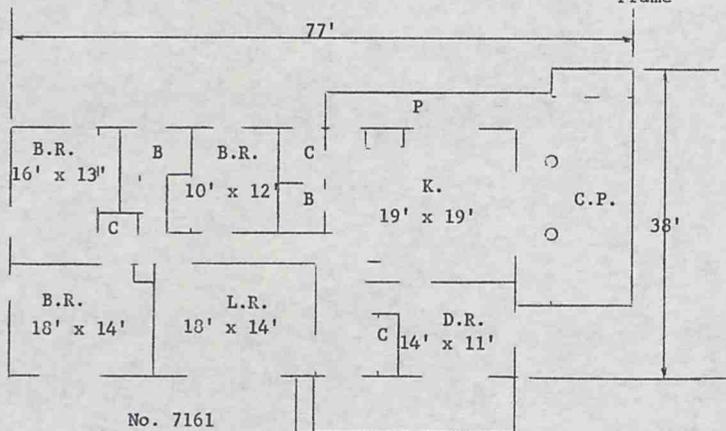
No. 7154

Frame on slab



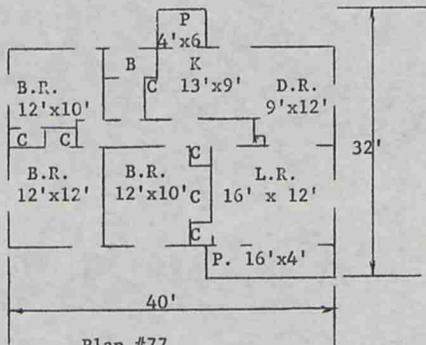
No. 7165

Frame

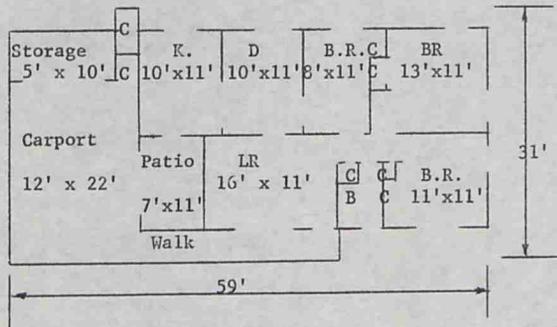


No. 7161

Frame on slab, trussed rafter



Plan #77
Frame



Plan #7167
Masonry and frame

Revised
& Enlarged

How to

insulate

your home

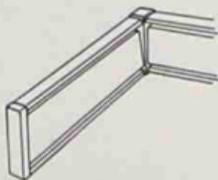
for

electric heating

THE RAPID PROGRESS OF ELECTRIC HOUSE HEATING

... is due to the ability of the nation's electric power producers to generate huge quantities of electricity at reasonable rates... the use of modern home insulating materials, such as mineral wool, that keep so much heat inside only a comparatively small amount of electricity is needed to steadily maintain the desired room comfort, ... and the dependability of electric house heating equipment.

There are many different types and sizes of electric house heating equipment that work on different principles. A trained electric house heating representative will be glad to discuss which may be best for you. Here is a brief description of some of the presently-used equipment:



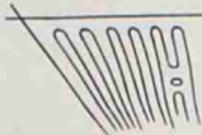
BASEBOARD ELECTRIC HEATING UNITS

Baseboard units give a uniform degree of heat over a wide area. Some units heat by radiation and convection. Others also have fans which blow warm air throughout the room.



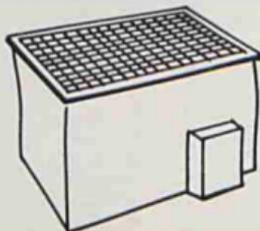
WALL PANELS

Radiant wall panels warm the occupants of a room with radiant heat waves... just as the sun warms the earth. Panels with fans for forced circulation of warm air are available, too.



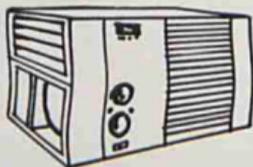
ELECTRIC CEILING CABLE

Electric ceiling cable is installed before the gypsum board or plaster ceiling surface. Thus, the whole ceiling radiates heat downward to warm occupants of the room below.



ELECTRIC FURNACE

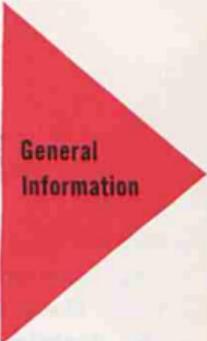
The electric furnace warms air by passing it over electrically heated elements and then blowing it into the room. Some are central units, heating a whole house.



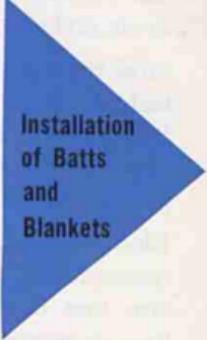
HEAT PUMP

The electric heat pump works year round—in effect, a reversible air conditioner. In winter it extracts heat from outside air (there's always some heat there, no matter how cold) and pumps it into the house. In summer it reverses and pumps heat from inside the house to the outdoors. There are both room and central units.

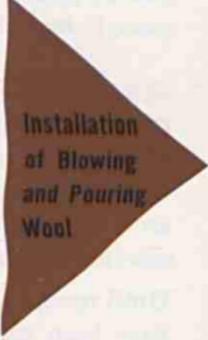
- Product description
- How to determine installed performance
- How much insulation is recommended
- Sill sealer and perimeter insulation



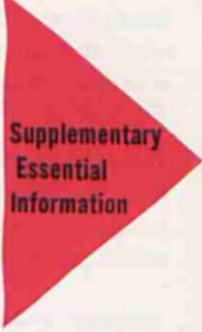
General Information



Installation of Batts and Blankets



Installation of Blowing and Pouring Wool

-
- 
- Ventilation Requirements
 - Vapor Barriers
 - How to determine the density of blowing wool

Supplementary Essential Information

PRODUCT DESCRIPTION

Mineral wool home insulations are made from rock, slag, or glass fibers. These fibers are formed into batts and blankets, blowing and pouring wools, and rigid perimeter insulation.

Most batts and blankets have an attached vapor barrier on one side. Many are totally enclosed, with a vapor barrier on one side and a vapor-permeable material on the other.

Blowing and pouring wools are names for mineral wool pellets of a size that can be blown through a hose or poured from a bag into the space to be insulated.

HOW TO DETERMINE INSTALLED PERFORMANCE

The purpose of house insulation is to provide resistance to the flow of heat . . . whether it's heat escaping from a house in winter or entering a house in summer.

Until recently, inches of thicknesses have been used as an indication of insulation value. However, today's mineral wool products of identical insulating value have wide differences in their physical characteristics.

Considering the purpose of insulation, the ultimate answer a user of insulation wants to know is how much resistance to heat flow a par-

ticular type of mineral wool will provide when he's put it where he plans to use it. And he wants this answer without having to make elaborate mathematical calculations.

To provide just such information, mineral wool batts and blankets now have an "R" number printed on the vapor barrier and the carton. This "R" number indicates *installed resistance*. It shows the total insulating value provided when any mineral wool product is *put in place* in the house. "R" includes the value of the mineral wool itself plus any adjacent air space and surface values. *This single "R" number also takes into account the influencing factors of thickness, density and conductivity.*

The greater the "R" number the greater the insulating value.

Where the same product can be used in more than one part of the home, "R" numbers for each application are given.

Blowing wools are packaged in bags marked with the installed densities, thicknesses and corresponding coverages per bag required to meet the standard ceiling installed resistance of R-19, and the standard wall installed resistance of R-11.

HOW MUCH INSULATION IS RECOMMENDED? The National Mineral Wool Insulation Association recommends its *Quality Home Requirements* for all electrically heated houses:

CEILINGS	R-19 (A)
WALLS	R-11
FLOORS*	R-13

**over unheated spaces*

The *Quality Home Requirements* are also the industry's recommendation for air conditioned homes. Thus the house that is insulated to these recommendations for electric heating is automatically insulated in the right amounts and places for air conditioning, whether installed now or later.

Quality Home Requirements meet the recommendations of the All Weather Comfort Standard for electrically heated and air conditioned houses.

(A) For special situations where additional insulation is desired, mineral wool products designated R-24 should be specified.

SILL SEALER A mineral wool sill sealer installed between the foundation and the wooden sill acts as a gasket to minimize infiltration. See Figure 1.

With slab-on-grade construction, this sealer should be applied between the sole plate and the concrete slab, as shown in Figure 2.

A sill sealer should be used in all applications except for floors over well vented crawl spaces.

PERIMETER INSULATION Most heat escapes from concrete floor slabs around their outside edges, or perimeters. This heat loss is reduced by using perimeter insulation. A typi-

cal installation of perimeter insulation is shown in Figure 2.

A ground moisture seal laid *under* the slab is usually required to protect the finished flooring on *top* of the slab.

Perimeter insulation may be used around the interior face of foundation walls and *unvented* crawl spaces in place of batts or blankets between the floor joists. A ground moisture seal over the crawl space earth is required with this application.

Note that weep holes are required at the base of the cavity in brick veneer walls, to allow wind driven moisture to escape from the cavity.

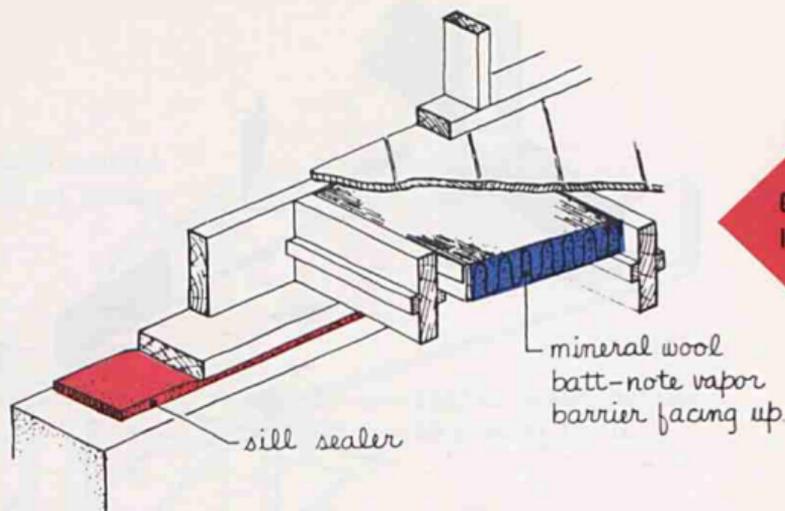


Figure 1 Location of sill sealer.

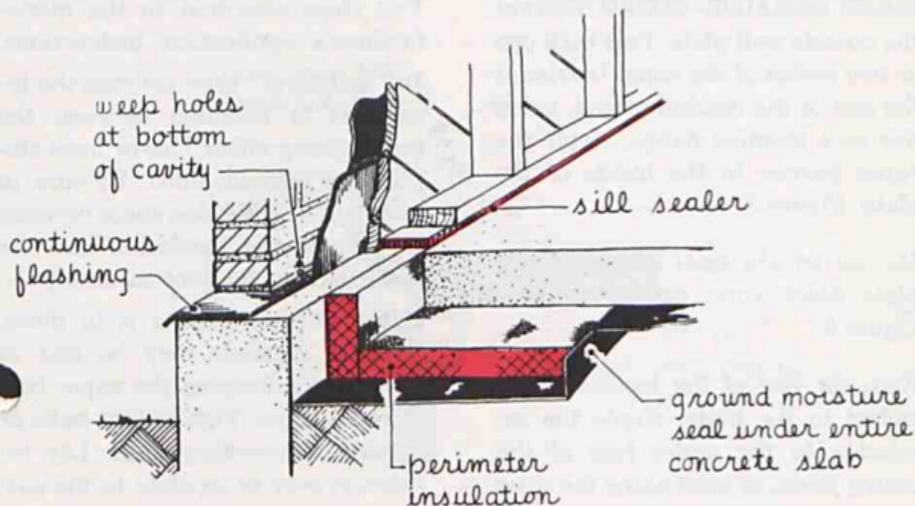


Figure 2 Perimeter insulation application.



CEILING INSULATION—GENERAL Start at the outside wall plate. Peel back one or two inches of the vapor barrier at the end of the insulation and, using this as a stapling flange, staple the vapor barrier to the inside of the plate, Figure 3.

Do not let the wool on top of the plate block eave ventilation. See Figure 4.

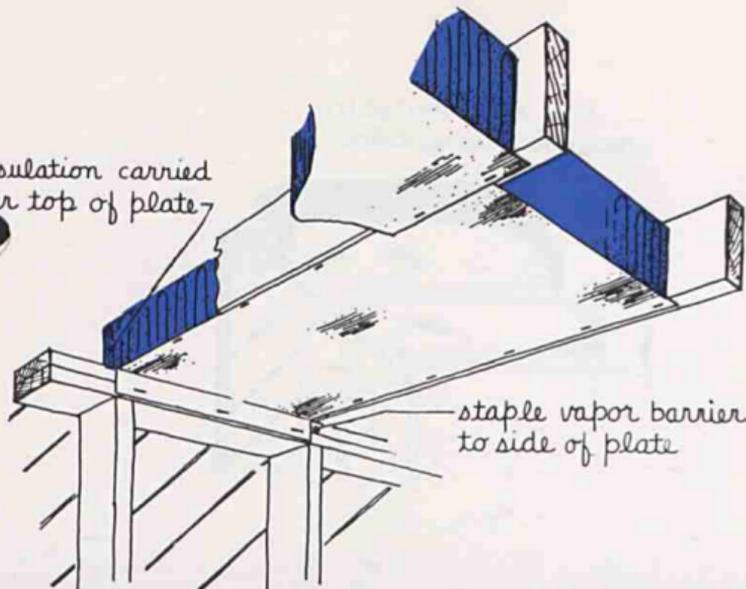
With the end of the insulation attached to the plate, staple the insulation to the under face of the ceiling joists, or inset along the sides of the joists, Figure 5, next page. Reflective faced insulation *must* be inset stapled to achieve its full insulating value. Pay close attention

Pay close attention to the manufacturer's application instructions.

In "cathedral" type ceilings, the insulation is installed between the rafters using either face or inset stapling as recommended. Be sure to maintain a ventilation space between the top of the insulation and the under side of the roof sheathing.

If the finished ceiling is in place, batts or blankets may be laid in from above, keeping the vapor barrier side *down*. Tightly butt batts or blankets where they meet. Lay insulation over or as close to the outside plate as possible without blocking the eave vents. This is particularly important with low-pitched roofs.

insulation carried
over top of plate

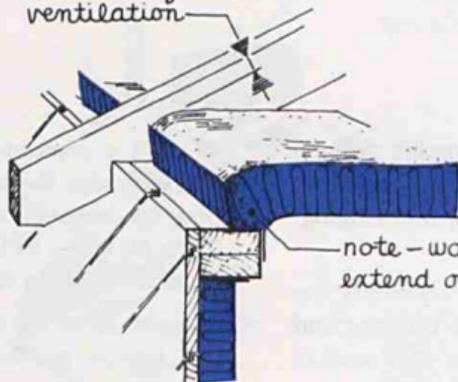


Batts
and
Blankets

staple vapor barrier
to side of plate

Figure 3 *Ceiling insulation at outside wall.*

clearance for
ventilation



note - wool to
extend over plate

Figure 4 *Ventilation clearance.*



CEILING INSULATION—BRIDGING If there is sufficient clearance, compress the ceiling insulation under the bridging,

OR Cut away the wool and carry the vapor barrier under the bridging and staple it in place. Then stuff wool in and around bridging,

OR Add a separate piece of vapor barrier under the bridging, overlapping the barriers of adjoining batts. Then fill space in and around bridging with wool, as shown in Figure 9.

Regardless of the method used, vapor barrier protection when specified, be continuous.

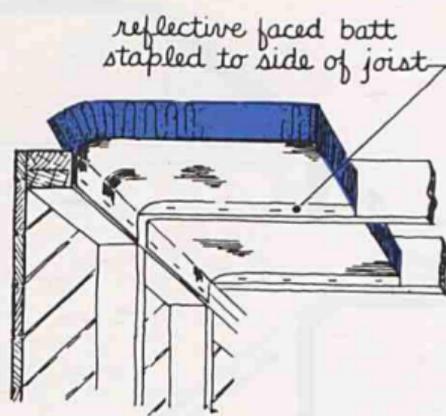


Figure 5 Ceiling insulation, inset stapling.

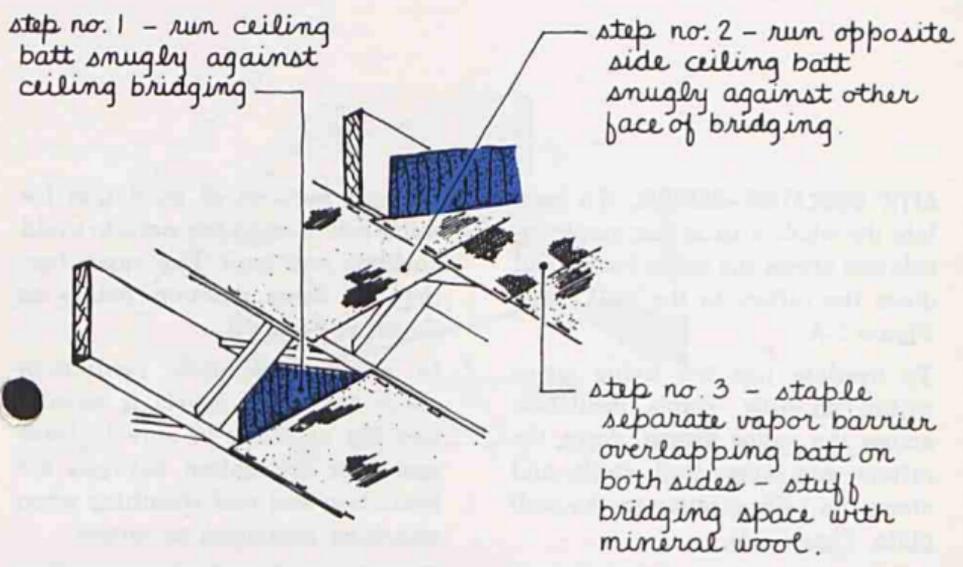


Figure 6 Method of insulating bridging between ceiling joists.



ATTIC INSULATION—GENERAL To insulate the whole attic space, staple insulation across the collar beams and down the rafters to the wall plate, Figure 7-A.

To insulate just the living space within an attic, staple insulation across the collar beams, down the rafters and knee wall studs and along the ceiling joists to the wall plate, Figure 7-B.

Do not try to run a continuous blanket across the collar beam and down the rafters and knee wall. Use

separate sections of insulation for collar beams and knee walls to avoid buckling and gaps. Lap vapor barriers at these junction points as shown in Figure 8.

In either application, ventilation above the collar beams is mandatory. In addition, be sure to leave space for ventilation between the insulation and roof sheathing when attaching insulation to rafters.

Use plenty of staples no more than 6" apart to avoid gaps along the stapling flange.

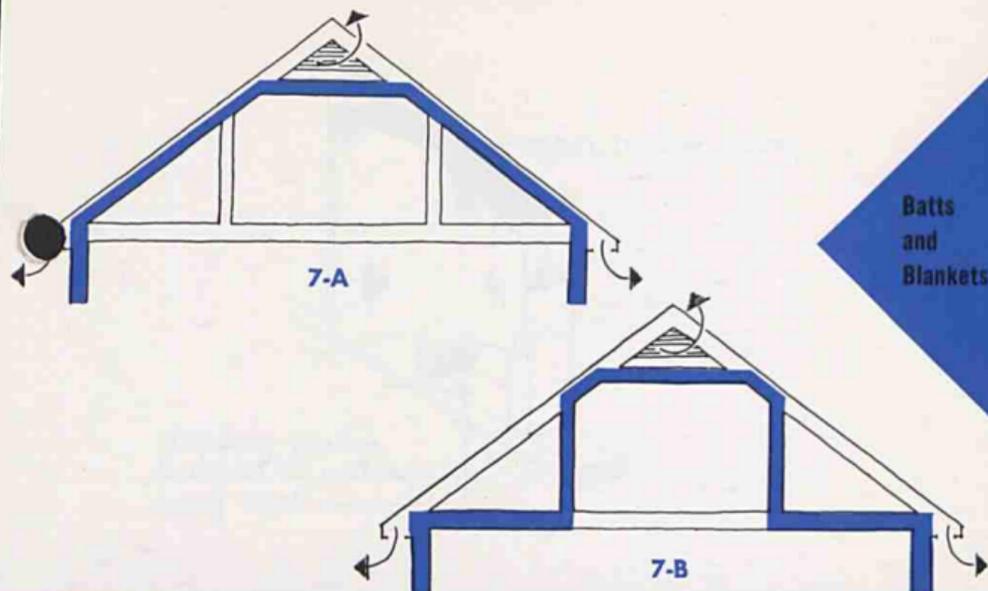


Figure 7 Attic insulation—satisfactory methods.

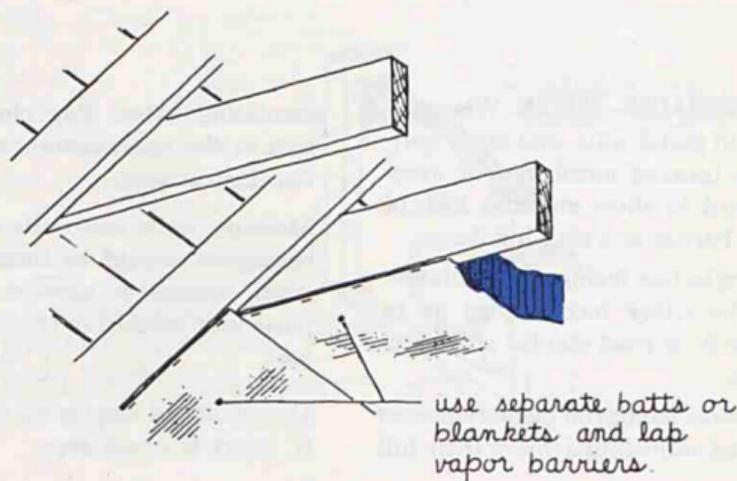
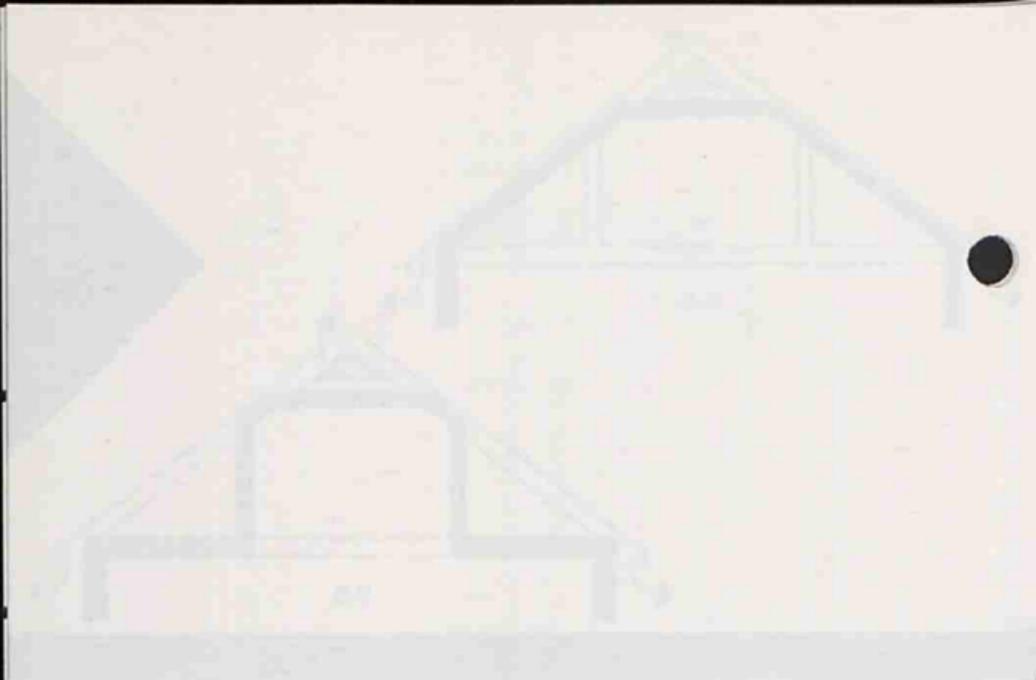


Figure 8 Attic insulation—framing offsets.



WALL INSULATION—GENERAL When stapling to plates, sills, and other horizontal framing members, cut away the wool to allow an extra inch of vapor barrier as a stapling flange.

Non-reflective facings on insulation may be either face stapled as in Figure 9, or inset stapled as in Figure 10.

Reflective facings on insulation *must be inset stapled* to achieve their full

insulating value. Pay close attention to the manufacturer's application instructions.

Masonry walls and walls of heated basements should be furred to the depth required to accommodate the particular insulation chosen for the job.

Use plenty of staples no more than 6" apart to avoid gaps.

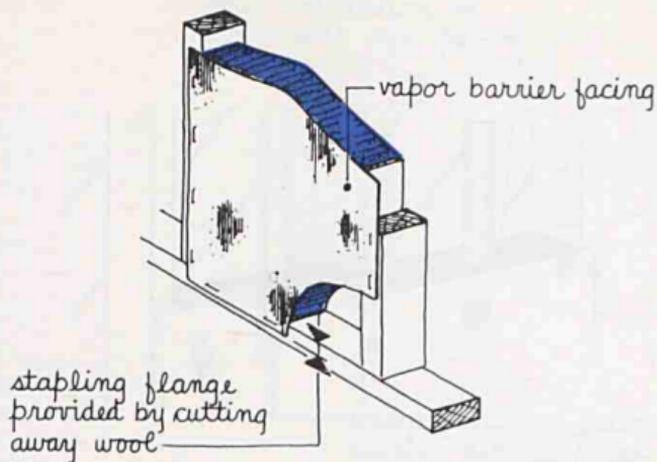


Figure 9 Face Stapling.

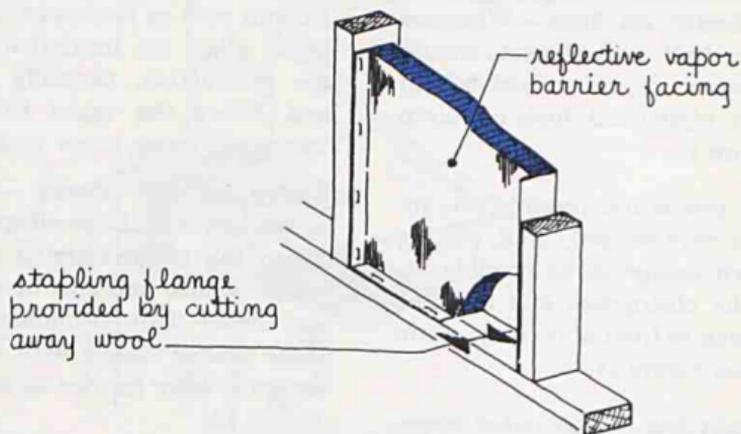


Figure 10 Inset Stapling.

WALL INSULATION—OBSTRUCTIONS

Piping Conduit and Ducts — Wherever possible, batts and blankets should be compressed and tucked behind conduit, piping and ducts as shown in Figure 11.

Where this is not possible, the insulation may be easily split, placing as much insulation as possible behind the obstruction and omitting insulation in front of it on the warm side. See Figure 11.

Wall Projections—Where outlet boxes,

electrical receptacles, and wall projections such as faucets are encountered, place the insulation behind the obstruction, carefully cutting and fitting the vapor barrier to insure maximum vapor protection.

Window and Door Framing — Where accessible, stuff the small spaces between the rough framing and the heads, jambs, and sills of windows and doors with insulation. Cover these stuffed spaces with a small, separate vapor barrier as shown in Figure 12.

omit insulation on
warm side of pipe

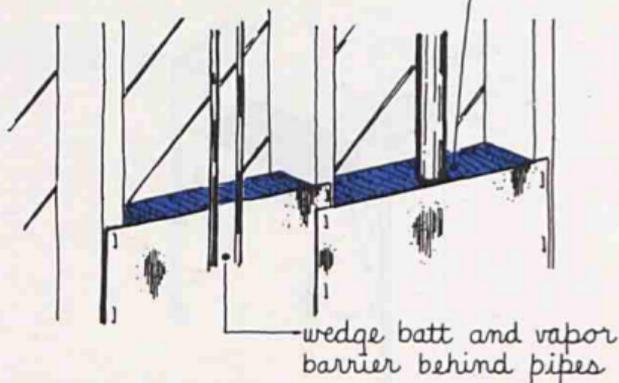


Figure 11 *Insulating behind pipe and conduit—two methods.*

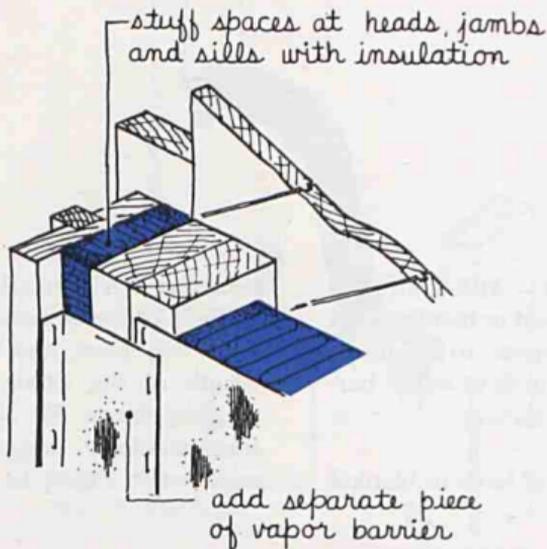


Figure 12 *Insulation and vapor protection—door and window framing.*

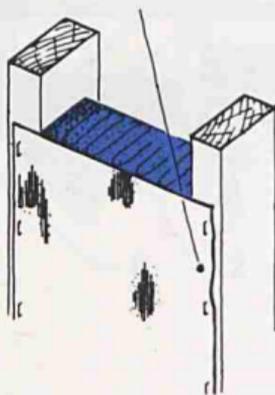


WALL INSULATION — NON-STANDARD SPACES—Cut the batt or blanket a bit wider than the space to be filled, leaving an extra inch of vapor barrier as a stapling flange,

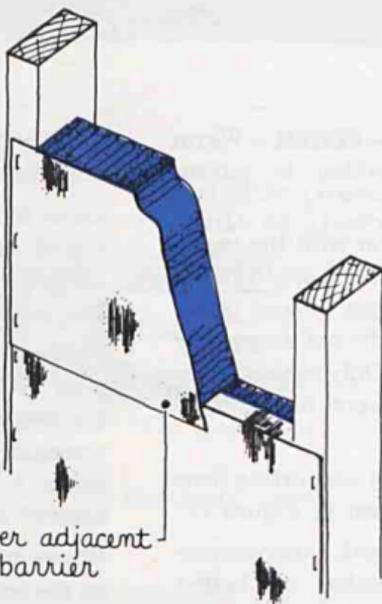
OR apply a series of batts or blanket

sections horizontally across the space. Cut the sections a little wider than the space, and use the extra length of the vapor barrier as stapling flange. Fit each successive piece similarly, lapping the flanges as shown in Figure 13.

extra width of vapor barrier
to form stapling flange



Batts -
and
Blankets



lap over adjacent
vapor barrier

Figure 13 Two ways of insulating non-standard spaces.

FLOOR INSULATION—GENERAL—Warm side vapor protection is recommended.

Place the insulation with the vapor barrier facing up in all applications *except* where a vapor barrier paper is used in place of the building paper over the sub floor. Only in this application may the vapor barrier face down.

Typical methods of supporting floor insulation are shown in Figure 14:

1. Use of a thin, rigid, vapor-permeable board supported on ledger strips nailed to floor joists.
2. Galvanized wire mesh stapled to the under face of the joists.
3. Galvanized wire mesh supported on ledger strips.

Other systems of support not illustrated include baling wire lacing, arched wire supports, wood slats, and prefabricated form boards.

Reversed flange material may be used as floor insulation and may be stapled from below. If the vapor permeable face toward the crawlspace is non-reflective, additional support may be required

Where insulation is applied near or on the bottom face of the floor joists, it should be turned up vertically at the header, or a separate batt should be installed as shown in Figure 15.

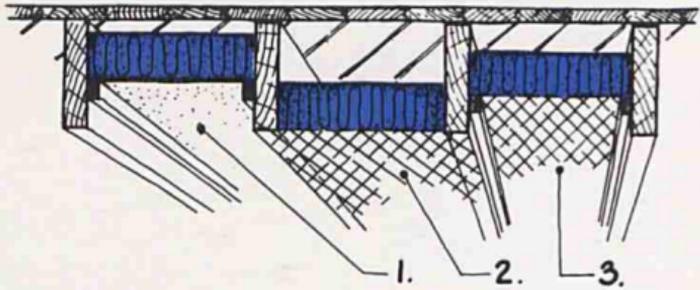


Figure 14 *Systems of floor support.*

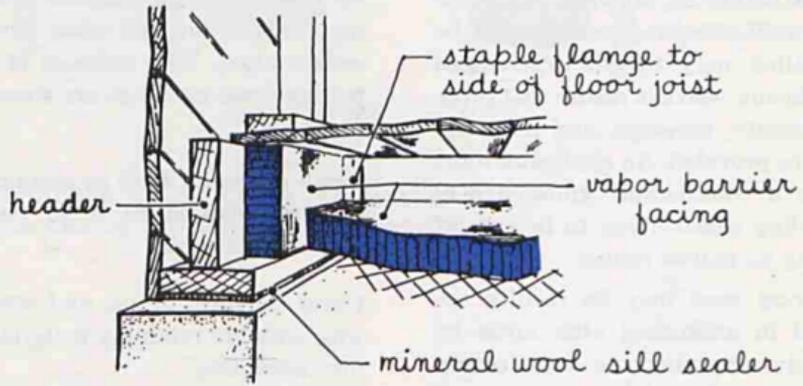


Figure 15 *Floor insulation at header.*



INSTALLATION OF BLOWING AND POURING WOOL—Blowing wool should be installed only by an *experienced* applicator who can assure that proper density, coverage, and thickness will be provided. An applicator must have a considerable knowledge of building construction to be sure of filling all hollow spaces.

Pouring wool may be readily applied in unfinished attic areas by simply emptying the bags evenly between ceiling joists, paying particular attention to the manufacturer's recommendations as to the proper thickness and coverage per bag. The wool may be leveled with a wood slat or garden rake.

Be sure that eave ventilation openings are not blocked when blowing ceiling areas. Two methods of protecting these openings are shown in Figure 16.

Small openings, such as around the chimney, should be hand packed with mineral wool.

Cover cavities, drops, and scuttles with suitable retaining material before insulating.

In floored attics, floor boards must be removed as required for access to all areas to be insulated. Check for obstructions, such as bridging and conduit, between openings.

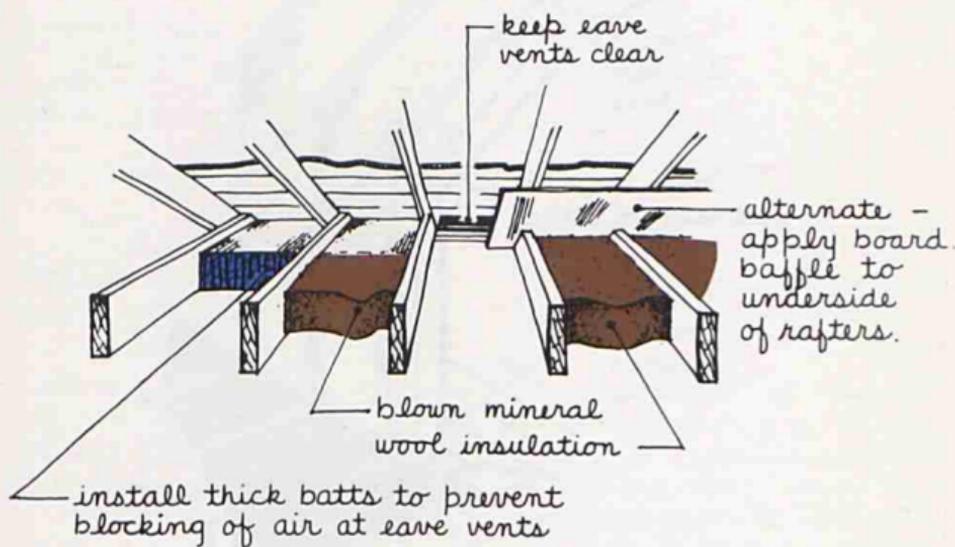


Figure 16 *Protecting eave ventilation openings.*



BLOWING FINISHED ATTIC AREAS—When blowing wool is applied in attics containing enclosed areas, the horizontal ceiling and collar beam surfaces are blown in the normal

manner.

The knee walls and rafters of the enclosed area should be insulated with batts or blankets as shown in Figure 17.

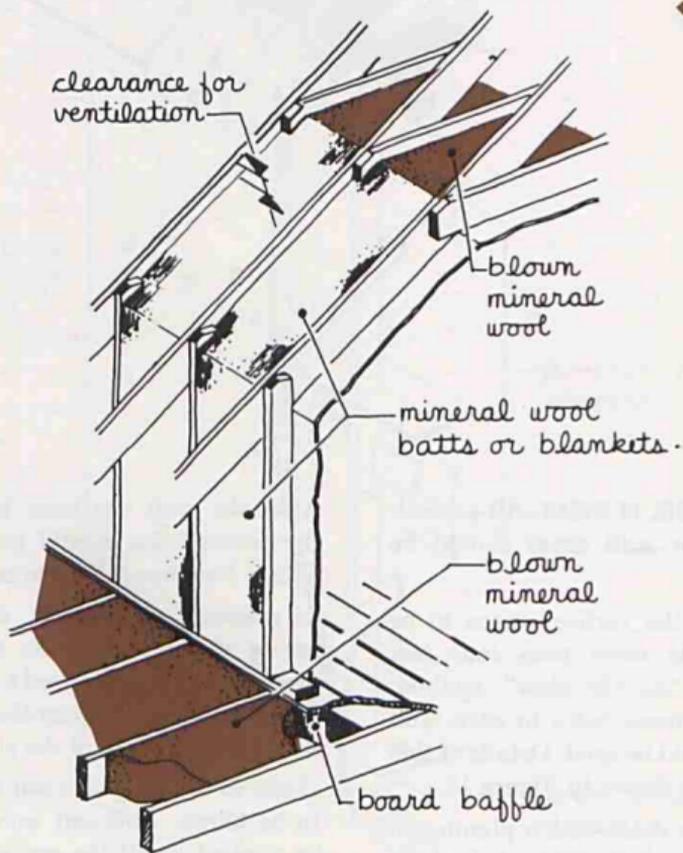


Figure 17 *Blowing finished attic areas.*

BLOWING WOOL IN WALLS—All accessible exterior wall areas should be insulated.

Whenever the vertical space to be insulated is more than four feet high, the “double blow” method, with two access holes to each stud space, should be used. Details of this method are shown in Figure 18.

Check each space with a plumb bob for possible obstructions below the holes. Insert a flexible steel rule to check for obstructions above the holes.

After the wall has been insulated, the access holes should be covered with a *breather-type* retainer.

In existing construction, the number of shingles or bricks to be removed may be minimized by cutting access holes as close together as possible on either side of the stud.

If spaces at joists between floors are to be blown, sufficient wool should be applied to fill the space the full depth of the joists.

For walls in finished attic areas see Page 22.

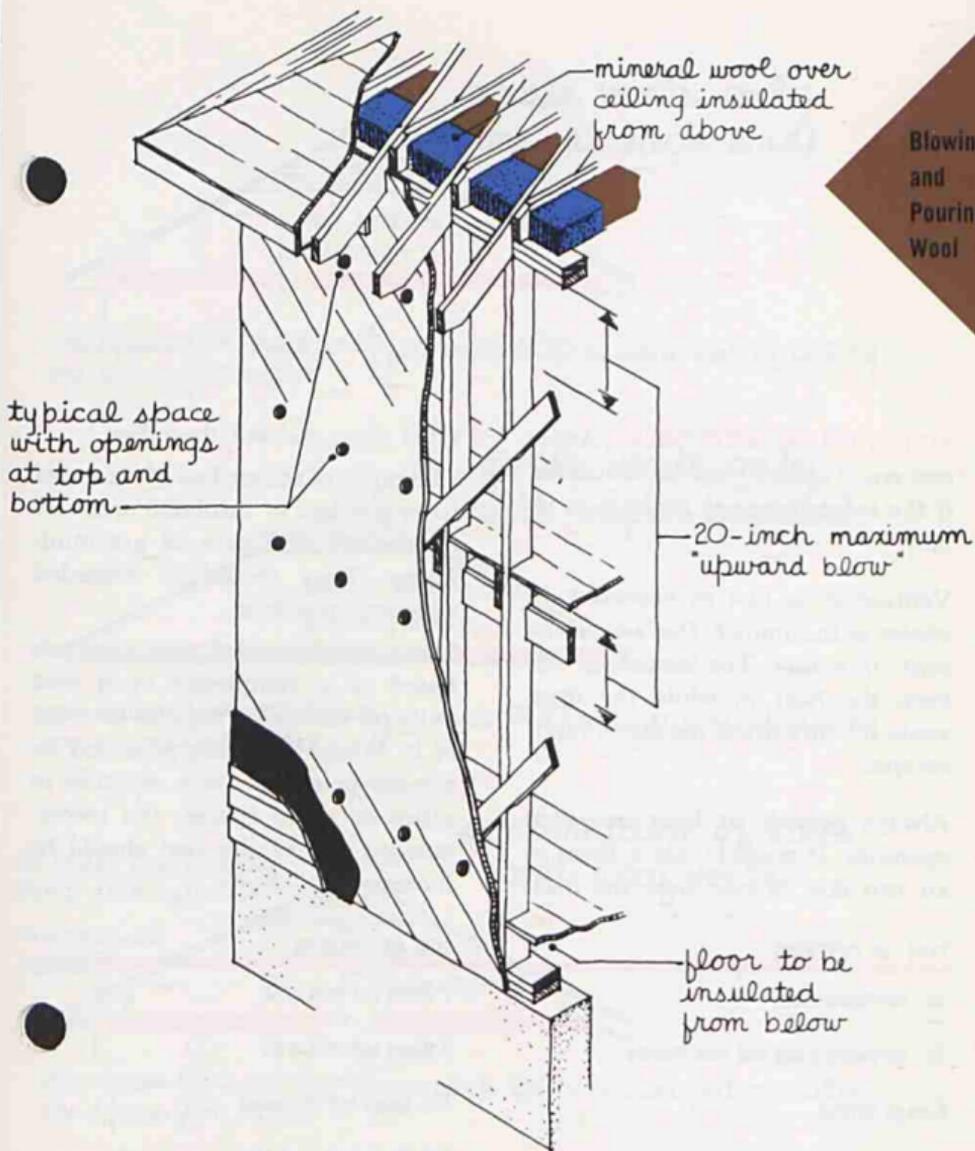


Figure 18 The "double blow" method of access.

VENTILATION OF ATTIC AREAS—Attics and crawl spaces must be ventilated if the insulation is to perform at its best.

Ventilation is just as necessary in winter as in summer. *Don't close the vents in winter.* The insulation will keep the heat in while the open vents let unwanted moisture vapor escape.

Always provide at least two vent openings. If possible, place them so air can flow in one, over the insu-

lated area, and out the other.

The ratios of square feet of vent area to square feet of insulated area recommended in Figure 19 are minimums. They should be exceeded whenever possible.

These recommended vent sizes are based on a completely open vent with no screen or louvers in front of it. Where vents are protected by screens or rain louvers, whether in attics or crawl spaces, the recommended size of the vent should be increased as follows:

TYPE OF COVERING

¼" hardware cloth

¼" hardware cloth and rain louvers

8-mesh screen

8-mesh screen and rain louvers

16-mesh screen

16-mesh screen and rain louvers

SIZE OF OPENING

1 times net vent area

2 times net vent area

1½ times net vent area

2¼ times net vent area

2 times net vent area

3 times net vent area

gable vents only
(one at each end)



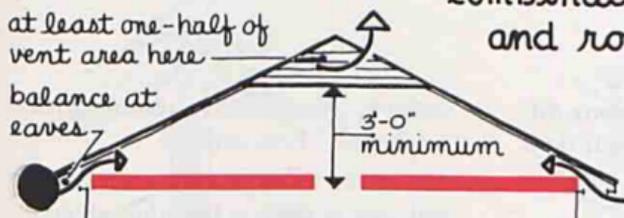
one square foot inlet and } for each 300 square feet of ceiling
one square foot outlet

gable vents only
(with vapor barrier)



one square foot inlet and } for each 600 square feet of ceiling
one square foot outlet

combination of eave
and roof vents



one square foot inlet and } for each 600 square feet of ceiling
one square foot outlet

Figure 19 Minimum attic ventilation ratios.

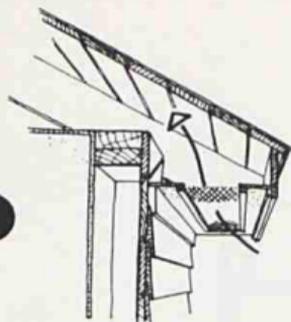


TYPES OF VENTS—There are many different types of vents that will do a highly satisfactory job and blend in with any type of architecture.

A number of these successful types are shown in Figure 20. The ridge

vent is particularly useful with “cathedral” type ceilings.

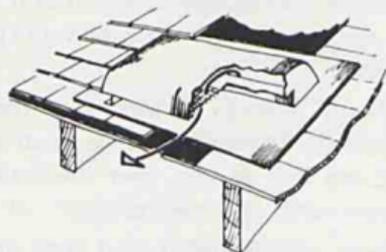
The main thing to be remembered with any of them is that they should be large enough and they should be kept open.



eave vent



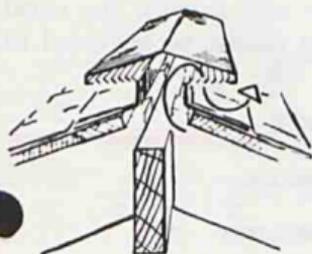
gable vent



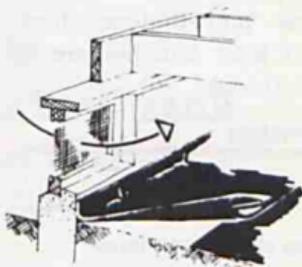
roof vent



cupola vent



ridge vent



foundation vent

Figure 20 Some satisfactory types of vents.

VENTILATION OF CRAWL SPACES—The ratios of square feet of vent area to square feet of crawl space area shown in Figure 21 are minimums. They should be exceeded whenever possible.

Note that the addition of a ground moisture seal over the bare earth will markedly assist in keeping the crawl space humidity at a safe level.

Fifty-five-pound roll roofing or 4-mil or thicker polyethylene sheeting, lapped at least 3-inches are satisfactory materials.

As with attic vents, crawl space ventilation is necessary in winter as it is in summer. Do not close the vents in winter.

Always provide at least two vent openings. If possible, place them so air can flow in one, over the crawl space earth, and out the other.

These recommended vent sizes are based on a completely open vent with no screen or louvers in front of it. Where vents are protected by screens or rain louvers, the crawl space vent should be increased as follows:

TYPE OF COVERING

SIZE OF OPENING

¼" hardware cloth

1 times net vent area

¼" hardware cloth and rain louvers

2 times net vent area

8-mesh screen

1¼ times net vent area

8-mesh screen and rain louvers

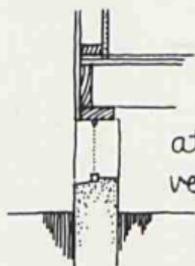
2¼ times net vent area

16-mesh screen

2 times net vent area

16-mesh screen and rain louvers

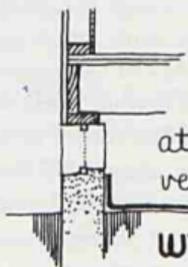
3 times net vent area



at least four
vents required

no moisture seal

one square foot of vent
for each 150 square feet
of crawl space



at least two
vents required

with moisture seal

one square foot of vent
for each 1500 square feet
of crawl space

Figure 21 Minimum crawl space ventilation ratios.

VAPOR BARRIERS — Vapor barriers should be placed on the warm—or heated-in-winter side of walls, ceilings, and floors.

Suitable vapor barriers are usually provided on batt and blanket insulation. Where no vapor barrier is attached to the insulation, separate vapor barriers are necessary. The following typical materials have been found satisfactory:

1. Waterproofed laminated asphalt coated paper.
2. Polyethylene sheeting: 2 mil or thicker in walls and ceiling, and 4 mil or thicker as ground moisture seals under slabs or over crawl space earth.
3. Foil-backed gypsum board.
4. Similar films, sheets, or materials with comparable vapor resistant qualities.

Any vapor barrier damage during installation or construction should be repaired by either replacing the damaged barrier or mending the damage with tape.

When blown insulation is to be used in new work, continuous vapor barriers should be applied to the underside of ceiling joists where specified, and to the inside of wall studs. The barrier should be brought up tight against electrical outlets, registers, door and window frames, and other similar openings.

In existing houses, vapor protection may be obtained by painting the areas needing protection with two coats of good vapor resistant paint.

For further information on vapor barriers and moisture protection, see "How to Control Moisture in Homes", published by the National Mineral Wool Insulation Association.

HOW TO DETERMINE THE DENSITY OF BLOWING WOOL IN CEILINGS

1. **Apparatus:**—Twelve-inch rule, accurate to 1/16".
 - Scales, 3-lb. capacity, accurate to 1/2-ounce.
 - Pre-weighed container, such as a plastic bag.
 - Sharp knife.
 - Depth measuring device, such as stiff wire.
 - Rigid plate, 12-inches square.
2. **Procedure:**
 - a. Within a one-square foot sample area, take an average of at least three thickness measurements to the nearest 1/16-inch with the depth measuring device.
 - b. Place the rigid plate on the test area, press firmly and cut around the periphery with the sharp knife. Push adjacent wool away from plate.
 - c. Remove plate and place sample wool in pre-weighed container, and determine *net* weight of the insulation.
 - d. Calculate installed density as follows:
$$\text{Density (lbs. per cu. ft.)} = \frac{0.75 \times \text{Net Weight of sample (ounces)}}{\text{Average thickness (inches)}}$$
 - e. Replace wool in sample area.

National Mineral Wool Insulation Association
Rockefeller Center, 1270 Sixth Avenue
New York 20, N. Y.

PRINTED IN U. S. A.

LIST OF AVAILABLE FREE HOUSE PLANS FOR N. C. FAMILIES

October, 1963

Agricultural Engineering Extension Service

<u>Plan Number</u>	<u>Square Feet</u>
44 - Frame, 3BR, Bath, LR, DR, or Den, Kit., Utility, Brzwy, Double Garage,	1627
47 - Frame, 3BR, Bath, LR, DR, Kit., Utility,	1364
49 - Brick Veneer, 3BR, Bath, LR-DR, Kit., Fam. RM, Porch,	1785
55 - Frame, 3BR, Bath, LR, Kit. - Fam. RM, Utility, Porch,	1260
55-A - Brick Veneer over Frame, 3BR, 2 Baths, LR, Fam. RM, Carport, Utility,	1360
57 - Brick Veneer, 3BR, 2 Baths, LR, Kit. - Fam. RM, Carport, Utility,	1596
58 - Brick Veneer, 3BR, 2 Baths, LR - Din., Kit.-Fam. RM, Utility, Porch, Carport,	1990
59 - Brick Veneer, 3BR, 2 Baths, LR, Kit.-Fam. RM, Utility, Porch, 2 Carport,	1770
60 - Brick Veneer, 3BR, 2 Baths, LR, Kit.-Fam. RM, Utility, 2 Carport,	1590
61 - Concrete Blk., 2BR, Bath, LR, Kit.-Fam. RM, Carport	1008
62 - Brick Veneer, 3BR, 2 Baths, LR, DR, Kit.-Fam. RM, Utility, 2 Porches, 2 Carport	2060
64 - Brick & Frame, Split Level, 4BR, 3 Baths, LR-DR, Kit., Fam. RM, Office, Utility, 2 Carport,	2419
66 - Brick Veneer - Basement, 4BR, 2 Baths, LR, DR, Kit., Utility, Porch, Carport,	2180
67 - Brick Veneer, 4BR, 2 Baths, LR-DR, Kit.-Fam. RM, Utility, 2 Carport	1975
68 - Frame, Brick, 3BR, Fam. RM, Kit., 2 Baths, Carport,	1640
69 - Frame, 4BR, 2 Baths Alt., LR, Kit., Fam. RM, Utility,	1484
70 - Brick & Frame, 3BR, Fam. RM, Kit., LR-DR, Utility, 2 Baths, Carport	1323
71 - Brick Veneer, 4BR, 2 Baths, LR, Kit.-Fam. RM, Utility,	1750
72 - Brick Veneer, 3BR, 2 Baths, LR, Fam. RM, Kit., Utility, Carport,	1344
73 - Brick Veneer, Frame, 3BR, 2 Baths, LR, Kit., Fam. RM, Screened Porch, Carport,	1900
74 - Brick Veneer, 3BR, Fam. RM, 2 Baths, Kit., Utility, Carport, LR-DR,	1938
75 - Brick Veneer over Frame, 3BR, LR, Kit., Bath, Utility,	1232
76 - Concrete Masonry, 3BR, 1 $\frac{1}{2}$ Baths, LR, Kit., Utility,	1177
77 - Frame, 3BR, Kit.-DR, Bath, LR, Economy House,	960
5928 - Cabin, Frame-on-Grade Construction, 1BR, LR-Kit., Bath,	576
5929 - 2930, Farm Garages, Frame Con. (5929) Post Con. (5930),	576
7011 - Frame, with or without Basement, 3BR, Bath, LR, Kit., Utility,	1138
7023s - Concrete Blk., 3BR, Bath, LR, Kit., Utility,	1138
7073 - Frame, 2BR, Bath, LR, Kit., Pantry,	884
7075 - Frame, 3BR, Bath, LR, Kit., Utility, Porch, Front Porch,	1020
7083 - Frame, 1BR, Bath, LR, Kit., Expandible to 3BR and Utility,	872
7092 - Frame, 3BR, Bath, LR, Kit.-DR, Utility, Porch,	1275
7098 - Frame, 3BR, Bath, LR-Kit., Utility, Porch,	1060
7132 - Frame, 3BR, Bath, LR-DR, Kit., Utility, Patio, 2 Car Gar.	1512

<u>Plan Number</u>	<u>Square Feet</u>
7137 - Frame Farm Cottage, LR/Sleeping Area, Kit.-DR, Bath, Laundry, Work Porch, Porch	1468
7138 - Frame on Slab, 3BR, LR, Kit., DR, Bath, Utility, Patio, Carport	1440
7139 - Masonry with Basement, 3BR, Bath, Kit., DR, Patio, LR, Carport	1492
7140 - Frame, 3BR, Fam. RM, Kit., 2 Baths, Office, Laundry RM, Utility,	2090
7146 - Frame, 1BR, Bath, LR, Kit.-DR, Utility, Carport,	1025
7149 - Masonry & Frame, 2BR, Beltsville Kit. Des. No. 2, Fam. RM, LR, Den, 1½ Bath, Carport,	2039
7150 - Frame Slab-on-Grade, 3BR, Dining & Kit., LR, Bath, Carport, Porch,	1306
7151 - Brick on Block, 4BR (1 in Basement) 2 Baths, LR, Rec. RM, Kit.-DR, Carport,	1350
7152 - Brick Veneer Frame, 3BR, 2 Baths, DR, Kit., Fam. RM, Carport, Terrace,	2618
7153 - Brick or Block, 5BR, Rec. RM, T.V. RM, Fallout Shelter, Utility, Kit., DR, LR, 3 Baths, Porch,	1590 1st floor 1590 2nd floor
7154 - Frame, 1BR, LR, Kit., Work RM, 1 Bath, Patio, Carport,	1032
7155 - Masonry, 2BR, Kit, DR, LR, 1 Bath, Work RM, Utility, Porch,	1316
7157 - Frame, 2BR, Bath, LR, Kit.-Din., Porch,	1268
7158 - Slab-on-Grade Consturction, 2BR, Bath, Kit.-Din, LR, Utility, Porch,	1200
7161 - Brick & Frame, 3BR, LR, DR, Kit., 1½ Baths, Carport,	1860
7162 - Frame, 4BR, Kit., Fam. RM-DR, 2½ Baths, Entrance Hall, Single Carport, Terrace, Laundry RM,	2060
7163 - Frame, 3BR, 3 Baths, LR, Kit.-Din., Porch, 2 Car Garage, LR, Rec. RM, T.V. RM,	1386 1st floor 1386 2nd floor
7165 - Frame, 3BR, 2 Baths, LR, Country Kit. and Din, Carport, Patio,	1544
7166 - Concrete Fallout Shelter	192
7167 - Masonry and Frame, 3BR, LR, Kit., Din., Bath, Carport,	1120

KITCHENS

EDGEWORTH BOND

HEAVY PAPER

USA

MADE IN

KITCHENS

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

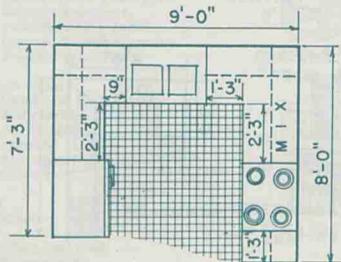
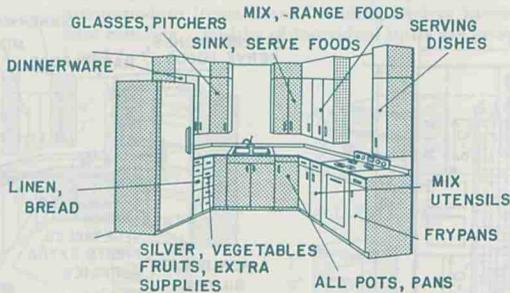
Illustrated are three U-shaped kitchen arrangements. Two of them have the sink in the center and one has the range in the center. When developing these arrangements, the recommended amount of counter space for each area was considered and storage was planned for all the items listed on page 3.

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"

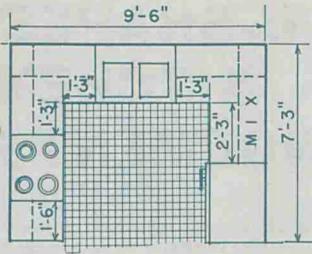


IF YOU CHOOSE A WALL OVEN AND SURFACE COOKING UNIT, MAKE THESE CHANGES IN THE RIGHT ARM OF THE "U."

INSTALL OVEN SO LOWEST RACK POSITION IS ABOUT 36" FROM THE FLOOR



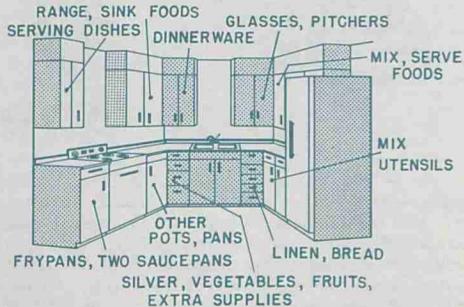
ARRANGEMENT "B"



SERVING DISHES



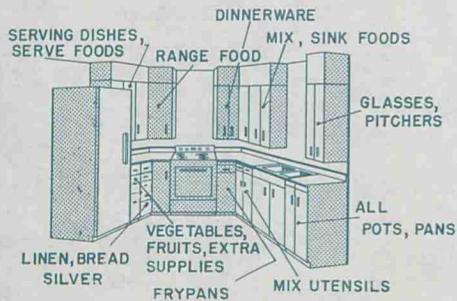
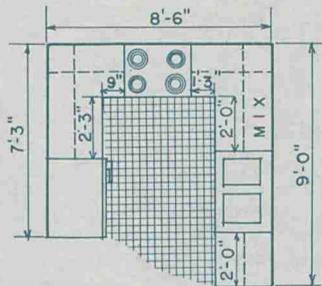
INSTALL OVEN SO LOWEST RACK POSITION IS ABOUT 36" FROM THE FLOOR



IF YOU CHOOSE A WALL OVEN AND SURFACE COOKING UNIT, MAKE THESE CHANGES IN THE LEFT ARM OF THE "U."

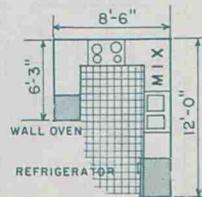
FRYPANS, TWO SAUCEPANS

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.

SERVING DISHES



FRYPANS

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



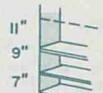
SERVING DISHES,
SERVE FOODS



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.



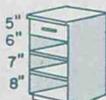
MIX UTENSILS



ALL POTS, PANS



FRYPANS



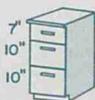
FRYPANS,
TWO SAUCEPANS



OTHER
POTS, PANS



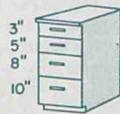
LINEN, BREAD



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.

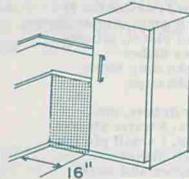
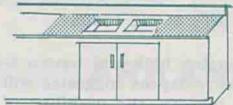


When the mix center extends around the corner, one arm of the counter should be 24 to 36 inches wide.

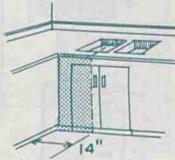


Provide 12 to 24 inches at both sides of the surface cooking area.

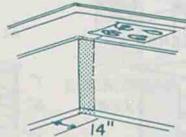
Provide 18 to 36 inches of counter to the left and 24 to 36 inches to the right of the sink. If a dishwasher is desired, allow 24 inches for it either to the left or to the right of the sink. Provide elsewhere for base storage lost.



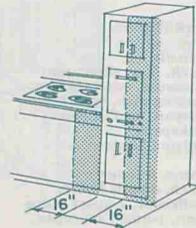
Provide at least 16 inches of clearance between the latch side of the refrigerator and the turn of the counter. Provide counter space near the refrigerator for foods taken from it.



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.

October 1966

PARALLEL-WALL KITCHEN ARRANGEMENTS

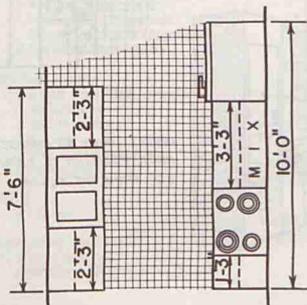
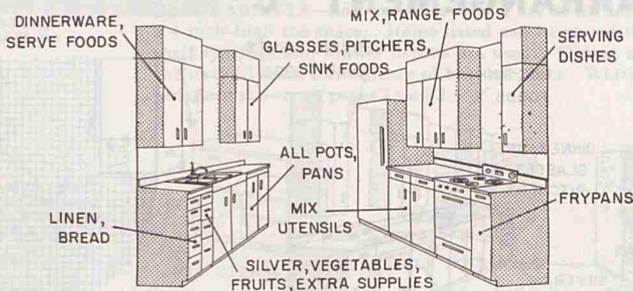
These are examples of efficient parallel-wall arrangements for kitchens. The recommended counter widths as given on page 4 and the cabinet space needed to store the items listed on page 3 were considered in the development of these arrangements. Foods are grouped by and stored near the area at which 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.

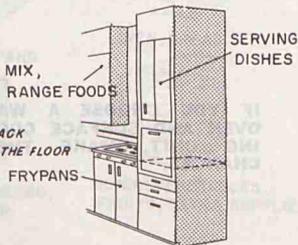
Locate doors so that a major traffic lane does not go through the work area of the kitchen. If possible, avoid placing the refrigerator or oven so that they open across a frequently used doorway.

ARRANGEMENT "A"

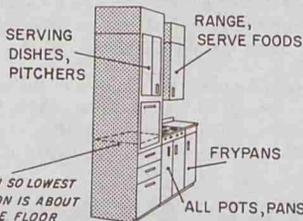
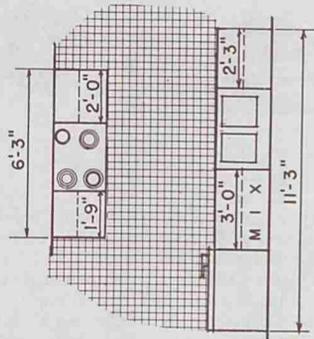
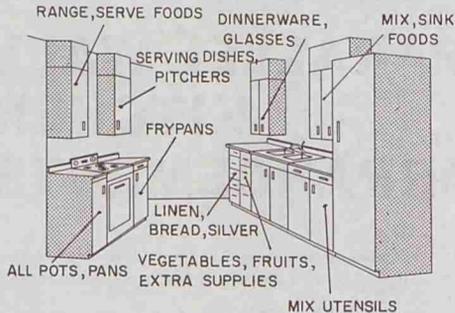


IF YOU CHOOSE A WALL OVEN AND SURFACE COOKING UNIT, MAKE THESE CHANGES.

INSTALL OVEN SO LOWEST RACK POSITION IS ABOUT 36" FROM THE FLOOR



ARRANGEMENT "B"

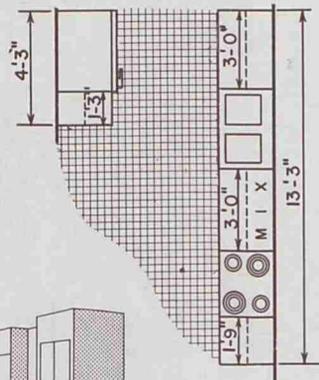
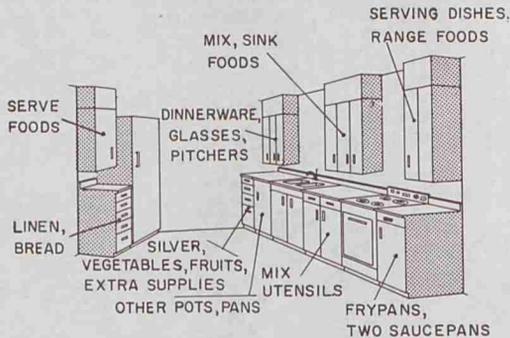


INSTALL OVEN SO LOWEST RACK POSITION IS ABOUT 36" FROM THE FLOOR

ALL POTS, PANS

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.

SERVING DISHES, RANGE FOODS

FRYPANS, TWO SAUCEPANS

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/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. 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.



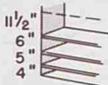
DINNERWARE, GLASSES OR
DINNERWARE, GLASSES, PITCHERS



SERVING
DISHES



SERVING DISHES,
PITCHERS



DINNERWARE,
SERVE FOODS



GLASSES, PITCHERS,
SINK FOODS



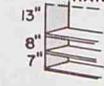
SERVING DISHES,
RANGE FOODS



MIX, SINK OR
MIX, RANGE FOODS



SERVE FOODS

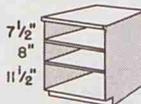


RANGE, SERVE FOODS

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.



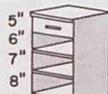
MIX UTENSILS



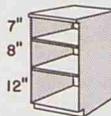
ALL POTS, PANS



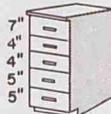
FRYPANS



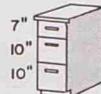
FRYPANS,
TWO SAUCEPANS



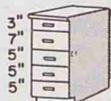
OTHER
POTS, PANS



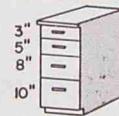
LINEN, BREAD



VEGETABLES, FRUITS,
EXTRA SUPPLIES



LINEN, BREAD,
SILVER

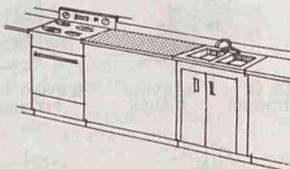


SILVER, VEGETABLES,
FRUITS, EXTRA SUPPLIES

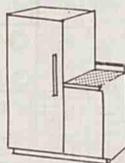
CLEARANCES AND COUNTER WIDTHS

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

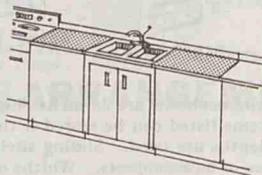
needs and your house plan. Counter areas between equipment can serve two purposes. For instance, a mix counter next to the sink can also be used for stacking dishes.



Provide a mix counter 36 to 42 inches wide, preferably between equipment; range and sink, sink and refrigerator, or range and refrigerator.



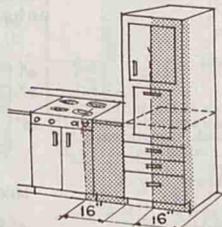
Provide a counter 15 to 18 inches wide at the latch side of the refrigerator for convenience when placing and removing foods from the refrigerator.



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 Home 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



L-SHAPED KITCHEN ARRANGEMENTS

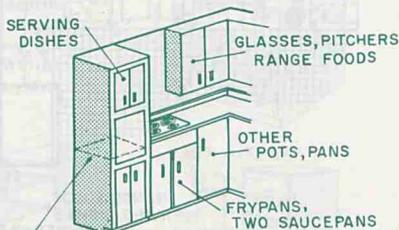
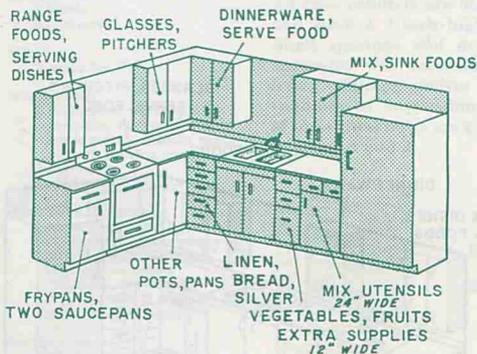
These are examples of efficient L-shaped arrangements for kitchens. The width of each work area is based on the recommended counter widths given on page 4 and the cabinet space needed above and below the counter to store items listed on page 3. Foods are grouped by area at which they are stored, such 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.

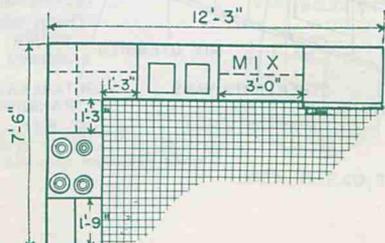
On page 3 you will find sketches of the wall and base cabinets used in the arrangements illustrated. Shelf spacing shown will make the best use of the cabinet.

ARRANGEMENT "A"



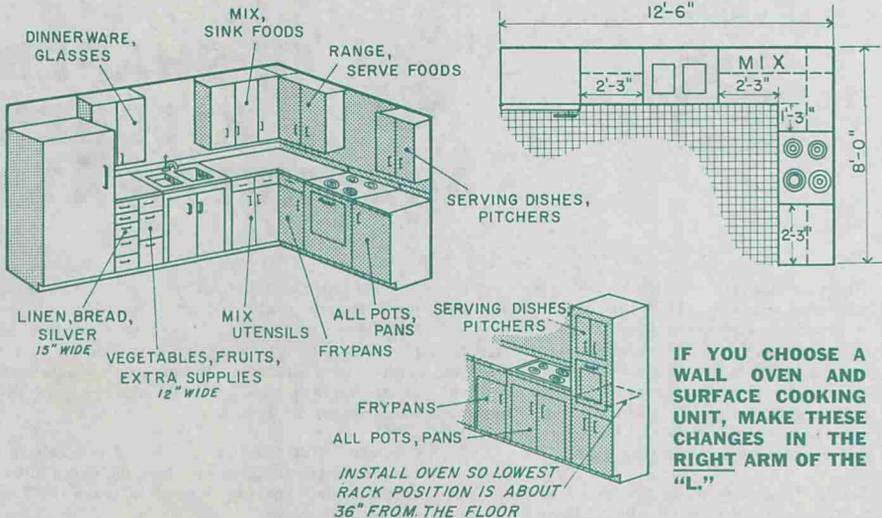
INSTALL OVEN SO LOWEST
RACK POSITION IS ABOUT
36" FROM THE FLOOR

**IF YOU CHOOSE A WALL OVEN AND SURFACE
COOKING UNIT, MAKE THESE CHANGES IN
THE LEFT ARM OF THE "L,"**

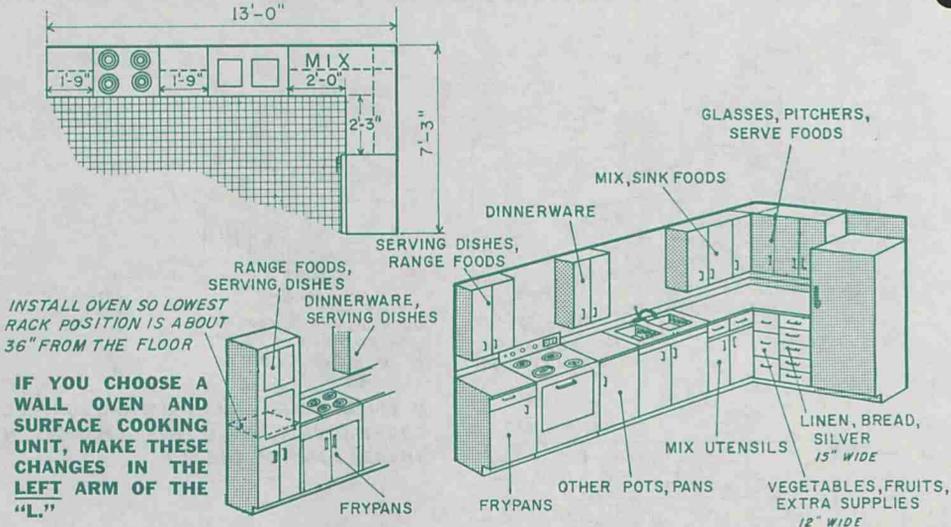


Prepared by:
Mildred S. Howard, Genevieve K. Tayloe, and W. Russell Parker
CLOTHING AND HOUSING RESEARCH DIVISION
AGRICULTURAL RESEARCH SERVICE

ARRANGEMENT "B"



ARRANGEMENT "C"



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

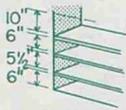
SHELF SPACINGS AND DRAWER DEPTHS

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.



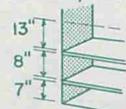
RANGE FOODS,
SERVING DISHES



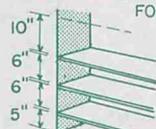
GLASSES, PITCHERS



DINNERWARE, SERVE
FOODS



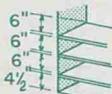
RANGE,
SERVE FOODS



DINNERWARE, GLASSES



MIX, SINK FOODS



DINNERWARE

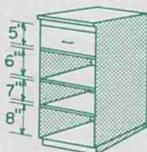
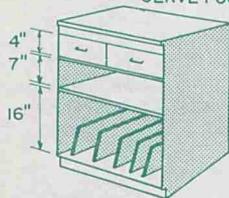


GLASSES, PITCHERS,
SERVE FOODS

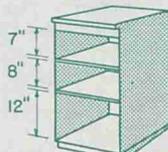
SERVING DISHES,
PITCHERS

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

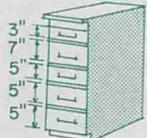


OTHER POTS, PANS

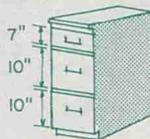


MIX UTENSILS

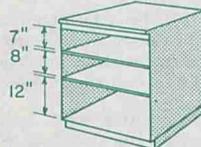
FRYPANS



LINEN, BREAD, SILVER



VEGETABLES, FRUITS,
EXTRA SUPPLIES

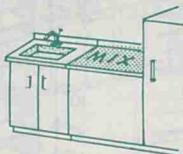


ALL POTS, PANS

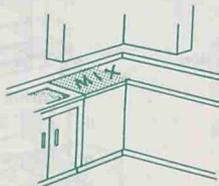
CLEARANCES AND COUNTER WIDTHS

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.



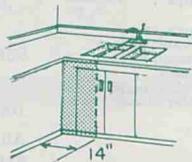
Provide 24 to 36 inches for mixing if the counter extends into the corner.



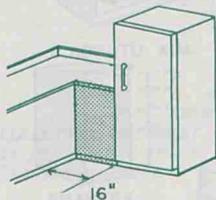
Provide 12 to 24 inches at both sides of the surface cooking area.



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.

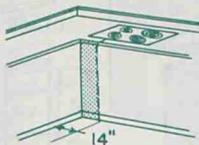


Provide at least 14 inches of clearance between the center of the sink bowl and the turn of the counter for standing.

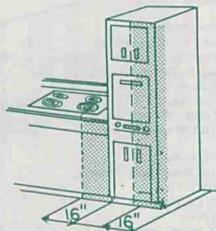


Provide at least 16 inches of clearance between the latch side of the refrigerator door and the turn of the counter.

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 30. 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

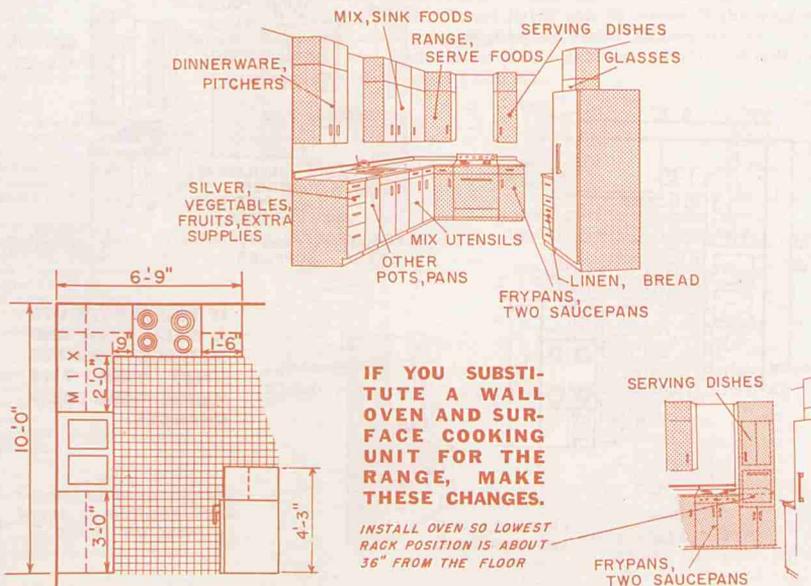
Broken-U arrangements for kitchens usually fit well into combination rooms such as kitchen-dining, kitchen-family, or kitchen-work rooms.

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.

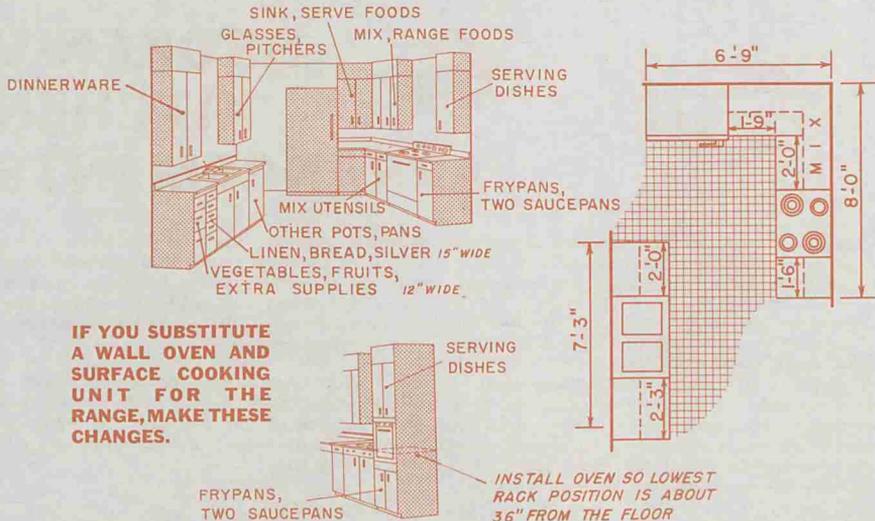
Compare this list with what you want to store in your kitchen. If you want more storage space and you can't increase the widths of the areas where the storage is needed, plan storage elsewhere for extra supplies and the utensils that you don't use very often.

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 passage-way at the end of the island should be at least 3 feet 6 inches wide.

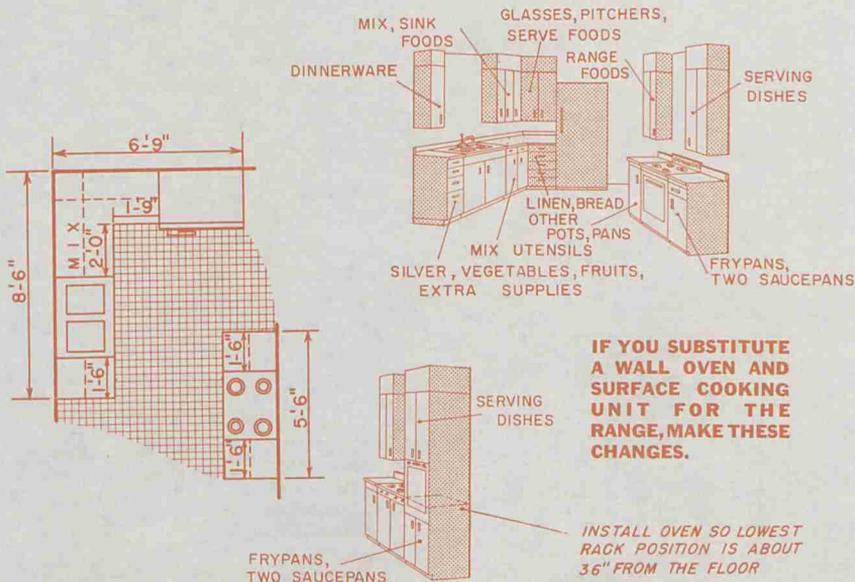
ARRANGEMENT "A"



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 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 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

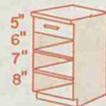


SINK, SERVE OR RANGE, SERVE FOODS

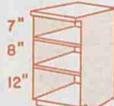
BASE CABINETS—Base cabinets shown are 36 inches high and have a 4-inch-high toe space. Items listed can be stored if the suggested shelf spacings and drawer depths are used. Sliding shelves increase the usability and convenience of base cabinets. Widths of individual units are shown on pages 1 and 2.



MIX UTENSILS



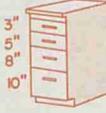
FRYPANS, TWO SAUCEPANS



OTHER POTS, PANS



LINEN, BREAD



SILVER, VEGETABLES, FRUITS, EXTRA SUPPLIES



LINEN, BREAD, SILVER

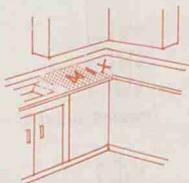


VEGETABLES, FRUITS, EXTRA SUPPLIES

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

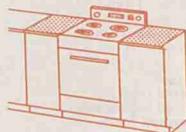
needs and your house plan. Counter areas between equipment can serve two purposes. For instance, a mix counter next to the sink can also be used for stacking dishes.



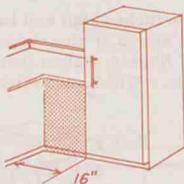
When the mix center extends around the corner, one arm of the counter should be 24 to 36 inches wide.



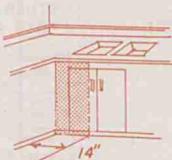
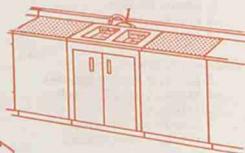
Provide a counter at the latch side of the refrigerator for foods being placed in or taken from it.



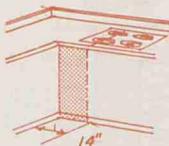
Provide counters 12 to 24 inches wide at both sides of the surface cooking area.



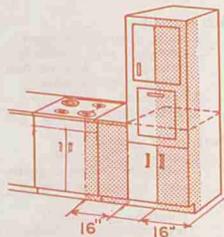
Provide a counter 18 to 36 inches wide to the left and 24 to 36 inches to the right of the sink. If a dishwasher is desired, allow 24 inches for it either to the left or to the right of the sink. Provide elsewhere for base storage lost.



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



Reprinted from U. S. Department of Agriculture Misc. Publication No. 944 and published by the North Carolina Agricultural Extension Service as *Home Economics 51*. 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 1968

CORNER STORAGE IN KITCHENS

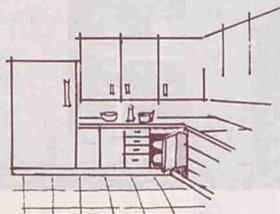


Special planning is needed to make corner spaces' in kitchen wall and base cabinets convenient for storage.

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 not particularly important in small kitchens not to waste corner storage space.

REVOLVING BASE CABINET



UTENSILS STORED ON REVOLVING SHELVES

TOP SHELF

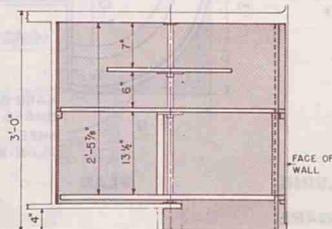
3-quart, 2-quart, and 1-quart saucepans; flour sifter

SECOND SHELF

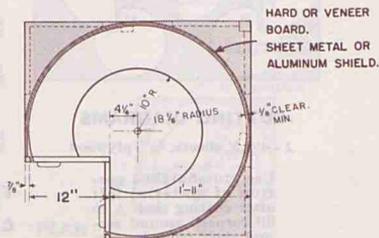
3½-quart, 2-quart, and 1-quart mixing bowls; coffeepot; pint and cup measures; 10½-inch and 9-inch frypans; baking dish

THIRD SHELF

3-quart saucepan; 4-quart saucepot; double boiler; colander; biscuit pan; piepan; muffin pan; 2 cakepans

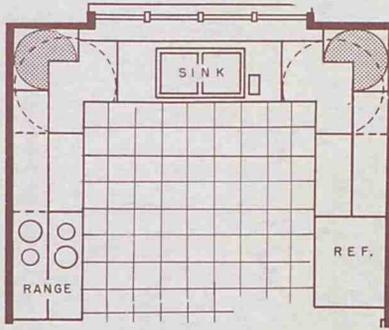


SECTION

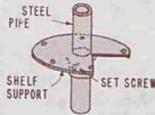
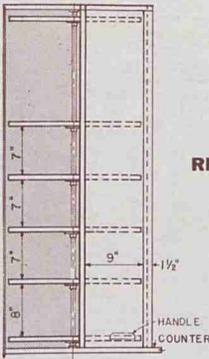


PLAN

REVOLVING WALL CABINETS



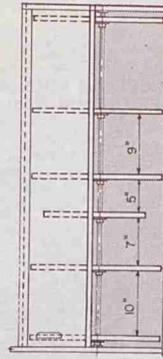
PLAN OF KITCHEN
SHOWING LOCATION OF THE CORNER CABINETS



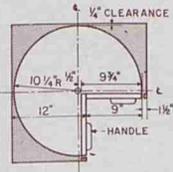
REVOLVING WALL-CABINET HARDWARE

Select hardware first. Modify construction of cabinets to conform to requirements of hardware selected.

3/4" plywood suggested for shelves.

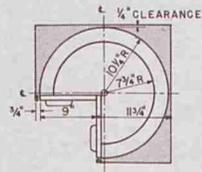


SECTION



PLAN

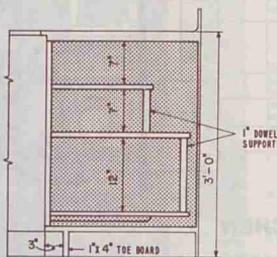
SECTION



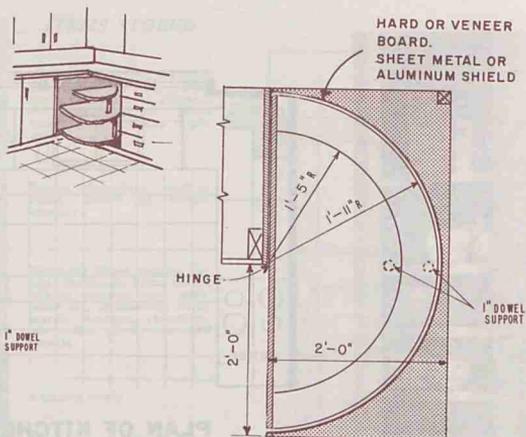
PLAN

OTHER SUGGESTIONS FOR USE OF CORNER SPACE

HALF-CIRCLE REVOLVING SHELVES



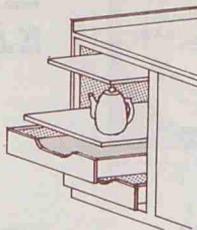
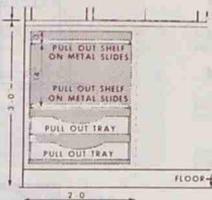
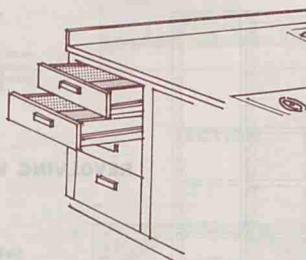
SECTION



PLAN

DRAWERS OR PULLOUT TRAYS AND SHELVES USED FROM ADJOINING DINING AREA

FOR STORAGE OF TABLE LINENS, SILVER, AND TABLE
APPLIANCES



Prepared by Mildred S. Howard
Genevieve K. Tayloe, and W. Russell Parker

AGRICULTURAL RESEARCH SERVICE

PLANNING YOUR KITCHEN FOR EASIER WORK

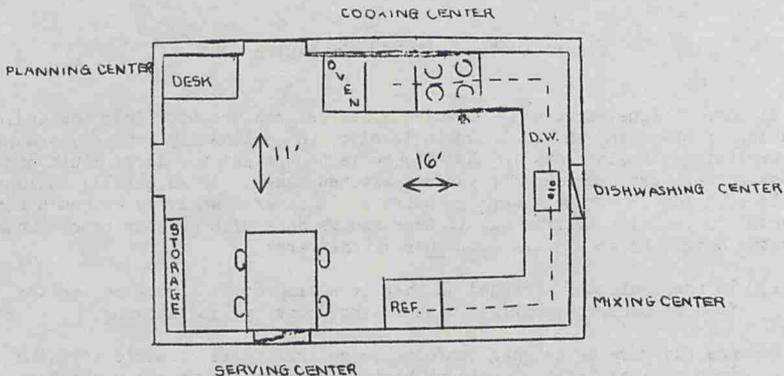
Kitchen fatigue, according to scientific research, results from the endless retracing of steps and the back strain involved in continually bending, stooping, and stretching. Easier work in the kitchen is the reward for careful planning, if work centers are provided for various kitchen tasks. It is equally as important to plan for comfortable working heights. A careful analysis of one's kitchen is necessary in order to find out if work can be done with greater ease. Questions which the homemaker should ask about her kitchen are:

1. Is the equipment arranged so that it will provide a work center for food preparation, mixing, dishwashing, cooking, and serving?
2. Are the working heights comfortable so that it is possible to stand in a relaxed position without having to stoop, or to raise the hand above the level of the elbow?
3. Are the centers well located with good work surfaces and convenient storage space?
4. Is there at least one work center where you can sit and work comfortably? Does the chair have good back support?
5. Is the storage at the work centers placed so that neither stooping nor stretching is necessary to get the things used more often?
6. Is the storage space well planned so that it is not necessary to stack dishes, pans, food, etc.?

Principles of Arranging Work Centers

The basic principle of work-center arrangement is efficiency of operation. A kitchen designed for work simplification should be planned to meet the needs of the one who will do the most work there. Certain basic principles of kitchen planning should be used and adapted for the individual kitchen. For the right-handed person, the work should go from right to left. Whether a person is right or left handed should be kept in mind as the work centers are arranged.

Each work center is a place where there is equipment, storage for supplies and equipment, and enough counter space for doing work. There are several step-saving arrangements for the main pieces of equipment. The U-Shape, the L-Shape and the parallel or corridor-type kitchen are all convenient kitchens in which to work. The following floor plan will illustrate the arrangement of work centers.



WORK SIMPLIFICATION KITCHEN

Storage in the Kitchen

Supplies and utensils are stored at the point of first and last use.

- A. At the Dishwashing Center
 - 1. Container for peelings and scraps
 - 2. Pans and tools used in preparing foods with water
 - 3. Cabinet under sink to hold dish towels and washing supplies so that they will be within easy reach
 - 4. Everyday dishes
- B. At the Mixing Center
 - 1. Files above mixing center to hold pie plates, cakes, tins, etc.
 - 2. Utensils can be hung on the wall ready for use
 - 3. Gravity feed bins to hold flour and sugar
 - 4. Equipment and materials used in baking
- C. At the Cook Center
 - 1. Cabinet, shelves, or racks next to stove for utensils and dishes first used there—serving dishes, pot lids, skillets, some pans, long handled forks and spoons
 - 2. Condiments and seasonings frequently used at the stove
 - 3. Foods first used at the stove
- D. At the Serving Center
 - 1. Shelves or cabinet for such items as paper napkins, salt and pepper, sugar, and other things which may eliminate trips away from the table at mealtime.

- Small equipment which may be used more often at table (toaster, waffle iron, etc.)

Correct Standing Work Height

Working Areas



- Stand facing a sheet of wrapping paper thumb tacked to the wall.
- With a crayon in each hand, and without reaching, swing two arcs beginning at the top and curving to the side and down (see fig.) The circle formed outlines your normal vertical working area. Objects used most frequently should be placed within this area.
- Now, with a comfortable reach (arm extended) swing two more arcs, one with each hand. This larger circle marks the maximum working area. Articles which are used often should not be placed above this height. The higher shelves may be used for seldom used things.

Correct Working Area at a Sitting Position

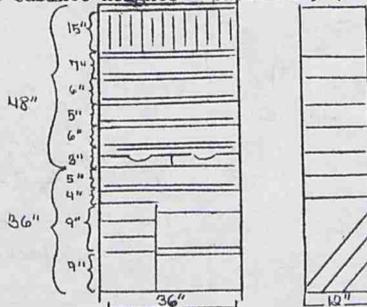
Working Areas



- Sit down at a table which is a comfortable height and which has been covered with a sheet of wrapping paper. Hold a crayon in each hand.
- Without reaching, swing an arc with each hand. This is your normal working area.
- Swing a second set of arcs at a comfortable reach (arm extended). This is your maximum working area.
- 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 the chair.

Illustration of Storage Cabinet (Average Cabinet Heights - based on 5'4" woman)

Storage should be planned according to articles that are to be stored there.



Plan Storage Area So That It Is Easy to Use.

The height of work surfaces is the most disputed measurement in the kitchen design. The preferred height varies from about 31 to 33 inches for workers less than average height to 37 to 38 inches for unusually tall persons. Various operations, such as cutting, mixing, beating, kneading, dishwashing, require different heights for the most convenience. Therefore, the homemaker should experiment by doing these various tasks at different heights. A portable table, with blocks cut at different heights, may be used to determine which is the most comfortable position for the jobs. For beating or mixing, it may be advisable for one work center to be lower than the others. The sink basin is often too low for the average woman. Some adjustment, such as a rack for the dishpan, may be necessary to eliminate needless bending of the back.

What Are You Doing About Your Kitchen

Your kitchen work can be easier, regardless of the size of your kitchen, family or your pocketbook.

Analyze your kitchen and figure out your actual needs.

Decide what you can do about it.

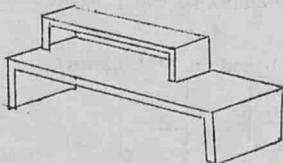
Determine how you can do it.

DO IT!

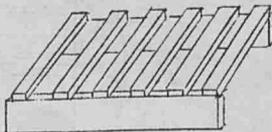
Storage Devices Which Can Be Made at Home

Measure the cupboard and the articles to be stored to determine the size of the storage device to be made.

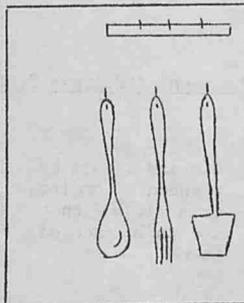
Decide on suitable wood for the different parts. The end of the shelves and racks are generally made of wood at least 1/2" thick, and the lengthwise piece may be thinner wood unless the articles to be stored are heavy.



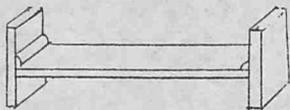
Removable Step Shelves



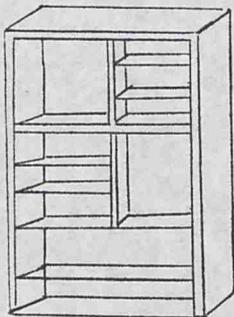
Sink Rack



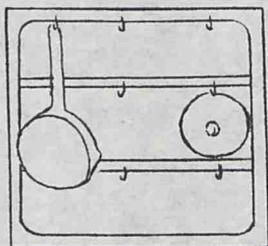
Plywood Board Covered with Oilcloth on Which Hang Kitchen Utensils



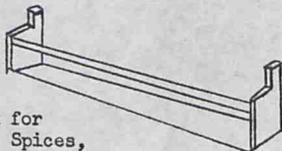
Movable Loose Shelf



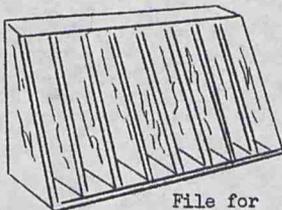
Cabinet With
Movable Shelves



Racks for Hanging
Pots and Pans

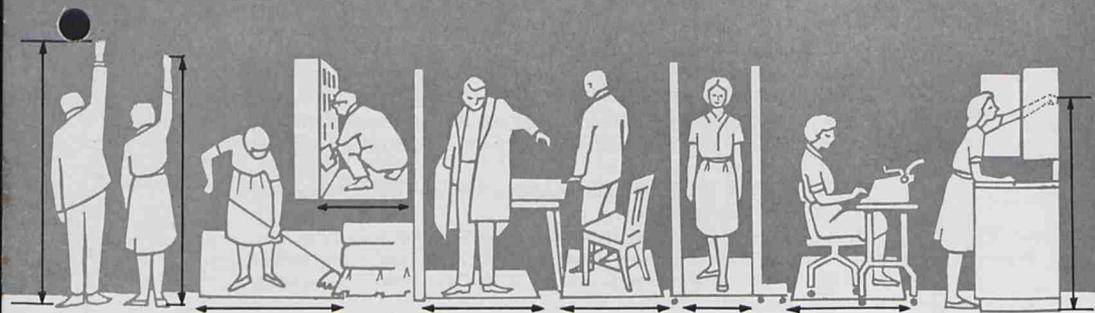


Door Rack for
Glasses, Spices,
Cookbooks, etc.



File for
Shallow Utensils

SPACE STANDARDS FOR HOUSEHOLD ACTIVITIES



Bulletin 686

UNIVERSITY OF ILLINOIS AGRICULTURAL EXPERIMENT STATION

in cooperation with

ALABAMA AGRICULTURAL EXPERIMENT STATION

COLLEGE OF HOME ECONOMICS, PENNSYLVANIA STATE UNIVERSITY

WASHINGTON AGRICULTURAL EXPERIMENT STATIONS

AGRICULTURAL RESEARCH SERVICE, U. S. DEPARTMENT OF AGRICULTURE

The research reported in this publication provides standards for the space needed to use and care for household equipment and furniture. Its purpose is to aid architects, builders, and families in answering the many questions that arise about space use and its relation to convenience and cost in building houses. It answers such questions as: How much space should be left around a bed to permit a woman to make it conveniently? How wide should a hallway be to allow two people to pass with ease? How much space is needed around a dining table to permit comfortable seating and easy serving?

The bulletin is divided into these sections:

How the study was made	pages 3, 4, 5
Elemental activities (walking, reaching, kneeling, bending)	pages 6, 7
Kitchen activities (using appliances and cabinets)	pages 8, 9
Tables and chairs (seating, arising, serving)	pages 10, 11
Beds and bedrooms (making a bed, cleaning under it, using dressers and closets)	pages 12, 13
Coat closets (putting on coats)	page 13
Studio couches (opening and making)	page 14
Bed-davenports (opening, making, and cleaning under)	page 15
Bookcases (removing a book, cleaning under)	page 15
Office or study (using desk, file, and typewriter)	page 16

Five different agencies participated in the work reported here. The project leaders included:

Helen E. McCullough, Associate Professor of Home Economics, Illinois Agricultural Experiment Station, Urbana

Avis Woolrich, Housing Specialist, Clothing and Housing Research Division, Agricultural Research Service, U. S. Department of Agriculture, Washington, D.C.

Kathryn Philson, Home Economist, Alabama Agricultural Experiment Station, Auburn University, Auburn

Ruth H. Smith, Research Associate in Housing, College of Home Economics, Pennsylvania State University, University Park (Kathleen A. Johnston, now of Purdue University, was project leader in 1955 and 1956 at Pennsylvania State University)

Anna L. Wood, Associate Home Economist, Washington Agricultural Experiment Stations, Washington State University, Pullman

The report was prepared by Helen E. McCullough.

SPACE STANDARDS FOR HOUSEHOLD ACTIVITIES

By HELEN E. McCULLOUGH, KATHRYN PHILSON, RUTH H. SMITH, ANNA L. WOOD, and AVIS WOOLRICH

The standards reported here resulted from studies carried on during 1956 and 1957 at four state agricultural experiment stations—Alabama, Illinois, Pennsylvania, and Washington—and at the Clothing and Housing Research Division of the Agricultural Research Service, U. S. Department of Agriculture. They were derived chiefly from detailed measurements of the activities of 230 women. Twenty men were also tested for household activities in which men most commonly participate.

The research started in 1953 with a pilot study at the Illinois Station. This study brought out the fact that work habits may be as important as size, age, weight, or body build in determining how much space an activity requires. For example, a small woman who habitually stands back from equipment as she works may use more space than a larger woman who stands close to it.

The pilot study also identified the part of each activity requiring the most space and therefore made it possible to reduce the number of measurements needed in the cooperative study. For example, to determine the space required to make a bed, several contributing measurements could be taken: space to remove the bedding, to turn the mattress, and to remake the bed with sheets, blankets, spread, and pillows. In the pilot study it was found that unfolding the bottom sheet, spreading it over the mattress, and tucking it in required more space around the bed than doing any other part of the bedmaking activity. In

the cooperative study, putting on the bottom sheet was therefore the only part of the bedmaking activity that was used in determining the space required.

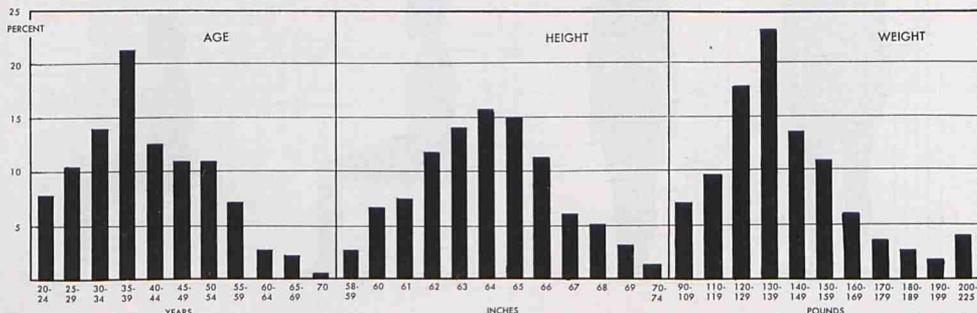
Following the pilot study, each of the five agencies carried on separate but parallel studies testing a total of 250 subjects chosen at random. A workshop was held for the research leaders before starting the tests in order to standardize methods of measurement, equipment, and records of data so that the results could be combined. A specially prepared manual was used to insure uniformity.¹ Report forms were set up that permitted easy transfer of data to punch cards. The five project leaders concurred on the final recommended figures for space use.

The 230 women in the study ranged in age from 20 to 70 years, in height from 58 to 74 inches, and in weight from 90 to 225 pounds, as shown in the chart below. All were physically normal homemakers, accustomed to working under usual home conditions (not in a house trailer, for example).

Two types of measurements were recorded: body measurements and activity measurements. Body measurements were taken in order to obtain a clear picture of the sample and to indicate the range that needs to be considered in planning heights, depths, and widths of work areas. Body measurements for the 230 women and the 20 men in the study are shown in the drawings on the next page and in Table 1.

¹ Single copies of this manual can be obtained from the Clothing and Housing Research Division.

DISTRIBUTION OF WOMEN SUBJECTS IN THE STUDY



The main part of the study determined the amount of floor space needed by the individual to perform household activities. Some of the measurements were of basic movements (called elemental activities), such as walking, reaching, bending, or kneeling, that would be a part of many activities. Other measurements were of specific activities in the home connected with the use and care of equipment and furniture and the use of closets.

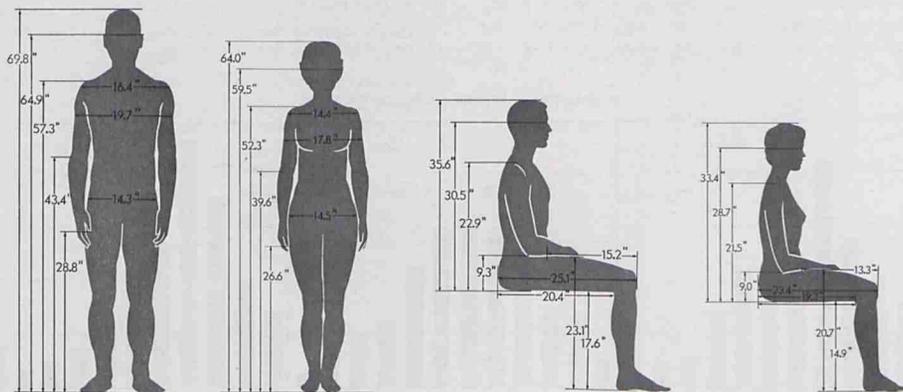
Each subject performed the assigned activities at least three times, doing them as she would have done

them at home and wearing the clothing she usually wore for housework. Movable panels, anthropometers, calipers, and steel tapes were used in obtaining the measurements. A special observational method was developed for a few activities in which both length and width of space were measured, such as in the use of coat closets.

The recommended standards resulting from this study are shown in illustrations on the following pages and in Table 2. These recommendations were determined by taking the average for each activity and

TABLE 1. — MEAN BODY MEASUREMENTS OF 230 WOMEN AND 20 MEN

	Women	Men		Women	Men		Women	Men
	inches			inches			inches or pounds	
HEIGHTS, standing			LENGTHS			THICKNESS		
Top of head.....	64.0	69.8	Sitting (buttocks			Maximum body.....	10.9	11.7
Eye.....	59.5	64.9	to front of knees)....	23.4	25.1	Lower body.....	10.7	10.9
Shoulder.....	52.3	57.3	Seat (buttocks			GIRTH		
Elbow.....	39.6	43.4	to back of knees)....	19.3	20.4	Bust, Chest.....	36.6	37.4
Palm.....	29.7	31.9	Lap (abdomen			Hip.....	39.0
Thumb tip.....	26.6	28.8	to front of knees)....	13.3	15.2	BENT AT HIPS		
HEIGHTS, seated			Total arm (acromion			Arms down, length.....	32.8	33.2
Seat to top of head.....	33.4	35.6	to thumb tip).....	25.0	27.0	Reach from bent		
Seat to eye.....	28.7	30.5	Forearm (olecranon			position (buttocks		
Seat to shoulder.....	21.5	22.9	to thumb tip).....	14.7	16.2	to thumb tips		
Seat to elbow.....	9.0	9.3	WIDTHS			of arms extended)....	45.0	48.2
Floor to under knee.....	14.9	17.6	Maximum body.....	18.4	20.6	ONE KNEE KNEEL.....	33.5
Floor to top of thigh.....	20.7	23.1	Shoulders.....	14.4	16.4	WEIGHT, pounds.....	140.5	167.4
Floor to top			Upper body.....	17.8	19.7			
of crossed knee.....	24.7	28.0	Lower body (standing)....	14.5	14.3			
			Lower body (sitting)....	16.2	16.0			
			Elbows extended.....	33.6	37.7			



adding one standard deviation, except for activities involving reaches, for which one standard deviation was subtracted. All figures were rounded to the nearest even inch. The standards apply to both men and women, except as indicated otherwise. The illustrations show the part of the activity that requires the most space, as determined by the pilot study.

The use of these recommendations will provide satisfactory activity spaces for most women in the United States and reasonably comfortable spaces for all others. For the subjects in the study, the final recommendations were adequate for a minimum of 82 percent for some activities and up to 100 percent for others.

The standards given for the elemental activities and

for the specific household activities have many applications besides those shown in the following pages. The measurement for the elemental activity of bending, for example, can be used to indicate the space needed to turn on a television set. The required space for sitting at a sewing machine can be judged from the recommendations given here for the use of chairs.

A limited number of floor plans are included to show the relationship of the space required for different items of equipment or furniture grouped in specific rooms or areas, such as in kitchens, dining areas, or bedrooms. No floor plans are shown for living rooms because they are frequently larger than other rooms and have a greater diversity in kind and amount of furniture.

TABLE 2. — CLEARANCES FOR SATISFACTORY PERFORMANCE OF CERTAIN ACTIVITIES

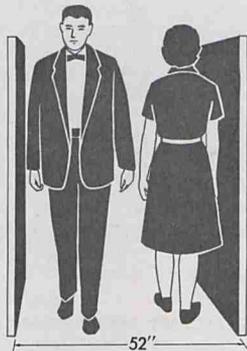
16" Edging past seated person Cleaning ends of furniture*	38" Using range oven* Rising from an armless chair in a confined area Walking past standing person (12" body thickness plus 26" walking space) Kneeling on one knee*
20" Sitting at table, armless chair Foot extension under table	40" Walking with elbows extended Using furniture with drawers Rising from an armchair in a confined area
22" Sitting at table, armchair Foot extension under desk Bedmaking* Space at end for opening and making studio couch or bed-davenport*	42" Using coat closet, one person Using file cabinet
24" Walking past seated person	44" Serving seated person (20" sitting space plus 24" walking space)
26" Walking between wall and table Walking between two walls	48" Cleaning under bed, bookcase, davenport, or studio couch*
28" Edging past standing person (12" body thickness plus 16" edging space)	52" Two people passing
30" Sitting relaxed in an armless chair Rising from chair at folding or typewriter table	42" x 44" Using dishwasher* (based on dishwasher 24" wide)
32" Rising from table, armless chair	42" x 48" Removing equipment from cleaning closet*
34" Rising from table, armchair Forward bend	46" x 60" Using coat closet, 2 persons
36" Using kitchen base cabinet* Using wall oven* Using refrigerator* Using desk Using bookcase Edging past person in armless chair (20" sitting space plus 16" edging space)	98" x 119" Using and cleaning studio couch* 110" x 112" Using and cleaning bed-davenport*

* Measurements of these activities were taken of women only. All other measurements were taken of both men and women or were derived from a combination of body measurements and activity measurements.

ELEMENTAL ACTIVITIES



Walking between two high walls (space adequate for both men and women)



Two people passing (figure derived; twice the space for one person to walk between two high walls)



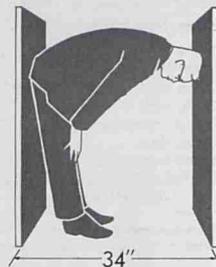
Walking between high wall and 30" high table (space adequate for both men and women)



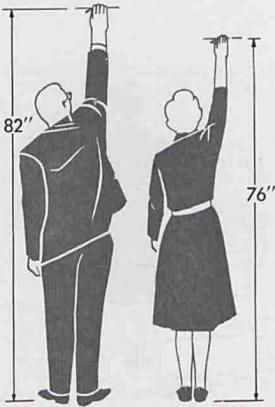
Walking with elbows extended (space adequate for both men and women)



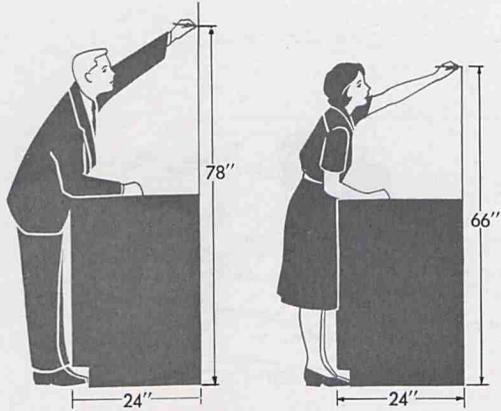
Kneeling on one knee (woman only)



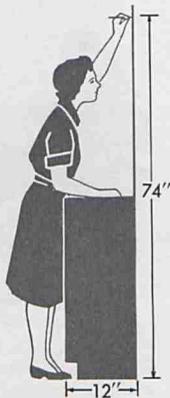
Man bending at a right angle



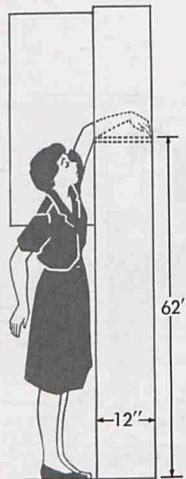
Reaching, maximum height



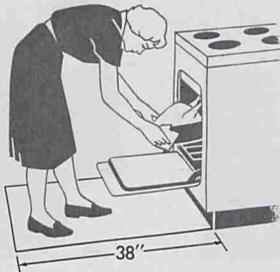
Reaching over obstruction, 24" deep and 36" high



Reaching over obstruction, 12" deep and 36" high (women only)



Maximum reach to back of shelf 12" deep (women only)



Using a conventional range



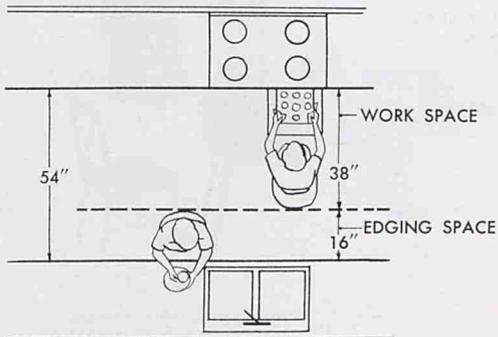
Using a wall oven



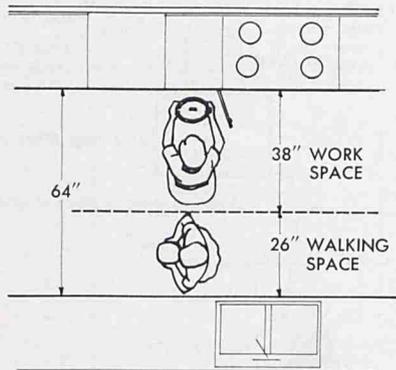
Using a refrigerator



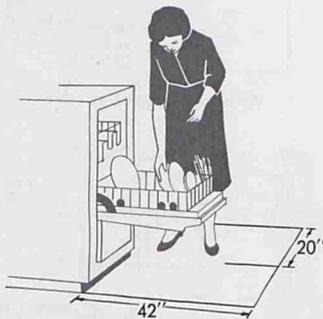
Using a base cabinet



Minimum space (allowing for edging) for two people working at cabinets and appliances opposite each other (except a front-opening dishwasher)



Liberal space (allowing for walking) for two people working at cabinets and appliances opposite each other (except a front-opening dishwasher)

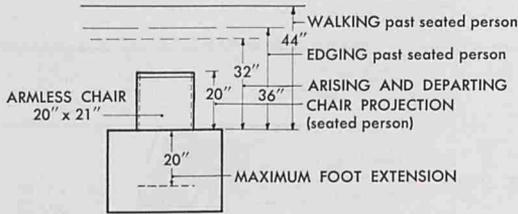


Using a front-opening dishwasher requires 4 inches more space than using other appliances in a kitchen

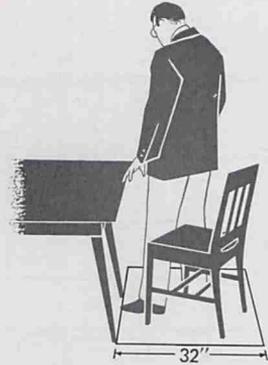


Using a cleaning closet

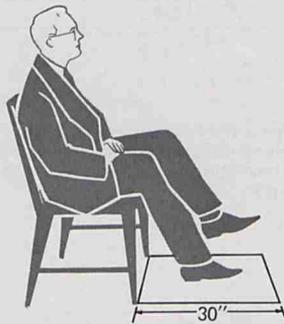
TABLES AND CHAIRS



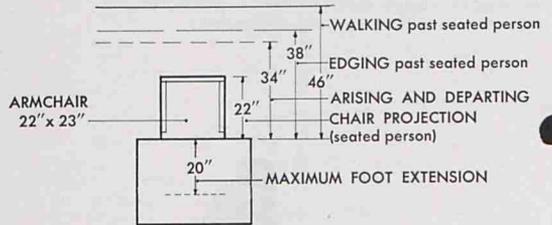
Armless chair in place at table



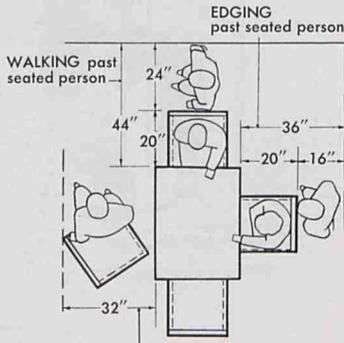
Rising from table, armless chair (armchair 2" more)



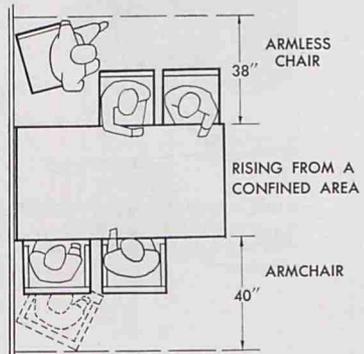
Foot extension, knees crossed, not at table



Armchair in place at table



Using tables and chairs in free area

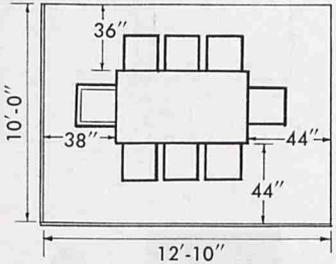


Using tables and chairs in confined area

Walking past seated person

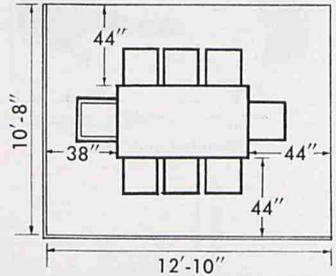


Dining areas for eight persons with free-standing table 72" x 40", one armchair, and seven armless chairs (calculated on basis of edging space on sides where there is not serving space, so that everyone can leave his place without disturbing others)



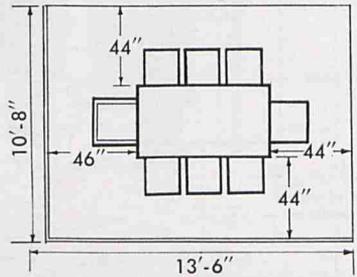
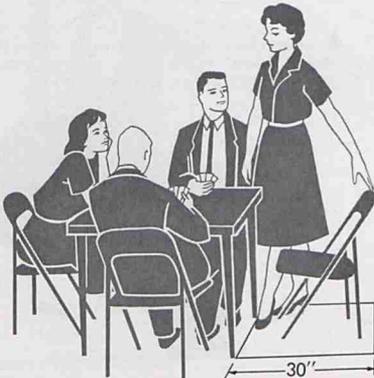
Serving space on one side and one end

Edging past seated person



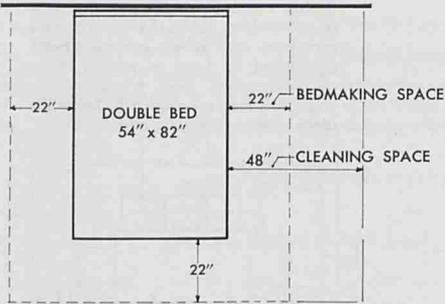
Serving space on two sides and one end

Arising from a card table

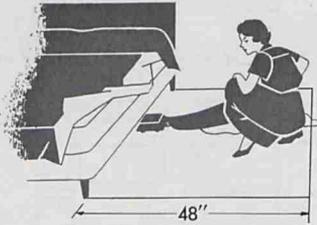


Serving space all around table

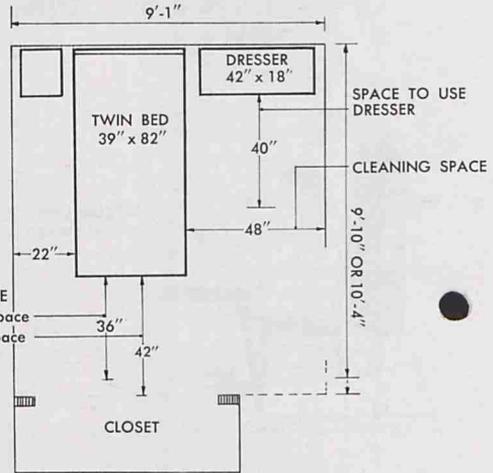
BEDROOMS



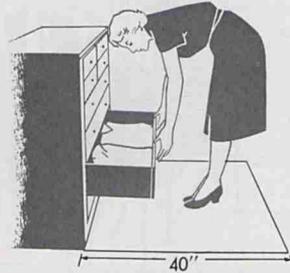
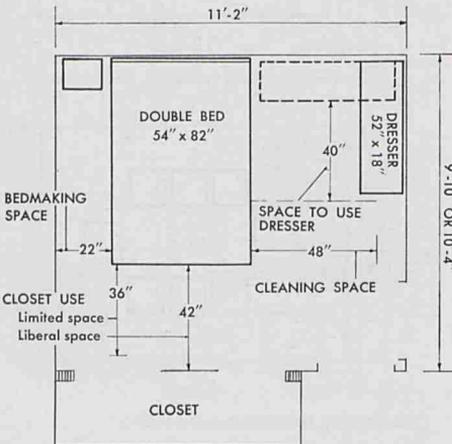
Making bed



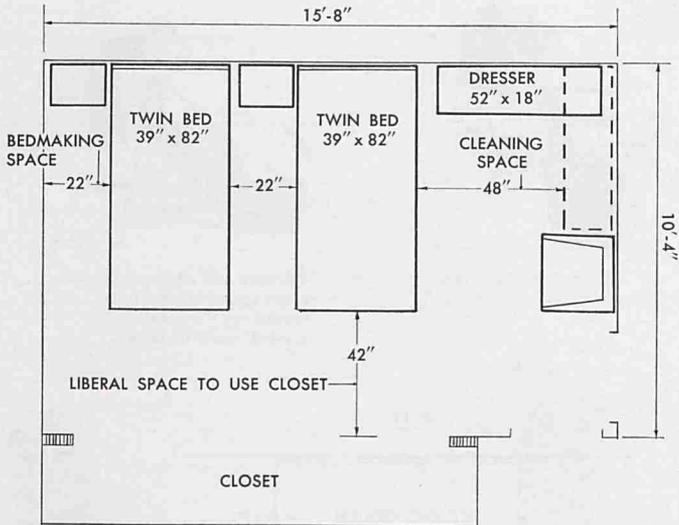
Cleaning under bed



(In the drawings, "limited space" allows space to open closet door and remove garment; "liberal space" allows space to open closet door, remove garment, and put it on)



Using dresser



COAT CLOSETS

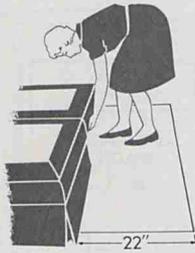


One person using coat closet

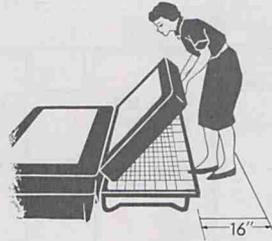


Two persons using coat closet in foyer area with space for one person walking

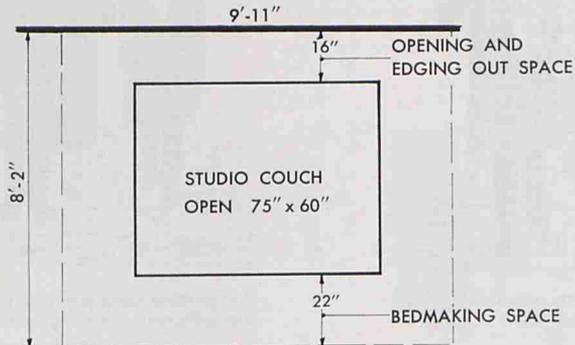
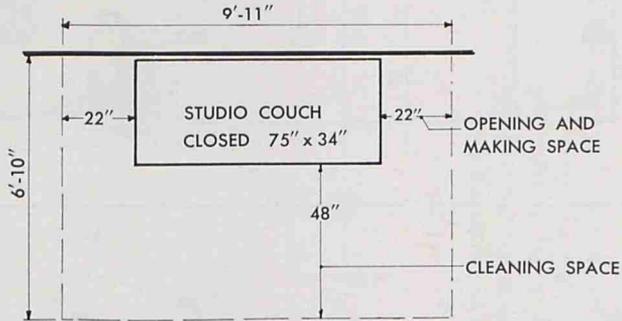
STUDIO COUCHES



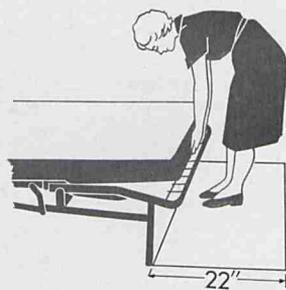
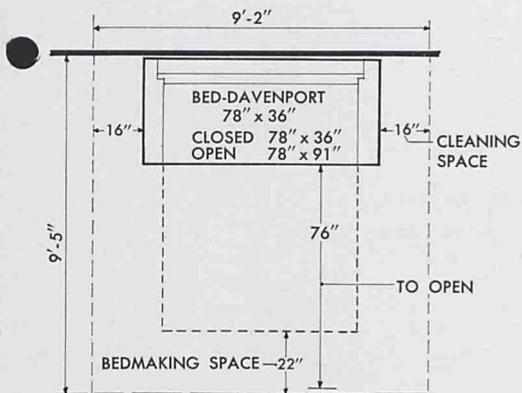
Making studio couch



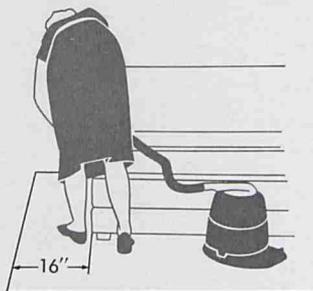
Opening and edging-out space (type tested needed to be moved out from wall to be opened; some do not)



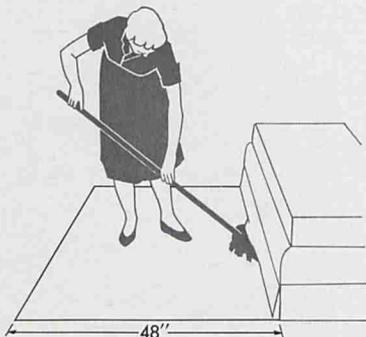
BED-DAVENPORTS



Opening or making bed-davenport



Cleaning ends of bed-davenport



Cleaning under bed-davenport
or studio couch

BOOKCASES

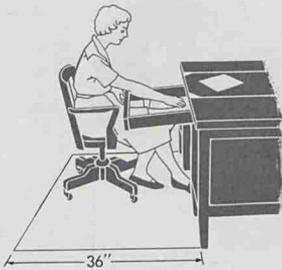


Using bookcase

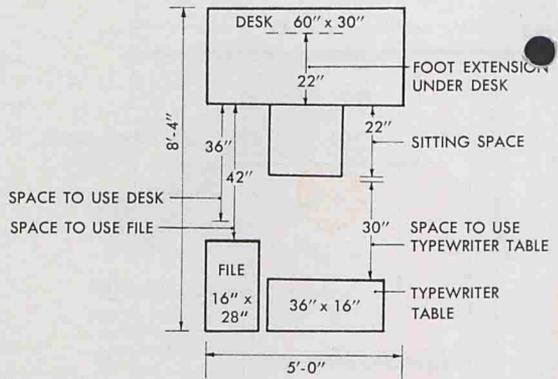


Cleaning under bookcase

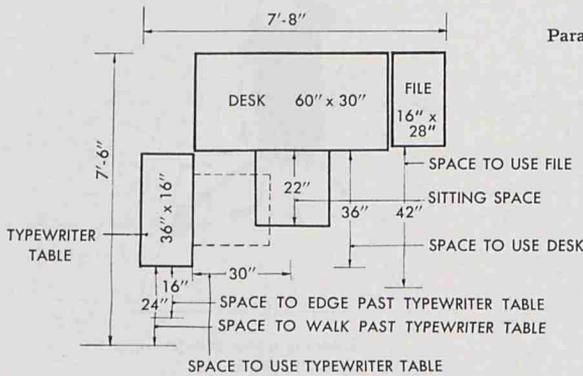
OFFICE OR STUDY



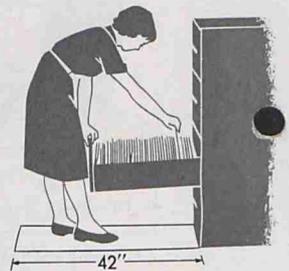
Using office desk



Parallel arrangement of office equipment



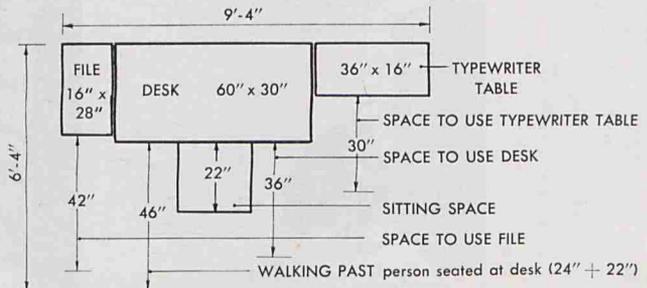
Right-angle arrangement of office equipment



Using file



Using and arising from a typewriter



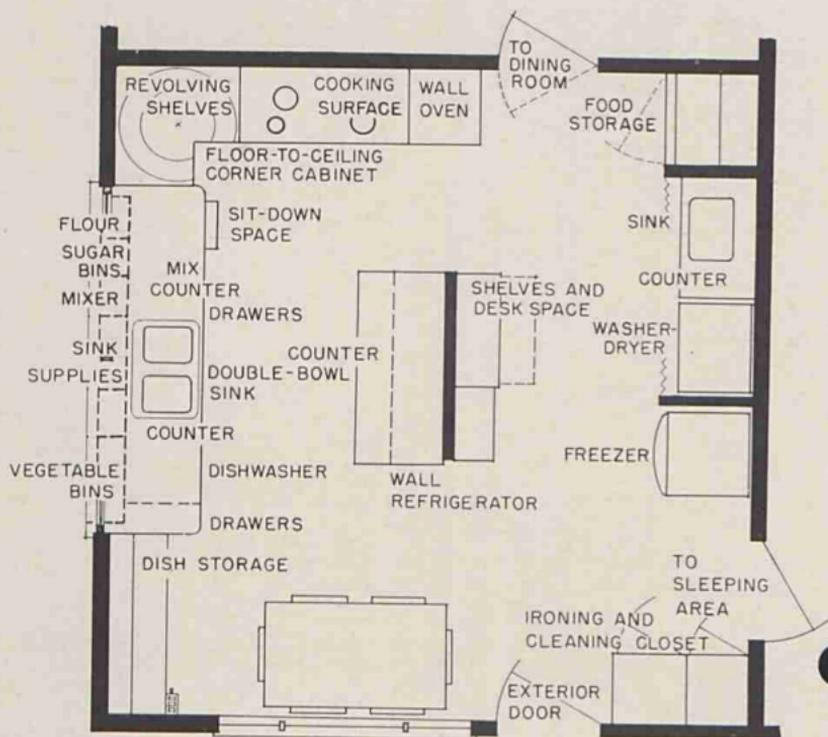
One-wall arrangement of office equipment



the Beltsville Kitchen-Workroom

**WITH ENERGY-
SAVING FEATURES**

Home and Garden Bulletin No. 60
U. S. DEPARTMENT OF AGRICULTURE



Negative numbers: Cover photo, DN-1219. Plan above, DN-1226. P. 3, DN-1201. P. 4, DN-1217. P. 5, Upper, DN-1225; Lower, DN-1206. P. 6, DN-1204. P. 7, Left, DN-1202; Right, DN-1222. P. 8, DN-1220. P. 9, DN-1223. P. 10, DN-1212. P. 11, Left, DN-1224; Right, DN-1227. P. 12, DN-1214.

the Beltsville Kitchen-Workroom

WITH ENERGY-SAVING FEATURES

By Mildred S. Howard, Lenore Sater Thyne, and Genevieve K. Tayloe

This kitchen-workroom was designed primarily for older or physically handicapped farm women who must conserve their energy. Its many energy-saving features, however, will work equally well for any homemaker.

In planning this kitchen-workroom, the designers have applied findings of studies of the energy expended by women in performing household tasks.

They have also taken into account studies of the space required for various household activities.

Storage designs, workspace, and arrangement of equipment are planned so that work can be done with a minimum of walking and other motions.

The overall size of the kitchen-workroom is 17½ feet by 18 feet.

TWO MAIN AREAS

The plan (at left) has two main areas—a kitchen area with dining space for family meals and a workroom area.

Kitchen and workroom are separated by a storage island. On the kitchen side, the island is made up of wall refrigerator, counter, and base cabinets. On the workroom side of the island are a planning desk and shelves.

The broken-U arrangement used for the kitchen equipment is both efficient and convenient. The break in the U between range and refrig-

erator allows step-saving access to workroom and dining room. The dining center has eating space for six persons.

The workroom includes, in addition to the desk and shelves in the island, laundry facilities, food-storage pantry, freezer, cleaning closet, and ironing closet. Workroom floor space is adequate for the varied activities carried on in this area. Small children can play safely in the end of the workroom near the dining center, within sight and hearing of the mother as she works in either area.

ENERGY-SAVING FEATURES

To save steps

- Pieces of equipment used for related jobs are placed as close together as feasible.

- Space is provided at each work center for storage of supplies, utensils, and tools used at that center.

- Serving cart is planned as part of kitchen equipment. Food can be

transferred on the cart from range to table in one trip. The cart can also be used to transfer dishes from table to sink, to move packaged food from kitchen to freezer, and to hold ironed flatwork.

To make reaching easier and reduce lifting of heavy objects

- Supplies and utensils most frequently used are stored between 28 and 64 inches from the floor, where a woman of average height can reach them without stooping or stretching. Refrigerator shelves are also within these heights.
- The electric wall oven is placed so that the bottom of the interior is 32 inches from the floor; the most-used rack positions are between 35 and 40 inches. If a gas oven had been used in this kitchen it would have been placed 34 inches from the floor. With the oven at this height the broiler rack is about 28 inches from the floor and the lowest oven rack position about 37 inches.
- Placed at counter level are: Bins for flour, sugar, potatoes, and onions and compartments for sink supplies and mixer. The mixer moves readily

on a platform with ball-bearing rollers.

- Trash box under sink has ball-bearing casters so that it can be rolled out for emptying.
- Perforated hardboard at each work counter provides place to hang often used tools and utensils.

Other energy savers

- Provision for sitting at work. At both mix counter and sink, under-counter knee space is provided so that the homemaker can sit comfortably. An adjustable posture chair is planned as part of the kitchen equipment.
- A minimum of pulling and pushing of doors and drawers. Dish cabinet has accordion-type door, which can be left open without being in the way. Door of the circular supply cupboard is attached to shelves and revolves with them. Drawers and sliding shelves can be pulled easily even when heavily loaded because they are on nylon rollers.
- Counters, dining table, and serving cart are covered with easy-to-clean laminated plastic.
- Electric outlets are provided at each work center and at the dish cabinet.

LIGHT AND AIR

Two large windows—a broad window over the sink and the counters on either side and a picture window in the dining center—provide adequate daylight and ventilation.

All work areas are well lighted by fluorescent ceiling fixtures, which are placed so that there are no shadows on the counters. The dining table is lighted with an incandescent ceiling fixture that can be adjusted in height

to provide good light at mealtimes or for studying or sewing. The light fixture at the planning desk can be adjusted as necessary.

A ventilating fan is located in the ceiling over the range; however, a ventilating hood could well be installed here instead. There is space for a room air conditioner above the dish-storage cabinet in the dining center.



MIX CENTER

The counter to the right of the sink is planned for mixing jobs. There is knee space under the right part of the counter so the homemaker can sit to work. The adjustable posture chair used here and at the sink is stored under this counter.

Whether the homemaker sits or stands to work she can reach all supplies, tools, and utensils needed for mixing jobs without stooping or stretching.

Bins for flour and sugar are at the back of the counter. Holders for wax paper and aluminum foil are built in above the bins.

To the left of the bins is a storage compartment for the mixer. The door to this compartment folds back out of the way when it is open. An electric outlet is located on the left wall of the compartment.

Small tools used at this counter are stored either on the perforated hardboard to the right or in drawers in the base cabinet.

All other supplies and baking pans used at this center are in the revolving corner cabinet. Shelves in this cabinet are sized and spaced so that everything stored here can be seen easily. Only large kettles that are not used often are stored on the bottom shelf.

A pullout board may be placed in one of three positions under the mix counter to provide a lower surface for some mixing jobs. With the board placed in its lowest position the homemaker can sit here to work in a comfortable straight chair. The board in the lowest position also makes a convenient working surface for children and a handy table for serving them snacks.



SINK CENTER

The sink center consists of a double-bowl sink, counter at the left with dishwasher below, storage compartments at counter level, and trash bin beneath the right sink bowl.

This center is located so that it is convenient and energy saving for the two main activities carried on here—food preparation and dishwashing. The left counter, which is used also for serving, is convenient to the dining center; the drawers below are a part of the storage for that center.

The homemaker can sit to work at the left sink bowl. This bowl is only $3\frac{1}{2}$ inches deep and has the drain set back of center, an arrangement that

leaves sufficient knee space underneath. The adjustable posture chair can easily be rolled to the sink from its storage space under the mix counter.

Food Preparation

By doing at one time all food-preparation jobs that are best done at the sink, the homemaker can sit for long enough periods to justify positioning the adjustable posture chair. Onions and potatoes are stored in ventilated bins at the back of the left counter. Saucepans used for cooking vegetables are hung on perforated hardboard at the left of the counter.



Everything else needed for food-preparation jobs done at the sink are at the homemaker's fingertips as she sits at the left sink bowl. Vegetable trimmings can go immediately into the disposer in the left sink bowl. Cartons, wrappings, and other trash can be thrown into the chute under the right sink bowl. Can opener and paper towels are in a compartment at counter level back of the sink. Knives are in a rack at the right of this compartment.

The trash container, which is a deep drawer at the bottom of the base cabinet under the right sink bowl, is mounted on ball-bearing casters so that it can be rolled out for emptying. It has a removable metal liner. If the house has a basement the trash chute can connect with a container there.

Dishwashing

The dishwasher is directly to the left of the sink, convenient to the dish-storage cabinet and the table.

Soiled dishes from the table can be stacked on the serving cart and wheeled to the sink in one trip. Utensils to be washed can be placed on the counters near the sink.

Then, with everything within easy reach, the homemaker can sit comfortably at the left sink bowl to scrape and rinse dishes, to load the dishwasher, and to wash any utensils, large platters, and electrical appliances that cannot be put into the dishwasher. Soap and other dishwashing supplies are in the sliding-door cabinet at the back of the sink.

The clean dishes can be taken from the dishwasher and put into the dish-storage cabinet with a minimum of motion.





REFRIGERATOR CENTER

The three-door wall refrigerator-freezer is in a central location convenient to the other kitchen centers. It is placed so that the top shelf is about 62 inches from the floor. A woman of average height can use it or clean it easily.

Between the refrigerator and the base cabinet that extends the width of the refrigerator is a sliding-door cabinet 10 inches high and 12 inches deep. This cabinet stores extra serving dishes, electrical appliances, and cartons of soft drinks.

The base cabinet, 32 inches high, has storage space at the left for the drop-leaf serving cart, a center sec-

tion of drawers for refrigerator dishes and kitchen linens, and a section at the right for pullout towel rods.

The counter serves as a holding space for items that are being taken out of or put into the refrigerator.

An alternate arrangement with a conventional refrigerator has also been planned for this center. In this arrangement the refrigerator is placed at the right and a five-drawer base cabinet for kitchen linens at the left. Over the base cabinet a wall cabinet or open shelves are provided for storage of refrigerator dishes. The serving cart is stored under the surface cooking top.

RANGE CENTER

The range center, to the right of the corner storage cabinet, is only a few steps from the mix counter.

The surface cooking top is 54 inches wide and 35 inches from the floor. Its four units are placed so that it is not necessary to reach over the front ones when using those at the back. This safety feature is particularly desirable for physically handicapped homemakers. There is ample room around each unit to allow for the use of large kettles.

Directly to the right of the surface cooking top is the wall oven. It is built in so that the most-used rack positions are at heights that a woman of average height can reach with a minimum expenditure of energy.

The lowest rack position is 35 inches from the floor, in line with the surface cooking top.

Utensils used daily are hung on the perforated hardboard at each end of the cooking top. Other utensils, pot-holders, and tools are stored in the drawers and on pullout shelves under the cooking top. Broiler pans and other oven accessories are stored in drawers under the oven. There is space in these drawers also for paper sacks and tall beverage bottles.

Serving dishes are stored in the part of the cabinet above the oven that opens from the front. The back part of this cabinet, which opens at the side, provides space for extra-large platters and trays.





DINING CENTER

A picture window (not shown) in the dining center helps to make this a pleasant place for meals.

The combination dish-storage cabinet and serve center has an accordion-fold door that can be opened with a single motion. It can be left

open and out of the way during table setting, meal service, and cleanup.

China and glassware are stored on the adjustable shelves in the top part of the cabinet. Lightweight, easy-to-grasp packages of ready-to-eat cereal are stored on the top shelf.



The base part of the cabinet has a serving counter, drawers for silver, pullout shelves for table linen, and a pullout shelf for small table appliances. Convenience outlets for appliances are inside the cabinet.

The left sink counter, immediately to the right of the dish-storage cabinet, is used for making salads and

arranging desserts. The two metal-lined drawers beneath this counter store bread, cake, and cookies.

By using the serve center and the serving cart the homemaker can eliminate many of the steps and motions that are ordinarily needed for serving a meal. The serving cart, with its leaves up, can be loaded with hot food, salads, and desserts at the range and refrigerator—then brought to the table.

During the meal, soiled dishes can be stacked on the cart. Dessert can be served from the cart or from the serving counter. The coffeemaker, toaster, and other small appliances can be pulled out and used on the shelf on which they are stored.

A swivel chair for the hostess is a convenience, makes it easier for her to turn to the serve center and back to the table.

LAUNDRY CENTER

The laundry center is conveniently near the kitchen work centers so that the homemaker busy with the laundry can easily keep track of kitchen activities.

A washer-dryer, sink and counter, and shelves make up this compact center. The washer-dryer is mounted on a platform that brings the opening to a height the homemaker can reach without stooping. Clothes to be drip-dried indoors can be hung from a rod on the ceiling above the sink.

The sink is also a handy place for arranging flowers or for children and men to wash their hands when they come in from out of doors.

Shelves hold laundry supplies and vases. Basswood folding doors screen the area when it is not in use.

PLANNING CENTER

A drop-down desk, shelves, and comfortable chair make up the planning center. The adjustable shelves can be arranged to accommodate tele-

phone, radio, cookbooks, books for household records, and other similar items. Some of the lower shelves can be used for children's toys and books.





WORKROOM STORAGE

Food Pantry

The food pantry to the left of the laundry center provides storage for canned goods, freezing and canning supplies and equipment, and extra household supplies.

Nine rows of canned food may be stored on shelves on the closet door. Each shelf is 5 inches deep and is tilted up slightly at the front. A heavy caster helps support the weight of the loaded door.

Freezer

The freezer is to the right of the laundry center. Foods prepared for freezing in the kitchen can be quickly and easily moved to the freezer on the serving cart.

Cleaning and Ironing Closets

There are two closets side by side in the corner of the workroom near the outside door—one for cleaning supplies and equipment, the other for



ironing board and ironing supplies. Small items may be hung within easy reach on the closet interiors of perforated hardboard.

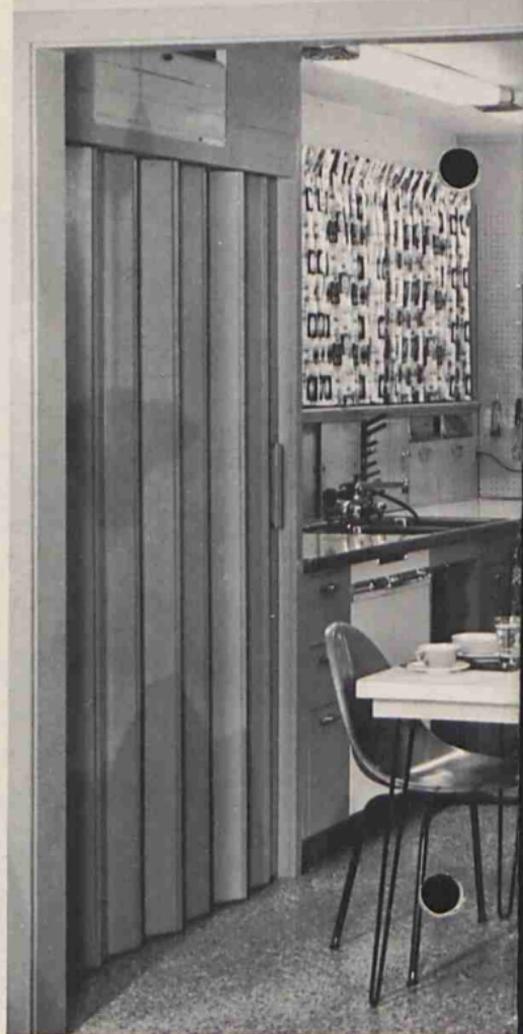
There is enough floor space at this end of the workroom to set up the ironing board. The board shown can

be adjusted so that the homemaker can sit down to iron. A wall bracket can be mounted nearby so that she can hang ironed clothing on it without getting up from her chair. Flatwork can be placed on the desk, on shelves of the planning center, or on the cart.

Working Drawings

Detailed working drawings of this kitchen-workroom, which your local carpenter or cabinetmaker can follow easily, are available from the extension agricultural engineer at most State agricultural colleges. In some States, county extension agents will place your order. In many of the States there is a nominal charge for the drawings.

If working drawings are not available in your State, write to the Clothing and Housing Research Division, Institute of Home Economics, U. S. Department of Agriculture, Beltsville, Md. This office does not distribute drawings, but will direct you to a State that does distribute them.



**Clothing and Housing Research Division
Agricultural Research Service**

**Washington, D. C.
Issued November 1958**

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price 10 cents

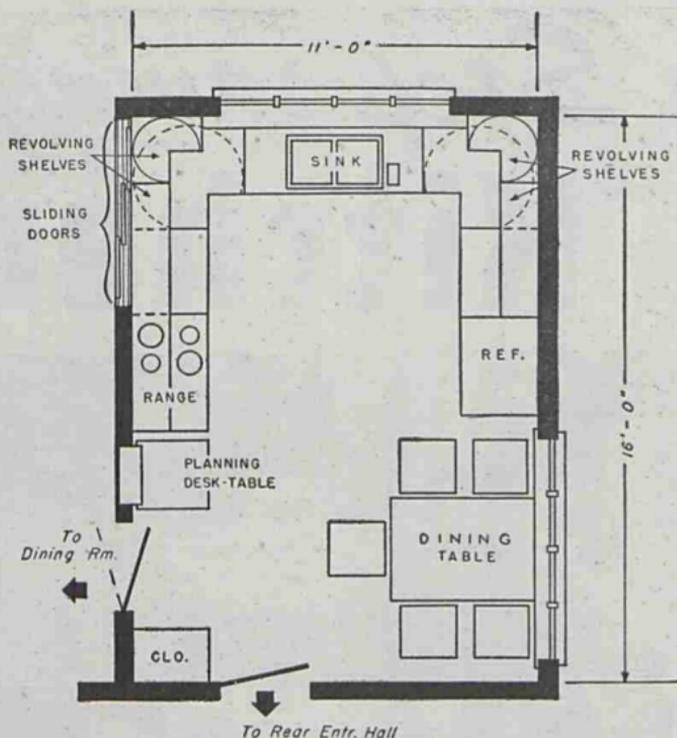
a Step-saving **U Kitchen**



UNITED STATES DEPARTMENT OF AGRICULTURE

Home and Garden Bulletin No. 14

Formerly Miscellaneous Publication No. 646



Points On Construction

- Working drawings are available from the extension agricultural engineer at most State agricultural colleges. In some States, county extension agents will place your order.
- If working drawings are not available in your State, write to Housing and Household Equipment Division, Agricultural Research Service, United States Department of Agriculture, Beltsville, Md. This office cannot supply the plans, but will direct you to a State that handles them.
- Working drawings are detailed, so that a local carpenter or cabinetmaker can reproduce them easily.
- If your storage needs are greater than those of the average family, you may wish to increase the size of certain units. Do not decrease the size of units. The space allotments needed for individual utensils and supplies have been carefully planned to allow ample room for removing articles.

HOUSE-DRESS NOTE: The young women pictured at work in this kitchen wear functional house dresses designed in the Bureau's laboratories.

A Step-Saving U Kitchen

Designed by

Lenore Sater Thye, housing specialist. Plans by J. Robert Dodge, architect

■ Maximum convenience for the homemaker at her work is the aim of this step-saving kitchen, planned primarily for the farm home. It was designed in housing and household equipment laboratories of the Bureau of Human Nutrition and Home Economics.

Basic plan.—The unbroken U shape was chosen for arranging equipment because it forms a compact dead-end work center through which household traffic cannot pass. It also allows the dining corner to be planned and decorated as a separate center.

As shown on the plan (opposite), the three key pieces of equipment are brought within easy reach of each other—sink at center of U, refrigerator and range at ends. Other arrangements of these pieces in a U or an L might be equally convenient.

The U as shown here, while compact, is large enough to give two women comfortable working space. There is also ample storage to accompany the activities usually carried on in a farm kitchen when there is a separate laundry and workroom.

Smooth production line.—This kitchen is planned to cut walking, stooping, and stretching to a minimum in accordance with modern work-simplification ideas. It is planned so jobs can progress smoothly from one work center to the next. The production line is from right to left, as preferred by most right-handed women.

Comfortable work heights.—Counters are 36 inches from the floor—the height used by manufacturers for most cabinet counters and gas and electric ranges. If this height is not comfortable, it can be adjusted an inch or two by changing the height of the toe space. The pull-out lapboard has a top 26 inches from the floor. Tests show that this is a comfortable level for seated work.

Handy storage.—To save time and energy, storage is provided for supplies and equipment near the places where they are first used. Articles in constant use are near at hand; those seldom used are farthest off. Cabinets have been designed especially to hold the various kinds of kitchen articles.

Corner space in cupboards and on counters is often wasted, for it is hard to reach. Revolving cupboards in corners of the U are a good solution.

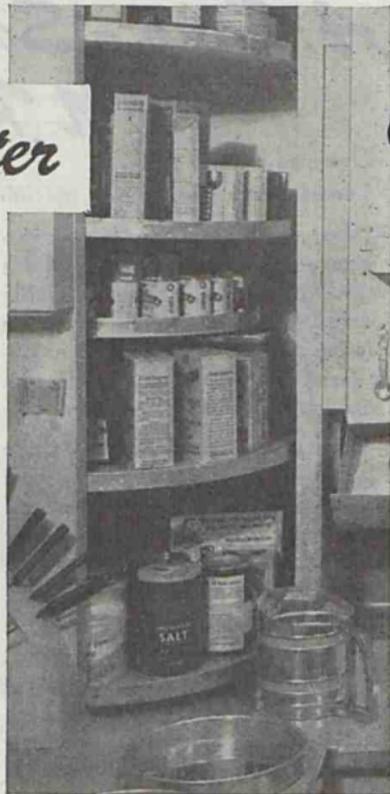
Light and air.—A broad window over the sink and its counters and another in the dining corner provide good natural light and cross ventilation. A fan built in the wall above the refrigerator helps to ventilate and carry off cooking odors.

Semi-indirect artificial light illuminates the work surfaces with a minimum of glare and shadow. The fixture is a U-shaped wooden trough with four 40-watt fluorescent tubular bulbs mounted on it. The dining corner has a semi-indirect incandescent fixture.

Mixing Center

Mixing jobs go quickly when supplies and utensils are within easy reach and the work space is adequate, as in this mixing center. The refrigerator is conveniently placed at the right end of the work counter.

Corner cupboards with revolving shelves above and below counter level tie in with the mixing center.



■ **Generous counter space.**—Of all food-preparation jobs, making cookies and bread requires the most counter space. Allowing for this, a mixing counter should be at least 36 inches long, with 42 inches more desirable, the Bureau's research has shown. In this kitchen 44 inches is provided.

Double-deck flour bins.—Keeping flour handy is a problem in farm kitchens where much baking is done. In this kitchen, replenishing the small container is easy.

A small metal bin above the mixing counter replaces the flour canister, which usually takes up counter space.

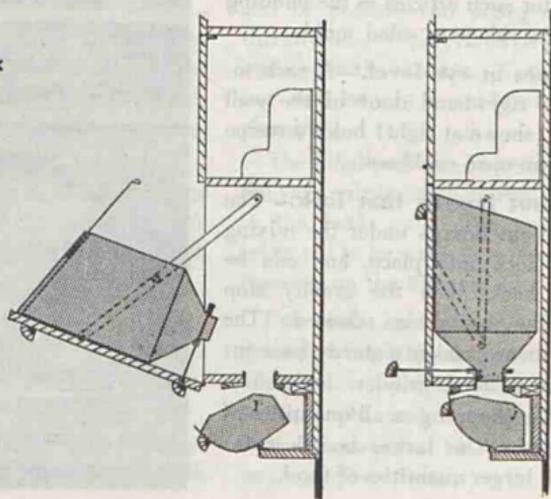
Directly above is a big bin for about 40 pounds of flour. Pull out a metal shutter in the bottom of the big bin . . . and flour feeds into the small bin just below.

More bins in a row.—Next to the small bin is a bin for granulated sugar, and beyond is one for other sugar, meal, or flour. The small bins are removable for easy cleaning.

Right-corner Lazy Susan.—The wall cupboard with revolving shelves at right bend of the U is part of the mixing center. It is big enough so that staples in daily use can occupy the outer part of the shelves and yet leave



Double-deck
flour bins



room near the center for reserves. These shelves are extended down to the counter, providing storage at working level for the heaviest and most often-used staples.

The base revolving cupboard is for the larger mixing bowls, baking utensils not stored elsewhere, a large jug of vinegar, saucepans. The top three-quarter shelf is just right for storing saucepans with long handles. The toe-board under the corner base cabinets is removable, to allow for brushing out under the shelves.

Utensils above mixing counter.—Since the Lazy Susan holds the many staples used at the mixing center, cupboards above the counter are left for equipment and supplies usually stored below the counter or in more out-of-the-way places.

The wall cabinet above the mixing center has shelves for mixing bowls, measuring spoons and cups, casseroles, custard cups. The top shelf is fitted with dividers to file the pie, cake, muffin, and bread pans, and similar pieces. Above the big flour bin, is a small vertical file for such articles as the pudding pan, tube cakepan, salad mold.

Recipes at eye level.—A rack inside the right-hand door of the wall cabinet (shown at right) holds a recipe card or an open cookbook.

Pull-out boards that lock.—The two pull-out boards under the mixing counter lock into place, and can be pushed back when the gravity stop under the board is released. The smaller board makes a sturdy base for attaching a food grinder. It also is handy for chopping small quantities of vegetables. The larger board is for use with larger quantities of food.

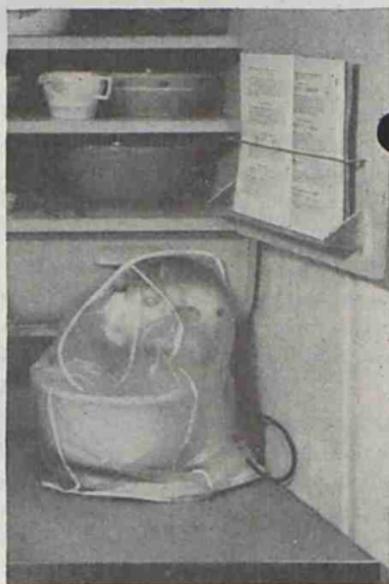
Drawers close to counter.—Below the pull-out boards are three drawers: One just deep enough for spoons, spatulas, and other mixing tools; a slightly deeper drawer for such things as a hand egg beater, can opener, graters; a deep drawer for refrigerator dishes and covers. All of these drawers can be opened without stooping.

A place for seated work.—A pull-out lapboard, shown on page 16, is included in this center.

Lower drawers.—Below the lapboard are two tiers of drawers, with two drawers in each tier:

Left tier: Top drawer for the children's lunch-basket supplies, and picnic things. Bottom drawer for seldom-used odds and ends of equipment, which most kitchens inevitably include.

Right tier: Top drawer for recipe books. Bottom drawer has dividers for filing large, seldom-used baking utensils.



Vegetable- Preparation Center

A step-saving set-up for preparing vegetables or for scraping dishes. Vegetable bins and knife rack near counter level. Garbage hatch in counter. Utensil cupboard at right.



Bins for vegetables and fruit.—The counter for preparing vegetables and scraping and stacking used dishes need not be so wide, front to back, as a mixing counter. By taking off 3 inches and using as much depth as possible in the outside wall, four bins are built under the windows.

The big bin at the vegetable-preparation counter holds about 20 pounds of potatoes. Next is a 10-pound bin for onions. Similar bins to left of sink are for other vegetables and fruit.

Made of metal and wood, the bins are easily removed for cleaning. The metal-lined compartments into which they fit are also easy to clean.

Garbage short-cut.—In this step-saving kitchen it is no trouble to save garbage for hogs—a problem chore in many farm households.

Common practice is to peel vegetables and fruit into a pan or sink

strainer . . . then pour the peelings into a garbage pail . . . then stoop to put pail under sink, or lift it to a table where it takes up work space.

Here, the garbage pail is in a metal-lined compartment under the counter at right of sink. Vegetables and fruit can be peeled—and plates scraped—directly into the pail through an oblong opening in the counter. Counter opening and lid are metal-lined for easy cleaning.

The filled pail can be removed from the yard side through an insulated door in the back wall. The pail can be taken out to be washed, through a door opening on the kitchen side.

For tools and paper.—Below the garbage compartment are two drawers. The shallow top drawer is for hammer, pliers, nails, and so on. The deep bottom drawer is a file for paper sacks and wrapping paper.



Cleared dishes progress to the left: Washed in shallow sink bowl . . . drained

Dishwashing Center

■ **Two-level sink.**—The sink for this kitchen was designed and constructed in the laboratory. No sinks like it are on the market.

The right bowl, 5 inches deep, permits dishwashing at a comfortable height. In so shallow a bowl, the drain must be directly under the faucet to prevent excessive splashing from running water.

The left bowl, 8 inches deep, is convenient for draining dishes or washing

vegetables. The sink is wide enough, front to back, for a medium-sized dish drainer to rest on the rims, supported well above the sink floor. Space at side of the drainer allows liquids to be poured down the sink or pans to be emptied without contact with the draining dishes.

For cleaning supplies.—A wall compartment at the back of the sink is for soap, brushes, and scouring and



in deep bowl . . . everyday dishes and silver stored near counter level.

soap powders. A compartment under the sink, shown on page 10, holds extra cleaning supplies.

Four drawers.—Below the counter at left of the sink are four drawers—for tea towels, for cake and cookies (a metal-lined drawer), for aprons, and for miscellaneous articles.

Left-corner Lazy Susan.—At the left bend of the U, a wall cupboard with revolving shelves is for everyday dishes. Heavy dishes and those most often used are on the lowest shelves. The top shelf is for ready-to-eat cereals. Steps

are saved when cereal and bowls are in one cupboard.

The revolving shelves below hold skillets, roaster, and other utensils used at the range. Shelves and openings are large enough to take, in addition, big pieces of equipment such as the pressure canner.

A large coffeepot is here, as well as the percolator used daily, and also the coffee—all handy to the cold water at the sink. If a hot-water coffee maker is used, a shelf over the range gives more convenient storage for coffee and coffee maker.



■ **Under-sink storage.**—The storage compartment under the sink provides a place for temporary storage of empty cans, jars, and bottles, as well as for extra cleaning supplies.

The wastepaper basket is mounted on the left door of the under-sink cupboard; also a roll of paper towels. On the right door are hooks for the dish drainer and a rack for the dish-cloth.

Tea-towel pull-out rack.—A pull-out rack at the right of the range is for drying tea towels.

To meet safety requirements, there is asbestos board on the side of the rack next to the range. To ventilate the rack, the asbestos board and the toeboard are both perforated.



Cooking Center

■ **Shelves at range.**—Shallow open shelves are provided for foods in frequent use at the range.

The lower shelf is for such supplies as flour, sugar, salt, pepper, tea, cocoa. The upper, for such staples as breakfast cereals that require cooking, rice and corn meal.

These shelves extend only a little way over the range, but, even so, for safety's sake there is asbestos lining under them.

Cabinet above.—The wall cabinet is 24 inches above the range. The

lowest shelf allows just enough space for meat platters. The shelf above is mostly a vertical file for pot lids and vegetable dishes. This leaves one-fourth of the shelf for additional staples used at the range. The top shelf is for extra packages of all foods stored at the range, and for dry breakfast cereal reserves.

Double-fold doors.—The cabinet above the range, and also the cabinet above the serving counter, have double-fold doors, hinged to fold back flat for convenience and safety.

Shelves and cupboards over the range save many steps. They should be protected from fire hazard by asbestos board under them.





Serving Center

■ The serving counter is next to the range and handy to the dining corner.

Sliding doors.—To speed dining-room service and save many steps, sliding doors (shown at right) are back of the serving counter. When these doors are opened, dishes may be taken from the wall cupboards on the dining-room side. The doors also open up a passway through which food is served from the kitchen counter to the dining-room sideboard.

For company dishes.—Above the serving counter is a 44-inch cabinet for storing good dishes. Farm families usually serve in family style. So space is allowed here, near the range, for meat platters and vegetable dishes of the company set.

For silver and such.—Four small drawers under the right end of the long



wall cabinet are for articles used when setting the table for everyday meals—silver, table hot pads, paper napkins.

Under the serving counter.—The base cabinet is fitted with—

- A large bread board . . .
- A drawer for small utensils used at the range: Meat forks, basting spoons, potato masher, other pieces . . .
- A metal-lined bread box big enough for four loaves and a pan or two of rolls . . .
- A file cupboard for trays, cooling racks, turkey platter, other large items conveniently stored upright.

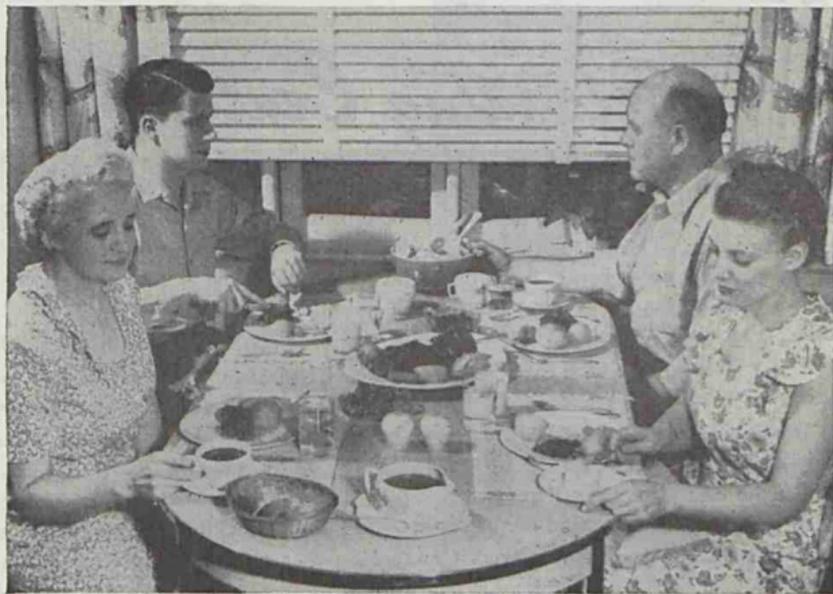
Dining Corner

■ The dining corner is large enough to seat six comfortably. With the table pushed to one side of the dining area or set with the long side against the window, there is room for a baby's play pen.

A 6-foot window looks out on the yard and drive. It also provides for cross ventilation with the window over the sink. Harmonizing colors of curtains, walls, and dishes help make the corner cheerful and attractive.

Under the window a radiator is flanked by open shelves where the toaster and waffle iron may be kept. There is room here for magazines and books at left and children's toys at the right. The top shelf provides a place for potted plants or flowers and also serves as a counter for convenient use of electrical equipment. Convenience outlets directly below eliminate reaching or stooping to make connections.

Dining corner, large enough for chairs rather than benches. There is ample space for pushing back chair and passing behind seated person.





Planning Center

■ A useful step saver is a desk at which to plan meals, telephone, and make out market orders. This kitchen desk is a drop-leaf table on casters. A shallow drawer holds pencils, pads, grocery bills. Placed next to the cooking center, the desk provides a convenient place to work while the meal is cooking.

Desk used as table.—With leaves raised, the desk makes a 48-inch table. It can be easily moved where wanted for use in food preservation or for setting up salads or desserts when serving a group. It can also serve as a tea

cart, or it will seat two extra persons comfortably for meals.

With a fluorescent light directly overhead, the table is a good place for a child to study.

Wall shelf.—A 6-inch-deep shelf extends back into the wall, making a place for a recipe book or two, telephone book, a kitchen radio.

Mirror for last look.—Homemakers say that when someone is at the door or when they join guests they like to see that they are presentable. A mirror above the desk meets this need.

Storage Features

■ **Storage closet.**—Near the doors and out of the way of meal preparation is this closet for the kitchen cleaning equipment. Besides such things as broom, brushes, and dustpan, the lower section can hold the step stool. There is a hook for aprons. A rack on the door provides storage for first-aid supplies.

The upper section is reserved for a selected supply of canned foods—saving trips to food-storage room.

Revolving shelves. — Revolving corner-cabinet shelves turn easily and smoothly on a ball-bearing pivot. To keep them from turning, a catch placed beyond the reach of young children is a wise precaution against accidents. A metal rim keeps utensils from sliding off the shelves.





Pull-Out Board

■ The pull-out lapboard in the food-preparation center provides a comfortable place to sit for long and tiresome jobs, such as making sandwiches, shelling peas, or preparing foods for canning and freezing. It is planned for

use with a kitchen chair which allows the worker to sit comfortably, with a good back rest and with her feet flat on the floor. Food supplies and utensils taken out for use can be placed on the counter above within easy reach.

United States Department of Agriculture

Formerly M. P. 646

Issued November 1951

U. S. GOVERNMENT PRINTING OFFICE: 1954

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price 10 cents

YOUR FARMHOUSE . . .

PLANNING THE KITCHEN AND WORKROOM



The plan for kitchen and workroom shown in detail in this publication, pages 10 to 28, was developed to illustrate the application of work-simplification principles. Because the aim was to include ideas and suggestions for as many activities as possible, the plan is not limited to low-cost demands. The arrangement of equipment and furniture shown is only one of many that could be similarly worked out.

The plan is based on the best information available at this time. Because very little research has been done to determine dimensional requirements for specific kitchen and workroom activities, the dimensions used are principally the result of a pooling of the practical experiences of home economists.

Results of a few limited kitchen studies have been incorporated. More extensive research in years to come should point the way to even better application of principles and better use of space and materials in the home.

Contents

	Page
Work-simplification principles.....	3
Decide on activities.....	3
Eliminate unnecessary activities.....	3
Provide best conditions for necessary work.....	4
16 good plans for kitchens and workrooms.....	5
A plan for a work-saving kitchen and workroom.....	11
Activity check lists.....	11
Meal preparation.....	13
Food-mixing center.....	13
Sink center.....	16
Cooking and serving center.....	18
Eating and clearing away.....	21
Planning.....	22
Extra kitchen storage.....	22
Play space or office corner.....	22
Relaxing, telephoning, mending, reading.....	22
Sewing.....	22
Laundry work.....	25
Food preservation and other food work.....	25
Serving harvest meals.....	26
Odd jobs.....	26
Putting wraps away and washing up.....	26
Storing cleaning supplies.....	27
Provision for good working conditions.....	27
Comfortable work heights.....	27
Lighting.....	28
Comfortable temperature and ventilation.....	28
Safety.....	28
Facts and figures.....	29

December 1951

This publication was prepared by Helen S. Holbrook, housing specialist, assisted by Elma Van Horn, writer, and Lynn H. Myers, illustrator, Agricultural Research Service, United States Department of Agriculture.

Reprinted without change June 1960

YOUR FARMHOUSE . . .

PLANNING THE KITCHEN AND WORKROOM

Two kitchens can cost the same amount of money, occupy almost identical space, and yet differ greatly in the convenience they afford those who work in them. It's the planning that makes the difference.

If you want a kitchen and workroom that help to make your work easier, it's up to you to plan these rooms with work simplification in mind.

Energy and time you save by good planning will leave you more of both for other things. You may want to use the energy and time saved for work you now have to neglect, for more attention to your family, for community work, or for such jobs as poultry production that bring in a cash income.

At the very least, simplifying your work can make

time spent doing it more pleasant—give you a lift mentally as well as physically.

In recent years home economists have made a start in studying ways of applying work-simplification principles to the home. The principles that apply to room planning are:

1. Decide what activities are to be carried on in a room.
2. Eliminate all unnecessary work connected with these activities.
3. Provide the best conditions for the necessary work.

This publication illustrates how to apply the three principles to kitchen and workroom planning.

Work Simplification Principles

Decide on activities

The first step in planning any room is to decide on the activities to be carried on there. A good way to help yourself decide is to make a list for each room. Not all families are likely to perform all of the same tasks or to prefer the same location for each one.

Every kitchen should have adequate provision for meal preparation—which includes storing, preparing, and serving food—dishwashing, and disposal of refuse. Most farm families want space in the kitchen for eating some family meals.

It will simplify both kitchen work and other tasks to assign jobs that interfere with orderly meal preparation to some room other than the kitchen—a workroom, a work porch, or the basement. Having a workroom on the first floor near the kitchen saves energy and simplifies turning of attention from one job to another when work is going on in both rooms. Such an arrangement also makes care of small children easier.

Eliminate unnecessary activities

Good planning can eliminate much unnecessary work. Six ways to reduce the homemaker's expenditure of effort and time follow:

● *Use modern labor savers.*—The use of modern labor-saving utilities and equipment can take some jobs completely off your hands—do the hardest part of other tasks.

Major labor savers available with or without electricity are: Hot and cold water piped to the sink; a power-driven washing machine; a controlled-fuel

range; and an automatic refrigerator. To operate water pumps and washing machines, engines may be run by windmills, fuel, or electricity. A gas, gasoline, or electric range may supplant the coal or wood range. The refrigerator may be run by gas, gasoline, kerosene, distillate oil, or electricity.

In addition to the foregoing labor savers, if electricity is available, better and more easily maintained lighting is possible, as well as additional large and small pieces of labor-saving equipment.

If you cannot afford every labor saver you need for your work, think first of the jobs that take the most of your energy and time—and decide which of these you least enjoy doing. Get help for these tasks first.

Before you buy any piece of equipment, consider the work it is to do. Is it a piece of equipment that you want to last as long as the house? Or will you replace it later when the family size changes, when improved models are available, or when you can better afford a more desirable model?

To help you select wisely there are numerous buying guides available in Federal, State, and other publications.

● *Plan a definite place for each activity.*—Having a definite place planned to accommodate each activity eliminates much of the confusion that makes work difficult. With good planning some centers can serve more than one activity. How many jobs can be done in one place without confusion depends on the length of time it takes for each one, when and how often each is done, and how work is managed.

● *Locate activity centers for logical sequence of work.*—Locate activity areas in relation to each other so that work progresses in a continuous, un-

interrupted path—without crisscrossing or backtracking of work paths. This cuts down on walking and the mental and nervous energy expended.

● *Plan work areas that are adequate but compact.*—To be adequate, a room must have space enough for the size and kind of equipment wanted and for the number of persons likely to be working in the room. It should also have enough counter space, working space, and storage facilities needed for each task.

You need to know at the beginning of planning the type and size of large pieces of equipment you'll have—and the clearances their use demands. (See pp. 29-33.)

For compactness, the dimensions of each work area should be kept as small as possible without sacrificing adequacy. When planning for compactness, consider location of doors and windows. These should be located not only for cross ventilation and good lighting on work surfaces, but also so that they won't break up continuity of equipment in work centers.

Planning adequate but compact work areas makes work go more smoothly and quickly with less tax on the worker's nervous energy. It also saves steps and reaches.

● *Design work centers for easy seeing and picking up of needed supplies and utensils.*—When you plan arrangement of storage space for each work center let three rules guide you.

First, plan enough storage for supplies and utensils at the center where first used.

Second, locate storage for most-often-used items in the most accessible places—between fingertip and shoulder height. This saves steps, stoops, reaches, and time.

Third, design the storage facilities for the articles to be kept in them.

● *Select interior millwork and surface materials that are easy to clean and maintain.*—At best, the kitchen and workroom need a lot of cleaning. Simple design and easy-to-clean, long-lasting materials lighten the work and cost of maintenance. For desirable construction and design features and qualities of materials for walls, counter tops, and floor coverings, see pages 30 and 34 to 45.

No material may have all the qualities desirable, so choose the one that has the most of those wanted at the price you want to pay.

Provide best conditions for necessary work

Many of the ways of saving labor listed in the preceding section also contribute to better working conditions in kitchen and workroom. However, there are other ways to make a room a better, safer, more pleasant, and more attractive place to work in.

● *Comfortable work heights.*—The right heights for work surfaces add much to ease and comfort of work. Provision should be made to enable a worker

to sit down instead of stand if she wishes, because changing position while working is restful. Whether she is standing or sitting at work, a homemaker should be able to maintain good posture without muscular strain.

The right height for a work surface depends upon the height, posture, length of arms, girth, and eyesight of the person using the surface. It depends also on the kind of job to be done.

● *Well-lighted work surfaces.*—Good lighting helps to prevent fatigue and promotes safety. Work surfaces need enough light for good seeing both day and night. Windows and fixtures should be so located that light never shines directly into the worker's eyes and there are no heavy shadows on the work surface.

The amount of window glass area needed varies with the floor area of the room and with different sections of the country. Considering lighting only, in a region where bright sunshine prevails most of the year, as in the Southwest, the window glass area may be smaller than in other parts of the United States.

For houses in the Northeast section of this country, window glass area in a room should be equal to at least 15 percent of the floor area. For the Southeast and Northwest, the figure is 12½ percent, and for the Southwest, 10 percent. These percentages are based on the slant of light, hours of daylight, and climate in the four sections of the country.

Lighting of the work surface is also affected by the amount of light reflected by walls and ceilings and by the amount absorbed by window curtains or lamp globes through which the light must pass. Walls and ceilings of light colors with either a dull or semigloss finish are best for reflecting a maximum of light without glare. Only in a very sunny room with a large window glass area will the colors that reflect a low percentage of light be satisfactory. See page 46 for amounts of light reflected by various wall colors.

● *Good temperature and ventilation.*—For favorable temperature and ventilation, locate the kitchen on the side of the house where it is protected from the coldest winter winds, and where it will get the prevailing breezes in summer. With the house properly located, the prevailing summer winds do not blow toward it from livestock barns or poultry houses.

See that cross ventilation is provided. If good natural ventilation through windows and doors is impossible, a ventilating fan will help. An installed fan needs a duct leading to the outside. This should be kept short to reduce cost of both duct and fan. A long duct requires a more powerful and larger fan.

● *Safety.*—As fatigue is one of the chief causes of accidents, a kitchen or workroom that is planned for simplification of work provides for safety to a great extent. Faulty equipment, poor lighting, poor arrangement—all contribute to making a work place unsafe. For details on how to plan a safe kitchen and workroom, see pages 47 and 48.

16 Good Plans for Kitchens and Workrooms

The following pages show kitchens and workrooms planned for various activities and types of equipment—and for rooms of different sizes and shapes.

Indicated on the plans are clearances allowed between pieces of equipment for safety and ease of work. All plans except those shown with coal or wood ranges allow maximum 6-inch clearance needed for gas and electric ranges. Passageways are also shown.

Adaptations of such typical arrangements may be made to fit limitations set by such factors as size of room and location of doors and windows. Factors governed by the architectural pattern of the house are sometimes hard to change.

Other plans similarly worked out may be more satisfactory or equally so. The kitchen and workroom that will suit you best will be the ones tailored to your family's needs—for step-saving, efficient work, and pleasant living. Information in the section on Facts and Figures, pages 29 to 48, gives additional factual material for working out detailed plans.

How to read the plans

Counter and work table tops are shown in medium blue. Partitions are dark blue. Wall cabinets above counter tops, equipment, furniture, closets, and windows are white.

Small sections of diagonal lines show where a counter top extends beyond a base cabinet. This is used near controlled-fuel ranges to give the longest counter possible when it is necessary to allow clearance between range and base cabinet for safety.

In these plans, 6 inches of free space is left between base counters and ranges. This is the greatest amount of clearance that may be needed. Many ranges require less clearance; some none at all. The base cabinets next to such ranges can be made longer accordingly.

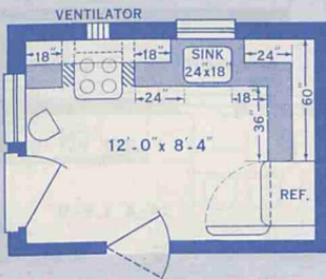
If a range needs no clearance at the back for safety, it may be moved back to the wall. Then it will not jut out beyond the front of base cabinets.

SMALL KITCHENS

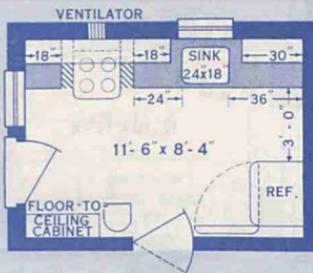
The plans on this page and the top of the next show the smallest rooms that can be arranged into work-saving kitchens for meal preparation. None of these kitchens has eating space.

All sinks are single-bowl type, 24 by 18 inches. All ranges are controlled-fuel apartment-type with

the oven below the burners. There is one 36-inch food-mixing counter in each plan, and counter and storage space on both sides of sink and range. All rooms have cross ventilation and good natural lighting. Traffic does not pass through work areas.

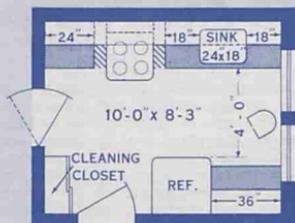
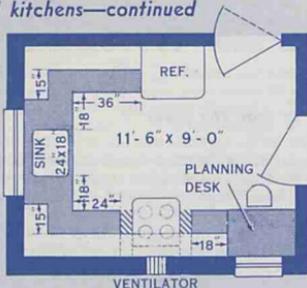


L-type.—Arrangement for a narrow room. Counters and equipment in unbroken line along two walls. Counters add up to 11 feet in length.



Broken L.—No counter on right wall as in plan at left. Room too short to allow needed 18 inches between sink edge and counter at right angle.

Small kitchens—continued



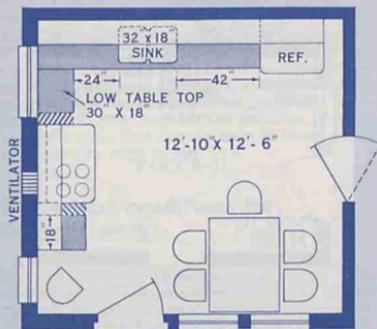
U-type.—A room can be no narrower than this to provide needed 18 inches of standing space on each side of a 24-inch sink in bend of U.

Opposite-wall-type.—For a short, narrow room. The 36-inch counter could be lower than other counters for greater convenience in food mixing.

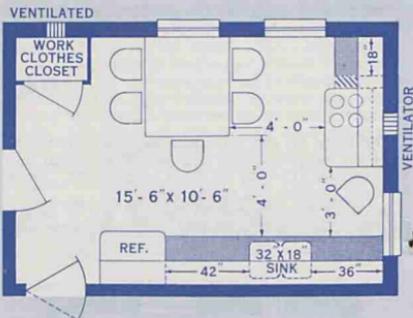
KITCHENS WITH EATING SPACE

All the following kitchens have, in general, more desirable sizes of equipment than have the smaller kitchens shown above and on page 5. Sinks and ranges are larger. In most cases, also, counter and storage space is more generous. Whenever possible the food-mixing counter is 42 inches long.

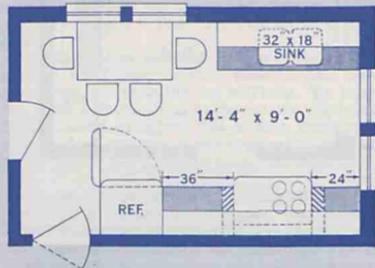
All rooms have cross ventilation, good natural lighting, pleasant outlook for eating, and no traffic through work areas.



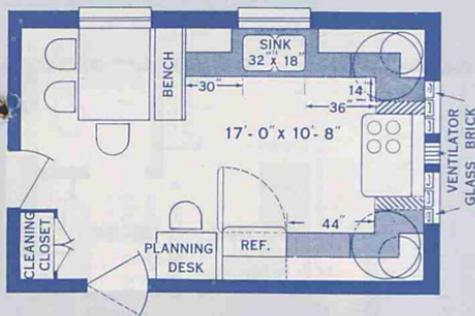
L-type.—This arrangement in square room puts generous eating space well away from work area. Table under window for jobs done sitting down.



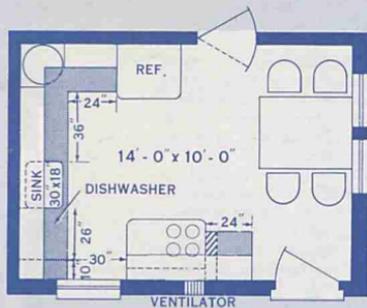
Broken L.—Arrangement for a long, narrow room.



Opposite-wall-type.—Eating space is limited. Sink counters can be higher than those opposite.

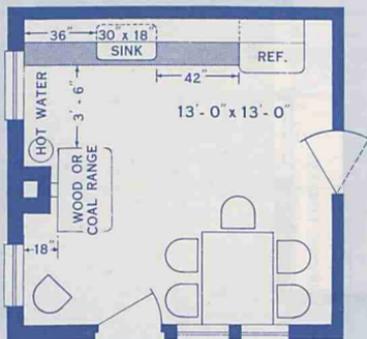


U-type.—Range instead of sink in bend of U. Dish storage and sink near table, so steps are saved in setting and clearing table. Corner shelves revolve.

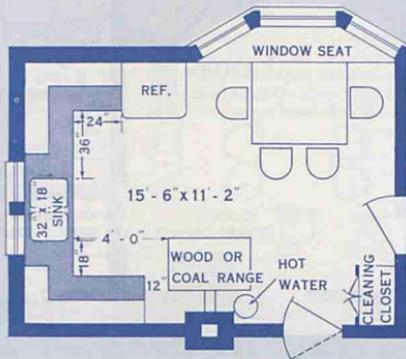


Broken U.—Left corner of U broken to allow standing room at left of sink. Storage for trays in 10-inch space at left of dishwasher.

Kitchens with coal or wood ranges



Broken L.—Wall cabinets unbroken by windows over sink. Range near chimney, with short, direct stovepipe, and adequate allowance for clearance at sides and back—for safety. Doors lead traffic between work and eating areas.



U-type.—Addition of a bay window to this room provides generous space for eating. With a coal or wood range, wider room is needed for U arrangement. If many large utensils are to be washed, there should be a larger sink bowl.

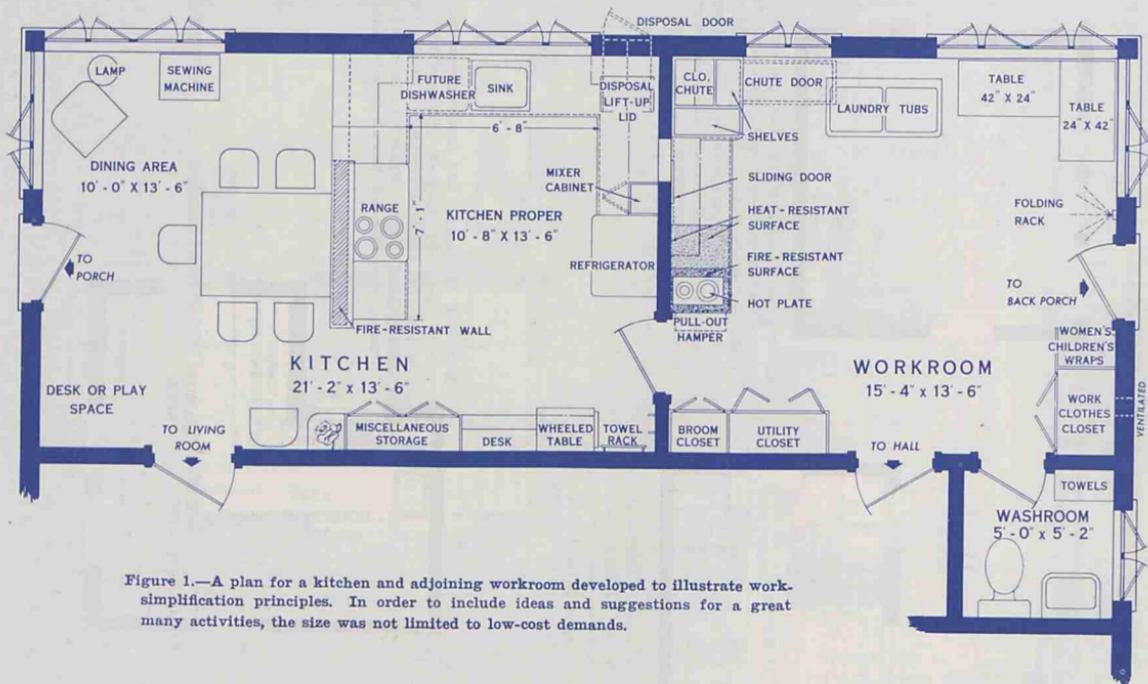


Figure 1.—A plan for a kitchen and adjoining workroom developed to illustrate work-simplification principles. In order to include ideas and suggestions for a great many activities, the size was not limited to low-cost demands.

A Plan for a Work-saving Kitchen and Workroom

In planning a kitchen to suit a family and to fit into a house plan, many experienced room planners try different arrangements on paper first—checking the arrangements that seem best by using scale cut-outs of furniture and equipment.

Though such planning may seem detailed and time-consuming, it pays in the long run. It often reveals flaws in a plan that would add to a homemaker's chores every day of the year. Correcting kitchen lay-outs after the equipment is installed is always expensive, sometimes impossible.

When you put your kitchen on paper, the work-simplification principles given in the foregoing part of this publication can guide you in developing your plan. The information in the section on Facts and Figures, pages 29 to 48, will also be helpful. These principles and facts will be useful, too, when you judge plans made for you by someone else.

On the following pages a farm kitchen and a workroom designed on work-saving principles are described and illustrated.

Activity check lists

Below are the lists used in planning the kitchen and workroom described in this section, pages 10 to 28. The lists were made with the needs in mind of a busy farm homemaker with small children.

KITCHEN ACTIVITIES

Meal preparation
Eating
Clearing away dishes
Dishwashing
Telephoning
Planning meals and keeping household accounts
Keeping accounts of small food sales and egg and similar records
Some mending and sewing

WORKROOM ACTIVITIES

Laundry work
Food preservation
Churning and care of household milk utensils
Small-scale preparation of eggs, chickens, and other farm products for market
Small household repair jobs

In addition, it was considered desirable to plan a place in the kitchen for the homemaker to relax, read, or visit between jobs. A place was included, too, for small children to play close to the work area but not in it—so the mother can watch the children as she works, but will not have them and their playthings underfoot.

The workroom was not especially planned to take care of drying laundry in bad weather, but it could be used for that purpose. It was planned as a place in which to feed harvest crews.



Figure 2.—Places planned for major activities.

Workroom facilities, opening from the workroom, were included. A ventilated closet for work clothes and a place for hanging outdoor wraps for the homemaker and children were also provided.

As the workroom temperature ordinarily is lower than that of the kitchen, some storage was planned in the workroom for vegetables and fruit not needing refrigeration.

Compare the foregoing list of activities to be planned for with the plan in figure 1. Note in figure 2 that there is a definite place assigned to each activity. Both rooms contain modern labor-saving equipment. Definite places are planned for other pieces of equipment to be added later—with a slight rearrangement of existing equipment.

The facilities provided for carrying on each activity have been located according to the order in which they are used.

In neither the kitchen nor the workroom is there any unused space. Much of the area, particularly in the workroom, serves more than one purpose since laundry work and food preservation or other jobs can be timed to avoid conflict.

Although the entire kitchen is larger than most farm kitchens, it saves room in the house as a whole because it does away with the need for two dining spaces. The large room is divided by a partial wall into two main activity areas—the kitchen proper and the dining area (figs. 3 and 4). Each area is planned as a unit.

The kitchen proper is large enough to provide adequate space for equipment, for working, and for storage needs for all wanted activities, but is compactly planned to cut steps to a minimum. Doors and windows are so placed that there is free wall space for equipment where needed. Traffic does not pass through any work area (fig. 5).

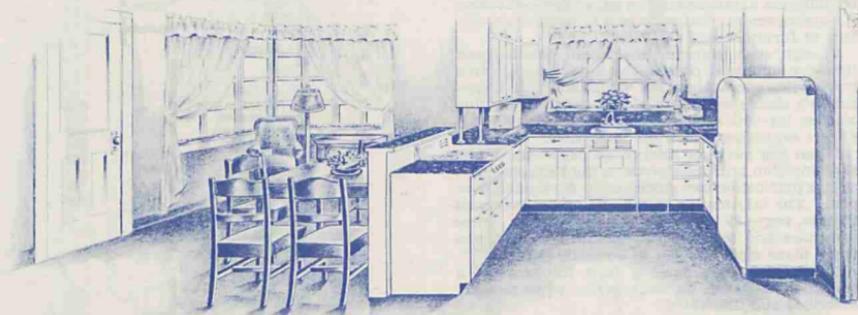


Figure 3.—Large room divided by a partial wall into kitchen proper and dining area. Although the room is large, it would take less space in the house as a whole than would a kitchen with some eating space and a separate dining room.

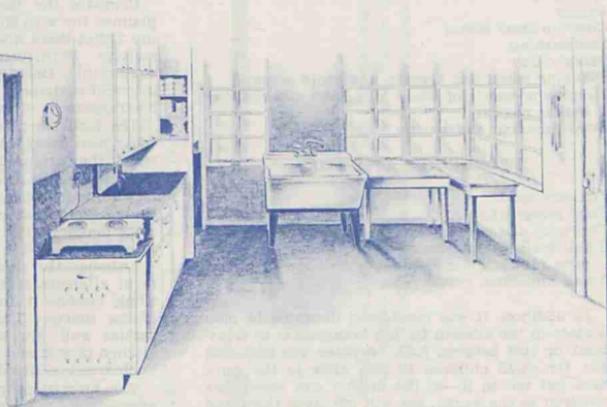


Figure 4.—Workroom planned for kitchen-related jobs that would interfere with orderly meal preparation if done in the kitchen.

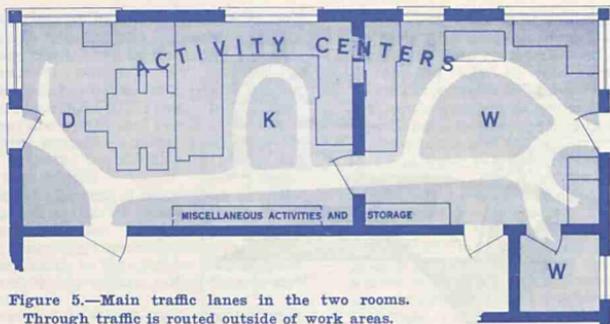


Figure 5.—Main traffic lanes in the two rooms. Through traffic is routed outside of work areas.

At the centers provided for each main activity, storage space has been planned carefully so that supplies and utensils are located as near as possible to the place where they are to be used.

Floor-to-ceiling storage has been used where counters are not needed and to provide for tall equipment. The storage space above normal reach—"dead storage"—provides for articles that families dislike to throw away but seldom use; or for seasonal storage. A sturdy step stool can be used for reaching this storage space.

Located in the workroom are all the kitchen-related jobs that would interfere with orderly meal preparation. This room is planned for many activities done at different times in the same general floor area. Work counters, hot plate, twin tubs, tables with rollers are all used for several activities.

Meal preparation

The number one kitchen job gets corresponding priority in this kitchen plan. Space allotted to meal preparation is shared by no other job, because doubling up duties in this area may lead to confusion.

Three centers make up the meal preparation area in the kitchen proper. From right to left these are the food-mixing center, the sink or vegetable-preparation and cleaning-up center, and the cooking and serving center (fig. 6).

Food-mixing center

The right side of the U is the food-mixing center. Observe the compactness with which this center has been planned (fig. 7).

Above, below, or close to the food-mixing counter is storage for all the supplies and utensils used here. Perishable foods are in the refrigerator to the right of the counter.

Space was allowed for a 9- to 10-cubic-foot refrigerator. One with a frozen-food storage compart-

ment would cut down on trips to store or locker plant—if there is no home freezer. With a home freezer in the basement, a first-floor freezer compartment is an added convenience.

Vegetables and fruits not needing refrigeration are stored in a bin under the workroom food-preservation counter—and can easily be slid through the pass door onto the food-mixing counter.

Having these storage spaces for food near the back door also saves steps in putting supplies away when they are brought in from the store or farm. Milk, eggs, perishable fruits and vegetables not requiring preliminary washing, and frozen foods can go directly into the refrigerator.

The food-mixing counter is 42 inches long. Although a 36-inch counter can accommodate space-taking jobs such as making bread and cookies, an extra 6 inches makes such work easier.

The extra 6 inches of counter at this center also make it possible to build in two desired features. One is the pass door connecting this counter with the food-preservation counter in the workroom. The other is a storage compartment for the food mixer. The two panels that cover the mixer when it is not in use fold back against the refrigerator when the mixer is wanted. This arrangement leaves the back corner of the counter as free work space.

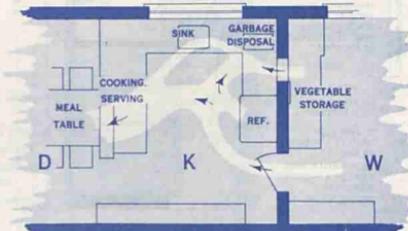


Figure 6.—Meal-preparation routes. Work moves smoothly from right to left, ends at meal table.

Figure 7.—Food-mixing center, showing the pass door, storage for food mixer, pull-out board, and unit for disposal of garbage and trash.

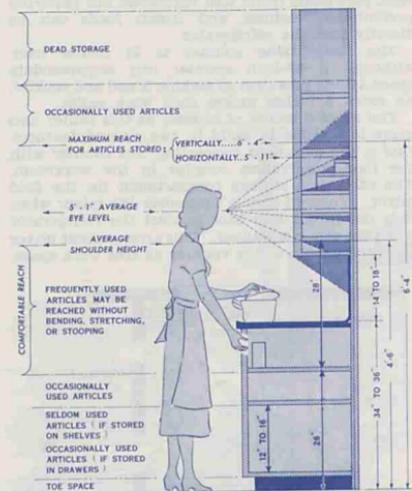
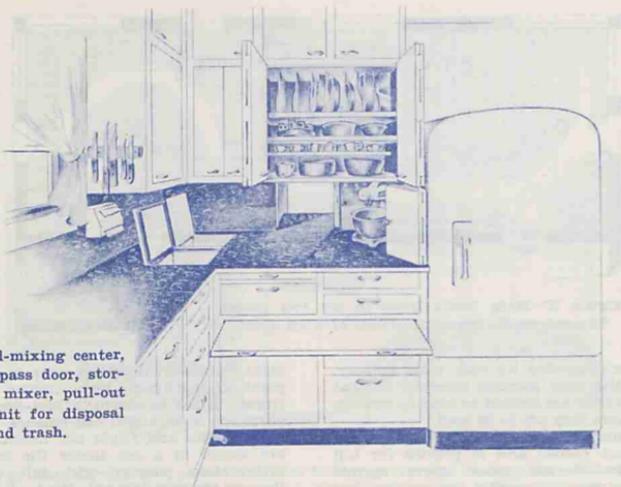


Figure 8.—Convenient storage heights for supplies for worker 5 feet 4 inches tall. Shaded areas cannot be seen by worker standing upright.

Wall cabinets above the counter are 5½ feet in length to the corner, extend another 15 inches along the outside wall to the window over the sink. The base cabinet is 42 inches long.

In most kitchens the food-mixing center is the place where emphasis on labor-saving storage arrangement is most important. Therefore, storage at the food-mixing center should be planned first and with special care.

As the first step in arriving at a good storage arrangement a list was made of all supplies and utensils used first at the mixing center. Then items on the list were divided according to the frequency with which they would be used. See list on page 15.

In general, articles used oftenest were stored on shelves or in drawers nearest the counter, within easy reach and sight. Those used only occasionally were given the least accessible locations. See figure 8 and page 46 for a guide to most convenient storage heights.

Besides frequency of use, shape, weight, bulk, and fragility of an item also influenced its location. For example, a lightweight package of crackers, although used more often than corn sirup, was assigned to a higher shelf because it was easier to lift. A heavy article, such as a can of sirup, is best kept near the counter.

Because cake, pie, bread and muffin pans, and cooky sheets are lightweight and easy to pick up by the edge they may be stored between vertical partitions. The partitions may be on a shelf of the wall cabinet, or in a drawer of a base cabinet. This saves energy and time otherwise wasted in picking the one wanted out of a jumbled heap.

Among other special storage arrangements that help a worker to find and pick up tools easily are shallow drawers divided into sections, pull-out cupboards, and racks for knives.

There is a magnet bar holder for knives on the end of the wall cabinet closest to the sink. In this location the knives are within easy reach of both sink and food-mixing centers. Another good place for knives is in a slotted horizontal rack in the top drawer of a base cabinet.

Throughout the planning of this storage arrangement care was taken that no article would have to be moved to get to another. Space was provided for mixing bowls, measuring cups, and measuring spoons to be stored separately so that the one wanted could be grasped individually without taking time to sort it from a nested pile.

Small articles and those with labels that are hard to read, such as spices, seasonings, and pudding

mixes, need some special storage arrangement to keep them in easy reach and sight. If they are stored one-deep on a wide shelf, they waste space. If they are stored in front of taller articles, they make the supplies behind them difficult to reach.

In this center, often-used seasonings are stored in a revolving cake pan attached to a shelf, where they are easy to see and pick up.

Any of other various solutions might be used for small articles. They could be put on step shelves between two widely separated shelves of a wall cabinet. Or they might be put in narrow racks attached to the inside door of a wall or base cabinet—or in slanting racks in a top drawer of a base cabinet. If no pass door is in back of the mixing counter, a narrow shelf 6 to 8 inches above the counter is another possible location for these small items.

Storage was planned for duplicates of small, inexpensive items used at more than one center.

GUIDE LIST FOR FOOD-MIXING-CENTER STORAGE

Used Daily	Used During Week	Used Occasionally
<i>Utensils</i>		
Bowls, mixing	Baking pans—bread, cake, meat loaf, muffin, pie	Apple corer ¹
Bowl scraper	Bottle and can opener	Custard cups or molds
Cutting board	Bowl, chopping	Extra baking pans
Egg beater	Bowl, salad	Knife sharpener
Forks, small, 3- or 4-tined	Casseroles ²	Knife equipment
Fruit reamer and strainer ¹	Cooky sheet	Large pudding pan, mold, or casseroles ²
Knives—case, paring, slicing	Cutters—biscuit, cooky, doughnut	Tube cakepan
Measuring cups	Flour sifter	
Refrigerator dishes and bags	Food chopper or grinder	
Saucepans ²	Graters	
School lunch boxes	Pastry blender and brush	
Shears	Pint or quart measure	
Spatulas	Pudding pan	
Spoons—measuring, mixing (metal and wooden), tablespoons, teaspoons	Rolling pin	
<i>Supplies</i>		
All-purpose flour ²	All-purpose flour ²	Bran ²
Baby foods	Baking powder ²	Bread crumbs
Baking powder ²	Bran ²	Canned goods
Cooking fats needing no refrigeration	Cake flour	Coconut
Paper, waxed	Chocolate, cocoa	Colorings
Paper towels	Corn meal	Condensed or evaporated milk
Salt and pepper	Cornstarch	Duplicate supplies
School lunch supplies	Crackers	Flour—graham, whole wheat
Sugar, granulated	Cream of tartar	Gelatin
	Dried fruits—for cakes and cookies	Molasses and sirups
	Extracts	Nut meats
	Prepared mixes, such as biscuit, cake, pudding, and waffle mixes	Picnic supplies
	Salad-dressing ingredients	
	Seasonings, spices, herbs	
	Sugar—brown, confectioner's	

Electric food mixer in location where it is easiest to use.

Recipes—in use, in an easy-to-see location; not in use, in an easy-to-reach location

¹ May be stored at different center, depending on use.

² This item is listed in more than one column. Best storage location depends on family food habits.

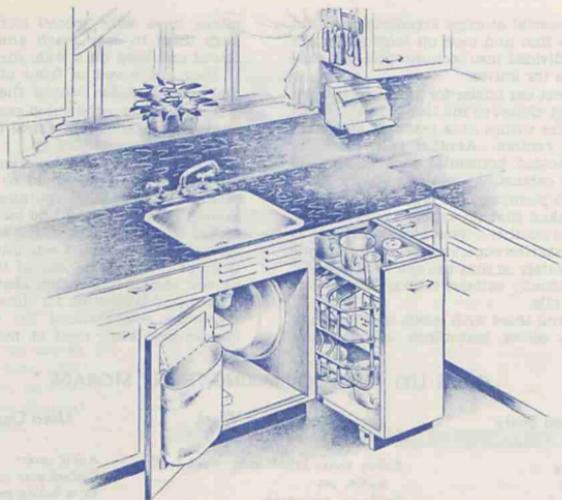


Figure 9.—Sink center. Base cupboard at right rolls out. Wide window lights side counters.

Sink center

The sink, with its running hot and cold water is located centrally, in the bend of the U, because it is used with the food-mixing counter, the refrigerator, the range, and the serving counter. This is a good location for the sink—under a window where the light is good and where many women prefer a sink to be if there is a pleasant view. For details of sink center, see figure 9.

The plan to provide for the eventual installation of a dishwasher determined the type of sink chosen and the length of the sink counters. A flat-rim type single-bowl sink, 24 by 20 inches was selected. This is large enough to accommodate one dishpan with room at the side for pouring out liquids. Later on, the dishwasher plus this sink will be a convenient combination. The added convenience of a double-bowl sink, until the dishwasher is installed, may not justify its extra space and cost, so was not included in this plan.

Twenty-eight inches—the maximum width a dishwasher may take—was allowed for the left sink counter. The same length was allowed for the counter at the right of the sink for an attractive balanced appearance.

By planning ahead for the dishwasher when the kitchen is built, the installation later can be made more easily and at less cost, without tearing up the sink end of the kitchen. The dishwasher will go in where a simple, movable, one-drawer-and-cupboard base cabinet now stands.

Work counters without a break in level, such as

those here, are labor-saving in that they make it possible to slide dishes from one counter to another instead of lifting them. Also, continuous counters are easier to clean than counters at different levels. And they make overlapping use of adjoining work surfaces possible, thus cutting down on the total surface needed.

With the overlapping use of the food-mixing and serving counters at their respective corners of the sink counter there is sufficient space near the sink for clearing and stacking dishes at the right, for draining and stacking at the left, or for preparing vegetables and fruits at the sink.

The 28-inch length of the sink counters is also more than enough to keep a worker at either the food-mixing or the serving counter from colliding with or crowding a person working at the sink.

Provision for sanitary disposal of garbage, trash, and tin cans is made in the specially designed unit in the right-hand corner of the base storage space (fig. 10). A garbage disposal unit in the sink would eliminate the need for a compartment for garbage.

In this unit the openings of the three sections are under the lift-up lid set flush in the counter. The lid is opened by a foot pedal so both hands are left free. There is no handle on top to interfere with the counter level. Attached to the bottom of the lid is a tight-fitting cover for the garbage compartment. All sections are opened through a door in the outside wall for removal of contents.

This unit illustrates one way to make use of the

4 square feet of corner space at the turn of the U, all of which cannot be reached from the kitchen side. For temporary collecting of trash, there is a wastebasket on the sink cabinet door. Waste paper and cartons may be disposed of quickly through a swinging closure in the door.

At the sink, work can proceed logically when vegetables or fruits are to be washed. Those stored in the workroom may be slid through the pass door to the food-mixing counter. After preparation at the sink, the food can go into a saucepan stored at the sink center, then to the range. Or it may go to the serving counter and table or back to the food-mixing counter or refrigerator.

Dishwashing can proceed logically at the sink also. From the right-hand sink counter dishes may be set directly into a dishpan in the sink, or rinsed at the sink and made ready for the dishwasher. A right-handed worker holds dishes in the left hand and the dishcloth or dish mop in the right. Then the dish is set at the left on the drainboard or into the dishwasher without the left hand crossing the right, without transferring the dish from hand to hand, or without dropping the dishcloth from the right hand.

For rinsing dishes, a wire drainer may be used on the work counter at the left—with a three-sided cooky sheet or a drain tray under the drainer. After drying, the dishes are stored in cabinets above the counters at the left of the sink.

Storage at the sink center was designed to take care of items used in dishwashing and in the preparation of vegetables and other foods at the sink. The items to be stored here are shown in the list, page 18, analyzed according to frequency of use.

Because the sink is under a window, nearby storage space is limited to base cabinets. Two of these cabinets are to the right of the sink and one is under the sink. Until the dishwasher is installed the temporary base cabinet at the left may also be used for storage.

Because the space for storage will be limited eventually to the cabinet under the sink and the two base cabinets at the right, special thought had to be given to planning cabinets to make supplies in constant use as accessible as possible.

The cupboard immediately at the right of the sink pulls out with its open side facing toward the sink. The cupboard is 12 inches wide, allowing a full-width shelf at the bottom for storing some utensils that must be filled with water at the sink before they go to the range. Upper shelves are narrower to make it easy to see what is stored on the bottom shelf.

When the cupboard is pulled out, dishwashing supplies, used three times a day, are immediately available. Soap, soap powder, scouring pad, dry dishcloths, and other dishwashing needs are stored on the top shelves. Brushes hang on hooks on the inside of the cupboard ends.

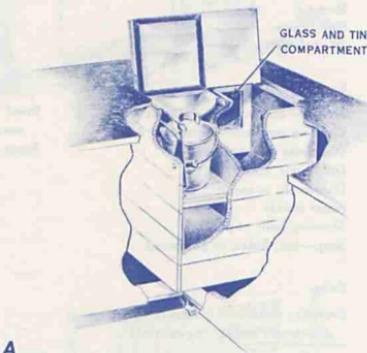
Hooks under the edge of the top shelf hold the dish drainer. On the narrow middle shelf, reserve supplies of bar soap and cleaners or articles not often used may be stored.

The cabinet under the sink furnishes room for a

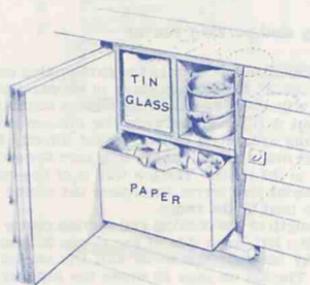
dishpan, extra dishwashing supplies in large boxes or bottles, the wastebasket, and a footstool for young children to use when working at the sink.

In the two top drawers of the four-drawer cabinet to the right of the pull-out cupboard, clean dish towels, aprons, and cleaning cloths may be kept. Until the dishwasher is installed some of these supplies may be kept to the left of the sink. The two deep bottom drawers of the right-hand cabinet are reserved for large utensils used first at either the sink or the food-mixing center.

On the wall above the right sink counter is a rack for paper towels and waxed paper. In this position both supplies can be reached easily from the food-mixing counter also. At the left of the sink, attached to the end of the cabinet for glass and china, is a small dishtowel rack.



A



B

Figure 10.—Garbage-and-trash disposal unit: "A", Cross section from kitchen side; "B," shows how the contents may be removed from outdoors.

GUIDE LIST FOR SINK-CENTER STORAGE¹

Used Daily	Used During Week	Used Occasionally
<i>Utensils</i>		
Coffee maker (coffee started with water from sink)	Bottle and can opener	Apple corer ²
Cutting board, for vegetables	Colander	Large coffeepot for special occasions ²
Dishcloth and dish towel racks	Double boiler	
Dish-draining rack (and drain pan)	Funnel	
Dishpan	Kettle, large	
Dish scraper	Saucepan ³	
Drinking cup or glass	Strainer, wire, 6 to 7 inches	
Fruit reamer and strainer ²	Vegetable slicer	
Garbage container		
Knives—cutting, paring, slicing		
Saucepans ²		
Shears		
Sink strainer		
Wastebasket		
 <i>Supplies</i>		
Brushes—bottle, sink, vegetable	Dried vegetables and fruits needing washing or soaking	Silver cleaner
Cleaning powders—coarse and fine	Paper, sacks, string	Duplicate soap and cleaning supplies
Dishcloths and dishmop		
Dish towels, clean		
Dish towels, in use		
Paper towels		
Scouring balls or pads		
Soap—bar, flakes, or powdered		
 <i>Dishes</i>		
Everyday dishes and glassware ² (near drainboard and serving counter)		Good dishes

¹ Sink-center storage provides for supplies for food preparation, cleaning, cooking, and serving.

² May be stored at different center, depending on use.

Cooking and serving center

After the food has been to the food-mixing center or sink center for various steps in preparation, it reaches either the range or the serving counter.

Without a full wall between the kitchen proper and dining area, food can be passed directly from the range over the shelf above it or over the serving counter to the table. The low wall is of fire-resistant material and serves to protect the dining side from the heat of the range.

The length of the cooking and serving center (fig. 11) on the left-hand side of the U was determined chiefly by base storage needs and the size of the range. The list on page 20 shows the supplies and utensils for which storage at this center has been planned.

The corner base cabinet opens on the dining area side (fig. 12). By facing the cabinet toward the dining room instead of the kitchen the 4 square feet in the corner becomes entirely accessible storage space. This cabinet, 30 inches wide, allows for

storage of silver, linen, and some sewing supplies.

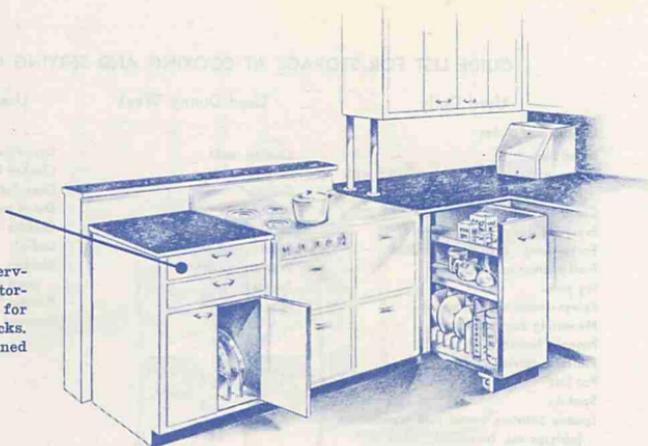
Next to the silver-and-linen base cabinet, but facing on the kitchen side, is a pull-out cupboard separated from the range by a thin partition of fire-resistant material. The open side of this cupboard faces toward the range. In it are stored coffee makers, teapots, pot lids, and supplies used most frequently at the range.

The shelves of this unit are graduated in width. They are so spaced that food supplies in most frequent use and the coffee makers and teapot can be stored on the two top shelves, the tallest and largest food packages and pot lids on the bottom. Vertical files on the bottom shelf make pot lids easy to see, reach, and pick up. Thus, all items can be grasped with a minimum of stooping.

The length of the serving counter from the wall to the range is 46 inches. The top of the range over the oven and the top of the 24-inch-wide base cabinet at the left of the range are additional serv-



Figure 11.—Range and serving center. Vertical storage in left base cabinet for platters and cooling racks. In set shows sectioned cutlery drawer.



ing spaces. Ample table space on both sides of the cooking units adds to efficiency of work at the range. The 8-inch-wide shelf back of the range may also be used as serving counter.

The insulated controlled-fuel range illustrated is 40 inches from side to side. It has drawer storage for the larger utensils in most frequent use at this center.

The top drawer of the cabinet to the left of the range is sectioned for cutlery and small utensils needed at the range (inset, fig. 11). A second drawer holds small packages of such foods as macaroni and soup mixes that go directly from the package into boiling water. Cupboard space below the two drawers is equipped with removable vertical dividers. These separate, for convenient reach, roasters, cooling racks, big platters, and serving trays.

The cabinets above the serving counter, for glass, china, and serving supplies, extend the full length of the counter and an additional 15 inches around the corner toward the sink. They match in appearance the corner cupboards at the right of the U. The end of the cabinet that is near the range is supported by rods, which rest on the counter. Cabinets open on both kitchen and dining side, so contents are easily available from either side.

Note in figure 12 how the addition of small shelves makes possible better use of the storage space. Small dishes may be stored separately on these shelves rather than piled on top of larger dishes. Having dishes of only one size in the same pile makes it easier to get the one wanted. Such storage is easier on the dishes, too. The dishes that may be needed at the range are stored at that end of the wall cabinet.

The end of the serving counter at the wall is a good place for a bread-and-cake box. In this position the box may be reached from either kitchen or dining side.

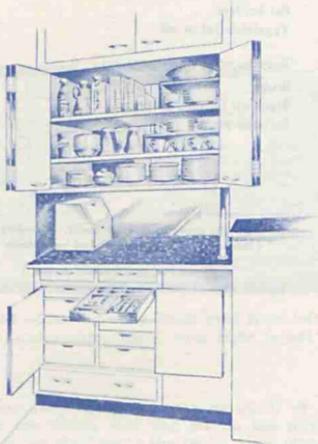


Figure 12.—Corner base cabinet opens on dining side. Dish cupboard also opens on kitchen side.

GUIDE LIST FOR STORAGE AT COOKING AND SERVING CENTER

Used Daily	Used During Week	Used Occasionally
<i>Utensils and dishes</i>		
Bread box	Cooling racks	Casseroles ²
Coffee maker (if coffee is started with boiling water)	Casseroles ²	Chicken fryer
Container for used fat	Griddle ²	Deep-fat kettle and strainer
Everyday dishes and glassware ¹	Ladle ²	Dutch oven
Forks—long- and short-handled	Meat-slicing board	Griddle ²
Fruit reamer and strainer ¹	Potato masher	Ladle ²
Fry pans	Pressure cooker	Platters and serving dishes of good set
Knives—meat-slicing, paring	Roaster ²	Roaster ²
Measuring cup and spoons	Tongs	Steamer
Pancake turner		
Platters, serving dishes		
Pot lids		
Spatula		
Spoons (stirring, metal and wooden)—tablespoons, teaspoons		
Teakettle		
Teapot and strainer		
<i>Supplies at range</i>		
Breakfast cereals (uncooked)	Soup cubes, mixes	Duplicate food supplies
Coffee, tea, and other hot-drink materials	Soup seasonings	
Flour, salt, pepper, sugar	Macaroni, noodles, rice, spaghetti	
Pot holders		
Vegetable fat or oil		
<i>Supplies at serving center</i>		
Bread	Crackers	
Breakfast cereals, prepared	Catsup, other meat sauces	
Salt and pepper	Cake	
	Cookies	
	Jelly, preserves	
	Oil salad dressing	
	Sirups	

¹ May be stored at different center, depending on use.

² This item is listed in more than one column. Best storage location depends on family food habits.

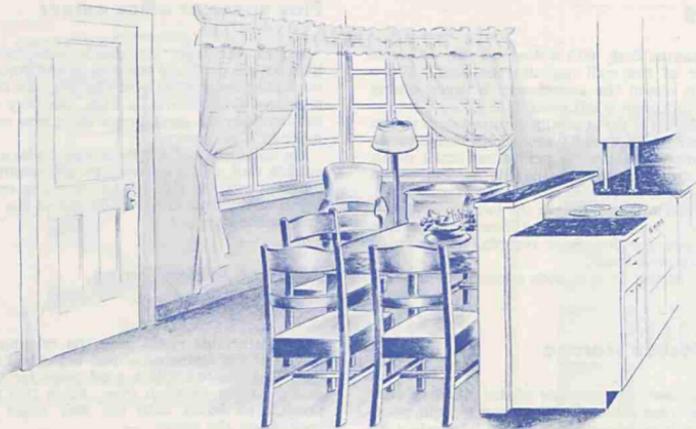


Figure 13.—Meal table is near range shelf for easy serving. Yet this location is attractive enough for company as well as for family meals.

Eating and clearing away

Generally, farm families prefer to eat most of their meals in the kitchen—to save steps in setting the table, serving the meal, and clearing the table. The arrangement for dining shown in figure 13 is even more convenient and step-saving than is usual when the table is in the kitchen proper.

In addition, this eating place is a more attractive spot for family meals than a dining table in the kitchen proper. It provides a pleasant environment helpful both to training of children and to family morale.

This dining area is attractive enough for company meals and much easier to serve to than a table in a separate dining room. If a more nearly complete separation for company meals is desired, a venetian blind can be hung from the ceiling behind the range and adjoining work counters or a screen may be used. A light wood partition may also be added, with sliding doors that make serving counters accessible from the dining side.

With the dining table placed lengthwise in the middle of the room and expanded, there is space for seating up to 12 persons for a meal.

Another advantage of this arrangement is that only one dining table and set of chairs need be bought for the house.

Supplies for setting the table are but a few steps away from the table—in the silver-and-linen cabinet and the glass-and-china cabinets (fig. 12).

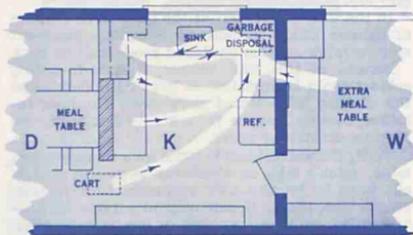


Figure 14.—Clearing-away route goes from left to right; dishwashing route, from right to left.

To clear away, the dishes may be taken off the table on the dining side and set on the serving counter or the shelf above the range, or go directly back to the storage cupboard.

After the meal is over, dishes may be transferred quickly from the kitchen side to the right sink counter. Here waste food may be scraped from the dishes into the corner garbage disposal unit and the dishes stacked ready for washing (fig. 14).

Planning

The planning desk with a drop lid (fig. 15) is in the center of the wall opposite the sink. When the desk is closed the passageway between dining area and workroom is left clear.

Under the lid of the specially designed desk shown are shelves and drawers for cookbooks, recipe cards, writing supplies, stationery, and other small items. The two drawers underneath this section afford ample space for additional storage.

In the cupboard underneath the two center drawers are sections planned for a household safe, a card-file box for food-sale records, and a wide space for account books.

The top of the desk is wide enough for a small radio.

Extra kitchen storage

There is room on each side of the planning desk for extra storage cabinets. They may be built when the kitchen is constructed, or added later when finances permit or storage needs increase. Here articles may be kept that are not used often enough to justify storing them in the main work centers.

At the right of the desk is a floor-to-ceiling cabinet, 15 inches deep and 4 feet wide (figs. 16 and 17). In it is space for table leaves, the good dishes, small electrical appliances, vases, and table-decorating supplies. Utensils such as the chicken fryer, steamer, or Dutch oven, used at the range occasionally but not accommodated by range storage, may also be kept in this cabinet.

In the wall cabinet left of the desk small supplies of canned goods brought up from the basement storeroom, or surplus packaged goods may be kept.

Instead of this wall cabinet, a floor-to-ceiling cabinet could be installed at left of the desk—and the wheeled table stored elsewhere. The floor-to-ceiling cabinet may be from 2 to 4 feet wide, depending on storage needs.

Under the wall cabinet is space for a small wheeled table. Such a table on wheels can be used in numerous ways in kitchen and workroom to save both energy and time. It can help in serving meals—especially meals for company or for harvest crews. It is a useful extra work table and can be used to move heavy supplies from place to place.

Play space or office corner

In the corner of the dining area, between the living-room door and the door to the porch, is room for a playpen or office desk (fig. 17). In this corner, protected from drafts, a baby can play safely yet be seen from the meal-preparation area and quickly reached if necessary.

Or, an office desk will fit in lengthwise against the outside wall of this corner. People coming in to do business with the man of the house can enter by the porch door. This keeps traffic out of the workroom and kitchen proper.

Relaxing, telephoning, mending, reading

A comfortable chair near the telephone in the corner of the dining area near both the living-room door and the range is a good place for the homemaker to rest between jobs. From this chair it is possible to watch both the play space and food cooking on the range.

The telephone in this location saves trips into another room to answer it, so that food and children are not left unwatched for the duration of the conversation. The telephone is convenient to the living room also, yet may be answered in some privacy if there are guests in the living room. Behind the telephone is a bulletin board for messages taken at the telephone or for short reminder notes from one member of the family to another.

A lounge chair in front of the corner windows in the dining area is a good place for the man of the house to read his paper while waiting for the meal to be set on the table. Here also the homemaker can relax or she may do small mending jobs or read in a good light.

Sewing

The window corner of the dining area is also a well-lighted spot for a sewing machine. Between meals, the dining table can be a cutting table. If you have an easy-to-clean floor, thread and scraps of material may be swept up easily. There is storage for most-needed sewing supplies in base cabinet trays under the serving counter (fig. 12).

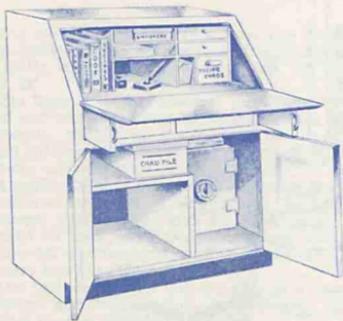


Figure 15.—Desk specially designed for use in planning meals and keeping household accounts.

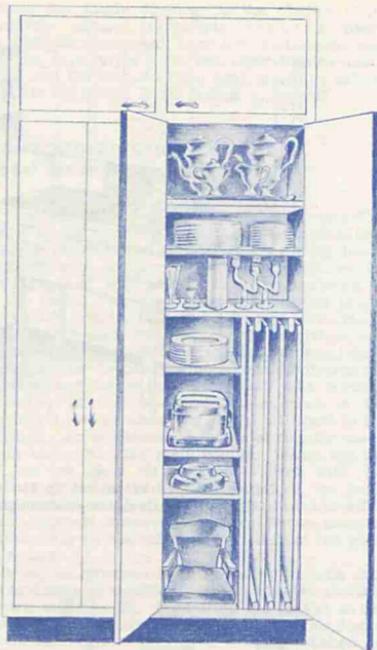


Figure 16.—Cabinet for extra storage. Shelves continue through to the left end of the cabinet.

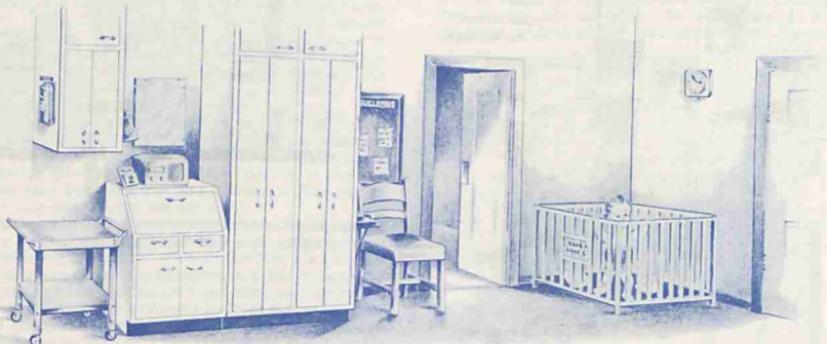


Figure 17.—Kitchen wall across from main activity areas. If preferred, desk for the man of the house could be put in the corner in which playpen is shown.

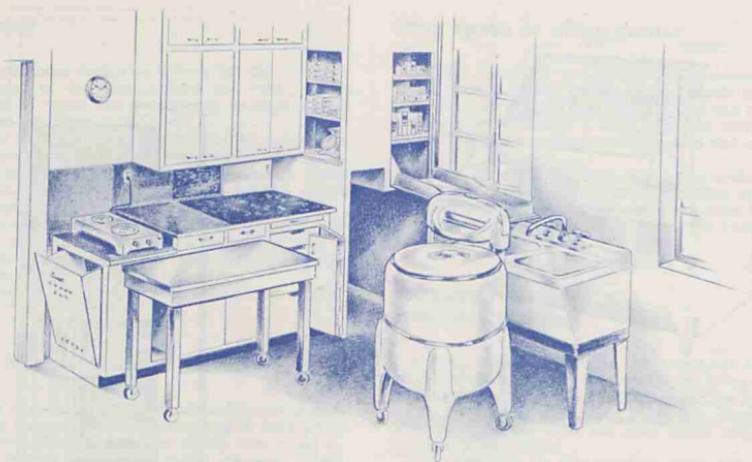
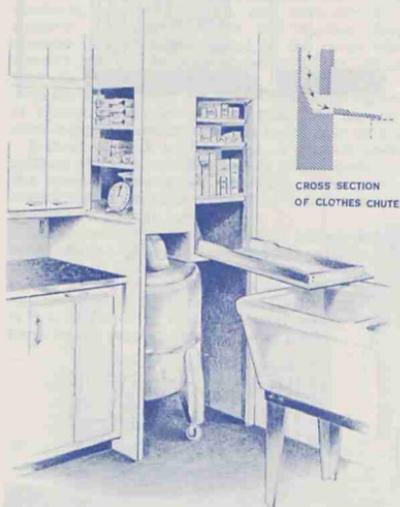


Figure 18.—Workroom set up for laundry work. This view of room also shows bins for fruit and vegetable storage in right-hand section of base cabinet.



CROSS SECTION OF CLOTHES CHUTE

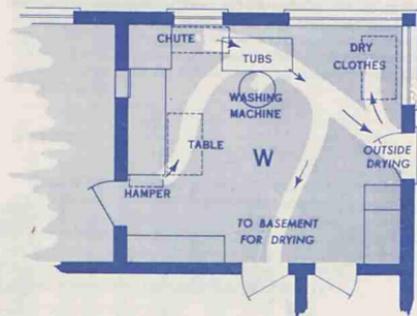


Figure 20.—Laundry work route. There is no backtracking or crisscrossing of work paths.

Figure 19.—Specially designed unit with laundry chute, sorting tray, and washer storage.

Laundry work

The laundry area centers around two stationary tubs located in the workroom out of the main line of traffic between the back door and the kitchen (fig. 18).

The kind of washer planned for determines the kind and number of tubs to be used. With a non-automatic washer, as shown here, two deep tubs speed soaking and rinsing and provide for greatest laundry convenience.

A combination of deep tub and shallow bowl was considered for this plan. But it was decided that, although the shallow bowl would be more convenient for food preservation, the deeper tubs were better for soaking and rinsing needs—and that laundry was the bigger job.

Also included in the laundry area is a specially designed combination clothes chute and storage cabinet for the washer (fig. 19).

The clothes chute has a door that lets down to rest on one of the tubs. The door is built up around three sides to make it a sorting tray.

The chute delivers soiled clothes and household articles from the second floor directly to the laundry area. For soiled towels and table linen from the first floor there is a hamper that swings out from under the hot-plate counter near the door between workroom and kitchen.

Some kind of stove is needed in the laundry area. Here a 230-volt two-unit electric hot plate or double-burner gas plate is adequate for any necessary heating of water or for making starch, and may serve for food-preservation work.

The workroom can easily be set up for laundry work by rolling out the washing machine and one of the tables. For stability in use, rollers on two legs of each table can be locked.

The washer is used in front of and midway between the twin tubs. In this position the wringer can swing between the tubs or along the front of either one to permit wringing into or from either tub. With the table nearest the tubs rolled out for sorting there is space on three sides of the tubs to make work easy no matter what the position of the wringer. There is ample clearance between the machine in working position and the traffic lane through the workroom.

A logical sequence of laundry work (fig. 20) starts with collecting the clothes from chute and hamper, sorting them, and putting them to soak in a tub or directly into the washer. After rinsing in the tub they may be wrung out into a basket at the end of the tubs nearest the outside door.

The washing process ends near the back door, a few steps from porch or drying yard. One advantage of doing laundry work on the first floor is that it does away with the backbreaking job of carrying baskets of wet clothes up steep basement stairs.

When clothes are brought in from the line a logical sequence for sprinkling and ironing them may be arranged by changing the position of the movable tables.

Laundry supplies such as soap, soap powder, starch, bluing, and bleaches are kept on shelves

above the inside opening to the clothes chute. Laundry equipment—baskets, ironing board, clothesline, washboard, hand iron, clothespins, pail, clothes stick, press cloth, and other ironing aids—goes into the section of the floor-to-ceiling cabinet next to the broom closet, shown on page 27.

Food preservation and other food work

The food-work area covers much the same floor space as the laundry area. But, because most food work is seasonal and laundry is not a daily job, it is possible to combine locations and facilities for both kinds of work without resulting confusion.

For use in food work there are movable tables, a counter, laundry tubs, and hot plate. The facilities are adequate for most canning activities and preparation of food for freezing, for small-scale churning, for preparation of eggs and chickens for market, and for washing household milk utensils.

Center of the food-preservation area is the counter 4 feet 6 inches long on the wall next to the kitchen. An additional 18 inches of counter space, built lower than the main counter, brings the top of the hot plate installed on it even with the counter top next to it. If the end of the food-preservation counter is made of hardwood or other heat-resistant material, a heavy steam pressure canner may be slid instead of lifted from hot plate to counter.

A logical sequence for canning or freezing may be arranged by moving the tables into the position shown in figure 21. Food from the garden is deposited and prepared for washing on a table placed at the right of the tubs. After it is washed the food may be drained in the left-hand tub or on a table set up at the left of the tubs, then moved across the table to the work counter. Here it can be peeled and cut up on the pull-out board below the counter, then packed into containers for processing on the hot plate, or scalded and packaged for the freezer.

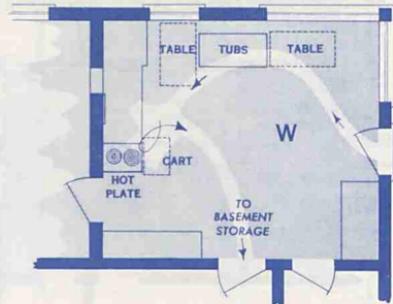


Figure 21.—Food-preservation route. Kitchen cart is used to move heavy or bulky materials.

For preparing chickens for market, or sorting and packing eggs, on a small scale, and for similar jobs, the work space at the counter is adequate. A pull-out shelf in the storage cabinet under the counter is a good height for an egg crate and egg pail or basket, or for jobs done sitting down.

For churning, there is ample room at the counter, at a pull-out board, or in some of the free floor space, the choice depending on the amount done and the type of churn used. Household milk utensils may be washed in the tubs and scalded there with water heated on the hot plate.

Storage for supplies and equipment used in food-preservation work is provided in the 4-foot-long wall cabinets above the counter, a 30-inch base cabinet under the left part of the counter, and open shelves at the right above the counter. The base cabinet is large enough to accommodate a pressure canner. Under the hot-plate counter is a narrow open section for trays. For best arrangement of storage supplies, a list of the supplies used needs to be made and classified according to frequency of use, as was done for food-preparation centers (pp. 15, 18, and 20).

Serving harvest meals

The two movable tables placed side by side in the center of the workroom form one table large enough to seat six or eight persons. There is adequate space around this table for serving, with room to push chairs back and get up easily. The table in this position may also be used for extra dining space for large family gatherings.

Food from the range, china, and silver may be taken directly to the table on the small wheeled table (fig. 22). Food from the refrigerator may be passed through from the food-mixing counter in the kitchen to the food-preservation counter in the workroom and transferred to the table. The pass door between the two counters also makes it possible to save steps when clearing the table, and to deposit the dishes near the garbage-disposal unit ready for scraping.

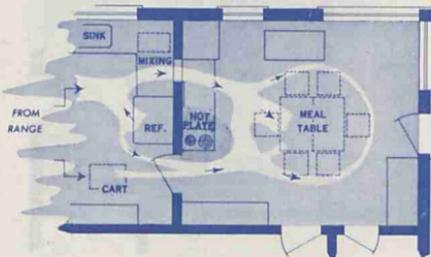


Figure 22.—Route for serving harvest meals. Food moved to table via pass door or on cart.

Odd jobs

The two movable tables set up in an L position in the well-lighted window corner, with unobstructed work space in the center of the room, provide space for odd jobs. Here furniture, small appliances, or toys may be repaired.

For a job that takes several days, such as painting furniture or reupholstering a chair, the tables may be moved to the center of the room to clear the corner space.

With tables moved out from the corner, this space is also a suitable place for a baby's playpen when the mother is working for long periods of time in the workroom.

Putting wraps away and washing up

Children or workmen coming in from outdoors can remove their wraps, hang them on hooks near the outside door, and go to the washroom without walking through any of the work areas.

Men's work clothes are stored in a closet unit on the outside wall near the washroom (fig. 23). This is ventilated by a vented toe space at the right side of the closet, a slatted shelf at the bottom, and a vent in the outside wall under the closet shelf. The slatted base of the cabinet and the vented toe space are removable, so that dirt that drops off boots through the slots can be swept up easily.

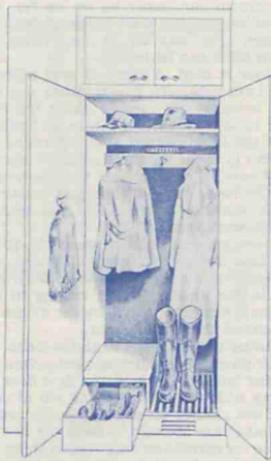


Figure 23.—Ventilated closet for work clothes. Drawer is for women's and children's rubbers.

A drawer that pulls out from the front on the left side of the work-clothes closet provides a place for storage of women's and children's rubbers and overshoes.

Storage for outdoor wraps for the homemaker and children is provided in the open section at the end of the storage unit (figs. 23 and 24). The opening to this section is at the side. When the outside door to the workroom stands open it conceals the clothing hung inside.

The small washroom includes a lavatory, a toilet, and a towel cabinet. The narrow top of the cabinet may serve as a place to keep small toilet articles.

Storing cleaning supplies

There should be a place for storing cleaning supplies close to the kitchen—but preferably not in the kitchen. In this plan two closets in the workroom next to the kitchen door are designed for cleaning equipment and supplies (fig. 25). The closet nearest the kitchen door has room for brooms, dry and wet mops, dust cloths, dustpan, brushes, carpet sweeper, cleaning cloths, and pails. On a high shelf is room for such cleaning aids as soaps, wax, furniture cleaners and polishes, and glass cleaners. This high shelf is doubly useful because it keeps supplies—some of which are poisonous—out of easy reach of small children.

The vacuum cleaner and attachments and a sturdy step stool for reaching high storage places or windows are kept in the adjoining closet with laundry

equipment. It is best to have storage for the vacuum cleaner separated from storage for articles that may be slightly damp. Dampness is likely to cause metal parts of the cleaner to rust.

See page 33 for minimum dimensions for closets for cleaning equipment.

Provision for good working conditions

In the plans for both the workroom and the kitchen the main factors that contribute to good physical working conditions have been considered. These are discussed below.

Comfortable work heights

The main work counters in both the kitchen and workroom are 36 inches high, at which level a woman of average height can do comfortably most standing-up jobs except hand beating and rolling or kneading. Also, 36 inches is the standard height for a table-top range, the work-surface height that usually is most difficult to adjust.

Other work heights are provided in the following ways:

For jobs done sitting down there is a pull-out board at the mixing center and one under the counter in the workroom. Such a board may be $\frac{1}{2}$ to 1 inch thick. The top is 26 inches from the floor.



Figure 24.—Open closet for women's and children's wraps is left of work clothes closet.

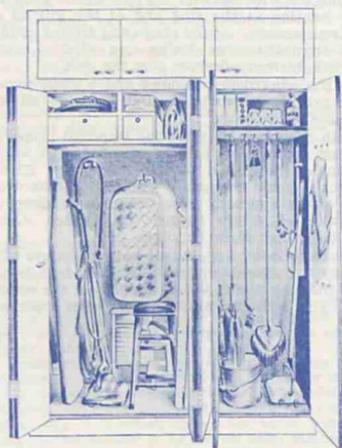


Figure 25.—Utility and broom closets for large laundry supplies, step stool, cleaning aids.

This height allows clearance for the knees of a worker as she sits comfortably in an ordinary straight chair, with her feet flat on the floor.

Another pull-out board directly under the food-mixing counter is 34½ inches high, which gives a surface slightly lower than the work counter for cutting up fruits and vegetables.

Pull-out boards may also be used on top of a counter to make a work surface slightly higher than 36 inches for the use of taller workers.

The small table on wheels is 32½ inches high, which is a better height than 36 inches for kneading bread or rolling out biscuits or piecrust. The wheels on the table legs can be locked in stationary position. If you do a lot of baking, you might prefer having one of the permanent counters this lower height.

Most large mixing jobs in this kitchen will be done at counter level with the food mixer. However, for hand-mixing jobs, a bowl can be set on the bottom of the sink—30 inches from the floor.

For dishwashing, the bottom of the sink bowl is somewhat lower than is probably most comfortable for a woman of average height. A dishwasher is to be installed later, however, so the sink-bottom height is not a main factor to consider here.

The rims of the tubs in the workroom measure 36 inches in height—as high as it is possible to have them for nonadjustable wringers on washers of some makes to swing over the tubs easily. A better height for washtubs is 38 inches.

Lighting

Generous windows over the sink insure good daytime lighting at the sink and at the mixing and serving counters. At the range and serving counter, light from the large dining-area window supplements light from windows over the sink.

In the workroom, windows and a glass-paneled door provide adequate natural light on all work surfaces in the room.

Both rooms amply meet the standard proportion of glass area to floor area recommended for various regions of the United States. (See p. 4.) Kitchen windows should combine a pleasant outlook with a view of the approach from the farm buildings and highway, children's outdoor play space, and, if possible, other farm buildings.

For electric lighting, a semi-indirect fixture with a 12-inch diffusion bowl and a 150-watt bulb is hung over the sink about 30 inches in from the window. This will light the kitchen work area sufficiently

when artificial light is needed. In this location, the light is directly above the worker at the sink, so there are no shadows on the work. The planning center is lighted by a pin-to-wall lamp over the desk.

A semi-indirect fixture in the center of the dining area supplies additional light to the range and serving area as well as supplying good general illumination for the dining area. In the workroom a fixture with a 12-inch enclosing bowl and 150-watt bulb gives good general illumination at minimum cost.

For the higher intensity needed for reading, studying, mending, and other close work, a portable lamp of the semi-indirect type can be connected to an appliance outlet near the dining-area window.

If a work table or counter is in front of any window except one on the north, some kind of protection from glare is needed. Even north windows may need such protection—if sun is reflected from the sides or roof of a nearby building, or from snow in winter.

For a north window, curtains of a fine mesh that won't shut out too much light may be all the protection from glare needed. The curtains may be made so that they can be drawn to the side when not needed over the window. For windows that need more protection, material with a solid weave may be used for curtains; or window shades, venetian blinds, or projections built over the window on the outside may serve to reduce glare.

Comfortable temperature and ventilation

The insulated range does much to keep this kitchen from being overheated. For summer comfort there is cross ventilation between windows on two sides of the kitchen and doors into the workroom and living room. In the workroom there is cross ventilation between windows on two sides of the room and the outer door, the door into the kitchen, and the door to other rooms of the house. Passways under the wall cabinets on opposite sides of the kitchen proper make a cross draft possible between kitchen work area and dining area and between kitchen and workroom.

Safety

In this kitchen and workroom, safety as well as saving of labor has been considered at every step in planning. Check features in the plan against the checklist on pages 47 and 48 to see how safety has been provided for.

Facts and Figures

Equipment

Sinks

The sink is one of the pieces of kitchen equipment most used and least likely to be replaced. So plan for it with extra special care to get the most labor-saving kind. See page 30 and table 1 for illustrations of and dimensions of sinks available.

A sink may be either wall-hung or leg- or frame-supported with open space underneath, or a cabinet type with base storage. Sinks without storage cabinets are cheaper, and the space underneath may be enclosed by a carpenter or handyman.

Sinks are made with roll rims, with or without aprons—or with flat rims. The flat-rim sinks are designed for setting into a counter. It is possible, with the flat rim, to have a smooth continuous counter to the edge of the sink bowl.

● *Single or double bowl.*—Sinks are available with single bowls and with double bowls.

If you do not intend to invest in a dishwasher, a double-bowl sink is well worth considering. Its extra convenience justifies for most homemakers the extra money it costs and extra space it takes. The two bowls are convenient for washing, rinsing, and draining dishes or for vegetable preparation.

For draining as well as washing dishes, a single-bowl sink needs to be large enough for a dishpan and a dish drainer, with some room at the side for emptying pans or dishes. This takes from 28 to 32 inches in length and 18 to 20 inches in width. If draining is not done in the sink bowl, a bowl 23 by 16 inches will leave space at the side of the dishpan for pouring out liquids.

● *Drainboards.*—Sinks come either without drainboards or with one or two. Some persons prefer smooth counter space on both sides of the sink rather than grooved drainboards. A smooth counter can be used for more purposes than a grooved drainboard, and, if built with a slight tilt toward the sink, provides for draining. Or, on a flat counter, a dish drainer set in a tilted drainpan may be used.

If you are buying a sink with one drainboard, a left-hand drainboard provides more convenience in use for a right-handed person. Normally, the easiest way for a right-handed person to work is from dishes stacked at the right of the sink to dishes drained at the left.

Sinks with two grooved drainboards are most suitable for large kitchens where getting duplicate use out of them as work surfaces is not essential.

If you are considering a dishwasher, take it into account when selecting and planning the sink. It is less expensive to plan for the dishwasher from the beginning, even though it may not be installed until later.

Tubs

The kind and number of laundry tubs needed will be determined by the type of clothes washer selected, as well as by other uses to which the tubs may be put. With an automatic washer, tubs may not be needed for laundry work. With a nonautomatic washer, two

deep tubs will speed up soaking and rinsing. If the tubs are used also for food preservation you may prefer a combination of one laundry tub and one shallow bowl. See table 2 for tub dimensions.

Ranges and workroom stoves

Early in kitchen planning, you will need to know the type if not the actual model of range you'll have. The dimensions and clearances for different types of ranges influence kitchen arrangements.

An insulated gas or electric range for the kitchen saves the energy and time that must be spent bringing in fuel for a coal or wood range, keeping up the fire, emptying and carrying out ashes, cleaning the stove, and sweeping and dusting the room afterward. A range with a temperature-controlled oven and minute reminder cuts down on trips to the range to check on food that's cooking.

The two most common types of controlled-fuel ranges are apartment-type and table-top. The apartment ranges are smaller but have about the same oven capacity as the larger table-top ranges. The table-top ranges have surface or counter space next to the top heating units or burners and usually base storage space. Sometimes they have additional top units, oven, or broiler. Usually the oven is a few inches higher than an oven in an apartment-size range.

There are on the market a few ranges with high ovens. On such a range the oven is to the side and higher than the burners. This makes it possible to use the oven without stooping, but eliminates comfortable use of that side of the oven top for work-counter space. Also available are range sections that may be installed separately. An oven may be set at a convenient height and the surface cooking units may be installed in a counter elsewhere in the kitchen.

For dimensions of ranges on the market, see table 3. A separate stove or heavy-duty hot plate in the workroom for laundry or food-preservation activities prevents conflict with use of range for preparation of meals.

Refrigerators

Automatic refrigerators come in varying capacities with various outside dimensions (table 3). When planning a kitchen be sure to allow room for a refrigerator of the size and type you need and for full opening of the door. Also remember that refrigerator doors, though usually hinged on the right side, may be bought with left-hand hinges. You will want the refrigerator to open on the side next to the work counter.

If a refrigerator is to go into a corner or there is an obstruction on the hinged side of the door there should be a 6- to 8-inch leeway to allow for opening the door wide for cleaning the refrigerator and removing the trays or drawers. The 6- to 8-inch leeway also allows room for moving the refrigerator in or out, as when cleaning or painting the kitchen or making repairs on the refrigerator.

A refrigerator with a freezer compartment may be a labor saver if you have no home freezer.

Construction and design features

For ease of upkeep, choose the following:

Plain instead of fancy trim. Plain knobs and hinges rather than fancy ones that catch dirt and grease.

Flush doors without panels, unless you need glass panes for more light. If you use glass, use large panes rather than small ones.

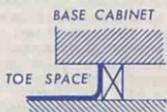
Cove moldings instead of square corners between floor and walls and between counter tops and walls.

Counters that project an inch or so beyond base cabinets and have edges slightly raised—to keep liquids from running down and streaking the front of base cabinets.

Splashbacks above sink and work counters to protect walls.

Special boards or surfaces for cutting and on which hot utensils may be set, so counters will not be cut or scorched by heat.

Floor and counter surfaces in mottled design and medium dark colors, which show spots and soil less easily than do plain, very dark, or very light colors.



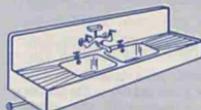
TYPES OF SINKS



Roll-rim sink, single-bowl without apron.



Roll-rim sink, single-bowl with apron.



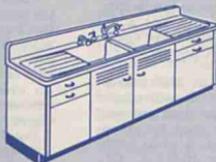
Wall-supported sink, roll-rim with apron, double-bowl with two drainboards.



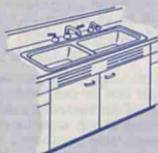
Flat-rim sink, single-bowl.



Cabinet sink, single-bowl with one drainboard.

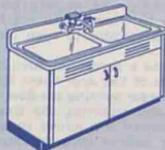


Cabinet sink, double-bowl with two drainboards.



Flat-rim sink, double-bowl, countertop.

TYPES OF LAUNDRY TUBS



Two tubs, cabinet-supported.



Two tubs, frame-supported.



Combination tub and sink, leg- and wall-supported.

Table 1.—Dimensions¹ of sinks

Type and over-all dimensions	Inside dimensions			Height above floor		Type and over-all dimensions	Inside dimensions			Height above floor	
	Length	Width	Depth	Top	Bottom		Length	Width	Depth	Top	Bottom
Cabinet (roll-rim or flat-rim):											
Single-bowl, without drainboard—24 inches long; 16, 18, 20, or 21 inches wide.....	<i>Inches</i> 20-22	<i>Inches</i> 13-16	<i>Inches</i> 6-8	<i>Inches</i> 36	<i>Inches</i> 28-30	Single-bowl, 2 drainboards—54 inches long; 25 inches wide.....	<i>Inches</i> 20	<i>Inches</i> 16-18	<i>Inches</i> 8	<i>Inches</i> (?)	<i>Inches</i> 1 ²⁸
Single-bowl, 1 drainboard—42 inches long; 20, 22, or 25 inches wide.....	19-22	15-18	6, 7, 8	34-36	26-30	60 inches long; 21 or 25 inches wide.....	20	17-18	8	(?)	1 ²⁸
Single-bowl, 2 drainboards—						Double-bowl, without drainboard—					
50 or 54 inches long; 21 to 25 inches wide.....	16-20	15-18	7, 8	36	28-29	32 or 36 inches long; 18, 20, or 21 inches wide.....	13-17	14-18	7-8	(?)	1 ²⁸⁻²⁹
60 inches long; 21-25 inches wide.....	16, 20-22	15-18	6-8	34-36	26-30	38 or 42 inches long; 20 or 21 inches wide.....	17-19	14-18	8	(?)	1 ²⁸
Double-bowl, without drainboard—38 or 42 inches long; 22 or 25 inches wide.....	18	15-18	8	36	28						
Double-bowl, 2 drainboards—						Roll-rim, with or without apron, wall or cabinet-supported:					
60 inches long; 25 inches wide.....	13-14	17-18	8	36	28	Single-bowl, without drainboard—			6-8	34-36	26-30
66 inches long; 24 or 25 inches wide.....	14-15	16-18	6, 7, 8	36	28-30	20-21 inches long; 15 or 18 inches wide.....			6-8	34-36	26-30
72 or 84 inches long; 25 inches wide.....	16, 18, 20	15-18	7, 8	36	28-29	24 inches long; 18-21 inches wide.....			6-8	34-36	26-30
						30 inches long; 18 or 20 inches wide.....			6, 8	34-36	26-30
						36 inches long; 20 inches wide.....			6, 8	34-36	26-30
						Single-bowl, 1 drainboard, left or right ⁴ —42 inches long; 20-25 inches wide.....	19-20	15-17	6, 7, 8	34-36	26-30
						Single-bowl, 2 drainboards—					
						54 inches long; 25 inches wide.....	20	15-17	6, 7, 8	34-36	26-30
						60 inches long; 25 inches wide.....	20	18	8	24-36	26-28
						Double-bowl, without drainboard—38 or 42 inches long; 22 or 25 inches wide.....	18	15-18	8	36	28
						Double-bowl, 2 drainboards—					
						60 inches long; 21 inches wide.....	13	15-18	8	34-36	26-28
						72 inches long; 25 inches wide.....	16-18	15-18	7-8	34-36	26-29

Flat-rim, countersunk (for setting into counter):

Single-bowl, without drainboard—

18 inches long; 24 inches wide.....

20 or 21 inches long; 16, 18, or 20 inches wide.....

24 inches long; 16, 18, 20, or 21 inches wide.....

30 inches long; 18, 20, or 21 inches wide.....

Single-bowl, 1 drainboard—42 inches long; 20, 21, or 25 inches wide.....

¹ Length, side-to-side; width, front-to-back.² Height of sink top above floor varies with height of cabinet into which it is set; counters most commonly used are 36 inches high.³ Heights of floor of sink are based on a sink set into a counter 36 inches high.⁴ Drainboard on left side preferable for right-handed worker.Table 2.—Dimensions¹ of laundry tubs

Type and over-all dimensions	Inside dimensions			Height above floor		Type and over-all dimensions	Inside dimensions			Height above floor	
	Length	Width	Depth	Top	Bottom		Length	Width	Depth	Top	Bottom
Laundry tubs, supported by leg and wall, legs, frame, or cabinet:											
Single tub—						Combination laundry tub and sink; countersunk or leg, wall, frame, or cabinet-supported:					
22, 24, or 25 inches long; 20-28 inches wide.....	<i>Inches</i> 21-24	<i>Inches</i> 16-22	<i>Inches</i> 12, 13, 16	<i>Inches</i> 1 ³²⁻³⁸	<i>Inches</i> 1 ¹⁶⁻²⁰	42 inches long; 20 or 21 inches wide—	<i>Inches</i> 17-19	<i>Inches</i> 16-19	<i>Inches</i> 12-14	<i>Inches</i> 1 ³²⁻³⁸	<i>Inches</i> 1 ¹⁸⁻²⁶
28 inches long; 26 inches wide.....	23	22	14	1 ³¹⁻³⁸	1 ¹⁷⁻²⁴	Tub.....	17-19	16-19	8	1 ³²⁻³⁸	1 ²⁴⁻³⁰
Double tub—						Sink.....					
41 or 42 inches long; 21, 22, or 25 inches wide.....	20-23	22	12, 16	1 ³²⁻³⁸	1 ¹⁷⁻²⁶	48 inches long; 24 or 25 inches wide—	20, 21	16-17	12-14	1 ³²⁻³⁸	1 ¹⁸⁻²⁶
48 inches long; 20, 24-28 inches wide.....	21-24	16-22	13, 14, 16	1 ³²⁻³⁸	1 ¹⁶⁻²⁵	Tub.....	20, 21	16-17	7-8	1 ³²⁻³⁸	1 ²⁴⁻³¹
53 inches long; 26 inches wide.....	23	22	14	1 ³³⁻³⁸	1 ¹⁹⁻²⁴	Sink.....					

¹ Length, side-to-side; width, front-to-back.² Shorter measurements are for leg- or frame-supported tubs as bought; these can be raised by blocks if desired. Taller measurements are based on tub set into a 38-inch cabinet. Cabinets usually are 36 inches high, but they can be raised or lowered.

Table 3.—Dimensions of commercial equipment other than sinks and laundry tubs

Equipment	Length along wall	Width, front to back	Height
	Inches	Inches	Inches
Cabinets:			
Base.....	15, 18, 21, 24, 30, 36, 42, 48	22-24	32-36
Wall.....	15, 18, 21, 24, 30, 36, 42, 48	12-13	30-36
Floor-to-ceiling.....	12, 15, 18, 21, 24	12, 13, 18, 24-25	62, 80, 84, 86, 92
Clothes drier:			
Electric.....	29-31	1 25-30, 1 42	36-39
Gas.....	31	1 27-30, 1 42	36-39
Clothes washer:			
Wringer-type.....	15	16	34
Spinner-type.....	23-31	23-30	46-50
Automatic-type:	36	25	40
Opening in front.....	26-31	1 25-29, 1 43	35-39
Opening on top.....	24-27	24-29	1 35-37, 1 40-61
Electric dishwasher:			
Opening in front.....	24-28	1 24-27, 1 42-43	36+ 1 34-4
Opening on top.....	24-27	25	1 36, 1 36
Electric dishwasher and sink:			
Opening in front.....	48	1 25, 1 42	1 36, 1 36+ 1 34-4
Opening on top.....	48, 54, 84	25	1 36, 1 42
Home freezer:			
Chest-type, with capacity (in cubic feet) of—			
4-6.....	26-49	23-29	36-42
8-15.....	40-82	24-33	33-42
16-21.....	78-101	28-33	34-41
23-26.....	93-121	28-34	33-37
Upright-type, with capacity (in cubic feet) of—			
6-10.....	29-49	27-30	55-67
14-17.....	36-45	25-32	63-74
18-21.....	41-64	27-33	60-71
25 or 30.....	47-77	26-32	72-80
Ironer:			
Cabinet-type.....	1 30-38, 1 45-67	1 13-25, 1 18-43	1 30-37, 1 34-59
Portable.....	27-31	9-11	5-14
Range:			
Electric:			
Table-top.....	36-44	24-28	1 36, 1 39-50
Apartment-type.....	19-21	20-25	36, 39-44
Gas (manufactured, bottled, or natural):			
Table-top.....	34-44	23-28	34-36, 38-53
Apartment-type.....	19-21	23-27	34-36, 38-53
Kerosene:			
No attached oven.....	32-53	12-22	30-36, 32-43
With oven, table-top type.....	33-47	19-34	32-37, 38-44
High-oven type.....	39-55	17-28	32-34, 47-52
Wood or coal.....	28-49	18-28	28-33, 43-62
Combination wood or coal and electric.....	36-53	23-32	34-36, 41-52
Combination wood or coal and gas.....	33	24-36	32-36, 34-61
Combination gas and oil.....	32-45	25, 35-37	35-36, 45-57
Refrigerator, with capacity (in cubic feet) of—			
6.....	28-30	22-29	54-60
7, 8.....	30-35	25-34	57-64
9, 10.....	32-34	24-29	59-64
12, 13.....	40-45	24-33	63-68
Water heater:			
Electric, with capacity (in gallons) of—			
10-20.....	17-20	17-20	30-41
30-40.....	20-24	20-24	56-60
50-70.....	24-28	24-26	69-90
80-85.....	26-28	26-28	70-72
Gas, with capacity (in gallons) of—			
10-15.....	14-18	15-21	48-54
20.....	14-26	14-28	37-64
30.....	16-24	16-28	44-69
40-50.....	19-25	21-30	55-75
60-75.....	24-27	26-33	67-74
75-80.....	24	27-31	70-75
Kerosene, with capacity (in gallons) of—			
20.....	15-16	19	64
30-45.....	17-22	20-23	54-65

1 Closed.

2 Open.

3 For back splash.

4 Plus height of lid.

5 Cooking top.

6 Over-all height.

Table 4.—Minimum inside dimensions of cabinets for storing cleaning equipment

Equipment	Width	Depth, front to back	Height, floor of cupboard to first shelf
Basic equipment consisting of broom, dustpan and brush, wet and dry mops, push-broom, pail, small brushes, and cleaning cloths	Inches	Inches	Inches
Equipment listed above plus—			
3 table leaves	15	14	67
5 table leaves	21		
Carpet sweeper	23	15	
Carpet sweeper and 3 table leaves	20		
Ironing board	26	17	
Steppladder	20		
Carpet sweeper and ironing board	21	21	
3 table leaves and ironing board	24		
5 table leaves and ironing board	26	17	
3 table leaves, carpet sweeper, and ironing board	28		
5 table leaves, carpet sweeper, and ironing board	31	21	
5 table leaves, carpet sweeper, and ironing board	33		
Basic equipment consisting of vacuum cleaner, steppladder, and ironing board	30	21	64
Equipment listed above plus—			
3 table leaves	36		
5 table leaves	38		

Allowances for clearance—Space needed around various pieces of equipment and furniture in kitchen and workroom for safety and ease of work

Space needed between—	Minimum allowance	Space needed between—	Minimum allowance
Sides of range and adjoining base cabinets or wall; or back of range and wall.	0, 1, 3, 6, 12, 18, 24 inches.	Front of cabinet and equipment or cabinets: If worker need not crouch to remove cabinet contents.	2 feet.
Front of range, refrigerator, or sink and front of equipment or cabinets opposite.	4 feet.	If worker must crouch to remove cabinet contents.	3 feet.
Front of refrigerator and side of cabinets opposite.	3 feet.	Dining table and wall or other furniture, to permit a person to push back chair, rise, and pass behind other chairs without disturbing those seated.	2½ feet.
Range top and bottom of wall cabinet above that extends 12 inches from wall:		Dining table and wall or tall furniture, to allow for serving and clear passage.	3 feet to 3 feet 4 inches.
With fire-resistant material on bottom of cabinet.	2 feet.	Set laundry tubs and back or side walls, to permit working at ends or back of tub.	21 inches to 2 feet.
Without fire-resistant material on bottom of cabinet.	3 feet.	Set tub and nearby obstruction, to store wringer type washer.	2½ to 3 feet.
Top of sink and bottom of wall cabinet above that extends 12 inches from wall.	2 feet.	Set tub and opposite obstruction, to allow for washer in use, and passage space.	4½ to 5½ feet.
Top of sink and bottom of wall cabinet above that extends 4 to 8 inches from wall.	14 to 18 inches.		
Chest-type freezer and wall cabinet above	Width of freezer lid plus 1 inch.	Other desirable allowances:	
Top of refrigerator and wall cabinet above	1 foot.	Length of food-mixing counter—	
Front of base cabinet with drawers and wall, tall equipment, or furniture opposite, to allow:		Minimum	36 inches for 25-inch width.
For standing space in front of pulled-out drawer.	3 feet.	For greater convenience	42 inches for 25-inch width.
For standing at one side of pulled-out drawer.	2½ feet.	Kneehole space for seated person	18 to 22 inches wide.
		Dimensions of seat of work chair	14 to 16 inches both ways.

¹ Space to allow varies depending on National Board of Fire Underwriters' specifications for different types and classifications of ranges as related to fire resistance of adjoining material.

Table 5.—Floor coverings

Material	Why it is good	What you may not like about it
ASPHALT TILE AND MASTIC	Smooth, quiet, warm, fairly comfortable underfoot. Some kinds not slippery. Greaseproof tile available. Resistant to water, acids, alkalies, fire. Durable; will not fade, loosen, curl, or buckle. Electric insulator. Individual tiles replaceable. Costs less than other resilient floor coverings. Washable; easy to clean. Low upkeep cost. Attractive; wide choice in color and size of tile in plain or marbled pattern. One type of few resilient floorings that can be used on concrete that is in contact with ground.	Unless greaseproof type is used, not suitable for kitchens and workrooms; deteriorated by grease and oils. Only fairly resilient. Dented by furniture. Scratched easily by moving furniture across it. Slippery when wet or greasy, unless of nonslip type. Shows any defect in subfloor in short time. Tiles must set for week or 10 days before furniture is moved onto them. Surface soluble in some cleansing agents.
CONCRETE	Durable and sanitary if properly finished. Easily cleaned by hosing. Low cost.	Extremely tiring to walk or stand on for any length of time; not resilient; mats required for comfort. Slippery when wet or improperly finished. Dust-preventive coating necessary; wear from traffic by "dusting" disagreeable.
CORK TILE	Very quiet, resilient, comfortable underfoot. Safe, nonslip surface. Reduces breakage of dropped articles. Easy to clean. Will not absorb water. Durable if kept properly finished; will not warp, buckle, dust, or crumble. Withstands shock. Provides heat insulation. Attractive; comes in four standard tile sizes, providing variety in pattern and design. Individual tiles replaceable.	Not entirely grease-resistant; so not much used for these rooms. Surface extremely porous. Color restricted to browns and tans. Very expensive.
LINOLEUMS: General	Smooth, resilient, not tiring underfoot. Tend to deaden noise. Water and grease on surface not absorbed as long as top finish lasts. Smooth types easy to clean. Washable. Low cost of maintenance. Comes in different thicknesses or gages, durability and price varying with gage. Attractive; variety of colors, patterns, with special decorative designs possible.	Dented by furniture. Slippery when wet or greasy. Moisture underneath causes rot and buckling. Seams must be waterproof to keep water from getting underneath.
Enameled or printed (felt-back)	Comes in rug sizes as well as by the yard. Easy to lay; no installation cost. Costs less than real linoleum.	Color and pattern applied to surface only; may wear off. Less resilient and durable than real linoleum. Choice in color and pattern more limited; surface shinier and less attractive.
Real linoleum (inlaid—embossed and straight-line; plain; Jaspe; Marbelle)	More durable than felt-back type. With right care will last 15 to 20 years. Initial cost reasonable for life of floor. More resilient than felt-back linoleums. Comes in four gages in some varieties. Color and pattern extend through to back and are intact for life of linoleum. Great variety in color, pattern, and design, with special decorative designs possible.	Mildews in hot, humid climate. Slippery if overwaxed. Grooved lines in embossed inlaid type hard to clean. Plain and dark colors show dirt easily.

for kitchens and workrooms

Material	Points about installation	How to care for it
ASPHALT TILE AND MASTIC	<p>May be laid over smooth subfloor of wood, felt base, or concrete.</p> <p>Base floor must be even, true, rigid, hard, dry.</p> <p>Follow manufacturer's specifications for subfloor and instructions for laying.</p> <p>Wood subfloor under asphalt tile may rot if moisture present.</p> <p>Skilled workmanship needed.</p> <p>Do not wet-mop or wax for a week or two after installation, or until tiles are set.</p>	<p>If not factory-finished, use type of finish advised by manufacturer.</p> <p>Brush up loose dirt with soft brush or dry mop.</p> <p>Mop or wash. Use mild neutral soapuds; <i>never</i> use cleaner containing caustic alkali, oil, or abrasives.</p> <p>Rinse thoroughly to prevent slipperiness.</p> <p>Use water emulsion waxes, <i>never</i> waxes containing benzine, gasoline, naphtha, or turpentine.</p> <p>Avoid excessive wax; it may weaken bond between tile and subfloor.</p>
CONCRETE	<p>Refer to Portland Cement Association instructions for structural requirements or to architectural drawings and specifications.</p> <p>Concrete must be clean and dry before painting.</p>	<p>May be painted, if given proper pretreatment to remove lime injurious to ordinary paints, especially prepared paints—rubber base paints and enamels with varnish base are available.</p> <p>Wax a painted surface. May be treated to prevent "dusting."</p> <p>Sweep with heavy broom.</p> <p>Scrub unpainted floors with hot water and a scouring powder or washing soda, not soap.</p> <p>Wash or mop painted floors with plain water.</p>
CORK TILE	<p>Must be properly laid to be entirely satisfactory; follow manufacturer's directions.</p>	<p>May be sealed with varnish-type sealer or varnished before waxing.</p> <p>Otherwise care as for linoleum.</p> <p>Remove spots with fine emery paper or No. 00 steel wool.</p>
LINOLEUMS: General	<p>Not recommended for floors in contact with ground or below grade; moisture will damage it.</p> <p>Wood subbase provides more resilient floor than concrete base.</p> <p>Subfloor should be smooth, level, dry.</p> <p>Let stand at room temperature 48 hours before unrolling.</p> <p>Permit to stretch fully on floor before cementing.</p>	<p>If not factory-finished, follow manufacturer's directions for finish used and for maintenance.</p> <p>Dust daily.</p> <p>Use dry mop or soft brush for loose dirt, damp mop or cloth for other soil.</p> <p>Wash with warm water and mild, neutral soap, using water sparingly.</p> <p>Wash small portion at a time and rinse; overlap strokes.</p> <p>Dry and rewax.</p> <p>Use no abrasive except fine steel wool for hard-to-remove spots.</p>
Enameled or printed (felt-back)	<p>No skilled labor required.</p> <p>Can be cemented directly to wood subfloor without lining felt.</p>	<p>Varnish, shellac, or lacquer as manufacturer advises to maintain patterned surface.</p> <p>A worn-off surface may be painted.</p>
Real linoleum (inlaid—embossed and straight-line; plain; Jasper; Marbelle)	<p>Requires skill in installing; experienced workman best; or follow manufacturer's directions strictly.</p> <p>Cement to felt base bonded to even, dry, smooth subfloor with ventilation beneath it.</p>	<p>Keep thin, even wax film on floor always, using self-polishing, no-rub, slip-resistant type of wax on clean surface.</p> <p>Never use varnish, shellac, or oil on surface.</p>

Table 5.—Floor coverings for

Material	Why it is good	Why you may not like it
PLASTIC RESILIENT FLOORING (Vinylite resins)	Smooth, nonporous, flexible, resilient. Some kinds not dented permanently by heavy furniture. More durable than other resilient floorings. Strongly resistant to water, soaps, oils, acids, alkalis, kerosene, gasoline, alcohol, heat, fire. Won't rot. Attractive; wide choice of plain, varied, nonfading colors. Easy and inexpensive to maintain. Usable for below-grade installations.	Initial cost high. Some kinds not permanently dent-resistant.
TILE AND BRICK (Glazed and unglazed)	Resistant to acids, alkalis, fire. Nonfading. If glazed, does not absorb grease or water; easy to clean. Low maintenance costs. Needs no waxing, polishing, varnishing. Nonslip, noncraze types available. Durable; will last lifetime of house. Many decorative possibilities; varied sizes, shapes, colors. Individual tiles replaceable.	No resilience. Too hard and cold for comfort underfoot. Nasty. Water standing on tiles may loosen them. Ordinary types slippery when wet or greasy. May craze (develop hairlike surface cracks). Unglazed tile absorbs grease, dirt, and water, and shows stains. Expensive.
WOOD, SOFT (Fir, pine)	Semiresilient. Lowest initial cost. Choice of stains and finishes possible.	Noisier than real linoleum or felt-back coverings. Not colorful. Dents and splinters easily; shows wear quickly. If not properly seasoned or laid, subject to shrinkage and buckling. If not finished, absorbs grease, food stains, and water, and is hard to clean. Finish needs frequent renewal. Paint, shellac, or varnish finish mars and wears off in traffic lanes. Shellac or varnish finish must usually be entirely removed and floor sanded before refinishing.

kitchens and workrooms—Continued

Material	Points about installation	How to care for it
<p>PLASTIC RESILIENT FLOORING (Vinylite resins)</p>	<p>Subfloor of wood or concrete must be clean, smooth, dry. Skilled workmanship needed. Follow manufacturer's directions.</p>	<p>Brush up loose dirt with soft brush or dry mop. Wash with soap and water, rinse, dry.</p>
<p>TILE AND BRICK (Glazed and unglazed)</p>	<p>Must be laid with care to give even surface. Floor construction must be strong enough to take weight. Follow manufacturer's directions.</p>	<p>Brush up loose dirt with soft brush or dry mop. Use wet mop or damp cloth for other soil. Do not allow water to stand on tiles; water loosens cement in which tiles are set.</p>
<p>WOOD, SOFT (Fir, pine)</p>	<p>Use well-seasoned, planed wood. Lay over thoroughly clean, dry, level, tightly nailed sub-floor. Tongue-and-groove flooring is fitted together for tight joints. Strips are blind-nailed in place at regular intervals. Careful, correct nailing with proper nails essential to rigidity and prevention of squeaks. If not blind-nailed, nail holes (or cracks) should be filled with putty or crack filler. Sand smooth before finishing. Wax finish the only practical one for these floors. It is easy to maintain and renew. Do not use varnish, lacquer, shellac, or paint.</p>	<p>Use a floor seal, followed by paste or self-polishing wax. Brush up loose dirt with broom, soft brush, or dry mop. Use damp cloth or wet mop for other soil. Regular and frequent scrubbing or mopping needed if wood is unfinished. Remove stains by bleaching. If paint is used, touch up worn spots.</p>

Table 6.—Materials for

Material	Why it is good	What you may not like about it
CERAMIC TILE (glazed or unglazed)	Bright, gleaming, long-wearing, nonfading, washable surface. Easy to clean. Will not absorb odors. Nonflammable. Hard to injure; will not chip, craze, or peel. Resistant to warping. Low maintenance cost; can be scrubbed. Attractive decorative possibilities; many and brilliant colors; varied patterns and designs.	More expensive than most other coverings. Unglazed tile somewhat absorbent to water. Glaze produces light glare. Indented lines hard to clean.
COATED FABRICS (canvaslike foundation)	Smooth, even, greaseproof, vaporproof, easy to maintain, washable surfaces. Covers cracks, protects, binds, and strengthens plaster walls. More durable than wallpaper. Plastic-coated fabrics extremely durable. Saves marring of walls by furniture. Easily removed. Great variety of colors, designs, textures. Sunfast.	Oilcloth surface wears off more easily than others. May be loosened by seepage on damp wall.
ENAMELED STEEL ENAMELED ALUMINUM	Even, smooth, nonabsorbent, waterproof, washable, easy to clean. Nonflammable. Durable, baked-on finish. Low maintenance cost. Some (but limited) choice in color.	Porcelain enamel costs more initially than synthetic enamel. Enamel may splinter or chip if hit hard. Reflection of light from surface produces glare.
GLASS PLASTIC (transparent and translucent)	Hard, nonabsorbent, waterproof, greaseproof, washable, easy to clean. Not affected by soaps or acids commonly used. Nonflammable. Will not swell or craze. Extra resistant to stain and soil. Low maintenance cost. Attractive, modern appearance. Wide range of color in glass slabs. Fair range of color in glass slabs.	High initial cost. Cracks or breaks under strain.
LINOLEUM, WALL	Smooth, even, flexible. Conforms to any wall contour. Not injured by surface moisture. Resilient; will not chip or crack when bumped. Withstands moderate settling of walls without cracking or buckling. Warm to touch. Moderate cost. Low maintenance cost. Washable. Modern, attractive appearance, with wide choice in colors and patterns. Special designs possible.	Requires special care when applying. In case of leaks will absorb water at back and rotting may result.
PLASTER, SMOOTH	Most commonly used material. Can be painted, papered, or covered with any of a variety of materials.	Subject to cracks. Absorbs grease and water. If untreated or uncovered, hard to keep clean. Light-glare with white, unpainted smooth plaster.

See footnote 1 on p. 41.

kitchen and workroom walls

Material	Points about installation	How to care for it:
CERAMIC TILE (glazed or unglazed)	Especially useful behind range to protect wall from heat, grease, grime. Requires skilled workmanship to install. Usually set in cement. Some types bonded direct to wall with plastic adhesive. Follow manufacturer's directions. Undersurface must be smooth and even.	Wipe off with damp cloth. Never use steel wool or gritty scouring powder on glazed tile. For cleaning, use mild soapsuds or whiting (powdered chalk) dampened with water.
COATED FABRICS (canvaslike foundation)	Pasted like paper over smooth walls, with edges meeting, not lapped. Add simple sirup or molasses to paste for better adhesion to walls. Add to paste 1 tablespoon formaldehyde dissolved in 1 cup of water, to prevent mildew.	Brush with lambswool wall brush or cotton-flannel bag over broom two or three times a year, and wipe with damp cloth. Wash with neutral soapsuds, using soft cloth or sponge. Never use gritty scouring powder or strong soap.
ENAMELED STEEL ENAMELED ALUMINUM	Follow manufacturer's directions.	Wipe off with damp cloth; then polish. For ordinary cleaning, use mild soap and water or trisodium phosphate in water. Use gritless (never gritty) scouring powder.
GLASS PLASTIC (transparent and translucent)	Cemented on top of cushioning material, with joints pointed. Direct contact with metal, concrete, or other hard substances to be avoided.	Dust with wall brush; wipe with damp cloth. Wash with mild soap and water, rinse, dry. Ammonia or vinegar added to wash water removes greasy or soapy film. Use whiting on damp cloth to remove stubborn spots.
LINOLEUM, WALL	Lightweight linoleums used. Apply on firm, hard, clean, smooth, dry walls of plaster or wallboard with waterproof cement. Follow manufacturer's directions. First completely remove old whitewash, oil, or water paints, wallpaper, oilcloth, or burlap. Finish with self-polishing wax if not factory-finished.	Wipe with damp cloth. Wash with soapsuds of neutral soap, rinse, dry. Rewax when needed.
PLASTER, SMOOTH		Dust with wall brush or soft, clean cloth, using up-and-down strokes. Wipe with damp cloth. Use whiting on damp cloth for badly soiled spots.

Table 6.—Materials for kitchen

Material	Why it is good	What you may not like about it
WALLBOARD, HARD FINISH (Plastic-coated panels, plain and grooved).	Hard, smooth, glossy, washable surface. Comes in panels 4 feet wide by 4, 8, or 12 feet long. Many types are factory-finished. Easy to apply and maintain. Unfinished types may be painted like plaster. Durable, not easily chipped or marred. Some kinds not affected by acids, alkalis, grease, or water. Resists corrosion. Some kinds are fire-resistant. Baked-on enamel finishes more durable than painted ones. Moderate cost in general; easy and low-cost maintenance. Pleasing appearance. Plastic panels differ in variety of colors and patterns possible. Some types are sound-deadening.	Some types fairly expensive. Some subject to stain penetration. Uneven surface of grooved patterns hard to clean. High polish on some types causes glare.
WALLPAPER	Wide range of cost, from a few cents to several dollars a roll. Fairly easy to apply. Waterproof-type washable. Gay patterns in wide choice of color and design.	Less durable than oil- or enamel-painted walls. Unless waterproof type is used, grease- and water-absorbent. Hard to clean, with frequent renewal needed. May be loosened by moisture in air, or seepage on damp wall.
WOOD (Yellow pine, fir, oak).	With right care gives good service. Appearance due to attractive grain of wood may be pleasing.	Likely to swell, stain, and rot, in case of leaks. Frequent refinishing necessary. Unless painted in light color, does not reflect light well.

and workroom walls—Continued

Material	Points about installation	How to care for it ¹
<p>WALLBOARD, HARD FINISH (Plastic-coated panels, plain and grooved).</p>	<p>Fastened to furring over plaster, or over gypsum lath or board, solid wood or plywood base, or finished concrete. Do not use on surfaces likely to become wet. Base should be so constructed that there will be no moisture seepage or sweating from the back to the surface. Joints may be flush, beveled, battened, or covered with metal molding strips. Follow manufacturer's directions.</p>	<p>Wipe with damp cloth. Wash with mild soap, rinse, dry, and polish with self-polishing wax. Use no soaps containing alkali or caustics.</p>
<p>WALLPAPER</p>	<p>Paste over smooth walls, taking care to match pattern when cutting.</p>	<p>Dust with soft wall brush or soft cloth over broom. Protect from splashing water or grease. Wash washable paper with cold water, then cold soapy water, using mild soap. Remove grease spots immediately with paste of fuller's earth, or blotter and warm iron over spot.</p>
<p>WOOD (Yellow pine, fir, oak).</p>		<p>Dust with soft wall brush or soft cloth over broom. Use cleaning methods suited to type of finish used. Wax finish is easy to maintain.</p>

¹ In cleaning walls, start at bottom and work up.

Table 7.—Materials for

Material	Why it is good	What you may not like about it
ASBESTOS-CEMENT BOARD	Smooth, even, hard, washable, mottled surface, without glare. Moisture-resistant; warp-resistant. Will not chip, crack, craze, or dent. Adaptable for special-size work surfaces up to 8-foot lengths. Panels easy to handle. Easy to install or replace.	Not resilient enough. Somewhat noisy and hard on dishes. Unless properly treated, absorbs stains and shows heat rings. Choice in colors limited to three. Surface must be treated to retain color. Dark colors make seeing difficult. Edges must be bound.
COMPRESSED WOOD FIBER WITHOUT PLASTIC COATING	Smooth, even, hard, washable, mottled surface, without glare. Moisture-resistant; warp-resistant. Will not chip, crack, craze, or dent. Adaptable for special-size work surfaces up to 8-foot lengths. Panels easy to handle. Easy to install or replace.	Subject to scratches; also to stains and heat rings unless properly finished. Requires some work to maintain and renew finish on surface. Discolors with use. Limited choice in color. Dark colors absorb light, making seeing difficult. Edges must be bound.
LINOLEUM	More resilient than other materials. Deadens sound; reduces breakage. Smooth, even, washable surface. Durable if all seams and joinings have watertight seals. Does not chip or crack. Waxed surface resistant to stains. Comes in 3 thicknesses or gages, durability and price increasing with thickness. Light gage may be applied over core molding between counter and wall for easy cleaning. Attractive and decorative; variety in colors available in patterns or plain.	Will show heat rings. Rots quickly if, because of improper laying, water gets under it. Edges must be bound and made waterproof. Mildews in hot, humid climates. Installation requires some skill. Needs frequent waxing.
MARBLE	Smooth, even, hard, heatproof, durable surface. Easily cleaned; waterproof. Attractive, with some choice in color. No upkeep cost.	No resilience; noisy, and hard on dishes. Not acid-proof. High initial cost. Heavy weight requires sturdy support and increases freight cost.
METALS: Aluminum-nickel alloy; stainless steel.	Smooth, even, nonabsorbent, heatproof, hard surface. Stain and corrosion proof. Will not chip, crack, or break. Lifetime durability. No refinishing needed. Wide range of stock-size counter tops made up of 16-gage metal, braced and sound-deadened. No upkeep cost. Seamless construction; all joints welded and polished.	Not quiet or resilient. Not colorful. Rubbing against it blackens clothes and pans. Aluminum-nickel alloy requires frequent rubbing to remove spots and maintain polish because of drying water on surface. Scratches show on some stainless steels. Very high initial cost.
Zinc (galvanized iron)	Smooth, even, heatproof, hard surface. Waterproof and greaseproof. Low initial cost.	Not quiet or resilient. Not stainproof. Attacked by acids. Not durable. When zinc coating wears off, subject to rust. Tarnishes easily and darkens with use. Requires refinishing or replacing. Unattractive.
OILCLOTH	Very low first cost. Easy to apply and renew, and to clean. Resistant to moisture and grease. Various colors and patterns available.	Least durable material. Must be renewed frequently. Subject to stains unless varnished. Shiny surface produces some glare. Not suitable for sink counters.

counters and table tops

Material	Points about installation	How to care for it
ASBESTOS-CEMENT BOARD	Can be cut or worked with wood-working tools. Cut with finished side up; some types hard to saw. Apply to any solid backing with adhesive, or screw or nail to framing. Finish with approved sealer. Edge with wood or metal.	Wipe with damp cloth. Wash with neutral, grit-free soap and water, rinse, dry. Heat-resistant seal or varnish finish helps prevent heat rings. To refinish, use approved seal. Wax, if desired.
COMPRESSED WOOD FIBER WITHOUT PLASTIC COATING	Same as for asbestos-cement board. Metal-cutting or carbide tools used for shaping.	Wipe with damp cloth. Wash with neutral, grit-free soap and water, rinse, dry. Heat-resistant seal or varnish finish helps prevent heat rings. To refinish, use approved seal. Wax, if desired.
LINOLEUM	Cemented under pressure to smooth, even wood, plywood, or steel surface. Edges bound tightly with wood or metal molding.	Wipe with damp cloth. Clean with soap and water, using mild neutral soap. Rinse and dry. Keep waxed with light coat of self-polishing wax. Do not use as a cutting surface. Use heat protector under hot pans.
MARBLE	Sizes cut to order. Support on frame. May be bolted in place, or cut to prevent sliding without use of bolts.	Wash with warm water and neutral soap, rinse, and dry with a soft cloth.
METALS: Aluminum-nickel alloy; stainless steel	Made to order for special sizes. Fasten to framework.	Do not use as a cutting surface. Scrub with fine steel wool, fine scouring powder, or whiting. Rub with soft, dry cloth to polish.
Zinc (galvanized iron)	Thin sheet zinc may be cut to any desired size and applied over wood, tacking under edge of top. Heavy zinc tops made to order by tinsmith, and fastened in place.	Scour with grit-free powder and water; rinse and dry. Remove stains with vinegar or lemon juice.
OILCLOTH	Stretch smooth over even, planed surface and edges, and tack firmly under edge. Apply spar varnish to dry top. Wait 24 hours to apply a second coat. Renew as needed.	Do not use as a cutting surface. Wipe with damp cloth. Wash with soapsuds, rinse, and dry. Remove stains with soap or gritless scouring powder. Spar-varnish finish increases life and prevents heat rings.

Table 7.—Materials for counters

Material	Why it is good	What you may not like about it
<p>PLASTIC-SURFACED MATERIALS: Wood fiberboard, coated</p>	<p>Nonporous, glasslike surface, easy to clean. Requires little attention. No upkeep cost. Not subject to grease or food stains. Permanent finish. Attractive, with wide choice in light-fast colors and varied patterns. Inlays possible. Same material may be used for edges. This material is factory-finished, and needs no finish applied.</p>	<p>Indentations in tiled and striped types hard to keep clean. Edges must be covered.</p>
Plastic-impregnated paper or cloth	<p>Nonporous glasslike surface, resistant to fats, acids in foods, alkalis, alcohol, scratches, and high temperature. Shock-resistant; will not break. Attractive and decorative, with wide choice in colors and patterns. Edges bound with same material, eliminating need of metal molding.</p>	<p>Initial cost very high. May warp with moisture.</p>
Plastic composition throughout	<p>Nonporous glasslike surface, resistant to stains; heat- and flame-resistant type also available. Binding edge of same material. Available in different thicknesses, widths, and lengths. Attractive and decorative with wide choice in color possible; special designs and patterns.</p>	<p>Initial cost high. May warp with changes in temperature or with moisture. Heat protection needed under hot dishes. Not scratch-proof. Rubber should not be placed on it.</p>
<p>PORCELAIN ENAMEL (on iron or steel)</p>	<p>Sanitary, glassy, smooth, heatproof, hard surface, easy to clean. Resistant to grease and food stains, unless surface finish has been damaged. May be resistant to acid, alkali, alcohol, heat, mild scratches. With care gives long service. Porcelain enamel on steel lighter weight than on iron; freight cost lower.</p>	<p>Noisy and hard on dishes. Subject to iron-rust stain from water. Enamel may wear, crack, or chip off, with subsequent rusting and danger from glassy splinters. If finish is destroyed by harsh abrasives, wear, or strong acids, exposed surface is subject to permanent stains. Choice in color limited. Produces light-glare.</p>
<p>TILE—CERAMIC (Glazed and unglazed)</p>	<p>Long-wearing, sanitary, smooth, heatproof, hard surface, easy to clean except for tile with indented grooves. Resistant to marking, heat, acid, stains, and mild scratches. With proper care, no maintenance cost. Attractive, with choice in colors, shapes, sizes, patterns, and designs giving many decorative possibilities.</p>	<p>Rigid and noisy. Hard on dishes. Water standing on it may loosen cement. Indentations make cleaning harder. Not easy for amateur to install. Heavy. Initial cost high. Glazed tile in light colors produces light-glare.</p>
<p>WOOD, HARD (Ash, maple)</p>	<p>Smooth, heat-resistant, hard surface. Laminated most desirable if properly fitted. Comparatively inexpensive. Excellent cutting surface. Does not need edges bound. No glare.</p>	<p>If finished, frequent renewal needed. If not finished, must be scrubbed or sanded to keep clean. Solid wood may warp and crack. Tops made of narrow pieces may develop cracks, hard to keep clean if pieces are not properly fitted together or wood is not well seasoned.</p>

and table tops—Continued

Material	Points about installation	How to care for it
<p>PLASTIC-SURFACED MATERIALS:</p> <p>Wood fiberboard, coated</p>	<p>Glue or cement in sheet form to prepared surfaces such as plywood or waterproofed hard board.</p>	<p>Wipe with damp cloth.</p> <p>Wash with neutral, grit-free soap and water; rinse and dry.</p> <p>Use heat protector under hot pans.</p>
<p>Plastic-impregnated paper or cloth</p>	<p>Sheets veneered to 7-plywood cores with casein or resin glue that can be sanded smooth.</p> <p>Bottom of plywood preferably sealed with the material to lessen warping from moisture.</p>	<p>Wipe with damp cloth.</p> <p>Wash with neutral, grit-free soap and water; rinse and dry.</p> <p>Use heat protector under hot pans.</p>
<p>Plastic composition throughout</p>	<p>Sheets veneered to plywood cores, with sealer sheet on bottom also, to lessen warping from moisture.</p>	<p>Wipe with damp cloth.</p> <p>Wash with neutral, grit-free soap and water; rinse and dry.</p> <p>Use heat protector under hot pans.</p>
<p>PORCELAIN ENAMEL (on iron or steel)</p>	<p>Usually made to order and fastened to cabinet frame in place, or to table frame.</p>	<p>Do not use as a chopping surface.</p> <p>Protect from blows.</p> <p>Do not allow food acids to remain on surface, but rinse off at once.</p> <p>Wash with mild soapsuds or gritless scouring powder, using soft cloth or sponge.</p> <p>To remove rust stains, apply diluted oxalic acid with care, and rinse immediately and thoroughly.</p>
<p>TILE—CERAMIC (Glazed and unglazed)</p>	<p>Laid in cement over even, smooth base, which is fastened to framing, or bonded to waterproof plywood. Skilled workmanship needed.</p>	<p>Wash with mild soap and water, using soft cloth or sponge.</p> <p>Surface may be waxed.</p> <p>Do not use steel wool on glazed tile.</p>
<p>WOOD, HARD (Ash, maple)</p>	<p>Well-seasoned wood must be used.</p> <p>Made to order of narrow grooved strips glued together.</p> <p>Tops nailed or cleated to framing.</p>	<p>Possible finishes: Penetrating seal and wax; spar varnish, and wax, oil, or stain; varnish and wax.</p> <p>Wash, rinse, and dry finished wood.</p> <p>Scour and rinse unfinished wood.</p>

Maximum Reachable Heights¹

Height of shelf:	<i>Inches</i>	<i>Inches</i>
A. No obstruction (no base cabinet to reach over)	72-79	57-61
Shelves for lightweight articles stored vertically	72-79	55-59
Shelves for such articles as plates stored horizontally	67-74	
B. Obstruction 12 inches wide (wall cabinet 12 inches from front of counter edge)	69-76	
Shelves for lightweight articles stored vertically	69-76	
Shelves for articles like plates stored horizontally	64-71	
C. 24-inch obstruction, as in reaching over sink to window latch	62-69	

¹ Wilson, M., Roberts, E. H., and Thayer, R. Standards for working-surface heights and other space units of the dwelling. Wash. Agr. Expt. Sta. Bul. 345. June 1937. (Out of print.)

Amount of light reflected by colors used for typical wall finishes

<i>Color</i>	<i>Percent of light reflected</i>	<i>Color</i>	<i>Percent of light reflected</i>
White	85	Gray, medium	55
Cream	75	Green, medium	52
Gray, light	75	Blue, medium	35
Yellow, light	75	Gray, dark	30
Buff, light	70	Red	13
Green, light	65	Brown	10
Blue, light	55	Blue, dark	8
Yellow, medium	65	Green, dark	7
Buff, medium	63		

Check list of safety features for kitchens and workrooms

Thought given to providing for safety in a kitchen and workroom when these rooms are planned can do much to prevent such accidents as falls, cuts, fires, burns, collisions, electric shock, and asphyxiation. Following are main points to check.

General room planning

Rooms planned for work simplification. (See text of this publication.)

Adjoining rooms on same level, if possible; no raised thresholds. If rooms must be on different levels, a minimum of three steps between levels, with steps well lighted.

Play space for children within sight of mother while she works—but outside work and traffic areas.

Doors.—Located to provide unobstructed, quick exit from room and house in case of fire.

Located to keep traffic out of work areas, to swing back against walls or side of equipment (or use sliding doors), and so they do not interfere with each other. Screened.

Windows.—Of sufficient size and located to provide for good seeing at all work centers.

Located to provide for cross ventilation. Will open enough to supply needed ventilation and comfortable temperatures. Screened.

Floors.—Even, level, nonslippery surfaces that will not splinter, crack, or become uneven.

Equipment selection

Smooth, even surfaces, not likely to splinter or develop jagged edges.

Rounded corners on exposed edges of cabinets and other large equipment.

Fire-resistant material on bottom of any wall cabinet closer than 36 inches above range top.

All electrical equipment, appliances, cords, and plugs approved by the Underwriters' Laboratories, Inc. All gas appliances and accessories approved by the American Gas Association.

Driving parts of mechanical equipment so guarded that user is not exposed to accidental contact with moving parts. Any opening in such a guard or enclosure no more than $\frac{3}{8}$ inch wide.

Any equipment involving feeding of food or clothes into machine, and any cutting or slicing mechanism on any food-preparation equipment, so designed or guarded that operator's fingers need not be endangered.

Doors on wall cabinets narrow, sliding, or folding—so they do not project beyond counter edge. Safety locks on revolving shelf cabinets—for children's protection.

Ranges, electric or gas.—With well-insulated, temperature-controlled oven. Surface heating units far enough apart for use of a large utensil without displacement of an adjoining utensil.

Control switches or gas cocks so located that a person can operate them without reaching across surface-heating units.

Safety cock on every burner of gas range. Automatic ignition for gas range surface burners.

Clothes washers, automatic.—Inlet waterpipe high enough above water level in the machine to insure that wash water is not siphoned back into water supply system.

Safety cock on cover of top-opening washers if design of spinner basket is such that it might be thrown out when the machine is operating and the top is opened. Safety lock on door of front-opening washers to keep children from opening them.

Clothes washers, nonautomatic.—Safety release device on wringer, that is readily accessible in any wringer position, that is easily operated, and that will work when wringer is under a heavy load.

Ironer.—With a dependable and easily operated release mechanism for separating ironing and heating surfaces and provision for separating surfaces when current fails. With ends of shoe heated separately and thermostatic controls on all heating units. With indicating light to show when current is on.

Iron, electric.—With automatic heat control. For iron without safety heel or side, a stand of metal or asbestos should be provided.

Freezer—chest-type.—With lid so constructed that accidental closing is prevented.

Step stool.—Of firm construction, with nonslippery step surfaces.

Fire extinguisher.—Easy to handle, with a chemical whose fumes are not noxious in close quarters.

Equipment location

Ranges.—Located and installed to conform with Code of National Board of Fire Underwriters. Surface heating units at least 2 feet away from any curtained window unless bottom of curtains is held on rod.

Table top on each side of range surface-heating units to aid in keeping handles out of reach of children, and out of way of passersby or swinging door.

Coal or wood range near chimney, with short, direct stovepipe connection to chimney—never across a doorway.

Refrigerator.—Placed so that door opens on side adjoining counter, and can be opened wide.

Storage facilities.—A place for pot holders, burn remedies, and salt and soda to put out flames of burning grease—within easy reach of range.

Places to put supplies or utensils that may be dangerous to small children out of their reach. These include: Special drawer section or rack for sharp knives; place for poisons and matches; place for immediate disposal of burned-out light bulbs, broken glass, and tin cans.

Fire extinguisher.—In easily accessible location.

Provision for safe use of gas

Gas installation to meet approval requirements of National Board of Fire Underwriters.

Equipment supplied with automatic shut-off that operates when the flame goes off.

Liquid gas or natural gas supplied with a warning odor, in case of leaking gas.

Portable electric fan that can be used at floor level in case of leaking liquid-gas fumes, to force expulsion of accumulated heavier-than-air fumes that may asphyxiate children playing on the floor or may explode.

More information

Listed below are other publications of the Agricultural Research Service that may help you in various phases of kitchen and workroom planning. The publications listed are available from the Office of Information, United States Department of Agriculture, Washington 25, D. C.

A step-saving U kitchen, G-14.

Easy-to-build kitchen cabinets for the remodeled farmhouse, G-18.

Washing machines . . . selection and use, G-32.

Home freezers . . . their selection and use, G-48.

The Beltsville kitchen-workroom with energy saving features, G-60.

Beltsville energy-saving kitchen. Design No. 2, L-463.



Growth Through Agricultural Progress

Clothing and Housing Research Division
Agricultural Research Service
U.S. Department of Agriculture
Washington 25, D.C.

Provision for safe use of electricity

Enough circuits and outlets for future as well as present needs—to prevent overloading.

Wiring done by competent electrician so that it conforms with Code of National Board of Fire Underwriters.

Each circuit—including main circuit to house—protected with fuses or circuit breakers of rating to agree with carrying capacity of wire—to prevent overloading of wires.

Proper fuses—never substitutes.

Plug-in outlets with ground connections for grounding all electric appliances, with 3-prong plugs that fit outlets.

Light switches near room entrances.

Flush plates of outlets of nonconducting material. Outlets installed high enough to keep cords off floor, close enough to where used to make long cords unnecessary.

Outlets far enough from water taps so that both cannot be touched at the same time.

Insulation link in all pull-chain switches.

Wall sockets with covers or of type into which children cannot poke their fingers or metal objects.

Rubber-covered cords where equipment cords may be wet.

Round pegs for hanging cords over—to prevent wear on cords.

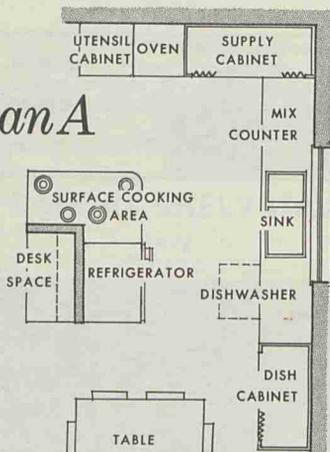


Design No.2

DN-1707

Beltsville ENERGY-SAVING KITCHEN

Plan A

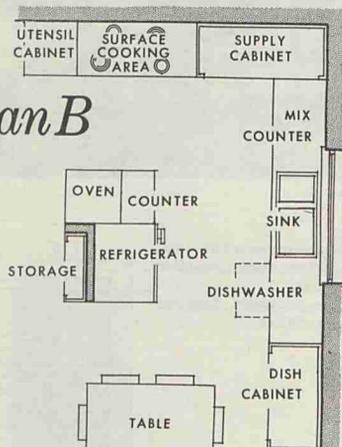


DN-1715

FAMILY ROOM



Plan B



DN-1717

FAMILY ROOM

This is the second kitchen designed and tested by housing specialists of the U. S. Department of Agriculture for homemakers who must conserve their energy.

Designs of work areas and arrangements of equipment were planned to reduce walking, lifting, and reaching and to eliminate some motions necessary when conventional designs and arrangements are used.

As shown in the plans above, the kitchen is oriented to a family room with dining area. If you plan to use the kitchen without the family room be sure to make adequate provision for the dining area. Three feet between the edge of the table and wall or refrigerator is needed for passage. Two feet between the edge of the table and the dish cabinet is adequate.

LEAFLET NO. 643

U.S. Department of Agriculture

For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. - Price 5 cents

At the mix center (below) the homemaker can sit comfortably at work.

In the upper part of the cabinet at her left is storage for supplies used at this center. This part of the cabinet starts at counter level--an arrangement that makes use of all the easy-to-reach space.

Folding doors can be left open while work is in progress. They are neat and attractive when closed.

The base part of the supply cabinet stores

casseroles and some canning equipment on revolving half-circle shelves.

Flour and sugar canisters are fitted with handles and caster-equipped platforms. (See page 4 for detail.) Even when full, canisters are easy to pull into position for use.

A pullout board just under the mix counter can be placed in any of three positions. The lowest position is the right height for use with a comfortable straight chair.



DN-1708

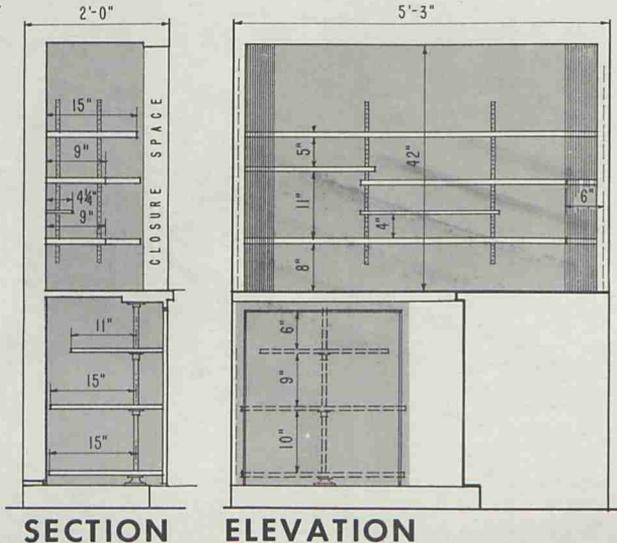
Above.--Note various shelf arrangements, knee space under mix counter.

Right.--Schematic drawings of supply cabinet.

Supply Cabinet



PLAN



The dishwasher is under the counter to the right of the double, two-level sink. A wall-hung cabinet above this counter holds sink supplies and salad supplies. (See page 4 for drawing of wall cabinet.)

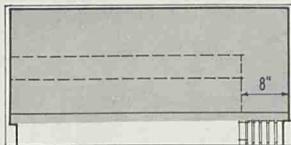
The dish cabinet is to the right of the dishwasher and conveniently near the table.

This cabinet has shelves for glassware, china, and a few packages of ready-to-eat

foods . . . a metal-lined drawer for bread and pastries . . . a sliding shelf for place mats . . . a slotted compartment for trays . . . a pullout shelf on which table appliances may be stored and used.

The wide shelf over the base of the cabinet can be used as a serving counter. Silverware is stored in two shallow drawers between dishwasher and dish cabinet.

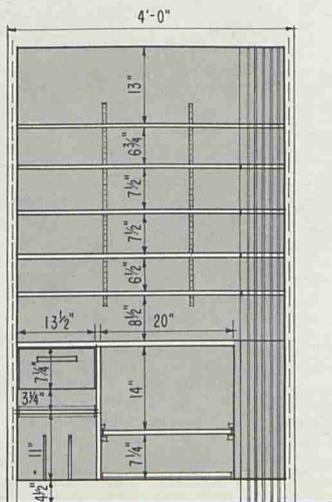
Dish Cabinet



PLAN AT SHELVES

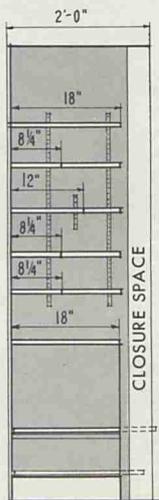


DN-1709



ELEVATION

DN-1712



SECTION

Above.--Note folding door on dish cabinet, various shelf depths.

Left.--Schematic drawings of dish cabinet.

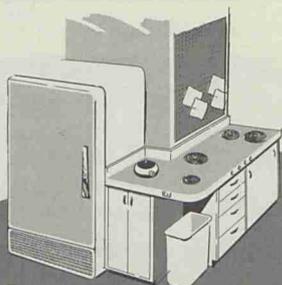
Sketches below show the island arrangements used in plan A and plan B.

The cabinet under the surface cooking area in plan A has half-circle revolving shelves, drawers, and space for a trash basket. When the surface cooking area is located as in plan B, the space for the

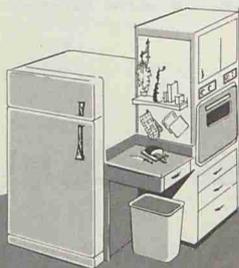
trash basket is omitted in that area. Shelf and drawer sections may be made wider, or file storage for large platters added.

The cabinet above the oven should be planned for the storage of serving dishes.

Space for a kitchen cart is incorporated in the utensil storage cabinet.



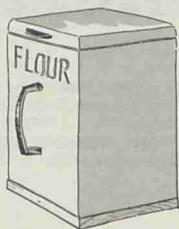
DN-1716



DN-1719

ISLAND ARRANGEMENT A

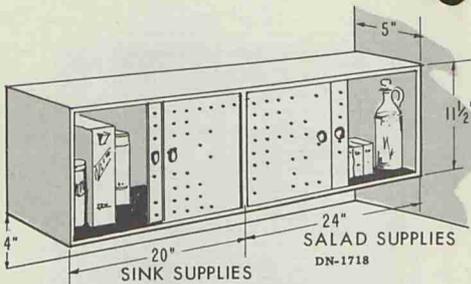
ISLAND ARRANGEMENT B



DN-1713



BOTTOM VIEW OF WOOD BASE
SHOWING POSITION OF ROLLER BALL CASTERS



EASY-ROLL CANISTER

WALL CABINET

Two house plans--Nos. 7149 and 7152--that incorporate this kitchen have been developed by USDA architects. Working drawings will be available by January 1960 through your county agent or from the extension agricultural engineer at most State agricultural colleges. There usually is a small charge.

If your State does not carry these plans, write to Clothing and Housing Research Division, Institute of Home Economics, U. S. Department of Agriculture,

Beltsville, Md. This office does not distribute drawings but will direct you to a State that does distribute them.

For information about Beltsville Energy-Saving Kitchen, Design No. 1, see Home and Garden Bulletin 60, "The Beltsville Kitchen-Workroom With Energy-Saving Features," and Leaflet 418, "Beltsville Energy-Saving Kitchen, Design No. 1 With Workroom." Both publications are available from Office of Information, U. S. Department of Agriculture, Washington 25, D. C.

Clothing and Housing Research Division Agricultural Research Service Washington, D. C.
Issued November 1959

Design No. 3



Beltsville

Old

ENERGY-SAVING KITCHEN

This is the third energy-saving kitchen designed and tested by housing specialists of the U.S. Department of Agriculture for the working convenience of the homemaker. It is carefully planned to reduce walking, stooping, lifting, and reaching in meal preparation and other kitchen activities.

Three arrangements of cabinets and equipment are presented. For a detailed layout of arrangements A, B, and C, turn to pages 2 and 3. Records of the distance walked in preparing, serving, and cleanup of identical meals in arrangements A, B, and C showed very little difference. Each arrangement is efficient and well suited to family use.

The distinctive feature of this kitchen is its use of slant-front, wall-hung cabinets. The bottom shelf of these cabinets is 5½ inches deep and the top shelf is 9½ inches deep, which makes the face of the cabinets extend farther out over the counters at the top than at the bottom. The mix and range cabinets and the other wall storage cabinet are hung only 4 inches above the surface counter instead of the customary 15 or 18 inches.

Thus the wall cabinets in this kitchen are designed to limit both the height of the reach and the extent of the reachover. Both of these factors have been found to affect the amount of energy required to place and remove articles from shelves. The height of the top shelf in the mix cabinet, for example, is 65 inches, within easy reach from a sitting position.

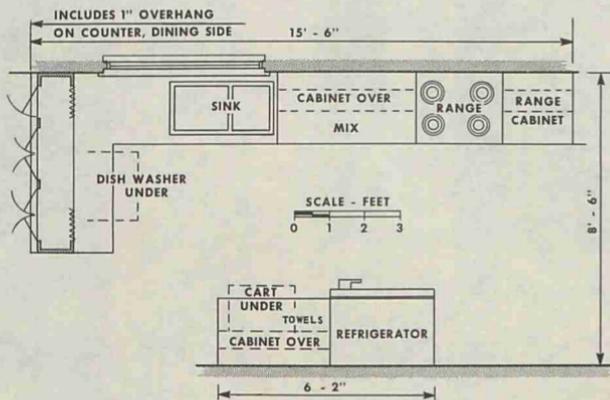
Other convenience features of the kitchen include: A hardwood cutting board, a trash container compartment, two pullout workboards, a pullout towel rod, an adjustable posture chair, and a two-shelf serving cart. Storage places for the chair and cart are provided in all arrangements.

Vertical shade-type closures for the wall and dish cabinets permit the entire storage area to be open when work is in progress, and are neat and attractive when closed. Directions for installing this type of closures are given on page 7.

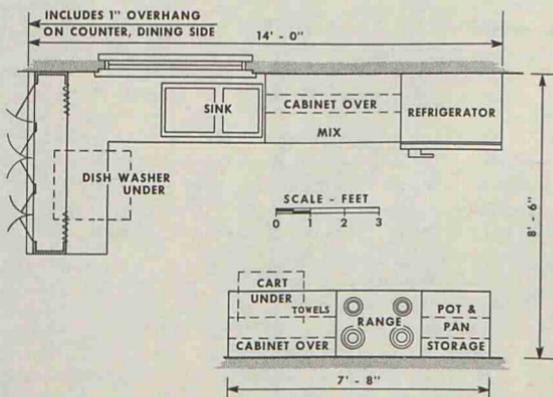
No detailed working drawings of this kitchen have been prepared for distribution. However, the dimensioned sketches of its principal features included in this publication will be helpful to your carpenter or cabinetmaker.

THREE CHOICES

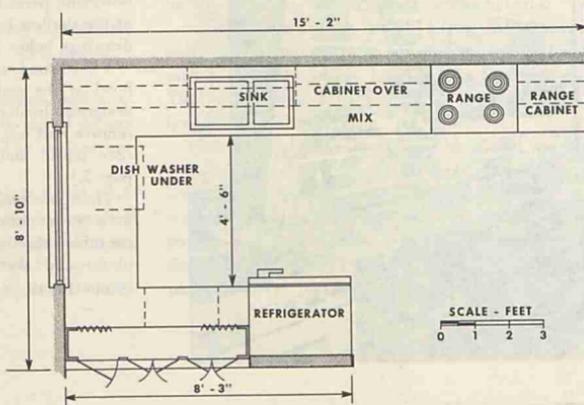
Arrangement A



Arrangement B



Arrangement C



You have a choice of three convenient arrangements for the cabinets and equipment. (See sketches A, B, and C.) Arrangements A and B are broken-U areas; arrangement C, an unbroken-U area. Arrangement C, the largest of the three areas, has more counter space than either A or B, but there is enough space for two persons to work comfortably at the same time in any of the three arrangements.

The sink and dishwasher are located in the same position in the three arrangements, but the placement of the refrigerator and range varies.

Arrangement A places the refrigerator across from the mix center with a 36-inch wide counter and cabinet to the right. In B, the refrigerator is at the right end of the mix counter, and the mix counter is a holding space for food from the refrigerator.

In C, the refrigerator is across from the mix center and next to the dish cabinet. The counter top in front of the dish cabinet is holding space in this arrangement.

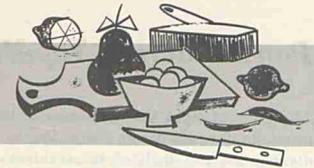
In A and C, the 30-inch free standing range is placed to the right of the mix center, and a 24-inch-wide counter and cabinet to the right of the range. In B, the range is placed across from the mix center, the 2-foot counter and cabinet is to its left; and the third storage cabinet—the one used to store refrigerator supplies and the serving cart—is to the right of the range.

In each arrangement the dining area is partially separated from the kitchen proper by the dish storage cabinet. In A and B, the dish cabinet is to the left and at right angles to the sink; in C, the dish cabinet is across from the sink.

In A and B, the corner base area under the dish cabinet has pullout shelves on the dining area side. See sketch on page 8.

A pullout towel rod is installed to the left of the dishwasher and under the two silverware drawers in A and B. In C, the drawers and rod are under the dish cabinet.

SINK AND MIX CENTERS



The sink center is conveniently located to the right and at right angles to the under-counter dishwasher and to the left of the mix center. A two-level double bowl sink permits the homemaker to sit comfortably at the shallow bowl while working at the sink. (See drawings below.)

A hardwood cutting board that fits over the shallow bowl of the sink is stored under it in a specially designed holder that allows the homemaker to remove and use the board when sitting at the sink. (See photo and sketch of board and holder on page 5.)

The space under the deep bowl of the sink is used for a trash container. Trash can be thrown into the container through a chute-type, hinged door. (See photo and sketch of chute and trash container compartment on page 5.)

The top drawer in the base cabinet to the left of the sink stores saucepans, colander, and strainer; the second drawer, potatoes and onions; and the third drawer, reserve supplies.

The mix center consists of a 48-inch-wide counter, a wall cabinet, and a base cabinet. (See drawings at bottom of page 4.)

Package supplies, seasonings, flavorings, and mixing and baking utensils used here are stored on the four shelves of the wall cabinet. The shelves are adjustable to some extent.

The top shelf of the mix cabinet is fitted with aluminum wire loops that serve as easy-to-clean pan dividers. (See page 6 for detailed plan of pan dividers on this shelf.)

The base cabinet of the mix center has two banks

of drawers with space between for sitting and for storing the posture chair when it is not in use. A pullout board under the center of the counter may be placed at any of three working heights.

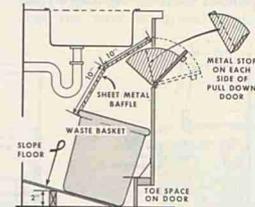
Three of the drawers to the left of the sit-down space store mixing tools, saucepans, and a hand mixer, the only mixer provided in this kitchen. The bottom drawer is reserved for large and infrequently used items.

The top right drawer holds additional mixing tools. The second drawer is divided into two metal-lined compartments with sliding tops—one compartment holds 20 pounds of flour, the other, 10 pounds of sugar. The deep bottom drawer is convenient for filing cookie sheets, flat baking pans, and large platters.

DETAILS

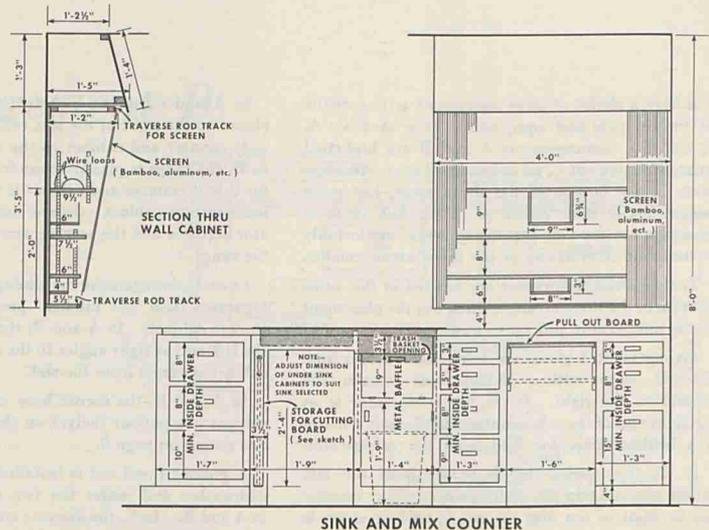
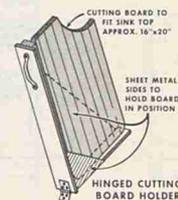
Trash Chute and Container

The trash chute and trash container, at right, fit in cabinet under the deep bowl of the sink. The inside of the cabinet is lined with metal baffle to direct trash. The cabinet floor slopes slightly to align the trash container with the chute. The toe space is attached to the door of the cabinet to facilitate the removal of the container for emptying.



Cutting Board Storage

The hardwood cutting board, shown in sketch and photo at right, fits over the shallow bowl of the sink. It is stored in a holder that is hinged to the bottom of the base cabinet. Sheet metal is attached to the sides of the holder to keep board in place when stored. The board measures approximately 16 by 22 inches.

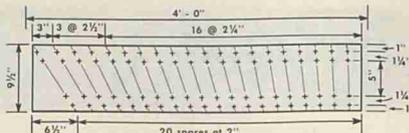


SINK AND MIX COUNTER

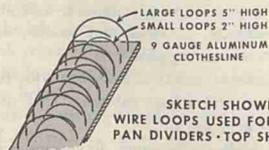
Pan Dividers on Top Mix Shelf

The plan at right shows spacing of holes at 2-inch intervals for aluminum wire loops used as pan dividers on top shelf of mix cabinet. Holes may be drilled at 1-inch instead of 2-inch intervals for a finer adjustment.

The sketch at right shows how wire loops, 2 inches and 5 inches high, are inserted into holes in shelf to separate and hold pans in place. Note the angle at which the wires are placed to permit the storage of larger pans and to facilitate the removal of pans from the shelf. Aluminum wire does not rust or require painting.



FOR FINER ADJUSTMENT
HOLES MAY BE DRILLED AT 1" INTERVALS



SKETCH SHOWING
WIRE LOOPS USED FOR
PAN DIVIDERS - TOP SHELF

PLAN OF TOP SHELF SHOWING HOLE SPACING

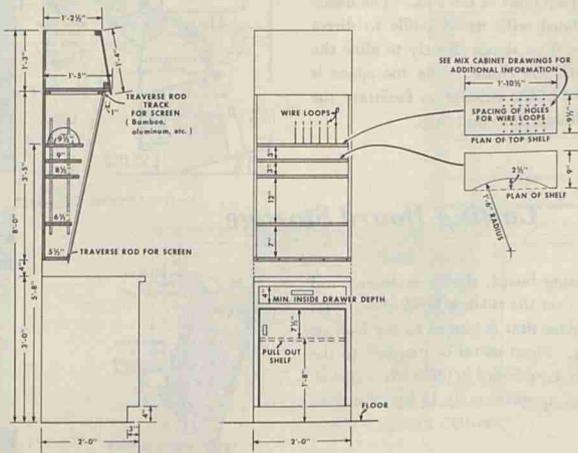
RANGE CABINET

A 24-inch-wide counter, a wall cabinet, and a base cabinet are provided next to the range in all arrangements. (See sketch below.)

The wall cabinet has five shelves for the storage of range supplies and serving dishes. The base cabinet is shown with a shallow drawer for potholders and range tools, and a pullout shelf for storing frying

pans and griddles. You can add a second pullout shelf at the bottom of the base cabinet to make this space more convenient for storage of utensils.

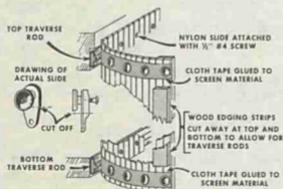
A part of the top shelf of the wall cabinet is fitted with pan dividers like those used on the top mix shelf. (For details see sketches below and at top of this page.)



Method Used To Attach Cabinet Closures

Measure length and width of cabinet front. Cut closure material the same length and $1\frac{1}{4}$ times the width of the cabinet front. Closures on cabinets more than 24 inches wide should be made in two pieces that fasten on the sides of the opening and meet in the center. In such cases, cut each piece of the closure the same length and five-eighths the width of the cabinet. Glue twill tape to top and bottom of closure. Cut off nylon traverse rod slides (see sketch at right). Use only the button end of slide. Drill hole in shaft to take a No. 8 ($\frac{1}{4}$ -inch) round head screw. Attach slides to top and bottom of closure at 4-inch intervals, making certain that slides line up at top and bottom.

Attach edging strip at each side of closure. Mount traverse rods at top and bottom of cabinet and attach cabinet closures. (See sketch below for details.)



METHOD USED TO ATTACH CABINET CLOSURES

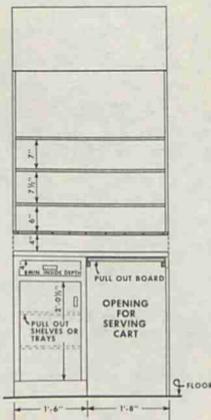
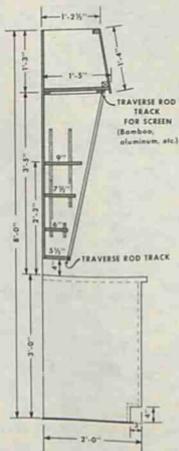
OTHER STORAGE CABINET

All kitchen arrangements also include a wall cabinet for refrigerator and salad supplies. The four shelves of this cabinet store refrigerator dishes, salad bowls, salad seasonings, oil and vinegar, casseroles, and canned food. (See sketch below.)

In arrangement A, this wall cabinet is next to the refrigerator. Under the cabinet is a 36-inch-wide counter. The base cabinet has a section of drawers

for kitchen towels and plastic bags; it also has a pull-out cutting board and space for storing a serving cart. (See sketch below.)

In B, both the wall and the base cabinet are placed to the right of the range. In C, the wall cabinet is placed to the left of the sink, the linen drawers are in the base cabinet to the left of the dishwasher, and the cart is stored under the dish cabinet.



SKETCH SHOWING OPENING FOR SERVING CART (NOT TO SCALE)

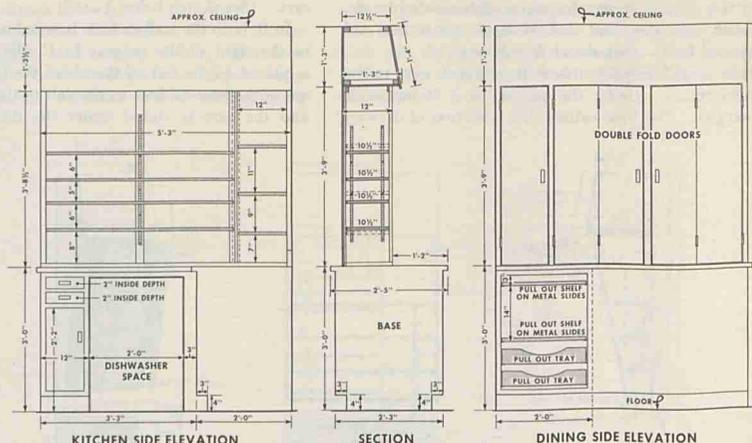
DISH CABINET

The dish cabinet is made in two sections—a wide section to the left for china and glassware, and a narrow section to the right for foods such as crackers, spreads, and ready-to-eat cereals.

Shelves in the pass-through dish cabinet extend to counter level so that heavy items, such as dinner plates, can be stored at an energy-saving height. The top shelf is only 68 inches from the floor—a comfortable reach for placing and removing lightweight articles with one hand. The base cabinet includes two shallow drawers for silver, and a pullout towel rod. (See sketches below.)

The dish cabinet has double-fold wood doors opening to the dining area so that the table can be set without interfering with meal preparation. Pullout shelves, accessible only on the dining side, store table appointments and small appliances.

In all arrangements, the dish storage cabinet and dishwasher are placed close together so that dishes can be stored at the place of first and last use.



Prepared by Mildred Howard and Genevieve Tayloe, Housing Specialists, and Russell Parker, Architect, Clothing and Housing Research Division, Agricultural Research Service

WASHINGTON, D.C.
ISSUED FEBRUARY 1963

U.S. GOVERNMENT PRINTING OFFICE: 1963 O-660960

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington 25, D.C.—Price 5 cents

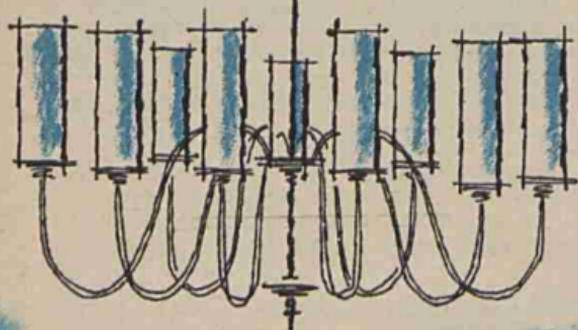
L I G H T I N G

L I G H T I N G

EDGEMOUNTAIN

1964:
suspended
by 4 lefflets

SEE YOUR HOME



**IN
A
NEW
LIGHT**

enjoy LIGHT FOR LIVING
in your light-conditioned home
(fourth edition)

LIVE BETTER ELECTRICALLY IN A LIGHT-CONDITIONED HOME

Light conditioning makes our homes visually satisfying, irrespective of the sun, just as air conditioning gives us physical comfort regardless of the season.

Both permit us to use more of our living space, and to move about with greater comfort, freedom and convenience. When the Franklin stove and central heating more effectively pushed back the cold, there could be more use of furniture groupings away from the fireplace. The first Edison electric light bulb more conveniently pushed back darkness. Today's technical knowledge from General Electric lighting laboratories pushes it back still further. Light conditioning makes it possible to live in all parts of your home—at any time. It adds a convenience, visual comfort, beauty, and living flexibility never before so easy to achieve.

Just as we air condition complete rooms or areas (instead of a spot) so do we light condition complete rooms or the entire home. This is done by applying a combination of these tested, easy-to-follow lighting recipes* which help you put the right light in the right places.

More than 14 million copies of this basic lighting recipe book have been used by homemakers, schools and the lighting industry to create light-conditioned homes. Use it to determine your lighting needs. Take it with you to make shopping and selection of equipment easier. Check recipes again before fixtures are installed, or when portable lamps are being grouped with furniture.

When you light condition your home you see with ease—you SEE YOUR HOME IN A NEW LIGHT. Rooms seem larger, colors appear richer, you and your furnishings look more attractive. Valuable space has better use. The environment matches changing moods and changing activities. Light-conditioning offers a better way of living and of enjoying our homes. It gives you

LIGHT FOR LIVING

**Developed by General Electric residential lighting engineers at Nela Park, Cleveland, Ohio*

COMBINE EASY-TO-FOLLOW LIGHTING RECIPES

The recipes prescribe lighting for every-day living activities which depend upon good, accurate seeing.

They consider: average eye heights and eye positions of the family; dimensions of widely used furnishings and equipment.

They recommend: types of lighting equipment; *minimum size dimensions* and *maximum placement dimensions*; types and sizes of lamp bulbs and tubes best for that equipment.

From them you select: an appropriate combination of recipes that best serve your family.

Flavor according to taste: select styles and materials in accordance with personal taste and income.

RECOMMENDED REFLECTANCES



All parts of a room absorb and reflect light, so the room itself (from walls to accessories) is a secondary lighting source. Interiors are visually more pleasant if very dark colors are not placed on large or major surfaces. Wherever dark colors are used compensate with other colors of recommended reflectances.* More light is reflected and less absorbed, and you reduce the harsh contrast of lighted equipment viewed against a dark background.

USE TWO LIGHTING ARRANGEMENTS

GENERAL, OR "FILL-IN" LIGHTING (5 TO 10 FOOTCANDLES)**

A low, though not even, amount of light throughout an area. It is light for moving about, for most housekeeping, and for softening pools of *local* light. You will need: ceiling fixtures; lighted valances or wall-brackets; or groupings of open-top, white lined portable lamps. Combinations of types are desirable.

LOCAL, OR FUNCTIONAL LIGHTING FOR VISUAL TASKS

Usually provided in living areas by portable lamps close to user, and in utility areas by fixtures. Wherever possible, the local source should also be contributing to *general* lighting.

Rec. Footcandles (min.)

Visual Task

10-20	Card playing.
20-30	Casual reading; good type on white paper. Easy sewing, such as basting with contrasting thread. Facial make-up. Easy musical scores.
30-50	Household activities in kitchen and laundry.
40-70	Prolonged reading. Study. Sewing on medium-colored fabric. Machine stitching. More difficult musical scores. Shaving. Benchwork.
100-200	Fine sewing. Hobbies with small details.

* The percentage of light reflected from a surface, to the light falling on it.

** Lighting research scientists specify min. levels of light measured in units called footcandles. Recipes provide needed amounts when colors are within recommended reflectance values.

HAVE YOU "MODEL T" LIGHTING?

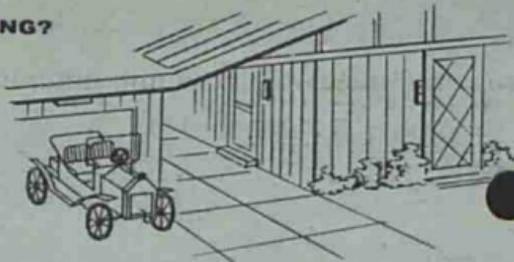
Most homes have kept pace with electrical living in their kitchens and laundries. But in too many homes the type of lighting equipment has not been improved since the Model T was bright and new in the backyard garage.

Outlets were in the center of the ceiling, without reference to use.

Fixtures were usually decorative ornaments and bare bulbs glared in the eyes. Then later the ceiling outlet may have been closed, and light from too-few and usually poorly designed table lamps couldn't reach to all walls. Sharp pools of light contrasted with gloomy corners. Convenience outlets were also too-few and too far apart to be convenient. "Octopus" outlets had their start.

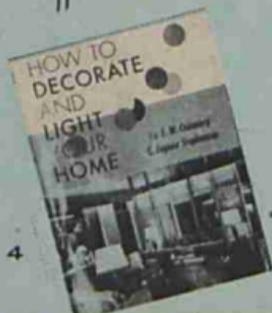
Today fixtures and lamps are *both* decorative and functional. They are related to the space, integrated with the furnishings, and planned to serve changing activity. This basic recipe book can give you assurance in appraising your present lighting and in selecting equipment. You can acquire the same ability, have the same confidence, as in your selection of furnishings, menus and clothing. When you add lighting to your home management "know how" you increase the pleasure and satisfaction to be found in homemaking.

If you would like further professional information on decorating and lighting, we recommend **HOW TO DECORATE AND LIGHT YOUR HOME***, by E. W. Commerly and C. Eugene Stephenson. This best seller among decorating books is available at decorating, lighting equipment, and home furnishings salesrooms.



FIXTURE ENSEMBLE Selecting an appropriate style need not increase a fixture's cost. You add further value, again without extra cost, if you will harmonize your entire fixture group from front hall to bedroom. Although types will vary they can show a relationship in style and materials—in the same degree of formality or informality.

Inexpensive pocket-size, soft cover edition (complete) G-E booklet 409-6231



DESIRABLE LIGHTING DESIGN

LIGHTING FIXTURES

value and usefulness. It will look as well lighted as unlighted. The purpose of the designer is defeated if glare from exposed bulbs and inadequate shielding prevents the design from being seen and appreciated. Bulbs should never show above, below, or through a shield. It's sensible when buying a fixture to view it by itself, lighted with the same size bulbs you will need at home.

INCANDESCENT SHIELDING

A. Multiple sockets—horizontal bulbs: For quality as well as quantity, spread the light smoothly through a large, luminous shield. It will be more attractive, perform more comfortably than the same wattage in a smaller shield. Horizontal position of multiple bulbs permits the shield to be shallow for close-ceiling mounting. This is desirable on today's eight-foot and lower ceilings and the unit seems a part of the ceiling, rather than an afterthought.

B. Bulbs shielded from view:

Translucent materials should shield bulbs by **SHAPE:** slightly curved at outer edge.

POSITION: about $\frac{3}{4}$ " below nearest bulb.

DENSITY: highly diffusing material but not needlessly dense. Flashed opal, ceramic-enameled glass, or some plastics are best. Etched crystal, configured and frosted glass suitable only for fluorescent and very low-wattage incandescents.

C. Both upward and downward light: *Opaque* shield should never interfere with up-and-down light distribution. Downward light should be diffused, but diffuser should *not be below* bottom of shade.

Suspended fixture will usually be in your line of vision, so be very aware of its design. Both the contour, and the top and bottom shielding, should provide visual comfort at standing and seated levels.

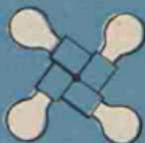
FLUORESCENT SHIELDING

For best appearance it is desirable to shield fluorescent tubes. Because of their low brightness the plastic or glass should not be as diffuse or dense as for incandescents.

WALL LIGHTING (Please see Pages 16-19)

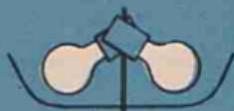
Multiple sockets—horizontal bulbs

A.



Bulbs shielded from view

B.



Both upward and downward light

C.



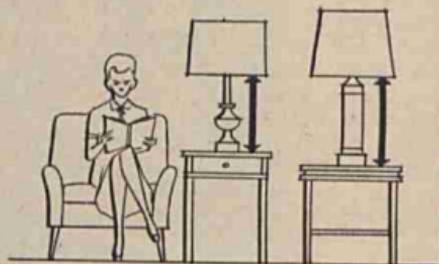
PORTABLE LAMPS

A well-designed portable lamp slights neither its functional nor decorative role. It will provide the amount of light needed for a seeing task, and at the same time be decoratively correct in its setting. The warmth and graciousness it radiates is not to be had from any other light source. Following the recipes protects your eyes from too little light or glaring bulbs, and saves you from slouching to get below a shade. They are based upon these *average* eye heights.

WOMEN: 40" seated in lounge chair; 61" standing.

MEN: 42" seated in lounge chair; 64" standing.

POINTS TO CHECK



Height to shade: measure *floor lamp* from floor to bottom of shade. Measure *table lamp* from table to bottom of shade. Use on a table whose height combines with this base measurement to position bottom of shade at eye level.

Socket: single socket slightly below or at lower edge of shade. Multiple sockets (D type) low in shade. (More light downward, in a wider spread.) Shades over 10" deep can be lifted by metal riser.

Shade: *white* on the inside, *open* at the top. (Drum types preferable for wide top.) Test translucent types. The recommended bulbs should not show a glare spot through the shade. An opaque shade is best if a bright or dark color is desired, or if a lamp is to be placed against a dark wall.

DIFFUSERS SPREAD AND SOFTEN THE LIGHT

A CLM GLASS DIFFUSER (Certified Lamp Makers)



8" top dia.
50/150w, or 50/250w
or 10" top dia.
100/300w (mogul)
Design shields bulb
from top viewing

B BOWL-SHAPED GLASS DIFFUSER



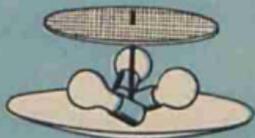
(Various Designs)
White glass preferable
8" top dia. 50/150w,
or 50/250w
or 10" top dia.
100/300w (mogul)

C R-40 Soft-White Indirect Bulb in Wide Harp, 50/150w



Large size and
whiteness
of bulb helps
diffuse
the light

D PLASTIC DIFFUSING DISC



(Multiple Socket)
Total 180w—3-step
switch desirable
Disc about 1" above
shade bottom
Also shield at top if
upper edge less than
58" above floor



SET YOUR STAGE FOR LIVING

Light conditioning makes daily living more enjoyable. You can use it, as in the room above, to set the stage for the way you want to live . . . to look . . . to feel.

A lighted valance and wall-bracket give spaciousness and drama. Light from the suspended fixture varies to match the mood of the diners. A three-lite portable lamp placed with each furniture grouping provides a place where each member of the family can pursue his own interests. At high levels they are right for reading, desk work, sewing. At lower levels the atmosphere is conducive to relaxing, visiting, listening to music. At any level the lamps are contributing to the room's beauty and decorative balance. It is a room to make the most of family life -- together.

PORTABLE LAMP ENSEMBLES

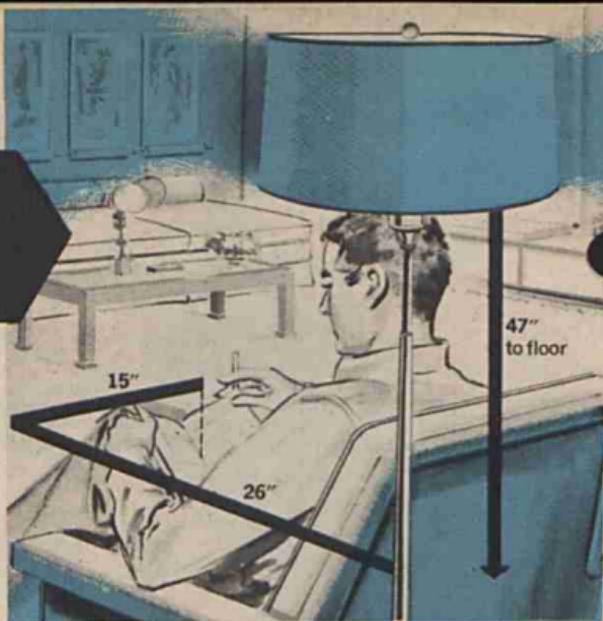
A lamp spreads its light over a limited area -- about 40 to 50 sq. ft. About five lamps are needed to serve the people and the room. To give your home this same decorative value (without additional lamp cost) ensemble the lamps to harmonize with the furnishings and each other. You do this in several ways --

- harmonizing styles, colors, materials and scale
- matching bases and matching shades (lamp types and sizes will vary)
- matching shades, with individual bases (usually one pair included)

READING

USING A FLOOR LAMP

Pleasure from reading and easier concentration are appreciated benefits of lighting that is not distracting but truly "just right." The quantity of light and the quality of the diffusion depend upon the type you select.



SENIOR LAMPS: Standard or Double swing-arm:

DIFFUSER: A or B—10". **BULB:** 100/300w (300w for reading).

HEIGHT TO SHADE: 47". **SHADE:** top 10", depth 10", bottom 18".*

JUNIOR LAMPS: Standard, Double swing-arm or Bridge:

DIFFUSER: A or B—8" **BULB:** 50/150w, 50/250w, or C. **BULB:** 50/150 R-40 (High level for reading).

HEIGHT TO SHADE: 47".

SHADE: Standard or Double swing-arm: top 10", depth 9", bottom 18".

Bridge: top 8", depth 8", bottom 13".

DIFFUSER D: (usually not in swing or bridge types) multiple bulbs 180w.

HEIGHT TO SHADE: 45". **SHADE:** top 14", depth 6", bottom 16".

WHERE TO PLACE

Since bottom of shade is above eye level, lamp stem should be about 10" behind shoulder, near rear corner of chair.* (Measure 15" left or right of book center; then back 26".) For chair and sofa against wall see Recipes 2, 3 and 3A.

VERY LOW LAMPS—If a lamp is too low for this recipe (and the lower edge of shade is no more than 42" from floor) it may be moved forward in table lamp position. See Recipe 2.

*Size dimensions always minimum; placement dimensions maximum.



READING

USING A TABLE LAMP



The table lamp recipe is one you can easily fit to your own family and their favorite chairs. The lower edge of the shade should be at eye level when seated. Measure your table height. Then fit the lamp to this formula.

Table height + lamp base height = eye height.

WHAT TO USE

END TABLE LAMP

DIFFUSER: A or B—8" BULB: 50/150w, 50/250w, or C. BULB: 50/150 R-40 (High level for reading).

HEIGHT TO SHADE: 15" on 23"-27" high table; 19" on 20"-23" table.

SHADE: top 8", depth 10", bottom 16" BULB: 50/150w, 50/250w.

DIFFUSER: D, multiple bulbs 180w.

HEIGHT TO SHADE: same as above. SHADE: top 14", depth 6", bottom 16".

SENIOR TABLE LAMP suitable for 21" to 25" high tables:

DIFFUSER: A or B—10". BULB: 100/300w (300w for reading).

HEIGHT TO SHADE: 18". SHADE: top 14", depth 13", bottom 16".

WHERE TO PLACE

Base about in line with shoulder. Measure 20" left or right of book center; then 16" to rear of chair or sofa.

CORNER TABLE—Senior Table Lamp will light a corner seating arrangement. It can remain centered toward back of the table and need not be moved each time it's used. However, distance is increased between bulb and reader, so the recipe is for casual use.

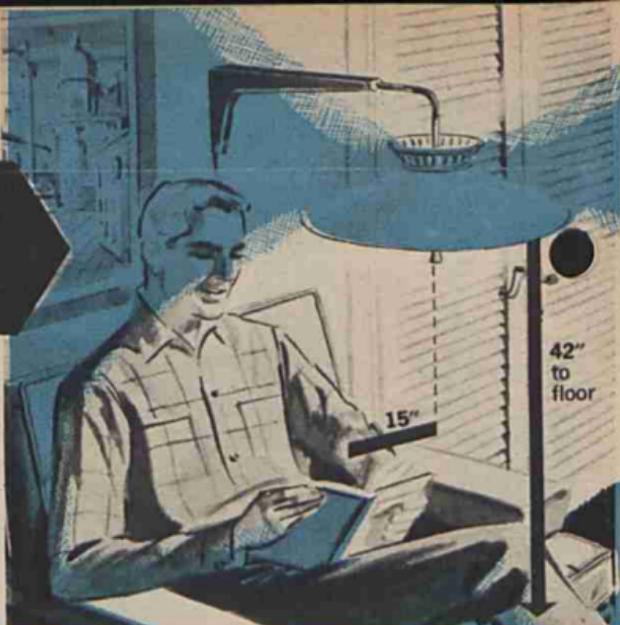
VERY TALL LAMPS—If it is desirable for decorative effect to use an extremely tall table lamp, placed it at the back of a low table, in floor lamp position. For chair or sofa against wall see Recipes 3 and 3A.



READING USING A WALL LAMP

Wall lamps are good:—

- in small rooms
- with furniture next to doors and windows
- where a lamp pair is desired, and end tables are unequal height
- with youngsters and frisky pets



WHAT TO USE

WALL LAMP

DIFFUSER: A—8" BULB: 50/150w, 50/250w, or C. BULB: 50/150 R-40; (High level for reading).

SHADE: top 8", depth 8", bottom 13".

DIFFUSER: D, usually in pull-up and-down type. BULBS: multiple, 180w.

SHADE: min. depth 6", bottom 14". Usually needs shielding at top and always diffuser at bottom, *not extending below shade.*

WHERE TO PLACE

Types A or C diffusers: bottom edge of shade 48" above floor, located 15" to left or right of book center and approx. 26" back to socket center.

Type D diffuser: bottom of shade 42" above floor, 15" to left or right. (illus.)

FOR SOFA—Double the recipe and position lamps with relation to persons seated at each end of the sofa.

OTHER APPLICATIONS—Use wall lamps in halls, storage areas, over tack-up boards. They are especially serviceable wherever children store their clothing and toys as the child's and lamp's height can "grow" together.

Warning: If temporarily instead of permanently mounted, wall lamps should not be used in kitchens or bathrooms where they might ever fall into water.



READING

USING A SUSPENDED CEILING FIXTURE

When suspended ceiling fixtures are unified with furniture groupings their uses are the same as portable lamps. Selected according to recipe specifications, they will provide light for casual reading and over game tables.



WHAT TO USE

SUSPENDED FIXTURE—14" min. dia. (16" preferable)

BULBS: multiple sockets totaling 180 watts.

SHIELDING: *If translucent:* material must have exceptionally good diffusing qualities, *If opaque:* contour of fixture should allow some upward light. (illustrated). Usually needs shielding at top and always a diffuser at bottom, *not extending below shade.*

WHERE TO PLACE

PREFERABLE—at height and position of *floor lamp shade*; 47" from floor to shade bottom. Center 10" behind shoulder, near rear corner of chair. (illustrated)

OR—at height and position of *table lamp shade*. (Necessary when furniture is placed against a wall.) Measure 20" left or right of book center; then 16" to rear of chair or sofa.

OVER CORNER TABLE—Select larger 18" min. dia. fixture. Multiple sockets totaling 180 watts; 3-effect preferable. Center over the table, with shade bottom at eye level.

Portable ceiling type which plugs into convenience outlet.



HAND SEWING USING A FLOOR OR TABLE LAMP

With recipe lighting you'll take a stitch in less time—with less effort. Even occasional sewing requires twice as much light as for casual reading, if you are to stitch or thread needles with ease and a minimum of nervous strain.



WHAT TO USE

SENIOR DOUBLE SWING-ARM FLOOR LAMP—preferable because only the shade, not the entire lamp, is moved forward from reading position, or,

SENIOR STANDARD FLOOR LAMP

DIFFUSER: A or B—10". **BULB:** 100/300w 3-Way (300w for sewing).
HEIGHT TO SHADE: 47". **SHADE:** top 10", depth 10", bottom 16".

SENIOR TABLE LAMP

DIFFUSERS: A or B—10".

BULB: 100/300w.

HEIGHT TO SHADE: 18" on 21"—25" table. **SHADE:** top 14", depth 13", bottom 16".

ADDITIONAL LIGHTING—For prolonged sewing, or for fine detail.

BULB: R-30, 75w spot lamp

EQUIPMENT: Adjustable clamp-on holder fastened to stem of lamp, or pole lamp.



WHERE TO PLACE

From center of sewing measure 15" to left (if person is righthanded).

FLOOR LAMP—Place center of shade 12" back from this point.

TABLE LAMP—Center the shade only 6" back from this point.

MACHINE SEWING USING A WALL LAMP

To "sew a fine seam" you need more than the light from the tiny bulb supplied in the machine. Recipe lighting delays fatigue; encourages you to take the time fine details require if your clothes are to have the professional touch.

WHAT TO USE

WALL LAMP: (only the mounting device need be permanent.)
DIFFUSER: C, **BULB:** 50/150 R-40 Soft-White Indirect.
SHADE: top 8", depth 8", bottom 13".

WHERE TO PLACE

Mount lower edge 14" above table. Center 12" to left of needle, 7" back.

ALTERNATES: Bullet reflector for R-30 75w flood, or for more confined and higher levels—R-30 75w spot. Requires additional surround lighting.

Placement: Adjusted by user to keep light out of eyes, and centered on needle area.

FLEXIBLE ARM FLUORESCENT LAMP: two 15w DeLuxe Warm White tubes.

SHIELDING: light colored metal reflector with slots for upward light. **Placement:** lower edge of shield just below eye level.

CEILING—BULB: PAR 38, 150w flood or spot.

EQUIPMENT: adjustable bullet reflector, recessed or surface mounted.

Placement: 13" left of needle, 7" toward user, and tilted toward needle.



DESK WORK—These three recipes for lighting desks will conserve precious eye-sight. They encourage concentration and good posture. Very dark or bright surrounding colors would be a distracting contrast to reading and writing materials. You get the best results if:

- Desk tops are light (add a large, light blotter)
- Adjacent walls are light, too (tackboard can be used)
- Lamp shades are fairly dense; or opaque in a light but not strong color.

lighting recipe 5



DESK WORK

USING A TABLE
OR FLOOR LAMP

WHAT TO USE

Table Lamp: Straight or Swing-arm type (only 15" to shade bottom).

For serious study: DIFFUSER: A or B—8".

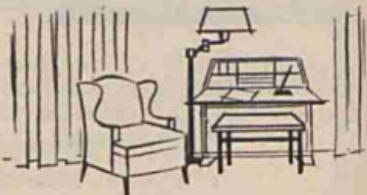
BULB: 50/150w (150w for desk use) or 50/250w.

SHADE: top 8", depth 10", bottom 16".

DIFFUSER: D. BULBS: multiple, 180w. SHADE: top 14", depth 6", bot. 16".

For casual use: HARP: C. BULB: 50/150w R-40 (150w for desk use).

SHADE: same as for A and B.



WHERE TO PLACE

Center of lamp shade 15" left of work center; 12" back from front edge of desk. If left-handed, reverse first measurement, place lamp right.

DROP LEAF—Use a floor lamp, preferably the double swing-arm type, which can remain at side of desk while shade is moved into needed position.

For study: senior types; bowls A and B — 10".

For casual use: junior types: A and B — 8"; C and D.

(Height, bulb, and shade dimensions as Recipe 1).

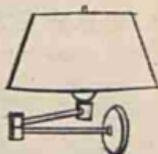
Placement—shade center 15" to left of work center; 10" in from front edge of desk.

lighting recipe 6



DESK WORK

USING
WALL LAMPS



WHAT TO USE

Pair of Wall Lamps: ideal for child's study center. BULB: 100w each.
DIFFUSER: 6" plastic bowl (see diagram); or flat plastic diffusing disc below bulb.
SOCKET POSITION: 2" below shade. SHADE: top 6", depth 7", bottom 10".

WIDE DESK—If desk is more than two feet deep, select types with an extending or swing arm by which you can move the center of the shade forward.

WHERE TO PLACE

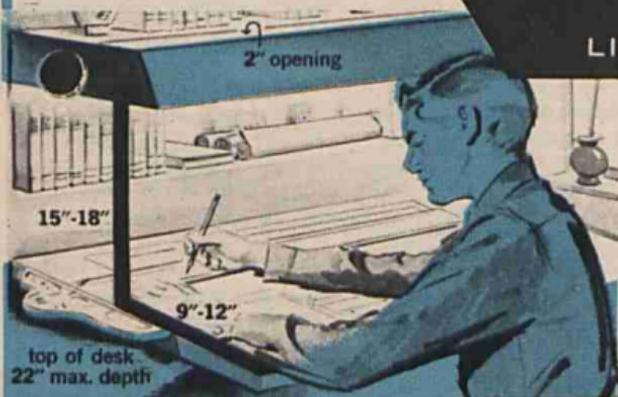
Center the shades 30" apart; no more than 17" back from front edge of desk, preferably 6"-12" from front. Mount bottom edge 15" above desk.

TELEPHONE STAND—Use half the recipe—
one lamp. Center 15" above area.

lighting recipe 7

DESK WORK

USING
LIGHTED SHELF



(Custom made)
Unit is space-saving and space-producing. White enameled channel with 36" - 30w DeLuxe Warm White tube is mounted on lower front edge of light-colored wood shelf.

WALL LIGHTING

can provide the most glamorous form of general room lighting—or combine duty with beauty and be a local lighting unit.

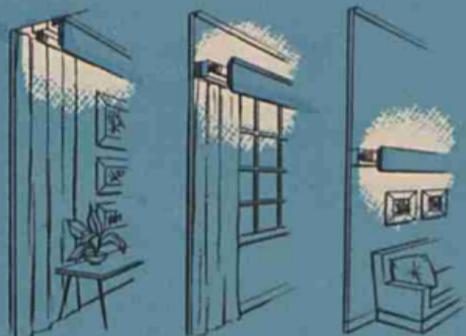
WALL LIGHTING UNITS ARE FORMED OF THREE BASIC PARTS:

1) **Baked White Enamel Channel-s:** pre-wired, with ballast and starter. Sockets (also white) should be at extreme ends so tubes can be as close as possible to channels end to end, using least number of largest sizes to fill desired length. Do not leave unplanned space equally at both ends, each not to exceed 9" in length.

2) **DeLuxe Warm White Fluorescent Tubes:** to fit channels. Usually T-12 (1½" dia.) 18"-15w; 24"-20w; 36"-30w; 48"-40w.

3) **Faceboard** designed to conform to the interior, but always *white* on the inside. If approach or viewing angle exposes tubes from below, add louvers for shielding.

TYPES The room's proportions, the lighting needs, and the effect desired, all determine whether the unit should be mounted as a—



CORNICE

VALANCE

WALL-BRACKET

CORNICE—(with or without draperies), attached to the ceiling above any wall area, usually extending wall-to-wall.

VALANCE—over windows and draperies.

WALL-BRACKET—not related to windows, usually on interior wall (min. length 36").

Faceboard Design: harmonize the faceboard with the style of the interior.

- WOOD:** straight edged, or cut in formal or informal patterns
Finishes: natural, paint, wallpaper, fabric edging below, or upholstering
- METAL:** including designs of small perforations
- PLASTIC:** often with impregnated colorful designs
- FRAMES:** holding mirrors, pictures, transparencies, or cut-out designs in heavy foil.

Amount Needed: living areas, including recreation and family rooms (up to 250 sq. ft.) require a minimum of 16 or more feet for general lighting.

In rooms over 250 sq. ft. use one foot of channel for approximately each 15 sq. ft. of floor area.

RECIPES FOR OTHER AREAS INCLUDE:

- Entrance and hallway—Page 36
- Bedrooms—Pages 29, 31
- Dining Room—Pages 22-23
- Kitchen—Pages 25-26

DeLuxe Warm White Fluorescent tubes compliment color. Everything will look better; the home—furnishings—you. They create a warm atmosphere, enhance complexions and food, and blend without conflict with incandescent bulbs.

Quick Starting Obtained for T-12 15w and 20w tubes when the ballast is Trigger Start. In the 30w and 40w size *both* the tube and ballast should be suitable for rapid start operation.

Dimming Flexibility of lighting level is added by using a dimmer control. Several systems are available, but not interchangeable.

MOST PRACTICAL:

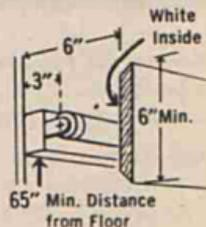
- 1) All 30w Rapid Start tubes with dimming ballasts.
- 2) All 40w Rapid Start tubes with dimming ballasts.

(Do not mix 30w and 40w tubes on same dimmer circuit)

WALL-BRACKETS



Wall-brackets supply an upward and downward wash of light never before practical to obtain on inner walls.



WHAT TO USE

LOW WALL-BRACKET PATTERN

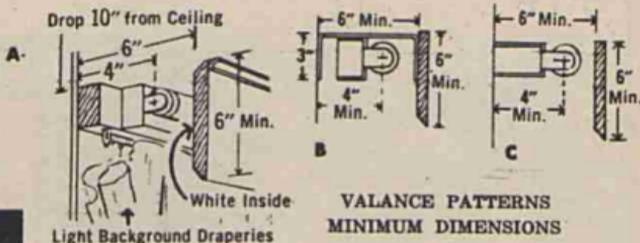
For General Lighting: Design as in pattern and position with bottom edge at least 65" from floor. Exception occurs when the unit is mounted at the same height as a valance. (Page 18). Top of channel is then at *top* of faceboard. Min. total length 16' unless combined with valance or cornice. Wall switch essential.

For Local Lighting: *Sofas*—bottom edge no less than 55" above floor.
Buffets and small serving tables—Pages 22-23.
Beds—special recipe pattern on Page 31.
Kitchen range—special recipe pattern on Page 26.

LUMILINE: A bracket whose function is mostly decorative can be lighted with tubular incandescent bulbs. Use a continuous row to fit space. (40w—12"; 60w—18".)

VALANCES

With a lighted valance across the top of draperies, the beauty of the window treatment and its part in room balance continue without benefit of the sun. Since valances are mounted at least 10" down from the ceiling, they provide both the upward and downward lighting needed to make an interior harmonious and visually comfortable.



WHAT TO USE

Commercial Pre-Fabricated Units: purchased ready to mount, with or without a faceboard. These units have a device for positioning the center of the tube out a necessary 4" from the wall. Each manufacturer includes instruction sheet.

OR—Custom-Made Units: from pre-wired white channels, tubes, and faceboard.

A—STANDARD CHANNEL: wood blocking places center of tube 4" out from wall, **B—**or use 2-12" metal angle brackets each channel. Vertical or slanted faceboard.

C—SIDE MOUNTED CHANNEL: minimizes the amount of wood blocking needed to position tube 4" out from wall.

MOUNTING TIPS. • Top of channel in line with top of faceboard.

• Channels are usually mounted directly above window frame or opening. If frame is extremely deep, mount channel on frame (top edge to top) and make faceboard to cover bottom edge. (max. depth 11".)

• Check to make sure that channel and tube cannot be seen from outside.

Lower edge of faceboard showing outside is usually not objectionable.

• Inside the room make sure that faceboard covers frame and drapery top.

• Except at the ends, place supports only where lamp sockets occur.

• Wall and woodwork behind draperies should match their basic color for harmony when draperies are open.

See page 19 for important drapery information

CORNICES

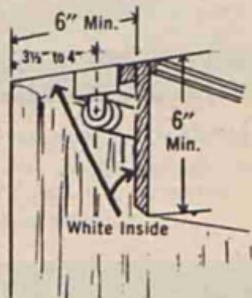


Lighted cornices are mounted on the ceiling and send all their light downward on the wall. This intensifies the wall treatment and is especially effective over wood, stone, brick and flock wallpaper. They are usually applied the full length of a wall, but draperies need be used only where the unit crosses windows.

Cornices have best application

- in low rooms — to increase the apparent ceiling height.
- if window height prevents a space of 10" between top of faceboard and ceiling.
- over murals and scenic wallpaper— so as not to block any part of the design.

The lack of upward light suggests the use of open-top lamps, a fixture, valance or wall-bracket in the same room.



CORNICE PATTERN

WHAT TO USE

It is easiest and less expensive to custom-make the cornice using standard white channel, (wall switch essential) see pattern.

DRAPERIES are always part of the valance installation, and are frequently used with cornices. Avoid dark colors. Select those that cooperate in reflecting light generously.

Any type heading may be used, if it is pinned or hooked at the extreme top so that none of the fabric falls forward in front of the tube. Box or cartridge pleating gives a trim, architectural effect. If French pleating is preferred be sure faceboard is deep enough to cover the line where the pleating is stitched.

TRAVERSE TRACK — As close to wall as possible. (about 1")

Use *ceiling-mounted type* with (1) cornices; (2) custom-made valances with standard channel and wood blocking; (3) custom-made valances with side-mounted channel.

Use *wall-mounted type* with (1) pre-fabricated units; (2) custom-made valances of standard channel with angle irons.

lighting recipe 8

READING MUSIC

AT THE PIANO
OR ORGAN

Play better because you see better. This recipe lights the score and the keyboard, helps synchronize the eye and hand. Relaxation and enjoyment supplant the subtle annoyances of eyestrain and tension.



WHAT TO USE

PREFERABLE—Senior Double Swing-Arm Lamp

DIFFUSER: A or B—10". **BULB:** 100/300w (300w when reading scores).

HEIGHT TO SHADE: 47". **SHADE:** top 10", depth 10", bottom 16"; neutral color in a material which transmits light generously.

WHERE TO PLACE

Center of shade (socket) 13" in front of lower edge of music rack, 22" to left or right of keyboard center.

ALTERNATE—Senior Standard Floor Lamp: same dimensions and shade as above.

Place 3" in front of lower edge of music rack, 34" left or right of keyboard center.

OR—Two Torches: (light ceiling essential)

HEIGHT: min. 66" tall. **BOWL:** 12"—16" dia.

BULB: 100/300w (300w when reading scores).

MATERIAL: opaque, or dense glass; shallow design.

Placement: align with lower edge of rack; 34" left and right.

CEILING LIGHTING—BULB: 150w PAR Flood.

EQUIPMENT: adjustable; surface or recessed mounting.

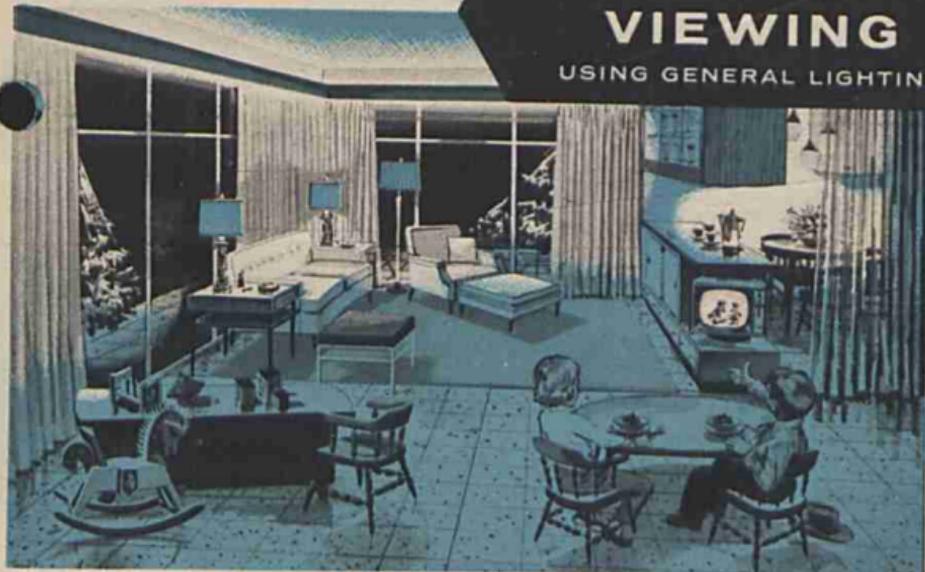
Placement: on ceiling, centered 24" in front of music rack, and tilted toward it.

WALL LIGHTING—See preceding pages.



TELEVISION VIEWING

USING GENERAL LIGHTING



A television screen, unlike a motion picture screen, is not designed to be viewed in a darkened room. The strong contrast between bright screen and dark surroundings is extremely tiring to the eyes. Relaxation and enjoyment increase with a moderate lighting level.

WHAT TO USE

The Ensemble of Four or Five 3-Way Table and Floor Lamps that serve the room. You may wish to turn to medium or low level.

WHERE TO PLACE

Position the set or lamps so that the lamps do not form reflections in the screen at the viewing positions. If this is unavoidable, opaque or dense fabric shades will reduce the reflection.

Or—Torcheres with opaque or dense translucent bowls.

WALL LIGHTING

Used alone, wall lighting creates a delightful environment for watching television, for listening to music, for conversation. (Pages 16-19)

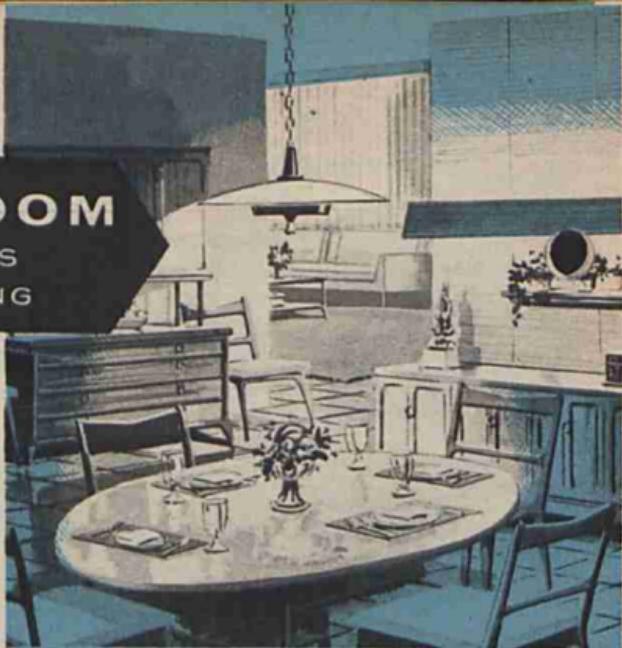
For Television Position set so that lighting units are behind or at the side of the viewers. If the lighting should be above the set, consider using a dimming system. (Page 17)

DINING ROOM

FIXTURE PLUS WALL LIGHTING

Create your own environment. Your room can be as relaxing, dramatic, gay; useful or practical as you wish.

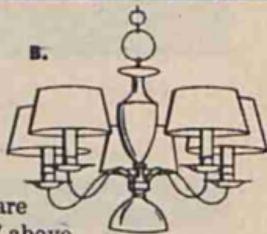
A.



WHAT TO USE

CEILING FIXTURE—directing light up and downward. Min. 18" diameter.* BULBS: 4 or more sockets, 40w each. Center over table.

SHIELDING: A. Single shield: (ceramic-enameled glassware preferable), close-to-ceiling type, or pendant (about 36" above table) or B. Multiple shielding of four or five bulbs (min. 5" dia. shades) plus center downlight (pendant). Reel-type fixture shown in feature illustration, (ceiling track available); min. three 60w or one 150w bulb (three-effect preferable).



PLUS WALL-BRACKET—mounted over buffet or serving area (illustrated).

OR VALANCE OR CORNICE—min. length one 48"-40w DeLuxe Warm White tube. Long units create a more spacious background; see pages 16-19.

OR PORTABLE LAMPS—pair of small table lamps—on the buffet or serving chest; or torcheres with opaque or diffusing reflectors.

IF ROOM IS LIMITED TO DINING—Ceiling Fixture with single or multiple shielding of four 40w or five 25w. Down light not essential but preferred. If the fixture distributes only down light, add a valance or wall-bracket.

* For large rooms, decorators often use this scale:

Fixture dia. in inches = room diagonal in feet. Multiple-arm chandeliers can be even larger.

DINING IN KITCHEN AREA



A unit to light the dining counter or table also helps separate it from work centers. The area is important and inviting.

WHAT TO USE

CEILING FIXTURE—centered over table or counter; directing light both up and downward.

A. *Close-to-Ceiling Pendant* (about 36" above surface) *Reel-Type* (illustrated).

B. or—each bulb separately shielded, 4" min. dia. each shield.

BULBS: Three or four sockets, min. 120 watts.

SHIELDING: 14" min. diameter, glass or plastic.

Pendant, or reel-type: **BULB:** one 150w.

SHIELDING: 14" min. dia., if opaque, have open top for upward lighting.

WALL LIGHTING

Wall-bracket: (see sketch at right) one 36"-30w DeLux Warm White tube, or

Wall Lamp: extended arm type, multiple sockets, total 120 watts, min. 14" dia. shade.

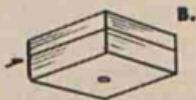
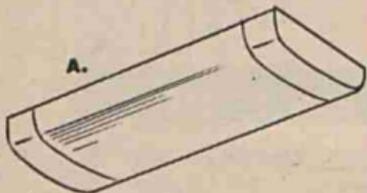


KITCHEN light conditioning recipes are as tried and tested for you as your cooking recipes. When you blend the lighting ingredients with the design of your work areas, you will have a kitchen that is cheerful at all times, that saves time and energy, is easy on the disposition.

lighting recipe *K*

GENERAL LIGHTING FOR KITCHEN

This gives you convenient, over-all lighting. You can see into drawers and cabinets, read labels easily.*



WHAT TO USE

CENTER CEILING FIXTURE

Fluorescent: DeLuxe Warm White, two 48"-40w (feature illustration) or, two 36"-30w or, four 24"-20w, see sketch **A**.

SHIELDING: complete shield preferable, highly translucent plastic or glass.

Circline: three-lamp unit; 40w, 32w, 22w; or double unit, 40w, 32w.

Incandescent: one 150w; or two 75w; or three 60w.

SHIELDING: ceramic-enameled or opal glassware; plastic. 12" min. dia.

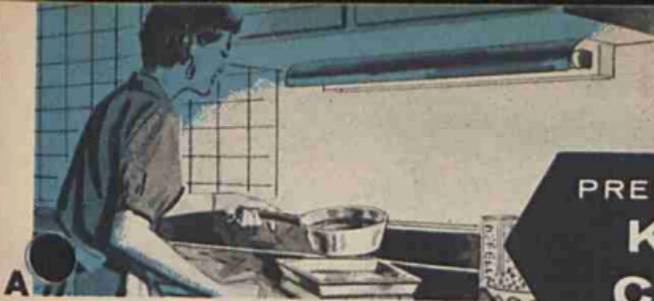
B. closed bowl or square types. **C.** open pan types with deep side.

Silvered-bowl incandescent: one 200w louvered unit; 14" min. dia.

SERVICE HALLS—use smaller sizes of kitchen type. Recipes on Page 37.

*Fluorescent fixtures can provide Trigger or Rapid Starting. See tubes, Page 38.

PREPARING FOOD AT
**KITCHEN
COUNTER**



Lighting over work counter erases shadow from recipes to be read, ingredients to be measured and blended.

WHAT TO USE

Fluorescent Bracket: with DeLuxe Warm White tube-s. Fluorescent tubes provide economical lighting over wide areas because of their high light output in a linear shape. Their more diffused light also lessens reflected glare.

A. Commercial type complete with shield, or **B.** Standard channel (white enamel.)

LENGTH: 24"—36" counter—20w

36"—48" counter—30w

48"—60" counter—40w

HEIGHT: 50" to 58" from floor. **SWITCH:** usually at right.

SHIELDING NOT NEEDED on standard channel and tubes, **B**, if they are

- below a cabinet less than 58" above the floor, and
- could not be in the line of vision of a person seated nearby.

MOUNT: on underside of cabinet near front edge, (tube toward wall). This front position essential if cabinet is less than 52" above floor or, on back wall just beneath the cabinet (tube toward front) **B**.

SHIELDING DEVICE ESSENTIAL if—

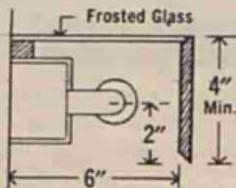
- counter is against plain wall (not below cabinet), or
- tube is in line of vision.

lighting recipe 11

COOKING AT RANGE ON FLAIN WALL OR UNDER HIGH CABINET (ALSO SINK)



This recipe lets the cook really see down into pots and pans. Lamps on the range usually light only dials or push buttons.



PATTERN A
2" x 4" horizontal outlet box
60" above floor.

WHAT TO USE

PREFERABLE—Fluorescent Wall Bracket

LENGTH: min. 36"-30w DeLuxe Warm White.

SHIELDING: essential, some upward lighting desirable. **SWITCH:** local.

TYPES: **A. Custom-made bracket:** white channel and tube with faceboard and frosted glass shelf as in pattern. Also use over counter, Recipe 10.

B. Commercial bracket: plastic, or metal with flat, perforated top.

PLACE on wall, center above range, bottom of shield 58" above floor.

Alternate: If wall-bracket is inappropriate, mount units on soffit or ceiling. See Recipe 12.

Metal Hood over Range: Select type with one or two sockets for one 100w or two 60w Soft-White bulbs centered inside front edge of hood.

A*lighting recipe 12*

**CLEANING FOOD AND
UTENSILS AT SINK**
FLANKED BY CABINETS.
USUALLY UNDER WINDOW
(ALSO RANGE)



*Lighting above the sink
supplements unreliable
daylight—assures easy
and accurate seeing.*

**WHAT TO USE**

A. When Faceboard Joins the Cabinets (min. 8" depth)
bare tubes or bulbs shielded by the faceboard:

FLUORESCENT: DeLuxe Warm White: two 36"-30w tubes
mounted beside each other immediately behind board.

INCANDESCENT: two R-30, 75w reflector flood lamps, or
two 75w inside frosted bulbs; space 15" apart.

Mount on ceiling or front edge of soffit, behind faceboard.

B. Without Faceboard (also over projected and island units)

Recessed fixture:

FLUORESCENT: DeLuxe Warm White: two 36"-30w tubes, or
three 24"-20w tubes. Shielding: louvers or frosted glass.

INCANDESCENT: increase recipe to three 75w inside frosted bulbs.
Shielding: opal or ceramic-enameled glass.

Surface mounted fixture: repeat fixture used in center of area, see Page 24;
or, two metal cones 15" apart, R-30, 75w flood or inside frosted bulbs.

SWITCHING: wall switch essential.

Alternate: if sink is not in front of window, use wall-bracket. See Recipe 11.

With light conditioning you "live" in your **BEDROOM**—instead of just sleeping and dressing. Combining the recipes to make the best use of space creates a relaxing, personal sitting room. You will look better and live better.

lighting recipe **BR**

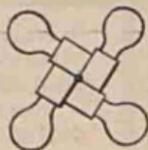
GENERAL LIGHTING FOR **BEDROOM**



This recipe gives you convenient, instant lighting when you enter the room. It is an aid to good grooming, good housekeeping, and care of the sick.



Multiple lamp bulbs in a horizontal position permit the fixture to be shallow.



WHAT TO USE

A Shallow, Close-to-Ceiling Center Fixture

(Pendant fixtures are often desirable with high 9'-10' ceilings.)

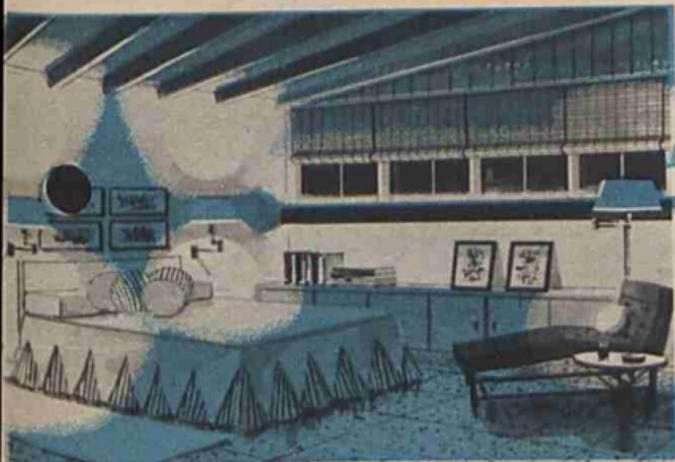
SHIELDING: ceramic-enameled glass, or plastic with good diffusing qualities.

SIZE: • *Very small room* (less than 125 sq. ft.) min. 15" diameter;
three 40w bulbs or one 100w bulb.

• *Average sized room* (125 to 225 sq. ft.) min. 17" diameter;
four 50w bulbs or (preferable) five 40w bulbs.

• *Very large room* (over 225 sq. ft.) Omit ceiling fixture and use same wall lighting recipe as for living room.

Wall Lighting as supplement, or alternate, see opposite page.



The sitting room atmosphere is most easily captured by wall lighting. Light the draperies first, or preferably an entire window or storage wall. This forms a lovely background for a seating area, just right for conversation or watching television.

WHAT TO USE

Valance, Cornice or Wall-Bracket as illustrated on Pages 16-19, using DeLuxe Warm White tubes. (This is preferable for lighting rooms with slanted ceilings.)

- *Very small room* (less than 125 sq. ft.)

SUPPLEMENT TO CEILING FIXTURE: 36"-30w wall-bracket (min.)

ALTERNATE TO CEILING FIXTURE: 6' of wall lighting; two 36"-30w, or three 24"-20w tubes.

- *Average sized room* (from 125 to 225 sq. ft.)

SUPPLEMENT TO CEILING FIXTURE: 48"-40w tube (min.)

ALTERNATE TO CEILING FIXTURE: 8' of wall lighting; two 48"-40w.

- *Very large room* (over 225 sq. ft.) min. 16' of wall lighting—as for a living room. Plus, if desired, a decorative *accent* ceiling fixture (shielded bulbs).

SWITCH: If *alternate* is used, a wall switch is essential at entrance.

ADD A PORTABLE LAMP ENSEMBLE

The recipes you combine from the next three pages determine how effectively you use your space.

Reading in Bed: If you want more bed table space, use wall or ceiling lighting.

Make-Up: The right lamps here free the bathroom mirror. Save you steps.

Chair: The right lamp adds reading and sewing to its uses (Pages 8-12).

Desk: Make life easier by having your own spot for personal bookkeeping and correspondence. (Pages 14-15).

- Arrange the furnishings so that lighted lamps on several walls add to the room's decorative balance.
- Add decorative value by ensembling the lamps in relation to the furnishings and each other.

READING IN BED

Reading in bed is a relaxing pleasure when there is a sufficient spread of light to permit both body and eye comfort.

lighting recipe 13



USING A TABLE LAMP

lighting recipe 13a



USING A CEILING FIXTURE

WHAT TO USE

13. End Table Lamp

DIFFUSER: A or B—8", or C. SHADE: top 8", depth 10", bottom 16".

BULB: 50/150w, 50/250w. 50/150 R40 Soft-White Indirect for C (high level for reading).

DIFFUSER: D. BULBS: multiple, 180 watts.

SHADE: top 14", depth 6", bottom 16". HEIGHT TO SHADE: 15"-17" above 26"-28" bedside table. Table height, plus lamp base height, should locate lower edge of shade about 20" above mattress—at eye level.

Even Better—Senior Table Lamp

DIFFUSER: A or B—10". BULB: 100/300w (300w for reading).

HEIGHT TO SHADE: 18". SHADE: top 14", depth 13", bottom 16".

13A. Suspended or Reel-Type Fixture

SIZE: 14" dia. or larger. BULBS: multiple sockets, total 120 watts.

SHIELDING: luminous with comfortable diffusion, or opaque with upward light.

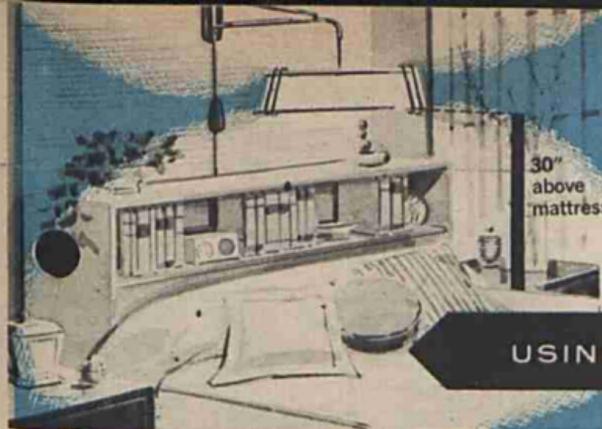
WHERE TO PLACE:

13. Measure 22" from center of book out to table. From this point measure 16" back to wall. Center lamp here (about in line with shoulder).

Twin Beds: Repeat the recipe at far side of both beds; don't compromise.

13A. Suspended: Close to wall, 2' above mattress, 20" left or right of person.

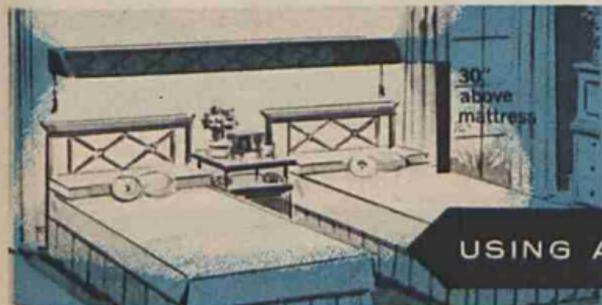
Reel Type: Pull down so that lower edge of shade is at eye level.



Extended arm-type wall lamps span wide headboards to bring the light over pillows.

lighting recipe 14

USING A WALL LAMP



This is the best recipe to light the entire width of a double bed, or decoratively unify twin beds.

lighting recipe 15

USING A WALL BRACKET

WHAT TO USE

14. Wall Lamp

DIFFUSER: A—8". **BULB:** 50/150w, 50/250w or C. **BULB:** 50/250w (High level for reading). **SHADE:** top 8", depth 8", bottom 13".

DIFFUSER: D—(usually in pull-up and down type) **BULBS:** multiple, 180w total. **SHADE:** Min. depth 6", bottom dia. 14". Usually needs shielding at top, and always diffuser at bottom, *not extending below shade*.

Wall-Bracket of approximate bed width (see patterns).

SINGLE BED: one 36"-25w DeLuxe Warm White tube.

DOUBLE BED: one 48"-40w DeLuxe Warm White tube.

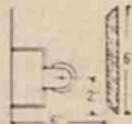
EXTRA WIDE, or twin beds: two 36"-30w units.

OUTLET BOX: 2" x 4" horizontal type; 32" above mattress, usually 53" above floor. **SWITCHING:** local.

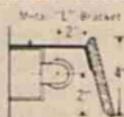
WHERE TO PLACE:

14. Bottom of shade 30" above top of mattress. Center over bed, or each side of double bed, if preferred.

15. Bottom edge of faceboard 30" above top of mattress.



STRAIGHT FACEBOARD



SLANTED FACEBOARD

MAKE-UP

It takes two to make-up. The two lamps in this recipe aid you in applying make-up smoothly and discreetly. They give you light evenly distributed to both sides of the face (at face height)—undistorted by color from the shade.

STANDING AT DRESSER



lighting recipe 16

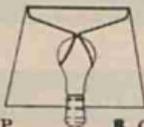
SEATED AT DRESSING TABLE

lighting recipe 17

WHAT TO USE



A HARP



B CLIP-ON

Pair of Lamps with white or ivory translucent shades.

A type preferred, OR B.

BULB: 30/100w 3-Way, or 100w Soft-White (top of bulb at least 2" below shade top).

SHADE: top 7", depth 7", bottom 9", (larger preferred).

LAMP HEIGHT: **Dresser Recipe 16:** shade center 22" above 36" high dresser.

Dressing Table Recipe 17: shade center 15" above 30" high table.

WHERE TO PLACE

Position 6" out from wall; 36" between shade centers.

DOUBLE DRESSER OR DRESSING TABLE—Select larger lamps of the A type.

SHADES: min. 12" bottom dia. **BULB:** 50/150w 3-Way.

POSITION: up to 48" between shade centers.

WIDE MIRROR AND COUNTER—Extend a shielded DeLuxe Warm White fluorescent unit over counter. Surface mount or recess in soffit a double row of tubes to fill space. Center 15" out from wall.

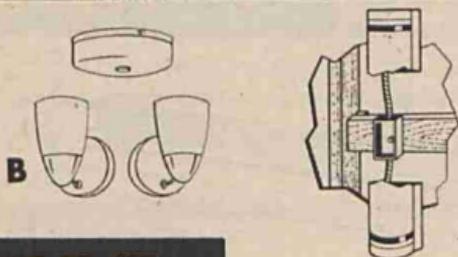
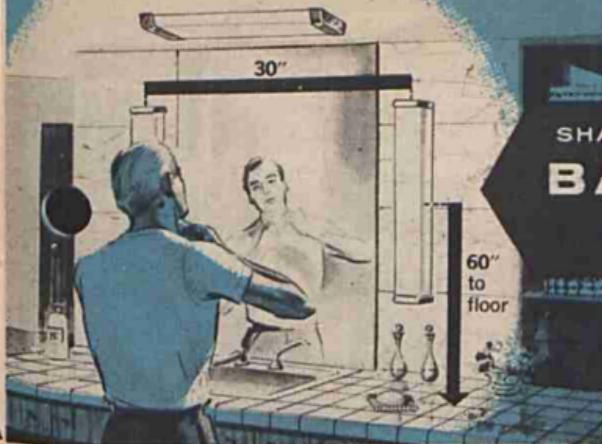
Or on wall: unit with single or double row of tubes.

DECIDABLE PLUS—Add vertical fluorescent brackets each end of mirror.

lighting recipe 18

SHAVING OR MAKE-UP AT BATHROOM MIRROR

This three-fixture recipe gives the right lighting for grooming, and at the same time will light the average-sized bathroom. There is ample light on top of the head, both sides of the face, and (by reflection from the washbowl) even under the chin. No shadows will interfere with a clean shave or precise make-up.



Location of 2" x 4" outlet box.

WHAT TO USE

SET OF THREE FIXTURES

A. Fluorescent: DeLuxe Warm White tubes, shielding preferable (illustrated).

Ceiling: two 18"-15w tubes, or one 32w circline.

Wall: one 24"-20w tube on each side.

TRIGGER STARTING BALLASTS available in 15w and 20w fixtures; also circlines.

OR—B. Incandescent: always shielded by opal or ceramic-enameled glassware.

Ceiling and Wall, MINIMUM: one 60w each unit; min. 6" dia. shielding on wall; 8" on ceiling. **PREFERABLE:** two-socket unit, 40w each socket. Min. length 10" or longer. Four-socket type, 25w each.

WHERE TO PLACE

Ceiling: centered with wash bowl, above front edge. (12"-18" from wall)

Wall: centered 60" above floor, 30" apart.

SWITCHING: the three units should be controlled by one wall switch.

ALSO ESSENTIAL

For Separate Compartment: wall or ceiling unit, 75w bulb, shielded.

For Shower: vapor-proof ceiling unit, 60w, switch on outside.

AND TO MAKE LIFE EVEN MORE PLEASANT

Pedicure Light: swivel unit under front of counter. R-30, 75w bulb.

Night-Lite: plastic unit with 7C7 bulb; or electroluminescent.

RS Sunlamp and Infrared Heat Lamp: timers available.

LAUNDRY

AT WASHER,
DRYER, TUBS

Lighting keeps pace with modern laundry equipment to end the washday blues. The right light helps you dial, sort, starch—and, if you use a wringer, you are certainly much safer.



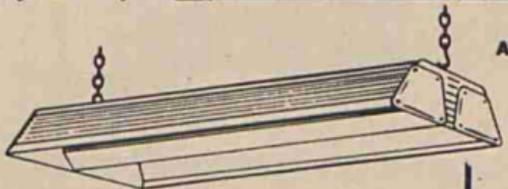
WHAT TO USE

Fluorescent: A.

Rectangular Ceiling Fixture:

TUBES: two 48"-40w Cool White.

SHIELDING: plastic or metal at sides.

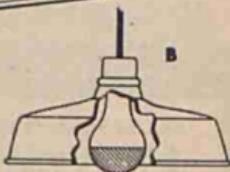


Incandescent: B.

Circular Pendant Metal Reflector:
12"-14" dia.

BULB: one 150w silvered-bowl.

Available as an adaptor which
screws into socket.



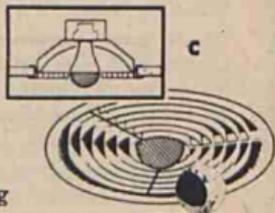
WHERE TO PLACE

Center over laundry center. Bottom edge of shielding
48" above top of equipment.

LAUNDRY CENTER—When the laundry is near the kitchen or bathroom it is desirable for the lighting fixtures in the area to blend or match.

Use any of the flush-mounted or recessed types shown on Pages 24 and 27.

Or (C) one 100w A-21 silvered bowl bulb in recessed louvered unit.



lighting recipes 20 and 21

HAND AND MACHINE IRONING



Ease of seeing lets the eye and hand take full advantage of technical improvement in irons and ironers. You'll work faster; avoid scorching and wrinkling.

WHAT TO USE Fixture A or B on opposite page.

WHERE TO PLACE

Hand Ironing: Recipe 20: bottom of shielding 48" above board center.

Machine Ironing: Recipe 21: bottom of shielding 48" above ironer; center 5" back from front edge.

Here's how the handyman can see his homework in the right light.

Amateur or craftsman can work with accuracy, speed, safety and comfort.

WHAT TO USE

Fixture A or B on opposite page.

Preferable: Ceiling convenience outlet and fixture with extension cord (as illustrated). Unit slides on rods.

WHERE TO PLACE

Center over front edge of bench; lower edge 48" above work.

ADDITIONAL EQUIPMENT: adjustable clamp-on holder, or bullet reflector (D). **BULB:** R-40 150w Flood or Spot. Use spot type for maximum concentration of light.

lighting recipe 22

CARPENTRY, HANDCRAFT AT WORKBENCH



HALLS

The entrance hall is a revealing glimpse into the home. Use light to show the area and yourself to advantage, and to help you impart graciousness and hospitality.

Select fixtures in accordance with the size of the area and style of furnishings. Use these to keynote the style of fixtures to be seen in adjoining rooms. (Types with closed tops are needed if bulbs are visible from stairs).

FOR ENTRANCE HALL—Ceiling Fixture: three sockets, 40w each. 12" min. dia. shielding; or 4" dia. shielding of each bulb; Or 100w, 14" dia. shield.



PENDANT
(TOP SHIELDING)

Or, three 50w GA bulbs, unshielded.



CLOSE-TO-CEILING
(OPEN PAN
OR CLOSED BOWL)



ABOVE:
MULTIPLE SHIELDING
BELOW:
OPAQUE SIDE SHIELDING

VESTIBULE—Ceiling Fixture: one socket, 60w - 8" min. dia. shield



Or, two 50w GA bulbs, unshielded

Or, Wall-Bracket; shielded Incandescent, one 60w,

Or, Fluorescent: two 18"-15w DeLuxe Warm White tubes.

PASSAGEWAY—repeat Vestibule Recipe at 8' centers

SERVICE HALLS—styles related to kitchen.

INCANDESCENT: one 75w, 8" dia., shielded,

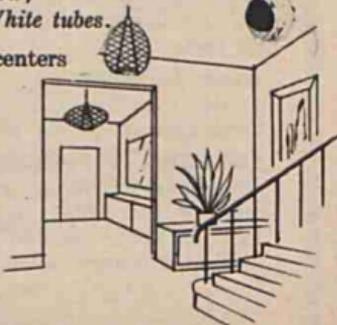
or one 100w or two 50w GA bulbs.

FLUORESCENT: DeLuxe Warm White, one

32w circline; or two 18"-15w tubes.

CLOSETS—(over 9' sq. or 2' deep) 60w min.

Walk-in areas usually 100w min.



ENTRANCES

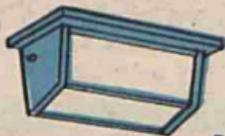
A light-conditioned entrance expresses cheerfulness and welcome. There is convenience and safety for yourself and others.

WHAT TO USE

A Group of Fixtures selected and positioned in accordance with your types of entrances; also the length and location of steps, walks and driveway. A coordinated group related to the style of the house adds to a harmonious appearance; suggests care and integrity in design and construction.



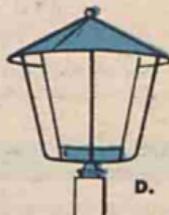
A.



B.



C.



D.

A. Wall-Bracket

On each side of main entrance.
On lock side of other entrances.
66" above standing level.
Min. 6" dia. shielding. 40w each.

B. Overhead Wall-Bracket

Over garage or house entrances.
One 60w or two 40w each.

C. Ceiling Fixture

Center on porch or breezeway ceiling. Min. 10" dia. shielding
Two sockets, 40w each.

Small Portico:

Min. 6" dia. shielding. One 40w

D. Post Lantern

One 60w min.

Avoid clear glass, or bulbs will glare into eyes. Opaque top, and open or glass bottom, directs light downward to foot level.

YARD LIGHTING

Projector lamps conveniently and inexpensively light driveways and large areas. Use 150w flood type in weather-resistant holder. Mount high on house, under eaves, or on trees or poles.

GARAGE LIGHTING.

In 1-car garage use 100w SOFT-WHITE bulbs in two sockets. Locate on ceiling each side of car spaced approximately midway in length of garage. This recipe provides safer, surer seeing for getting in and out of cars. In 2-car garage add a third ceiling socket and 100w SOFT-WHITE bulb, in line with the other two sockets. A fourth outlet may be on wall between garage doors.

LIGHT FOR LIVING—OUTDOORS

Use the Outdoor Lighting Recipes to add more space to your home. They make possible more and better use of your investment in land and outdoor furnishings.

(Booklet 1.5-5229R)





THE LIGHT SOURCE

The great variety in lamps that STAY BRIGHTER LONGER gives you the exact bulb or tube required for best service in each type of lighting and household equipment. A cupboard for spares is a convenience and an aid to good housekeeping.

FLUORESCENT

DELUXE WARM WHITE tubes and circlines are designed for the residential interior and are complimentary to furnishings and complexions

TUBES: T-12 (1½" dia.)—15w-18** 20w-24** 30w-36*** 40w-48***
T-8 (1" dia.)—15w-18* 30w-36**

CIRCLINES: T-9—22w 8¼*** T-10—32w-12*** 40w-16***

Quick starting: *when used with a trigger start ballast.
**tube marked "rapid start" is used with a rapid start ballast.
***always rapid start.

INCANDESCENT

Single Filament

INSIDE FROSTED:

A19—25, 40, 50, 60, 75, 100w
A-21—150w A-23—200w

SOFT-WHITE: A-19—40, 60, 75, 100w

SOFT-WHITE INDIRECT: R-40—150w

COLORAMIC BULBS—

(complimentary to furnishings and complexions)

A-19—75w A-21—100w A-23—150w
Dawn Pink, Spring Green,
Sun Gold and Sky Blue

REFLECTOR: Spot and Flood

R-20—30 and 50w R-30—75w R-40—150w

COLORLED REFLECTOR: R-30 and R-40

Pink, Yellow, Blue-White, Blue, Red,
Green, Amber

SILVERED-BOWL: (porcelain socket over 100w)

PROJECTOR: (weather resistant) Spot and Flood PAR-38

INFRARED: (heat and drying)

R-40/1—250w (inside frosted)
R-40/10—250w (heat resistant red filter)

SUNLAMP: for year 'round tanning
RS—275w (fits standard socket)

NITE LIGHT:

C-7—7w (fits plug-in unit)
7½S—7½w (fits standard socket)

Three-Way (base down)

INSIDE FROST or SOFT-WHITE

A-21—30/100w
PS-25—50/150w
PS-25—50/250w

G-30—100/300w (mogul)

R-40—50/150w

They absorb some light, so use next higher wattage than "recipe." For prolonged critical seeing, indications are that white light is preferred.

PS-25—50/150w (all 4 colors)
G-30—100/300w (Pink only)

Decorative

GA: for unshaded fixtures (base up)
GA-25—50w (Ivory and Dawn Pink)

FLAME SHAPED:

F-10—15w F-15—25, 40w

TUBULAR: T-10—25, 40w (both 5½")

T-8—40w (11¾")

LUMILINE: T-8—40w (12") T-8—60w (18")

Household Equipment

SEWING MACHINE: T-7—15w

VACUUM CLEANER: T-8—25w

OVEN: A-15/22—40w

REFRIGERATOR: inter. base T-6½/2—40w
st. base S-11/102—15w or 40A-15/1—40w

INDICATOR: inter. base C-7—10w
miniature G-3½

*Letter in a bulb designation indicates its shape.
Number indicates its approx. diameter in eighths of an inch.*

DO YOU HAVE THE HOUSEPOWER?

You can only Live Better Electrically when your home is wired for the job.



Start with a 3 WIRE (100 ampere) service entrance.

Make certain you have ENOUGH BRANCH CIRCUITS

For lighting—only—you will need about 6000 watts.*

(This doesn't include wattage for any electrical item plugged into living area outlets). You will need at least . . .

Four circuits with 15 ampere fuses or circuit breakers (1800 watts each circuit) or

Three circuits with 20 ampere fuses or circuit breakers (2400 watts each circuit)

Other than lighting, you also need . . .

Two circuits for small appliances, refrigerator, plus

Separate circuit for each major appliance, plus one outdoors.

Check that you have ENOUGH OUTLETS.

Lighting outlets:

One for a ceiling fixture or wall unit in each room or area; also

One in each closet over 9' square or over 2' deep

Convenience outlets (floor line in living areas; counter height in kitchen-utility area.)

One outlet on walls 3' to 12' long

One outlet for each 12' of longer walls (Consider probable furniture arrangements)

Kitchens need outlets at shorter 4' intervals, including one at each work area. Specify one near mirror in bathroom

Special outlets:

One for each major appliance, plus wall clock.

Weatherproof outlets:

One near front entrance. Two close to outdoor living area.

Plan your SWITCHES FOR CONVENIENCE.

One essential at latch side of all doorways

Multiple switches — at all entrances over 10' apart. Also at head and foot of stairs

Mercury switches — for silence

Remote Control System—for greatest flexibility and convenient master control

Dimming System—to reduce light output of either fluorescent or incandescent units

Know your CIRCUIT BOX.

Add a wiring diagram and labels. Have service telephone numbers and new fuses nearby.



More HOUSEPOWER information is available through free professional wiring layout service and inspection, usually from your electric service company, a local Adequate Wiring Bureau, or an electrical league. Electrical contractors provide expert advice and service.

*Based on a 1200 sq. ft. house; 3 bedrooms, 1½ baths. (5 watts per sq. ft.)

RECIPE INDEX

AREA	PAGE-S	ACTIVITY	PAGE-S
Bathroom	33	Carpentry-Handcraft	
Bedroom	28-29	Food Preparation-Cleaning	
Closets	36	Counter	25
Dining Room	22	Range	26
Entrances—(exterior)	37	Sink	27
Garage	37	Grooming	
Halls	36	Dresser, Dressing Table	32
Kitchen	24	Bathroom Mirror	33
Kitchen Dinette	23	Ironing	35
Laundry	34	Laundry	34
Living Room, Family Room, etc.	7	Piano-Organ Playing	20
Walls (Valances, etc.)	16-19	Reading	
Workshop	35	Bed	30-31
		Chair or Sofa	8-11
EQUIPMENT		Sewing	
Fixture Design	4-5	(hand and machine)	12-13
Portable Lamp Design	6-7	Study	14-15
Wall Lighting Design	16-19	Television Viewing	21
Lamp Bulbs and Tubes	38	Writing at Desk	14-15
Wiring	39		



Your Light and Your Sight

Good lighting in the home is essential to the comfort and well-being of all family members. Though light needs vary for different age groups and tasks, it's important to have the proper lighting for your home.

by Mary S. Pickett

A WELL-LIGHTED home is a true joy in which to live. In it, you and your family have the best opportunities to see easily, accurately and comfortably. And there's plenty of light for safety and accident prevention—making your family feel more secure at home. Tasks and hobbies can be done in comfort with a minimum of eye discomfort and irritation.

Why Be Concerned?

Today, light for seeing is vital; 75 percent of our activity depends on the eyes, and 75 percent of all stimulus to the brain comes through the eyes. Good lighting, therefore, becomes a must. Man's eyes, because they function in cooperation with a higher intelligence, are particularly essential to him in carrying out the activities of our complex world.

Although good lighting is vital to all members of the family, every age has its special needs. In a course designed for the training of lighting specialists, the following information is given on the special lighting needs of all members of the family:

The *young child*, as he begins to learn to live in our world, responds most favorably to a well-lighted path. The need looms larger when we realize that the number of children under 10 years of age who wear glasses is increasing

each year. It's estimated that 20 percent of the children of elementary school age have eye defects.

By the time our young people reach *college age*, about 40 percent of them do not have normal vision. This, coupled with the fact that young people are extremely sensitive about their personal appearance and resist wearing glasses, makes one wonder just how well young people really see the world in which they live.

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

The lighting needs of *husbands and fathers* vary a great deal, depending on their work. For example, only 10 percent of farmers have known eye defects. They work mostly by daylight in relation to the distance of the sky and the field. On the other hand, among men who do work with different seeing requirements, such as drafting and accounting, for 40 hours a week by artificial lighting, about 90 percent have eye defects.

Seeing of the *aged* requires 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 by a higher level of light.

Thus—regardless of the age or the task—fast, accurate seeing is a part of everyone's daily life in

MARY S. PICKETT is assistant professor of household equipment and home economics research.

Reprint from the November 1962 IOWA FARM SCIENCE
Vol. 17, No. 5; pages 6, 7 and 8.
Iowa State University of Science and Technology

FS-994

Ames, Iowa



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

- Holding a book too far from or too close to his face when reading;
- Evidence of difficulty in reading or in other work requiring close use of eyes;
- Inability, or lack of desire, to participate in games requiring distance vision;
- Tilting his head to one side or thrusting his head forward to near or distant objects; and
- Irritability when doing close work.

our modern world. And that's why the value of good light is immeasurable.

Danger Signals . . .

As we live and work with our family in the house, we ourselves are very poor judges of the correct amount of light needed for each task, since our eyes "try" to adjust to the existing light. But sometimes we expect or demand too much from our eyes.

Studies conducted with young children have revealed some very useful "signals" that indicate poor lighting in the environment of a child. Regular medical checkups that include eye examinations are your *best bet* in detecting eye defects your child might have or be developing. But these "danger signals" may help you spot poor lighting conditions in your home that may be causing difficulty.

The very young child is likely to respond quickly to poor lighting. He won't freely choose to go to poorly lighted areas to play, and he may show symptoms of defective sight even before he learns to read.

Here are some types of behavior that may be regarded as possible danger signals among children:

- Attempting to brush away a blur;
- Blinking more than usual;
- Frowning and frequent rubbing of eyes;
- Undue sensitivity to light;
- Watery eyes; and
- Frequent headaches.



These are important signals as to the special needs of a child, but they may also indicate that the lighting isn't good enough for the older members of the family—the adults who have become so accustomed to getting along in their surroundings that their behavior may not reflect their actual needs.

How Much Light?

How much light does your family need for reading, studying, food preparation or enjoying hobbies? That depends on several conditions.

First, it depends on the kind of work you're doing. Some tasks are more difficult 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 back-

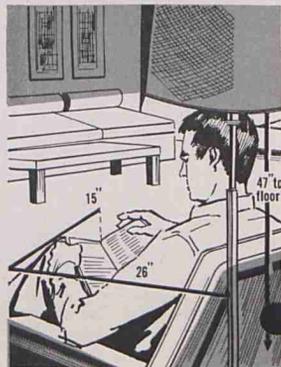
grounds or on backgrounds such as many comic books have. The colors absorb some of the light, so more light must be supplied to make the print as easy to read as black print on white paper.

Second, the amount of light you need also 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 task. Less light is needed for a casual scanning of the pictures in your favorite magazine than for your teenager to study one of her textbooks. 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.

Lighting specialists have set up standards to meet the basic lighting requirements for family activities that involve close vision. There are no differences in the need for amounts of light between the farm and city dwelling or between the most pretentious and the most modest residence. The only differences may be in the ways of providing light, in costs and in the choice of lighting equipment appropriate to the decoration of the home.

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.

Research Tells Us . . .

Certain amounts of light, as based on extensive research tests, are considered essential for effective seeing and comfort. The amounts of light that are recommended for some of the areas where much of the family's time may be spent are listed in the table. The light values are listed in terms of footcandles. You can check at home yourself if you have a camera exposure meter that gives footcandle readings.

Even without a light meter, however, you might provide enough light for the various tasks by choosing light sources that are appropriate for the need.

Studying and other extended, close reading require one of the highest quantities of light—70 footcandles. This amount 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. The same level of light would also be appropriate for reading difficult music or 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—50 footcandles—include working at the range or counters in the kitchen, in the



laundry and at the sewing machine, or shaving or applying makeup in the bathroom and bedroom.

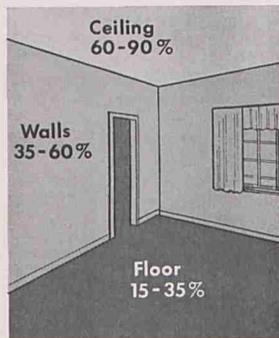
The most desirable way to light the work areas in the kitchen is with a 30-watt fluorescent unit attached to the wall or cabinet about 18 to 22 inches above each work surface. For shaving or applying make-up, light should be directed on top of the head, on both sides of the face and (by reflection from the lavatory) even under the chin. This way, no shadows will interfere with a close shave or precise make-up. 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—30 footcandles—may be ade-

quate for casual reading of magazines and newspapers, occasional sewing by hand or machine and table games. A 50/250 watt incandescent bulb in a swing-arm lamp will provide the lighting needed for both the 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 with 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 and for softening pools of other light provided for specific tasks.

Your home decorating also has an effect. The lighting methods recommended for each of the situations just mentioned will provide the needed amounts when the colors in the room are within recommended reflectance values. Colors used on the ceiling should reflect 60 to 90 percent of the light falling on the surface; the walls, 35 to 60 percent; the floors, 15 to 35 percent. Usually, you'll get these reflectance values if you use light to medium colors.



Recommended Amounts of Light for Various Home Areas

Specific task	Footcandles on task ^a
Kitchen activities:	
Sink	70
Range and work surfaces	50
Reading:	
Books, magazines, newspapers	30
Desk study	70
Sewing:	
Occasional period (light fabrics)	50
Shaving, make-up, grooming, on face at mirror locations	50
General lighting:	
Halls, stairs, entrances	10
Kitchen, laundry, bathroom	30
Living room, dining room, bedroom, family room, sun room, library, game or recreation room	10

^aSome photographic light meters are calibrated to give footcandle readings directly. There also are special "lighting" meters for measuring the amount of illumination in an area.

Other factors are of equal importance to consider in designing the lighting in your home to meet the needs of your family. In your plans, keep in mind, too, the quality of the light and its placement in relation to the task. We'll discuss these factors in more detail in forthcoming articles.

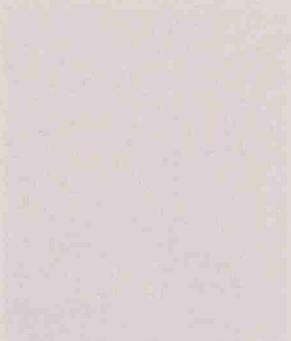


Faint, illegible text in the upper right section of the page, possibly a title or introductory paragraph.

Faint, illegible text in the middle left section of the page, possibly a descriptive paragraph.

Faint, illegible text in the middle right section of the page, possibly a descriptive paragraph.

Faint, illegible text in the middle right section of the page, possibly a descriptive paragraph.



Faint, illegible text in the lower middle section of the page, possibly a descriptive paragraph.

Faint, illegible text in the lower right section of the page, possibly a descriptive paragraph.

Faint, illegible text in the lower left section of the page, possibly a descriptive paragraph.

Faint, illegible text in the lower middle section of the page, possibly a descriptive paragraph.

Faint, illegible text in the lower right section of the page, possibly a descriptive paragraph.



Have the "Best of Light" in Your Home

Last month we talked about the amount of light needed in the home. Now let's consider the quality of home lighting. Lamps and fixtures properly selected and placed will give you the right light in the right place.

by Mary S. Pickett

HAVE YOU considered *quality* of light in relation to your home lighting? The *amount* of light we have for every day living is important, of course, but the *quality* of our light also is important.

Discomfort from indoor lighting is more often caused by poor quality than by too much light. There's much more light outdoors—on even the cloudiest of days—than we usually find indoors, but no one complains of too much light outdoors on such a day. Nature has balanced the light and dark. The shadows are softened, and we can move our eyes easily over the landscape. We should have the same effect in the home. Once we have enough light in the home, we can achieve quality largely by correct placement of the lighting and by eliminating glare.

The Right Place . . .

Lamps and fixtures, properly selected and correctly placed, give you the right light in the right place. Three general guides that may help you in good placement of light are:

- Light should be delivered to the place where it's needed;
- Light rays shouldn't shine or be reflected directly into the eyes; and
- There shouldn't be any shadows on the work area.

Recommendations as to the correct placement of light sources

MARY S. PICKETT is assistant professor of household equipment and home economics research.

usually are given with the recommended amounts of light for certain areas of the home (see "Your Light and Your Sight" in the November issue or reprint FS-994). These suggestions come from the work of many scientists and lighting specialists and have been tested by many thousands of homemakers. They are based on average eye heights of men and women, the common dimensions of equipment and furnishings, and the everyday activities in family living.

Each home, of course, is different. Rooms differ in furnishings and size. Living habits vary with individual families. But the suggestions are flexible and adaptable to your particular needs. The suggestions and principles make no attempt to dictate style or price—you use your own individuality in designs and style.

An understanding of the seeing needs of the family in several areas of the home will help you to choose satisfying lighting solutions.

In the Kitchen: The homemaker does much of her kitchen work facing the walls, with her back toward the center of the room. If light is supplied by only a central ceiling fixture, the worker casts a shadow on what she's doing. To eliminate such shadows and to provide light just where it's needed, additional fixtures need to be placed at the various work centers.

At the range, light is needed to see into pans. This light may be located on the wall in a bracket. Light at the sink for food prep-

aration and washing dishes may be supplied by light sources placed directly over the sink. This will also eliminate shadows on your work.

A fluorescent light unit mounted on the wall above counters and other work surfaces can eliminate working in your own shadow. These units should be shielded if the fluorescent tube can be seen when you're working at the counter or seated nearby (drawing 1).



Drawing 1. Counter units should be shielded if they're near eye level.

Counter units provide light for reading recipes, easy seeing and accuracy in measuring foods and performing other tasks in this space. If there's an eating area in the kitchen, a light should be centered over the dining table. This helps to define the dining area from the work areas and will provide light for critical eye tasks—such as sewing, reading and card games—which may be done at the dining table.

In the Laundry: The place where you do certain jobs dictates the best placement of light fixtures. Inspecting clothes before washing, and ironing them afterward, are the jobs that demand the most light in the laundry.

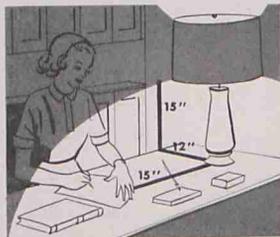
For close inspection of clothes and spot removal, the light source should be directly over the clothes. For ironing, a light source

at the side of the board and in front of the worker will do the best job of detecting wrinkles. One good ceiling fixture might serve both tasks. But, as in the kitchen, work areas around the side of the room need extra light to eliminate shadows.

In the Living Areas: The placement of lighting in the living areas—such as the living room, den or family room—presents a real challenge. How can you provide the best light possible for your family, considering that members perform so many tasks at the same time in these areas? How can you provide both general light and light for specific tasks? And how can you keep the light that's good for one person from annoying another?

Lighting for reading, writing or studying in the living areas should be placed to provide light *at the task*. This light most often is supplied with portable floor or table lamps (drawing 2). For watching television, lamps or balanced general lighting should be placed to avoid a reflection on the screen but to light the walls or behind the viewer.

Some activities in the living area may be served by well-balanced general lighting. Remember, however, that balanced overall lighting is needed all through the house to supplement special light for specific tasks. The conventional method is to place one or more fixtures in the ceiling. To add imagination and creativity to the use of ceiling



Drawing 2. Lamp is in position for right-handed person. Move lamp to other side if left-handed. Bottom of the shade should be below eye level.

fixtures, try placing an uneven number of fixtures someplace other than the center of the room.

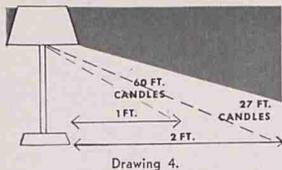
General light may also be supplied by "structural" lighting—cove, valance, cornice or bracket—along the walls, over the windows or to emphasize special features. When you have enough of this kind of light, there will be less need for moving portable lamps, and the usefulness of the area will be increased.

In the Bathroom: Correctly placed bathroom mirror lamps will supply ample lighting on both sides of the face, under the chin and on top of the head (drawing 3). Such lighting is desirable for shaving or applying make-up. A pair of vanity lamps on a dresser in the bedroom is an alternative solution for applying make-up. This arrangement provides even lighting on both sides of the face so you can see yourself as others see you.



Drawing 3. Three fixtures are needed for proper light at bathroom mirror.

For Close Work: Regardless of the task or areas to be lighted, an important rule to remember is that the amount of light decreases rapidly as you move away from a lamp. For a given source of light the level of illumination decreases by the square of the distance from the source. As may



Drawing 4.

be seen from drawing 4: If 60 footcandles of light are falling on a desk at 1 foot from the base of the lamp, slightly less than half as much light—about 27 footcandles—will be measured at 2 feet from the same lamp.

For this reason, when you're doing difficult eye work the lamp should be placed close.

Glare — What Is It?

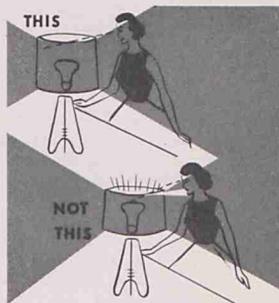
Have you ever wondered why your eyes feel so strange when you come from a darkened theatre into the bright sun—or when someone turns on a light in the dark—or when a candle is the only light in a dark room? Almost everyone has experienced "blindness" at night from the bright headlights of approaching cars. These sensations result from a condition known as *glare*. Probably the greatest contribution to lighting quality is the elimination of glare.

Any light coming to the eyes in such a way that it causes difficulty or discomfort in seeing is defined as glare. Conditions which often produce glare in the home are (1) viewing exposed light sources, such as bare bulbs (*direct glare*) and (2) bright reflection of light from glossy paper and from desk or table tops (*reflected glare*). Large differences between the amount of light on the work area and the amount of light in the surrounding area also will produce glare by contrast.

To eliminate *direct glare*, shade or shield exposed light sources. Or they can be diffused with translucent materials such as glass or plastics. Lights used on dropceords have been the chief offenders in direct glare. Such a light might serve to light an area such as a closet where you don't view the source directly and spend

just a short time in the area. On the other hand, this same arrangement on the stairway may be a safety hazard as well as a disturbing light source.

Other conditions producing direct glare occur when a shade is too small for a lamp, or when a lamp is incorrectly placed in relation to its use. Place the lamp so that the user can't see the bright bulb or diffusing bowl inside the shade from a standing or sitting position (drawing 5).



Drawing 5.

Glossy, highly polished surfaces may be the source of much *reflected glare*. While it may be pleasing to have a beautiful, highly polished wooden dining table or other pieces of furniture, this same gloss or polish on a study desk or kitchen counter surface may produce a most uncomfortable seeing condition. Glossy paper has the same effect when viewed for some time.

Reflected glare may be reduced by increasing the over-all level of lighting, reducing the brightness of the source, changing the position of the work surface or the type of finish on the work surface, or directing the light source in a different direction. The use of dull matte-finish blotters often solves the problem on desks.

Glare by contrast results from continual adjustment of the eye between the task and darker or brighter surroundings. In casual seeing, such as reading newspapers, high brightness differences may seem more acceptable. But as soon as the task becomes difficult, such as with prolonged

reading or sewing, the brightness difference becomes noticeable and causes eye fatigue. In a glance about your home on an evening of family activity, you might find many examples of such contrasts in brightness—where there are "pools" of light and dark edges all around.

To avoid contrasts, the brightness of the area near a task should not be greater than the brightness on the task and should not be less than one-fifth of the brightness on the task. For tasks of fairly long duration—such as sewing—or for jobs where accuracy is important, the surrounding brightness should not be less than one-third of the task brightness.

To illustrate this, let's consider the kitchen. The recommended amount of light at the sink is 70 footcandles; for the general surrounding area, it is 30 footcandles, or slightly less than half of the brightness level at the sink. This amount of general light is slightly more than half of the brightness needed for working at the range and counters. Such a relationship between the level of light provided for the task and the surrounding area will eliminate glare caused by contrasts in brightness.

The Plan . . .

To achieve good light throughout your home, you might plan for the immediate needs of your family as well as for the future. A plan that coordinates all areas of the house to serve all members of the family will provide the greatest satisfaction through the years.

Such a plan may be carried out by purchasing an item at a time—say, a good floor lamp—or it may be developed all at one time as a complete installation to meet the lighting needs in each area of the home. The method you choose to follow will depend on the needs of your family as well as your income.

We know what factors affect seeing—and the tools and methods to control and predetermine these factors are at your command.



Choosing Portable Lamps

This is the third in a series of articles on home lighting. The first two articles discussed quantity and quality in lighting. Now let's look at ways to achieve this — plus decorative beauty — with portable lamps.

by Mary S. Pickett

THE TALENTS of today's designers have been applied to creating beautiful and individual portable lamps — floor, table and wall-hung. Endless variety of forms, materials, decorative motifs and finishes permit harmony with all furniture and period styles. The decorative qualities of lamps have become so coordinated with their functional purpose in many cases that they've become a most important accessory in home decorating.

Their Purpose . . .

Portable lamps may be chosen to combine beauty of design with functional lighting. Or they may be purely decorative — never intended to be otherwise. When you're shopping for a lamp, the real question is: What purpose do you wish a lamp to serve? Will it be purely *decorative* — used to add imagination, interest and creativity to your home? Are you looking for a conversation piece? Or, do you have in mind a lamp for a *specific* lighting task — a lamp for reading in your comfortable chair, a study lamp for young Jane's room or lamps for the dresser in your bedroom?

MARY S. PICKETT is assistant professor of household equipment and home economics research.

An understanding of the characteristics of various types of lamps will help you to make just the right choice for the use you intend.

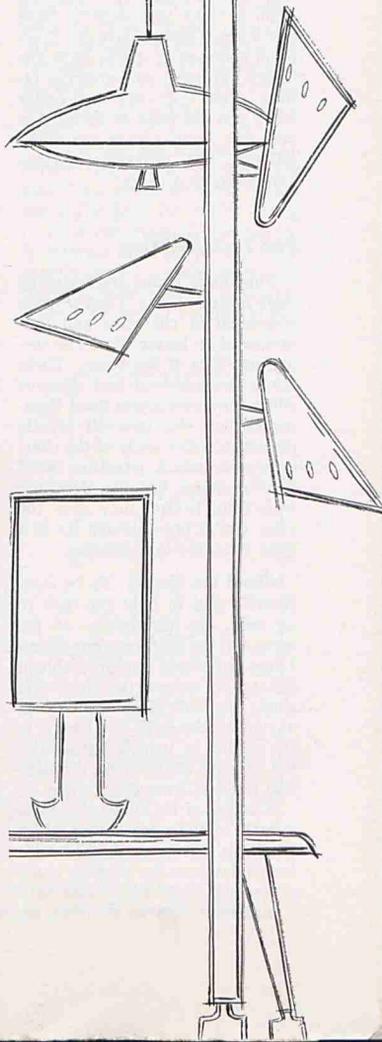
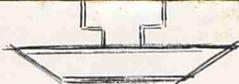
For Decoration . . .

Lamps chosen for decorative purposes should help to coordinate your interior planning. They should accent or complement your accessories and colors; the lighting may help to create the atmosphere you desire.

One of the important contributions made to home lighting by portable lamps chosen for decoration is to provide general over-all lighting. They may brighten a shadowed corner, glow in a hallway or serve as a guide from one area of the house to another.

These lamps are accessories and necessities. You need them for both your basic lighting and your decorating plan. Because of this, lamps might be called the royal family of accessories. They are an integral part of your furniture groupings. Their ornamental bases and shades may increase the loveliness of your rooms. And light from them can influence and intensify the pleasant atmosphere of your home.

The beautiful in lighting comes from a well-planned lighting design to bring out the best in your decor and interior — whether it's



lovely drapery or upholstery fabric, carpeting, furniture woods or other accessory items. Over and above their value as light sources, lamps are accessories and should be selected to fit your decorating plan. When you choose lamps that go together—just as you choose the rest of your furnishings—there will be harmony as you look from one furniture grouping to another or from one wall to the next.

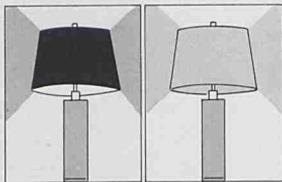
This is why you find so many attractive pairs of lamps used in home decoration today—pairs for either side of a sofa and for either side of the bed; pairs for long, low room dividers to accentuate them so that you seem to have two rooms, though visually there is no decrease in space; pairs for buffets, dressers and dressing tables. You not only see better when you use pairs of lamps, but you also avoid adding too many different and distracting shapes and colors to a room.

For Task Lighting . . .

Functional lamps are becoming more beautiful, too. They're often individual in character and proportioned to better serve the seeing activities of the home. These lamps are practical and effective when they coordinate good lighting design with over-all artistic design. Careful study of the characteristics which produce good lighting design in table, floor and wall-hung lamps may give the clues you've been looking for in a good lamp for task lighting.

About the Shade: To be comfortable and to light the task to be seen, the dimensions of the lamp and the shade are important. Lamp and shade combined should diffuse or spread the light and shield the bulb from view. Such a combination will contribute to the quality of your lighting—giving effective distribution, diffusion and freedom from direct glare.

The size of the shade should be related to the purpose for which the lamp will be used. For table lamps designed for reading, study or sewing, the shade should have a minimum of 8 to 9 inches top



White or nearly white shade lining is best—particularly with opaque shade.

diameter, 16 to 18 inches at the bottom, and be 10 inches deep. An exception to this is the modern lamps with shallow shades and top shielding.

Shades for floor lamps vary from 8 to 10 inches top diameter, 13 to 18 inches at the bottom, and 8 to 9 inches deep. Floor lamps are often classified as senior, senior swing-arm, junior and junior swing-arm lamps.

With wall-hung lamps, the size of the shade depends on the arrangement and the task for which they are expected to provide light. A pair of lamps for the study desk (with a 6-inch diffusing bowl) should have a shade about 6 inches across at the top and 10 inches at the bottom. For reading, study or at sewing (with an R-40 bulb only), the shade should be 6 inches diameter at the top, 13 inches at the bottom and 8 inches deep. For reading or study with a pull-down disc diffuser lamp, the top of the shade should have an open diameter of 4 inches to direct some light upward; bottom diameter should be 14 inches; and the depth should be 6 inches.

These shade dimensions permit a desirable relationship between the amount of light directed on the work surface and that directed to the ceiling for more general lighting.

Points to remember: The taller the shade and the wider the bottom of the shade, the larger is the circle of light it produces. A lamp with an open-top shade directs some light upward. This makes the room more cheerful than a lamp which gives just a small concentrated pool of light downward. Drum shape shades, especially the narrow ones, confine the light se-

verely. The shade should be deep enough to conceal the light bulbs from any person in a standing position, or there should be a shielding disc above the bulb to conceal it from view. Some light, however, should be directed upward.

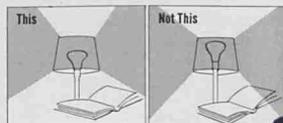
A white or nearly white shade lining will direct the maximum amount of light out of the lamp. The outside preferably should be a natural color (such as a light beige) or should blend with the wall color. Dark colors absorb the light as a sponge soaks up water. And intense colors distort room colors.

Translucent shades which permit some light to pass through, but are dense enough to avoid uncomfortable brightness, are desirable for bed reading, applying makeup and use at pianos. Shades with this characteristic also are designed for more general use.

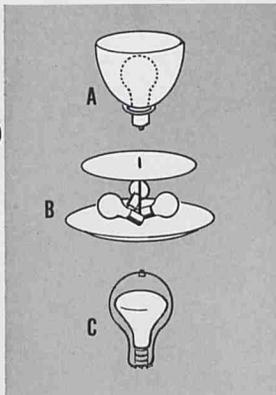
Thin plastic and Fiberglas are not acceptable materials for shades unless combined with other material, such as opal laminates or fabric covering. More dense shades for lower brightness are preferable for television viewing and desk use. Opaque or near opaque shades are recommended when the walls are a very brilliant color.

For best seeing and color rendition when dark colors are emphasized in the decorative scheme, more light is needed. Greater attention needs to be given to increasing the number of lamps, the wattages of the bulbs, or both, to compensate for the light absorbed by dark colors.

Under the Shade: For best light distribution, the bulb is positioned with the bottom of the socket even with or slightly lower than the bottom of the shade.



Select lamp with bulb low in shade to have wide spread of light downward.



Diffusers under the shade spread and soften the light. Types of diffusers: A, bowl-shaped glass diffuser; B, plastic diffusing disc using a multiple socket; C, R-40 white indirect bulb in a wide harp, 50/150 watt bulb.

Diffusion or "softening" of light is desirable to spread brightness over a larger area and to reduce shine from glossy surfaces. Bowls of blown or waffle glass surrounding the bulbs under the shade will give good diffusion of the light.

Equally satisfactory, is a diffusing disc of glass, plastic or Fiberglas, placed about 1 inch above the shade bottom. This is the method used in many contemporary shallow-shaded lamps. This diffuser should transmit as much light as possible without being overly bright itself. Moderate diffusion may be obtained from an R-40, 150-watt white indirect bulb (without bowl). White-coated bulbs give less diffusion but are better than inside-frosted bulbs for this purpose.

For casual reading, if you choose a lamp without a diffuser under the shade, be sure that the shade is dense enough to conceal the outline of the bulb when the proper wattage is used. Remember, stores tend to use very low wattage bulbs in lamps for display, and it is difficult to know what the lamp will look like with brighter bulb.

Diffusion in wall-hung lamps may be supplied by bowls, or curved opal glass or plastic discs.

Where flat or slightly curved diffusers are used, no part of the diffuser should extend below the shade bottom.

About the Bulb: The correct wattage bulb will help to provide the proper amount of light for the many close seeing tasks in the home.

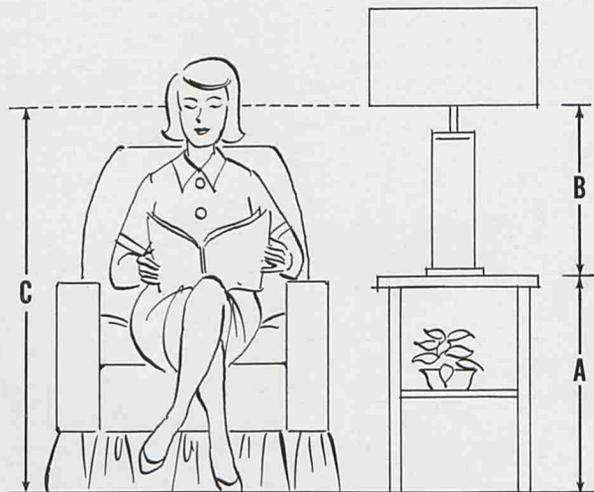
The minimum wattage bulb in any single-socket table lamp for reading, sewing or studying should be 150 watts. A three-way 50/100/150 watt bulb allows a low level for relaxing or conversational atmosphere. A 50/200/250 watt bulb used in an 8-inch diffusing bowl will give nearly 80 percent more light than a 50/100/150 watt bulb. Some of the larger lamps are equipped with a large, or mogul, socket and a Certified Lamp Manufacturers diffusing bowl and use the 100/200/300 three-way bulb. In lamps with two or more sockets, the total should add to 120 or 180 watts (180 watts are essential when sockets are in base-down position).

In floor lamps, there should be a minimum of 150 watts for casual reading and 250 or 300 watts for prolonged reading or sewing.

Wall-hung lamps arranged in pairs should be used with a 100-watt bulb for each. For the single wall-hung lamp, use one with three 40-watt bulbs or their equivalent with a shallow shade, or a single 150-watt bulb. An R-40 type bulb should only be used if the single socket is in an upright position.

Lamp Height: For best seeing, a table lamp should be just tall enough so that the lower edge of the shade is at, or within, 2 inches of eye level. If the lamp is too tall, the light shines into the eyes of the user. If too short, the light spread isn't sufficient to illuminate the task. Some chairs which we have in our homes present a challenge since many "sit low" or "sit high." So, to fit the lamp to the user, you must make the adjustments through careful placement.

When you have a table lamp on a table, the bottom of the shade should be about 40 to 42 inches above the floor for adults sitting in most conventional upholstered furniture. Floor lamps, which are usually placed slightly behind the reader's chair, can be somewhat taller. To permit reading in bed



Subtract table height (A) from seated eye height (C) to figure proper height for table lamp from the base to lower edge of the shade (B).

in a comfortable sitting position, a lamp on a bedside table should have the bottom edge of its shade about 20 inches above the top of the mattress. A desk lamp should measure 15 inches from desk top to the bottom edge of the shade to have a wide enough circle of light on the desk top and yet protect the eyes from discomfort of viewing the under-shade brightness.

Wall-hung lamps used for study at a table or desk, should be located at eye level. If they are used for reading in a comfortable chair in a floor lamp position, they should be 42-47 inches from the floor.

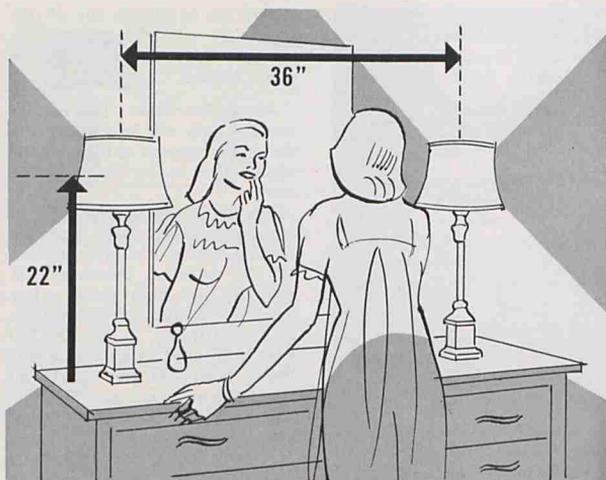
Special Purpose Lamps . . .

Lamps for Makeup: When dresser and vanity lamps are used for makeup, they should light the face of the person in front of the mirror. The center of the shade should be level with the cheeks. And there should be two lamps—one to light each side of the face. The shade should measure 7 inches at the top, 9 to 10 inches at the bottom and 7 inches deep. The shade material should be white or near-white inside and out and must be translucent enough to let a high percentage of light through to the face.

It's essential that the shade be white or near white; otherwise the skin looks distorted by light the color of the shade. Use color only in the lamp base or when the lamps aren't used for applying makeup.



This pull-down wall lamp is being used as floor lamp and should be at floor lamp height (42-47 inches from floor).



Pair of lamps to apply makeup should provide light at cheek level.

"Pole" or "Tree" Lamps: These lamps which stand between floor and ceiling and have several individual light sources are excellent as room dividers to highlight planters, statuary and pictures or as background lighting for television viewing. But they were not designed for reading or studying.

Pole lamps provide large quantities of light on tasks that need high levels of illumination for effective seeing. It's desirable that the light source have a 1/2-inch or deeper dark-colored louver to shield the bulb. The unpleasant brightness of the inside rim of the housing can be improved by painting a 1-inch band of a low-reflectance color.

To provide the correct amount of light for close visual work, use a 100-watt white bulb or a 75-watt R-30 flood lamp bulb. An R-30 spotlight may be used for sewing on very dark colored material.

One of the most important things to consider with pole lamps is correct placement. Always make sure that no bulb or excessive brightness is visible to anyone in the room. For lighting for piano music, the lamp should be placed behind and slightly to the side of the player. Aim the high-

est lamp at the ceiling and the middle one at the sheet of music.

For hand sewing, place the pole lamp at the side opposite the sewing hand. When using the sewing machine, place the lamp to the left of the operator. Aim one light directly at the needle and another to light the surrounding area.

Questions and Answers . . .

When you set out to choose a portable lamp for your home, consider these questions:

—What would you like to have the lamp do for you?

—Does the lamp have the characteristics which will permit it to do the best job for you?

—Have you considered where the lamp should be placed for best results?

The answers to these questions are to be found as you carefully consider the activities and interests of your family. This understanding, when combined with an understanding of types of lamps and their uses, will help you to make just the right choice. Remember, it's your choice. Shop different lamp stores and view the lamp with a bulb of just the right size. If possible, take the lamp home on approval.



Know Your Lightbulbs

We've discussed many of the elements that make up good home lighting. One of the simplest—but very important—elements to consider in planning your home lighting scheme is the lightbulb or the fluorescent tube.

by Mary S. Pickett

LIGHTBULBS are such simple and common items in the home that most of us don't think too much about them—except maybe when one burns out. But before you can use lighting fixtures and lamps correctly in your home, you should know something about the lightbulbs or fluorescent tubes that furnish the light. It's important to use the right one in the right place to achieve good and comfortable home lighting.

Fluorescent and incandescent lamps differ in some features that make either one or the other most suitable for different uses. Initial cost, operating cost, efficiency, brightness, productive life, size, heat output and color of light—all must be considered in choosing the right type lamp for a particular purpose.

Incandescent Lamps . . .

First, let's look at a clear lightbulb. We don't use these clear ones very often, except in specially designed lens fixtures or occasionally in decorative fixtures. Look at a clear bulb, and you can see the three essential parts of all bulbs—a glass bulb, a metal base and a finely coiled wire filament. When electricity passes through the wire filament, the wire gets so

hot that it glows brightly, thus producing light. This is the way all incandescent lightbulbs "light," regardless of their finish, size or shape.

Bulb Finishes: To improve the quality of light, manufacturers have designed different types of bulb finishes. These may be described as inside frosted, ceramic finish, tinted pastels, silvered bowl and bug-away bulbs.

The inside-frosted finish was developed to reduce the brightness of clear lightbulbs. This slightly roughened finish absorbs only a small amount of the light, but the brightness is less than that of the clear bulb and sharp lines are reduced.

Bulbs with a ceramic or milky white finish have a coating of fine white silica particles on the inside of the bulb. When this bulb is lighted, you'll notice that the light is distributed over the entire bulb surface, with no bright spot near the filament. The light is spread over a larger area; so the bulb is less glaring than the inside frosted ones. With a ceramic finish, harsh shadows are greatly eliminated. Ceramic bulbs should be used in lamps without diffusers and in fixtures with lightly etched or clear glass.

Inside-frosted, ceramic and clear-glass bulbs of the same wattage give about the same amount of light. But there can be a tre-

MARY S. PICKETT is assistant professor of household equipment and home economics research.

Reprint from the May 1963 IOWA FARM SCIENCE
Vol. 17, No. 11; pages 6, 7 and 8.
Iowa State University of Science and Technology

FS-1033
Ames, Iowa

mendous difference in the appearance and comfort of the light they produce.

The tinted pastel bulbs are made by the same process as the ceramic white bulbs, and they both provide the same diffusion and softness of illumination. The colored coating, however, absorbs some of the light. Manufacturers state that the pink and candlelight yellow bulbs absorb about 10 percent of the light; the aqua, 25 percent. So when the amount of illumination is important and tinted light is desired, use a higher wattage for tinted bulbs than you would for white bulbs. This will compensate for light loss from added color.

Tinted bulbs are designed to accent or compliment certain colors. The pink bulb is complementary to complexions—creating a warm, cheerful effect. And reds, oranges and browns are stimulated and enriched when a pink bulb is used. The aqua bulb may be used with cool color schemes to accentuate and refresh blues, blue-greens and greens. Aqua makes small areas appear larger—producing a cool relaxing effect. It can be used to subdue overly warm color schemes. The delicate yellow tint should be used with warm color schemes—yellow, beiges and browns. It creates a warm, sunny, pleasant mood.

The silvered-bowl bulb is a standard inside-frosted bulb with a silver coating on the bowl end. This bulb often is used where inside frosted bulbs have been used for general lighting. It is designed primarily for base-up fixtures. The opaque silver coating directs all the light against the ceiling or the fixture reflector and, at the same time, conceals the brightness of the bowl end of the bulb. Since the light is "bounced" from, and diffused by, the ceiling or reflector, the resulting illumination is soft, comfortable and free from harsh shadows. For best results, the ceiling or reflector should be white. **Caution:** Don't use an ordinary bulb in a fixture or lamp designed for a silvered-bowl bulb.

Insect-repellent bulbs have a deep yellow finish. These are used out-of-doors on summer evenings, because their yellow light

attracts fewer night flying insects than does white light.

Bulb Bases, Sizes and Shapes:

Bulb bases vary in size according to the intended use of the bulb. The mogul (large) base is used on the 100-200-300 watt size three-lite bulb, while a medium base is found on all popular sized household bulbs and on some three-lite bulbs. Christmas bulbs, nightlights and flashlight bulbs have smaller bases.

Lightbulbs have been shrinking in size over the years. Now the 200, 150, 100 and 75 watt bulbs are manufactured in more compact sizes so that we can get more illumination from existing fixtures and lamps. Today, the standard "A" bulbs (as shown on the next page) in 25, 40, 50, 60, 75 and some 100 watt bulbs have the same diameter. Three-lite bulbs also are smaller than they used to be.

Three-Lite Bulbs: Three-lite bulbs (or three-way bulbs) are used in table and floor lamps, fixtures and wall lamps to give a choice of three levels of illumination. These bulbs have two filaments instead of one. For example, the 50-100-150 watt three-lite bulb has a 50-watt filament and a 100-watt filament, and when both filaments are lighted the bulb uses a total of 150 watts. For three-lite operation, you need a three-lite socket and switch. The bulb must be screwed tightly into the socket to make contact with both filaments. When a three-lite bulb is used in an ordinary socket, only one filament works.

Fluorescent Lights . . .

The fluorescent tube is more recent than incandescent bulbs, and the lighting principle is entirely different from the incandescent bulb. The inside of the fluorescent tube is coated with a phosphor that transforms ultraviolet energy into visible light. By using chemically different phosphor powders, various shades of "white" light can be produced—ranging from a very cool to a warm effect. So, with fluorescent lighting, you can select the type

of "white" light that will do the most for the colors that you have in your room.

The Seven Whites: Each of the whites possible in fluorescent lighting has specific color characteristics. The *Deluxe Warm White*, sometimes called *Home-Line*, is a slightly pinkish-white light that creates a warm atmosphere and blends well with incandescent bulbs. Complexions, foods and warm tones in furniture, fabric and paint are enhanced. *Deluxe Warm White* is recommended for home uses where color appearance is important—except when cool colors (green and blue) predominate.

The *Deluxe Cool White* produces a blue-white light which creates a cool atmosphere. This fluorescent color gives the most accurate color rendition of all fluorescent tubes, but its cool light looks quite different from the mellow yellowish incandescent lighting we're used to. *Deluxe Cool White* is recommended for home use when color is important and when cool colors predominate in the decorative scheme.

The Warm and Cool whites are especially designed for accentuating colors. *Warm White* is an orange-white light that blends well with incandescent lighting but somewhat yellows red and pink surfaces. *Cool White* tubes produce a blue-white light that creates a cool atmosphere but dulls warm colors. This light is definitely not flattering to complexions and to many foods.

A compromise between the Warm White and the Cool White may be found in the *White*. The chief disadvantage of this color is that it dulls the appearance of warm colors.

Tubes designated as *Daylight* produce a very blue-white light. They're seldom used in homes because they give a gray cast to complexions, reds and pinks.

Soft White is a pinkish white light that emphasizes reds and pinks. The White, Warm White and Cool White produce more light than do the *Deluxe Whites* or *Soft White*. But the *Deluxe Soft Whites* usually are more acceptable in the home where color,

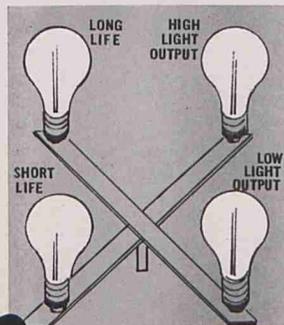
decoration and attractive complexions are important. If the fluorescent lighting in your home seems unattractive, check the "white" you're using. You may have to shop around to find just the color you wish.

Sizes: Fluorescent tubes are available in different diameters—the most common are 1 and 1½ inch. Usually, the higher the wattage, the longer the tube. The length as it is listed is the over-all length of the tube plus two sockets.

Preheat or Rapid Start: Those tubes called "Preheat" require a starting mechanism and take several seconds to light; those described as "Rapid Start" don't need starters and light almost instantly. A new "Preheat-Rapid Start" has been designed to replace the former separate Preheat and Rapid Start types. This new tube will operate equally well in either a Preheat or a Rapid Start fixture, but there will be a time delay in fixtures with starters. Rapid Start tubes are especially desirable for safety in the bathroom, kitchen, on stairs and at the entryway.

Bulb Life . . .

Incandescent Bulbs: Most household bulbs are designed to operate an average of 750 to 1,000 hours. An incandescent bulb could be designed to last a few minutes, a few hours or indefinitely.



The life of a lightbulb is related to the amount of light it produces.

ly. The "catch" is that the life of a bulb and the amount of light it produces are related—sort of like a see-saw. A bulb can be designed for long life at the expense of the light it produces, or it can be designed for high light output at the expense of life.

The wire filament gradually vaporizes with use, becoming smaller in diameter until it breaks. While the bulb is burning, particles of the filament are deposited on the glass. That's why the bulb blackens. When the bulb becomes very blackened, it absorbs much of the light that you pay for but don't get. So it's really economical to replace your bulb at this stage or to use it in a closet or attic where less light may be satisfactory.

The life of the bulb may be directly affected by the voltage in your electrical system. Using bulbs rated at more than socket voltage increases bulb life, but the bulb will give much less light than normal. On the other hand, using bulbs rated at less than socket voltage (say, 115-volt bulb on a 120-volt circuit) results in more light, but the bulb has a shorter life. You'll get the best balance of life and light when bulbs are used at the designed voltage marked on the bowl end of the bulb.

The position of the bulb—base down or base up—in the lamp or fixture also may affect its life. When the bulb is designed to operate most effectively in one position only, life will be shortened if used in a different position.

Fluorescent Tubes: The average life of a fluorescent tube depends primarily on the number of times the tube is turned on and off. Other factors, such as voltage and quality of ballasts, also affect fluorescent tube life. Average fluorescent tube life, however, is 7,500 hours if it burns for about 3 hours each time it is turned on. This life is much longer than that of incandescent bulbs.

While the fluorescent tube is operating, the coating lining on the tube sputters off. Gradually, the phosphor is used up, and the tube won't light. When the tube starts flashing on and off in an

effort to light, it has come to the end of its life and should be replaced to protect the starter and ballast. These may be damaged by the repeated flashing of the tube in an attempt to start.

How They Compare . . .

Fluorescent—

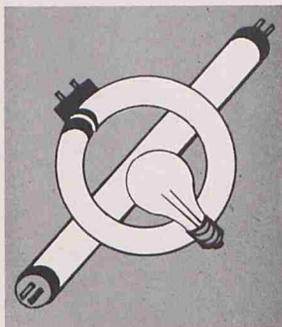
— Provides a "line-of-light" so light comes from several angles and tends to wipe out shadows. These "lines-of-light" can be used over mirrors and kitchen work areas or in structural lighting to provide useful and decorative lighting.

— Provides three to four times as much light per watt of electricity as incandescent bulbs, with less heat produced.

— Will operate about 7 to 10 times longer than an incandescent light bulb, if the tube averages more than 1 hour burning time every time it is used.

— Needs accurate color rendition.

— Is more expensive to buy, install and service than incandescent light, but is more economical to operate.



Incandescent—

— Provides a point source of light that can be focused or directed over a limited area if desired.

— Has the same size base for most household uses; thus, lighting from fixtures or lamps can be increased or decreased, within certain limits, merely by changing to a bulb of different wattage.

— Is less expensive to buy and service than fluorescent lighting but more expensive to operate.

— May be turned off and on frequently without damage to bulb parts.

— Produces much heat. May increase requirements for air conditioning.

— Produces more light per watt of electricity as the lightbulb wattage increases. One 100-watt bulb, for example, gives at least 50 percent more light than four 25-watt bulbs.

Remember, lightbulbs are cheap but eyesight is priceless!

L I N E N S

L I N E N S

HOUSE PLANNING AIDS



Reprinted from U. S. Department of Agriculture Misc. Publication No. 980 and published by the North Carolina Agricultural Extension Service as **Home Economics 54**. 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



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.

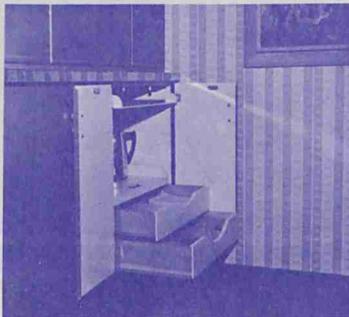
Designs for storage units that provide the necessary space are shown. You can develop other designs by using the interior dimensions given and making allowances for the type of construction you plan to use.

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.



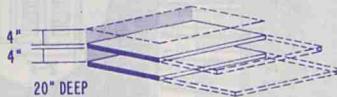
FIXED SHELVES



16" DEEP
22"-40" WIDE



DRAWERS OR SLIDING SHELVES

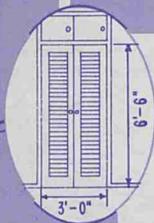


20" DEEP
20"-30" WIDE

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.

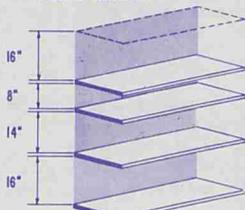


Features of this design are adjustable shelves, two louvered doors that open the entire width of the closet, and a separate storage area above the doors.

THESE UNITS PROVIDE SPACE FOR THE FOLLOWING:

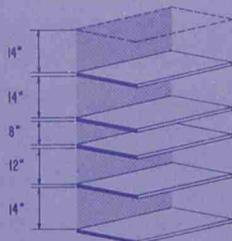
ARTICLE	NUMBER OF PILES
4 BLANKET SHEETS	2
3 BEDSPREADS	2
6 SHEETS	1
7 PRS. PILLOWCASES	2
6 DRESSER SCARVES	1
4 BLANKETS, QUILTS	2

FIXED SHELVES

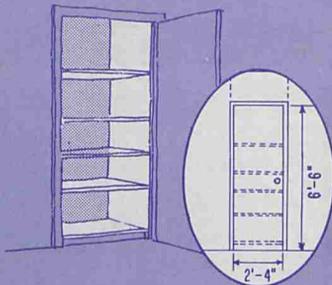


16" DEEP
34"-41" WIDE

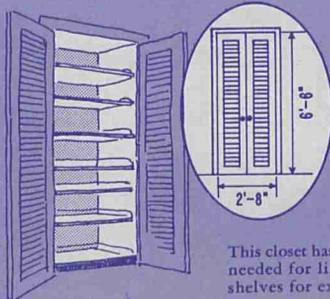
FIXED SHELVES



20" DEEP
26"-32" WIDE

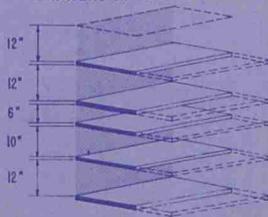


This closet—20 inches deep and not as wide as the one illustrated above—is designed with a stock door, 2 feet 4 inches wide, and a raised floor for protection from dust.



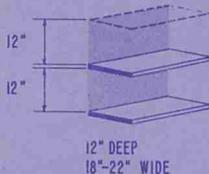
This closet has five sliding shelves needed for linen, and two fixed shelves for extra bedding.

DRAWERS OR SLIDING SHELVES



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.



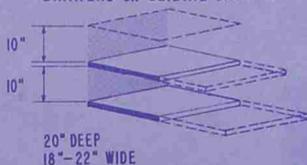
BATH LINENS

THESE UNITS PROVIDE SPACE FOR THE FOLLOWING:

ARTICLE	NUMBER OF PILES
12 BATH TOWELS	2
12 WASH CLOTHS	2

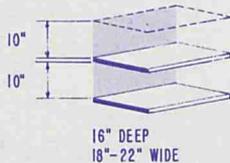


DRAWERS OR SLIDING SHELVES



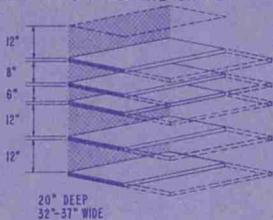
In this arrangement, bath linens are conveniently stored in drawers. Extra storage is provided on the shelves in the top of the cabinet for bathroom supplies.

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.

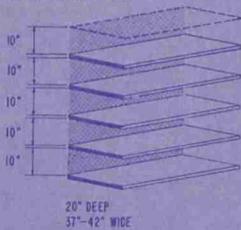
DRAWERS OR SLIDING SHELVES



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

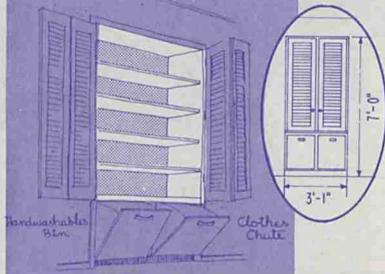


BEDDING AND BATH LINENS

When bedding and bath linens are stored together, the closet should be convenient to bedrooms and bath.

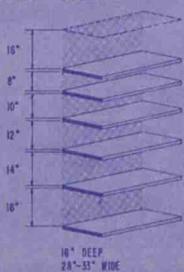
THESE UNITS PROVIDE SPACE FOR THE FOLLOWING:

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. PILLOWCASES	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.

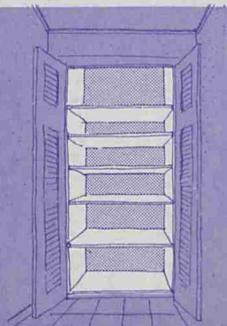
FIXED SHELVES



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



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 inventory 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.

Other References:

Bedding Buymanship, H. E. 107

Sources of Color Schemes, H.E. 29

Faulkner, Ray and Sarah Faulkner, Inside

Today's Home. New York: Holt Rinehart and Winston, revised 1968.

Stepat - De ban, Dorothy. Introduction

to House Furnishings. New York: The McMillan Company, 1964.

Grateful acknowledgment is made to representatives of industry who reviewed the manuscript.



Prepared by Mrs. Lillie B. Little, Housing and House Furnishings Specialist

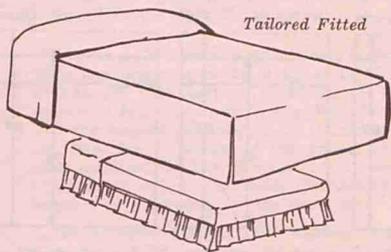
Published by

THE NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

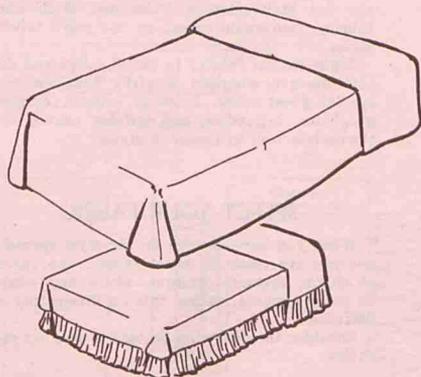
North Carolina State University at Raleigh and the U. S. Department of Agriculture, Cooperating. State College Station, Raleigh, N. C., George Hyatt, Jr., Director. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

Make Your Own BEDSPREADS

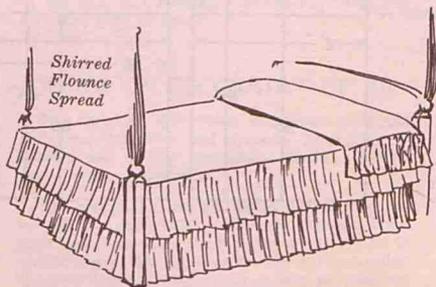
SELECT YOUR STYLE



Tailored Fitted



Throw Style



*Shirred
Flounce
Spread*

MAKE YOUR OWN BEDSPREAD

A handsome bedspread easily can be the center of interest for your bedroom. It may serve as covering or it may provide an important decorative touch. Often, it does both.

Before selecting a bedspread, study your needs. The type of room, the people using the room, and the style of furniture will help determine the kind of spread you should use.

While there is a wide variety to consider, bedspreads usually fall into one of the four following classifications:

1. Tufted—chenille, candlewick, or punch work.

2. Woven—The color and pattern are woven into the fabric.

3. Coverlets and quilts.

4. Custom tailored—made of firmly woven fabrics (antique satins, linen, chintz, glosheen, denim, percale, etc.) with custom detail as quilted top, ruffles, flounces, applique, or embroidered designs.

Each kind may be purchased ready made or may be custom made. This discussion is designed specifically for the last group—the tailored or custom made type bedspread.

By making your own spread, you can not only save money but you can choose the exact fabric, color, and style to harmonize with other bedroom furnishings. The fabric and the style of spread will be determined by the type of room and the way the room is used.

A boy's room usually needs strong colors, bold patterns, and sturdy fabrics. Denims, twills, corduroy, linens, and bulky weaves are good examples. These fabrics would also be appropriate for multi-purpose bedrooms. With these fabrics, you would expect to use more tailored styles.

Light weight fabrics in pastel colors and delicate designs suggests a girl's bedroom or a special guest room. Polished cottons, chintzes, gingham, organdies, and taffetas usually lend themselves well to feminine styles.

SELECT YOUR FABRIC

When you have decided on the style spread to use you are ready to select fabric. The variety of colors, textures, designs, fibers and weaves on today's market makes this an interesting experience.

Consider the following factors in making your choice:

1. A firm weave of sufficient weight to hold its shape will be easy to work with and will wear much longer. Loosely woven fabrics ravel, stretch, and pull out at the seams.

2. Since the bedspread covers a large area, choice of color is important. Color may be chosen to blend with other colors in the room or to give contrast.

3. Pattern is often used to add interest in the room. Stripes, florals, or geometric designs may be used satisfactorily, depending on the effect you wish to create.

4. Consider texture in selecting fabric for your spread. The nubby textured fabrics express a feeling of informality. The smooth, shiny textures are used for more formal rooms.

5. Look for fabrics that will launder or dry clean easily. The label which reads "Sanforized" or "Pre-shrunk" means that the fabric will not shrink more than 2 per cent.

6. Color fastness to light, washing, and dry cleaning is desirable for a cover you use every day or for a long period of time.

7. New finishes which repel moisture and soil and resist wrinkles are used on many fabrics. These qualities are highly desirable in a bedspread.

ESTIMATE THE YARDAGE

Make up the bed with sheets, blankets and pillows to take measurements. Measure each bed individually to determine length and width for finished spreads. These measurements will help you estimate the amount of fabric you will need and will help you cut and use the fabric to best advantage. Although standard beds can vary an inch or two, the following chart shows accepted measurements for standard mattress sizes. (Figure 1)

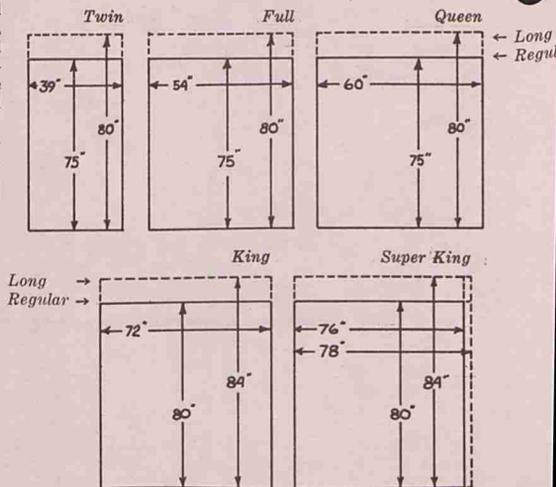


Figure 1

In addition to measurements for width and length of the mattress, you will need to measure for the overhang of the spread on the sides and at the foot and make allowance for covering the pillows.

Amount of overhang will vary according to the style of the spread and the distance from the top of the mattress to the floor.

A minimum of 20" extra length is needed if the spread is to tuck under and cover the pillows. If pillow covers are separate from the spread, the style of the cover will determine the amount of fabric needed.

The following measurements will be helpful in computing fabric needs:

Width of mattress _____ inches

Length of mattress _____ inches

Overhang on sides (2 sides) _____ inches
(top of mattress to bottom of spread)

Overhang at foot _____ inches
(top of mattress to bottom of spread)

Allowance for pillows _____ inches

Allowance for cording _____ inches
(Allow for 1/2" seams. Hem allowances will depend on the style of the spread.)

You can make your own layout chart by fitting these measurements to the width of fabric you wish to use. This chart will determine the exact amount of fabric you need to buy. Keep in mind that the lengthwise grain of the fabric should run from top to bottom of the spread. If the sides are fitted, the type of weave and/or design of the fabric will determine the direction of the length-wise grain line for the overhang.

For adequate fullness in a shirred flounce, allow two to two-and-one-half times the combined measurements for the length and width of the bed. Self cording requires approximately an extra yard of fabric.

DECIDE ON DECORATIVE DETAIL

The trend in decorating bedrooms is to use matching draperies and spreads. Repetition of fabrics and styling provides a feeling of harmony and coordination.

The choice of trims and finish details provides variety and individuality. Braids, fringes, bindings and decorative accents are available to fit almost any fabric, style of spread or room decor. Cording not only comes in a variety of sizes but may be self-covered or covered in contrasting fabric.

SUGGESTIONS FOR CONSTRUCTION

The same good sewing techniques used for making seams, bindings, hems, etc. on other items are applied to making bedspreads. Good workmanship is always an earmark of quality. Fabrics should be pre-shrunk and straightened so there is no evidence of "off-grain."

The style of the bedspread will determine the seam lines, finishing details, and trim. The width of the fabric will also influence the finishing detail of the top. If more than one width is needed for the top, the first width is centered and a second width is cut to fit on either side to provide the amount required to make the top. All seams should be at least 1/2 inch and should be finished neatly.

All custom-tailored spreads will wear longer, will wrinkle less, and look better if they are lined. It is almost essential to line light-weight fabrics. Quilting will also add to the wearing quality of many fabrics. Use a firmly woven pre-shrunk muslin or other fabrics especially designed for lining. When a lining is used, be sure that it has been pre-shrunk. The two fabrics may be cut and handled as one. (Figures 2 and 3)

DIAGRAM OF SECTIONS OF BEDSPREADS

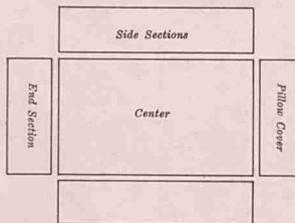


Figure 2

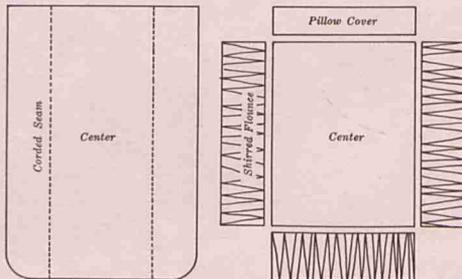


Figure 3

DUST RUFFLES

Dust ruffles may or may not be used according to the style of spread. If they are used, the material used for them and the style should be appropriate and pleasing with the spread.

There are two usual ways of fitting the dust ruffle. A round rod with spring socket suction-cup ends may be made to fit between the bedposts. A casing is made at the top of the dust ruffle to fit this rod. Or, the dust ruffle may be attached to a sheet fitted between the mattress and springs.

COVERING THE CORD

Covered cording may be purchased in a variety of colors or plain cording may be covered with fabric of your choice. If you cover the cord, both the fabric and cord should be preshrunk.

The covering should be cut on a true bias. Several yards of bias may be cut in a continuous piece by the following method:

Take a 30 inch square of material, fold diagonally and cut on the fold. (Figure 4)

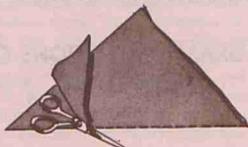


Figure 4

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 5)

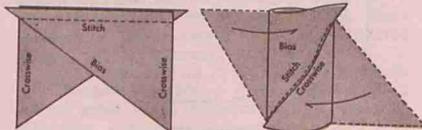


Figure 5

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 6)

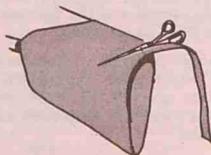


Figure 6

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 7)

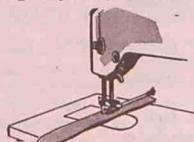


Figure 7

OTHER REFERENCES

- Better Bedding for Better Sleep, North Carolina Agricultural Extension Service, Home Economics 7.
- Selection of Household Linens, Mimeo, House Furnishings Department, North Carolina Agricultural Extension Service.
- Decorating With Slip Covers, North Carolina Agricultural Extension Service, Home Economics 20.

Revised by
Lillie B. Little

Housing and 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.

12-66-10M

(Revised)

Home Economics 6



HOW TO MAKE A FITTED SHEET

By

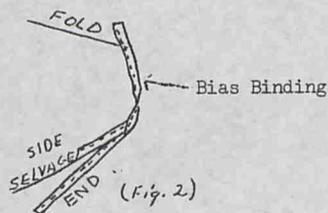
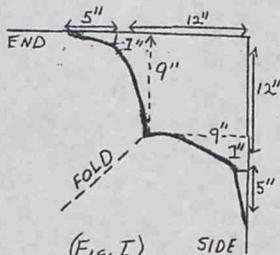
Charlotte Womble
Extension Specialist in
Housing and House Furnishings

Fitted sheets have become very popular, and many homemakers would like to make them. You can buy fabric by the yard or transform your plain sheets into the fitted type.

A fitted sheet should be made to fit the mattress it will be used on. It would be advisable to shrink the fabric or the new sheet before cutting. Many times the shrinkage is so great that the sheet is too tight after it is laundered and this shortens the life of the sheet.

Steps for Making Sheet to fit 6 inch to 7 inch Mattress:

1. Measure carefully the length, width and thickness of the mattress.
2. To the length measurement you should add twice the thickness of the mattress plus 6 inches for tuck under.
3. To the width measurement you should add twice the mattress thickness plus 6 inches for tuck under.
4. Cut sheet by the above measurements. The selvage may be left on if desired. If you cut off selvage allow for hem.
5. Make a paper pattern, following diagram in Fig. 1. Cut on heavy lines.



6. Place pattern on corner of sheet and cut sheet by pattern.
7. Hem sides and ends, including the slanted part near the corner. The ends may be bound, as they are in some ready made sheets.
8. Fold and pin the corner so the curves match. (Fig. 2) Bind the curve with bias binding. Repeat these steps for all corners.
9. The sheet should tuck underneath the mattress $2\frac{1}{2}$ to 3 inches in order to keep it in place, as shown in Fig. 3.



MISCELLANEOUS

MISCELLANEOUS

MILLER'S FALLS

TRUSS

COTTON CONTENT

AGENT'S EVALUATION OF COUNTY PROGRAM
IN THE AREA OF FURNITURE - 1965

I. The following people were reached with information on furniture:

1. Home Demonstration
Number of women _____
2. Non-Club
Number of women _____
3. 4-H
Number of 4-H members _____

II. Methods used to give information on furniture

1. Regularly scheduled Home Demonstration meetings
Number _____ Attendance _____
2. Special Interest Meetings
Number _____ Attendance _____
3. Workshops
Number _____ Attendance _____
4. Leader Training
Number _____ Attendance _____
5. Radio Programs
Number _____
6. TV Programs
Number _____
7. News Articles
Number _____
8. Exhibits
Number _____
9. Tours
Number _____
10. Individual Visits
Number _____
11. Office Calls
Number _____

III. List resource persons contacted

- 1.
- 2.
- 3.
- 4.

IV. Results observed

1. Number of individuals planning furniture needs
Number _____
 2. Number improving arrangement of furniture
Number _____
 3. Number of persons purchasing new furniture
Number _____
 4. Number of persons renovating or refinishing furniture
Number _____
 5. Estimated savings
Amount _____
 6. Number of persons renovating picture frames
Number _____
 7. Estimated savings
Amount _____
- V. Special comments or observations (interesting human interest stories)

EVALUATION OF COUNTY PROGRAM IN AREA OF WINDOW TREATMENT

I. The following groups were reached with information on window treatments:

1. Home Demonstration
Number of women _____
2. Non-Club
Number of women _____
3. 4-H
Number of 4-H members _____

II. Methods used to give information on window treatment

1. Regularly scheduled Home Demonstration meetings
Number _____ Attendance _____
2. Special Interest Meetings
Number _____ Attendance _____
3. Workshops
Number _____ Attendance _____
4. Leader Training
Number _____ Attendance _____
5. Radio Programs
Number _____
6. TV Programs
Number _____
7. News Articles
Number _____
8. Exhibits
Number _____
9. Tours
Number _____
10. Individual Visits
Number _____
11. Office Calls
Number _____

III. List resource persons contacted

- 1.
- 2.
- 3.
- 4.

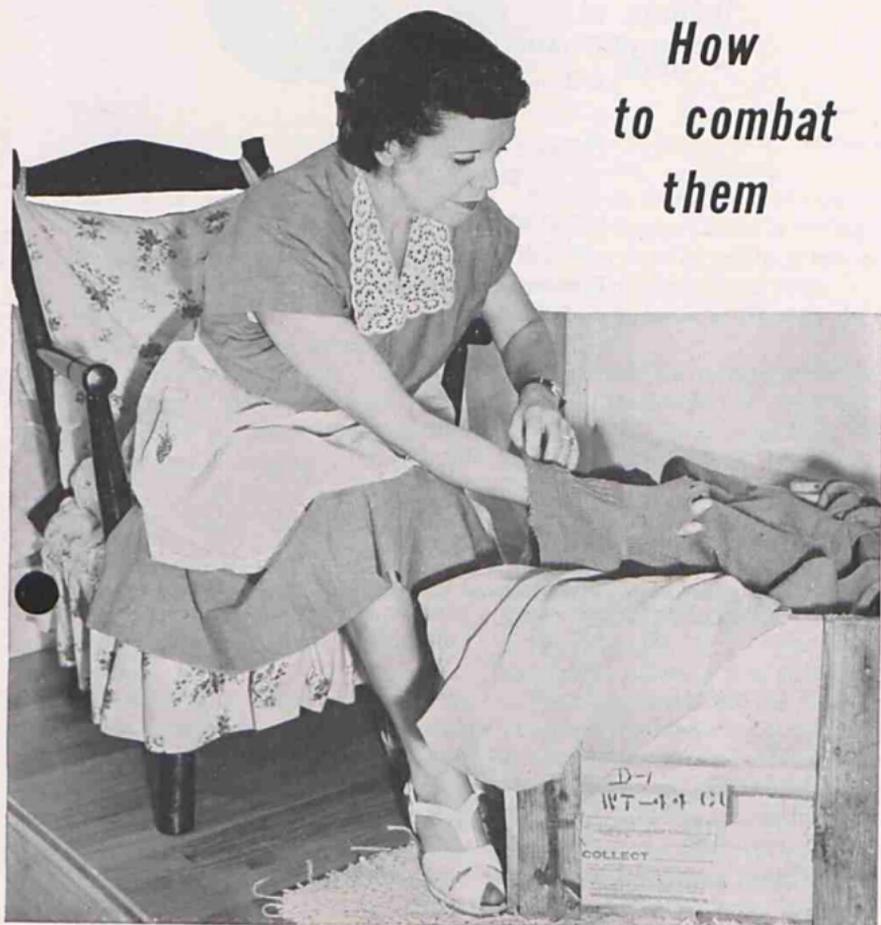
IV. Results observed

1. Individuals using construction kit
Number _____
2. Persons making draperies for added income
Number _____

V. Special comments or observations

Clothes Moths and Carpet Beetles

*How
to combat
them*



Home and Garden Bulletin No. 24
UNITED STATES DEPARTMENT OF AGRICULTURE

THIS BULLETIN was prepared by
the Stored-Product Insects Branch,
Market Quality Research Division,
Agricultural Marketing Service.

Washington, D.C. Revised June 1961

SCIENTIFIC NAMES OF INSECTS DISCUSSED

Webbing clothes moth

Tineola bisselliella

Casemaking clothes moth

Tinea pellionella

Carpet beetle

Anthrenus scrophulariae

Furniture carpet beetle

Anthrenus flavipes

Varied carpet beetle

Anthrenus verbasci

Black carpet beetle

Attagenus piceus

EQ-53 was available commercially for a time but is not available at present (1961). However, instructions in its use are included in this bulletin in the event that it again becomes available.

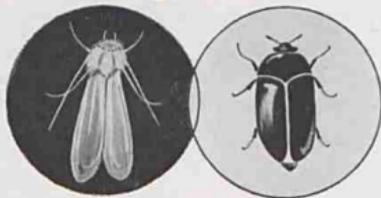


Growth Through Agricultural Progress

For sale by the Superintendent of Documents, Washington 25, D.C.

Price 15 cents.

Clothes Moths and Carpet Beetles



*How
to combat
them*

Clothes moths are well recognized as fabric pests. Housewives throughout the country are on guard against them. The fact that they cause widespread damage is due more to weaknesses in control measures than to lack of awareness of the need for control.

Not so well known as clothes moths, but just as destructive to fabrics, are carpet beetles, or "buffalo moths." Carpet beetles are more abundant than clothes moths in some localities, and

damage that they do is often blamed on clothes moths.

The larvae of clothes moths and carpet beetles damage fabrics by feeding on them. They feed on anything that contains wool or other animal fibers.

The adult moths and beetles do no damage.

Estimates of the damage caused each year by clothes moths and carpet beetles in the United States range from \$200 million to \$500 million.

Description of the Insects

Two species of clothes moths and four species of carpet beetles commonly infest homes.

The webbing clothes moth and the casemaking clothes moth look much alike. The full-grown larvae are about $\frac{1}{2}$ inch long, and are practically hairless; they are white, except for the dark heads. The adult moths are yellowish or buff, and have a wingspread of about $\frac{1}{2}$ inch.

The larvae of the carpet beetle, the furniture carpet beetle, and the varied carpet beetle are elongate-oval in shape, are never more than $\frac{1}{4}$ inch long, and have brownish or black bristles that give

them a fuzzy appearance. The full-grown larvae change into small beetles mottled with white, yellow, brown, or black.

The black carpet beetle is easily distinguished from the other three species. The larvae are yellowish, golden, or dark brown, they may get to be $\frac{1}{2}$ inch long; the slender bodies are tapered from the head to the end of the body, where there is a tuft of long brown hairs. The adult beetles have solid black bodies and brownish legs.

The illustrations on page 5, which are in natural color, will help you identify clothes moths and carpet beetles in your home.

Stages of Development

Clothes moths and carpet beetles pass through four stages of development—egg, larva, pupa, and adult.

The female moths and beetles lay soft, white eggs in clothing, in the pile of upholstery, in cracks, and in other concealed places. A moth lays from 100 to 300 eggs, which hatch in 4 to 8 days in summer. A beetle lays about 100 eggs,

which hatch in 8 to 15 days in summer. Hatching takes longer in cool weather.

Under conditions normally existing in homes, the black carpet beetle has one generation a year; the other carpet beetles and the clothes moths have two, three, or four generations a year.

As the carpet beetle larvae grow, they shed their skins, or molt, several times.

Food and Habits

As soon as they are hatched, the larvae begin eating. They feed on wool, mohair, hair, bristles, fur, feathers, and down. Thus they attack clothing and a wide range of household furnishings, including blankets, comforters, rugs, carpets, drapes, pillows, hair mattresses, brushes, upholstery, and hair padding in upholstered furniture.

They also feed on organic matter—hair that falls from pets, lint, and dead insects—that collects in places infrequently cleaned.

Besides feeding on all these materials, black carpet beetle larvae feed on grain products.

Clothes moth larvae usually stay on their food material. A webbing clothes moth larva spins a silken webbing to form a feeding tube, which is attached to the food material. A casemaking clothes moth larva spins a protective case, which it drags about.

Carpet beetle larvae, which do not spin webbing, are more active, crawling from place to place. You may find them on cotton goods or other things on which they do not feed. They often live behind baseboards and moldings, in cracks in the floor, in corners, behind radiators, in the air ducts of heating systems, on closet shelves, or in dresser drawers.

Adult clothes moths prefer darkness, and do not flit about lights; but they may be seen flying lazily in darkened corners, or at the edge of a circle of illumination. When clothing or other objects on which they are resting are suddenly moved, the moths run or fly to conceal themselves.

Adult carpet beetles fly readily, are attracted to daylight, and are sometimes found on window sills. They like sunlight, and in the spring large numbers are outdoors feeding on the pollen of flowers.

How Infestations Begin

In urban areas some infestations are started by adult carpet beetles or clothes moths that fly from house to house. An infestation is more likely to be started in this way by beetles than by moths.

The insects are sometimes carried into homes on articles containing wool or other animal fibers. Most commonly these articles are secondhand clothing, upholstered furniture, and house furnishings.

FABRIC PESTS



◀ **BLACK CARPET BEETLE** - *a*, Larva; *b*, pupa; *c*, adult. Background shows damage to fabric.

FURNITURE CARPET BEETLE *a*, Larva; *b*, pupa; *c*, adult. Also showing damage.



◀ **WEBBING CLOTHES MOTH** *a*, Larva and silken feeding tube; *b*, cocoon; *c*, cocoon with cast pupal skin protruding; *d*, adult. Background shows typical clipping of nap.

 Aushman '50

(All insects about six times natural size.)

Carpet beetles breed and feed not only in homes but also outdoors, in such places as bird and rodent nests, and the adults sometimes enter homes from these places.

Carpet beetle larvae may crawl from one room to another. If a hall carpet in an apartment house becomes infested,

it is almost certain that some of the larvae will crawl from the hall into rooms that open onto it.

The practice of exchanging woolen scraps for use in making rugs accounts for some infestations. When such scraps have lain unprotected for long periods, they may become infested.

Prevention and Control

To prevent clothes moths and carpet beetles from damaging fabrics—

(1) Practice good housekeeping constantly.

(2) Apply protective treatments to susceptible items.

(3) Spray premises with insecticides which effectively kill fabric insects.

If your home is now free of infestation, you can keep it that way by closely

following the first two of these lines of effort; but to eliminate an infestation, you must follow all three.

If you must cope with a heavy or widespread infestation, you will do well to obtain the services of a reputable pest-control firm. Such a firm has the equipment, materials, and experience necessary to handle a difficult control job.

Good Housekeeping

Certain elements of good housekeeping have a specific bearing on control of fabric pests in the home.

In cleaning, do a thorough job of removing organic matter on which larvae feed. Besides depriving larvae of some of their food supply, you may, at the same time, remove insects and their eggs.

Clean often enough to prevent lint and hair from accumulating. Give close attention to—

Rugs and carpets;

Drapes and upholstered furniture;

Closets, especially those in which woolens and furs are kept;

Radiators, and the surfaces behind them;

Corners, cracks, baseboards, moldings, and other hard-to-reach places.

Vacuum-cleaning is the best way to remove lint and hair from hard-to-reach places. Use the radiator-cleaning attachment of the cleaner.

To clean rugs, carpets, drapes, and upholstered furniture, use the vacuum cleaner or a brush.

Clean rugs and carpets thoroughly and frequently, and rotate them occasionally. Rotation is important because insects usually feed under heavy pieces of furniture, where cleaning is inconvenient, rather than in the open, where regular cleaning, light, and movement of people keep down infestation.

After vacuum-cleaning, dispose of the sweepings promptly. They may contain larvae, eggs, or adult insects. If you leave sweepings in the cleaner, you may trans-

fer an infestation from one place in the home to another.

Woolen scraps or garments that lie for long periods on shelves, or in corners,

boxes, or drawers, are often a source of infestation. Store these things properly or, if you do not want them, get rid of them.

Protective Treatments

There are a number of things you can do to protect fabrics and furs against insect-feeding damage. Some measures, such as dry-cleaning and the use of crystals and flakes, kill the insects. Others do not; they keep the insects away or cause fabrics to be resistant to insect feeding.

Clothing and Blankets

Insecticide Oil Solutions

Spray woolens with DDT, dieldrin, methoxychlor, chlordane, lindane, Strobane, or Perthane to protect them from feeding damage by clothes moths and carpet beetles. These insecticides are sold as liquid oil solutions to be applied with a sprayer, or in pressurized spray containers ready to use. Follow the directions and observe the cautions given on the container label.

A simple way to prepare woolens for spraying is to hang them on a clothesline. Spray lightly and uniformly until the surface is moist. Do not soak or saturate the woolens. Excessive spray may cause a white deposit after the fabric dries. A slight excess deposit can be removed by light brushing. A heavier deposit may require dry-cleaning; the protection is lost when the insecticide is thus removed.

Allow treated woolens to dry before storing them.

Fluoride Solutions

Spraying woolens with a commercial fabric-treatment solution containing fluo-

ride is another way to protect them against the feeding of the larvae of clothes moths.

Before spraying, be sure the woolen articles are clean and free from stains. Apply the spray freely until the surface is uniformly moist. When the articles are dry they are ready for use or for storage.

Fluoride solutions are for treating woolens, not for spraying on walls or floors. Their purpose is to protect the woolens against feeding damage, not to kill insects.

Treated woolens in storage will be protected a year or more; those in use a year, unless washed. The fluorides are removed from the fabric by washing but will withstand several dry-cleanings before they are reduced to an ineffective level.

EQ-53 For Washable Woolens¹

Washable woolens are protected from insect damage when washed or rinsed in water containing a few spoonfuls of EQ-53, a product developed at the Savannah, Ga., laboratory of the U.S. Department of Agriculture.

EQ-53, which is sold under different trade names, is an emulsifiable concentrate in which the active ingredient is the insecticide DDT. There are two other ingredients—a solvent and an emulsifying agent. Wool immersed in water containing EQ-53 picks up DDT, which remains after the wool dries and gives protection against insect feeding.

¹ See note on page 2.

With this product the housewife can pestproof washable woolens, such as blankets, sweaters, scarves, or socks, at the same time that she washes them. The procedure is especially convenient in the spring, when woolens are being prepared for summer storage, but it can be used any time.

Stored washable woolens treated the EQ-53 way are protected against the feeding of the larvae of clothes moths and carpet beetles for a year or more. Where woolens are put in use after a treatment, rather than stored, they are protected for a season unless they are washed or dry-cleaned. Washing may reduce the insecticide below an effective level, and dry-cleaning removes it.

The unique advantage of EQ-53 is that it permits pestproofing to be combined with washing, but it can also be used to pestproof clean woolens, if they are washable. To apply it to soiled woolens, follow these directions:

If you wash woolens by hand—

(1) Weigh dry woolens or estimate weight.

(2) Wash woolens in the usual way.

(3) Pour EQ-53 into the first rinse water at the rate of 1 tablespoonful for each pound of dry woolens.

(4) Soak woolens a few minutes, then stir 3 to 5 minutes with a paddle.

(5) Follow with the normal rinsing and drying.

If you use a washing machine—

(1) Weigh dry woolens or estimate weight.

(2) Put woolens, water, and soap in the tub, as if preparing for washing in the usual way.

(3) Pour in EQ-53 at the rate of 1 tablespoonful for each pound of dry woolens.

(4) Wash, rinse, and dry in the usual way.

To apply EQ-53 to clean woolens, follow the same directions but, instead of washing the woolens, merely rinse them; do not use soap.

Your woolens will be free of any odor of EQ-53 after they are dried.

Woolens shrink and become matted if improperly washed. When treating woolens with EQ-53, follow proper washing procedures. Use lukewarm water and a mild soap or detergent. EQ-53 itself does not affect shrinking or matting.

Paradichlorobenzene and Naphthalene

You can protect stored woolens by putting paradichlorobenzene crystals, or naphthalene flakes or balls, in the container or closet in which they are stored.

As these chemicals evaporate, they produce a vapor. To be effective, the vapor must be in a concentration sufficient to kill insects. The proper concentration kills both clothes moths and carpet beetles. The mere odor of paradichlorobenzene or naphthalene does not repel insects and is no indication that there is enough vapor to kill them.

Much depends on whether the container or closet will hold the vapor. The container, which may be a trunk, chest, box, or garment bag, should be airtight. If you store the woolens in a closet without first placing them in individual containers, see that the closet is tightly closed. If there are cracks around the door, seal them with tape or fit the door with gaskets; if there are cracks in the interior walls, floor, or ceiling, close them with putty or plastic wood. Protection is lost if the closet door is opened frequently. Even in a tight closet that is kept closed, it takes several days for the

vapor to build up to an effective level. Effectiveness is greatly increased if a closet is used for storage only.

In a trunk-size container use 1 pound of crystals, flakes, or balls. Scatter them between layers of garments or blankets.

In a closet use 1 pound to each 100 cubic feet of space. The vapors are heavier than air. The crystals, flakes, or balls should therefore be placed in a shallow container on a shelf, or suspended from a clothes rod or hook in a thin cloth bag or perforated container.

Clothes moths or carpet beetles in a closet can be quickly killed by vaporizing paradichlorobenzene crystals with a vacuum cleaner. A special attachment is provided for this purpose.

Cedar Chests

Cedar chests make good pestproof containers primarily because of their tight construction. They should be made of red cedar (*Juniperus virginiana*). At least 70 percent of the chest proper should be made with $\frac{3}{4}$ -inch heartwood. They may be veneered on the outside with hardwoods, such as walnut or mahogany, without affecting the pestproofing value. The cedar-oil vapor kills small larvae but is not effective against larger ones. Therefore make sure that woolens are free of larvae when stored.

Treat cedar chests that are several years old as you would any other container in which you store articles susceptible to insect damage. Scatter crystals, flakes, or balls between layers of the stored articles.

Other Practices

Woolens can be protected from feeding damage by wrapping them in paper or sealing them in a cardboard box. Before wrapping or sealing, be sure the woolens are not infested. In making a

paper bundle, carefully fold back and seal the edges of the paper.

Dry-cleaning kills all stages of clothes moths and carpet beetles but gives no protection against reinfestation. Protective treatments are applied by many cleaning establishments and pest-control firms.

You can rid woolen articles of insects, and their eggs and larvae, by brushing and sunning them. Brush thoroughly, especially in seams, folds, and pockets. If they cannot find protection from the light, larvae missed in the brushing will fall to the ground from clothing left hanging in the sun.

Rugs and Carpets

Spray a 5-percent DDT oil solution on rugs and carpets every 12 to 18 months. Use $1\frac{1}{2}$ to 2 quarts of spray on a 9-by-12 rug of average weight, if you spray the entire rug.

Fluoride solutions are also satisfactory for protecting rugs and carpets. Follow the manufacturer's directions for applying.

Give special attention to parts of the rug that will be under a piano, sofa, bookcase, or other heavy furniture, and to parts that will be under radiators or around heat registers. If there is a rug pad containing animal hair or wool, and it has not been treated by the manufacturer, spray it on both sides.

In spraying wall-to-wall carpeting, give special attention to the edges, all the way around.

If you have expensive broadlooms or oriental rugs, and fear that lack of experience in spraying may cause you to mar their appearance or otherwise injure them, it is advisable to call on a pest-control or carpet-cleaning firm that is experienced in treating rugs and carpets.

Commercial rug cleaning destroys larvae, eggs, and adult insects in rugs and carpets but prevents reinfestation only if a special treatment is given for this purpose.

Rugs and carpets are protected against insect feeding when placed in commercial storage. In home storage they may be protected by spraying with DDT oil solutions or fluoride solutions or by using paradichlorobenzene crystals or naphthalene flakes.

Household Furnishings

To protect furniture upholstery and drapes containing wool or mohair, spray them with any of the solutions discussed on page 7, except do not use dieldrin, lindane, or chlordane on furniture.

These sprays applied to the outside of furniture, mattresses, or pillows help prevent infestation of the down or hair

inside, but do not control an existing infestation.

Felts and hammers in pianos often become infested and so badly damaged by clothes moths and carpet beetles that the tone and action of the instrument are seriously affected. The solutions discussed on page 7 will protect the felts and hammers, but the treatment may damage other parts of the piano if applied incorrectly. To avoid this, you may wish to call a piano technician to do the job.

Furs

If you store furs at home through the summer, protect them with crystals, flakes, or balls in a tight container.

We do not recommend applying protective sprays on furs.

Furs in commercial storage receive professional care and can be insured against damage.

Control Measures

Surface Sprays

Surface spraying is the chief means by which insects living in the structure of the home are eliminated. It also has protective value.

The insecticide is applied to surfaces where larvae and adult insects are likely to crawl. When the spray dries, a thin deposit of insecticide remains. For several weeks or months the deposit kills insects that crawl over it. Thus it may kill insects before they have a chance to damage fabrics, and may prevent them from becoming established in your home. For continuous control and prevention, spray surfaces once or twice a year.

Contact spraying, the purpose of which is to kill insects by direct application, does not always give full control. Moths and beetles hit by the spray

are killed, but they may be only a small part of the total infestation. Many may be in protected places where you cannot reach them with a spray.

Selecting an Insecticide

Select an insecticide that is effective in killing fabric insects.

A 3- to 6-percent DDT oil solution kills both clothes moths and carpet beetles when it hits them directly, but the dry deposit is effective against moths only.

A spray containing 2 percent of chlordane, 3 to 5 percent of premium grade malathion or ronnel, or 1/2 percent of lindane, heptachlor, dieldrin, or Diazinon is effective against both clothes moths and carpet beetles, whether it hits the insects directly or whether they come in contact with the treated surface.

These should be applied only in accordance with the precautions listed on page 12.

Hence, use DDT only if you are sure your problem is the control of clothes moths alone. If you have an infestation of carpet beetles, or are not sure which insect it is that requires control, use chlordane, malathion, lindane, dieldrin, heptachlor, ronnel, or Diazinon.

Applying the Spray

Apply the insecticide with a household sprayer that produces a continuous coarse mist.

Satisfactory surface treatments can be applied with pressure sprayers that look like aerosol dispensers but produce a coarse spray. These liquefied-gas surface sprayers are distinguished from aerosol dispensers by their labels, which show that they are for use in spraying surfaces.

Places to spray: Along the edge of wall-to-wall carpets; closets; behind radiators; and corners, cracks, baseboards, moldings, and other hard-to-clean places. These are places where insects may be living. If you cannot reach some of them, apply the insecticide as close to them as possible, so that carpet beetles (larvae or adults) will crawl over it as they emerge from hiding.

Take clothing out of closets and apply the insecticide to corners, to cracks in the floor and walls, along baseboards, around shelves, and at ends of clothes rods.

Aerosols

An aerosol is a spray in the form of a fine mist that floats in the air for a time. It is applied by releasing it from the metal dispenser in which it is purchased.

An aerosol in a clothes closet kills flying clothes moths; it also kills clothes moth larvae that happen to be exposed to the mist. It does not moisten surfaces as coarse mist sprays do; hence it does not give lasting protection.

Few aerosols are strong enough to be effective against carpet beetles.

Aerosol dispensers should not be confused with the liquefied-gas sprayers mentioned in the discussion of surface spraying.

Insecticidal Dusts

You may find carpet beetle larvae in floor cracks, especially under rugs. The blocks of parquet floors tend to separate slightly, leaving a checkerboard of cracks. Black carpet beetle larvae can thrive in the lint, dust, and bits of hair that accumulate in these cracks.

Getting spray into numerous floor cracks is a tedious task. You may prefer to use a 10-percent DDT dust. If there is a rug, take it up; then sprinkle the dust on the floor, brush or sweep it into the cracks, and put the rug back in place.

You may use a dust gun to blow DDT dust into cracks behind moldings or baseboards and into other places that are difficult or impossible to reach with a surface spray.

You may use a 5-percent chlordane or 1-percent lindane or dieldrin dust, but apply it only to cracks around the edge of a room, behind baseboards, or under rugs. There are indications that chlordane, dieldrin, and lindane are more effective against carpet beetle larvae than is DDT, but they should not be applied throughout a room (see Precautions, p. 12).

Applying a dust is an easy way to treat attics or basements where there are numerous cracks in which carpet beetle larvae can live.

Fumigation

Before present control methods were developed, fumigation of an entire house was a common method of controlling carpet beetles. Clothing and furnishings

were left in the house during the fumigation. This method, which is expensive and requires vacating the house, is seldom used today to meet ordinary control problems. Moreover fumigation is dangerous. In some localities it is subject to legal restrictions. Only professional pest-control operators should fumigate.

Fumigation gives quick and satisfactory control, but there is no assurance that it will kill all the beetles in a house, and it does not prevent reinfestation.

Although fumigation of an entire house is seldom necessary, the best action to take against clothes moths or carpet beetles living in the down in pillows, or in the hair padding of furniture or mattresses, is to have the infested article treated with hydrocyanic acid gas in a fumigation vault. This fumigation service is provided by many pest-control and storage firms. The treatment kills the insects, but it does not prevent reinfestation.

Precautions

IN GENERAL.—Most insecticides are poisonous to people and to animals. . . . Keep insecticides where children and pets cannot reach them. . . . When applying them, do not contaminate food, dishes, or kitchen utensils. Do not store them with food. . . . Do not breathe too much of the spray mist or the dust. . . . If insecticide is spilled on the skin, wash it off promptly. . . . Change your clothes if you spill insecticide on them. . . . Keep children and pets off sprayed surfaces that have not dried. . . . When you have finished applying an insecticide, empty unused material into the original container, clean the sprayer or duster, and wash all exposed surfaces of the body with soap and water.

INFANTS' APPAREL.—Apply insecticides to infants' sweaters, blankets, or other woolen articles only if they are to be stored. Launder or dry-clean them before returning to use.

DIAZINON, DIELDRIN, CHLORDANE, HEPTACHLOR, LINDANE, MALATHION, AND RONNEL.—Do not use on furniture; on rugs and carpets, use only for spot treatments. Dry-clean clothing and bedding treated with dieldrin, lindane, or chlordane before using them. Do

not use any of these insecticides in the concentrations recommended in this bulletin for overall spraying or dusting of the interior of rooms.

OIL-BASE INSECTICIDES.—Do not spray oil-base insecticides near open flames, sparks, or electrical circuits. . . . Do not spray them on silk, rayon, or other fabrics that stain easily. . . . Do not spray them on asphalt-tile floors, because they will dissolve the asphalt. . . . They will also soften and discolor some linoleums and certain plastic materials; if in doubt about spraying such a surface, test the spray on a small inconspicuous place. . . . If you apply one of these insecticides to the cracks in a parquet floor, apply it lightly; an excessive amount will dissolve the underlying black cement, and the dissolved cement will stain the floor.

WEIGHT ON DAMP FURNISHINGS.—Do not put any weight or pressure on sprayed rugs, carpets, or upholstered furniture (as by walking, sitting, or pressing with the hand) until the spray has dried. Doing so gives the damp pile a mashed-down appearance, which persists for several days.



PREVENTING AND REMOVING

MILDEW

... HOME METHODS

UNITED STATES DEPARTMENT OF AGRICULTURE

Leaflet No. 322

Subject Matter: Margaret S. Furry

Illustrations: Anne Goshdigian

Washington, D. C. Issued April 1952

This is a revision of AIS-72.

Reprinted November 1959

For sale by the Superintendent of Documents, U. S. Government Printing Office
Washington 25, D. C. - Price 10 cents



PREVENTING AND REMOVING MILDEW — HOME METHODS —

Molds Cause Mildew

Molds that cause mildew grow on anything from which they can get enough food--on cellulose products such as cotton, linen, wood, and paper; on protein substances like silk, leather, and wool.

Though always present in the air, these molds need moisture and certain temperatures in order to grow. Molds commonly develop in muggy summer weather, especially if the house has been closed. They flourish wherever it is damp, warm, poorly aired, poorly

lighted--in cellars, in clothing closets, on draperies and rugs in basement recreation rooms, on shower curtains, in damp clothes rolled up for ironing. Also molds are likely to grow in a newly built house because of moisture in the building materials.

As molds grow they cause considerable damage. They discolor fabrics and leather--leave a musty odor. They decay wood. Sometimes molds so severely "eat" into cloth that it rots and falls to pieces. By preventing mildew, valuable clothing and household goods can be preserved for longer use.

TO PREVENT MILDEW

Keep Things Clean

Keep closets, dresser drawers, basements, any place where mildew is likely to grow, as clean as possible. Dust that settles on articles can supply sufficient food for mildew to start, when moisture and temperature are right. Clean clothing is less likely to mildew than soiled clothing.

Keep Things Aired and Dry

Try to remove the cause of dampness. Then thoroughly air and dry out the damp room or article. Otherwise, a layer of moist air settles around articles, and mold spores--always present in the air--have ideal conditions for growth.

In rainy or humid weather keep things as dry as possible. Close doors and windows if it is warm and damp outside. Warm, moist air coming in condenses on cooler surfaces

of the house, particularly in the basement, thus increasing the amount of moisture.

Adequate ventilation essential.--Ventilate the house only when outside air is cooler and drier than inside. As the cool air is warmed inside the house, it absorbs moisture. Take advantage of cool nights to freshen the air in the entire house.

If necessary, get rid of the dampness by heating the house for a short time with a stove, furnace, or an electric heater. Then open doors and windows to let out the warmed air that has taken up the extra moisture. Use an electric fan to force out the warm, moist air more quickly.

Poorly ventilated closets get damp and musty during continued wet weather, and clothing hung in them is likely to mildew. To dry the air, burn a small electric light continuously in the closet. The heat is enough to stop mildew if the space is not too large. Leave closet doors and dresser

drawers open occasionally to keep moisture from gathering and to stir up the enclosed air. Take special care to ventilate linen closets in bathrooms.

Run an electric fan in places that cannot be exposed to outdoor breezes. Improved fans designed for special purposes, help keep the house better ventilated. Among these are adjustable window fans that fit into windows of various shapes and sizes.

Mechanical air dryers.--The new electric refrigerator-type air dryers--dehumidifiers--actually remove moisture from the air. They draw in damp air, then condense the moisture on freezer coils so that it may be drained off in the form of water. This equipment, sometimes called a "basement dryer," is useful wherever condensation causes moisture damage. Keep windows and doors closed.

Some chemicals help.--Silica gel, activated alumina, or calcium chloride may be used to absorb moisture from the air. They are sold in department or drug stores sometimes under various trade names.

Silica gel is not harmful to fabrics and can be used over and over. The porous granules remain dry feeling even when saturated--they hold half their weight of water. To use, hang cloth bags of silica gel in clothes closets. Or place an open container of it on the floor or preferably on a shelf of the closet. Keep closet doors closed so that moisture from outside air will not get in.

"Tell tale" silica gel is pink when full of moisture, blue when dry. To dry, simply place moist granules in a vented oven at 300° F. for several hours. Then put in an airtight box and cool before re-using.

Activated alumina is used in the same way as silica gel. Like silica gel, it holds moisture without dripping and is not harmful to clothing.

Calcium chloride holds twice its weight of water and is cheaper than silica gel or activated alumina. But, as it absorbs moisture it liquefies. Do not let this chemical come in contact with clothing or household textiles; it is harmful to them.

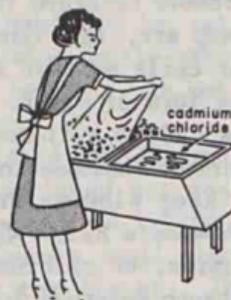
To use calcium chloride, put the granular chloride on a nonrusting screen supported in an enameledware container. Then place the open container in the closet and keep the door shut. When calcium chloride becomes liquid replace it with fresh chemical.

In basements and cellars, musty odors which indicate mold growth usually disappear if the house is well heated and dried. If the odor persists, *chloride of lime* is a good deodorant and disinfectant to use. Sprinkle it over the basement floor, and

let it stay until all mustiness disappears. Then sweep it up, scrub and dry the floor.

Clothing and Household Textiles

Never let damp or wet clothing or other articles lie around. Dry soiled clothes before throwing them into the hamper. Wash out dishcloths and hang them to dry. Spread out washcloths. Stretch out wet shower curtains. It is the wet curtain left bunched together or sticking to the wall or tub that suffers



Sun and air garments often. Burn an electric light and place a can of calcium chloride in closets to dry the air.

Use soap and cadmium chloride for a mildew-resistant finish.

most from mildew. Sprinkle for ironing only as many articles as can be ironed in a day. Shake out and dry those not ironed.

Clean before storing.--Wash or dry-clean clothing or household textiles before storing, as soiled articles are more likely to mildew than clean ones. And do not leave sizing or laundry starch in fabrics to be stored since molds feed on these finishes.

Never store textiles in a damp basement, even though they are clean or treated with a mildew-resistant finish.

From time to time, sun and air articles stored in closets. Watch woolen clothing put away in garment bags. A closed bag, dampness, and hot summer weather make ideal conditions for molds to grow.

Protect with mildew-resistant finish.--Make sure that cotton shower curtains, awnings, tents, sails, and so forth, have been treated with chemicals to make them resistant to mildew before using them in damp places. Many such articles are treated before they are placed on the market. If not,

you can buy special products at drug and department stores to protect articles against mildew. Do not use these products on clothing as they may irritate the wearer's skin.

Here is a simple treatment using *soap and cadmium chloride* to make cotton articles, such as shower curtains, mildew-resistant. First dip the article in hot soapsuds made of soft water and good neutral soap. Soak a few minutes to be sure the goods are wet through. Then remove the cloth and, without rinsing, put at once into a hot solution of cadmium chloride (1-1/2 ounces cadmium chloride to a gallon of water). Be sure to have plenty of soap in the cloth for it is the combination of the soap with the cadmium chloride that does the trick.

Stir and turn the fabric for about 15 minutes in this bath. Then wring and hang to dry. Use a *twine* clothesline as wire will stain the treated fabric.

Copper sulfate can also be used with soap for making cotton cloth mildew-resistant. But this treatment makes the fabric blue.

Both of these treatments withstand two or three launderings. But after exposure to weather, the soap-cadmium chloride treated fabrics are more satisfactory than those treated with the soap and copper sulfate.

Caution.--Both cadmium chloride and copper sulfate are poisonous, so thoroughly wash pans and utensils that were used for them.

Leather

To protect leather against mildew, sponge with a 1-percent solution of *paranitrophenol* in alcohol. You can purchase this solution at drug stores.

To be sure the solution does not change the color of the leather, test a small area where it will not show. *Paranitrophenol* protects against mildew for 2 to 3 months.

Thymol is another chemical that can be used in the same way (1-percent solution in alcohol) to keep leather from mildewing.

Protect leather shoes with a good wax dressing. And don't forget the soles. A thin

coat of floor wax keeps moisture out and helps prevent mildew.

Painted Surfaces

Indoor wood surfaces covered with enamel or oil-resin paint rarely mildew except under conditions very favorable to mold growth. You can make a mildew-resistant paint by replacing 20 percent or more of the regular pigment with zinc oxide.

For a mildew-resistant finish for outdoor wood surfaces, add spar varnish to exterior oil paint. However, use this varnish only with dark colors.

Books

To keep books in closed bookcases from mildewing, dust them at times with paraformaldehyde. Use this chemical sparingly, for it may be very irritating to some persons.

Another way is to burn a small electric light continuously in the bookcase.

TO REMOVE MILDEW

Clothing and Household Textiles

Remove mildew spots as soon as they are discovered, before the mold growth has a chance to weaken or rot the material. Take off any surface growth by brushing out-of-doors to prevent scattering the spores in the house. Sun and air fabrics thoroughly. Treat mildew spots by whatever method is suitable for the material in question. Dry-clean fabrics that cannot be washed or sponged with water.

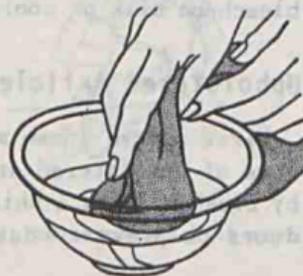
Fresh mildew stains.--Wash at once with soap and water any fresh mildew stains on

washable clothing or household articles. Rinse well and dry in the sun. If any stain remains, moisten with lemon juice and salt, and spread in the sun to bleach. Then rinse thoroughly, and dry. Use this treatment with care on colored goods.

Sodium perborate is another safe bleach to use on washable cloth. Sponge the mildew spot with a solution made with 1 tablespoon sodium perborate to a pint of lukewarm water, or sprinkle the powder directly on the dampened stain. Let stand a minute or two; then rinse well. For colored material, first test the bleach on a sample of the cloth or on a



Use sodium perborate to bleach fresh mildew stains from uncolored fabrics. Dampen the stain with water, and dust with powdered sodium perborate. Let stand a minute or two; then rinse well with water.



seam or hem of the garment to be sure it will not change the color.

In summer weather soiled dishcloths and washcloths often dry so slowly that they get sour and musty smelling--a sign of mold growth. Boil them a few minutes in water to which baking soda (2 teaspoons to a quart of water) has been added. Use a bleach if necessary. Then launder as usual.

Old mildew stains.--Dip old stains on undyed cotton, linen, or rayon in Javelle water or other chlorine bleach for no longer than 1 minute. Then dip into a weak vinegar solution (2 tablespoons to a cup of water) to stop the action of chlorine. Finally, rinse well with water. *Never* use a chlorine bleach on silk or wool.

Upholstered Articles, Mattresses, Rugs

First remove loose mold from outer coverings of upholstered articles and mattresses by brushing with a whisk broom. Do this outdoors to prevent scattering mildew in the

house. If possible, run a vacuum-cleaner attachment over the surface to draw out more of the mold. Sun and air the article to stop the growth.

If necessary, sponge lightly with thick soapsuds and wipe with a clean, damp cloth. In doing this, get as little water on the fabric as possible so the filling does not get wet. Another way is to wipe upholstered furniture with a cloth wrung out of dilute alcohol (1 cup denatured alcohol to 1 cup water). Dry the article thoroughly.

Sponge mildewed rugs and carpets with thick soapsuds or a rug shampoo. Then remove the soap by wiping with a cloth dampened in clear water. Dry in the sun.

Fumigate if mildew has grown into the inner part of the articles. To do this, burn formaldehyde candles in a tightly closed room in which the articles have been placed. Be careful. Formaldehyde is very irritating. Follow directions given with the candles. Or send the things to a reliable dry-cleaning or storage company for fumigating.

Leather

To remove mildew from leather goods, wipe with a cloth wrung out of dilute alcohol (1 cup denatured alcohol to 1 cup water). Dry in a current of air. If necessary, wash with thick suds of a mild, neutral soap or saddle soap. Then wipe with a damp cloth and dry in an airy place. Polish shoes and leather luggage with a good wax dressing.

To kill molds that have grown into leather goods, fumigate with formaldehyde gas. To do this, burn formaldehyde candles in a tightly

sealed room or closet in which the articles have been placed. Follow directions given with the candles. *Do not inhale* formaldehyde fumes. Fumigation will kill any molds present at the time but will not protect against future attacks.

Wood

Wipe mildewed floors and woodwork with a cloth dipped in water to which a little kerosene has been added. Or, if necessary, wash the wood with warm water and soapsuds, then



Brush mildewed articles outdoors in the sun.

Protect leather shoes with wax.

dry thoroughly. Remove mildew stains from painted surfaces with paint cleaners, available in many stores. Then apply a mildew-resistant paint (see p. 6).

If the mold has grown into the wood under paint or varnish, remove the finish and bleach the stain with oxalic acid. Oxalic acid is poisonous and should be handled carefully. Apply a solution (3 tablespoons of the acid to a pint of water) or put the acid directly on the stain. Finally, rinse the wood well with water. Dry thoroughly before repainting.

Paper

Brush any dry, loose mold from paper with a clean, soft cloth. If the mildewed paper is damp, dry it first in an airy place.

If paper is washable, wipe it with a cloth wrung out of thick soapsuds, then with clear water. Take care not to wet the paper more than necessary. Do not rub it. Finally pat with a soft, dry cloth. If stains remain, bleach with a commercial ink eradicator. Be careful if the paper is colored, for the eradicator will bleach print and dyes as well as stains.

Spread pages of books out fanwise to air them. If the books are very damp, sprinkle cornstarch or pure talc between the leaves to take up the moisture. Leave starch or talc on for several hours, then brush off.

When wallpaper has mildewed, be sure to dry not only the paper but also the plaster beneath it. If necessary, heat the room for several hours or days. Let the plaster dry slowly to prevent it from cracking.

C H R I S T M A S D E C O R A T I O N S

Families who observe family anniversaries, holidays and special occasion get-togethers seem to have closer family ties.

Good cheer at Christmas time is justified because Christmas is a light from within. It should not only brighten the faces of children, it should also glow deep within our hearts. Give your home a festive appearance by using evergreens, berries, seed pods, and pine cones. These simple decorations which you have in abundance and cost no money add greatly to the charm of your home. (Do not injure a tree by cutting it for decoration, but prune carefully small sprays of evergreens.)

THE CHRISTMAS TREE should be the center of the decorations--whether it is large or small. Place it in front of a window so that its bright cheerful glow can be seen from within and without. Decorate your tree with balls of red, silver, blue, and green; strands of popcorn; and various decorations that are saved from year to year.

Be sure to hang a rope of evergreens, a spray, or wreath on your front door. It will signify to many who pass your home that you are celebrating this joyous season.

A ROPE OF EVERGREENS requires four or five yards of rope. The place you plan to use it will determine the length. The other materials needed are: short lengths of wire (about 15" to 18"); short sprays of evergreen (cedar is especially good); balls, bows, red berries, or bells. Place a bunch of evergreen against the rope and fasten in place with wire. Repeat until the rope has been completely covered. Drape the rope over your door frame, mantel, or along the stair rail. Locate places where an additional decoration, such as berries, balls, bells, etc., will be effective; then wire in the decorations. Fasten the rope in place with cellophane tape, tacks, corsage pins, or small nails. (Scotch Tape is a cellophane tape.)

SPRAYS require evergreens, wire (short lengths), berries, balls, bows, or bells. Arrange pieces of evergreen in desirable position, wire in place, add other pieces, and wire. When the evergreens are arranged in a satisfactory spray, add the decorations.

Magnolia Spray. Put a little cooking oil, such as Wesson Oil, on a cloth and rub each leaf. The oil will give a lovely sheen to the leaf. To make artificial snowstick to a magnolia leaf, put liquid white shoe polish down the center and on the edge of the leaf. Sprinkle artificial snow on while the polish is wet. To make artificial snow stick on a Christmas tree, brush on a starch paste with a small paint brush. While paste is still wet, sprinkle with snow.

WREATHS. Use a wire hoop or coat hanger that has been bent into a circle. Wire pine needles to the hoop with short pieces of wire. Keep adding pine needles until you have a foundation wreath that is at least two inches deep. Then wire on pieces of evergreen berries.

(WREATHS, continued) If the foundation is firmly made, the evergreen and berries may be stuck into the pine needles.

Silvered berries, leaves, seed pods, sprays of ivy, etc., may be made by pouring a small amount of aluminum paint into a deep container almost filled with water. The aluminum paint will float on top of the water. Dip the material to be silvered into the water and draw it out slowly. Hold it over the container until it has stopped dripping. Then hang in a dry place for 24 hours. The aluminum paint which one buys to paint metal surfaces is more satisfactory and gives a more silvery appearance than the aluminum paint which is used to paint wood.

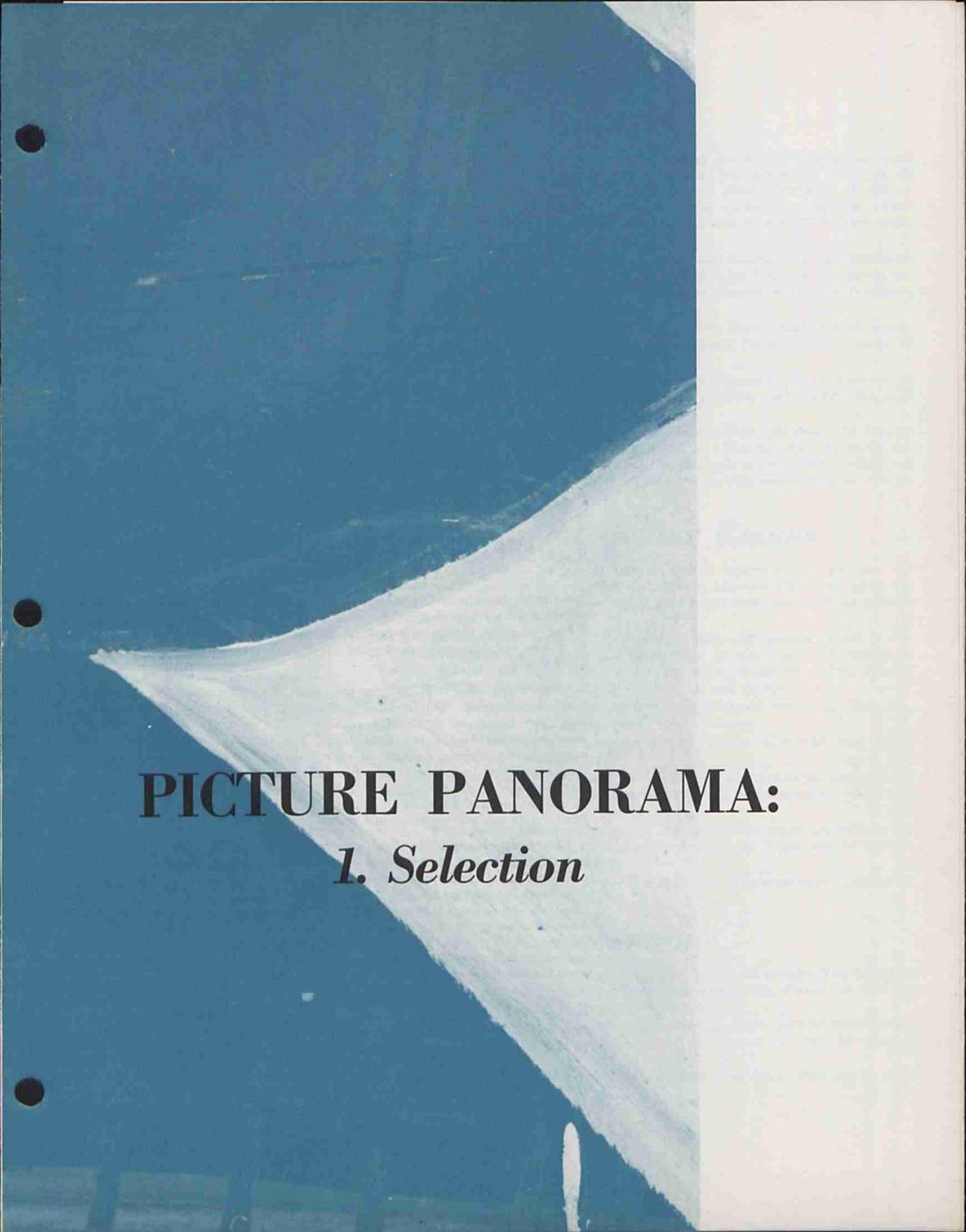
Place card holders or Christmas tree favors can be made by using egg shells. Make a hole in the side of the egg and shake contents out for use in cooking. The hole should be a little smaller than the bowl of a teaspoon. Paint the shell with a bright red enamel. When enamel is dry, fill with sand and stick small branches of evergreen and twigs into the sand to form a tree. Put a little paraffin on the bottom of the egg shell to keep it from rolling over.

North Carolina State College of Agriculture and Engineering
U. S. Department of Agriculture, Cooperating
North Carolina Agricultural Extension Service
Raleigh, N. C.

WALTER HOBBS

PICTURES

PICTURES



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.

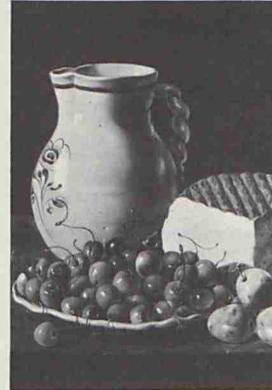


Figure 1.

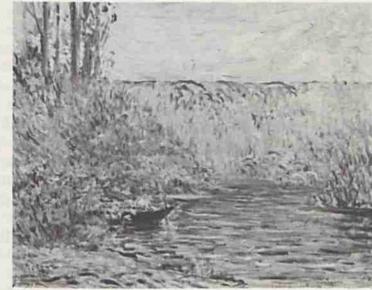


Figure 2.



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.

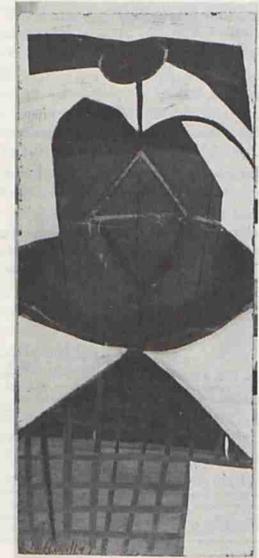


Figure 4.

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 repousse, "Leaves and Fishes," Helen Worrall, Cincinnati, Ohio. The enameled 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

Figures 1, 2, 4 are courtesy of the North Carolina Museum of Art, Raleigh.
Figure 3 is courtesy of the Museum of Modern Art, New York.
Figure 7 is courtesy of the artist.

Prepared by Jean Black, 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.

6-66-10M

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

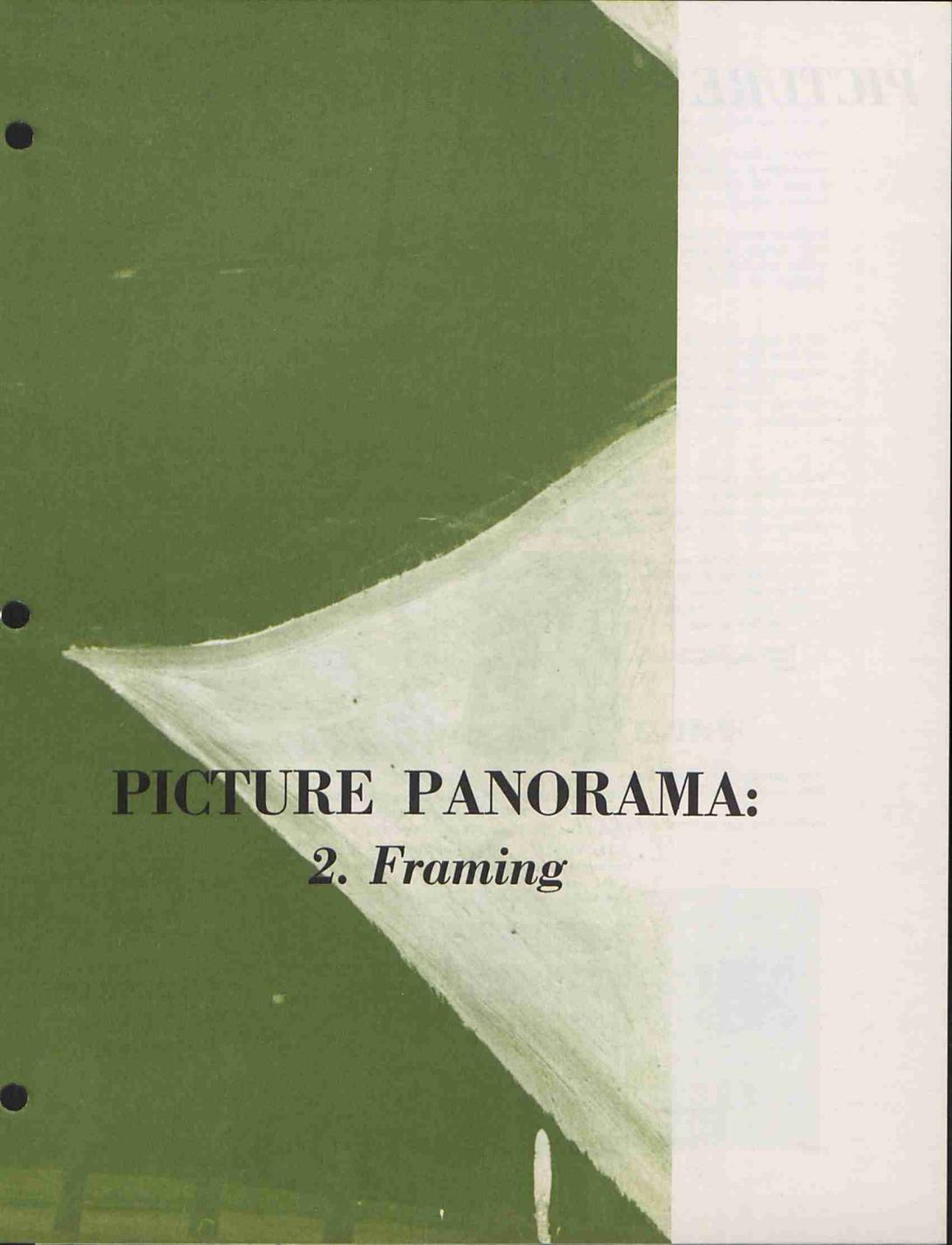
Books on art:

- 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 Peroneau.



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.



Figure 3.

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

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.

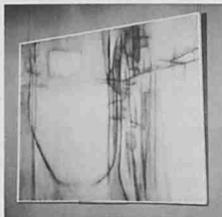


Figure 4. "Broken Trail," J. Bardin.

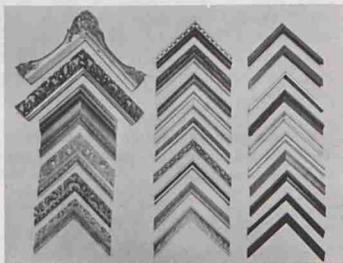


Figure 5.



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.

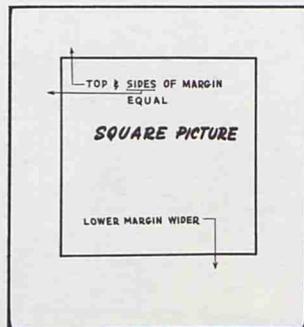
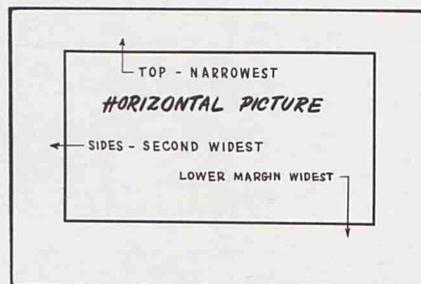
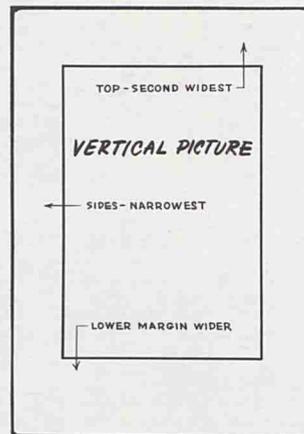
The size of the mat depends on the size and type of picture, the space where it is to be hung, and the scale of furnishings in the room. On an average size picture, a 2" to 4" top margin is reasonable. Woodcuts and etchings require wider mats than other types of pictures.

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.

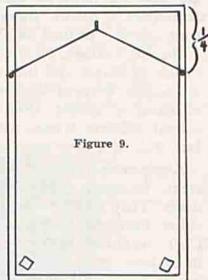
With the frame wrong side up, lay the clean cover glass in place (if glass is used). Tape the top of the picture to the back of the mat. Lay picture and mat face down on cover glass. Place a backing of heavy cardboard or corrugated paper, cut to fit, on top of mat.

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.

Prepared by Jean Black, Extension House Furnishings Specialist

Published by

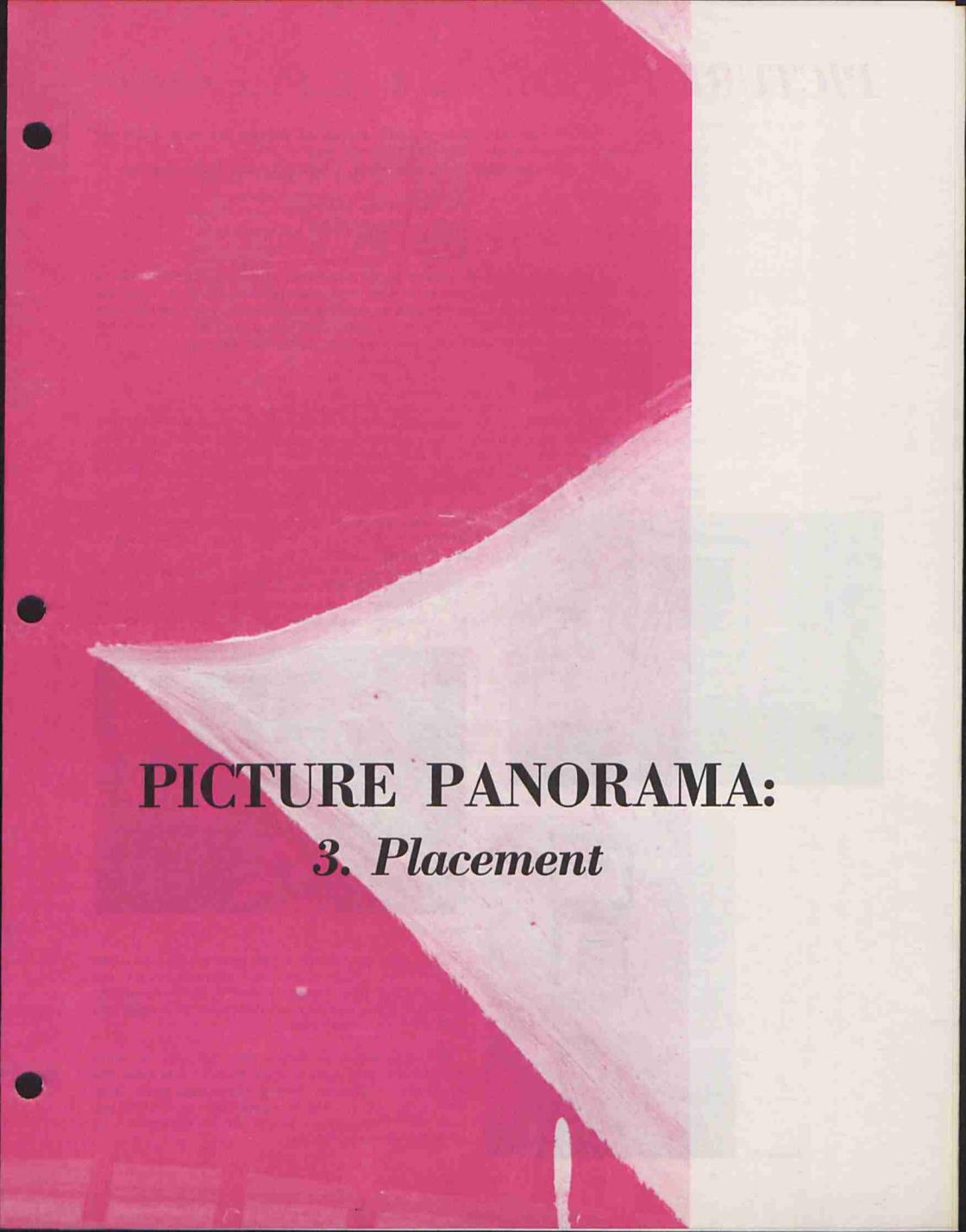
THE NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

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.

6-66-10M

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 (Fig. 3).

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 snack bar or desk (Fig. 3a).

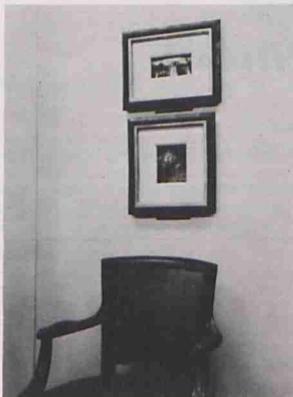


Figure 2b

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 staircase 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

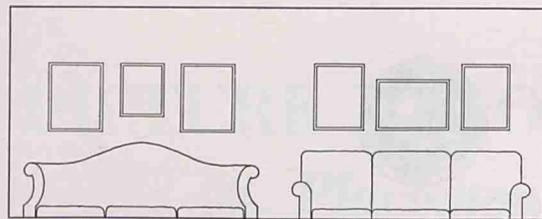


Figure 5

■ 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).

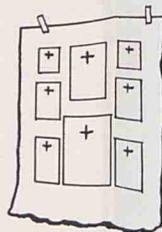


Figure 9

■ 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 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 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. If

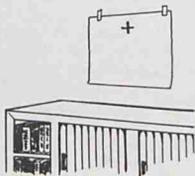


Figure 11

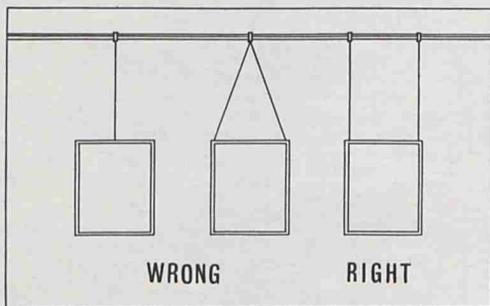


Figure 12

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:

- Picture Panorama: 1. Selection, Home Economics 37
- Picture Panorama: 2. Framing, Home Economics 38



Prepared by Jean Black, 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.

PICTURE FRAME FINISHES - FOR OLD AND NEW

By Edith B. McGlamery, House Furnishings Specialist

If you have old picture frames that you have stored or have 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 for lovely pictures or 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.

A gilt frame 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

Wood.--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.

Plaster.--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 design.

MENDING

Wood.--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.--Use plaster patch to mend plaster frames that have holes, chipped places, and broken designs. Mix a small amount at the time (approximately one tablespoon plaster 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.

FINISHES

After the old finish has been removed from the plaster or wood, the mending has been done, the surface smoothed, and the surface is dry, you are ready to apply a new finish.

Wood Frames

- a. 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 are 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 seal finish after stain.

Most satisfactory finishes can be obtained by application of one or two coats of penetrating seal. A penetrating seal 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.

- 1) Dust the wood.
 - 2) Flow the sealer on the surface with a clean brush.
 - 3) Continue the application for about 20 minutes. Be sure to keep the wood saturated in order to allow as much sealer to penetrate the wood as possible.
 - 4) 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.
 - 5) Allow to dry 24 hours.
 - 6) Rub lightly with 3/000 steel wool or extra fine sandpaper.
 - 7) Dust well with lintless cloth dampened with penetrating seal.
 - 8) Apply second coat following directions used for first coat. Make as many applications as desired.
 - 9) After drying, lightly sand the last application of penetrating seal, wax with a paste wax, and polish to get desired finish.
- b. 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.
- c. 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 plastered 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 in other colors with alkyd base paint.

SPECIAL EFFECTS

Antiquing.--Antiquing gives an old and mellow finish to a gold 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 white enamel or 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.

North Carolina State of the University of North Carolina 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

July 1964

R O O M S

R O O M S

HOUSE PLANNING AIDS



Reprinted from U. S. Department of Agriculture Misc. Publication No. 1004 and published by the North Carolina Agricultural Extension Service as **Home Economics 33.**

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

BEDROOMS AND CLOTHES CLOSETS

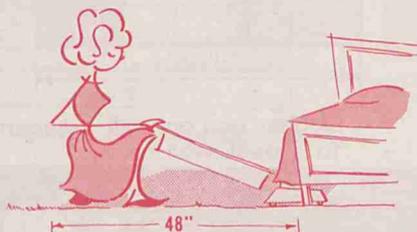
Here are some general reminders to aid you in planning the bedrooms for your home. A three-bedroom house is considered minimal for the average family, and a bedroom on the first floor of a two-story house is very convenient. Locate the bedrooms, if possible, to take

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

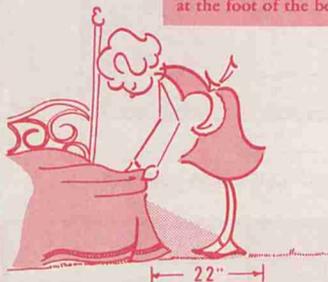
CLEANING UNDER THE BED--

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.



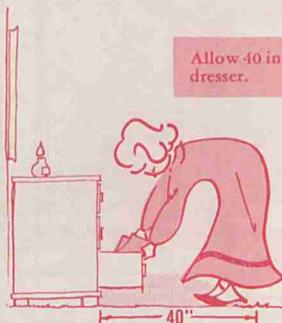
USING THE CLOSET--

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.



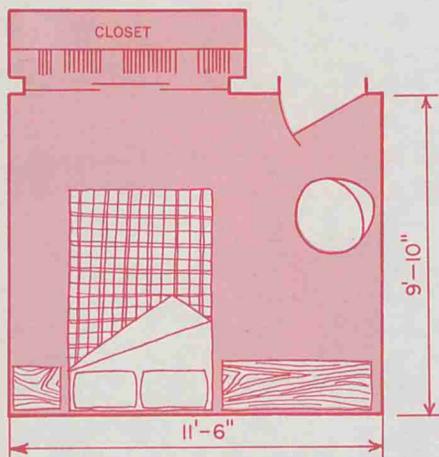
SUGGESTED BEDRO

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

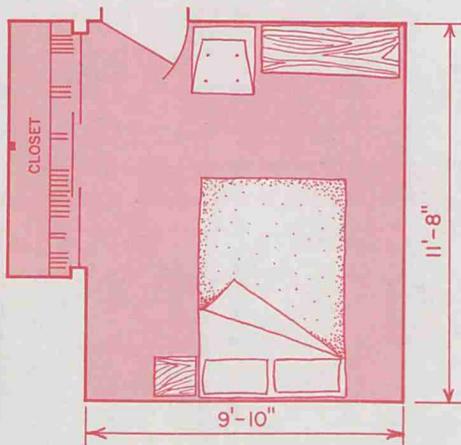
closet, and cleaning.

In a room with parallel twin beds, only one bed should have to be moved for cleaning and making.

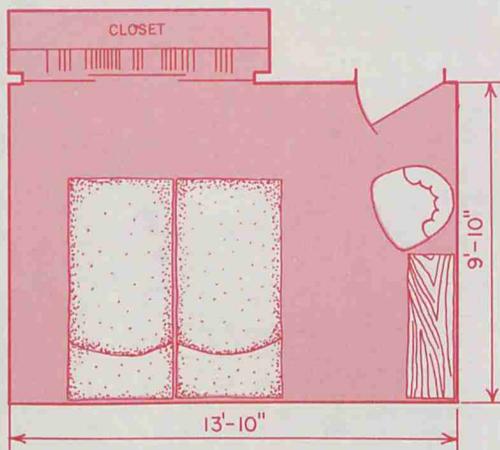
Locate the dresser or chest so you have access to it from the hall door without having to go around the bed



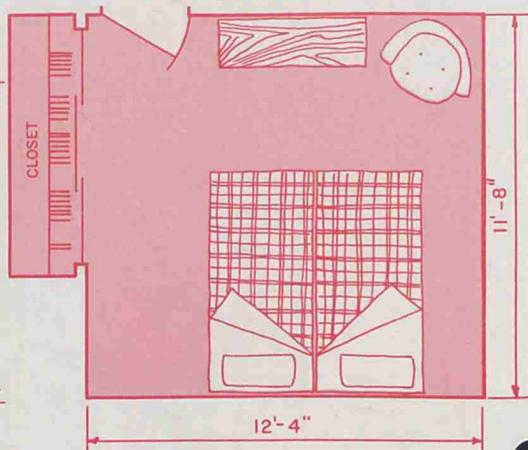
Double bed opposite closet.



Double bed on wall adjacent to closet wall.



Twin beds opposite closet.



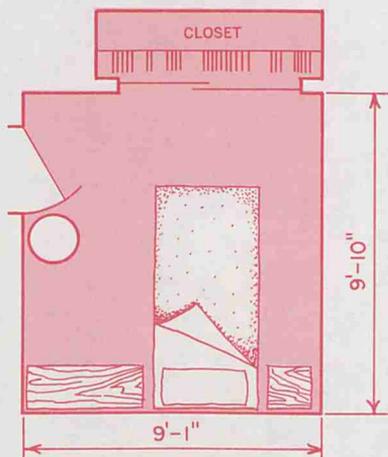
Twin beds on wall adjacent to closet wall.

OM ARRANGEMENTS

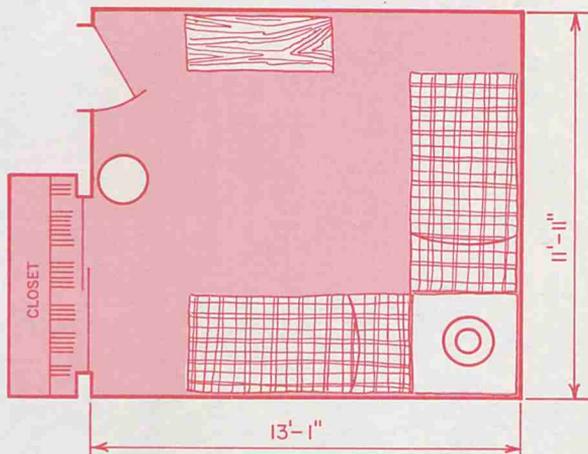
to get to it. Since bedroom furniture is heavy, few pieces should have to be moved when the room is cleaned.

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.

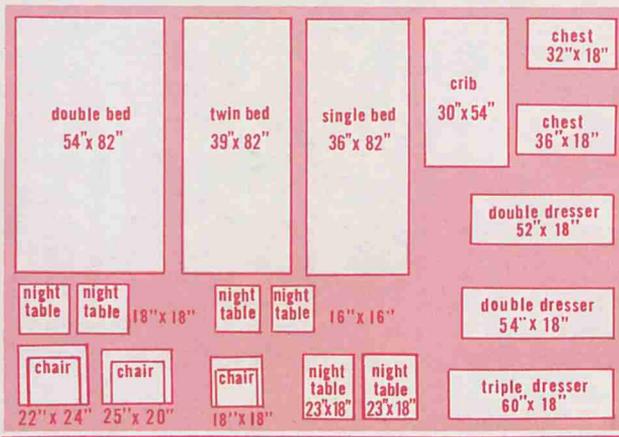


Twin beds at right angles.

BEDROOM FURNITURE CUTOUTS

Use cutouts like these, drawn to 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 ³ / ₄	42	82
Large ³ / ₄	48	82
Double	54	82
Queen	60	82
King	78	82

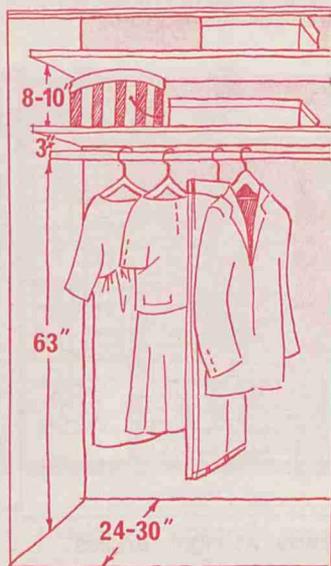


CLOTHES CLOSETS

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

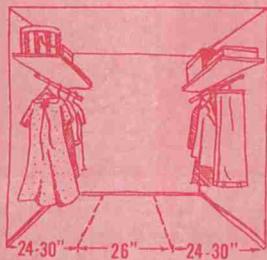
do not depend on the number of garments to be stored. The width or lateral dimension varies with the number and kind of garments.



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/}

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

^{1/}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

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

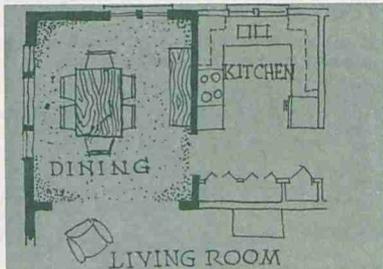
The number of persons you wish to serve, the type and amount of entertaining done, and your preferences for style of service and furniture will determine the number, size, and location of your dining areas.

Plan at least one major dining area large enough for family sitdown meals. It should be

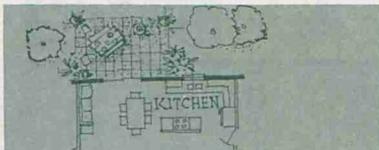
attractive, have a window if possible, be convenient to the food preparation area, and be directly accessible from the living room.

Secondary dining areas, such as counters and booths, also need to be carefully planned for adequacy and convenience.

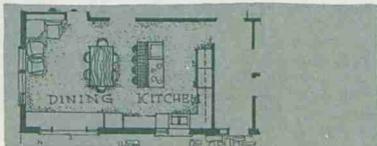
DINING AREA LOCATIONS



- ... IN A SEPARATE DINING ROOM accessible from both kitchen and living room.



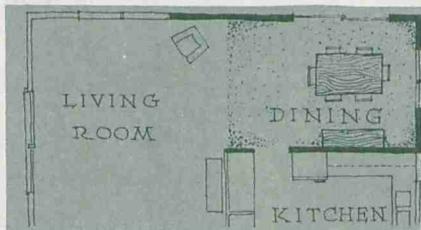
- ... ON A PATIO OR PORCH near entrances to kitchen and living area of the house.



- ... 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.

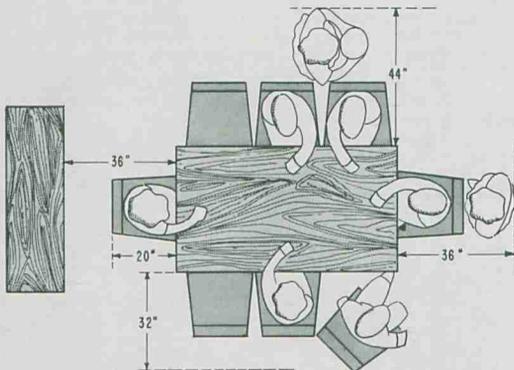
TABLES

FREE-STANDING

Regardless of the size or shape of your dining table, there are certain minimum clearances around it for which you should provide.

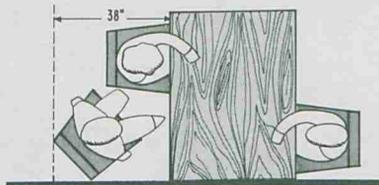
Allow 36 inches between the wall or a piece of furniture and the table to edge past a seated person. Serving requires 44 inches from table to wall, whereas only 32 inches is needed for rising from a chair at the table.

If armchairs are used, all space clearances should be increased 2 inches.

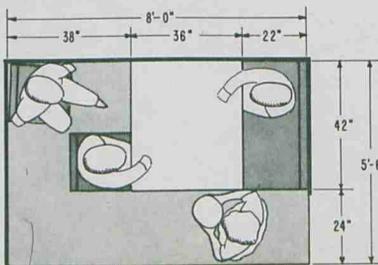


ONE END AGAINST WALL

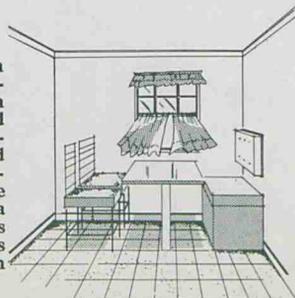
When a table is placed with one end against the wall, 38 inches is needed for rising from a chair in this confined position.



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.



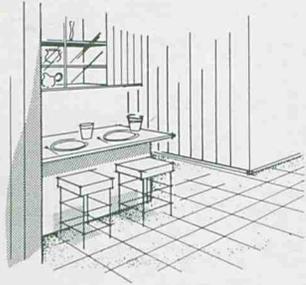
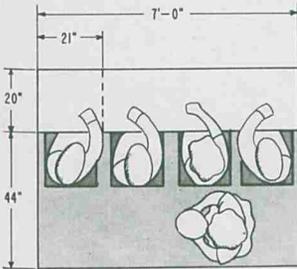
COUNTERS

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.

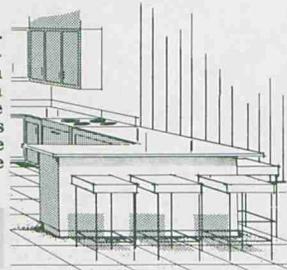
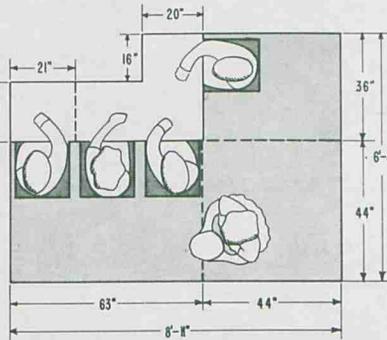
STRAIGHT

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

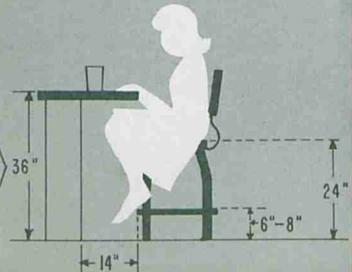
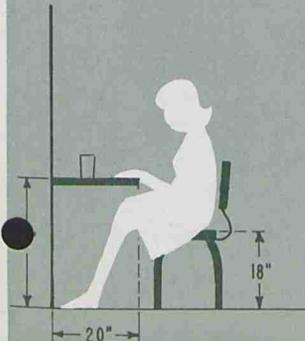
If you desire an L-shaped counter, remember to allow space in which to serve on both arms of the L. The length of the counter is again determined by the number of people to be seated at it.



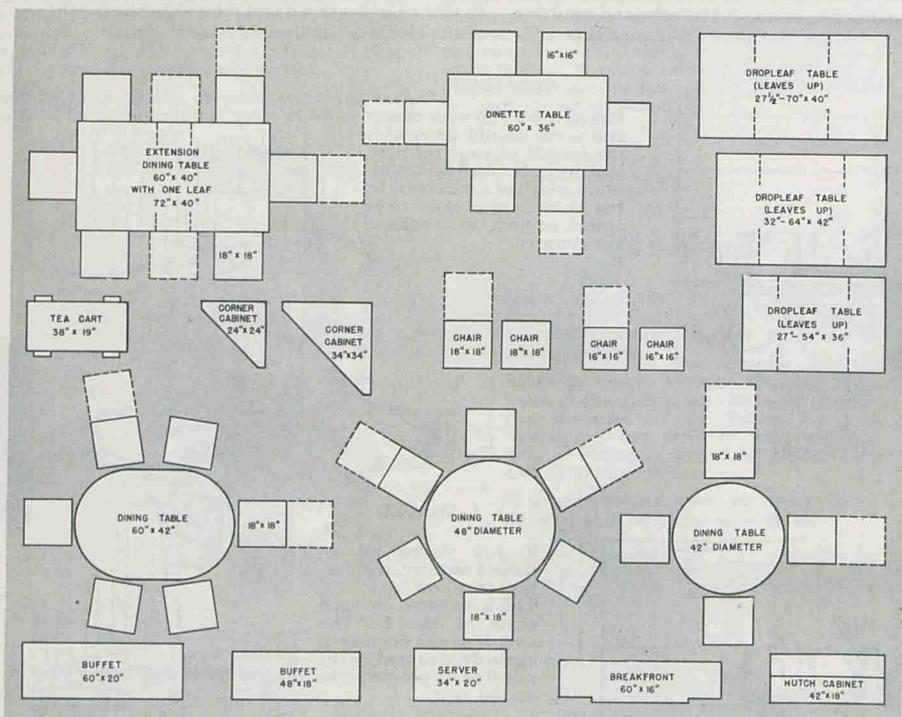
COUNTER HEIGHTS

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.

DIMENSIONS OF SPACE REQUIRED FOR A DINING AREA WITH TABLE AND CHAIRS

SIZE OF TABLE	AREA DIMENSIONS	
	LIMITED SERVING FROM TWO SIDES	LIBERAL 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"

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

HOUSE PLANNING AIDS



Reprinted from U. S. Department of Agriculture Misc. Publication No. 961 and published by the North Carolina Agricultural Extension Service as **Home Economics 55**. 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.

5-68-5M



LAUNDRY AREAS

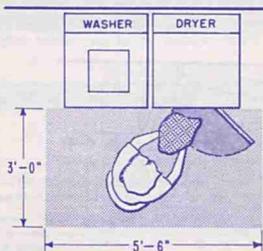
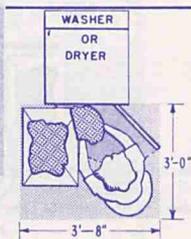
Choose a laundry area that best suits your needs and your house plan. The space requirements and arrangements illustrated will help you to plan an adequate and convenient laundry area.

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

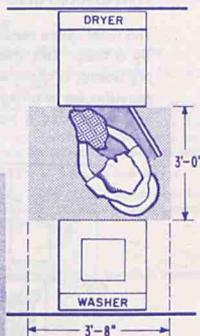
WASHER OR DRYER

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.



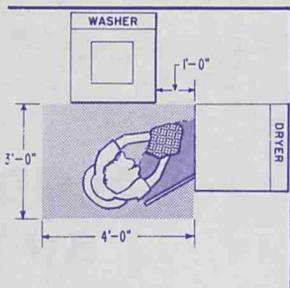
WASHER AND DRYER SIDE BY SIDE

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.

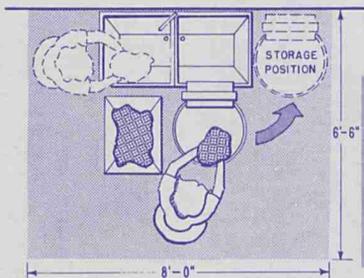
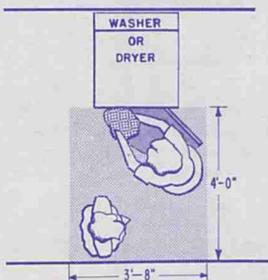


WASHER AND DRYER AT RIGHT ANGLES

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.

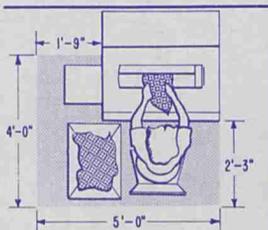
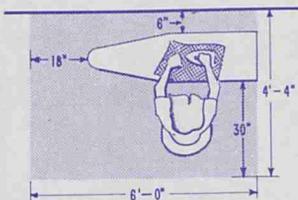


NONAUTOMATIC WASHER

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

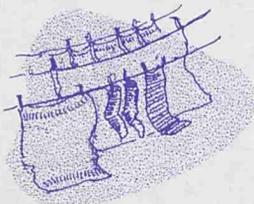
A space 32 inches wide and 31 inches deep will accommodate a washer or a dryer. Regardless of the size of your present equipment, allow at least this amount of space for equipment placed between built-in cabinets or walls. If you place your equipment under a window, the sill should be at least 3 inches 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.

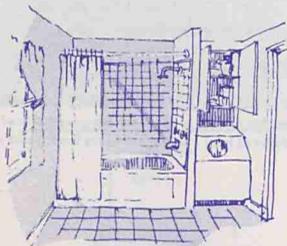
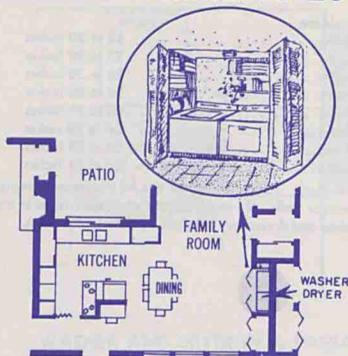
Most electric dryers are designed to use 230-volt, 3-wire, 60-cycle, AC circuits of 30-amp. capacity. Some high-speed dryers (8,000- to 9,000-watt) require greater capacity circuits. Some dryers are available or can be converted to operate on 115-volt, 60-cycle currents.

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

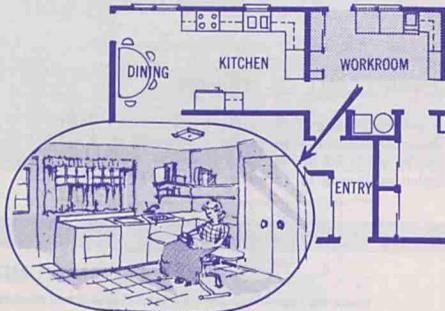
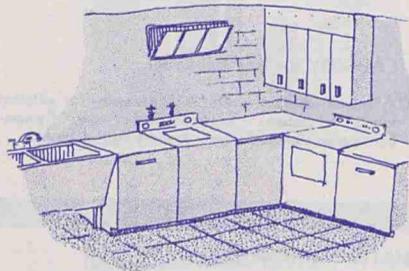


IN THE KITCHEN OR FAMILY ROOM

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 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 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 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

S T O R A G E

ENCLOSURE

STORAGE

STORAGE

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.

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.

Clothing

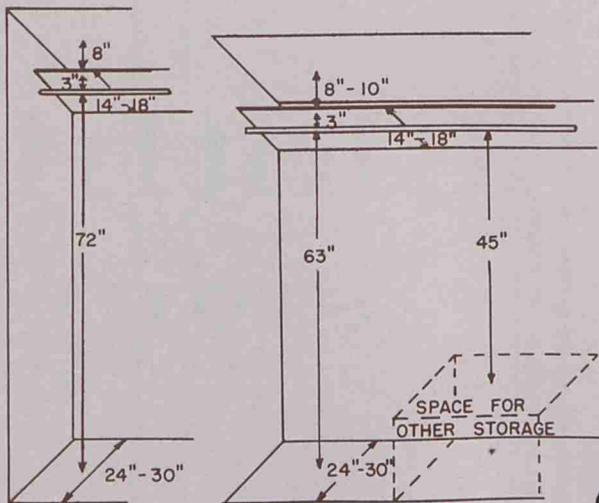
STORAGE



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.

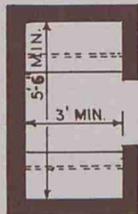
For Clothing in Bedrooms

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.

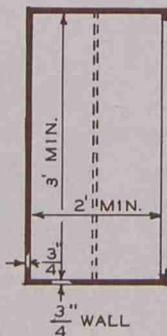
TYPES OF CLOSETS



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.

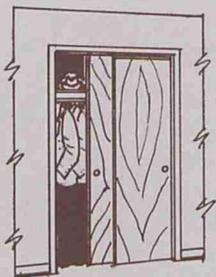


REACH-IN CLOSET. The reach-in closet is the most popular closet, and all carpenters know how to build it. Located between rooms, it creates a sound barrier. Where the width is greater than 4 feet, a double door should be provided. Standard equipment includes a hanging rod and one or two shelves above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

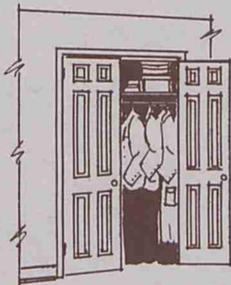


THIN WALL CLOSET. Thin wall clothes storage is the most economical use of floor space as the walls are only $\frac{3}{4}$ inch thick compared to approximately 6 inches for conventional walls. The entire front area of this storage can be opened for 100 per cent accessibility. A closet floor 4 inches above 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.

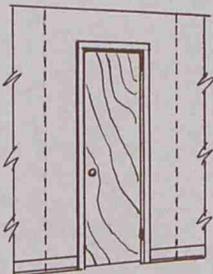
TYPES OF DOORS



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.

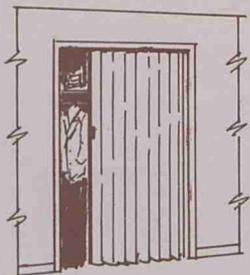


DOUBLE SWINGING DOORS. For good accessibility to a closet and for trouble-free service, double swinging stock doors rank at the top. They will stand hard use and furnish a place on the back that can be used to great advantage. Shoe racks or shoe bags, necktie racks, and full length mirrors can be attached 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.

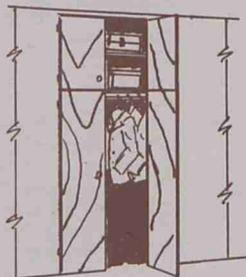


SINGLE HUNG DOORS. There are some advantages and disadvantages in every door type. A single hung door has the advantage of economy, and is a wall space saver. When used for a walk-in closet, there is no problem of accessibility, but for a reach-in closet a single door does limit accessibility. For a 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.

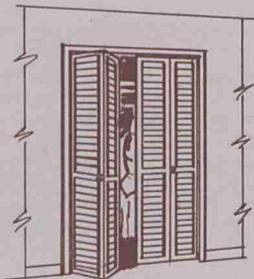
SHOE STORAGE. Racks can be provided for use on the closet floor beneath short garments. The rack may be metal or wood. Each pair of men's dress shoes requires a space 9 inches wide by 13 inches by $5\frac{1}{2}$ inches high. One pair of women's shoes requires space 7 inches wide, 10 inches toe to heel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

Published by

THE NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

Misc. Pamphlet 214

August 1963

North Carolina State of the University of North Carolina 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.

HOUSE PLANNING AIDS



Reprinted from U. S. Department of Agriculture Misc. Publication No. 996 and published by the North Carolina Agricultural Extension Service as Home Economics 53. 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

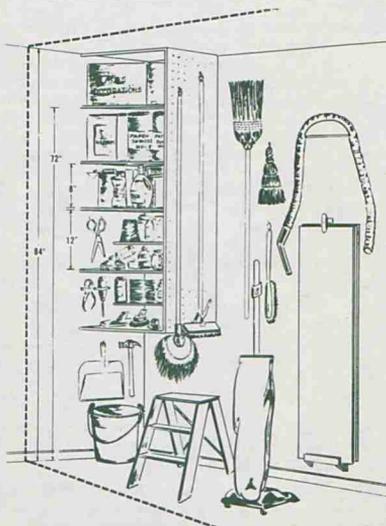
STORAGE FOR CLEANING EQUIPMENT

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	28	16
Canister vacuum	32	20
Tank vacuum, stored on end	24	16
stored horizontally	28	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



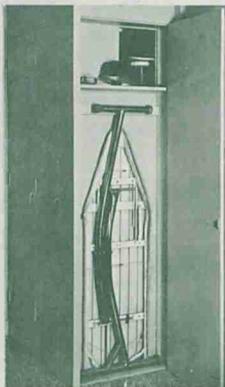
DEEP AND NARROW CLOSET

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.

W A L L S

COLLEGE COLLEGE
RECORDS
UNIVERSITY OF TEXAS

THE
STANDARD
HOCKEY BOARD
PUBLISHED

HOME VENTILATION GUIDE

*to help architects, builders, contractors and others to correctly select
the proper exhaust fan and hood-fan for home ventilation*

Based upon standards established by the

Home Ventilating Institute

a non-profit organization of leading manufacturers
of home ventilating equipment



HOW

Certified Air Delivery HELPS YOU

Widespread demand for proper ventilation in homes has made it essential for architects, builders and home owners to have accurate information on the performance of ventilating fans and hoods. For this reason, the Home Ventilating Institute has established a program for testing and certifying its members' products, based on independent tests made by the Texas Engineering Experiment Station at

Texas A & M University, a recognized authority on air movement engineering. Each fan and hood-fan is rated on air movement performance in terms of cubic feet per minute (CFM). The scale below keys CFM ratings to typical room sizes. To determine proper CFM rating for range hoods, see "Range Hood" section below.

Ventilation requirements recommended by the Home Ventilating Institute:

- Kitchen — 15 air changes per hour
- Bathroom — 8 air changes per hour
- Family, laundry or recreation room — 6 air changes per hour

CLASSIFICATION SCALE

This table shows CFM ratings required by rooms of various types and sizes, based on 8-foot ceilings and recommended air changes per hour (above).

CFM	Kitchen area that fan will ventilate (square feet)	Bathroom area that fan will ventilate (square feet)	Family Room Recreation Room Laundry Room areas that fan will ventilate (square feet)
40	Not Suitable	35	50
50	Not Suitable	45	60
60	Not Suitable	55	75
70	Not Suitable	65	90
80	Not Suitable	75	100
90	Not Suitable	85	110
100	Not Suitable	90	125
120	60	110	150
140	70	130	175
160	80	150	200
180	90	165	225
200	100	185	250
225	110	Over 200	280
250	125	Over 200	325
275	135	Over 200	350
300	150	Over 200	375
325	160	Over 200	400
350	175	Over 200	425
375	185	Over 200	450
400	200	Over 200	500
425	210	Over 200	Over 500
450	225	Over 200	Over 500
500	250	Over 200	Over 500
550	275	Over 200	Over 500
600	300	Over 200	Over 500

NOTE: Figures in table are rounded off to closest even number. Fan capacities over 600 CFM are rated in increments of 50, each ventilating an additional 25 square feet of kitchen area.



This tag, attached to the fan grille, shows the number of square feet for each type room a particular fan will ventilate, based on 8-foot ceilings. It should be left on grille to assure home owner that fan meets HVI specifications and will perform according to its rating.

This label is Your Guarantee of "Certified Air Delivery"

This label is permanently applied to the housing of all exhaust fans and range hoods manufactured by HVI members. CFM ratings vary from 40 to 600 and over, according to certified capacities of specific fans and hoods.



FOR RANGE HOOD FANS

the minimum requirements established by FHA and HVI, is 40 CFM per lineal foot of Range-Hood. The Peninsula, or Island Hood minimum requirement is 50 CFM per lineal foot. The larger the CFM rating the greater will be the air delivery and performance of the Hood-Fan. Classifications of Hood-Fans are on the basis of the following ratings:

80	=====	200	=====	375
90	=====	225	=====	400
100	=====	250	=====	425
120	=====	275	=====	450
140	=====	300	=====	500
160	=====	325	=====	550
180	=====	350	=====	600

WHY

Proper Exhaust Ventilation

IS ESSENTIAL IN THE HOMES YOU DESIGN OR BUILD

To conserve heat and avoid drafts, the modern home is built with heavy insulation and very little outside air can slip through windows and doors. Often this causes stale, contaminated air that must be exhausted without undue loss of coolness in summer or heat in winter.



Today's homeowners expect you to provide ways to remove these costly and annoying hazards

ODORS—The open design of many new homes makes it more necessary than ever to keep cooking odors from spreading throughout the home.



SMOKE—Grease-filled smoke not only damages kitchen walls and cabinets, but other walls, draperies and furniture all over the house.



MOISTURE—Removal of moisture from kitchens, bathrooms, and laundries saves the homeowner hundreds of dollars in cleaning and refinishing.

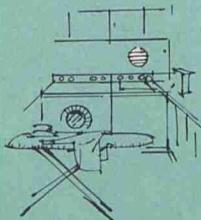


HEAT—Instant removal of heat over ranges, ovens, washers and dryers is important for comfort and to protect cabinet and walls.



KITCHENS

During cooking, droplets of grease, carried by steam, must be expelled before they settle on walls, ceilings—or even furniture in other rooms. University tests have established that as much as 200 pounds of such grease-laden moisture are given off every year in the average kitchen.



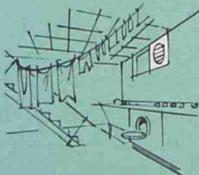
UTILITY ROOMS

Modern, step-saving room arrangements frequently place utility areas on the first floor. This makes removal of heat and moisture especially important. Studies have shown that almost 5 pounds of water vapor are produced during the washing cycle on a standard washer.



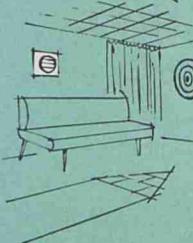
BATHROOMS

While removal of odors is desirable, it is especially important to eliminate excess moisture before it can loosen wall coverings and corrode plated finishes.



BASEMENTS

Stale, moist air in a basement is annoying and encourages mildew and structural rot. An average weekly washing in the basement adds 26 lbs. of water to the air.



RECREATION ROOMS

During a party, recreation rooms are often smoke-filled and stuffy. An exhaust fan eliminates this.

HOW TO PLAN *Correct Exhaust Ventilation*

You should consider these three elements in planning efficient ventilation:

LOCATION—Place the fan in the correct location in the room

SELECTION—Choose the proper fan for the room

DUCT WORK—Plan the shortest possible run to the outside

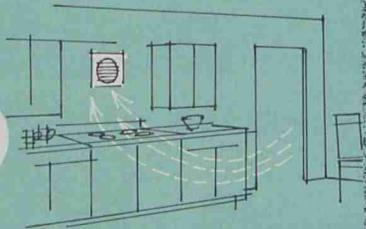


Location OF EXHAUST FANS TO GET BEST RESULTS

Place the ventilator in relation to the work it has to do. In a kitchen, it should be as near the range as possible and preferably, in conjunction with a range hood. "Make-up" air should come from other rooms in the house and sweep through the entire room.

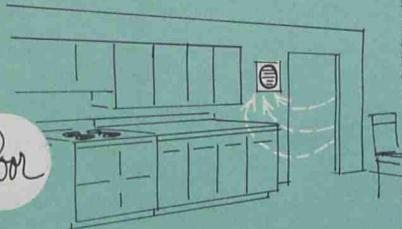
KITCHENS

Good



Air sweeping into the fan, located directly above the range, efficiently catches the smoke, odors, grease and moisture.

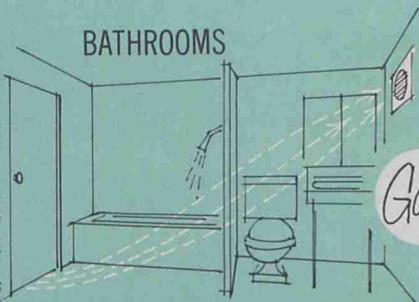
Poor



Air reaches the fan before it passes over the range, allowing cooking wastes to spread out into the room.

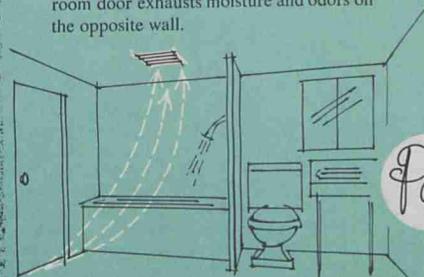
BATHROOMS

Good



Replacement air coming in under the bathroom door exhausts moisture and odors on the opposite wall.

Poor



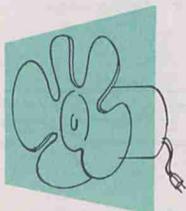
This fan would take out moisture over the tub but neglects the rest of the room. The air should sweep through the entire room.

Selection OF EXHAUST EQUIPMENT

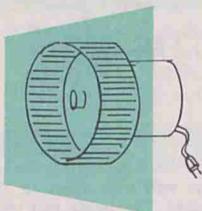
The efficiency of any ventilating equipment is dependent upon the ability of the fan to deliver a specific quantity of air through a standard duct system vented to the outside. If the fan delivers less than the rated capacity, full value has not been received and the

home owner will be dissatisfied. Under the Home Ventilating Institute's Certified Air Delivery program each tag tells how many square feet that particular fan will ventilate when properly installed. This removes the guesswork in the selection of suitable fans.

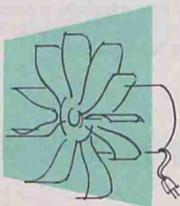
For your information, the following Blades are generally used in Exhaust Fans and Hood-Fans



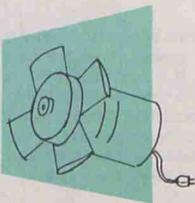
PROPELLER TYPE—The propeller type is usually a stamped impeller disc with three or more blades set at an angle (“pitch”) to deliver a maximum amount of air against relatively low resistance.



CENTRIFUGAL BLOWER—These are commonly called “squirrel cage” fans. Air is sucked into the center of a revolving wheel and discharged at right angles into an expanding scroll. This has maximum ability to overcome resistance.

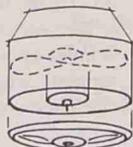


MIXED FLOW IMPELLERS—These combine the best features of both the propeller and the blower. The blades are set at a pitch at the intake and are like a blower at the discharge end. Consequently, less motor power is required than for a centrifugal blower.



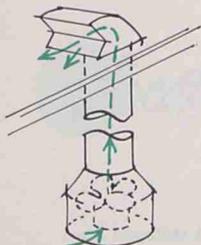
AXIAL FLOW TYPE—This is an improved version of the propeller blade which overcomes resistance by driving air at high speed through a close-fitting tube.

Types of Fans FOR KITCHENS, UTILITY AND RECREATION ROOMS



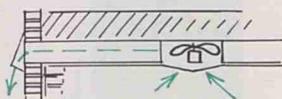
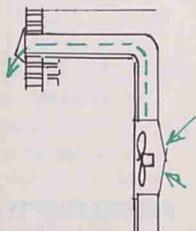
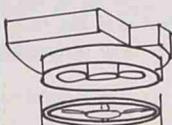
CEILING EXHAUST FANS

This fan can be flush-mounted in the ceiling. Hanger bars are used for mounting between joists. It can also be mounted in the kitchen cabinet or as an integral part of a range hood. A minimum of duct work is involved. Air is discharged through a wall cap or directly to the roof through a louvre-equipped roof jack containing a counter-balanced shutter. Control is with a wall switch, either single or multi-speed.



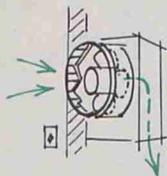
EXHAUST FAN FOR CEILING OR WALL

This versatile fan, built in several sizes, will fit in the wall with a vertical discharge or, if desired, can be installed in the ceiling with a horizontal discharge. It is often mounted in the wall for operation with a range hood. Generally it is equipped with a mixed flow impeller or a blower wheel.



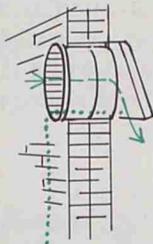
SIDEWALL EXHAUST FAN—WITH WALL SWITCH

Air is discharged into a weatherproof hood projecting beyond the outside face of the wall. This protects against the entrance of rain, snow and in-temperate air into the home. It also can be used with an extension sleeve for thick wall installations ranging from 15 to 28 inches. The unit can be controlled by a single or multi-speed wall switch. The fan can also be used with a range hood.

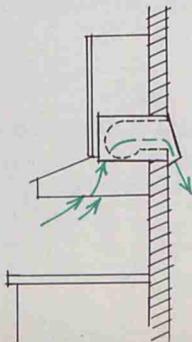
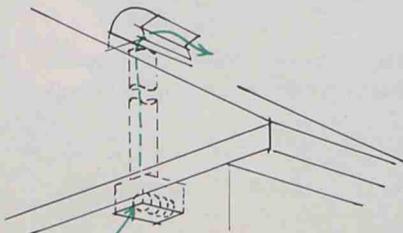


SIDEWALL EXHAUST FAN—WITH PULL CHAIN

This fan is mounted in the outside wall with direct air discharge. The inside pull chain controls the motor and, at the same time, regulates a spring-actuated door. The housing has a weather-tight seal.



BLOWER TYPE FANS

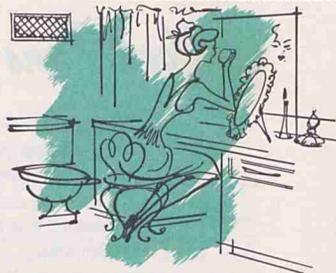


This type of fan will usually overcome greater resistance of duct work. It is controlled by a multi-speed switch when installed in the wall or ceiling. Often it is used as part of the range hood. It may be discharged vertically through the roof or through a wall cap.

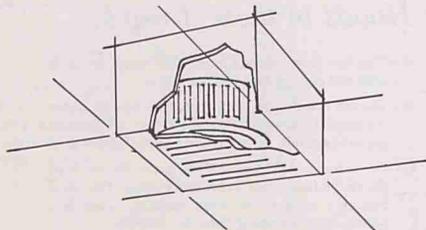


EXHAUST FANS FOR *Bathrooms*

Exhaust fans in the bathroom wall or ceiling eliminate moisture and odors. "Make-up" air, generally supplied from space under the door, is essential for satisfactory results. Duct work may go into the attic, if necessary.

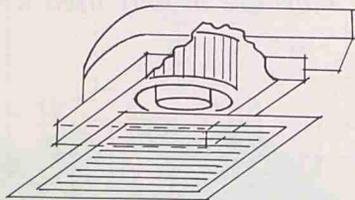


BATHROOM CEILING FAN



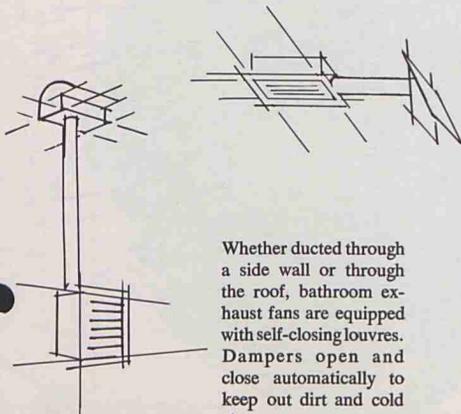
This type of fan is flush mounted between ceiling joists. It is designed with a blower wheel and may be directed vertically into the attic space or outside. It can be controlled with either a wall or timer switch.

EXHAUST FAN FOR WALL OR CEILING



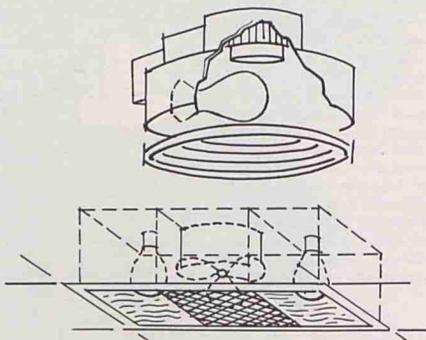
Mounted on the side wall, this fan discharges vertically. In the ceiling, discharge may be horizontal or vertical. Wall or timer switch may be used. The exhaust fan is mounted to the side wall studding by means of brackets.

TYPICAL BATHROOM EXHAUST FAN INSTALLATIONS



Whether ducted through a side wall or through the roof, bathroom exhaust fans are equipped with self-closing louvers. Dampers open and close automatically to keep out dirt and cold air.

FAN AND LIGHT COMBINATIONS



These dual-purpose units provide ventilation plus a ceiling light. They may be discharged horizontally or vertically with proper duct. Sometimes the light and fan are combined with an electric heater for the bathroom.

Hood-Fans Over the Range—MOST EFFICIENT WAY TO REMOVE

Range hood-fans are the ideal way to remove cooking odors and vapors because they trap and hold them right in the immediate area of the exhaust fan. This minimizes the escape of odors and greasy smoke into the kitchen and throughout the house.

The type of fan used depends upon the length of the hood, type and size of duct work and cooking requirements. It is not necessary to consider room size since the hood, not the room, is used as the collection area.

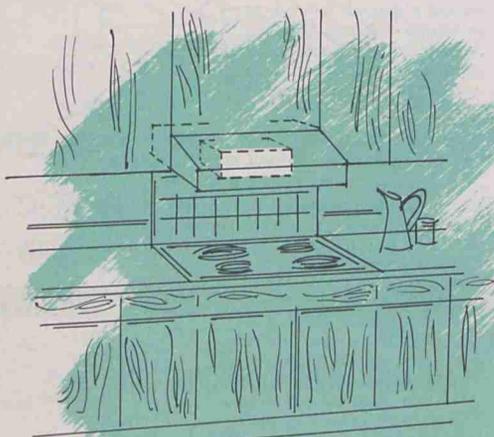
Hoods should not be more than 30" from the range burner level to the bottom of the hood. They should cover the entire range or cooking space.

Fans are usually used with Range Hoods in these 3 ways:

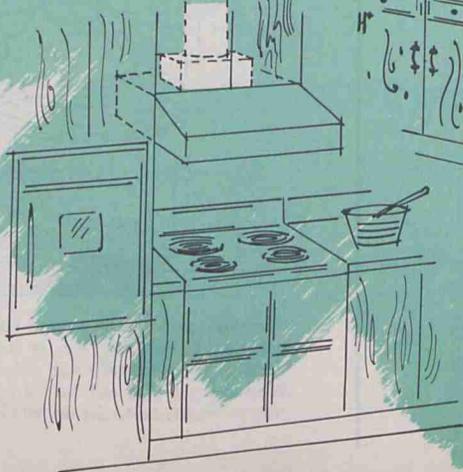
A—This fan is an integral part of the range hood. It does not occupy any cabinet space.

B—The fan is mounted in the cabinets directly above the hood. Usually the duct work goes up through the cabinets into the soffit and then to the outside.

C—An exhaust fan may be mounted in the wall above the range, just beneath the hood. The hood acts as a collector to keep cooking odors and grease from escaping into the kitchen.



A



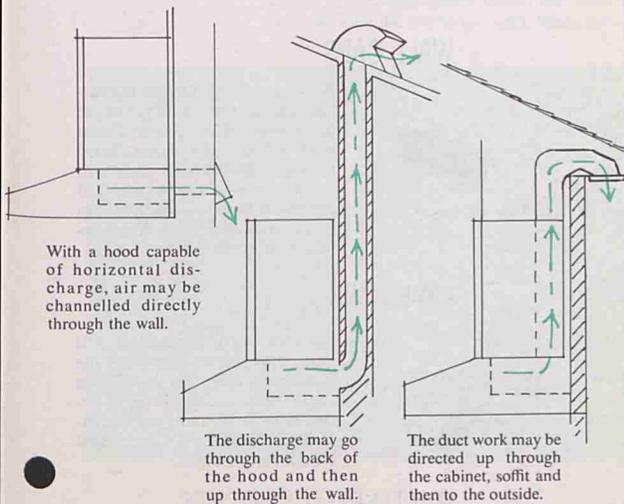
B



C

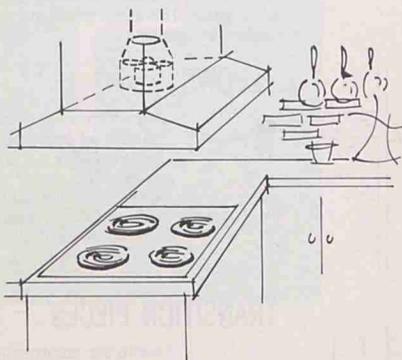
COOKING ODORS, GREASE, SMOKE AND HEAT

How to duct Range Hood-Fans

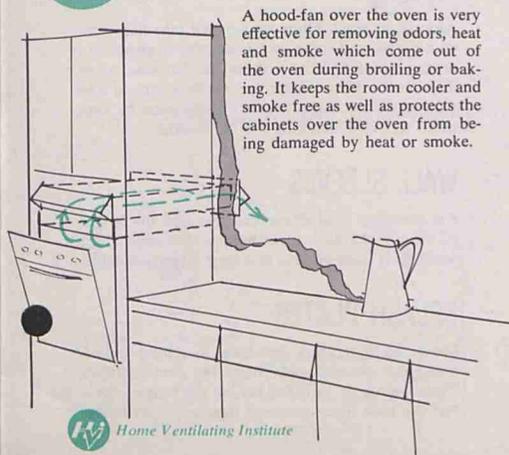


Peninsula Hood-Fans

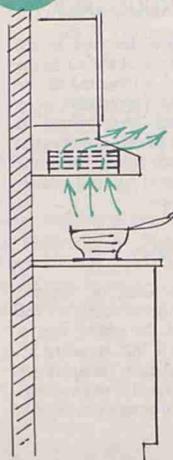
Peninsula hood-fans are available for ranges that extend into the kitchen and are open on two or three sides. Because the sides are open, the fan within the hood should be of large enough capacity to remove cooking odors, greasy smoke and excess heat. Duct work goes up through cabinets over the range, preferably directly through the roof or through the wall.



Hood-Fans for Built-In Ovens



Non-Ducted Hood-Fans



Non-ducted hoods use a system of filters to clean the air and return it to the room. As the air is not discharged to the outside, no duct work is needed. They may be hung on the wall above the range, either with or without cabinets. Non-ducted hoods have installation advantages in apartments or for remodeling, but are less desirable than hood-fans that duct to the outside because they do not remove heat and moisture.



Accessories FOR EXHAUST VENTILATION INSTALLATIONS

Because the exhaust fan is located in the interior of a house, it is necessary to conduct the discharged air from the fan to the outside. Two or more of these accessories generally are used to complete the installation.

DUCT WORK

Duct is available in many sizes and shapes. The most popular sizes are 3", 4", 6", 7", or 8" round and 3¼" x 10" or 3¼" x 12" rectangular. The metal is usually galvanized steel or aluminum.

ELBOWS

Elbows come in all the standard sizes of duct work and are used to change the direction of the air. The proper elbow depends upon the size of duct work and the direction the air is to be directed. A minimum of elbows should be used.

TRANSITION PIECES

Due to the construction of the house, it may be necessary to change the size of the duct work from perhaps 7" round to 3¼" x 10" rectangular. Such transition pieces are designed with a taper to cause least air resistance.

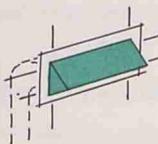
ROOF CAPS OR ROOF JACKS

A roof cap is designed for the final discharge of the air to the outside and is mounted on the roof as the termination of a vertical duct work system. It contains a pressure-actuated damper that opens when the fan is operating and closes when it stops.

DAMPER SECTIONS

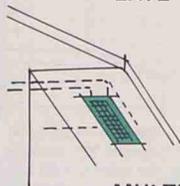
Damper sections, in assorted sizes, can be attached to the top part of the ceiling fan in order to fit it into standard 7" or 8" round duct. Dampers are gravity operated to prevent outside air from entering the home.

WALL CAPS



A wall cap is installed on the outside wall of a house to act as the termination of a horizontal duct work system. The outside hood section is slanted at an angle with an extension on the outside wall surface. A flush mounted wall cap is also available if the hood extension is not desired.

EAVE CAPS



An eave cap is used when it is more desirable to terminate the duct work under an eave. It is usually flush mounted and is designed to fit standard duct. It includes a back draft damper and a flush mounted grill.

MULTI-SPEED SWITCHES

These provide a choice of speeds for meeting changes in ventilating requirements and for controlling noise, just as the accelerator on an automobile controls engine speed. It also compensates for abnormally high or low voltage which affects motor speed.

FILTERS

Aluminum mesh filters on exhaust fans help prevent grease and vapor laden deposits from settling on the motor and the sides of the fan housing or duct work. These filters are easily removed and washed in hot, sudsy water. Filters must be kept clean to avoid blocking the air stream.

WALL SLEEVES

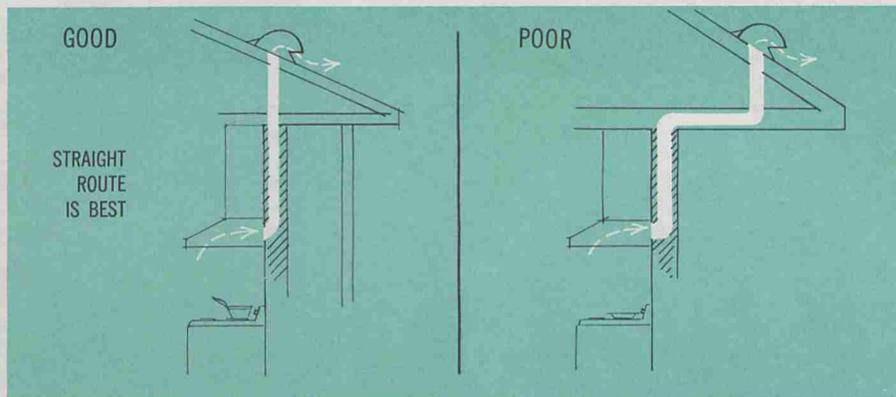
An extension wall sleeve can increase the length of the air chamber to accommodate extra thick walls. It is used on fans that vent directly outside.

SPLASH PLATES

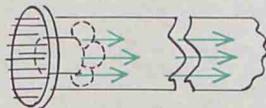
Most manufacturers produce matching splash plates for use with their hood-fan combinations. These are easily installed behind the range to protect the wall from excessive heat and splattering.

RIGHT *Duct Work* FOR TOP PERFORMANCE

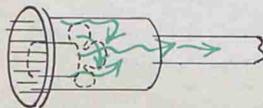
Because the duct system is concealed after the house is completed, it is often neglected. The straightest system is usually the simplest and most efficient. Unnecessary elbows should be eliminated during the early planning stage as they drastically reduce the flow of air. For example, in the illustrations below, the hood at the left will exhaust approximately 20% more air than the one at the right. When possible, always reduce the number of elbows.



Avoid Constricting Ducts



GOOD—If a fan discharges into a 7" diameter duct, it should continue with this to the outside.



POOR—If duct work is reduced somewhere in the system, air delivery will be poor.

Regulations governing outlets for Kitchens and Bathrooms



If necessary, bathrooms may be vented into the attic space, as their primary function is the removal of moisture. Kitchen fans, however, should be vented to the outside because the grease they remove is a possible fire hazard within the attic.



You can be certain
if you select an
"HVI" Certified Fan



Reg. U.S. Pat. Off.

The Home Ventilating Institute

This booklet is published for the home building and remodeling industry to provide helpful information on ventilation in the home.

For further details, write Home Ventilating Institute,
1108 Standard Building, Cleveland 13, Ohio.



THE
SOUTHERN
BANK OF
INDIA

MALLS

WALLS AND WALL FINISHES

By House Furnishings Specialist

Walls give protection and privacy; govern room shape, size and character; determine movement and vistas; affect light and sound; and form the background against or with which one lives. Walls are seen and used in relation to the windows, doors and fireplaces which are a part of them; and the floors and ceilings which complete the enclosure. The furniture, accessories and people in this area should be considered as a part of the room.

The minute one begins thinking of windows, for example, as features separate from the walls and from the rooms in which they are located, all sorts of foolishness creeps into the "treatment," as curtains and draperies are so often rightly called. While paying special attention to walls, one should consider walls, windows and doors, floors and ceilings, and fireplaces as unified parts of a whole.

I. Rigid Wall Material

Wall materials profoundly affect the character of a room and home. Some of the materials used are:

- A. Plastic-finished hardwood plywood panels, which are among the most expensive of the wood panels. They are easy to install and require little subsequent care. The finish, like any of the plastics, does not stain, requires no waxing, and may be wiped off with mild soap and water. Most of these panels may be obtained in an assortment of wood grains -- oak, walnut, mahogany, and birch.
- B. Plywood panels and squares, which range from those pre-finished at the factory to those sanded and ready to finish at home with wax, stain, or paint. They may be obtained in almost all soft or hard woods, and the cost varies with the type of wood. In addition to plain surfaces, textures come in combed or striated effects, or with a grooved surface or edges.

For easy installation, get the type with the shiplapped edges, where the edge of one panel or square overlaps that of the one next to it.
- C. Hardboard panels, which are basically light-brown or dark-brown tempered composition boards, but which can now be obtained also with a plastic finish in patterns, colors or wood grains. Tongue-and-groove edges make installation easier. However, the edges are brittle and must be handled carefully. Hardboard makes an inexpensive, attractive covering over old walls and ceilings in bad condition. The punched or perforated surfaces look particularly handsome in a modern setting.
- D. Plastic-coated sheets or panels. This thin paneling (1/16-inch thick) is ideal for any room with a number of built-ins or windows that break up the wall surface. It is easy to fit and is available in a large assortment of patterns and wood grains. This is the same material one sees on furniture and counter surfaces.

- E. Glass or translucent plastic panels, which are primarily for walls and which make excellent divisions between rooms. Glass paneling takes greater skill to install than light-weight plastics. Both materials are available in colors and in corrugated or plain finish.
- F. Insulation boards, plasterboard or composition board, which are the least expensive of the panels. Their plain surface can be painted or papered after sizing. Board paneling can be applied over walls and ceilings in bad condition or directly to studs in unfinished rooms. Standard sizes are 4 feet by 4 feet or 4 feet by 8 feet.
- G. Acoustical tile, which is a composition material for ceilings, specially designed to absorb sound. It may be obtained in a perforated form, in a plain, a textured, or a refinished patterned surface that resembles a cork face. Grooved edges fit into each other for simple ceiling or wall installation.
- H. Plastic tile. The rigid tile in clear or pastel colors is generally used for kitchen or bathroom walls and ceilings. There is also a flexible or plastic-coated fabric tile. This comes in colors and textures that can be used in any room. Like any of the plastics, these tiles resist staining and marring and make a nearly permanent surface.
- I. Ceramic tile or mosaic tile. A new bonding adhesive now makes it possible for anyone to install these tiles. They are available in 4 1/2-inch squares or on backing sheets of small tiles about one foot by two feet. The colors are impervious to almost any kind of stain, spillage, or marring. This lovely tile can be used for ceilings, walls and floors.

II. Applied Wall Finishes

Painting is the traditional method of reviving a background, although natural wood finishes are popular in some areas of the home. The use of wallpaper is another method which has grown in popularity in recent years.

A. Paint

Paint covers and conceals the grain of the wood and marked areas. It adds color and new life to a room.

1. Turpentine-thinned enamel

a. High-gloss enamel

- 1) Characteristics: Very smooth. Hard. Not quick-drying. Harder to apply than alkyd high gloss. Washes easily. Resists dirt.
- 2) Use: To trim areas and to paint furniture.

b. Low-luster and semi-gloss enamel

- 1) Characteristics: Same as high-gloss enamel
- 2) Use: For large areas such as kitchen, bathroom, and workroom. Also for trim.

2. Solvent-thinned paint with alkyd base (Has color control and stabilizers). Dries in three to four hours.
 - a. Alkyd high gloss
 - 1) Characteristics: Extremely washable and easy to keep clean. Resistant to stain and grease. Surface reflects glare. Appears brighter and lighter than same color in another finish.
 - 2) Use: For kitchen, bathroom, workroom. For wood trim.
 - b. Alkyd semi-gloss
 - 1) Characteristics: Wider range -- Softer and more pleasing colors. Does not have quite the washability of high gloss.
 - 2) Use: For kitchen, playroom, bathroom, workroom, family room.
 - c. Alkyd flat
 - 1) Characteristics: Very popular. Less easy to keep clean.
 - 2) Use: For bedroom and living area.
3. Water-thinned latex. (Some latex is labelled "alkyd", which means they have color control and stabilizing ingredients.)
 - a. Characteristics: Flows on easily. No lap marks. Dried quickly. Odorless. Good covering power. Spills cleaned up easily.
 - b. Use: For living room, bedroom, etc.
4. Textured paint is a heavy-bodied material used to seal surfaces to give special effects. Some give plastered effect. Tools used to apply are: rollers, brushes, sponges, brooms, spatulas, and crumpled newspapers.

B. Wood Finishes

These emphasize the grain of the wood but give smoothness and protect it from rot and moisture. Minimize fading or darkening. These finishes penetrate or stay on the surface.

1. Lacquer
 - a. Characteristics: Harder, tougher, more resistant to heat, acids, and less elastic than paints, varnishes. Costlier but time is saved. Durability offsets this. Not suitable for outdoor wood.
 - b. Use: Transparent lacquer is used on furniture and walls; opaque lacquer is used on furniture.
2. Penetrating sealer
 - a. Characteristics: Easily applied. Darkens some with age. Penetrates the wood. Very durable.
 - b. Use: On furniture, walls, floors.

3. Oil

- a. Characteristics: Penetrating, very durable finish with soft luster. Darkens and yellows wood somewhat at first, considerably in time.
- b. Use: On furniture.

4. Shellac

- a. Characteristics: Changes character of wood a little, especially white type. Rubbed to soft satiny finish or high brittle gloss (Franch Polish). Fragile finish, wears badly. Affected by heat, moisture, water spots. Good as filler or undercoat for varnish or wax.
- b. Use: Used today primarily as an easily applied, quick-drying undercoat.

5. Varnish

- a. Characteristics: Thin, durable, brownish skin coating. Little penetration. Darkens wood. Emphasizes grain. Best when not thick or gummy. Comes in gloss, satin-base and dull.
- b. Use: Chiefly on interior furniture, floors, walls.

6. Wax

- a. Characteristics: Penetrates raw wood, especially liquid waxes. Darkens, enriches, brings out grain. Gives soft to high luster, depending on type and kind of polishing. Must be renewed often. Surface wears and washes off. Many water spots. Difficult to remove.
- b. Use: Very old way of finishing wood. Generally used as easily renewed surface over more durable undercoats. Some liquid waxes used along on wall, floors and furniture.

7. Liquid plastic

- a. Characteristics: Quick drying. Clear. Satin or high gloss. Very durable. New.
- b. Use: On walls and furniture.

C. Wallpaper

A third method of decorating walls is with the use of wall coverings. While paint is very effective in many areas and does offer the advantages of quick, easy decorating, it does not achieve the individuality and distinctive atmosphere of a well-chosen wall covering.

The effects that can be achieved through the use of pattern and color are limited only by lack of ingenuity. In addition to these decorating possibilities, wall coverings can do more to establish an unmistakably modern, traditional or provincial period than any single item.

An appropriate wall covering can give character to a dull, ordinary room. It can provide complete decorating for problem areas such as an entrance hall or open stairway, or it can offer complete

wall decorating with pattern substituting for pictures and other wall hangings. More practically, wall coverings can be used to cover effectively unsightly wall cracks and imperfections.

The major objectives in the selection of a wall covering will undoubtedly be a choice of pattern and color. Some wall pattern types from which to choose are: all-over pattern, small pattern, large pattern, texture, geometric design, stripes, novelty prints, abstract designs, "conversation pieces" and scenic prints. Regardless of the style of decorating or the kind of furniture one has, there is a pattern to suit the room.

When actually making the final selection, study wall covering books available from any wall covering department. In addition to the advantage of seeing actual samples of the wall coverings, these books include many helpful decorating suggestions.

To make selection easier, many companies group patterns of wall coverings; i. e., all small patterns are in one section; all large patterns in another, etc. Matching fabrics available with some wall covering patterns allows the background theme to be carried into the room itself.

In addition to the wide range of pattern and color already mentioned, specialty wall coverings increase the range of decorating possibilities. Hand-printed flocked papers, hand-painted murals, textured grass cloth, oriental silks, plastic wall coverings designed to simulate brick or wood paneling, are a few in this group.

The materials used and the hand-printing process make these coverings more expensive without necessarily increasing the quality. However, their value lies in the unique and dramatic decorating possibilities.

III. Plan Your Color Scheme

The present trend in home furnishings is toward colored walls. It is a matter of individual taste whether the walls, woodwork and doors are all painted the same color or whether the woodwork and doors are finished in a dark color, a light color, or a deeper shade of the wall color.

No longer is it a problem to get the colors you want. Paint manufacturers have on the market hundreds of ready-mixed paints in various hues and shades. Many of them have directions for combining certain colors to get a desired color.

If you are planning to paint your walls, collect the color charts, study them carefully, and then plan your color schemes.

Here are a few suggestions to guide you in selection of colors:

1. Exposure of the room determines the colors that will be most effective:
 - North -- warm colors
 - East -- gradually cooler colors
 - South -- cool colors
 - West -- gradually warmer colors
2. When a room has many openings, paint walls, woodwork and doors the same color.

3. Dark walls should be used only in a room that has large window areas. It is desirable to have light ceiling and furnishings. Dark walls make a room look small.
4. Off-white or white ceilings reflect light.
5. Colors are affected by the use of other colors.
6. Plan a complete color scheme for rooms opening into each other.

IV. Prepare Your Walls for Paint

About 95% of paint failures are due to improper surface preparation. The most important step in painting is the preparation of walls so that the paint will have a solid foundation.

Paint will not stick to grease or moisture. Since dirty walls usually contain greasy soot, they should be washed with a mild soap and water and rinsed with one quart of vinegar in one gallon of water. Or they may be thoroughly cleaned with a tri-sodium phosphate solution. It is important that walls be thoroughly dried before painting. There are commercial preparations available that will disintegrate grease.

Dust must be removed, as it will form lumps. Fly specks should be washed off and, if necessary, the surface sanded.

Paint or enamel will not adhere well to a slick enamelled surface. You should cut the gloss with a commercial preparation, or a cupful of sal soda to a gallon of water, and rinse with vinegar or use fine sandpaper to roughen.

Dark woodwork paints may bleed; therefore it may be necessary to use a varnish remover and then paint with an aluminum paint or shellac. Skilled painters can remove paint with a blowtorch.

All old calamine should be removed from a wall before any type of paint is applied. Removing a calamine is a dirty, difficult job. One can wash it off with a solution of household ammonia, or it can be removed with a steel brush. Regardless of what method is used to remove it, it must be removed before one can do a good paint job.

Cracks should be filled. Small cracks should be cut into the shape of an inverted V and filled with a spackling compound. Large places should be patched with patching plaster.

Mildew should be removed. In damp, humid areas mildew may form on the walls of a house where there is moisture, absence of sunlight, food in the form of oils in paint films, and the presence of mildew spores. One should never paint over mildew, as the brush will spread it.

Mildew is a fungus which lives on vegetable matter such as the oil in paints. It can act through several coats of paint. Therefore one should first get rid of the mildew by washing the wall with a solution of one pound of tri-sodium phosphate to a gallon of water and by rinsing with clear water. Several commercial products are available for washing walls. Then sterilize surface with chlorine solution.

Special mildew-resistant paints are available. A poison can be added to the paint, but it should be used with great caution. Some products of this type are available, which are non-toxic to humans and animals.

V. Priming and Undercoats

Priming and sealing are to provide a satisfactory surface for the finish coat on both old and new work. This insures an even penetration of the finish coat, preventing light, dark, or shiny spots. They provide a bond between the undercoat and the finished coat.

Primers and sealers may be clear or pigmented. To determine the proper undercoating for a wall finish, use the undercoat recommended by the manufacturer and follow the directions for applying it. Do not thin unless instructed to do so.

The undercoat cannot be touched up by applying a second coat to spots. The entire surface must be covered from one natural break to another (from corner to corner and from baseboard to ceiling).

A successful wall finish where deep tones are used is dependent upon the proper undercoat.

There are three types of wall primers:

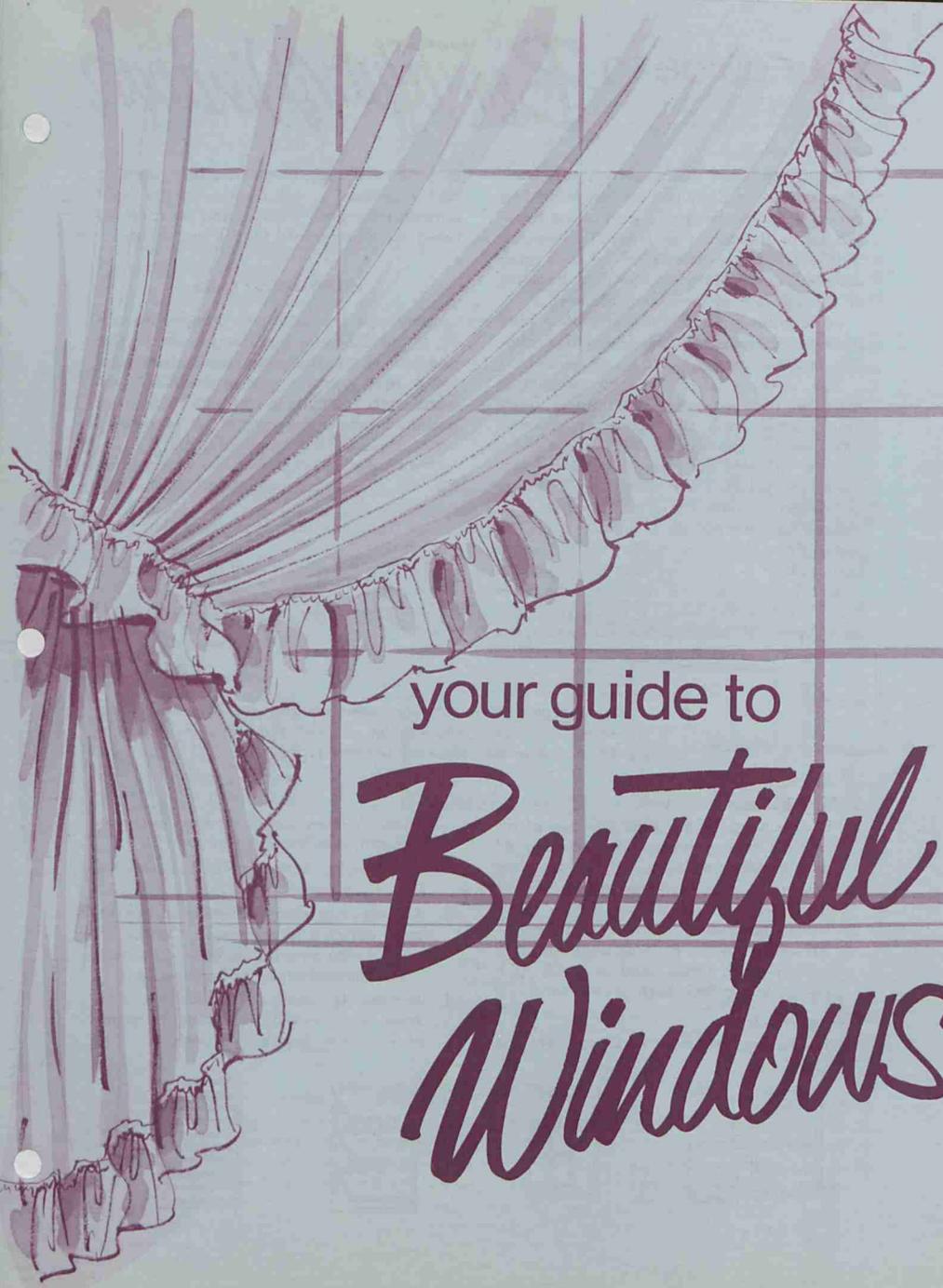
1. Clear type of varnish (It will not hide but it seals.)
2. A pigmented primer
3. Shellac

North Carolina State of the University of North Carolina at Raleigh and the United States Department of Agriculture, Cooperating. N. C. Agricultural Extension Service. State College Station, Raleigh, N. C. Revised Oct. 1963

W I N D O W S

MILLERS FALLS
BOND
COTTON-CONTENT

WINDOWS



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

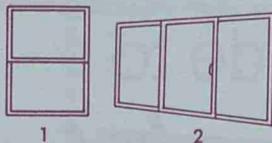
Window styles are usually grouped according to installation or according to shape, size and placement. There are basic styles commonly used by architects and builders the world over. You need to learn the style names and the terms for the parts of the windows in order to discuss window treatments.

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

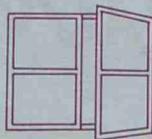
1. Double-hung—Is the most common of all window types. Has two sashes, one or both of which slide up and down. Unless unusual in size or placement, it is easy to decorate.
2. Horizontal sliding windows and doors—Are often used in multiple units with one section fixed. Often used in ranch type houses and called ranch or strip windows.

Swing Windows

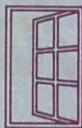
1. In-swinging casement — Opens into the

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.



1



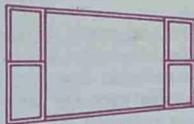
2



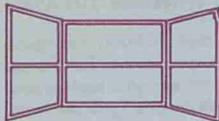
3



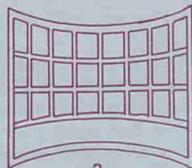
4



1



2



3

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.

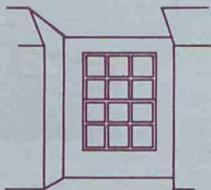
2. Bay windows—Consist of three or more windows set at an angle to each other in a recessed area. May be combination of fixed and movable.
3. Bow window—A curved window often referred to as circular bay. A fixed window area.

Other Styles Classified According to Shape, Size or Placement

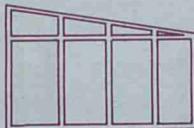
1. Dormer—Usually a double-hung window projecting from the house in an alcove-like extension.
2. Cathedral windows—Characterized by the angle at the top that follows the line of a slanting roof.
3. Clerestory windows—Set near the ceiling.

Sometimes placed in a slope of beamed ceiling. Often not decorated at all.

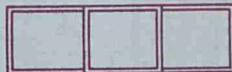
4. Corner windows—Include any windows that come together at the corner of a room. Easy to decorate with right hardware.
5. Arched windows—Characterized by curved top. Need special decorating.
6. Window wall—Is a group of basic window units fitted together to form a glass wall.



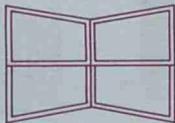
1



2



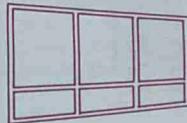
3



4



5



6

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.



1



2



3



4



5



6



7



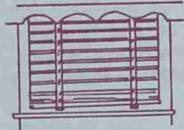
8



9

Blinds and Shutters

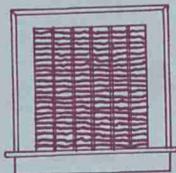
1. Venetian blinds—May be used alone or in combination with curtains and draperies. Available with vertical and horizontal slats. Suitable for most any type window



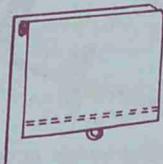
1

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



1



2

except in-swing, corner, slant or arched windows.

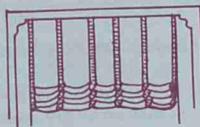
2. Shutters—May be used alone or in combination with other types of window treatments. Suitable for same types of windows as Venetian blinds.



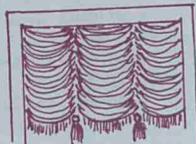
2

serve both purposes.

3. Roman shades—Work on the same principle as matchstick shades, except fabric forms pleats as it is raised and lowered. Add a decorative note.
4. Austrian shades—Are shirred; usually of sheer to medium-weight fabric. Appropriate for more formal decor.



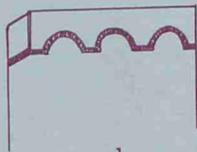
3



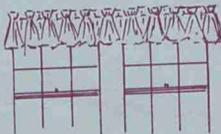
4

OVER-TREATMENTS

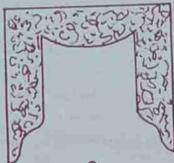
Over-treatments are often used with curtains, draperies, blinds or shades to give a finished appearance to the window. There are several choices, depending on the decorating effect you wish to achieve.



1

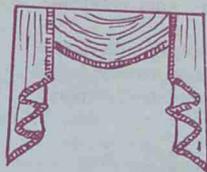


2

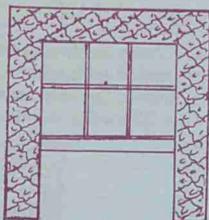


3

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 perlette 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.

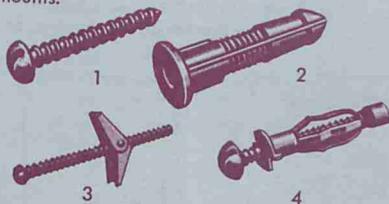
DRAPERY HARDWARE

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.

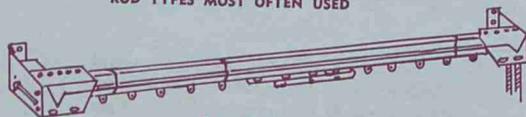
Fastening devices are available for mounting rods on different kinds of wall materials. Wood screws are used for casing mounts.

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.

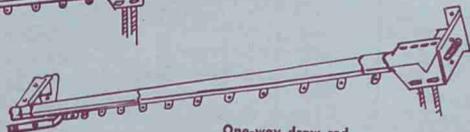


Rods are available in a wide selection of standard models. In addition, they can be custom cut and assembled to any size. They can be mounted on the wall or the window frame, on extenders or inside the casing. Rods for bow and bay windows are custom cut. Decorative rods have become a fashion trend. Many of the basic types are also available in a variety of decorative finishes. The rods then become an important part of the decorating plan.

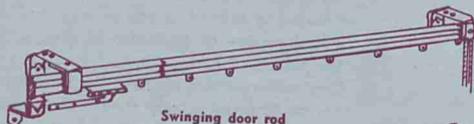
ROD TYPES MOST OFTEN USED



Two-way draw rod



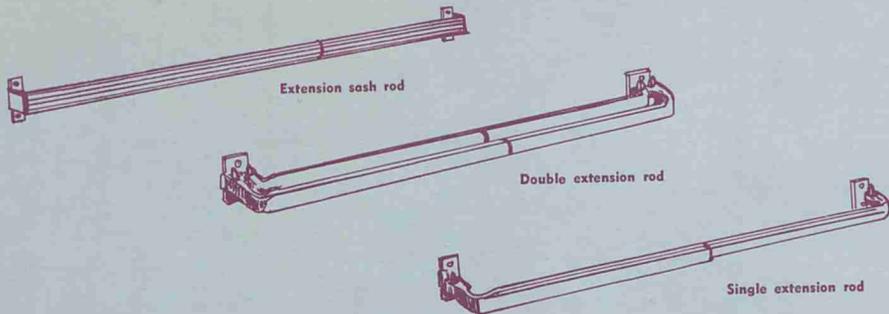
One-way draw rod



Swinging door rod



Cafe rod



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.

ADDITIONAL REFERENCES:

- H.E. 101 "Your Guide for Making Draperies."
 Faulkner, Ray and Sarah Faulkner. *Inside Today's Home*, New York: Holt, Rinehart and Winston, revised 1967.
- Whiton, *Elements of Design*, New York: J. B. Lippincott Company.
- Kirsch. *How to Make Your Windows Beautiful*, Sturgis, Michigan: Kirsch Company, 1965.
- Kirsch. *Draperies Hardware*, Sturgis, Michigan: Kirsch Company, 1967.
- Graber, Marie. *Window Decorating Guide*, New York: Graber Company, 1967.
- Eastern. *Window Wonderland*, Baltimore, Maryland: Eastern Products Corporation, 1967.
- Breneman. *The Elegant World of Window Shades*, Cincinnati, Ohio: Breneman, Inc., 1967.



Prepared by Mrs. Lillie B. Little, Extension Housing and House Furnishings Specialist

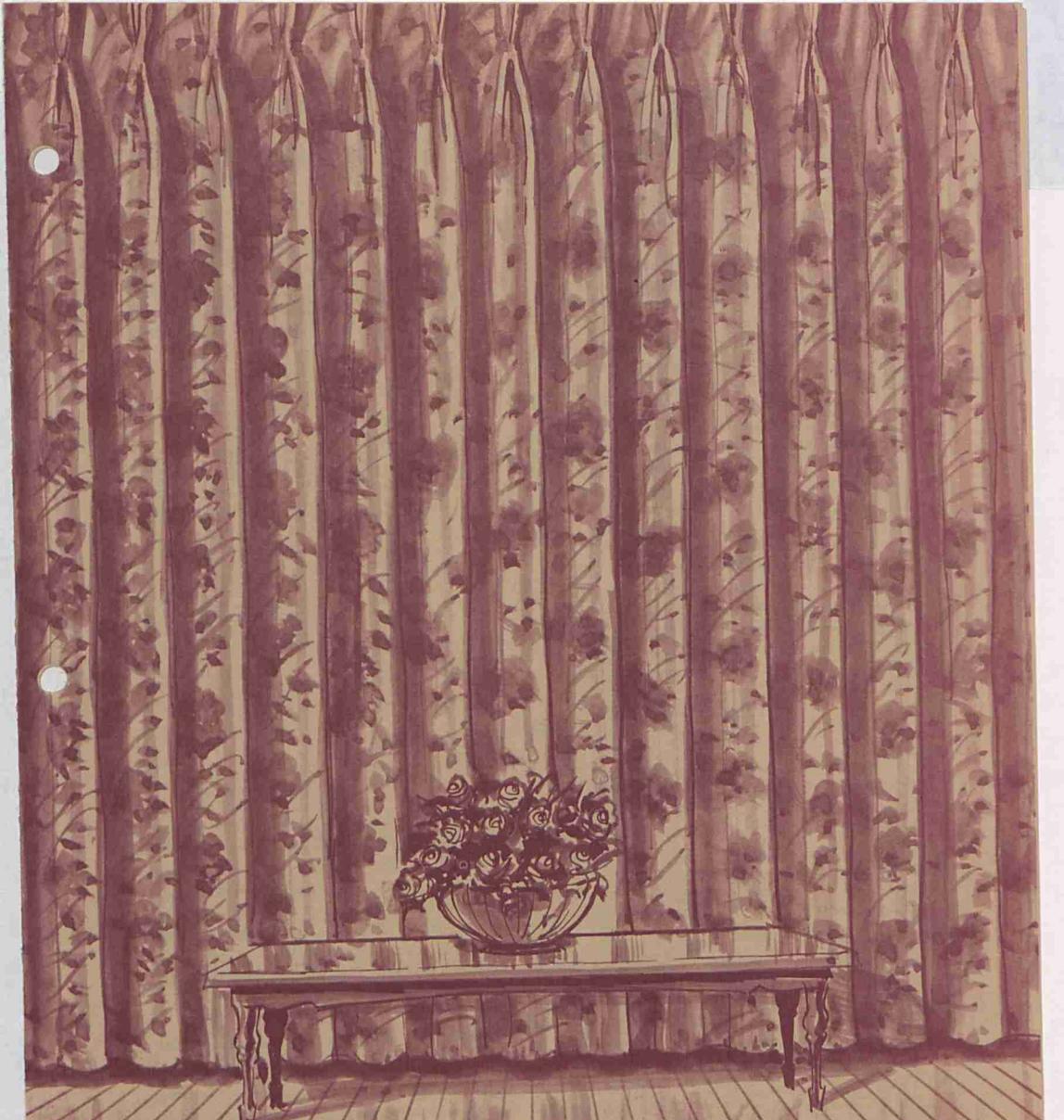
Published by

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.

9-68-10M

Home Economics 100



YOUR GUIDE FOR

making draperies

YOUR GUIDE FOR

making draperies

Draperies are the most often used style of window treatment. They may be either stationary or drawn, lined or unlined, hand- or machine-sewn. These step-by-step directions will help you achieve satisfactory results with the type of your choice.

Draperies may cover the window area plus additional wall space or the windows only. If you wish to take advantage of light and a view, you may extend the draperies far enough on each side of the window for the glass area to be completely exposed when draperies are open. This also applies to side draperies that do not draw.

Draperies should begin and end with some structural part of the wall or window. The top of the drapery may extend from the ceiling; top of the window frame or the top of the sash of a recessed window. The lower edge of drapery may extend to the window sill; to the bottom of the apron, if there is no frame, approximately 1 inch below the opening; or to the floor or no more than 1 inch above the floor.

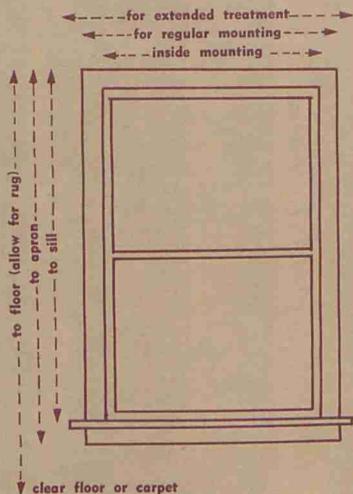


Figure 1

SELECTING THE FABRIC

Your choice of fabric is influenced by the type of window, style of drapery and the general effect you desire. Fabric may be chosen to filter the light, provide privacy, soften the background for your furnishings, frame a lovely view or create a center of interest. In either case draperies are an important part of the decorating plan and should be in harmony with other furnishings.

A satisfactory fabric for draperies:

- is colorfast to light, laundering and drycleaning.
- will not shrink or stretch.
- will resist soil.
- has resistance to deterioration from light or heat.
- has excellent draping qualities.
- will resist abrasion (fibers will not break easily).
- resists fire. This is particularly desirable for public buildings.

A lining may serve one or more useful purposes. It may protect the drapery fabric, improve the outside appearance, provide insulation, control the light or simply make the drapery hang better.

Lining fabrics may now be selected in widths approximately the same as the drapery widths. While cotton is most often used, chromspun and rayon are gaining wide acceptance. Some of the new cotton and rayon lining materials resist stains, have insulating qualities and resist wrinkles.

Many of the new drapery fabrics have special finishes and do not require lining.

Trimmings do for fabrics what accessories do for a costume. They come in such a wide variety of colors and types that it is easy to find just the right one for any style of drapery. The way trims are applied can also vary and add individuality to your window treatment. When you are shopping for fabric is a good time to select the trims.

AMOUNT OF FABRIC NEEDED

In order to be accurate, rods should be installed before measurements are taken. Then each window should be measured individually. A steel tape or yardstick is preferred to a cloth tape.

Length of draperies

The finished length of the drapery should be determined by your personal preference, the structural features of your window and the character of the room.

1. Measure the finished length of the drapery. Determine if it will hang to the sill, bottom of apron or the floor. **Fig. 1.**
2. Allow 4 to 6 inches for the bottom hem of long draperies. Double hems are often desirable for unlined or sheer draperies. A 3- to 4-inch finished hem is satisfactory for apron-length draperies; 3 inches or width not to extend above glass is desirable for sill length.
3. Allow 1½ inches for top heading of lined draperies. An allowance of 3½ or 4½ inches should be made for unlined draperies — depending on the width of the crinoline. If a sheer fabric is used, the allowance can be doubled for covering the crinoline.
4. Check labels for fabric shrinkage. If shrinkage is one percent, allow ½ inch per yard; if two percent, allow ¾ inch per yard. If shrinkage is not shown, allow 1 to 2 inches per yard. Subtract one-half to one inch for loosely-woven fabrics that may stretch as they hang.
5. If a patterned fabric is used, begin or end with a complete pattern where it shows most prominently. As a rule, the bottom repeat is more important than

the top. To determine additional yardage needed for placing and matching pattern, measure from the edge of one motif to a corresponding point in the next. Divide the total length of the unhemmed drapery by the length of the repeat to estimate the number of repeats you will need. Example: If the total unfinished length of drapery was 95 inches and the repeat 10 inches, then 10 repeats would be required for each width of fabric needed.

Width of draperies

For side draperies, measure the space you wish to cover and allow at least twice that amount or 100 percent fullness.

For draw draperies, the fabric should measure 2 to 2½ times the width of the fixture upon which they hang, plus:

1. 2½ to 3 inches on each panel for overlap at center.
2. 2½ to 4 inches for return on each side. Distance from face of rod to the window facing or wall may vary between 2½ to 4 inches.
3. Center and side hems—1½ to 2 inch hems. (1 inch + ½ inch turn in or 1½ inch + ½ inch turn in).
4. Depth of seams if more than one width of fabric is used.
5. Ease or drag (1 inch per panel).

Sheer or very soft fabrics may require 3 times width plus allowances given above.

The yardage needed will be the TOTAL LENGTH per unfinished panel times the number of widths for each panel, including all allowances. See table for computing yardage, page 4.

DRAPERY CONSTRUCTION

Straighten the fabric with the grain before cutting. If you do not work with the grain of fabric, the drapery will tend to roll to one side. However, if you are using a printed fabric, you will have to work with the pattern rather than the grainline.

LINED DRAPERIES MADE BY HAND

In the finest draperies, hems and linings are

done by hand. This method of construction permits the lining to be attached in several rows from top to bottom and prevents it from rolling on the seam edge. It also eliminates the possibility of lining being seen from the front side of the drapery.

Cutting the fabric. Measure and cut the drapery lengths allowing for the hems and

Table for Computing Drapery Yardage

Width of area
to be draped

_____ Inches
 A. * _____ Inches
 _____ Total

Desired length
to finished drapery

_____ Inches
 B. ** _____ Inches
 _____ Total

Width of fabric
selected

C. _____ Inches

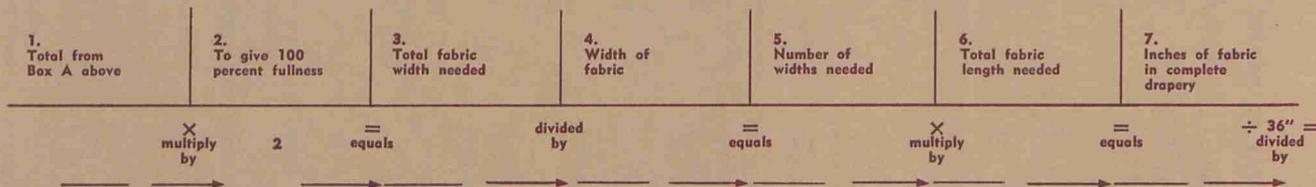
Length of
pattern repeat

D. _____ Inches

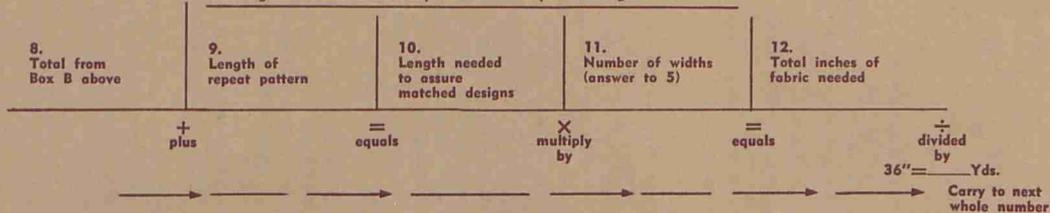
* Allowance for seams, hems, overlap and return to wall, if any.

** Allowance for heading and hem or double hem.

First, figure as though for plain fabric without repeats



Then figure for fabric with repeats (Work steps 1 through 5. Continue)



heading. If the fabric has a design, use the first panel to match design for other panels. If the design has an "up" and "down," be sure to cut all panels in the same direction.

The width and length of lining will depend on allowances made for hems and heading. The lining should come to within one inch of the top and should hang about one inch shorter than the drapery at the bottom. The top of the lining hem should coincide with the top of the drapery hem. If innerlining is used it should extend to the fold line of side hems, top hem and bottom hem.

Joining the lengths. When more than one width of fabric is used in each panel, pin sections with right sides together, allowing for a $\frac{1}{2}$ -inch seam. Stitch seam on wrong side from top to bottom. If using $1\frac{1}{2}$ widths per panel, place the seam nearest the side of the window rather than the center.

Selvaged edges are woven closely and tend to shrink or pucker. To prevent this, trim selvage or clip at 1- to 3-inch intervals. Press seams open. Linings should be joined in the same way.

Hemming. A 2-inch finished hem may be blind stitched at the bottom of the lining before joining it to the drapery panel.

Fold and pin side hems of drapery panel, over innerlining, matching crosswise grain of fabric. Press. For double hems, make the second fold the same width as the first. Pin and press. Raw edges should meet exactly the line of the second fold. **Fig. 2.**

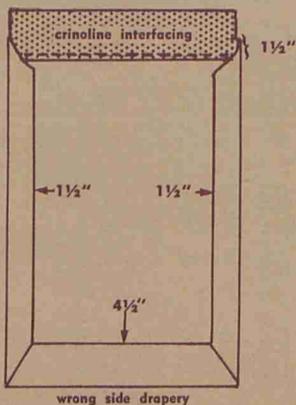


Figure 2

Hem by hand, using a blind or catch stitch. Catch as few yarns as possible on the right side. Make stitches about $\frac{1}{4}$ -inch long and do not pull tightly. Stop stitching several inches before reaching fold line for lower hem and heading. **Fig. 3.**

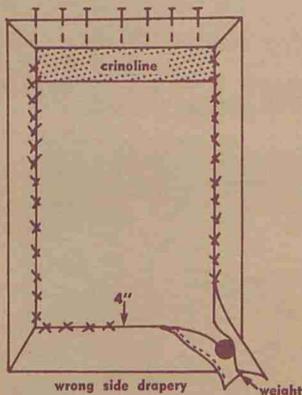


Figure 3

Fold, pin and press lower hems. If fabric requires weights, attach these inside the hem at each seam. For sheer fabrics a beaded weight can be inserted in the fold of the hem and tacked at the ends. Finish the corner with a mitered corner (excess fabric folded into a dart, pressed in place, but not cut).

Make heading. Place the panel on a flat surface with the wrong side up. Measure up from lower edge of finished hem to the desired length of finished panel and mark with pin. Repeat this in several places and fold extra fabric to the wrong side at pin marks. Press.

A stiff interfacing or crinoline is needed to make the heading stay erect. Permanent finish crinoline is satisfactory for this and may be purchased in 3- and 4-inch widths. The 3-inch width is more appropriate for short draperies.

Cut the crinoline $\frac{1}{4}$ inch shorter than the width of the finished panel. Or to add extra stiffening at the ends, cut 5 inches longer and add extra at each end and fold back.

Place the crinoline under the hem with the ends inside the fold of the side hems. Machine

stitch crinoline to fabric using a long stitch. Place pins at right angles in top of drapery to hold crinoline and fabric in place. Miter corners and blind stitch. **Figs. 2 and 3.**

Join lining and drapery. Place drapery panel wrong side up on work surface. Turn under $\frac{1}{2}$ inch on sides of lining and one inch at the top. Press.

Place the lining on the drapery panel, right side up (wrong sides together) matching the top edges of the lower hems and matching seams, if any. Turn under $\frac{1}{2}$ inch and pin the lining to panel on one side. This leaves one inch of a $1\frac{1}{2}$ -inch hem or $\frac{1}{2}$ inch of a 1-inch hem. **Fig. 4.**

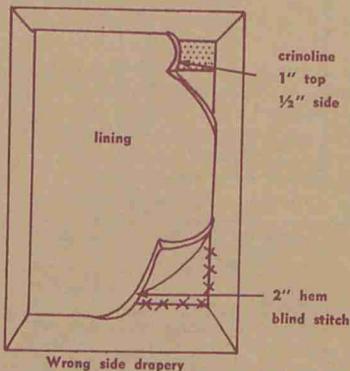


Figure 4

Fold the lining back halfway if there is no seam and pin at the fold. Tack with a long (4-inch to 6-inch) loose catch stitch. Use a double thread and begin at the lower edge of the crinoline and stop just above the hem. If there are seams, tack at each seam rather than at center. **Fig. 5.**

Smooth the lining back over the flat panel. Turn lining under at the top so that the folded edge is approximately $\frac{1}{2}$ inch below the top edge of the drapery panel. Press and pin in place.

Turn under $\frac{1}{2}$ inch on lining, press and pin to remaining side of drapery panel.

Slipstitch lining to panel at sides and across top, using stitches $\frac{1}{2}$ - to $\frac{3}{4}$ -inch long. Be careful not to pull thread tight. Catch thread on right side of drapery panel about every six inches. Now the drapery is ready for pleating. **Fig. 12.**

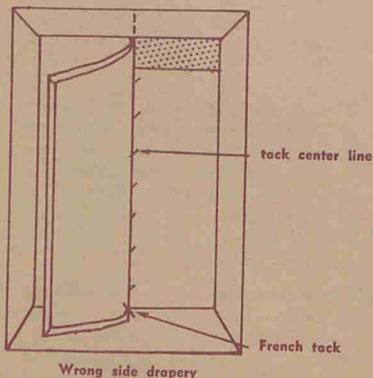


Figure 5

LINED DRAPERIES MADE BY MACHINE

Many persons prefer to make draperies by machine because it is faster and does not require so much table space for handling. If you use good construction techniques, you can have satisfactory draperies.

Measure and cut the drapery and lining lengths as for handmade draperies.

Fabric lengths and lining lengths will also be joined in the same manner if more than one width of fabric is used. The lining hem may be machine stitched rather than stitched by hand.

Joining fabric and lining. Place the right side of lining and the right side of drapery together with the lining down $1\frac{1}{2}$ inches from the top. **Fig. 6.** Pin the side seams together.

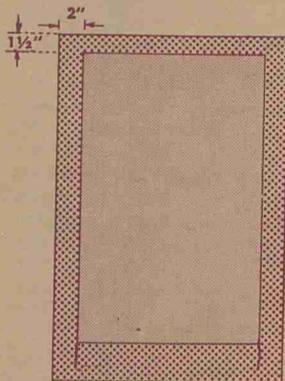


Figure 6

Stitch $\frac{1}{2}$ -inch seams and press open. **Fig. 7.**

Turn right side out and adjust so that the turn-back is the same on both sides from top to bottom. Press carefully. **Fig. 8.**

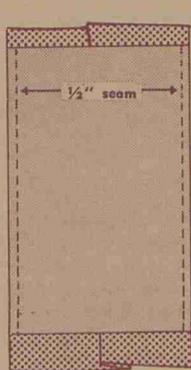
Making the heading. Cut the crinoline as for hand-sewn draperies. Using a yardstick draw a pencil line from end to end— $1\frac{1}{2}$ inches from the lower edge of the crinoline. Place the crinoline on a flat surface and pin the top edge of the drapery (right side up) along the pencil line. Stitch by machine using a long stitch. The amount of crinoline extend-

ing above the drapery will depend on the width of crinoline. **Fig. 9.**

Turn stiffening under to wrong side so that the full width is between drapery and lining. Put pins in at right angles to top of drapery.

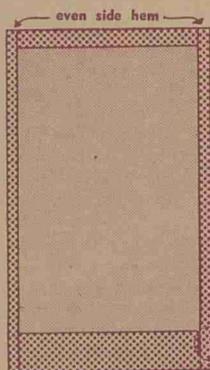
Turn under top of lining $\frac{1}{2}$ inch and pin it to fabric. The top of the lining will be about one inch from top of drapery. Fold corners and stitch by hand. Do not stitch through stiffening. **Fig. 10.**

Bottom hem will be made as for handmade draperies. **Fig. 11.**



Right sides together

Figure 7



Wrong sides together

Figure 8

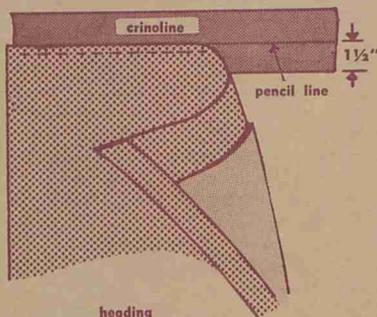


Figure 9

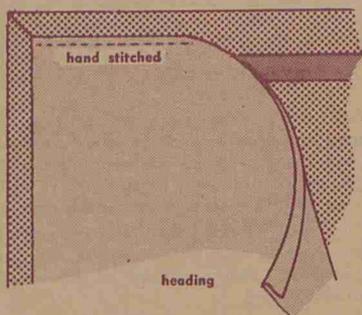


Figure 10

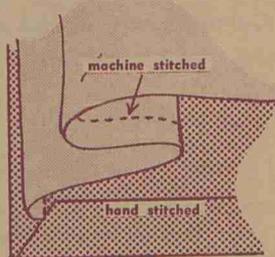


Figure 11

UNLINED DRAPERIES

Some of today's fabrics are designed to filter the sunlight rather than close it out. Others have special backings that give protection or provide insulation. Many fabrics resist fading and deterioration from sunlight and moisture. For unlined draperies you may wish to use fabrics with these qualities.

Cut the panels in the same manner as for lined draperies; except allow $3\frac{1}{2}$ or $4\frac{1}{2}$ inches for the heading; depending on the width of the crinoline.

Join the widths together with a French seam so that there are no raw edges. Cut off the selvage edges and turn under the side hems, $1\frac{1}{2}$ to 2 inches. Pin, press and slipstitch by hand.

Cut the crinoline the same as for lined draperies. Measure down one inch more than the width of the crinoline and mark. Place the crinoline on this mark and pin it to the drapey. Fold the excess fabric over the edge of the crinoline and stitch by machine. Turn under the interfaced hem, pin and stitch by hand.

If you use a sheer fabric, measure down twice the width of the crinoline and mark. Place the crinoline on this mark and pin. Fold excess fabric over the top of crinoline, pin and machine stitch. Turn under interfaced hem—you will have a double layer of fabric over the front of the crinoline. Pin and stitch by hand.

FINISHING THE HEADINGS

Pleating is one of the best ways to distribute fullness and make draperies hang in graceful folds.

The number and size of pleats depend on the amount of fullness to be taken up on the rod. It is usually desirable to allow about 5 inches for pleats and 3 to 5 inches between pleats. The spaces between the pleats should be no wider than the amount allowed for pleats themselves to assure proper folding when draperies are open.

For draw draperies it is necessary to know the exact finished width before you begin to make pleats.

To determine the finished width of each panel, measure the length of the face of the rod plus the return to the wall and the center overlap.

Using Commercial Pleater Tape

Many persons prefer commercial pleater tape because it is easy to use and when the pins are removed the panels are flat and easy to clean or launder. The new adjustable tape allows for adjusting the heading height and thus the drapery length. It also has more pockets, giving more flexibility in spacing pleats.

For best results install the rod and purchase pleater tape amounting to $2\frac{1}{2}$ times the length of the rod and the pleater hooks. You can determine the exact amount of fabric needed by pleating the tape to fit the rod. Begin at the center and allow 4 inches on the end of the tape for overlap of draperies. Skip one pocket between each pleat in regular tape; in the new tape allow 4 inches between pleats. The last pleat should come at the end of the face of the rod. Allow enough tape for return to wall plus $\frac{1}{2}$ inch for hem. Mark where the hooks go and remove them. The length of the tape is the width of the fabric needed for panel minus allowance for side hems.

The pleater tape supplies the stiffening needed for the heading. It can be used with lined or unlined draperies.

The panels are measured and cut as directed for machinemade draperies with 2 inches added for the lining to extend all the way to the top of the drapery panel.

The panels and linings are also joined as for machine draperies.

Pin tape (upside down) to right side of drapery, allowing $\frac{1}{2}$ inch of tape to extend beyond the side drapery hems. Stitch both edges of tape to drapery panel. Turn $\frac{1}{2}$ inch of tape at sides to wrong side and edge stitch.

Turn tape to wrong side. The $\frac{1}{2}$ inch of drapery which extends below the tape is folded under and blind stitched with small stitches by hand.

Now to figure out the amount of material for each pleat and the space between pleats for one side, or half the draperies.

1	___	Total width of one side of finished, unpleated drapery
2	___	$\frac{1}{2}$ of rod measurement, including overlap and return
3	___	Subtract line 2 from line 1 for the amount of fabric to be pleated
4	___	Total number of pleats. Allow five pleats for every width of fabric (44"-48" fabric) in the side. For cartridge pleats, allow seven or eight pleats
5	___	Divide line 3 by line 4 for amount to allow for each pleat
6	___	Number of spaces between pleats is total number of pleats, or line 4 minus 1, because there is always one less space than there are pleats (not counting return & overlap)
7	___	Divide line 2 by line 6 for amount to allow between each pleat

Mark off pleats and spaces on heading, using amounts in line 5 and line 7 above, starting the first or center pleat 3 inches from edge.

The space at the bracket and return end may be 3 inches or longer.



Mark the pleats with pins. Bring pins together to establish stitching lines. Stitch from top through to $\frac{1}{4}$ inch below the interfaced

hem. Divide each tuck into 3 small pleats and tack by hand to hold.

French Pleats

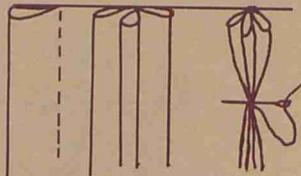


Figure 12

HANGING DRAPERIES

After the draperies have been pressed, lay out flat; fold pleats in position. Tie in place with tape, not too tightly, every foot or so. Leave tied for several days. This will train the pleats to fall into position when hung.

Pin the hooks at the correct height for the length of the drapery. Use one hook behind each pleat and one at each end to hold the corners.

The hook in first pleat at the side is placed

at the turn of the rod; the end hook is fastened at the back of the rod. The hook in first pleat at the center is placed in the hole of the master slide nearest the plain slides. The end hook should be placed about $\frac{1}{2}$ inch from the edge of the panel so that it will be completely hidden from view.

The outside edges of the drapery panels should hang close to the wall. If they do not, sew rings near the top and bottom of the side hems and fasten to cup hooks screwed into the wall or window frame.



Prepared by:

Mrs. Lillie B. Little
Housing and 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.

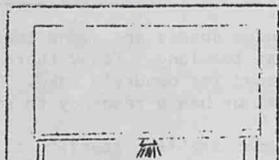
11-68-10M

Home Economics 101

SHADES OF DIFFERENCE

New shades can make far more than a shade of difference in a room that needs a lift. They needn't be expensive, custom-made ones. Nowadays there's a fine choice of ready-made shades in the stores. The trick is to personalize them. You may use rows of fringe, tassels or ribbon, stenciled flowers, designs cut out of wallpaper, textile paint and your imagination to dress up new window shades. Then combine them with draperies, curtains, shutters or lambrequins to coordinate with the room decor.

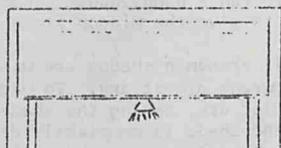
Measure Carefully - For accuracy, use a wood or metal rule. Take measurements at the point where the brackets will be mounted. Windows may look identical, but check each one. An inaccuracy of even a quarter of an inch will disturb the fit of the shade. For the width of the shades to be hung on inside brackets, measure from jamb to jamb at the top of the window along line B. Specify reverse or standard roll. For the width of outside brackets, mark position of brackets on frame at top and measure along line A. Allow an inch and a half to two inches for overlap.



A. Reverse-roll inside bracket

For length, measure window opening at C or D and indicate that this is an exact measurement. Twelve inches will be added for the roller.

If old shades are being replaced, do not measure the shade fabric, but measure the old rollers from tip to tip including the metal pins that fit into the brackets. State whether it is an inside or outside bracket and include window height.



B. Standard-roll outside brackets

When special installations are to be made, on ceilings, bottom-up, or sky light windows, mark points from which measurements were taken to aid installation later.

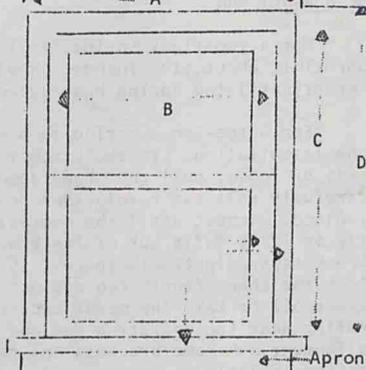
Glossary of Shade Brackets

To hang shades at problem windows, consult your dealer. See the large array of brackets for unusual situations.

Standard Inside Brackets: Used where frame is deep enough for the roller.

Inside Extension Bracket: Shallow frame but an inside mounting is wanted, so-called footless brackets extend outside the frame.

Sash-run bracket: Placed at the top of the track in double-hung windows, a bumper stops the window when it is raised.



C. Diagram for shade measurements

Outside Bracket: Designed to be mounted on the frame of the window or on the wall.

Combination Brackets: Dual purpose models which hold both shade and curtain rod.

Ceiling Brackets: Mounted on the ceiling, these give the window added height.

Double Brackets: Hold two shades when different color effects are wanted or when a dark shade for a special light block is needed.

Bottom-up: Shade is mounted in window sill and a smooth pulley mechanism unrolls shade up instead of down. Useful with cathedral windows.

GIVE THEM A LONG LIFE - KEEP THEM CLEAN

Window shades are among the tougher things around the house. If possible, they last too long. Today there are thousands of rooms where window shades should be replaced for beauty's sake. Rollers have few moving parts so if a shade is hard to adjust or has a tendency to snap up you can fix it in a do-it-yourself operation.

Shades are like sterling silver--constant use reduces care. Used silver doesn't tarnish and shades pulled up or down daily won't collect dust. Keep them clean and you may avoid emergency measures. Periodically dust with a clean, soft brush or run a hand vacuum cleaner over both sides. While dusting the shades, don't forget to give the window frame and sills a once-over; they are natural dust catchers.

All Breneman shades are washable and may be wiped off with a soft cloth or sponge wrung almost dry. To wash, spread the shade flat on a counter and do both sides; let dry; rehang the shade and pull it down full length to set for 12 hours. After the shade is completely dry, roll it up to the top and let it set for 12 hours. Result - your shade will look spic-and-span new.

BE A HANDY MAN

For a too-tight spring, roll up the shade to the top, take shade down and unroll it about six inches. Replace it on the brackets and roll it up again. Repeat until the spring has regained correct tension.

For a too-loose spring on a shade that will not roll up easily, first check the installation. If the bracket is not rubbing against the roller or is not bent or loose, pull the shade down about twelve inches and remove from the brackets. Carefully roll two revolutions or about six inches of cloth onto the roller, then replace. Repeat until the operation is smooth. If a shade does not stay put easily or if it falls out of its brackets, the installation may be faulty. Are the brackets straight? Is there 1/16 inch to 1/8 inch leeway for smooth action? Does the shade fabric rub against the bracket? Are the brackets too far apart? Never oil or take the metal caps off the mechanism. Never drive a nail into the roller near the operating end and don't bend brackets to bring them into better alignment. Remove brackets and re-set exactly parallel, if necessary, to improve the manipulation.

ETIQUETTE OF SHADES

Should shades all over the house look the same from the outside? Yes and no. In contemporary houses with windows of assorted sizes, the total appearance of each side of the house should be considered, but shades need not match. If the house is traditional with orderly window placement, shades should be two-faced and look uniform outside.

Should shades always be drawn to exactly the same place on the window? This used to be a decorating fetish, but this no longer is true. In fact, at window walls fitted with many shades, it's interesting to have them drawn at different levels. If, however, your house is Georgian or some other equally formal style, it's more graceful to keep the shades on the street side evenly drawn.

Material compiled by Mrs. Martha B. Adams
Home Economics Extension Agent
Richmond County

Mrs. Lillie B. Little
Housing and House Furnishings Department
North Carolina Agricultural Extension Service
N. C. State University, U. S. D. A. Cooperating
Raleigh, North Carolina 27607

Selection and Construction of Window Curtains

Revised by Charlotte Womble • Housing and Home Furnishings Specialist

EVERY 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.

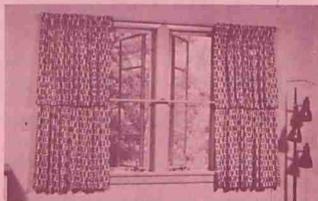


Figure 2a.

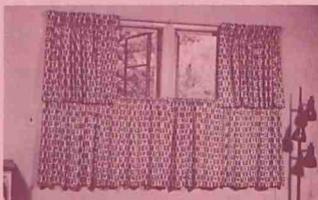


Figure 2b.

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.

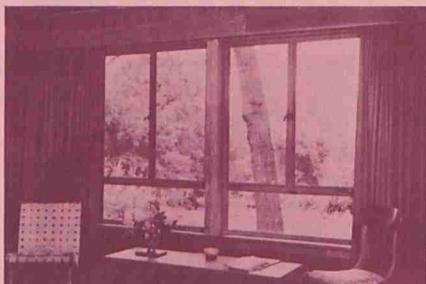


Figure 1. Curtains are effective in framing views.

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,

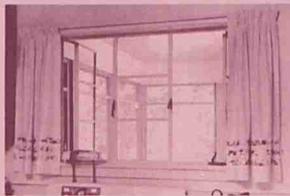


Figure 3. Proper length is important factor.

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 skim 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 $1\frac{1}{2}$ 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.

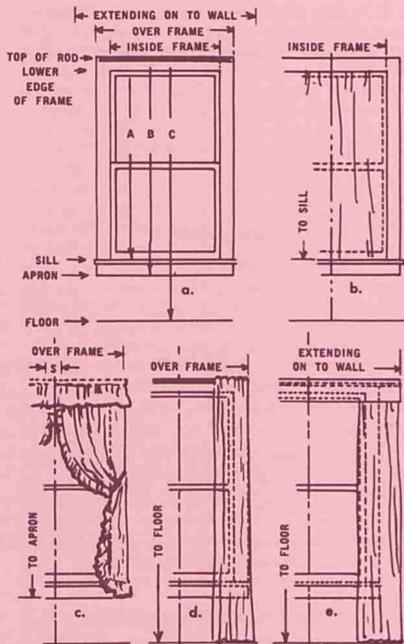
Directions for Making Ruffled Curtains

(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 $\frac{1}{8}$ or $1/16$ -inch hemmer attachment.

(2) Ruffles may be any width from $1\frac{1}{2}$ inches to 10 inches. The trend in window fashions and the fabric used influence the width of ruffle. Cut ruffles the desired width and $1\frac{1}{2}$ 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 $\frac{1}{8}$ 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 $2\frac{1}{2}$ 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.

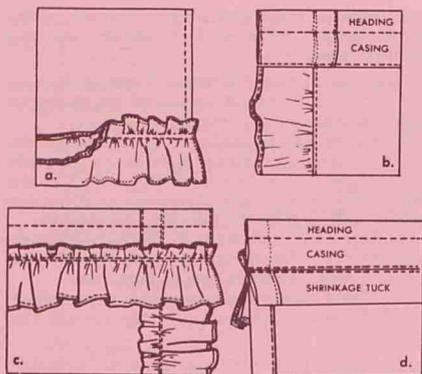


Figure 6.

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-transparent, 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.

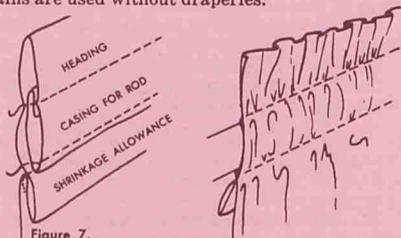


Figure 7.

(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

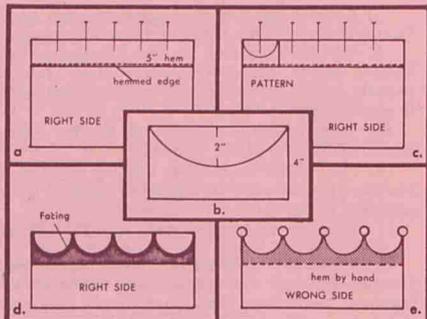


Figure 8.

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.

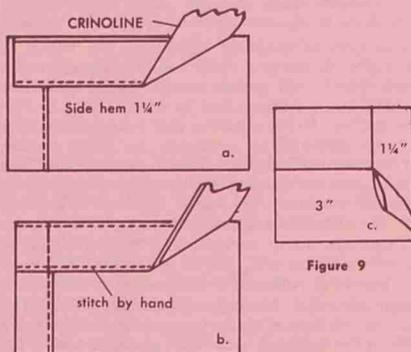
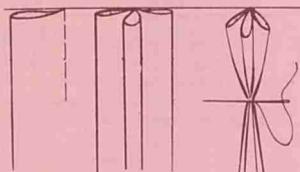


Figure 9

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.



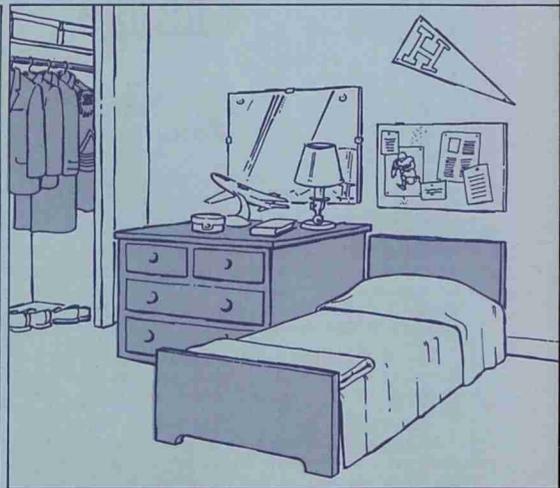
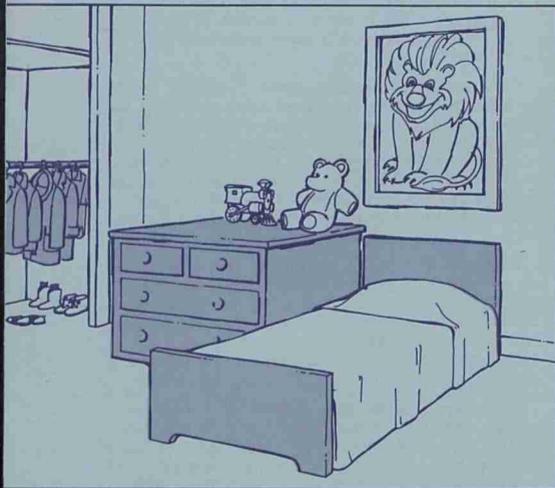
Published By: THE NORTH CAROLINA AGRICULTURAL EXTENSION SERVICE

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

F. J. M. M.
COTTON SEATED

YOUNG CHILDREN

YOUNG CHILDREN



Homes
Change
as
Children
Grow

Homes Change as Children Grow

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

Preschool—2½ to 5 years

School Age—6 to 12 years

Teenage—13 to 19 years

The trend is toward giving the baby a special place of his own and readapting 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 dove-tail 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.

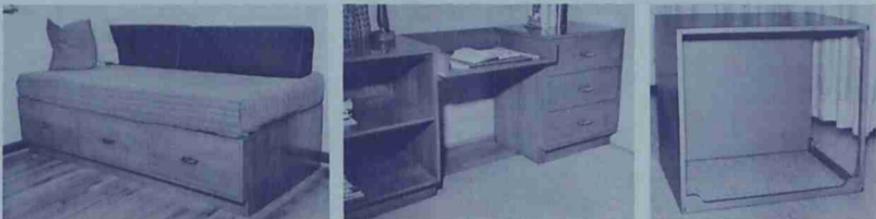
Home study calls for a desk or table, book shelves, a place for school supplies, straight chair, and study lamp. Toy and game storage and a bulletin board for school papers, art work, etc., complete the furnishings.

- **Bathroom:** Storage space for toilet articles and a step if lavatory or mirror are too high are the main considerations.

A painted chest is easy to care for and is usable for all ages. It provides clothes storage from infancy to teen-age. The top makes a good diapering surface, and supplies are within reach. Easy-to-open lower drawers can be used by pre-schoolers. Later, add a mirror for grooming and it becomes a dresser.



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.



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 so the center section is of 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.

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 set 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!)

SUMMARY

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.)

Suggested Reading

- Agaar, Tessie and Elaine Luchsinger, *The House: Principles, Resources, Dynamics*. New York: J. P. Lippincott Co., 1965. Chapter 13—"Housing and Children."
- 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.
- Duval, Evelyn Mills, *Family Development*. Chicago: J. B. Lippincott Co., 1957.
- Faulkner and Faulkner, *Inside Today's Home*. New York: Holt, Rinehart and Winston, Inc., 1961.

Prepared by Jean Black, Housing and House Furnishings Specialist, in consultation with Frances Jordan, Family Relations 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.

5-66-10M

Home Economics 34



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.

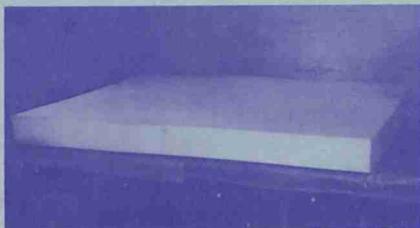


Fig. 1

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

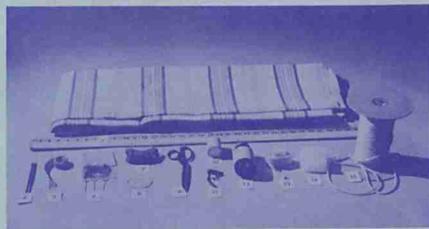
--one 4-fluid-ounce bottle rubber cement

--5/8 yard unbleached muslin

--15 yards cotton cord and wax, preferably beeswax

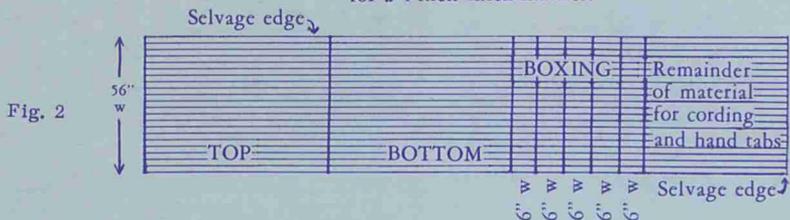
--tailor's chalk; iron and ironing board;

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

1. 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 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.

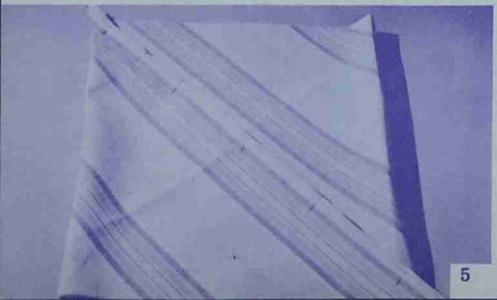
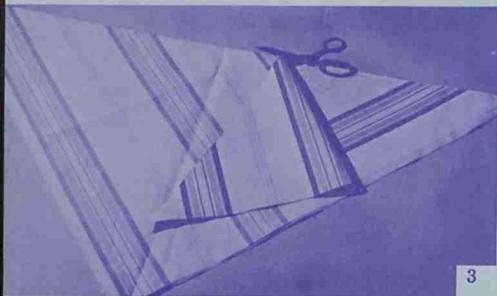
II. Cording

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 1/2-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 1/2 inches at each end. (Figure 5.) Sew 1/2-inch seam and press open. You now have a continuous cylinder with a 1 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.

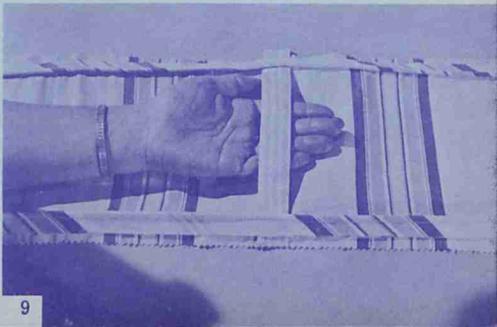
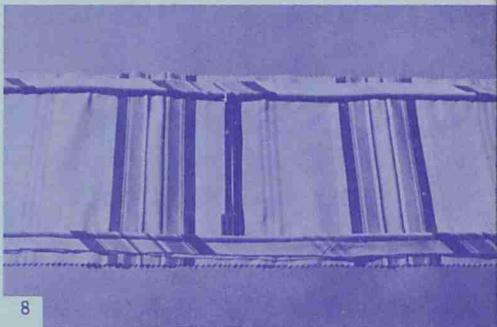
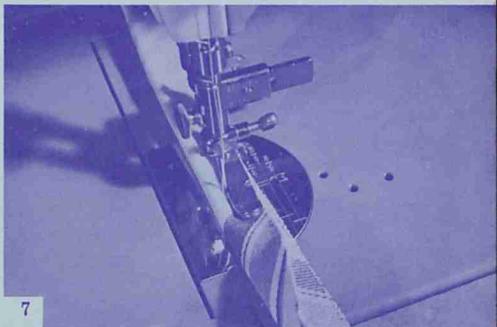
V. Join the Boxing to Top Piece of Mattress Cover

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



6

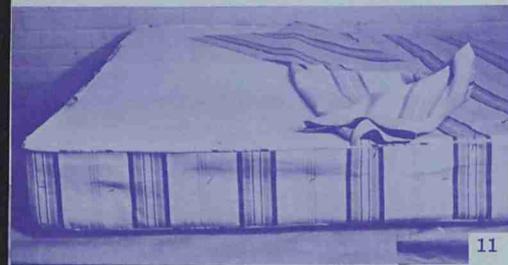
7

8

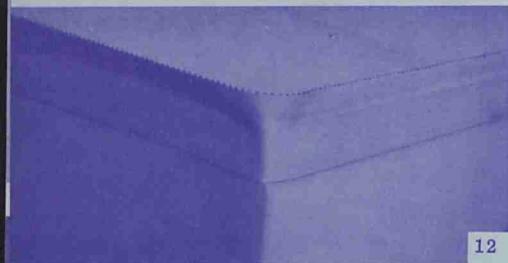
9



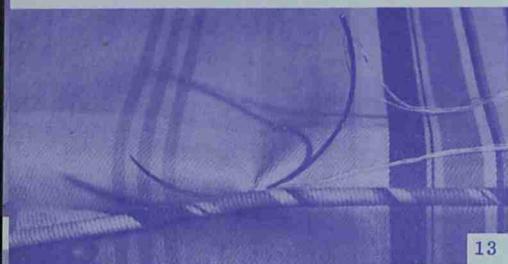
10



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 Henry, Jr., Director, Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914.

11-68-5M

(Reprint)

Home Economics 42



MAKE YOUR OWN KITCHEN CABINETS

The purpose of this leaflet is:

1. To help North Carolina homemakers have a more convenient kitchen with adequate space to store utensils and other equipment.
2. To provide simple clear-cut directions on how to develop the skill to build your own kitchen cabinets.
3. To help homemakers to save money and provide the know how to make better use of storage space to help keep the kitchen orderly and efficient.

The average North Carolina homemaker with a limited income may find it profitable to take advantage of the opportunity to make her kitchen more convenient through the use of minimum standards for comfortable living by making adequate storage cabinets.

The kitchen is one of the most used rooms in the house. Homemakers use the kitchen for preparing foods, dining, entertaining, serving, child care, laundry, business for planning and keeping records and many other activities.

The major functions of the kitchen have not changed; therefore, it is still the room where you should find the refrigerator, sink and the range. Activities that are performed at these places have been conveniently arranged in four "areas or centers" to help the homemaker to save time, steps, and work.

The basic requirements for a convenient kitchen is to have four "areas or centers". The kitchen "areas or centers" are:

The refrigerator and food preparation center

This center includes a special place to store foods. It also serves as a working place to mix foods and store cookware.

The sink and clean-up center

This center includes a place to wash dishes, pots, pans, and other cooking equipment. It is a convenient place to wash, peel, scrape and prepare foods to be cooked. This center supplies hot and cold water for kitchen and other household use.

The range and cooking center

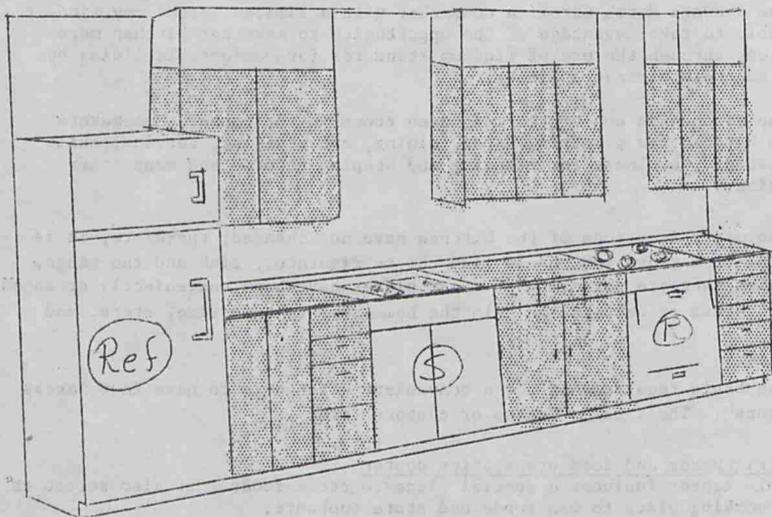
This center includes the stove, work counter, and storage space for things used at the stove, such as: coffee pot, toaster, serving trays, dishes, kitchen tools and other utensils.

The serving and eating center

This center is where the family enjoys eating and socializing.

Here are several arrangements of well planned kitchens with work areas or centers that you may use as a guide to help make your kitchen more convenient and orderly.

ONE WALL KITCHEN ARRANGEMENT

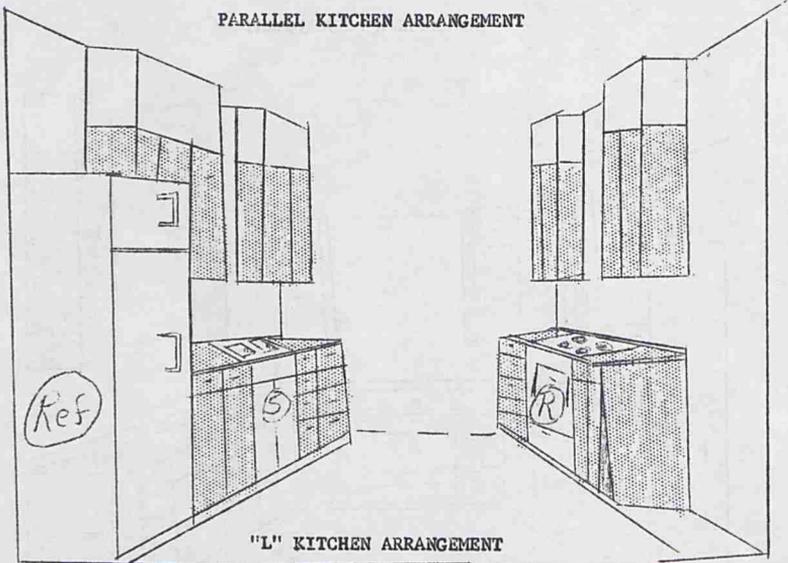


Ref - Refrigerator

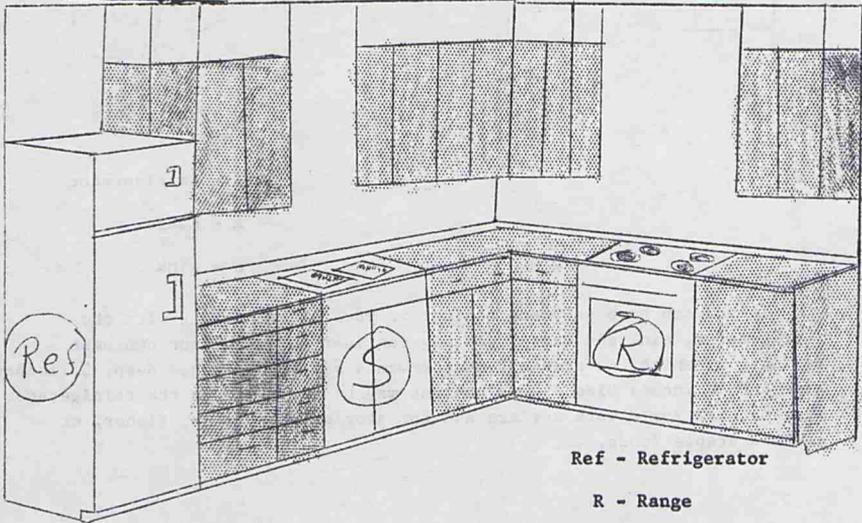
R - Range

S - Sink

PARALLEL KITCHEN ARRANGEMENT



"L" KITCHEN ARRANGEMENT

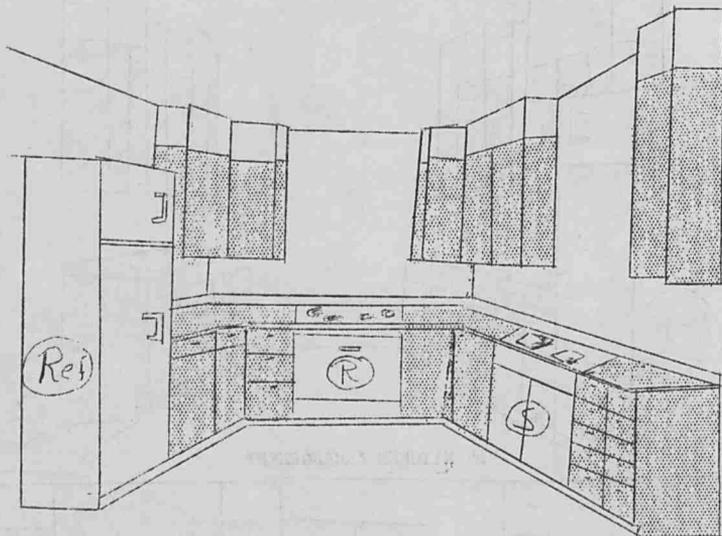


Ref - Refrigerator

R - Range

S - Sink

U" KITCHEN ARRANGEMENT



Ref - Refrigerator

R - Range

S - Sink

If you can have only one cabinet in your kitchen along with the refrigerator, sink and range, you may consider building your own base cabinet, of which the standard measurements may be 24 inches deep, 36 inches high and 48 inches wide. This cabinet may be used between the refrigerator and the sink for a work surface and for storing pots, pans, dishes, or certain staple foods.

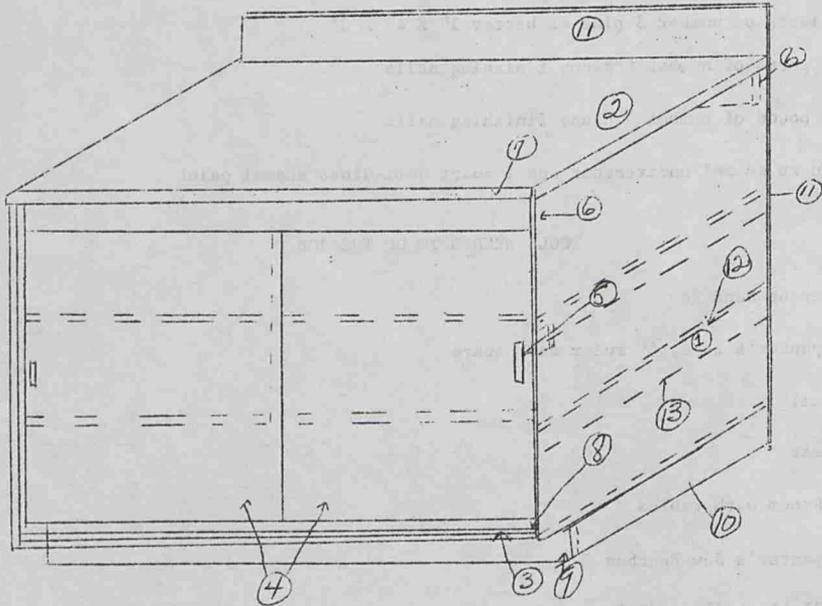
INEXPENSIVE BUILDING MATERIALS NEEDED

- 2 pieces of "Particle board Underlayment" or plywood sheathing 4' X 8' X 5/8"
- 3 pieces of number 3 pine or better 1" X 4" X 8'
- 1/4 pound of number 6 penny finishing nails
- 1/4 pound of number 3 penny finishing nails
- 1 quart enamel undercoater and 1 quart Semi-Gloss enamel paint

TOOLS NEEDED TO DO THE JOB

- Power or Hand Saw
- Carpenter's tape, 6' ruler and square
- Pencil
- Hammer
- Workroom with tables
- Carpenter's Saw Benches
- Small block plane (6")
- Plastic wood and putty knife
- Carpenter's Work Benches
- Nail Set
- Screwdriver
- Paint brushes
- Turpentine for paint brushes
- Sandpaper (2 sheets each of medium and fine)

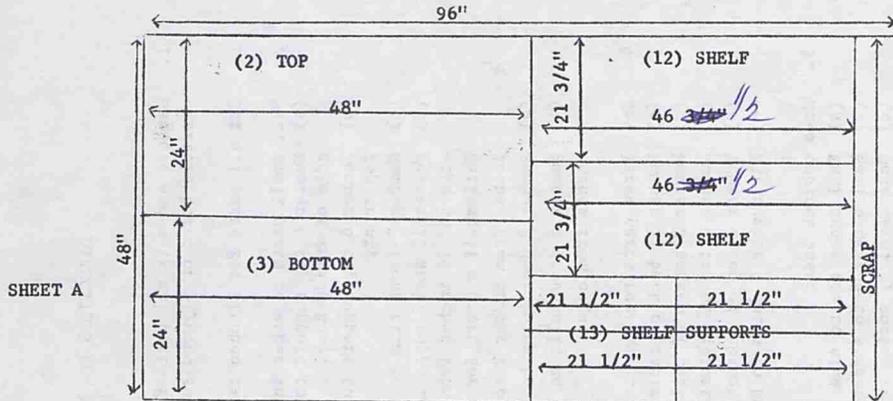
STORAGE CABINET FOR KITCHEN UTENSILS



NUMBER OF PARTS

NAME OF PARTS

1	Ends (2) 24 X 31 ^{28 3/4}
2	Top (1) 24 X 48"
3	Bottom (1) 24 X 48"
4	Door (2) 24 X 29"
11	Back (1) 36 X 48 X 5/8"
12	Shelves (2) 21 3/4 X 46 37 ^{1/2}
13	Shelf Supports (4) 3/4 X 2 1/4 X 21 1/2"
	<u>Base</u>
5	Pulls (2) 3/4 X 3/4 X 3"
6	Support Top (2) 1 X 4 X 46 37 ^{1/2}
7	Front Trim (1) 1 1/2 X 3/4 X 48"
8	Door Guide (1) 3/4 X 3/4 X 46 3/4"
9	Front Toe (2) 1 X 4 X 48"
10	Side Toe Base (2) 1 X 4 X 19 1/2"

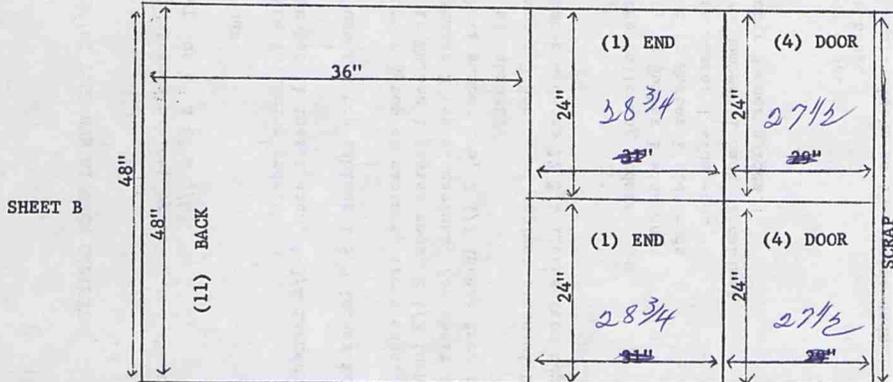


SHEET A

CUT THE FOLLOWING PIECES:

SHEET A:

- (2) TOP 24 X 48"
- (3) BOTTOM 24 X 48"
- (12) SHELVES (2)
21 3/4 X 46 ~~3 1/2~~ 1/2
- (13) SHELF SUPPORTS (4)
3/4 X 2 1/4 X 21 1/2"

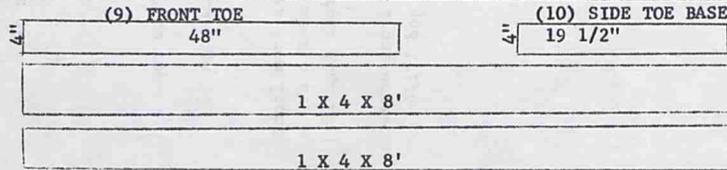


SHEET B

SHEET B:

- (11) BACK 36 X 48 X 5/8"
- (1) SIDEJ OR ENDS (2)
24 X 31"
- (4) DOORS (2) 24 X 29"

BASE LUMBER:
9, 10, 6, 7,
8, 5.



BASE LUMBER:

- (9) FRONT TOE 1 X 4 X 48"
- (10) SIDE TOE BASE
1 X 4 X 19 1/2"
- (6) TOP SUPPORTS (2)
1 X 4 X 46 ~~3 1/2~~ 1/2
- (7) FRONT TRIM
1 1/2 X 3/4 X 48"
- (8) DOOR GUIDE
3/4 X 3/4 X 48"
- (5) PULLS (2)
3/4 X 3/4 X 3"

DIRECTIONS FOR MAKING YOUR OWN KITCHEN CABINET

1. Measure and mark all parts for kitchen cabinet by using two sheets of particle board or plywood sheathing 4' X 8' X 5/8".
2. Cut all parts for kitchen cabinet.
3. Nail small parts together in the following order:
 - (a) Number 6 top support to Number 11 inside back, 4 3/4 inches from top edge of inside back.
 - (b) Number 6 top support to Number 2 top cabinet 1 5/8 inches from edge of top front.
 - (c) Number 7 front trim to Number 2 top of cabinet, front edge.
 - (d) Number 13 shelf supports to Number 1 inside ends, 2 1/2 inches from front edge and 10 inches from Number 2 top of cabinet, for shelf number one. Nail shelf support for shelf number two, 2 1/2 inches from front edge 20 inches from Number 2 top of cabinet.
 - (e) Number 8 door guide to Number 3 bottom of cabinet flush with front edge.
 - (f) Number 5 door pulls to Number 4 doors 12 3/4 inches from top and 1 1/4 inches from edge.
4. Nail large parts together in the following order:
 - (a) Number 11 back of cabinet, to Number 1 side ends
 - (b) Number 3 bottom of cabinet to Number 1 side ends
 - (c) Number 2 top of cabinet to Number 1 side ends
 - (d) Number 2 top of cabinet to Number 11 back of cabinet
 - (e) Fit number 4 doors to Number 8 door guides.
5. Make cabinet base:
 - (a) Nail front toe to side toe base.
 - (b) Nail back toe to side toe base.
 - (c) Make level by adding two small blocks to the inside ends.
 - (d) Set cabinet on base and nail securely.
6. Paint
 - (a) Use one coat of enamel undercoat.
 - (b) Fill all cracks with plastic wood, allow to dry and sand with grain of wood.
 - (c) Use one or more coats of semi-gloss enamel paint.
 - (d) Top of cabinet may be covered with linoleum, sheet vinyl, laminated plastic, or painted.

HOUSE FURNISHINGS - ORDER AND COMFORT

STORAGE: Build Your Own 4-Door Clothes Closet
For Agents and Leaders

PURPOSE

This leaflet has been prepared for leaders or other homemakers who may be interested in learning a new skill for themselves and to help teach others how to build their own storage cabinets for the home.

Adequate storage in the home will help to make more living space in the home, help to save time and energy, create an atmosphere of order and comfort, and make living in the home more convenient.

North Carolina consumers must develop a greater appreciation for the value, use, and care of adequate storage in the home.

Homemakers who are willing and want to do something about the order and comfort in their homes, may find it profitable, as well as educational, to learn how to build their own storage cabinets. Cabinets you build yourself may cost less than one-third the amount charged by professional carpenters. The money you save may be used to improve other inconvenient conditions in the home.

Let us make the home more convenient by planning to build adequate storage for the family clothes.

TOOLS NEEDED

Work Table

Work bench

Hand Saw

Hammer

Screwdriver

Nail Set

Measuring Tape

Sandpaper (medium and fine)

Paint Brush

LOCATION

The most desirable location for the clothes closet should be in the bedroom. Each bedroom in the home should have at least one clothes closet. The reach-in type of closet is the most desirable, because it is a space-saving closet that may be built to be portable or stationary.

STANDARD SIZE

The minimum standard size of an adequate clothes closet should be 6 to 7 1/2 feet high (will vary according to the height of the ceiling), not less than 2 feet deep, and 4 feet wide (width will vary according to space allotted). The rod should be round and installed 63 inches from the floor, and 3 inches below the shelf. Each closet should have at least one shelf 65 inches from the floor.

SKILLS NEEDED

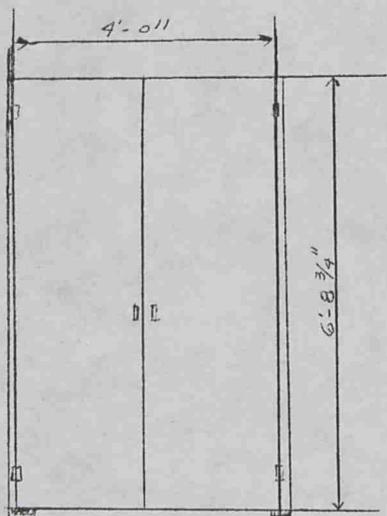
Measure and cut accurately.

Fit neatly and fasten securely together.

Paint inside and outside.

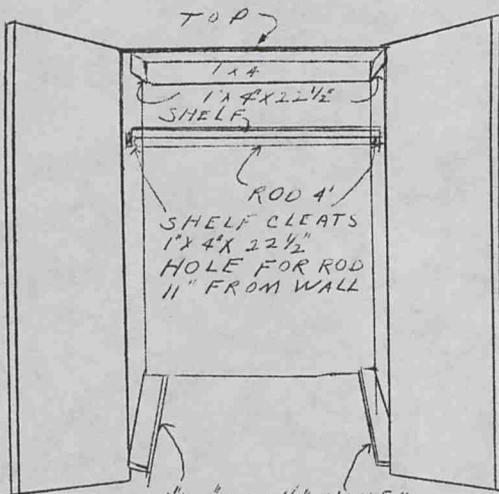
LEADERS RESPONSIBILITY

1. Contact the County Extension Agents concerning cost and type of building materials needed.
2. Invite and encourage teammates to help you to build your own storage cabinets.
3. Sign up and participate in a County Clothing Storage Workshop.
4. Teach others.



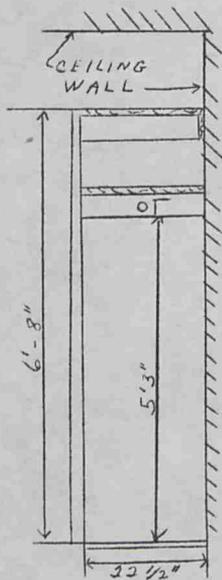
FRONT VIEW
SCALE: 1/2"=1'-0"

SET FLOOR
CLEAT IN 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: 1/2"=1'-0"

MATERIALS ORDER LIST

- 4 Hardboard Doors 2' X 6'8" X 1 3/8"
- 2 Pieces #2 Ponderosa Pine 1" X 12" X 8'
- 2 Pieces #2 Ponderosa Pine 1" X 4" X 8'
- 2 Roller Door Catches
- 3 Pair Flush Cabinet Door Hinges
- 1 Piece Full Round 1 5/16" X 4'
- 2 Cabinet Door Pulls.
- 1 Pound 6D Finishing Nails.
- 1 Quart Semi-Gloss Paint

DIRECTIONS FOR BUILDING 4-DOOR CLOTHES CLOSET

Fasten hinges to doors at the top and bottom.

Closet Top and Shelf

- (a) Cut Ponderosa Pine 1" X 12" X 16' into four equal pieces to be used for the top and shelf of the closet.
- (b) Nail two of the pieces 1" X 12" X 4' together with corrugated fastners for the top of the closet.
- (c) Nail two of the pieces 1" X 12" X 4' together with corrugated fastners for the shelf of the closet.

Inside Top

- (a) Cut one piece of the 1" X 4" X 16' into one piece 1" X 4" X 4' and nail to the top inside back of the closet.
- (b) Cut two pieces 1" X 4" X 22 1/2" and nail to the inside top of right and left sides of the closet.

Rod and Shelf Cleats

- (a) Cut two pieces 1" X 4" X 22 1/2" for shelf cleats.
Cut a hole for the rod 11" from the back wall of the cleat.
- (b) Nail shelf cleat for the rod 63" from the floor.
- (c) Nail shelf 3" from the top of the rod.
- (d) Cut two pieces 1" X 4" X 22 1/2", nail 1/4" set back under door panels after panel doors have been nailed permanently and nail to floor for firm support.

Paint Closet.