

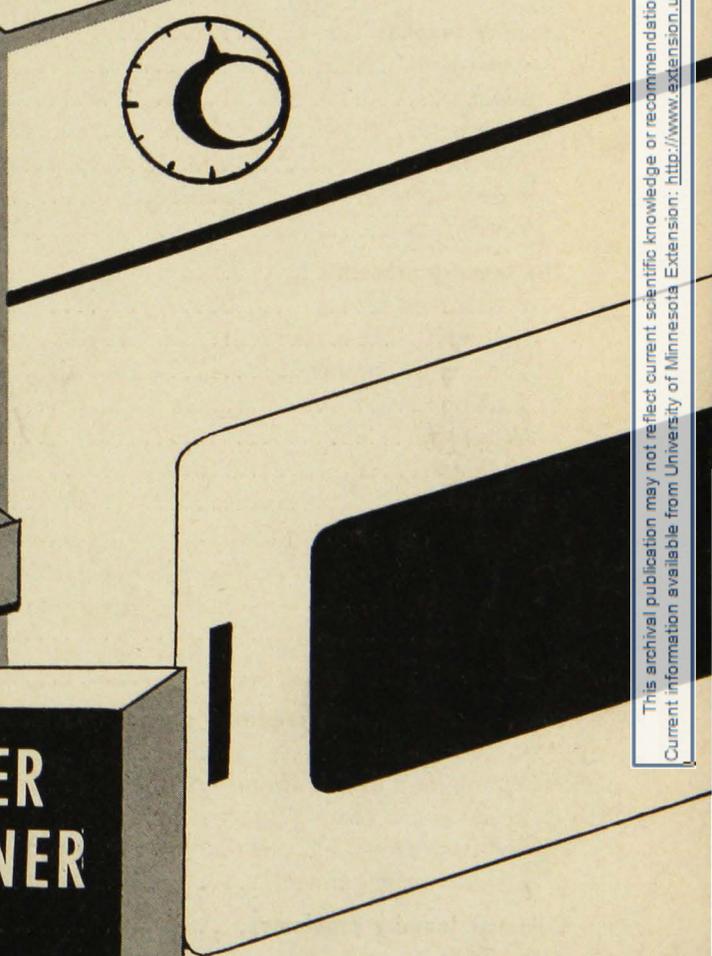
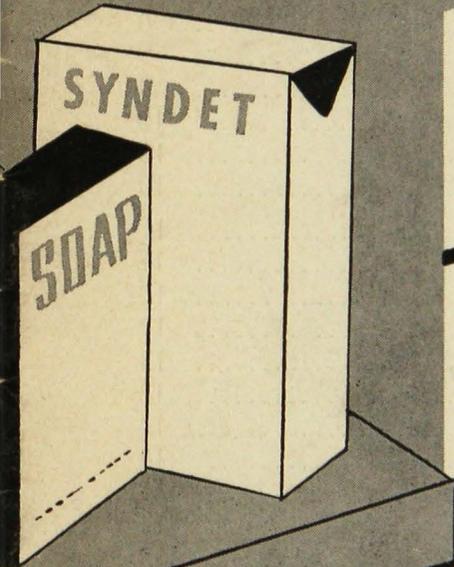
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HOME

Laundrying



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Home Laundering

Elizabeth A. Rivers¹

GONE IS BLUE MONDAY! Present-day developments in laundry equipment, laundry supplies, and fabrics not only have changed the day on which we wash but also have made the job of washing easier. However, these new developments have also brought some problems.

Homemakers are asking many questions: How much package water softener shall I use? Do I have to put water softener in the rinse water if I put it in the wash water? How hot should water be to get white clothes really clean? What is the difference between a soap and a syndet (synthetic deter-

gent)? Should I use a soap or a syndet? Why do clothes get yellow or gray? When should I use a bleach and what type should I use? How should I wash Dacron shirts? Wool blankets? White cottons and linens? Pleated skirts? These are but a few of the types of questions this bulletin will answer.

Water

Softening Hard Water

Soft or softened hot water plus soap or syndet are desirable in order to get clothes soft and clean.

Hard water plus soap forms a gummy insoluble soap scum or "curd" which settles on the fabric and is almost impossible to rinse out. This curd makes white clothes gray or yellow, makes bright prints dull, makes fabrics stiff, and may shorten the life of the fabric. And, although synthetic detergents do not form a curd in hard water, they work better in soft or softened water than in hard water.

It is as important to use soft or softened water for the first rinse as well

as for the wash water. The detergent remaining in the fabric from the wash water may combine with the hardness minerals in unsoftened rinse water, forming a curd which will collect on the fabric.

Water may be slightly hard, moderately hard, or very hard, depending on the amount of minerals that make water hard (calcium and magnesium) in the water. It is possible for you to determine the hardness of water with a commercial testing kit. Also, local laundry appliance companies, water softening companies, and utility companies often provide water testing service. And if you live in a city, the city water plant will be able to tell you how hard the water is.

¹ Former staff member.

Grateful acknowledgment is made to Mrs. Dorothy Bonnell Stulberg, Assistant Professor, Home Economics, University of Minnesota, for her help in preparing this bulletin.



Fig. 1. Laundering yesterday and today—from sad iron to electric iron, from standing to sitting.

Methods of Softening Water

Some methods of softening or conditioning hard water follow:

1. **Connecting a water softener tank into the water system of the house.** You can rent a softener tank from a water softening concern and either have it serviced by the company or do the servicing yourself. You may install and service your own water softening system.

In the most common type of softener the water is filtered through a tank containing “ion-exchange synthetic resin,” which takes out the hardness minerals. After a time the synthetic resin cannot hold any more hardness minerals and it must be regenerated by flushing with a salt brine. The resin will last for many years if this process is repeated as needed. For best results in laundering, both hot and cold water should be softened.

2. **Using packaged water softeners.** Ideally such softeners should be added to the wash and first rinse water. If for some reason you can add it only to one, use it in the first rinse water.

These water softeners are of two types: (a) precipitating and (b) non-precipitating.

a. **Precipitating water softeners**

make the water soft but cloudy. If this cloudiness is not removed before you use the water for washing, it may collect on the clothes, making them gray. Examples of this type of softener are washing soda, borax, and tri-sodium phosphate.

b. **Nonprecipitating water softeners** leave the water clear and soft. Calgon, Noctil² and other similar products are examples of this type. While this type of softener is somewhat more expensive, the clear soft water resulting makes them desirable for use in the laundry.

Amount of Softener To Use



Since water softener is rather expensive, you won't want to waste it. Here is a simple test to determine the amount of water softener needed:

1. Stir $\frac{1}{2}$ teaspoon of water softener into a gallon of hot (140° F.) water in a pan. Half fill a screw top quart jar with some of this mixture. Add $\frac{1}{2}$ teaspoon soap (do not use a syndet) and shake vigorously. If good suds form and remain standing, the water has been softened. Try again, using less softener, to find out if a smaller amount will make good suds.

² Use of brand names does not mean an endorsement of the product. Omission of any brand name does not imply criticism.

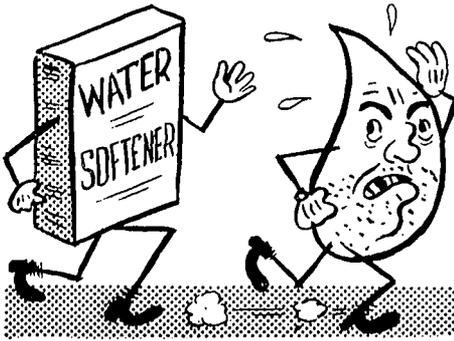


Fig. 2. Chase away hard water worries with water softener.

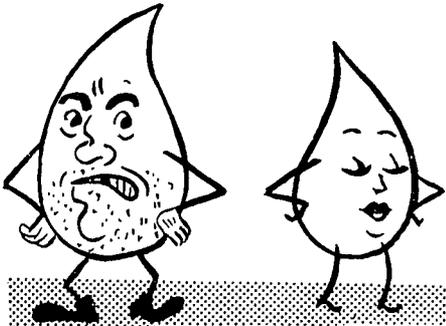


Fig. 3. Change hard water to soft water with water softener.

2. If $\frac{1}{2}$ teaspoon of softener does not make good suds with $\frac{1}{2}$ teaspoon soap repeat the test with fresh water using 1 teaspoon of softener to 1 gallon of water. Repeat until a good suds is formed and remains standing.

3. Measure the number of gallons of water your washer, tub, or wash basin holds. Multiply this number by the number of teaspoons or tablespoons of softener needed to soften 1 gallon. Write down these amounts and post or file for future use. (Remember that 3 teaspoons equal 1 tablespoon; 16 tablespoons equal 1 cup.)

The dirt on clothes may add additional hardness to the wash water, so keep this in mind when adding softener. When adding water softener to the wash water, be sure it is thoroughly dissolved before adding the soap or

syndet. Use only as much as needed—in soft or softened water, less soap or syndet is needed.

Iron in Water

A frequent laundry problem is brown spots that form on clothes from iron in the water. A special filter installed in the water system at the point before the water goes into the water softener and heater may eliminate part of the iron problem. Some water softening systems are equipped to remove iron from hard water; others are not.

Iron stains are not removed by bleach. Don't use chlorine bleach in water containing iron as it may cause iron stains on fabrics.

Water Temperature

The temperature of water is very important in getting good laundry results. It is generally a good rule to use the highest temperature that a fabric will stand in order to melt greasy spots, open up the pores of the fabric, and dissolve the detergent quickly and thoroughly. High temperatures are best for cottons and linens. See the generally recommended washing temperatures at the top of the next page.

Homemakers tend to use water that is too cool rather than too hot. The hand is not reliable for testing temperatures. The temperature in the washer or tubs is not the same as in the water heater — it may drop several degrees in temperature after it leaves

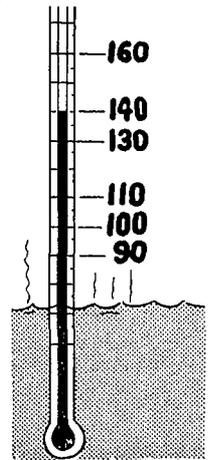


Fig. 4. Use a thermometer to check the water temperature.

Washing Temperatures

Fibers	Water temperature
Cotton and linen (see pp. 11-13)	
White	Hot (140°-160° F.)
Colorfast	Medium hot (110°-130° F.)
Nonfast-colored	Warm to lukewarm (about 100° F.)
Nylon, Dacron, Orlon, Acrilan, and Dynel (see p. 19)	
White, sturdy	Hot (140° F.)
Colorfast, sturdy	Medium hot (110°-130° F.)
Delicate fabrics	Warm to lukewarm (about 100° F.)
Nonfast-colored	Warm to lukewarm (about 100° F.)
Rayon and acetate (see p. 19)	Warm to lukewarm (about 100° F.)
Wool and silk (see p. 18)	Warm to lukewarm (about 100° F.)

the heater. It is important to test the water in the washer and tubs with a thermometer occasionally. Use a thermometer having a range from 32° to 212° F. (a dairy thermometer is all right).

Be sure to have a good supply of hot water. Washers vary from 6 to 20 gallons in the amount of water needed to fill the tub. The amount of water needed, the size of the tank, and the speed of heating water are very important. The size of the tank needed to provide a good supply of wash and

rinse water depends on the "recovery rate"—the amount of water heated per hour.

Most heaters are set for heating water only to 140° F. But some of the newer tanks provide water at two different temperatures: (a) higher temperatures (up to 180° F.) for washer and dish washer and (b) a lower temperature (about 130° F.) for general use. If your heater is the type that can be set higher than 140°, set the temperature up for washday and turn it down again afterwards.

Laundry Supplies



Detergents



Choosing a cleaning agent or a detergent is no longer easy. Exciting advertising and the rows and rows of brightly wrapped bars, bottles, and packages that greet the shopper in the market make it difficult to choose. A satisfactory answer to this problem will come only as you study these products and try them out. Here are some of the questions to be answered when you are choosing soaps and syndets:

- How does it perform in the water I have to work with?
- Will it take care of the type of soil in my clothes?
- How will it affect the fabric?
- How will it work in my washer?

A "detergent" is any cleaning agent that removes soil. Soap, water, syndets, and dry cleaning solutions are all detergents. We use the term here to refer to soaps and syndets. "Syndet" is an abbreviation of the words "synthetic detergent" and is now often used to refer to all synthetic detergents.

Soap is made by the simple process of combining fats or oils with lye. Syndets are made by a rather complex

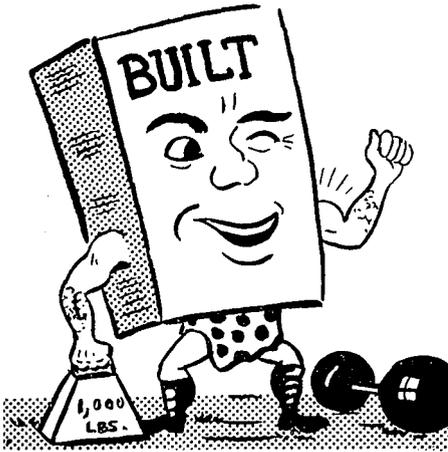
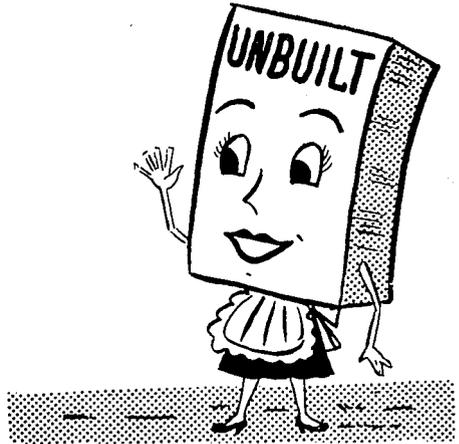


Fig. 5. Use me for sturdy fabrics.



Use me for delicate fabrics.

chemical process from fats and oils or from a by-product of petroleum plus other products. Soaps and syndets are divided into two groups: unbuilt soaps and syndets, best for light-duty hand washing and for fine fabrics; and built soaps and syndets, suited to heavy-duty or general laundry.

In addition to the basic ingredients some heavy-duty soaps and some heavy-duty syndets contain builders and other chemicals which may (1) increase their cleaning ability; (2) increase their sudsing ability; (3) make clothes appear whiter and colors brighter; (4) prevent soil loosened by washing from settling on the fabric; (5) act as a water softener; (6) form a protective coat over the metal part of the washer to protect it from the detergent.

Some heavy-duty-built syndets produce more suds than others. The low

sudsing type of syndet is recommended for use in the rotating cylinder (tumbler) type of washer.

The amount and type of soap or syndet to be used depends on the type and amount of soil on the clothes, the quantity of clothes being washed, the amount of water, the type of fiber and fabric, the type of washer, the temperature of the water, and the hardness of the water (see preceding section).

In general, follow the directions for use given on the package and then experiment with different amounts until you get satisfactory results. A satisfactory quantity is the amount necessary to give a clean wash and yet rinse out during the washing cycle. If you know how hard the water is, the following table may be of help in deciding with what quantity to start your experimenting.

Amount of Detergent to Use in 10 Gallons of Water

Detergent	Water hardness		
	Soft (0-2 grains)	Medium hard (5-8 grains)	Hard (over 10 grains)
	cups	cups	cups
Soap	¼	¾
Sudsing syndet	¼	¾	1 ¼
Low-sudsing syndet	⅛	¾	¾

How to Use Soaps and Syndets

Soaps	Syndets
<p>1. Light-duty, mild, unbuilt soap. Use for hand or washer washing of fine fabrics and for fabrics with nonfast colors. Does not remove heavy soil. Good for silk or wool. Use in soft or softened water.</p> <p>Examples: Chiffon Flakes, Ivory Snow, Ivory Flakes, Lux Flakes, Nola, Kirkman Flakes.</p> <p>2. Heavy-duty, built soap. Soap (55 to 80%) to which builders have been added to increase the cleaning power. Use for general household laundry and heavily soiled garments. Use in soft or softened water.</p> <p>Examples: Duz, Fels Naphtha, Rinso White, Super Suds.</p>	<p>1. Light-duty, mild, unbuilt sudsing syndet. Use for hand or washer washing of sheer fabrics and for fabrics with nonfast colors. Does not remove heavy soil. Good for wool or silk. Use in hard, soft, or softened water.</p> <p>Examples: Dreft, Swerl, Trend, Vel. Liquid—Ivory, Lux, Vel, Falso, Joy.</p> <p>2. Heavy-duty, built syndets. There are two types of heavy-duty, built syndets: sudsing and low sudsing syndets.</p> <p>a. Built sudsing syndet. Contains builder for increasing cleaning power; also contains a suds-making ingredient. Use for general laundry and household use. May be used in any top loading or pulsator automatic washer or any non-automatic washer. Use in hard, soft, or softened water.</p> <p>Examples: Breeze, Cheer, Fab, Falso, Oxydol Detergent, Rinso Blue Detergent, Super Suds Detergent, Surf, Tide, Wisk.</p> <p>b. Built, low-sudsing or controlled-sudsing syndet. Lower in suds than the sudsing type. May be used in any washer. Especially recommended for rotating cylinder or drum type (tumbling) automatic washers. Use in hard, soft, or softened water.</p> <p>Examples: Ad, All, Dash, Fun.</p>

A general guide to follow in the use of soap or high-sudsing syndet is to be certain there is a good rich suds covering the surface of the wash water throughout the washing period. Use low sudsing syndet according to the directions on the package or the table on page 7.

It is sometimes difficult to tell which product is a soap and which is a syndet. Sometimes you can find the word soap or syndet on the label; sometimes not. If the statement "no soap scum" or "no hard water film" is on the box, it contains a syndet. If the label carries the word "detergent," it refers to a syndet.

To help you tell one type of product from the other, the above table has been prepared. It includes the trade names of some products of each type commonly used in this area. **The listing of these names does not mean the prod-**

ucts are endorsed. Omission of any brand does not imply criticism.

Many complaints are due to the misuse of cleaning agents rather than to the product itself. Using too much soap or syndet may add too much alkali to the water and this may fade colors and weaken fabrics. Overuse makes rinsing harder and also increases washing costs.

It is important to find exactly how much soap or syndet to use in your washer; then **measure accurately with a measuring cup.** It will require some experimenting and good judgment to determine the exact amount of a specific product to use in your laundry.

Don't shift from one type of syndet to another, or from soap to syndet, or from syndet to soap, as this may cause gray scum to remain in the fabric. And don't use soap and syndet together in the same washer load.



Bleach



There are two general types of bleach, chlorine and peroxy. The chlorine bleaches are available in either the familiar liquid or the powdered form. The peroxy bleaches are represented by hydrogen peroxide, sodium perborate, and the other peroxy compounds. Some examples of these products are listed below. It is important to **follow the directions given on the bottle or package**. See the table below for the general characteristics of each type of bleach.

Choosing and using bleach correctly is important. Bleach removes color and removes some types of stains. It is not a substitute for good washing. If you use hot water (160° F.) in washing white cottons and linens, you won't need to use bleach often. Overuse of chlorine bleach shortens the life of the fabric.

Adding chlorine bleach about **3 minutes** after the wash cycle has begun provides an opportunity for the optical brighteners or fluorescent dyes, now common in built (all-purpose) synthetic detergents, to adhere to the fabric.

Today, some of the delux model automatic washers feature a dispenser that adds the bleach later automatically so the homemaker can put the bleach in the dispenser before the washer is put into operation.

When you are using a chlorine bleach in a washer, **measure** the bleach carefully and be sure it is **thoroughly diluted or dissolved** before adding it to the washer. Instructions for diluting the bleach are found on the container and are found in the instruction booklet accompanying your washer.

After using a bleach, the rinsing must be thorough. If the bleach is left in the fabric, it may turn yellow when ironed. Don't use chlorine bleach in water containing iron, for it may cause permanent stains on the fabric.



Bluing



Bluing tends to cover the yellowish tint in white clothes, making them appear whiter. It is not necessary to use bluing if clothes are properly laundered.

If you wish to use bluing, you can get it in liquid, solid (balls, sticks,

Types of Bleach

Chlorine bleach	Peroxy bleach
<ul style="list-style-type: none"> • Comes in liquid or powdered form • Has strong action on some stains. • Can always be used on colorfast cotton and linen; can be used on white nylon • Should be used only occasionally—as needed • Should not be used on silk or wool • Should not be used on special finish fabrics unless the label on the garment states that chlorine bleach can be used safely 	<ul style="list-style-type: none"> • Comes in powdered form (except hydrogen peroxide) • Has weak action on stains • Can be used on cotton, linen, wool, silk, rayon, acetate, nylon, Dacron • Can be used on colorfast colored fabrics • Gives better results if used in every washing • If used on white wool, needs vinegar in the rinse water • Available in pre-measured form
<p>Examples: Liquid—Hilex, Clorox, Purex; Powdered—Hilex, Beads O' Bleach, White Sail, Pruf²</p>	<p>Examples: Snowy, Dexol, Du Rite, Lestare²</p>

cubes), flake, and bead form. It is important to **follow the directions on the bottle or package.**

Liquid and solid bluing are used in the last rinse water. It is important that fabrics be well rinsed before using these bluing, or rust spots may show up when you are ironing. To prevent streaking, it is important to mix bluing and water thoroughly before adding the clothes.

Flake or bead bluing are added to the wash water and thus are more convenient to use in an automatic washer.



Starch



Starch stiffens fabrics, adds body and crispness, and gives a fresh look. It tends to keep fabrics clean longer and makes them easier to wash. The dirt clings to the starch rather than to the fabric and is removed with the starch during washing.

There are different types, as well as different brands, of starch on the market. It may be necessary to try out different starches for different purposes and then decide on the brand and type that best serves your purpose. Some starches give a stiff, heavy-bodied finish; others give a crisp, pliable finish; others may be used on dark colored clothes without leaving a white film.

Some starches are made of corn and wheat starches, while the new plastic starches are made of synthetic resin. Vegetable starches must be applied after each wash; plastic starches generally give a more permanent finish and are usually applied only after several washings. Here are some general suggestions for the use of starch:

- ✓ **Follow the directions on the package or bottle of starch carefully.**
- ✓ Liquid vegetable starch is more expensive than dry starch but may be more convenient, especially if you are starching only a few things.

✓ If you are drying starched clothes in an automatic dryer, use a heavy, thick starch. Do not dry starched articles with unstarched ones. Take starched articles from the dryer when they are ready for ironing. Place them at once in a plastic bag or wrap them in a damp cloth until you are ready to iron.

✓ When using an ironer, use less starch than you otherwise would.

✓ If you are using a cooked starch, have it as hot as possible for good penetration of the fabric. Be sure to strain out any lumps.

✓ Be sure to have enough starch to cover the article to be starched. Starch garments first that you want stiffest. Starch on the wrong side of clothes.

✓ When using plastic starch take great care to avoid over-starching. The higher cost of plastic starch averages out about the same as others, since it needs to be applied less often. Use a lower ironing temperature when you use plastic starch.

Fabric Softener

Products called fabric softeners are now available for home laundering. Their purpose is to soften fabrics, give a fluffier finish to woolens and deep-pile fabrics, and reduce wrinkles. Some fabric softeners are said to leave fabrics of man-made (synthetic) fibers static free so they won't cling to you. These softeners are added to the rinse water. The increased softness of fabrics is more apparent when they are dried in the air rather than in an automatic dryer.

Antistatics

Slips and blouses frequently tend to cling due to static electricity. There are products called antistatics on the market which can be used in the rinse water to overcome this difficulty. See paragraph on fabric softeners above.

The Laundry Process

The type of fiber, the type and weight of the fabric, the color and colorfastness of the fabric, the construction of the article, the amount and kind of soil, the condition of the water, and the type of equipment are factors which determine what laundry supplies and methods you should use.

If the manufacturer has given directions on the label or tag for washing, drying, and ironing his product follow these directions as closely as possible. But often there are no laundry directions on a new garment. In that case, your knowledge about the way the material behaves when wet, when heated, and when agitated will guide you in deciding how to handle the fabric. Some of the more common types of fabrics are discussed in the section, "Garments and Fabrics Requiring Special Treatment" on page 18. The largest part of the average home laundry is made up of white cotton and linen articles which usually can be washed according to the following steps.

1. Prepare the clothes by removing stains, repairing tears and rips, and removing nonwashable accessories.

2. Sort according to washer loads.

3. Soak only if necessary and then no longer than 20 minutes.

4. Fill the washer with water up to the water line if you are using a non-automatic washer. If using an automatic washer, clothes may be put in the washer before adding the water.

5. Check the temperature of the water.

6. Add water softener and detergent. If you are using bleach or bluing (flake or bead), add them at this time.

7. Load the non-automatic washer.

8. Wash only as long as necessary to remove soil.

9. Rinse, adding water softener to first rinse water. If you are using bluing (liquid or solid) you can add it to the last rinse.

10. Remove or extract the water by spinning in the automatic washer or by using the wringer of the non-automatic washer.

11. Starch by hand or in the washer—(starch in the washer only if the washer directions advise it) and then follow the manufacturer's directions.

12. Dry in the air on a line, or in an automatic dryer.

13. Sprinkle clothes and let them stand until they are ready to iron.

14. Iron the clothes, using ironer or dry or steam iron.

15. Fold and store.

Special precautions and suggestions for carrying out each of these steps are given on pages following.

Preparation

Shake or brush dust-laden articles thoroughly before washing them. Shake sand from children's play clothes. Empty pockets, turn them inside out, and brush them thoroughly. Brush pants cuffs and other cuffs on the inside of fold. Tie apron strings and close zippers. Remove shoulder pads, non-washable buttons, ornaments, removable ties and belts before washing.

Stains are often set by water and detergent. The best time to remove stains is while they are fresh. If they were not removed at that time, they should be removed before washing. See USDA Farmers' Bulletin 1474, *Stain Removal from Fabrics*. You can get it by writing to the Bulletin Room, Institute of Agriculture, University of Minnesota, St. Paul 1, Minnesota. Some

manufacturer's washer instruction booklets contain directions for removing stains.

Sorting

There are many different ways to sort clothes for washer loads. This is another place where knowledge of how fibers and fabrics behave under laundry conditions is important. Clothes needing the same water temperature, the same detergent, the same washing time, and the same washing method can be washed together.

It is ideal to change water for each load. If you wash more than one load of clothes in the same water in a non-automatic washer, wash those needing the hottest water first. This is usually a load of white cottons and linens. Colorfast cottons and linens requiring cooler water follow. Wash heavy-duty wash garments such as work clothes, work shirts, denim, and children's play clothes next. Do items such as heavy couch covers and wash rugs last.

Do not combine sheer things with heavy things as they require a different length of time for washing. If they are fragile, they can be washed in a mesh bag³ in the washer. Because of very fragile construction or because of a nonfast color, some garments need to be **handwashed**. (See page 17.) This would include nylon hose, wool sweaters, fragile blouses and lingerie, silk scarves, fiber glass curtains, and blouses or dresses trimmed with rhinestone sequins or fancy beads.

Check colored fabrics for color fastness before their first wash. Cut a piece of material from an inside seam or placket or from the inside of a pocket. Soak it in lukewarm suds for several minutes. Press the piece of material with a warm iron on a piece of white

paper or cloth. If the color of a fabric runs, launder the item separately.

Do not wash white nylon with colored fabrics as nylon takes up color even though it may be fast color. Some rayons, nylons, and other man-made fibers can be washed with cottons. Others should be washed at lower temperatures. Be sure to save and follow the washing directions on the label or hang tag that was on the garment when you purchased it. See pages 18 through 20 for "Garments and Fabrics Requiring Special Treatment."

Wash infants' clothing and clothes of a sick person separately. Do not wash woolens and silks with cottons and linens as they require a lower water temperature.

Loading the Washer

Underloading the washer provides too little friction between fabrics and between fabrics and water resulting in poor cleaning. Overloading is often the cause of poor washing and tearing of garments. It is important that you watch the turnover of the clothes in the washer. If they do not turn readily, there are too many things in the washer regardless of the number of items or the weight of the load.

A combination of large and small pieces in a washer load is better than all large pieces. No more than two large pieces (sheets) should be put in a load. Too many large pieces interfere with the washer action.

In general it is better to put 1 to 1½ pounds less clothes in the washer than the top capacity recommended by the manufacturer, which may be 8, 9, or 10 pounds. Studies indicate a load of 6 to 7 or 8 pounds gives best results regardless of the capacity of the wash-

³ An open mesh bag can be crocheted from natural coloring carpet warp or string—½" square mesh (14" x 21" is a good size) or sew two or four mesh dish clothes together to make a bag. (Be sure there are no colored threads in the dish cloths.)

er. A 6-pound load has been recommended by some specialists as the best. It might be well to check the weight of some loads on a household scale until you can pretty well estimate them. Two sample 6-pound loads follow:⁴

Load A

1 sheet	1 pair pajamas
4 bath towels	1 slip
2 pillow cases	1 laundry bag
1 wash cloth	1 pot holder
1 shirt	2 handkerchiefs

Load B

2 sheets
4 bath towels
2 shirts
2 pair pajamas

Soaking

Tests show that if fabrics are soaked too long they tend to take up soil that is loosened during the first few minutes of soaking. Therefore, it is advisable to soak clothes no longer than 20 minutes.

You can pre-treat soil streaks on men's shirt collars, bands, and cuffs, or on children's play garments by brushing or rubbing with a heavy solution of whatever soap or syndet you use in the washer.

A highly recommended method of soaking heavily soiled white clothes is the "agitated soak." Clothes are washed in the washer in warm water (about 100° F.) for 5 to 10 minutes using about one-half the amount of the same detergent used for washing. This period is followed immediately by a regular wash period in hot water (140° to 160° F.). Some manufacturer's automatic washer direction booklets give directions for an "agitated soak."

Washing

All types of washers do a good job of cleaning if you use the correct methods. **Be sure to follow the manufacturer's directions for operating the washer.** Some suggestions for successful washing are:

- Use soft or softened water of the right temperature for the load being washed.
- Do not overload or underload. Be sure there is a good turnover of clothes as they wash.
- Use the correct amount of the most suitable soap or syndet for the load being washed.
- Set the dial for the right time on the automatic washer. Watch the clock or set a timer or alarm if you are using a non-automatic washer. Avoid running overtime. Lightly soiled garments usually need from 5 to 8 minutes and heavily soiled garments need from 8 to 15 minutes. Wash garments no longer than 20 minutes. Wash sheer fabrics, poorly constructed garments, and non-colorfast fabrics from 3 to 5 minutes (it may be necessary to wash some of them by hand).
- Rewash garments in clean water and detergent rather than extend the wash period, if they are not as clean as desired.

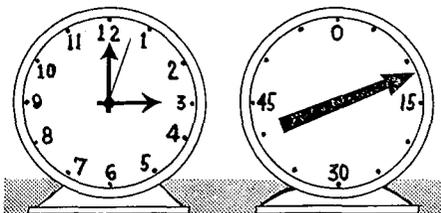


Fig. 7. Set an alarm clock or timer when you're using a non-automatic washer.

⁴ *Washing Machines—Selection and Use*, USDA Home and Garden Bulletin No. 32, 1955.

- Cottons and linens require a higher temperature and a longer time than other fabrics. See pages 5 through 6 for "Water Temperature."

- Change the water for each load for the best laundry results. If the water is used for more than one load, as in a non-automatic washer, the water becomes loaded with soil which may be deposited on the clothes. Also, the temperature of the water drops and the detergent needs replacing. If water supply and other conditions make it necessary to wash two or three loads in the same water, add some fresh water and a small amount of detergent between loads to replace the water and detergent used by each load.

- See the suggestions for softening water and for using soap and syndets, bleaches, bluing, and other laundry supplies in other sections of the bulletin.

Boiling

Boiling clothes is no longer a regular part of the laundry process. It is necessary only when clothes must be disinfected.

Rinsing

About three to four quarts of wash-water are left in each 8 pounds of clothes. Some washers and wringers leave more. Usually this water contains soap curd, detergent deposits, or soil which will cause clothes to become gray or yellow if it is not completely rinsed out of them. Therefore, thorough rinsing is a **must** if you want clean clothes.

Use soft or softened water for the first rinse water. When you rinse in tubs, the clothes will need at least two rinsings with considerable agitation. A good way to rinse in a non-automatic washer is to fill the washer tub with

cool or lukewarm water, add the clothes, and agitate them for at least three minutes. Rinsing in the automatic washer is part of the washing cycle.

Wringing or Spinning

Water is extracted (or removed) by a wringer or a spinner in the non-automatic washers. Some general suggestions for extracting the water are:

- When you use the spinner basket, be careful to equalize the garment load to reduce vibration during the spin.

- Before you use the wringer be sure the safety release is working and be sure you know how to stop, start, reverse, and open the wringer. Fold large pieces flat and support them as they run through the wringer. Avoid wrinkling by feeding garments through carefully to prevent bunches from forming. Do not put garments with buttons that have shanks on them through the wringer. Give small lightweight articles special attention to keep them from winding round the wringer rolls. Fold buttons, hooks, and zippers inside garments to protect them and the wringer rolls.

In most automatic washers, the water is extracted by a spinning process which is part of the washing cycle. Shorten the spinning time for some types of fibers and fabrics that can be washed in the washer to prevent wrinkling. **Be sure to follow the washer direction book and the washing directions given by the fabric manufacturer.**

Drying

The automatic dryer saves time and makes it possible to dry clothes regardless of the weather. There are some things which experience and studies have taught that should be considered whether we dry our clothes outdoors or in an automatic dryer.

Automatic Dryer Drying

- Follow carefully the dryer manufacturer's directions for use and care of the dryer. In addition to this be sure to follow any drying directions given by the manufacturer of each garment or household article.
- Avoid overdrying. Experience is the best guide to the length of time for drying. To test for dryness, check the clothes after three-fourths of the recommended time has passed. Pull a garment out of the dryer to test it, as it is difficult to test it accurately while it is still in the heat of the dryer. Remove the clothes from the dryer as soon as they are dry.
- Combine larger and smaller pieces in the dryer. You may need to remove lighter and smaller pieces before the drying cycle is completed. Some fabrics hold more moisture than others and will require a longer time in the dryer. Knitted cotton or rayon T shirts, underwear, jerseys, and socks may shrink if overdried. Remove them before they are completely dry and block or pull them back into their original shape and size.

Air Drying

- Place your clotheslines at a good height. Take down rope lines after each use. Plastic lines clean easily but take them down during the winter. Wash wire lines each time before using them.

- Group like types of articles together in the basket so you can hang them together easily. Shake each piece before hanging it. Place the white garments in the sun and nonfast colored items in the shade.
- Hang the best way possible to reduce the time involved in sprinkling and ironing. Hang all pieces by their strongest part or parts. Avoid hanging any articles by the corner. You can use rustproof hangers for dresses, shirts, pants, and other articles. Hang sheets, pillow cases, table linens, and towels by folding 6 inches or more over the line.

Drip Drying

Some garment manufacturers recommend drip drying for a garment. To drip dry, take the article from the last rinse and gently squeeze out the water. Do not twist the garment. Hang it on a rustproof hanger. The hanger may be padded with a white turkish towel to avoid having the shape of the hanger pressed into the garment.

Towel Drying

Some garments, such as rayon crepe blouses, slips, and gowns may be loosely folded while wet into a heavy turkish towel until time to iron them.

Sprinkling

Garments that are too wet increase the ironing time and may result in a poor job. If they are too dry the gar-



Fig. 8. Hang flat pieces about 6 inches over the line—other garments by their strongest part.

ments will be full of wrinkles. Just the right amount of dampening is important.

You can remove clothes dried in an automatic dryer while they are still damp enough for ironing and put them in a plastic bag or wrap them in a piece of plastic or a damp cloth. Some dryers have an automatic sprinkling device which can be used for sprinkling clothes which are dried completely. Some suggestions for successful sprinkling are:

- A bottle with a perforated top, a small vegetable brush with a handle, or a whiskbroom are good for sprinkling.
- Warm water penetrates the fibers better than cold water. Light, even sprinkling is better than heavy, spotty sprinkling. Heavily starched articles need more dampening than unstarched things.
- Fold garments when they are sprinkled so that the part to be ironed first will be unrolled first. Tight rolling adds wrinkles. It is desirable to place things in the basket in the order of ironing—things to be ironed first on top and things ironed at the same temperature together.

- Two hours from the time of dampening to ironing is about right for most things. Heavier garments take longer than lightweight ones. Do not let dampened clothes stand too long in damp, humid weather—they may mildew.

- Rayons, silks, and lightweight nylon or Orlon may iron better if removed from the line just before dry—thus eliminating sprinkling.

- If you are sprinkling only a few lightweight items, put a small amount of water in a plastic bag; put the clothes in the bag; and shake well. Let the clothes stand until ready to iron.

Ironing

Ironing gives the final touch to a well laundered garment. There are many things you can do to speed up this job, ease the strain on the back and feet, and give a better looking product. Here are some suggestions made by time and motion study specialists:

- Fold carefully and put away without ironing as many items as possible—such as sheets, turkish towels, dish towels, seersucker garments.

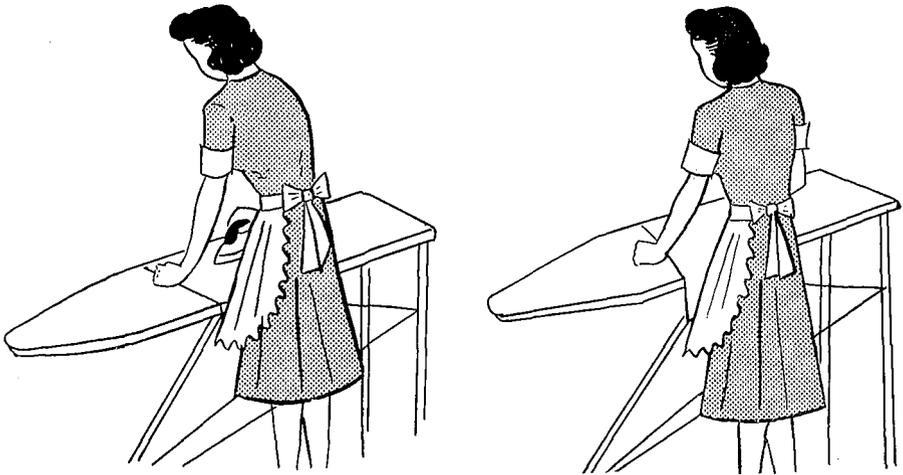


Fig. 9. Place the ironing board at a comfortable height so you can stand or sit erect while ironing.

- Place the ironing surface at a comfortable height—high enough so you will maintain an erect posture while reaching the full width of the board.
- Learn to sit while ironing. Use an adjustable board or a high stool with a back and a foot rest.
- Assemble everything—such as hangers, damp sponge, and elevated clothes basket—in a convenient place. Have a good light on the article to be ironed.
- Avoid unnecessary use of energy by pressing down on the iron. It is the heat that does the ironing not the pressure. Use the thermostat to set the heat for the type of fiber to be ironed. Do not overheat your clothes, as many fabrics are discolored and some destroyed by high temperatures.
- Use both hands. Use the left hand to smooth and spread out the garment as the right hand irons. Shift the iron from the right to the left hand to use the iron effectively.
- Iron acetates, rayons, silks, and all dark fabrics on the wrong side. If it is necessary to iron any of these on the

right side, place a soft, clean cloth over them when pressing.

- Iron the small areas of the garment first, the larger areas last. Iron around buttons, not over them. Iron each area dry before starting another area. Heavy places such as collars, cuffs, pockets, and hems should be ironed first on the wrong side and then on the right.
- Allow articles to air before storing—be sure they are well dried.

Ironing with an Ironer

An electric ironer is a time saver, especially if you have a large family. Have a demonstrator come into your home to show you how to iron different types of things. **Use the manufacturer's direction book** as it usually gives careful directions and has illustrations of how to iron the more complicated things.

If you store the ironer in a cold place, be sure it has warmed to room temperature before you turn the motor switch. Place it where the light is good and arrange ironing supplies so that you can sit while ironing.

Hand Washing

It is better to wash some garments in a wash bowl or laundry tub rather than a washer. Labels or hang tags on new garments often specify that the garment should be washed by hand. Loosely knitted or woven fabrics and fabrics made of sheer yarns are usually hand laundered. Hand wash poorly constructed garments that cannot stand washer washing, those with nonfast colors, especially finished fabrics unless the label states otherwise, and glass fiber articles.

Be sure to use the same good laundry practices in softening wash water and rinse water and dissolving the detergent as when washing in the washer. Use the same precautions when you

use bleach, bluing, and starch as in washer washing. Be sure the water temperature is the best for the fabric and the amount of soil in the garment.

Squeeze suds through the fabric. Squeeze rather than wring the wash water out. Water may be pressed out by patting the article in an absorbent bath towel. If the article is not colorfast, work rapidly. Use a small wash board for some things. Many delicate things, however, should not be rubbed, pulled, or twisted. Rinse in two waters.

Follow the directions given for drying for the garment or the fiber. See the sections on "Drying" and on "Garments and Fabrics Requiring Special Treatment."

Garments and Fabrics Requiring Special Treatment

Wool Blankets

Wool blankets present a definite laundry problem and require a special procedure commonly referred to as the "soak method." Shrinkage in woolens and wool knits is due to agitation and tumbling of wet articles. Wool gives up soil readily.

The only part of wool blankets that may require soil or spot removal are the bindings. If necessary, use a soft brush and detergent solution (use same detergent as you use in washing) on the binding before washing the blanket. If the water is hard, soften it with a nonprecipitating type of water softener. Blankets washed by the following method, developed as the result of extensive study, should not shrink.

Washing

- Dissolve mild soap or syndet or all-purpose syndet (use only enough) in soft or softened warm water about 100° to 120° F. Be sure the detergent is completely dissolved. Run the washer until the detergent is dissolved. You may remove the agitator from the washer before you put in the blanket.
- Put one blanket in at a time. Allow it to soak (do not agitate) for 15 to 20 minutes. Turn it over two or three times by hand.
- Wring it through a loose wringer or spin out the wash water.
- Rinse through two rinse waters by allowing the blanket to soak (no agitation) 5 minutes in **water about the same temperature** as the wash water. Turn two or three times by hand. Soften the first rinse water.
- Wring or spin out the water after each rinse.

- Most washer manufacturers give directions for washing blankets using the "soak method."

Air Drying

- Hang the blanket across two lines to let the air get to all sides. It is best to choose a warm, dry day. Stretch the blanket occasionally as it dries. It is desirable to have two persons stretch the blanket. A folded sheet under the blanket will reduce the line mark. Turn the blanket over when it is partially dry.
- Brush it with a stiff clean brush while the blanket is slightly damp. A wire pet brush or clean nylon hair brush can be used on firmly constructed blankets. This raises the nap and softens the blanket. Do not brush too hard or over brush.
- Press the binding with a warm iron.

Drying—Automatic Dryer

- **Follow the manufacturers' directions, if available, for drying wool blankets.** A good method is to put several dry, clean, large bath towels (five or six) in the dryer. Preheat the dryer to high

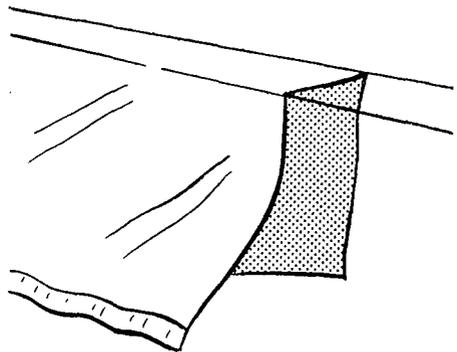


Fig. 10. Hang blankets across two lines so the air will get to all sides.

heat (about five minutes). Mix the hot towels into the blanket and allow the blanket to dry until only a small amount of moisture is left in it. Check it at the end of five minutes. Only about three-fourths of the moisture should be removed. Do not dry the blanket completely. It is better to have it too wet than too dry. The time varies with the size and weight of the blanket. Remove the blanket from the dryer. Give it a good stretch crosswise and lengthwise. It is desirable to have two persons stretch the blanket.

- Lay the partially dried blanket on a flat surface covered with a sheet and brush as suggested above under air drying.
- Press the binding with a warm iron.

Reconditioning Previously Damaged Blankets

Wash a wool blanket that has been badly shrunk and felted by previous washings using the soak wash (as above). Stretch it vigorously and thumb tack the edges down to a large table or floor which has been covered with a sheet or heavy paper. Brush the blanket thoroughly while it is wet. After drying, brush the blanket again to raise the nap and relieve the felting.

Mothproofing Blankets

If moths are a problem, you can mothproof your blankets by adding a solution containing "EQ-53" to the wash or rinse water. Several such solutions are on the market. Follow the directions that accompany the solution. Blankets treated with "EQ-53" remain mothproof for more than a year or until rewashed.

Woolen and Wool Knit Garments

You can wash woolen and wool knit garments by the soak method (see page 18, "Wool Blankets"). Use luke-

warm water 100° to 110° F. for washing and rinsing. Use a mild soap or syndet. A brief soaking with a few gentle turns will be enough for slightly soiled garments. Avoid rubbing, wringing, and agitation in the washer. Work as quickly as possible.

Dry wool sweaters or scarves in a warm but not a hot place. The outline of a sweater may be traced on paper or on an old sheet before you wash the sweater. Reblock the sweater to its original size after washing—before drying. An electric fan helps it dry quickly, which is desirable.

Rayon and Acetate Garments

Rayon and acetate garments lose strength when wet, therefore handle them carefully when washing them. If the fabric is sturdy, you can machine wash it for a short period of time. Spin dry for a short time only. You may wash sturdy white and fast colored rayon and acetate garments at 140° to 160° F. If the fabric is sheer and loosely woven or if the label indicates hand washing, wash it in warm or softened water (about 100°) using a mild detergent.

To prevent creasing the fabric, avoid rubbing or wringing. Dry it in a dryer at low heat until it is damp dry. If drip dried on a hanger or hung on a line, iron it before it is completely dry. Have the iron set at rayon or the low setting and iron it on the wrong side.

Nylon, Dacron, Orlon, Acrilan, and Dynel Garments

It is important to follow the laundry directions that come with the articles to be washed and with the laundry equipment one is using for washing nylon, Dacron, Orlon, Acrilan, and Dynel fabrics. Check the label to see if the manufacturer indicates that the

garment is washable, or if it should be dry cleaned.

Man made, or synthetic fabrics, have some similar characteristics and their laundry care is somewhat the same. They are all sensitive to heat and tend to glaze or melt when subjected to a high temperature. In general, these fabrics require a short time for drying and ironing.

Ironing is sometimes unnecessary. Smooth the seams, cuffs, and other stitched parts with the fingers while the garment is still somewhat wet. When you iron these fabrics, use a low ironing temperature and iron on the wrong side of the fabric while it is slightly damp. Dynel fabrics require the lowest temperature of this group of fibers. Always use a pressing cloth between the fabric and the iron. Lay knit garments out flat to dry.

Take care that wrinkles don't form during the washing and drying process. If the garments are poorly constructed or the fabric is delicate, wash the garments by hand. If you wash them in a washer, the spin dry part of the washing cycle should be shortened to keep wrinkles from forming. Avoid putting these fabrics through the wringer and avoid twisting them. If they are dried in the dryer, set the temperature at a low heat and do not overdry them. Often the manufacturer recommends that specific garments be drip dried.

You may machine launder sturdy white nylon, Dacron, Orlon, and Dynel fabrics such as found in uniforms, shirts, blouses, slips, and other garments. Hot soft or softened water (about 140° F.) in the washer with a



Fig. 11. Read the washing directions on the hang tag that comes with your garment.

good detergent, followed by thorough rinsing (first rinse should be soft or softened water) should keep white nylon, Orlon, and Dacron white. If necessary, pretreat excessively soiled areas by rubbing with a heavy solution of the same detergent you use in washing (let stand from 10 to 20 minutes only). Wash colored garments separately in water at about 100° F. (See page 5, "Water Temperature.")

Blended Fiber Garments

Wash blended fiber garments as you would wash the most delicate fiber in the blend.

Common Laundry Problems

- Lint on dark fabrics will result if you wash them with other fabrics that give off lint or if you iron them on an ironing board that gives off lint. It is

better to wash dark fabrics in fresh water.

- Washable pleated skirts and dresses will hold pleats better if they are drip

dried. The weight of the water helps to reshape the pleats better. If pleated garments are labeled "durable" rather than "permanent," they have to be re-pleated after four or five washings. Follow the garment manufacturers' washing directions.

- Yellowing of fabrics is due to several causes. If you don't rinse out soap curds or bleach thoroughly, your clothes may become yellow during ironing or in storage. White nylon will yellow with repeated ironing at a high temperature. White nylon washed with colored nylon will give the white nylon a dingy appearance. Some fibers turn yellow with age and after several washings.

Chlorine bleach may cause yellowing of some resin treated white fabrics. Washing directions that come with such fabrics usually advise you on the use of bleach. There are some new products on the market and some old products now being advertised for use in whitening yellow synthetic fabrics.

- Fabrics become gray for several reasons. A common cause is soap curd not thoroughly rinsed from a fabric. This may be because hard water was used

for the washing and for the first rinse. Fabrics can become gray if the soil isn't thoroughly removed. This can happen if the wash water isn't hot enough, if there is not enough detergent, if the washer is overloaded, if the wash period is too short, or if soiled areas aren't pretreated.

Soil can be redeposited on the fabric if the wash period is too long, if the laundry is allowed to stand in the washer too long, or if there is not enough detergent. If you shift from a soap to a syndet or a syndet to a soap from washing to washing, there may be a deposit of soap curd.

Reconditioning Grayed or Yellowed Clothes

To whiten clothes which are gray or yellow from previous washings, where they are poorly rinsed, run them through the wash using a nonprecipitating type of softener (no soap or syndet). This will remove soap and soil deposits thus whitening the fabric. Use 1 to 1½ cups of softener to a washer. It may be necessary to repeat this process several times to get your clothes as white as you want them.

Care of Laundry Equipment

Laundry equipment will do its best job only if you keep it in good operating condition and operate it correctly. **Read the manufacturers' directions for use and care carefully and frequently.** Many of the complaints that are made about a piece of equipment result because people do not follow the directions for the use and care given in the manufacturers' direction booklet. Some general suggestions are:

Washer

- Bring the washer into a warm room several hours before you use it if you store the washer in a cold place. This permits the oil and grease in the motor

to warm up before you start the motor. Do not add hot water to a cold washer especially if it has a porcelain lining. The finish may check or crack.

- Start the motor of a non-automatic washer before you put the washer in gear. Open the wringer to release the pressure immediately after you use it. Wipe it dry. If the wringer does not open, dry it by running a dry absorptive cloth through it until the moisture is taken up. If the rolls cannot be separated, be sure to leave a dry piece of cloth between the rolls.

- Empty, clean, and dry the non-automatic washer immediately after you

use it. Add fresh water after draining the used water. Agitate until it is well rinsed, and drain it. Sometimes detergents left on the tub lining tend to corrode it. Remove the agitator if it is removable. Wipe it dry. Wipe the center post. Leave the agitator lying free in the tub until the next use. Detergent deposit or "scum" may freeze the agitator to the center post if it is not cleaned.

- Leave the cover ajar when the washer is not in use. Keep the washer covered when it is not in use.
- Clean the lint from the lint screen. Do not scour the tub with rough scouring powder. A cloth dipped in vinegar will often remove a water coating.
- Follow the manufacturers' directions for the kind of oil and the frequency of application if oiling is required. Have your washer checked and lubricated by a service man about once a year.

Dryer

- Clean the lint trap (if your dryer has one) after each use. For a periodic cleaning when lint has collected inside, disconnect the dryer from the electric outlet and remove the lint from the crevices with a vacuum cleaner attachment—using first the blower end of the

cleaner and then the suction end. If no cleaner attachment is available, use a long handled brush.

Iron and Ironer

- If the sole plate of your iron has become stained with starch or other things, heat the iron slightly and rub it back and forth on waxed paper. If this does not remove the stain, rub it on salt sprinkled on a paper. When the iron has cooled, wipe it with a clean cloth and warm soapy water. Dry it thoroughly.
- Disconnect the iron by pulling the cord from the outlet. Do not use an extension cord. Plug the iron cord directly into the wall socket. When the iron is cold, wrap the cord *loosely* around the iron for storing.
- Heat the ironer to room temperature, if it has been stored in a cold place, before you turn the current on. The oil or grease in the ironer should be warm before you start the motor.
- Fluff or reverse the position of the ironer padding or roll occasionally. To fluff the padding, put it in the automatic dryer for 20 to 30 minutes with low or no heat, or hang it outdoors on the line. The pad should not be washed. Keep a clean cover on the ironer.

Saving Time and Energy

Here are some suggestions that will help you save time and energy. They are made by people who have studied home laundry methods and conditions.

- Wash clothes before they become very soiled. Wash them as soon as possible after they are soiled.
- Remove stains before they have a chance to set.
- Use paper napkins, towels, and cleansing tissue when it is practical. Use fewer dish towels—drain the dishes

dry. Use table mats or hard surfaced table tops that you can wipe off.

- Choose fabrics that you can wash and iron easily or that need no ironing.
- Choose fast colored fabrics so you can wash most things together.
- Choose garments with simple construction to eliminate laundry fuss and irritation.
- Keep and use a file of labels or hang tags that come on garments and house-

hold articles which give laundry instructions.

- Choose the most convenient day or days for washing. Automatic washer users usually wash two or more days each week. This also might be a good idea for families with non-automatic washers, especially if they have large washings.

- Locate the laundry area where it will reduce steps. Many women like a separate first floor room. For others, the basement is the best place. For some, an automatic washer and dryer in the kitchen is proving an energy saver. When combining the laundry and the kitchen, consider the effect of the noise of the washer and dryer on the family. Be sure the location of the equipment doesn't interfere with cooking and other kitchen activity. Since much of the laundry comes from the bedroom and the bathroom, some planners suggest that the laundry be located near these rooms.

- Arrange the equipment in the laundry area to make work easier. A right-handed person can work best if the equipment and work counters are placed so that the work can proceed from right to left.

- Provide adequate storage space for detergents, stain removers, bleaches, and other supplies at the place you use them. Store hangers and racks you need for ironing near the place of ironing.

- Have good ventilation and light. If possible, day light should fall directly on your work. Put artificial lighting where you need it. It should be adequate in amount and quality.

- Have correct working heights to prevent stooping. Place the sorting table, sinks or tubs, ironing board, and laundry basket at the best height for you. You can raise low benches and tables easily by adding height to the legs. You can place a front opening automatic washer or a dryer on a platform to eliminate bending.

- Avoid accidents which result from improper installation and incorrect use of electric equipment. Ground electric washers and dryers properly.

- Wear comfortable clothing that is free of ties or parts that could get caught in the wringer or in other equipment.

- Use a hose to fill and empty a non-automatic washer.

- Avoid carrying heavy baskets of clothes. Baskets about as wide across the top as a bushel basket are easier to carry.

- Have a clothes chute, a clothes hamper, or clothes bag on each floor to save yourself steps. Be sure the storage space for soiled clothing is well ventilated. If you wash in the kitchen or on the first floor, the storage of soiled clothing needs careful planning. Perforated boxes, bins, or baskets for storing soiled clothes that are washed in the same washer load eliminates extra handling.

- Plan to provide space for equipment that may be added in the future, if you are building a new house or adding a service room.

- **Read the manufacturer's directions carefully.** Many washing problems result because equipment and laundry supplies are used incorrectly.

UNIVERSITY OF MINNESOTA, INSTITUTE OF AGRICULTURE,
ST. PAUL 1, MINNESOTA

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