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# BLANKETS, SHEETS, AND TOWELS FOR THE HOME

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## ILLUSTRATIONS

# BLANKETS, SHEETS, AND TOWELS FOR THE HOME[1]

Katherine Paddock Hess

## FABRICS FOR THE HOME

In colonial days the whirr of the spinningwheel and the rhythmic beat of the loom were familiar music in the home. Their song accompanied the productive activity of the homemaker of that time, as through her skill the wool sheared from sheep pastured on stony hillsides and flax grown in the fields were transformed into fabric for apparel, bed coverings and other household uses. There was no question of adulteration then. Home grown commodities were manipulated with all the skill the homemaker possessed to make a fabric well suited to the known needs of her household. Homespun counterpanes of fine wool, some of which have lasted to this day, bear witness to their durability and to honest methods, integrity of production, and the artistic expression of their makers. Numerous patterns, now eagerly sought, were created and developed by the beauty-loving women of the colonial and post-colonial periods. The tight twist of the yarn that facilitated the bringing out of the pattern added strength to the cloth. The wool coverlet served the two-fold purpose of covering the bed and adding to the beauty of the room. It afforded, however, little protection from the cold, and the weight was relatively great in proportion to the warmth secured. (Fig. 1.)

The colonial housewife's sheets differed as much from the sheets of today as the wool coverlet differed from the modern fluffy blanket. Sheets woven in the home from flax prepared and spun by the housewife were often coarse as compared with the texture desired today. The quality of the sheet depended upon the quality of flax produced and upon the skill of the spinner in the use of the distaff and spinningwheel in the production of the yarn. A few pairs of linen sheets lasted a lifetime and were the proud possession of every bride, and usually the product of her own labor.

The spinningwheel is quiet now; if found in the modern home, it stands as an ornament, a subtle token of the connection of the present with colonial days. The noise of the loom has also passed from the home to be intensified in the mills where the production of blankets and other household fabrics

1. Contribution No. 837 from the Department of Home Economics. Based upon studies by graduate students and the staff of the Department of Clothing and Textiles.

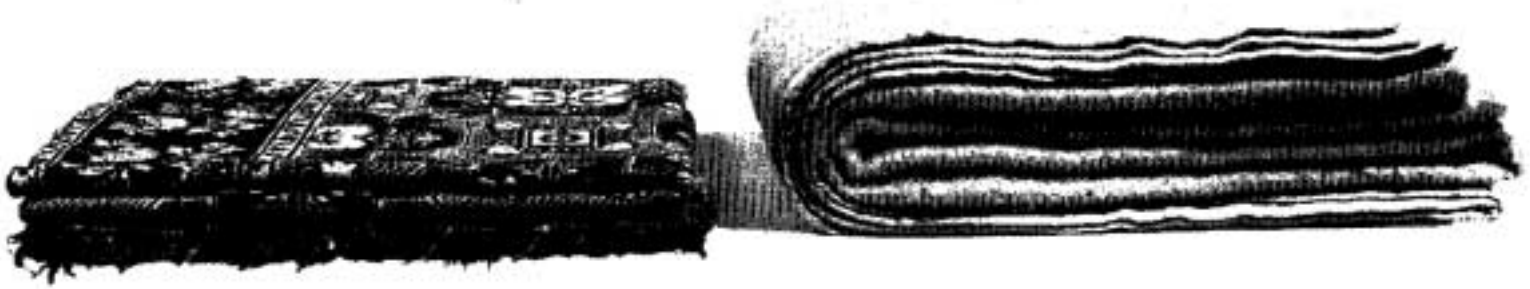


FIG. 1. Left. Colonial wool coverlet. Artistic and durable but heavy and lacking in warmth. Right. Wool blanket. Beautiful in color and texture; also light and warm.

has gone. Today the homemaker seeks to obtain in the market blankets, sheets and other articles for her household. Her work is not one of production but of selection; and, in order to spend wisely, she must supply herself with all the available informa-

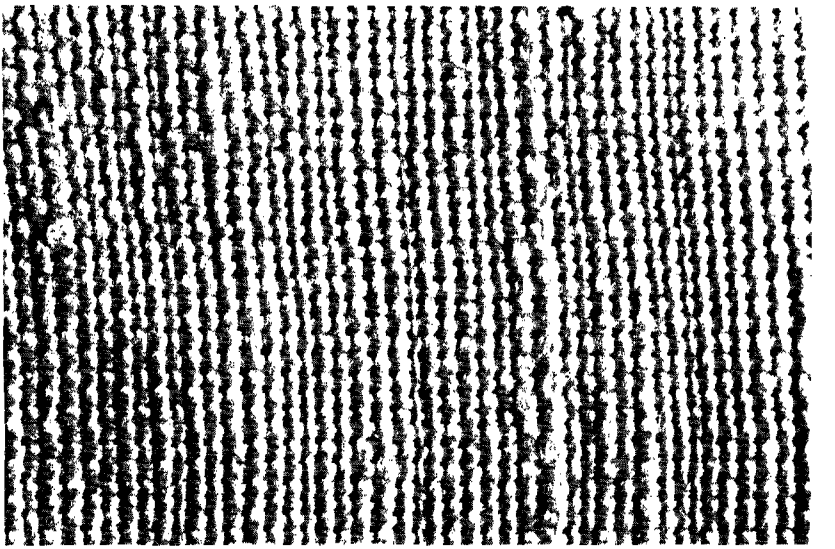


FIG. 2. Homespun linen sheet.

tion that will assist her in making her choices. This includes kind and quality of fiber, method of construction, and the finish of the cloth.

## BLANKETS

Long ago the blanket was also the bed cover, and as such often had its place in the family livingroom. Color and charm of pattern were then important. No longer does the blanket serve as the cover for the bed, nor does it appear in the living-room; so its contribution to the color and design of daily living is regarded by many as slight. A certain color may be selected to give a color accent to the room, but for the most part the artistic value of a blanket is regarded as secondary. In general, aside from borders, some plaids and checks, there are no patterns in present day blankets to catch and hold the interest of the buyer as the coverlet pattern caught and held the interest of its creator. No longer does the weight, color and design, once deemed the index of quality, serve as a sufficient guide to the buyer. Modern folk dislike heavy bedding as tiring, and demand qualities in their blankets not found in the early coverlet.

The homemaker of today must select her blankets from the

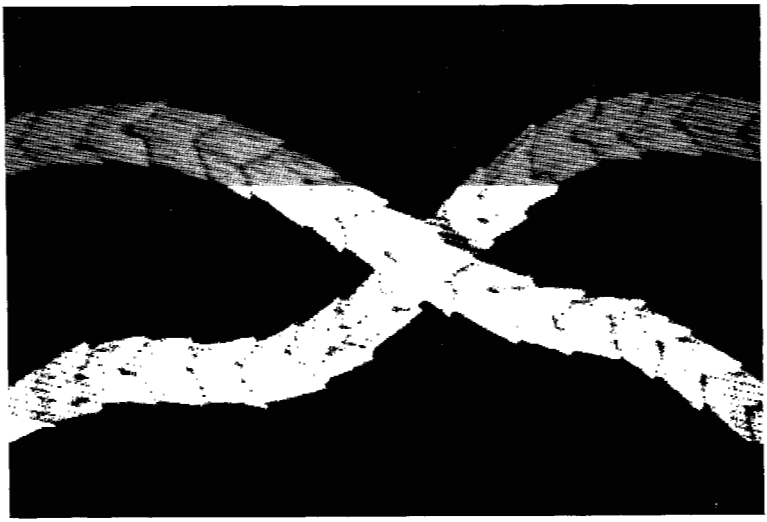
many types available on the market. If she is to obtain the greatest value for the money she spends, she must be able to answer the following questions.

1. What are the qualities desired in a blanket for home use?
2. What relationship exists between price and value?
3. What may serve as a basis in blanket selection?
4. How may correct care preserve the durability and beauty of blankets?

Let us consider these questions in detail.

## QUALITIES DESIRABLE IN A BLANKET FOR HOME USE

The first and most important quality is warmth. Blankets are used as a protection from cold and are chosen primarily for this purpose. Wool is especially suited for manufacture into blankets because of the nature of the fibers. These fibers are comparatively resilient and kinky, and are covered with fine



Courtesy Kenwood Wool Products Co.

FIG. 3. Drawing of wool fibers, showing overlapping scales.

microscopic scales which give them a rough surface. (Fig. 3.) The characteristics of wool fibers permit them to be made into yarns in which there exist many little air pockets.

**WARMTH** The wool fabrics woven from these yarns are not a compact mass but in turn hold air in their meshes. This is true whether the fabric is of the loose open weave of the throw blanket, the sturdy twill weave, or the heavier weave using two sets of filling yarns. The still air held in the meshes

of the yarns and the fabric prevents the ready passage of heat through them, thus imparting the quality of warmth.

Most blankets are finished with a napped surface. In the process of napping, the ends of the fibers are pulled or scratched out of the yarns and brushed so as to stand upright on the surface. This napping is done by wire hooks or by teasels, which are vegetable pods with many sharp, hook-like projections. (Fig. 4.) The nap of protruding fibers greatly increases the amount of dead air held within the meshes of the cloth and thus adds to the warmth of the blanket. This was proved in a textile laboratory where the heat retaining qualities of blankets were tested. The results of these tests, made several years ago, showed that a five pound all-wool blanket with a slight nap gave less protection than a four pound blanket of the same size, quality and construction, but which had a deeper and more compact nap. This information resulted in the trend toward light weight fluffy blankets finished with a deep, compact nap.

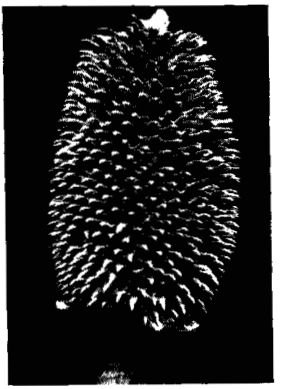


FIG. 4. A vegetable teasel. Sometimes used in the finishing of blankets to brush up the nap.

A study made at the Kansas Agricultural Experiment Station of unfinished and finished blanket materials furnished an opportunity to compare the effect of various amounts of napping on the qualities of wool blankets. The relative "warmth" of these blankets as shown by their resistance to heat flow was determined under carefully controlled conditions. In the unfinished material the comparative warmth was found to be determined by the construction and thickness of the cloth. It was found that by napping there was an increase of from 18 to 23 percent in the ability of the blankets to resist the passage of heat through them. The thicker blankets still possessed the greater protective value.

The kind and quality of fibers used in materials to be napped are of great importance if the effectiveness of this nap is to be maintained. Wool fibers do not pack or mat as other fibers do, thus permitting the nap to remain upright. This quality of wool, rather than the heat retaining property of the fiber itself, causes blankets made entirely of wool to be warmer than those made from cotton or from mixtures of wool and other fibers. For this reason the fiber content or the comparative amounts of wool and other fibers in the fabric should be known when choosing blankets for warmth.

Sometimes the cost of an all-wool blanket may seem prohibitive and the buyer regretfully turns to blankets labeled "part wool," In such a case, the use made of the cotton fibers or yarns in the fabric becomes of primary importance. If cotton has been used instead of wool, only for the fine warp yarns common in blankets, the heat retaining qualities will be altered but slightly from those of blankets "100 percent wool." If, however, the cotton fiber has been used, wholly or in part, in the comparatively coarse filling yarns which will later receive the napping, then the heat retaining qualities will be markedly less than those of an "all-wool blanket."

The inclusion of small amounts of wool, even up to 25 percent, does not alter the cotton non-warmth retaining characteristics of the blanket. Hence, investment in blankets of mixtures of such small percentages is to be avoided.

A comparatively long fiber must be used, especially in the filling yarn, in order that the nap may be of the desired depth and also be securely fastened in the yarn. Highly napped blankets made from short fibers will shed the nap during use and cleaning and thus lose much of their heat retaining quality.

The second quality which characterizes a good blanket is durability. Strength, which is considered an index to durability, is second only to warmth as an important and desirable quality in blankets. Blankets must be strong enough to withstand wear and laundering.

**DURABILITY**

Results of laundering tests indicate that a strength of from 35 to 40 pounds in the warp (the lengthwise yarns) and not less than 20 pounds in the filling (the crosswise yarns) is desirable. This strength is required to withstand the treatment given in power laundries and is necessary also for blankets that are to be laundered at home. Wool absorbs and holds large quantities of water. The fiber is weaker when wet and the yarns in a blanket with less than 20 pounds breaking strength would be most likely to pull apart under their own weight when hung to dry.

It was found in the study of blankets mentioned above that the finishing or napping affected the strength of the warp yarns but slightly, but that from 62 to 81 percent of the strength of the filling yarn was lost. This was due to excessive napping done in an effort to give warmth and fluffiness to the fabric. (Fig. 5.) The original blanket material possessed more than 20 pounds breaking strength in the filling. The napping of one light weight fabric reduced the filling strength from 37.5 to 7 pounds, of another from 22 to 6.5 pounds. This represented losses of 81 and 70 percent, respectively.

In a study of other blankets it was found that the strong blankets were also the warm ones. Comparison of the weight of the blankets indicated that strength, warmth, and weight go

hand in hand. The weight per square yard of four of the finished blankets, with a low breaking strength, was in two cases slightly more than 10 ounces per square pard, and in others much less. A blanket of 10 ounces per square yard would weigh less than 3 pounds in a 72 x 84 inch blanket. Warmer, stronger blankets weighed more than 4 pounds in a 72 x 84 inch size. With the greater weight there was not only more strength, but

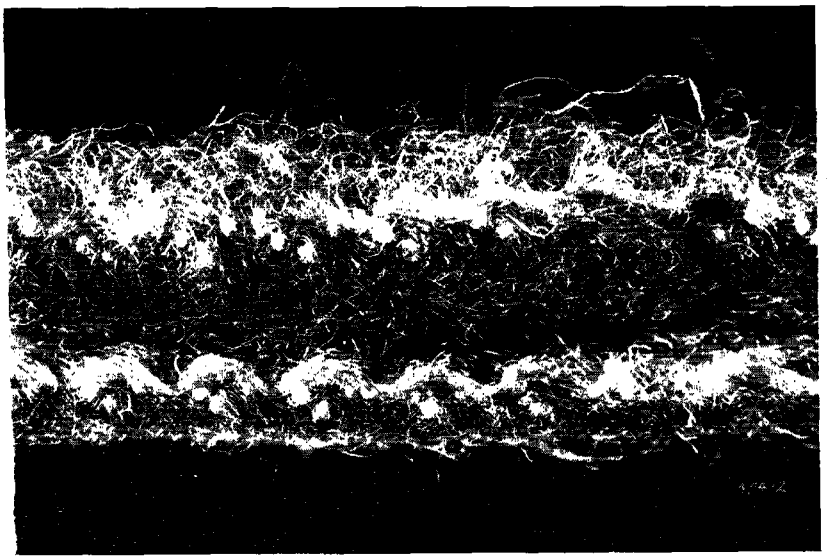


FIG. 5. Napped and unnapped blanket fabric. Shows the effect of napping on the thickness of blankets.

approximately one-third more warmth. This would indicate that the lessening of the amount of fiber used in blankets and the increase in the degree of napping has been carried too far in some of the blankets found on the market. If an insufficient mass or quantity of fibers is used in the original fabric there will not be sufficient fibers left in the filling yarn to give it the required strength after it is given a high degree of napping. A comparison of the weight, warmth and strength of the blankets studied showed that a blanket fabric that weighed less than 12 ounces per square yard was lacking in either warmth or strength, or both.

**Size**

The size of blankets is another point to be considered in connection with durability. Blankets that are too short to be tucked in securely at the foot of the bed and leave adequate length to be drawn up over the shoulders are under a constant strain during use. A blanket 84 inches long is considered adequate in most instances but an

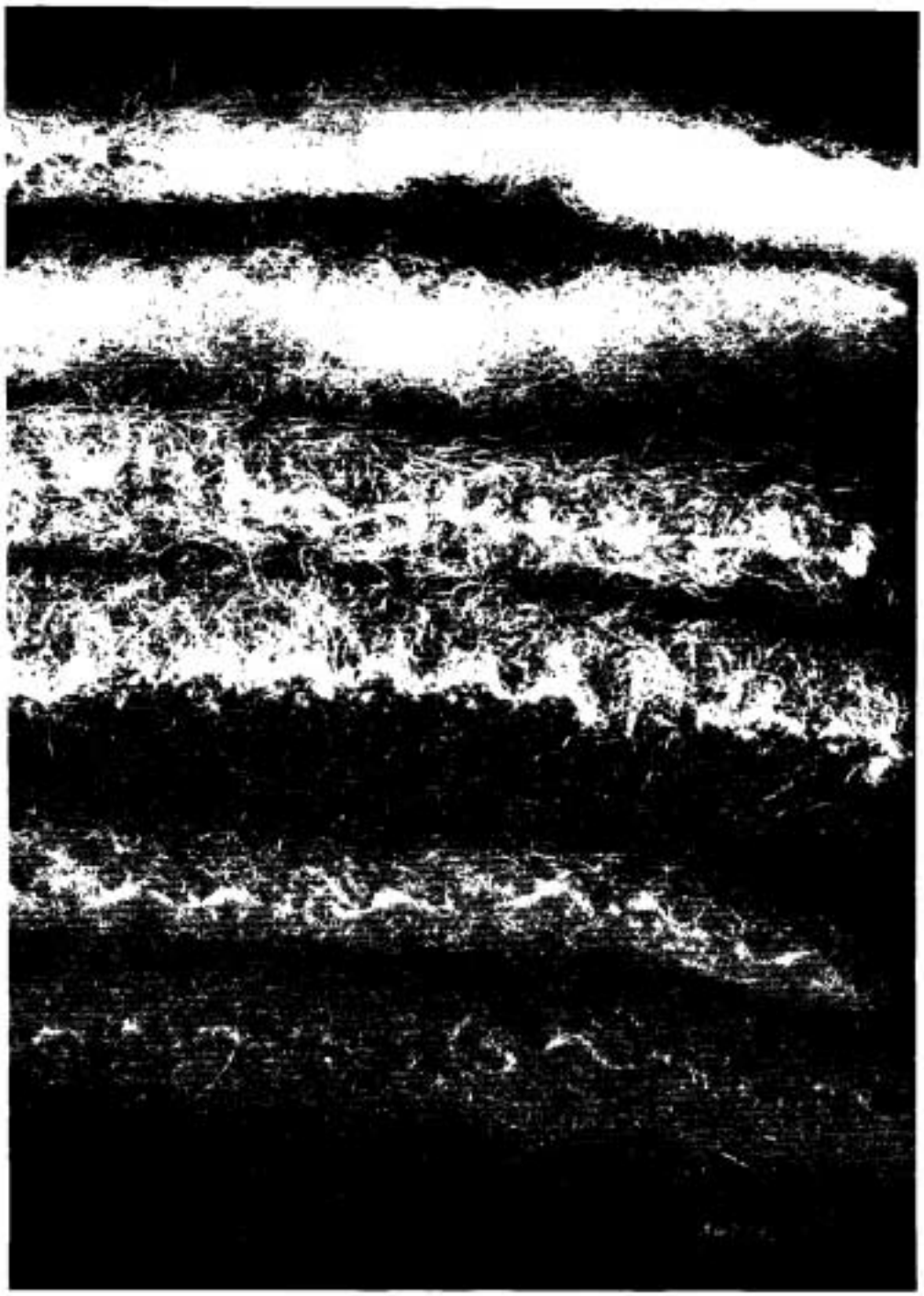


FIG. 6. Edges of blankets, showing difference in thickness. Note weak spots in the two white blankets.

extremely deep mattress might necessitate the use of a 90 inch blanket.

If a single blanket in a size 60 x 84 inches is chosen, this blanket should weigh not less than two and three-quarters pounds. A 66 x 84 inch size in a single blanket should weigh not less than 3 pounds, and one 72 x 84 inches should weigh not less than three and one-half pounds. These weights are given as the minimum amounts of wool that will be found in a warm, strong blanket of the sizes given. Slightly heavier blankets, provided they have a long, compact nap held securely in the fabric, should furnish added protection from cold, and wear an added number of years. (Fig. 6.)

**BEAUTY**

The beauty of a blanket is sometimes the most important consideration of the purchaser. Fluffy, two-toned blankets or those in one color, finished with wide satin bindings may be chosen on appearance only. The finishing of the ends of blankets is an important point in the consideration of beauty and also durability. It must be understood that many satin bindings will have to be replaced in a few years and that similar material with which to rebind them is expensive and difficult to obtain. Sateen bindings usually wear longer than satin. A crocheted edge is durable, and, if the ends are securely fastened, should withstand the same wear as the rest of the blanket.

## FACTS TO REMEMBER

What information is available that may serve as a basis in blanket selection? This is a question of utmost importance to the housewife and one for which there is no brief, definite answer. The characteristics of the fibers, the construction and finish of the fabric, and the size and weight of the blanket must be taken into consideration. There is evidence that the manufacturers recognize the fact that the consumer is interested in adequate informative labels, and the more progressive firms are taking the lead in supplying this demand. If all of the necessary information is given correctly and clearly on the label, there is still the problem of choosing the best value for the money and the blanket most nearly suited to the individual need. In the absence of satisfactory labels, some information may be gained from inquiries and inspection. The size of the blanket is usually given; and the better blanket manufacturers furnish the fiber content, labeling their blankets according to the agreements accepted as "Commercial Standards." According to this agreement, which producers are not compelled to accept but which is adhered to by many of the larger blanket concerns, a blanket to be labeled part-wool must contain not less than 5 percent wool in the entire blanket. Those containing from 5 to 25

**FIBER CONTENT**

percent wool are to be labeled "not less than 5 percent;" and those containing from 26 to 98 percent wool are to be labeled with the minimum amount of wool present. Only blankets containing not less than 98 percent wool can be labeled "all-wool."

The weight of the blanket is seldom stated on the label but may be obtained from the salesman. **One should request this information and, in the absence of facts concerning breaking strength and warmth, remember that 12 ounces per square yard is the minimum mass of wool fillers which can he made into a blanket that is both warm and strong.** High quality blankets are made of long, virgin wool fibers constructed into a compact fabric and finished with a deep, compact nap. If a small portion of the fibers of the nap, pinched between the thumb and fingers, will sustain the weight of the entire blanket, the fibers are of a length sufficient to permit the amount of finish given the blanket, and also to hold the nap securely in the yarn.

WEIGHT

A comparison of the texture of several blankets will permit one to judge the fineness or coarseness of the fibers. New or old fibers can be identified definitely only by microscopic or chemical analysis. However, experience in handling blankets enables one to judge even this quality since old or re-worked fibers feel dead or lifeless, lacking the natural spring of new fibers.

Uneven shrinkage often occurs in blankets in the construction of which heavy and light weight yarns or yarns of different types are used. This may be a part of an all-over design but usually is found only in the border. The uneven shrinkage results in unsightly blankets, narrower in spots. To avoid this choose a blanket in which only one size and type of yarn is used in any one direction.

No definite price range can be given within which one may expect to obtain a blanket that will possess all of the desired qualities. However, an all-wool blanket, constructed of a sufficient mass of long, new fibers to be warm, strong, and durable, will be in the upper price range. The price should be lower in direct proportion to the percentage of cotton used and the quality of the wool. Only the cheaper blankets are likely to contain old or re-worked wool. The larger sizes are more expensive but, up to a certain point, they are proportionately more durable and offer greater protection.

## CARE OF BLANKETS

To maintain softness and fluffiness in blankets, they must be aired frequently and great care used in cleaning and storing them. If a blanket has been chemically treated to protect it from moths, it will be necessary to have it dry cleaned, or to have it re-treated after each laundering,

**DRY CLEANING**

Dry cleaning is recommended as a satisfactory method for cleaning blankets as there is less danger of excessive shrinkage and change of texture during dry cleaning than during laundering. Dry cleaning adds to the cost of upkeep but should be considered as the necessary means of cleaning high grade blankets.

**LAUNDERING**

According to Technical Bulletin No. 575[2], in a test consisting of an average of 12 launderings "the shrinkage of all blankets was so high they would not adequately cover a single bed. . . . . , there is increasing shrinkage with service although the greater shrinkage occurs in the first 12 washes. The percentage change in length is considerably greater than that in width. The finer the wool the greater was the shrinkage."

If it is desirable to have the blankets washed, a well equipped commercial laundry may prevent excessive shrinkage by keeping them stretched during drying. All well equipped laundries have special machines built to minimize the pounding or felting action. Many laundries have special apparatus that thoroughly brushes up the nap, leaving the blankets as soft and fluffy as when new. If the blankets are slightly damp when they are run through these machines, comparatively little wool is lost.

All of the handling of blankets in laundering must be done as gently as possible to prevent felting or fulling of the wool since this causes excessive shrinkage and makes the fabrics thick and harsh. Large blankets are difficult to launder by hand and many types of washing machines tend to felt blankets as a result of the tumbling action which they are given.

In order to minimize the harmful effects of laundering wool fabrics the following rules should be observed:

Excessive temperatures (above 90 degrees F.) must be avoided; all water should be soft; and only a mild non-alkaline soap should be used. The following blanket wash is sometimes used instead of soap:

> Dissolve one large bar of mild white soap in three quarts of water. When thoroughly dissolved and cool add one cup wood alcohol and two teaspoonfuls borax.[3]

Use enough of this blanket wash to make a good suds.

If the blankets are extremely soiled, the following detergent will assist in the cleaning:

> Detergent. 1½ ounces of castile soap dissolved in 1 pint of hot water. Add 3 quarts water, 1 ounce wood alcohol, 1 ounce ether, 4 ounces ammonia. Stir vigorously.[4]

If it is necessary to soften the water slightly, add two table-

2. Hays, Margaret B., Elmquist, Ruth E., and Hardy, J. I. **Serviceability Test on Blankets Made from Four Blends of Wool.** Washington. U. S. Department of Agriculture.
3. Justin and Rust. **Home Living.** p. 222. Chicago: J. B. Lippincott Company. 1935.
4. Ibid. p. 222.

spoonfuls of borax to each tub of water. If a sediment is formed, the water should be strained before using. Dissolve the soap in a small quantity of hot water and add a sufficient amount of the solution to insure a good permanent suds. Soap suds take up the particles of dirt and thus assist in their removal. If the suds "falls" the dirt is deposited in the fabric and is more difficult to remove than the original soil. The number of suds necessary is determined by the amount of dirt to be removed. Use plenty of suds each time to permit the easy handling of the blanket. Continue changing the suds until all the dirt is removed, then rinse in clear water of the same temperature as that of the suds until all soap is removed. Clean wool thoroughly rinsed in soft water should smell fresh and have a soft texture. There is no advantage in leaving soap suds in the wool. There is, however, danger of the soap becoming rancid and causing the blanket to have a slightly disagreeable odor.

Blankets should be dried where the air is circulating freely and where it is not extremely cold or hot. In placing blankets on the line to dry, some prefer pinning the ends, but whether folded over the line or pinned by the ends they should not be stretched or even placed smoothly where fastened. The loose hanging part will tend to draw up as the blanket dries and will be narrower than the pinned part unless this is fulled slightly when placed on the line.

To obtain the best results blankets should be turned while drying. Hang them the other side out and reverse from ends to the middle or from crosswise to lengthwise. This will keep them in good shape. Never hang blankets so that one side has to bear the entire weight. As wool absorbs a large amount of water and becomes weaker when wet, no part of the blanket should be required to bear a great weight.

The hanging of blankets on two lines a few feet apart or even on three lines is recommended. This plan permits the weight to be well distributed and the blanket to dry rapidly. The ready access of the air to both sides of the blanket tends to fluff up the nap which makes the blanket softer and warmer. Blankets should be hung where the air is circulating freely but should never be hung out of doors when a strong wind is blowing.

**STORAGE**

Blankets should be stored carefully when not in use. The finer the quality of the wool in fabrics, the more susceptible they are to the attack of wool moths and other fabric pests which are generally present to some extent in the home. (Fig. 7.) These pests seem to prefer soiled rather than clean wool so that the thorough cleaning of the fabrics is the first step in correct care.

Chemical moth-proofing treatment is the safest method to employ in the protection of blankets. The blankets have some-

times been given this treatment by the manufacturers. Such a treatment may have a lasting effect. Laundering will often remove the chemicals; dry cleaning affects them but little.

Many well equipped laundries and dry cleaning establishments are prepared to moth-proof blankets effectively. Whether given this treatment, or cleaned at home or by a commercial firm, blankets should be wrapped when freshly cleaned and thoroughly dry. Wrappings may be of any type of clean paper securely fastened to prevent the entrance of the adult moth.

**PROTECION AGAINST MOTHS**

Untreated fabrics are difficult to protect from the ravages of

FIG. 7. Clothes moth larvae. Shows damage done to wool fabric.

the wool moth. Many compounds are for sale in various forms of powders, crystals or sprays that are more or less effective if used in concentrated form and confined in boxes or wrapping that will prevent the escape of the fumes.

For home treatment of wool fabrics to insure the destruction of moth eggs or larvae, paradichlorobenzene is generally recommended. This white crystalline chemical may be obtained commercially in any color and under some fifty commercial names. To be effective 2 or 3 pounds of the crystals should be sprinkled evenly between the folds of the blanket and the blanket immediately wrapped and sealed in air tight clean wrappings. The fumes of "parade" quickly disappear when the blanket is aired before using.

Paradichlorobenzene, or any other chemical recommended as a fabric pest eradicator, is of no effect if sprinkled on the material and left unwrapped on the shelf or when the crystals are placed in open containers in the closet.

## SHEETS FOR THE HOME

### QUALITIES DESIRABLE IN A SHEET

Durability and texture are the important qualities to be considered in the selection of sheets. The texture is important because the sleeper comes into direct contact with the sheet. Sheets must be made of strong fabrics in order to withstand use and laundering. The finer the quality of the fiber and the yarn, the more even the construction and better the finish of the fabric, the more perfect is the texture. Heavier yarns tend to increase the durability and also the weight of sheets. The questions then are: Can fine texture be combined with service qualities at a price within the reach of the average homemaker? How much of one must be sacrificed for the other? What relationship exists between price and these qualities?

**DURABILITY AND TEXTURE**

Sheets and sheetings are classified as light weight, medium and heavy muslin, fine count and percale. These five groups represent not only a difference in weight but progressive quality differences, and also increase in price. In judging price and quality of sheets one must determine the group or classification of sheets, and then make comparisons of qualities within the same group.

The Bureau of Home Economics as a result of a study of 39 sheets suggested minimum specifications for these five classes of sheets. (Table I.)

TABLE I. SUGGESTED CLASSIFICATIONS OF SHEETS. *a.*

| Description of class | Thread count | Weight Ounces per sq. yd. | Breaking strength in lbs. |
|---|---|---|---|
| Heavy weight muslin | 74 x 66 | 4.6 minimum | 70 |
| Medium weight muslin | 70 x 60 | 4.2 minimum | 50 |
| Light weight muslin | 60 x 52 | 3.7 minimum | 40 |
| Fine count | 86 x 82 | 3.7 to 4.0 | 60 |
| Original percale | 200 (warp plus filling) | 3.8 maximum | 60 |

*a.* O'Brien, Ruth, and Hays, Margaret B. **Sheets Again.** Jour. Econ.; pp. 11-15. Jan., 1937.

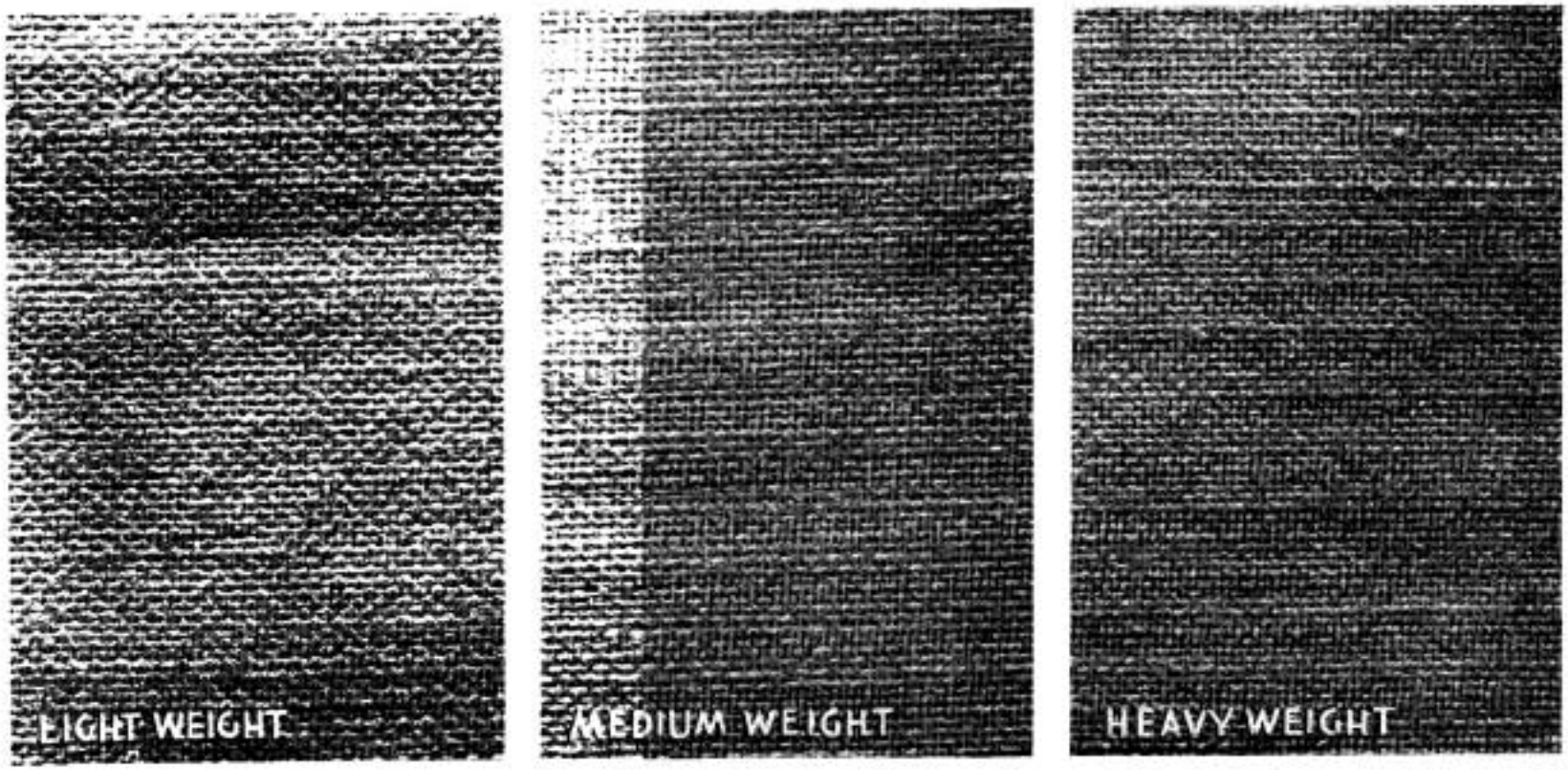



FIG. 8. Muslin sheets showing variation in compactness of the three classes. Note the difference in the size of the yarns as well as the number of yarns per inch.

The classes of sheets whose minimum specifications are suggested above will furnish a basis for consumer information. As these figures are the result of the analyses of sheets of various brands purchased on the market, they give an idea of qualities available in the different weights.

This classification is made on the basis of weight, which is indicated by thread count. Many comparatively large yarns result in a heavy fabric of coarse texture which may or may not have a high breaking strength. Fine yarns packed closely in a fabric result in a lighter weight fabric of fine texture. This fabric also may vary greatly in breaking strength depending upon the quality and evenness of the yarns and the fibers of which they are made. Many retail stores handle the three classes of muslin sheets and sheeting, bleached and unbleached sheeting in two or more brands, and one or more types of finer quality sheets. These finer quality sheets fall into the class of fine count with regard to thread count and weight but are often sold as a type of percale. Sheets of as high count as the "original" percale are not carried by the average retail store.

Heavy weight muslins of good quality as the name implies, are strong heavy fabrics and will give the longest service of any type. Variations within this class are difficult to determine unless the breaking strength and sizing can be obtained. (Fig. 8.) These sheets are the most expensive of the muslins. An average price per yard of sheeting of this class in a width for a double bed (9/4) is 45 to 55 cents.

Medium weight muslin is a finer, lighter weight fabric, second in price and in wearing qualities. Many institutions purchase this quality because of the smaller initial cost and lower cost of upkeep. This weight may be preferred because it is less difficult to handle if laundered at home and is less expensive if the laundry is paid for by the pound. The texture is the best of the muslin groups. (Fig. 8.) The average price per yard of bleached sheeting of this type is 29 to 45 cents.

Light weight muslins are comparatively loosely woven, excessive sizing often being added to give the appearance of a better fabric. This class of fabrics is low in thread count and breaking strength, which indicates short service. The yarns are not fine but few in number and comparatively uneven in size resulting in a sheet of poor texture. (Fig. 8.) The average price per yard of a 9/4 sheeting of this class is 27 to 43 cents.

Fine count and percale sheets are sometimes placed in the luxury class not to be purchased by the average homemaker who must consider original cost, upkeep and service. The breaking strength of these fabrics would indicate longer service than the medium weight muslins and their texture is much superior to that of any of the muslins. Reported studies on cost of laundering show a saving that makes a combined initial

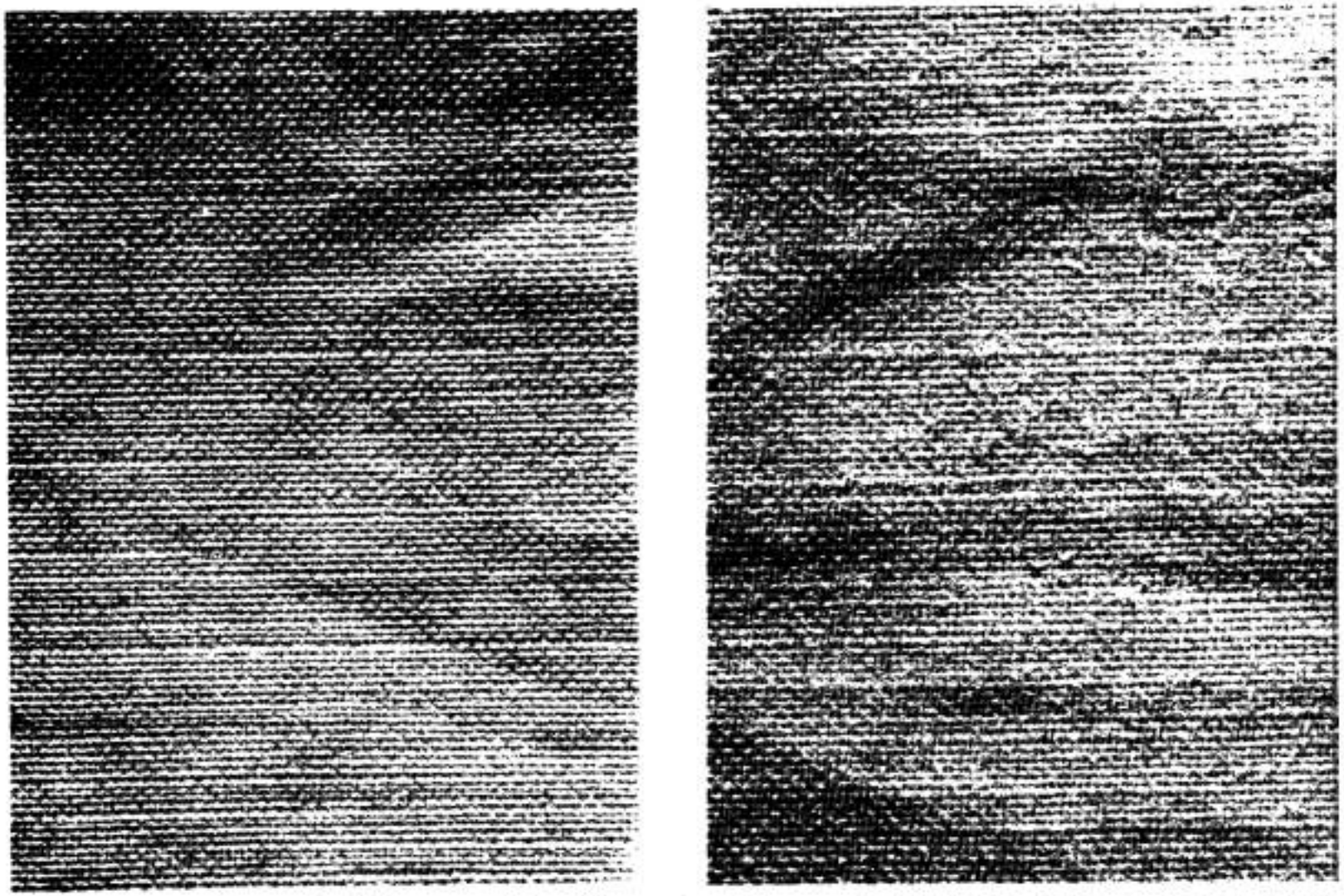


Fig. 9. Left. Sheets classified on page 22 as fine count, sold as percale. Right. Finest texture of sheet. Classified as "original" percale.

cost and laundering of heavy muslins (through a period of four years) equal to that of percales. If cost of laundering is considered before making a decision, it may be found that one can afford the luxury of the more perfect texture of fine count or even "original" percale sheets. (Fig. 9.)

**ADEQUATE SIZE**

Information as to the size of sheets is always available and is of utmost importance. Sheets and sheetings increase in width by one-quarter yard and are often listed as 7 quarter, 8 quarter, 9, and 10 quarter widths, written 7/4, 8/4, 9/4, 10/4. An inadequate width is unsatisfactory, and an excessive width is wasteful as it has a higher initial cost and the extra weight adds either to the labor or the expense of laundering.

In practically all homes two sheets are used on a bed. The width, length and depth of the mattress should be taken into consideration and a width purchased that permits the lower sheet to be tucked in well on all sides. Extra length must be purchased to allow for hems and shrinkage. A regular length bed and average thickness of mattress requires at least 99 inches of usable length for both the upper and lower sheet. This necessitates the purchasing of 108 inches of sheeting or a sheet sold as 108 inches in length, as the length of sheets is usually given in terms of the unfinished and unlaundered sheet. In most sheets from 4 to 6 inches have been turned under for taking up in the hems. The customary method is to have a 3 inch hem at the top and a 1 inch hem at the bottom, but a 4 inch hem is sometimes placed at the top and a 2 inch hem at the bottom. Some manufacturers are using 3 inch hems at both ends. This results in sometimes one end and sometimes the other being used for the top, and thus prevents excessive wear in the same part of the sheet. Research studies have proved that the greatest wear occurs where the shoulders come in contact with the sheet, and not where the sheet is folded.

Sheets shrink from 1 to 3 inches per yard, requiring an allowance of from 3 to 8 inches in length for shrinkage. Add to this amount the 4 to 6 inches used for hems, and, in order to have approximately 100 inches of usable length, one must purchase a length of not less than 108 inches.

## PRICE AND QUALITY

**BARGAINS**

If economy is of prime importance in the purchasing of sheets, one should be thoroughly acquainted with the comparative prices of sheeting by the yard and of the finished article of the same quality. In some instances the finished sheets cost no more and even less than sufficient material to make the same size sheet. Sheets are often for sale at reduced prices or as bargains. Caution should be used when purchasing such articles. In figuring bargains one

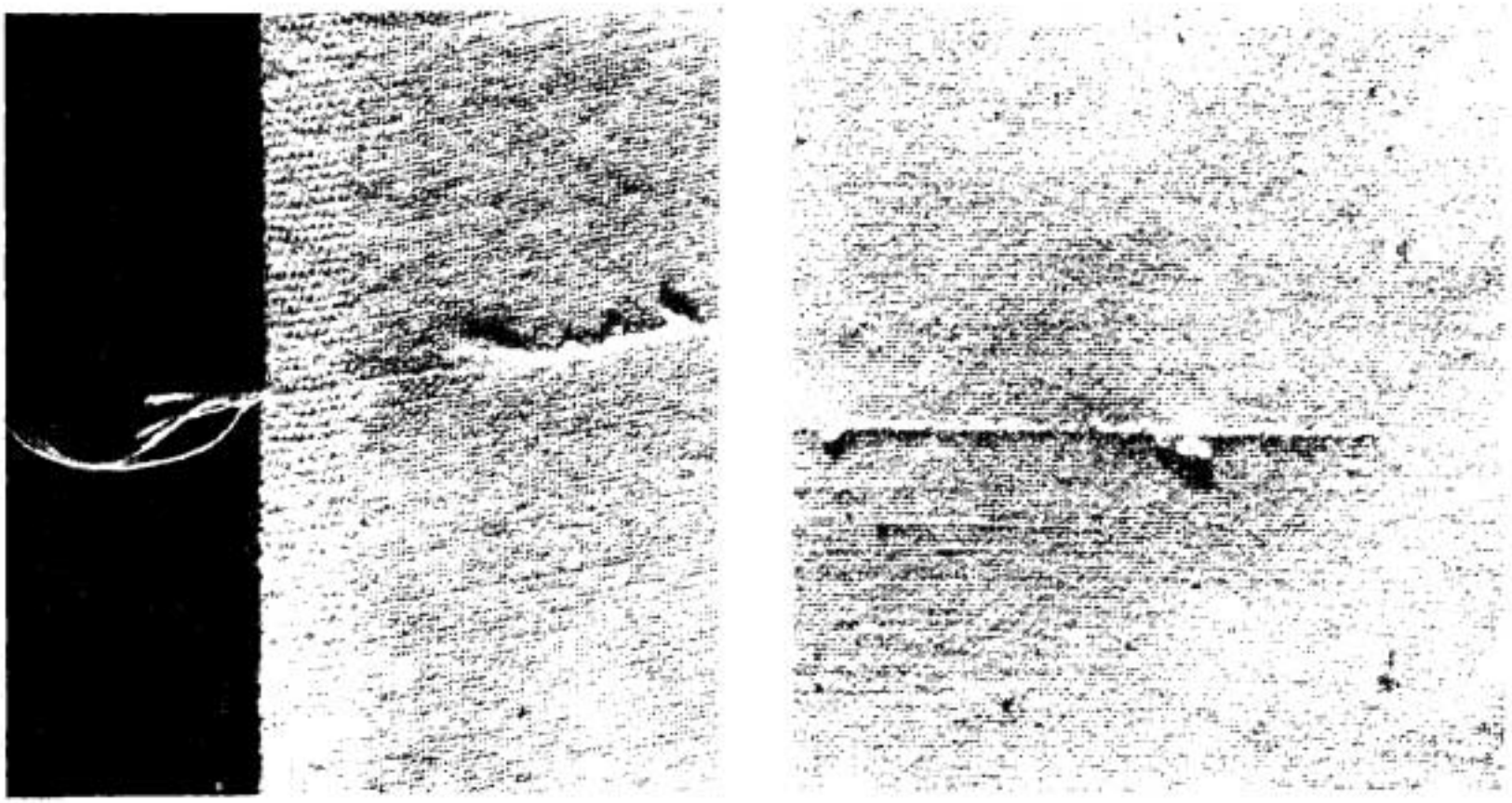


FIG. 10. Flaws often found in sheets.

must consider not only quality but also the width and length of the sheet. Some merchants are willing to admit that much of their bargain sale material is not from their regular stock but slightly different in quality or size.

A good quality known as "firsts" of any sheeting would be one of even quality throughout without thick and thin places or heavy or broken yarns. It should have a firm, compact selvage, should be finished with a minimum of sizing and in a good, clear white. The hems should be straight of the goods with an even stitching of an average of 12 to 14 stitches per inch. "Seconds" may be slightly irregular in weave, having heavier and lighter yarns throughout the fabric. (Fig. 10.) It is doubtful if goods of inferior quality are bargains.

**BLEACHED AND UNBLEACHED**

The question of the comparative economy and quality of bleached and unbleached sheeting of the same brand has been answered by studies made at various institutions. A recent study at the Kansas State Experiment Station included a comparison of light weight, medium and heavy unbleached and bleached sheeting of the same brands analyzed before laundering, after laundering, and again after 20 launderings. Portions of the unbleached materials were bleached by different methods during the 20 launderings and then compared with the bleached sheeting of the same brand.

Before laundering the breaking strength of the warp of four of the bleached muslins exceeded that of the unbleached fabrics of the same brand. In every case the strength of the filling of the unbleached fabric was equal to or greater than that of the bleached fabric of the same brand. After 20 launderings, in every case the strength of both warp and filling of the unbleached fabrics equaled or exceeded that of the bleached fabric of the same brand. These results indicate that unbleached sheeting is superior to bleached sheeting if breaking strength alone is considered.

Nine-quarter bleached sheeting shrank from slightly less than 1.5 inches to 2 inches in width, and from 1.6 to 2.3 inches per yard in length. The excessive shrinkage in the width of the unbleached muslins in some instances equaled practically one-quarter of a yard, a 9/4 sheet resulting in an 8/4 width after 20 launderings. For this reason unbleached sheeting should be purchased in wider widths than required in the finished article. The shrinkage in length was so irregular, amounting to 6.88 inches in the extreme cases, that an added allowance should be made when purchasing unbleached material in order to insure adequate length after laundering.

The price of 9/4 unbleached sheeting is the same or within one or two cents of the price of 8/4 bleached sheeting, so there would be practically no difference in the price of unbleached

and bleached sheeting if an allowance were made of one-quarter of a yard in width for shrinkage of the unbleached.

The texture of the unbleached sheetings after 20 launderings and laboratory bleaching did not equal that of the bleached sheeting of the same brand. After laundering 20 times and storing for one year, the bleached sheetings remained a clearer white than any of the unbleached sheetings that had been laundered 20 times by the different laboratory methods.

For these reasons it is questionable whether the added strength of unbleached sheeting compensates for its inferior texture and finish.

## FACTS TO REMEMBER

A few manufacturers of sheets and sheetings place informative labels on their products. If this information includes breaking strength, number of yarns per inch, percentage of shrinkage, percentage of sizing and weight, it is of great assistance to the purchaser. These items are included in the analysis of sheets which forms the basis of comparative studies of all kinds.

**INFORMATIVE LABELS**

That the more reliable manufacturers are willing and ready to place specifications for their goods on the labels has been proved by a comparison of the qualities of various brands of sheets and of the uniformity of quality within brands. For the first part of this work, lengths of sheeting representing nine different brands were purchased at intervals during the year. At least a month elapsed between any two purchases of the same brand at any one store. This length of time was considered sufficiently long to prevent the purchase of two lengths of fabric from the same bolt. Specifications for one brand tested were available to the consumer.

**BRANDS**

The breaking strength of different pieces of some of the brands purchased at any one store or at different stores through the nine months period varied greatly. The greatest variation within one brand was 19 pounds. The least fluctuation, about 1 pound, occurred in the brand for which specifications were available.

The amount of soluble sizing in the heavy weight muslins was small and varied little in the several lengths purchased at different times. A comparison of muslins of different weights showed that as the weight of the fabric decreased the percentage of soluble sizing increased. This variation was most in different lots of the same brand for the light weight fabrics. A comparison of the same brands through a period of years indicated similar variations. Brands that rated first one year with regard to breaking strength or the percentage of sizing might be second at another time that tests were made. Again it was found that

the brand for which specifications were available remained most constant with regard to qualities.

The results of these studies tend to prove that purchasing sheets by brands would not insure the same length of service even if bought at the same store within a period of nine months. However, the fact that the brands for which specifications were available varied the least would indicate that the wise shopper will select brands carrying adequate information on their labels or at least those for which information is available.

If sheets bearing adequate informative labels are not available, it is probably wiser to select familiar brands with which one has had some experience rather than unfamiliar brands for which no information can be obtained.

## BATH TOWELS

The particular type of fabric used for bath towels was never constructed in the American home. This cloth is known as terry weave or Turkish toweling.

Beside the regular warp and filling yarns which are necessary for the weaving of any fabric, in the construction of terry woven cloth an extra set of warp yarns known as the pile warp forms uncut loops on both surfaces of the fabric. This type of construction furnishes a maximum of surface area, which gives a soft texture and increases the ability of the fabric to absorb moisture. For this reason it is the only type of fabric used for bath towels.

The availability of bath towels of every shape, size and color, varying in cost from a few cents to a few dollars, should cause the purchaser to study well the problem before making a selection.

### QUALITIES DESIRABLE IN BATH TOWELS

The first question to consider is: What are the qualities desired in a bath towel for home use? Durability and the ability to absorb moisture rapidly should be the first qualities to consider, but unfortunately many towels are selected on the basis of appearance and price only.

In all cloth the type and quality of fibers, the kind of yarn, the construction and the finish of the fabric determine its qualities. The mass or amount of cotton used determines to a great extent the amount of water a towel holds; and the looseness of the construction of the yarns and fabric greatly influences the rapidity with which the water is taken up. On the other hand, durability, or the strength of the fabric, is increased by the tightness of the construction of the yarn and fabric. We must know then just what construction will in-

**ABSORPTIVE CAPACITY AND DURABILITY**

clude the maximum of both absorption and durability possible in a bath towel.

The number of filling yarns that interlace with the ground warp and the pile warp in the formation of each loop may vary from one to five, or more. In fabrics of the same compactness this interlacing determines the security with which the loops are held in the fabric. It is an accepted standard that less than three filling yards for each loop (three pick terry) is not satisfactory, and usually no other construction is found in the market.

## QUALITIES AS AFFECTED BY CONSTRUCTION

The consumers' problem of selection is somewhat simplified by the fact that there are two distinct constructions known as the double-loop and single-loop terry. (Fig. 11.) In the double-loop construction two pile warp yarns are used together in making the loops, with one ground warp in the body of the cloth for every row of loops. This means twice as many pile warp on the surface as warp in the body of the fabric. In the single-loop, one pile yarn forms the loop. In this construction there is an equal number of ground warp and pile warp in the cloth. Double-loop construction, where two yarns are used together in the formation of the loop, furnishes twice as much surface area as a towel constructed of the same number of yarns per square inch in which only one yarn forms the loop. However, in two towels of the same weight there is a corresponding decrease in the number of ground warp or foundation yarns for the increase in the number of pile warp or loop yarns. This means that with the present methods of construction, a gain in absorption is accompanied by a loss in strength, and this loss is in the warp or lengthwise, which is where the breaks always come in bath towels.

**SINGLE AND DOUBLE-LOOP TERRY**

## RELATION OF PRICE TO SERVICE QUALITIES

In both the single-loop and double-loop constructions there is a variation in the type of yarns used, the number of picks and ends, and the weight, size and color of the towel. (Fig. 12.) Ply yarns, —yarns made up of more than one strand of fibers, —add strength and are sometimes used as ground warp in order to increase the strength of the towel in the direction of strain. A ply yarn is more expensive to construct than a single strand so the use of ply yarns increases the cost of production of the fabric. The use of ply yarns as foundation warp yarns in connection with double-loop construction would compensate, at least in part, for the smaller number of ground warp yarns.

The length of the loops as well as the number of loops on the surface influences the surface area of the fabric. Loops less

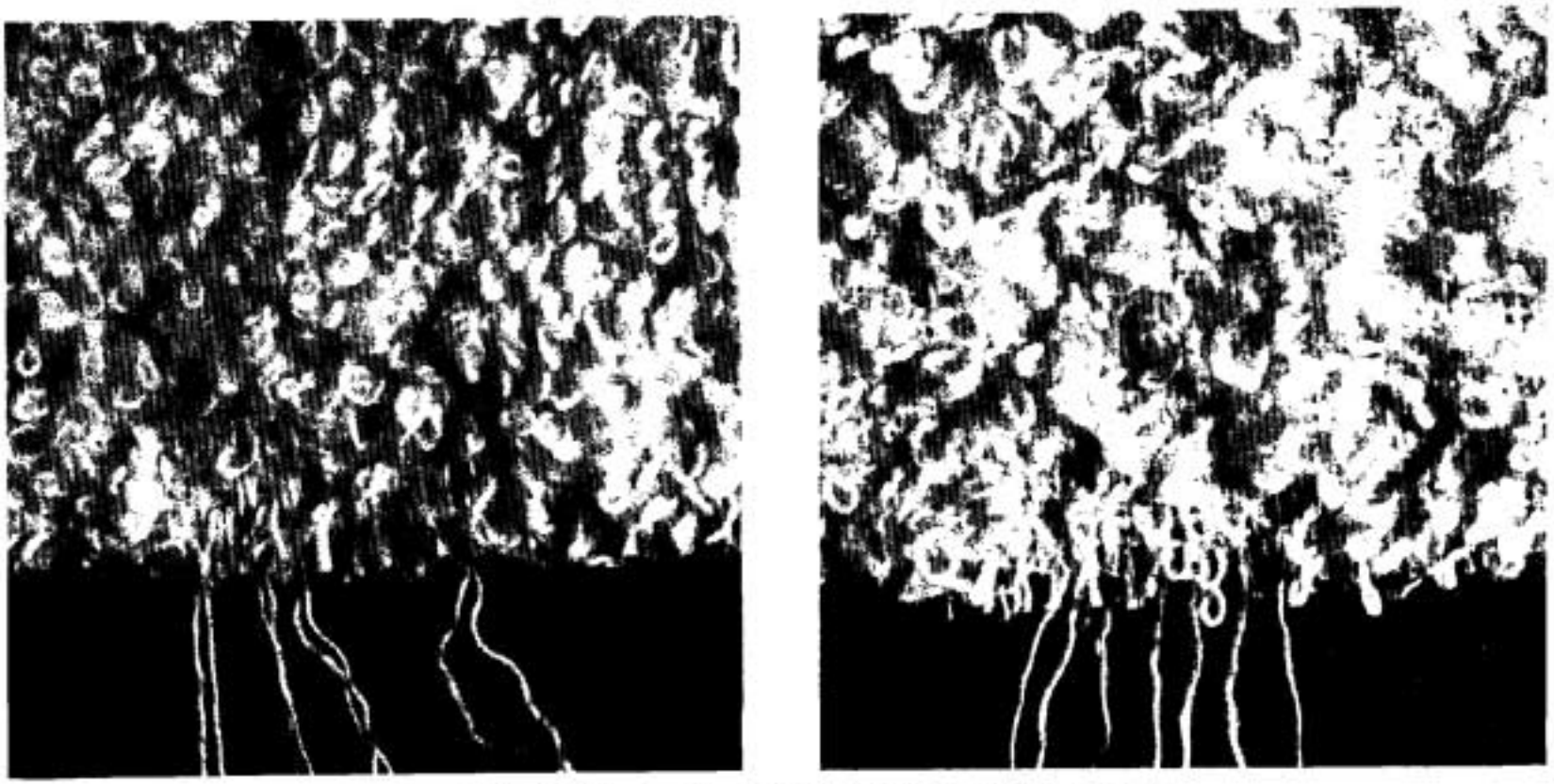


FIG. 11. Terry woven towels: Left, "double-loop"; Right, "single-loop" construction.

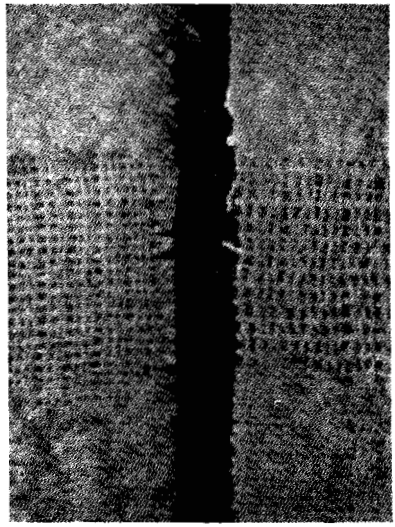
than one-eighth of an inch in height add little to the absorptive qualities of the towel, and longer loops increase the tendency to catch or snag.

**CONSTRUCTION AND PRICE**

In a recent study made at the Kansas Agricultural Experiment Station the durability and absorptive qualities of double-loop and single-loop construction of towels of the same and different prices were compared. Eight types considered representative of low and medium priced towels were included in this study.

A comparison of the analyses of the towels shows that one 59 cent towel was of the double-loop and one of the single-loop construction. However, the single-loop towel had a ply yarn as ground warp and had the highest number of yarns and greatest breaking strength in both warp and filling ground. The warp breaking strength of No. VIII, the 59 cent double-loop towel, was less than that of towel No. I, of single-loop construction, which cost but 25 cents. The size of the two towels varied slightly. No. I was three-fourths of an inch longer and one and one-third inches narrower than No. VIII.

No. VI, a 15 cent towel of double-loop construction, was the only towel that had a cut selvage. Further comparison of the two 15 cent towels showed the same number of ground warp for both but lower breaking strength of the warp in the double-loop towel. The number of picks and ends in these two towels was so low that the ground fabric would probably be insufficiently compact to prevent the loops from being pulled out readily. The pile yarn in No. IV lacked both twist and breaking strength. In this single-loop towel the pile yarn would not snag and form long loops but would pull apart and drop out, leaving a thin ground fabric of no value as an absorbing surface. Neither of the 15 cent towels could be recommended for purchase.



Courtesy Laundryowners Nat'l. Assoc. of the United States and Canada.

**FIG. 12. Variations in construction of terry towels. The pile has been removed in order that the difference may be shown.**

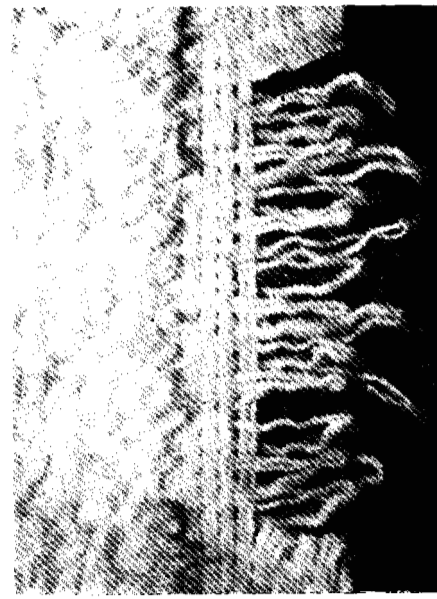
Nos. I and II, single-loop 25 cent towels, had more picks and ends (ground warp and filling) and higher warp breaking strength than Nos. V and VII, double-loop towels of the same

price. However, all four of the towels were much better than either of the 15 cent ones. A comparison of the fabrics for absorptive qualities proved the statement that wearing qualities were sacrificed in order to gain absorptive qualities.

The two 15 cent towels which could not be recommended from a standpoint of durability absorbed a comparatively large quantity of water with great rapidity.

The 59 cent double-loop towel which gave no better indications of wearing qualities than the 25 cent single-loop towels absorbed the largest quantity of water of all, and with greater rapidity than the corresponding single-loop 59 cent towel which would give the best wear. A comparison of the single- and double-loop 25 cent. towels indicated slightly different conditions. The single-loop towel absorbed more water, but not so rapidly as the double-loop one.

In inexpensive and medium priced towels the increased absorptivity of double-loop construction does not compensate for its lack of durability as expressed in terms of breaking strength. Single-loop towels are therefore recommended as a wise selection.



Courtesy Laundryowners Nat'l. Assoc. of the United States and Canada.

FIG. 13. Selvage of Turkish towel. Warp yarns removed. Poor quality selvage. Only part of the filling yarns came to the outside edge and went around the last warp yarn.

Other points to be considered: The selvage of towels should be examined to determine its construction. Some cheap towels are woven in double width and cut in two. The one side is finished with a stitching which is none too secure and often breaks, leaving the raw edge to fray. Woven selvages differ in the number of filling yarns that cover the outside warp yarns. To give the best service each filling yarn should come to the outside edge and go around the last warp yarn. (Fig. 13.)

The hems of towels should be straight of the goods with adequate turn-under and securely fastened ends. These points add to the appearance and the durability of the towel.

The absorbing surface of the towel is lessened in direct pro-

portion to the increase in size and type of border. There is a question whether the actual drying surface is reduced since the ends are generally used only to hold the towel. Fancy colored borders and designs add to the expense of the towel. One must be sure that the colors are fast when choosing colored towels.

## FACTS TO REMEMBER

One might conclude from the many studies that have been made of bath towels that the following facts will be of assistance in the selection of bath towels:

Practically all of the towels found on the market are of three pick terry construction with either single- or double-loop pile. In the single-loop type there are the same number of ground warp and pile warp yarns. Towels with double-loop pile, as a group, excel in absorptive qualities but lack wearing qualities. Ply yarns are usually found only in the ground warp of towels in the higher price range. The cheapest towels are usually double-loop and the most expensive (75 cents and up) are single-loop construction. A towel should absorb seven or eight times its own weight in moisture. Those that absorb between four and five times their weight are considered deficient in this quality.

Compactness of background, which is determined by the number of yarns per inch (thread count), as well as the number of filling yarns that hold the loops in place, influences the security of the pile.

These facts, while inadequate, should aid the consumer in determining the comparative qualities of the towels offered for sale and will have to serve until the manufacturers can be persuaded to mark their products with labels furnishing information concerning absorptivity and durability qualities. The consumers' problem then would be one of personal preference as to size, color and price.