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Running Water

...for your farm home

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IOWA STATE COLLEGE

AMES, IOWA

SO you're going to put running water into your house. You're going to make your water system work for you! Then you are on the right road to modern farm living. Gather your family together and plan for a safe and handy water system.

This booklet will help you settle many questions. It will bring out some ideas you may not have thought about in connection with the uses you will make of this new tool—running water—in your home.

There will be technical questions you will wish to study out, too—the location and capacity of the well, type and size of pump, pipes and plumbing, for instance. For answers to these and other important engineering phases of planning, write for AE-514, "Planning the Farm and Home Water System," available from Iowa State College or from your county extension office. And note other good sources of information listed at the back of this booklet.

RUNNING WATER

for your farm home

By Naomi Shank

Want running water in your home? There's more than one answer to this question. The first one, of course, is to save yourself time and work. For kitchen use alone, the average farm family of five carries about 25 tons of water each year. On wash days at least an extra 20 buckets are carried. When you have running water, you'll save a month of 8-hour days each year.

Helps Your Housework

Your cleaning and washing is done more thoroughly when it's no chore to get water in and out of the house. This means better sanitation and much family satisfaction.

Aids Health

Running water helps your family to establish regular personal health habits of bathing, handwashing and toileting. It also saves back and leg muscle strains when you stop carrying tons of water each year.

What happens on your farm when the weather changes or there's illness or too much work? Usually a little less water gets pumped and carried on schedule. Water on tap when you need it is always a help. It's an asset for increasing live-stock production, too.

Safety

Hose faucets on the outside of your house make it possible to check small fires before they get out of hand. You can lose



everything in just one farm fire.

It's good for your family morale when you can easily keep the lawn green, flowers in bloom, the porches, windows and car washed. When you have the modern conveniences that running water provides, children are more interested in sharing the work. They are also proud of their home.

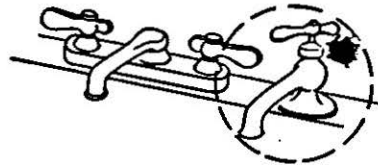
running water . . .

WHAT KIND DO YOU WANT?

You can have many modern conveniences with running water. Before you make pump and piping purchases, plan carefully so that you will have a safe, pure water supply for family and stock and an adequate year-around supply of water for all the faucets.

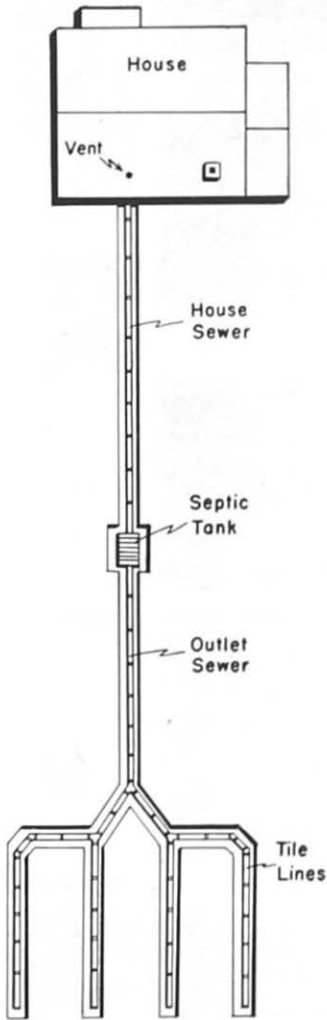
Eventually you will want both hard and soft water. Before deciding what size water softener you will need to buy, have the dealer check samples of the well water to find out the mineral content. You will also want to take the number in your family into account. Soft water is a time- and labor-saver. For a family of five it will save about 70 pounds of soap a year.

Soft water saves clothes because when excessive bleach is used in washing, it weakens the fabric fibers. Soft water also protects tender skin. An automatic water softener is best installed for both hot and cold piping, except for the water closets. If you plan to add it later, you can save on cost now by allowing floor



A hard-water faucet is easily installed with a flat-rim sink.





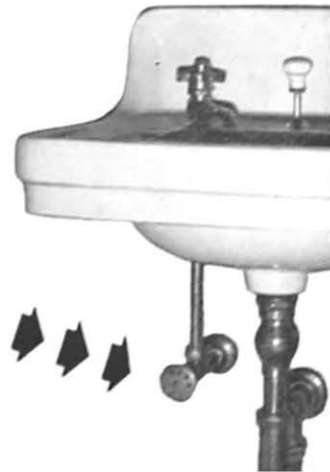
space and piping. Place it so that at re-generating time the brine can empty into the floor drain and by-pass the septic tank.

Water under strong pressure is important for the most frequently used faucets and fixtures. Some pressure is lost as it goes through a water softener and heater.

Most families want hot as well as cold water. You will use cold water for about 10 jobs about the house, but you'll use hot water for about 100. Uniformly hot water, between 120 and 140 degrees during all the hours of the day and night, can be economical. An automatic water heater will help reduce mineral deposits in the hot water storage tank. In hard water, where uncontrolled water heater temperatures go from 140 degrees to 180 degrees, scales form quickly.

You, your animals and neighbors need the health protection gained from piping waste into a septic tank. In fact, make a concrete septic tank the first step toward a complete water system for your home. Pitch or slant the piping system so used water runs out of your house fixtures quickly.

Make the system easy to service. It pays. Faucets often develop leaks at the busiest times. One dripping faucet can waste 400 gallons of water in 1 year. Whenever it's a hot water faucet, you have lost fuel as well as water. Then, too, iron in the water can make a stubborn stain. Shut-off valves at each fixture make a quick valve change possible. Carefully locate drain valves for those pipe lines which might freeze in sub-zero weather. Provide cut-off valves on all mains just inside the building.

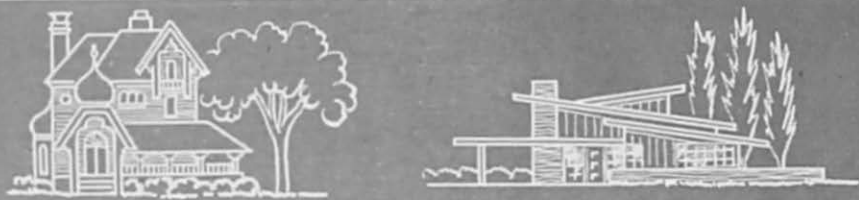




one, two or three-story house



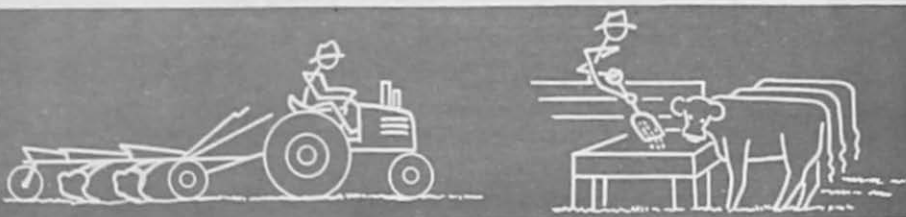
house with or without basement



condition and age of house



size and age of family

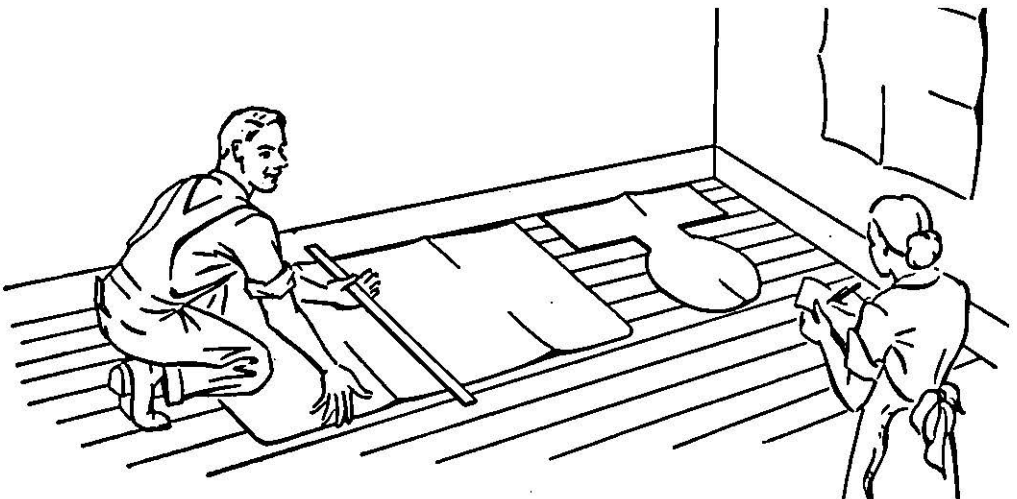


type of farming

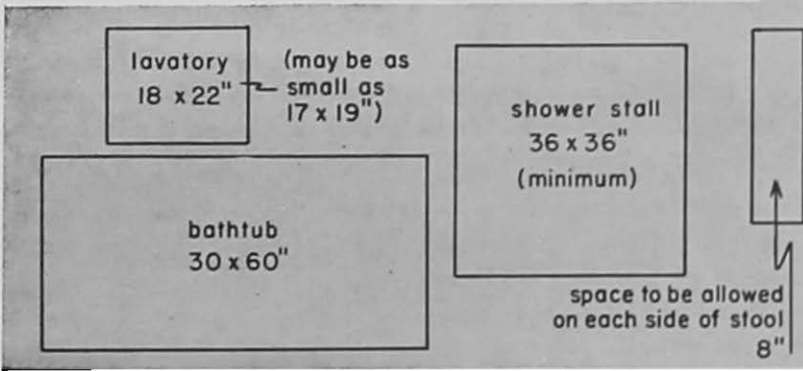
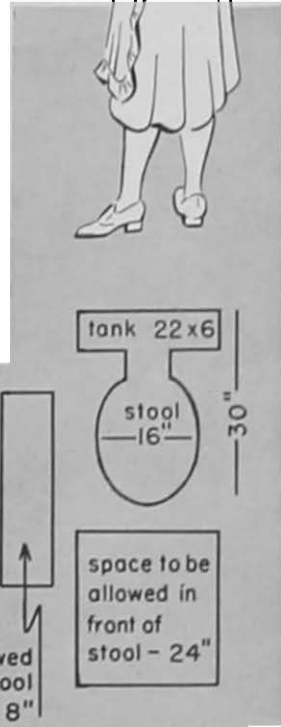
running water . . .

WHERE DO YOU WANT IT?

There is no one plan for installing a water system, even for a new building. Each farmhouse offers its own set of problems. Family habits and needs determine this. Draw a plan for each floor of your house. Map it to scale, let $\frac{1}{4}$ inch equal 1 foot, and show the distances in feet. Regardless of what you can put in now, sketch in all the locations for faucets and fixtures you will eventually want.



In order to choose the most useful arrangement of fixtures, make larger separate room plan drawings for the bathroom, workroom and kitchen. For this use $\frac{1}{2}$ to 1 inch for each foot. Make scaled paper cutouts for the fixtures which you can arrange on the plan. At the same time you might like to make full-scale cutouts of paper. Lay them out on the actual floor space you have planned for the remodeling. As you see the cutouts in place you might do a little more rearranging.



piping and fixtures

Piping is mostly out of sight behind walls and under floors. Don't neglect it just because you won't see it. Pipes must be big enough to carry all the water you will need for a long time. They must be leakproof and have tight joints. Poorly installed piping might develop vacuums which will suck waste into your water supply. Check carefully for a safe system.

Plan an arrangement which is a labor-saver. Allow for work surfaces, plenty of light and enough storage space for the equip-

ment you use around water. Be sure outlets and fixtures are placed where you will need them most.

Piping and fixtures seldom get moved about, once they are in. You will be wise to install the first piping with plugged "T's" where branches are to be added later.

Plumbing and fixtures should be on inside walls unless the piping or house is well insulated. It's economical to use the plumbing in one wall to supply fixtures in adjoining rooms, or rooms directly above each other on different floors. For operating efficiency have the water closet located as near the soil stack as possible. Each fixture should have easy-to-reach shut-off valves.

Know your needs before you go to buy. Your plumber or supply dealer can then advise you better on the right type and capacity pump.

Be sure to examine the floor strength for the total installed weight of the bathroom fixtures and fittings. You may have to reinforce the joists.

Test the water before installing your system. Three out of every four farm water sources are polluted enough to be unsafe, according to a survey by the U. S. Department of Agriculture.

Any Iowa family can easily and quickly secure a check on its farm well. All you need to do is send a card addressed to Water Laboratory Division, State Hygienic Laboratories, 227 Medical Laboratory Building, University of Iowa, Iowa City, Iowa, stating that you wish to have a purity test made of a sample of water from your well. The charge for this service is \$1 per sample tested, plus transportation charges. The sample must be sent only in a special container supplied by the laboratory. The sample must be collected exactly as directed, or the results of the test will be of little value. This laboratory does not make an analysis of the water to determine its hardness.

Be a good neighbor and make permanent plumbing diagrams to show the location of every pipe, valve, branch or "T." A good diagram can save a lot of digging and tinkering time. Paste or tack the diagrams on wood, shellac them and then mount them close to the main line valves. If you move off the place, leave them in the house for the next family.

running water . . .**HOW MUCH WILL YOU NEED?**

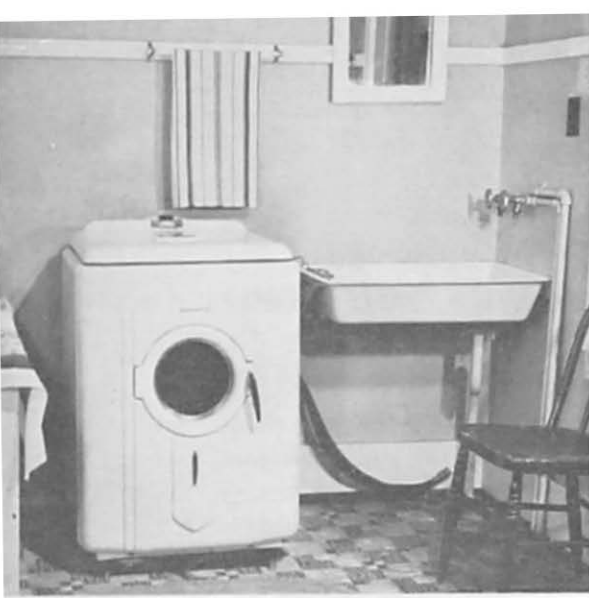
Here's when a calendar comes in handy. Use it to help you plan a year-around supply, enough for your home and farm work and then some. Then you'll be sure of the reserve you need at certain times. It will help you make final plans and get a cost estimate.

Your family comes first on the list. For all adult purposes—kitchen, laundry, bath and toilet—allow at least 50 gallons a day per person. This amount is quite different from the 5 to 7 gallons a day you carried in and out of the house. A baby under 2 years can use as much water as two adults since there is so much more bathing, laundering and sterilizing to be done for it.



Remember the daily visitors. The folks from town are accustomed to using lots of water. Count in relatives, too. They come for family reunions, holidays and vacations. Often they come in the summer months when you have extra water demands for stock, farm hands and canning.

Do you use extra or regular help on your farm? If the hired man lives on the place at least 8 months of the year, count him along with the family. Maybe you hire a year-around family man whose house is served by the same pumping system. If so, you need to figure faucet demands for two places.



Have you figured on the water you'll use if you get automatic household equipment? Some of these items are washers, dishwashers, electric sinks which dispose of food wastes, water heaters and central heating with radiators. They all need certain amounts of water in order to give complete satisfaction.

running water . . .

WHEN DO YOU WANT IT?

Your money is well spent for running water. It is an investment in family health and actually adds to your farm income.

Plan now with your family for the year-around uses you'll make of running water. You'll want to budget and schedule into your farm work the installation of plumbing and fixtures, either complete or piece by piece. Whether you own or rent your farm, running water will pay you good dividends right now.

KITCHEN

Farm women spend more hours working in their kitchens than any other room in the house. That's why your kitchen plan is so important.

Is your kitchen located where you can glance up, rather than walk, to see the driveway and buildings? If not, maybe you will want to exchange rooms before you put in running water. Many families have done this. The new kitchen gives them a better view, more ventilation, fewer doors, and more work counter and storage space.

sink

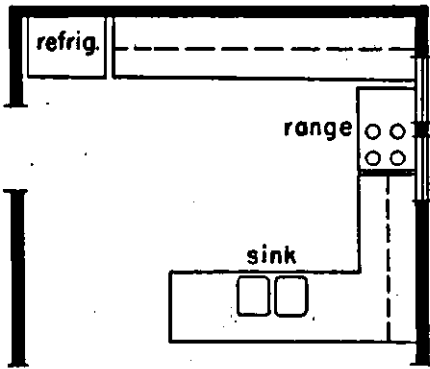
Each faucet will use 7 to 15 gallons a day per person.

Plan your kitchen sink to give you convenient running water, free of kitchen traffic. The ideal location is between the range serving center and the refrigerator-mixing center. This will save you the most steps. Farm kitchens need at least 3 running feet of counter space on both sides of the sink. This gives reachable space for sink jobs so you won't have to take more than one step.

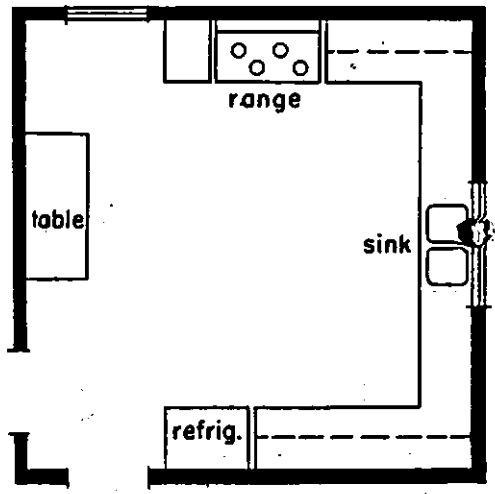


A comfortable average height for the sink bottom is around $32\frac{1}{2}$ inches. However, check this height for yourself. You want to work at your sink with perfect balance, without having to bend your waist or shoulders. When you stand upright, you should be able to place the palms of your hands flat on the bottom of the sink without stooping or bending your elbows. If your sink is put into a home-built

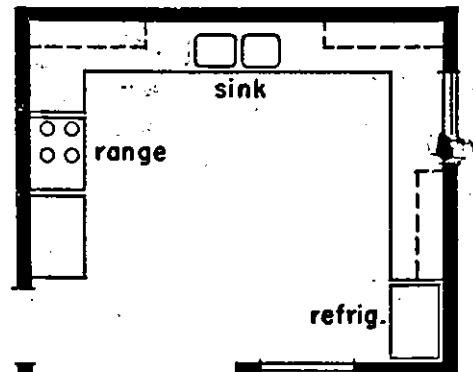




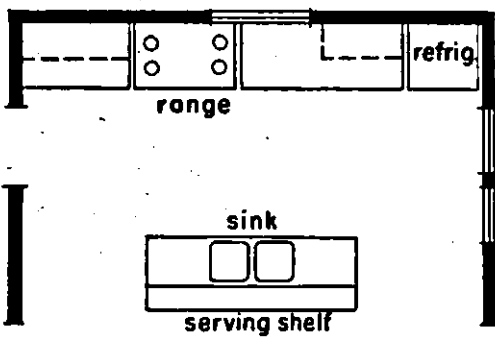
Sink in Peninsula



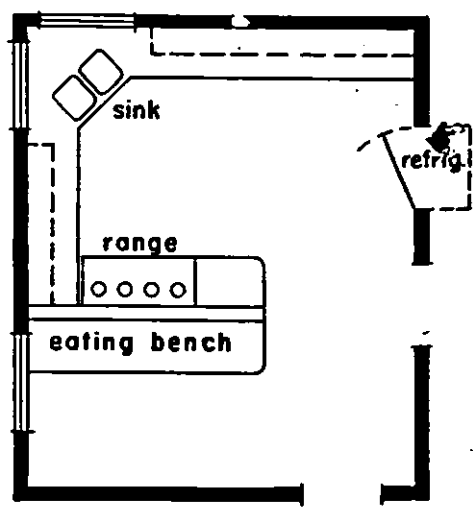
Sink Under Window



Sink on Inside Wall



Sink in Island



Sink in Corner

Place your sink where you'll enjoy it most for convenience and saving steps.

cabinet, provide toe or knee space. Most custom-built sinks provide toe space.

Today's sinks are made so you can place them wherever they will be most convenient, accessible and time-saving. Also, you can choose between a sink with single or double drainboards and one with no drainboards.

Many homemakers prefer a double-basin sink rather than a single sink. A double sink holds large utensils and reduces the time and effort of washing up throughout the day. When you can easily clean up as you cook, you reduce clutter and confusion at meal time. You can always have correctly tempered and sudsed water in one basin, as well as a free open drain in the other. Canning goes much faster, too, with a double-basin sink.

Invest in a sink with its own splashback or shelf back. Then over-splashing will go into the sink drain. The water will not stand in a crevice to cause buckling and rotting of the counter top.

Kitchen sinks are made of durable cast iron enameled in a glossy finish, or of pressed steel, stainless steel or monel metal.

accessories

A swinging mixer type of faucet saves water, not only from your water heater but from your water supply.

A double strainer with a stopper allows you to wash dishes right in the sink without a dishpan. It also protects your septic tank by holding back raw food waste.

Stop valves under the sink make it easy for washers to be replaced.

Have a good, lightweight, portable platform which your young kitchen helpers can use. Children like working in water. But they don't like water trickling down to their elbows and to the floor rather than back into the sink.

Install a self-draining soap dish.

Have a nozzle spray for cleaning vegetables or rinsing dishes and large utensils.

Place racks for holding dish towels at some place other than under the sink.

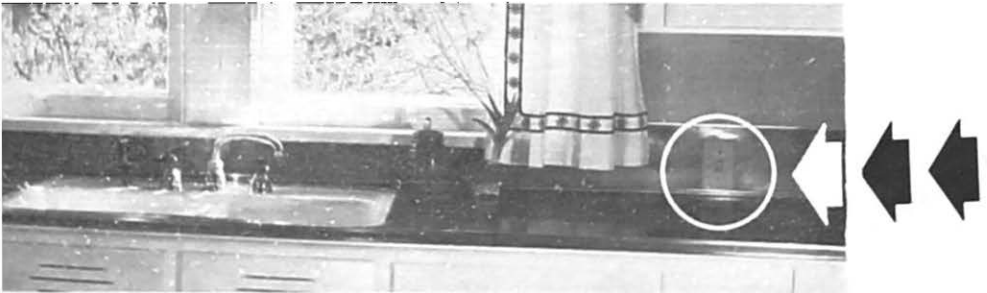
storage

For easy servicing of pipes, keep the below-sink space ventilated and free of storage. Maybe not more than a trash con-

tainer and a few shallow shelves for cleaning brushes and supplies should be stored there. Under the counter space to either side of sink, plan drawer and shelf storage for utensils you use around the sink but do not store caustics, bleaches and fine soap powders here. Store them up high away from children. Store everyday dishes and glasses in cupboards near the "drying" side of the sink. If you're righthanded you wash dishes from right to left, so your dish storage will be to the left of the sink.

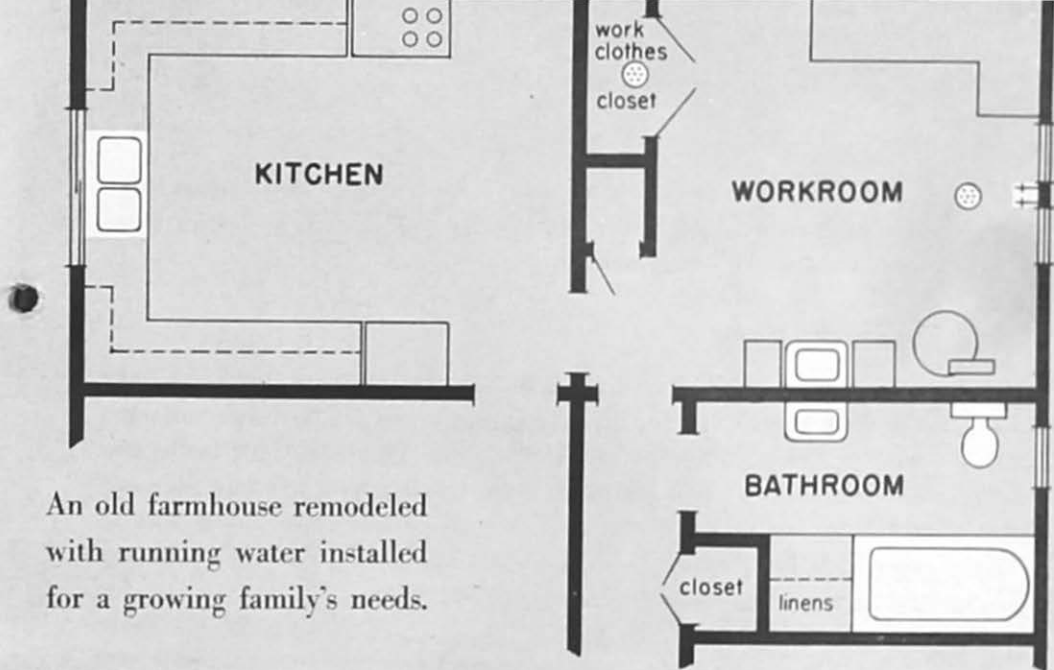
lighting

Freedom from glare reduces fatigue, so plan for good artificial as well as natural light at your sink. You may want a wall bracket light, an enclosed ceiling fixture, tubular light or recessed ceiling light. A silver-tip bulb is inexpensive and satisfactory when back of a cornice trim. Have the light controlled by a wall switch to avoid the risk of handling with wet hands. Only if you need an outlet for a permanent plug-in lamp or clock should you have a convenience outlet above the sink.



LAUNDRY

Put your laundry room on the first floor at ground level if at all possible. Then you will not have to climb steps with heavy laundry baskets. Instead you can roll them back and forth to the clothes lines. Install the hose faucets about 42 inches from the floor so as to clear laundry equipment. Make them high enough so you will not need to stoop to reach them. Have a sloping floor drain near by. Let this drain, with its large amounts of laundry water containing bleaches and chemicals, by-pass the septic tank. For four washer-loads of clothes you'll use about 96 gallons of water, if you fill the washer and tubs twice.



An old farmhouse remodeled with running water installed for a growing family's needs.

Laundry work moves faster if you have at least a 2-foot clearance around your washer and portable tubs. With a short garden hose in hand you will never need to lift water to the washer and tubs. For a more permanent laundry installation, you can add plumbed-in laundry trays.

Use this same hose when washing the cream separator. You will use about 10 gallons of water to clean up the cream separator and milk utensils.



Plan convenient work counters for sorting and sprinkling; also plan storage space for supplies as well as soiled clothes close to your laundry equipment.

provide light

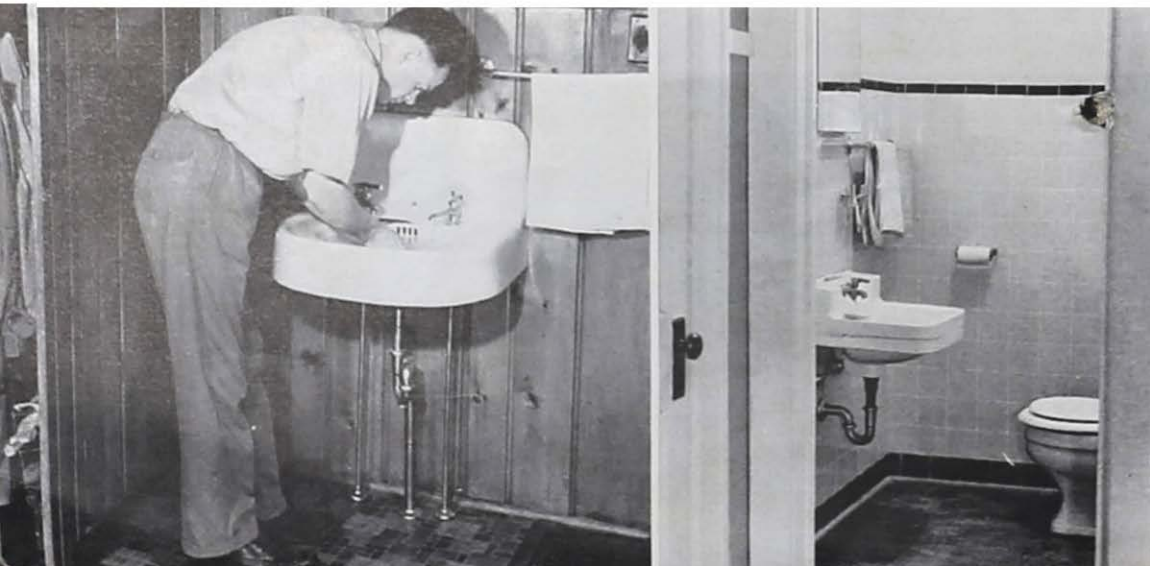
Even if you have good natural light, provide an artificial light for dark days. Use a diffusing globe or an RLM dome reflector with a 100- to 200-watt silver-tip bulb. Blue daylight bulbs are good to see dirt and stains; however, when you use one increase the bulb wattage by one-half. A wall switch is the safest way to turn this light on and off. Install a special, approved outlet for the washer at least 4 feet up from the floor.

WASHROOM

Men like a washroom near the rear entrance either in the workroom, off the hall, or in the basement. They prefer a lavatory, water closet and shower there if possible.

They like the privacy and a chance to wash up before eating. When there's company, they can even get into some clean clothes before appearing. Small children and farm workers can use this washroom without having to worry about their muddy shoes or greasy clothes.

A very simple washroom spreads out bathroom facilities to prevent overcrowding. Many families put in a washroom when their budget isn't ready for the final bathroom.





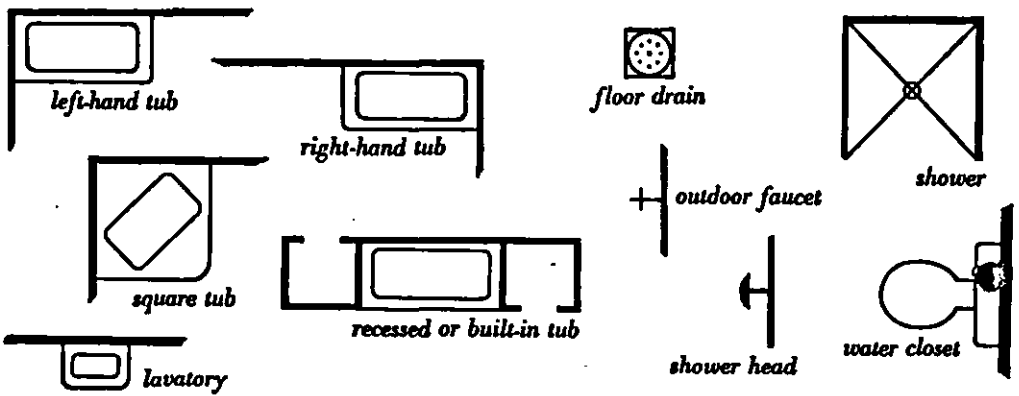
A discarded kitchen sink makes a good lavatory. With two wash basins, it allows two persons to wash at once.

In flat country, it may be difficult to put a water closet in the basement. However, there are times when connection to the septic tank can be made by using a platform installation with steps. If this is built into your washroom, be sure to paint the steps white to avoid accidents.

A shower may be a leak-proof, water-resistant cabinet made of galvanized steel, enameled steel or glass. Shower cabinets may be from 30 to 42 inches square. Each shower takes about 30 gallons of water. Just a shower head installed along the overhead piping will do. Put it in close to a floor drain. All shower arrangements need grab bars securely anchored in the wall and a rough floor surface so no one will slip and fall.

Choose a shower nozzle that directs water on the body below the shoulders rather than on the head. It is worth the difference in cost to have the safety protection of a thermostatic water-mixing valve.

Washrooms need storage for clean linens and work clothes. Plan for towel rods, a paper towel holder, waste basket, shaving supplies, clothes hooks, mirrors, safe lighting, ventilation and heat.



BATHROOM

Deciding on an adequate bathroom takes a lot of family thinking whether it's for a new or an old house. Bathroom fixtures do not get moved about occasionally the way heating stoves do. They stay in for about three generations. Plan to use too much rather than too little space, to avoid overcrowding. An adequate bathroom means the right location, fixtures carefully placed, easy-to-clean finishes and plenty of storage space. Your type of bathroom should provide for as many family needs as will fit into your budget.

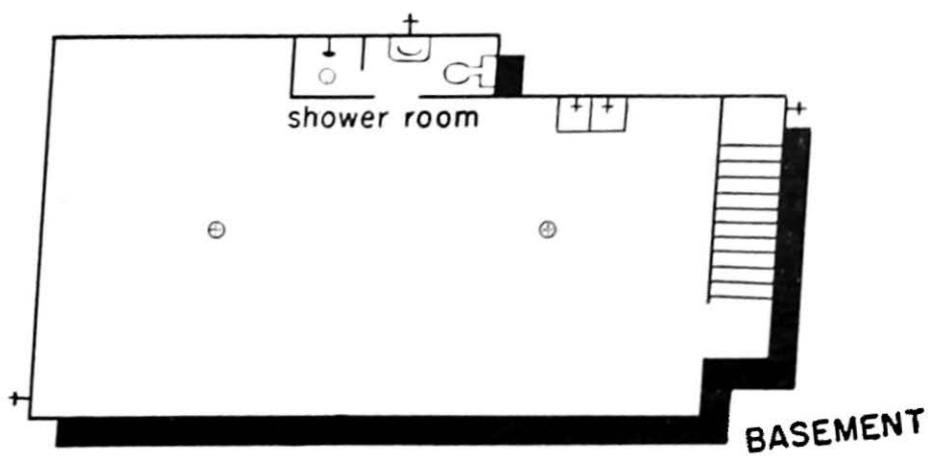
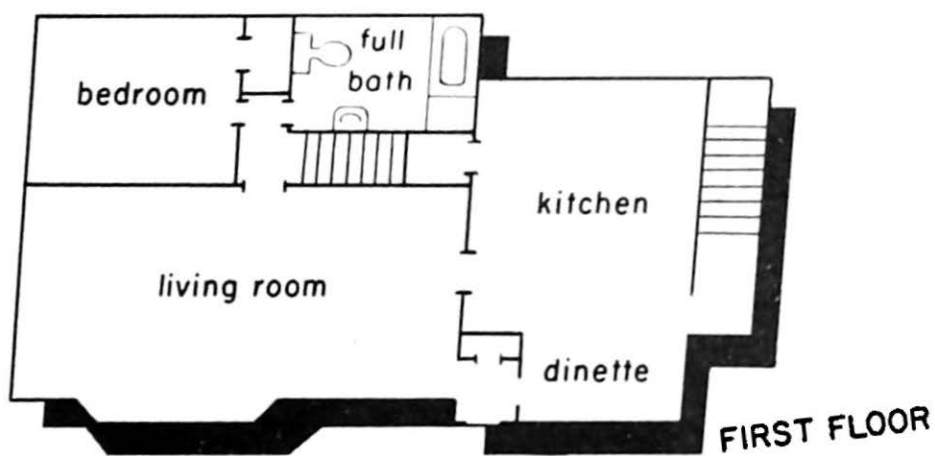
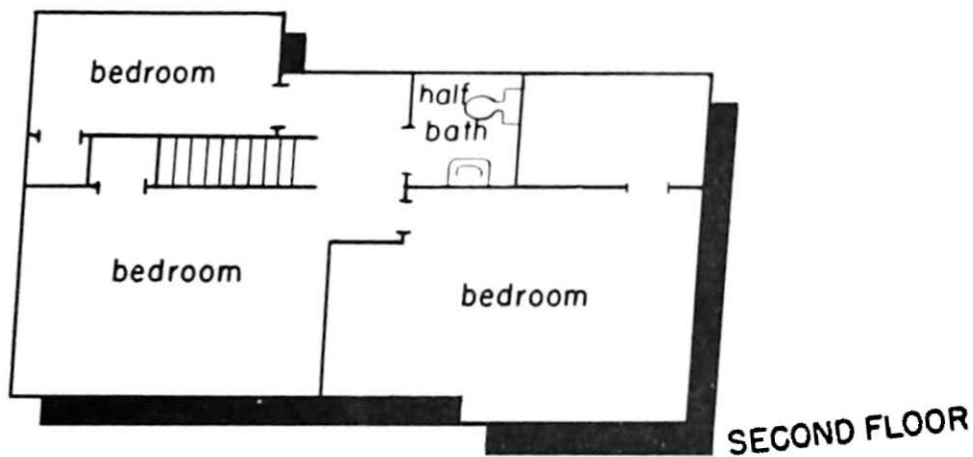
location

If you can afford just one bathroom, put it on the first floor. Then it will be easy for outdoor workers to reach, too. Good health habits are maintained only if the bathroom is reached with privacy and with little traffic through the living areas of the house.

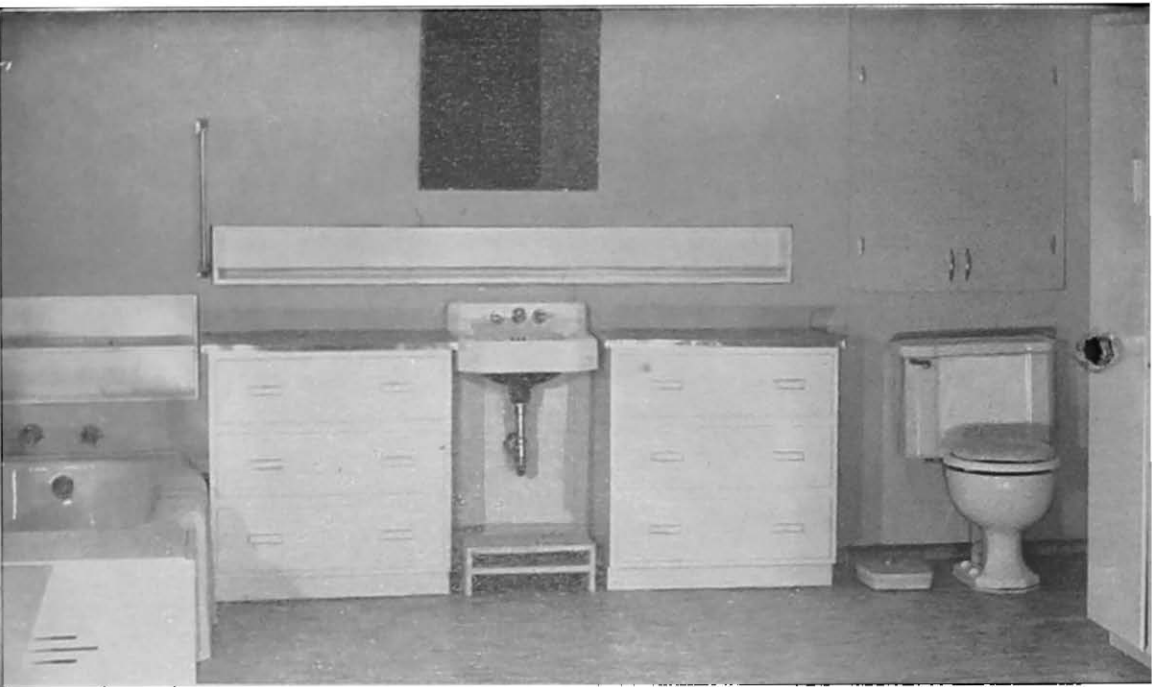
A first-floor bathroom is a real step-saver to grandparents and grandchildren. And whenever there is a bed patient on the farm, a first-floor bathroom is most helpful.

A bathroom should also provide privacy. Sound-proof the bathroom as much as possible. Buy the less noisy fixtures and if necessary, use sound-absorbing materials on ceiling and door. A soil pipe stack can be wrapped with hair felt or rock wool to reduce sound. Avoid direct views of fixtures through an open door. Recessing the fixtures gives additional privacy. Another plan is to separate the fixtures so that the tub is divided from the lavatory and water closet. It is always better to have a bathroom entered from a hallway than from the kitchen, dining or living room.

You may need a half or full-size bathroom on the second floor. Plan for it even if you don't add all the fixtures at first. No matter what type of bathroom or washroom you install, follow the same planning ideas. You'll avoid major mistakes.



How one family planned for complete bathroom facilities.



size

You will find that standard size fixtures need plenty of room for everyday use. Clearance space is a must for the cleaning and servicing your bathroom will need. If your space is limited, consider a shower rather than a tub. The minimum space for a bathroom is 5 x 7 feet. For a farm family bathroom, try for not less than 60 square feet. The space may be either square or rectangular. Few pantries make good bathrooms. They are usually not large enough and offer little privacy.

arrangement

All bathroom fixtures come in standard basic sizes. Take time to make cardboard cutouts. Then try them for the best arrangement of fixtures on your scaled floor plan. The most popular measurements for fixtures are: tub 30 x 54 or 60 inches; water closet and space in front 30 x 48 inches; lavatory and space in front 20 x 44 inches; shower stall 36 inches square.

bath tub

There are all types of tubs, so shop around. You can buy them in cast iron covered with acid-resistant enamel or enameled steel. Built-in tubs, of the corner or recessed type, are the most popu-

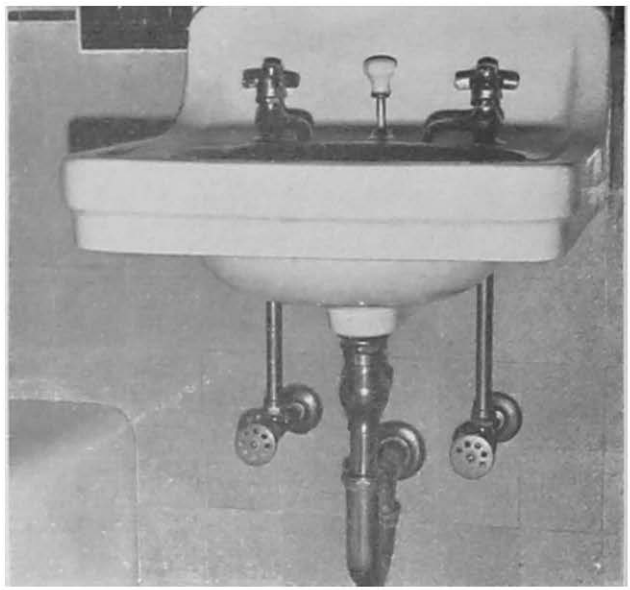
lar. Four-foot square tubs with diagonal sitting space are fine for small spaces. They are not as safe for old people and are difficult to clean. Remember to allow for access to the plumbing at the end of the tub.

The better tubs have built-in seats either as part of the rim, across the end or corners. You will find this convenient when you take a foot or sponge bath or bathe the children. A tub with a sloping head offers a restful bath for grown-ups. A bath takes about 30 gallons of water.

It is easier to get in and out of a low tub built to the floor and with straight sides. They are 15 to 18 inches high. Plan to use metal grab bars securely built into the wall above the tub. One horizontal and one perpendicular will reduce the chances of bathtub accidents. A chromium mixing nozzle is the most sanitary type of faucet.

You can put a shower over the tub in your bathroom but it's better to have it a separate compartment. Either installation involves careful planning and costly maintenance.





lavatory or wash basin

Plan to put this fixture nearest the bathroom door. It is the least noisy and is used most often.

Lavatories may be wall hung, supported by legs, or sunk in a built-in cabinet. There are corner, D-shaped, square or rectangular basins. They come in vitreous china or acid-resisting enameled iron. The popular sizes range from 15 to 24 inches wide. You will find them with or without towel racks.

The popular type of mixing faucet is available in chromium or as part of the lavatory bowl. It takes about 1½ gallons of water to fill an ordinary lavatory.

For adults, the average height of the lavatory rim from the floor is 35 inches. However, just as with the kitchen sink, be sure that the bottom of the bowl is a comfortable height for the majority of your grown folks. You should not have to bend sharply from your waist. You will need a set of steps for toddlers up to 4. A small platform stool will be helpful to children 4 to 6. It may be used at the toilet for a short adult's footstool.

water closet or flush toilet

Spend enough on the water closet so that it protects health and has a rugged and dependable tank mechanism. Your first choice should be one made of vitreous china which will not craze or soak up water. A porcelain toilet which crazes easily will get

foul smelling. The seat with a plastic cover is more durable than wood. Open-front styles are more sanitary and are easier to clean.

The smaller your house, the more important it is to keep toilet-flushing from being noisy and embarrassing. You pay more for a water closet which operates quietly, but it will be worth it. This will be the siphon-jet type. It has a large water area in the bowl and small fouling surface. The medium priced closet has the reverse trap. The lowest in cost is the wash-down type. For ease in cleaning, consider closet combinations which cover up the connection pipes.

Water closets take about 6 gallons of water to each flushing. Stock sizes come 22 to 24 inches wide and extend 24 to 30 inches out from the wall when connected. Always allow at least 8 inches from each side of bowl to wall or next fixture. Also allow 24 inches or more in front of the bowl. Increase these spaces if your family includes tall, broad people.

Closets usually measure 14 to 15 inches from floor to top of bowl. Too high seats tighten up the abdominal muscles and interfere with natural evacuation. The height of the seat should be such as to allow for perfect relaxation of the abdominal muscles. For most persons this means that the knees should be flexed and slightly higher than the hips. A seat shaped to the body contour helps to create this angle.

For a tall family, the water closet may be installed on a cement base of 2 or more inches. An oblong footstool 6 inches high is a worthwhile toilet accessory for shorter family members. For children up to 2 years, fasten a small training seat with a foot rest to the seat. Keep a set of steps, then a footstool of correct height, on hand for children over 2.

lighting

You will want good diffused lighting, free from glare, in your bathroom. Plan for light around the lavatory with twin fixtures on both sides of the mirror, or a light over it. A wall switch for the lavatory light is the safest. However, if you have a light with a pull-chain, be sure to guard against shock with an insulator clip. If your budget allows for only one bathroom light, let it be a ceiling light and mount it off center so it will be over the lava-

tory. A 7-watt plug-in night light which stays on all night is a safeguard for a family with children and in time of illness.

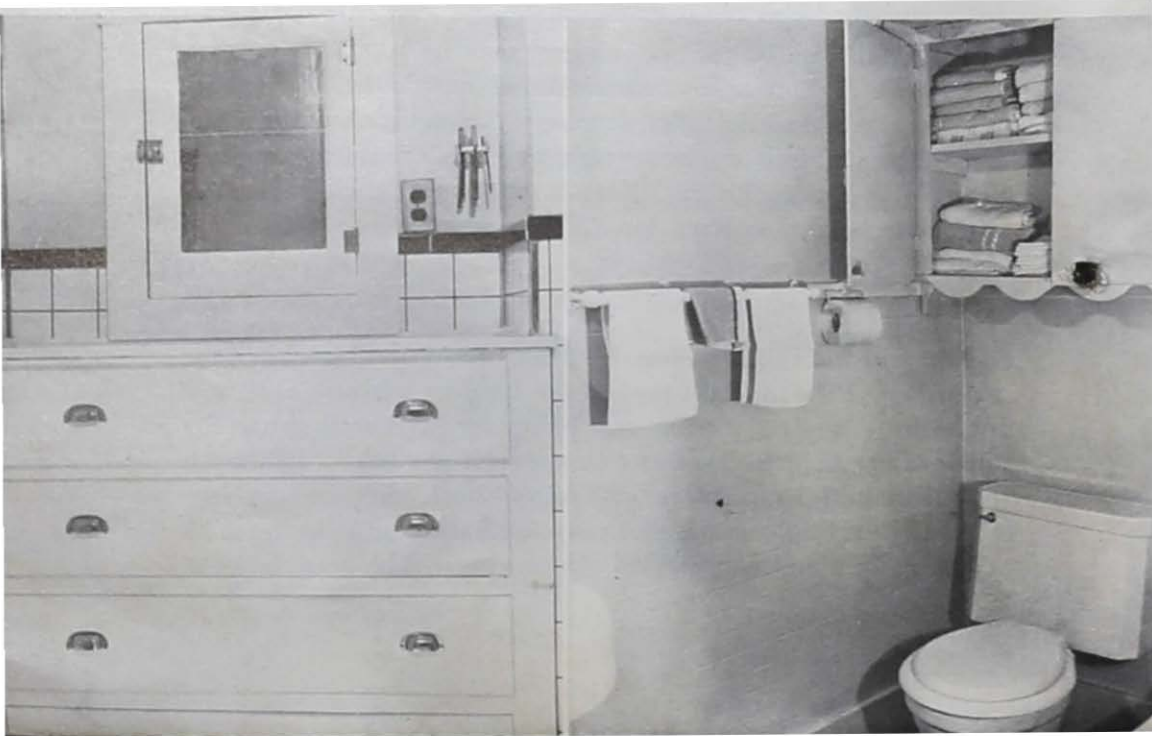
Install at least one special purpose outlet 3 to 4 feet above the floor. It will be there for safer plugging-in of the space heater, shaver or bottle warmer. Place all appliances beyond arm reach of anyone in the bathtub, to avoid shock.

storage

Build plenty of storage space around the fixtures—then your bathroom will stay in order. If this is your first bathroom, you have no idea of the constant use it will get. Have each member of your family make a list of what he might want stored in the bathroom, such as:

Bathroom supplies: soap, toilet paper, clean linens, facial tissues.

Cleaning supplies: brushes, cleansers, mops.



Toiletries: cosmetics, hair tonic, shampoo, combs, brushes, manicure supplies.

Shaving supplies: razors, soap, lotion.

First aid supplies: medicines, hot water bottle, heating pad.

Dressing chair or stool, scales.

Container for soiled clothes.

Hanging area for garments between dressing periods.

Children's needs: training seat, step stool, bathinette, diaper pail, mirror, brush.

Recessed open utility shelves.



Examine your floor plan. Then put storage into all the waste spaces, even in the smallest bathroom. Place shelves, cupboards and drawers within the studding, partially recessed or as cabinets that are flush with the walls.



floors and walls

Much dripping, splashing and steaming goes on in a bathroom. Select wall and floor finishes which repel moisture, are durable and easy to keep up.

Inlaid linoleum installed with waterproof cement is a popular floor material. Paint, asphalt and ceramic tile are other choices. Install curved rather than square baseboards and corners. They save time when you clean.

There is a wide choice and price range of wall finishes which are easily installed. In addition to glossy paint and wallpaper, there is wall linoleum, fiber-tile, ceramic tile, structural glass, plastic tile, asbestos cement board and enameled tile-effect wall-board.

Because of the moisture in bathrooms, shellac, varnish, then wax all wood shelves and drawers. They swell less and clean more easily. Usually glass or linoleum-covered shelves are used in utility and medicine cabinets.

Neutral colors make more satisfactory permanent backgrounds than do striking color effects. To get the most out of your lighting, finish the ceilings in white or off-white. You will get 85 percent reflected light from a white ceiling, but only about 35 percent from a medium blue, green or grey one.

special accessories

Decide early where to have your accessories, then the necessary backings can be put into either wood or masonry construction for secure fastenings.

Mirrors. They are most convenient when near the wash basin and on the bathroom door. Always plan one low enough for the small children.

Medicine and first aid cabinet on first floor in wash room or bathroom.

Different height towel rods for the short and tall folks, and the extra hands. You might like a continuous rod of wood, metal or plastic all around the room.

Recessed toilet paper holder.

Ventilated tooth brush holder.

Recessed soap holders that drain well.

A recessed shelf above the lavatory about 5 by 18 inches.

Slot in wall through lathing for discarded razor blades.

Something for drying hand-sudsed lingerie—better if over tub to catch the drippings.

Low bathroom scales—a health aid.

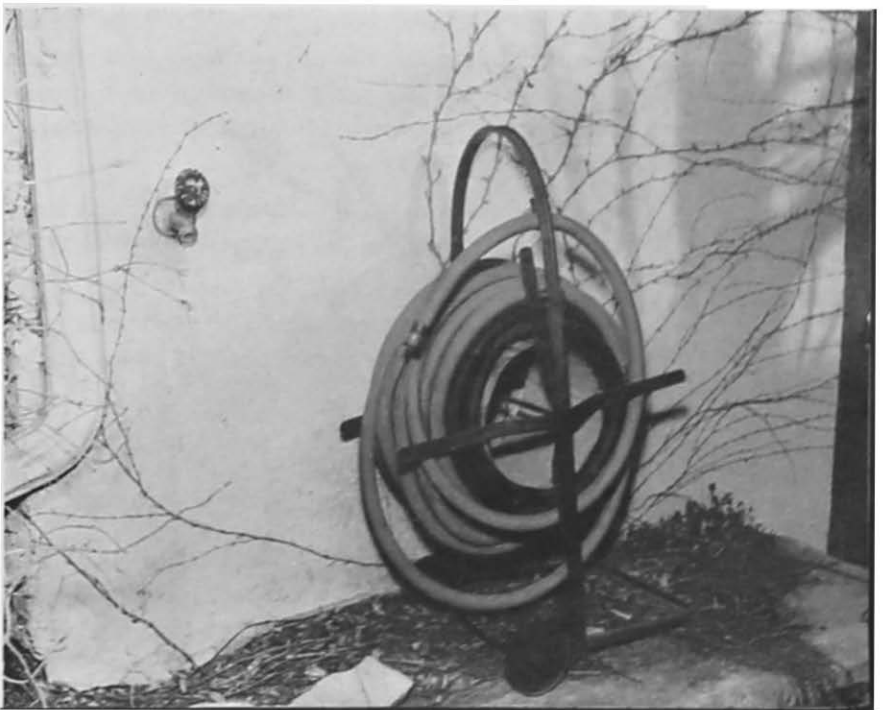
Baby supplies—enameled oblong dishpan recessed in wood cabinet on swivel casters—also good for sick room.

Shoe cleaning cabinet for dress shoes.



OUTDOOR HOSE FAUCETS

Do remember outdoor faucets in your planning for house, poultry, garden and garage. Even in years of normal rainfall, garden yields are increased by irrigation. A faucet at the poultry house saves carrying water on long hauls. A water fountain is even a greater labor-saver. Whenever you can hose down porches, screens and storm windows, you help keep down house



dust. A wise safety practice is to have a reeled-up hose connected to a faucet for fire emergencies.

A 1/2-inch hose with nozzle will deliver 200 gallons of water an hour.

A 3/4-inch hose with nozzle will deliver 275 gallons to 300 gallons of water an hour.

Lawn sprinkler head will deliver 120 gallons per hour.

This is a lot of water. Plan carefully so that whenever necessary the regular faucets for house and stock can be used at the same time.



SELECTION AND CARE OF FIXTURES

Go fixture shopping before you buy. Study catalogs and visit displays by plumbers, hardware stores, contractors; also visit farm homes where water has been installed.

Carry your floor plans for the rooms where fixtures will be located so as to select the correct sizes and weights.

Depending upon the amount you have to invest and the weight the floor can take, you can choose between fixtures in porcelain enamel on cast iron, vitreous china, vitreous glazed earthenware or sheet steel.

Wash new fixtures with nothing but a soft brush and soap. Gritty cleansers scratch the enamel. Replace washers in dripping faucets at once.

Keep grease, food scraps, sand and tea leaves from going down the drain. Then you will not need to clean the septic tank so often.

Durable chromium-plated brass fixtures will keep bright and new with ordinary care. Wash them with a damp cloth or soft brush and dry with a clean soft cloth.

To clean and disinfect the water closet each week: Pour $\frac{1}{2}$ cup chlorine solution with 2 tablespoons vinegar into toilet bowl after cleaning and flushing. Swish the solution over all inside surfaces. Allow to remain 1 hour or overnight.

SEPTIC TANK

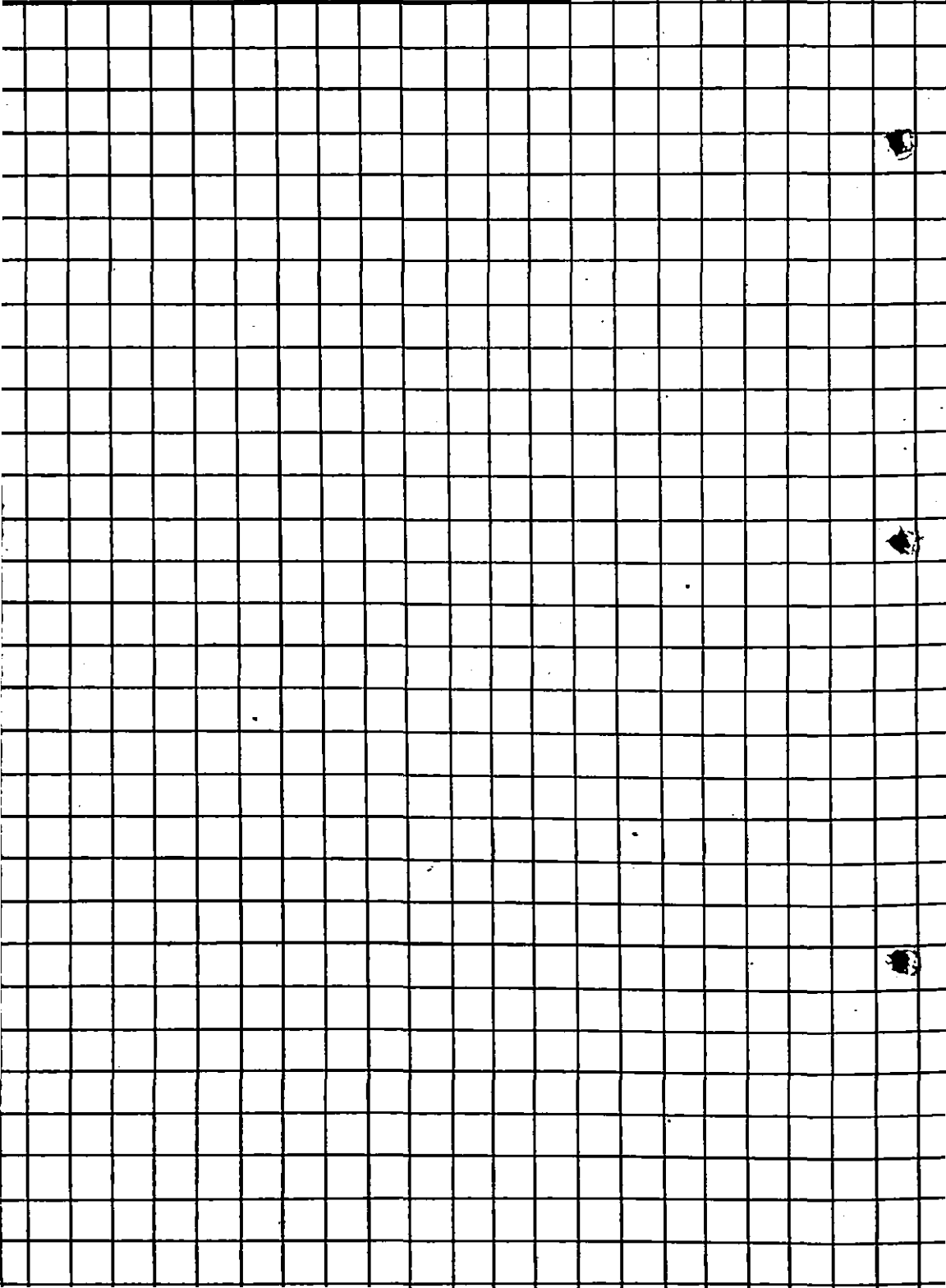
You will want a good waste disposal system. Of all expenses involved with putting in a water system, the septic tank is the least.

A poorly made waste disposal system is a health menace and a nuisance. You can provide your house with a concrete septic tank at little cost.

It is not healthful to make an old cistern into a cesspool. Furthermore, it's a waste of time to put a septic tank too deep in the ground—it will not function properly. A good septic tank requires very little attention on your part. It is never necessary to use a commercial starter or to treat the septic tank with yeast. Take out the sludge about once every 3 to 5 years. Avoid putting grease, food scraps, sand and tea leaves down the drain. These things hasten the ash accumulation and you will have to clean the tank more often. Frequent use of chemicals, bleaches and caustics will slow down the necessary bacterial action.

Never use matches or open flames to inspect a septic tank because gases from decomposing sewage may explode.

**First, draw your house floor plans to scale,
one-quarter inch to the foot; then put in
your water fixtures, such as sinks, tubs, etc.**



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