

TESTING TEXTILE FABRICS

By ELIZABETH TURNBULL

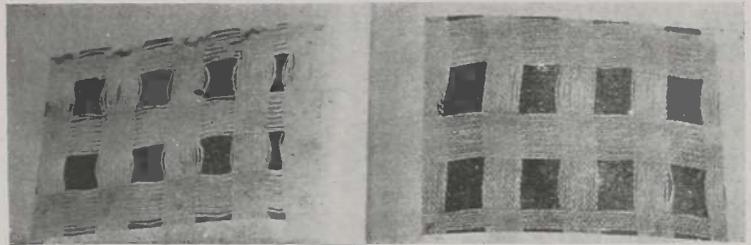
Assistant Professor of Home Economics, University of Arizona

Some Simple Household Tests Which May be Used in Judging Fabrics for Clothing and the Household

HERE is an increasing recognition of the fact that very keen judgment as to the standards of quality in textile fabrics is most essential for the buying public. This is an age in which substitution, imitation and adulteration play an important part in manufacture. No commodity other than food is subject to such adulteration as fabrics for clothing and the household. Pure food laws protect the buying public, but as yet we have but few laws governing the manufacture of textile fabrics. It is true that large purchasers have adopted definite specifications to insure the quality of goods bought. Before fabrics are accepted from the manufacturer by railway companies, the army clothing department, and similar large organizations, certain tests must be run in the laboratory and requirements must be met. The tests in common use by such purchasers are as follows:

1. Identification of the weave.
2. Testing breaking strength and elasticity of the fabric.
3. Determining the number of warp and filling threads per inch.
4. Determination of shrinkage.
5. Testing the constituents of the warp and of the filling threads.
6. Testing the finish and dressing in material.
7. Testing the fastness of the dye-stuff.

The relatively small purchaser of textile fabrics, the housewife, may not be able to carry through so rigid an examination due to lack of apparatus, but she may very easily subject fabrics to such an inspection as will definitely set up standards as to quality



Cotton has survived treatment with caustic soda. Wool has dissolved leaving the cotton.

Wool has survived treatment with hydrochloric acid.

and cost for the buying of textile fabrics.

The study of the weave is important in judging materials for it is the structure of a fabric which determines its strength and shape. Loosely woven fabrics with yarns loosely twisted will lose their shape rapidly because of excessive stretch and lack of power for the threads to spring back to their original place. Such fabrics will not withstand the strain of washing for, due to friction, the threads are pushed aside, and a thin section is produced in the goods. To secure a durable fabric, the weave must be relatively close and the twist of the yarn strong.

Tensile strength, stretch and resistance to bursting indicate the success of the construction of the fabric and the physical condition of the fiber. Special machinery for making such tests is used in the textile laboratory, but certain comparisons may be made by determining how easily the cloth may be torn in each direction and by pressing the thumbs down upon the cloth while it is held firmly. If it gives badly, it will not stand the strain accompanying wear. If short fibers have been used in the fabrics, it will split easily and the same thing will happen if the finishing processes, such as the shearing of pile fabrics, have been carelessly done.

It is in recognizing disguise in quality of fabric that the purchaser is particularly interested. In the cheap and novelty fabrics is found the greatest misrepresentation and this is accomplished by one or more of the following methods:

1. Adulterating the fabric with a low grade or cheaper fiber.
2. By increasing the weight of the fabric.

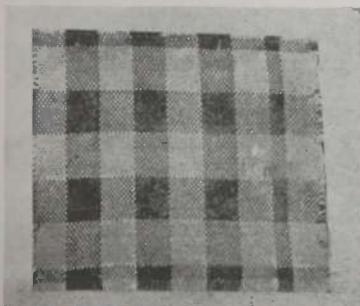
3. By substituting one fiber for another.

4. By finishing a fabric to imitate one of the higher grade.

The first necessary step in recognizing these deceptions is to know simple physical tests for recognizing the main fibers used in manufacture of fabrics. The burning or combustion test may be used to partially identify the fibers. From a sample of the material, warp and filling threads of all yarns present in the fabric should be removed and the untwisted yarns held in a flame. Cotton and linen yarns burn with a quick flame, give off the odor of burning paper, and leave a powdery ash as a residue. Wool and silk yarns burn more slowly, the flames going out quickly. They give off the odor of burning feathers or hair and leave as a residue a hard, rounded mass. Artificial silk burns very, very rapidly—about three times as fast as cotton—and gives off the odor of burning paper.

The burning test does not distinguish between cotton or linen or between silk and wool. Another physical test, the tearing test, gives fairly good results in distinguishing cotton from linen. Linen fabric when torn gives a very characteristic shrill sound and shows more strength than a cotton of the same weight. Yarns of linen break showing more strength than cotton of equal weight. The ends of linen break stiff and unevenly across the fiber while cotton gives ends which are soft and fuzzy. Wool is the weakest of fibers as shown in the breaking test. Artificial silk is inferior in strength to silk and if a strand is held between the finger and thumb of each hand and the middle

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Wool and cotton mixture. The dark portion is wool and the light portion is cotton.

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wet with the tongue, it will pull apart as though rotten.

These tests give indication as to the source of material but are not conclusive and further tests may be used to confirm these results. Common lye may be used in testing the proportion of wool in material thought to contain some cotton. In the textile laboratory a solution of caustic soda is used, but lye or even a solution of washing soda, star naptha or gold-dust will accomplish the same purpose. Boil a sample of the fabric in one of these solutions for twenty minutes to half an hour. The alkali will dissolve the wool leaving the cotton intact. (Plates I and II). If confirmation of this test is desired another sample of the material may be placed in a cold solution of hydrochloric acid for ten minutes. Rinse, dry and rub, so removing cotton yarns leaving the wool intact. (Plate III).

The lye test may also be used in testing mixtures of silk and cotton, and silk and artificial silk. The silk yarns are weakened, the cotton not being affected. Wool and artificial silk will give a similar reaction, artificial silk, like cotton, not being affected by the alkali.

The wearing qualities of silk material has decreased during recent years. This is largely due to the weighting of silk fabrics. Due to the fact that the silk fiber has such structure that it is capable of taking up in its cell walls metallic salt solutions and thereby adding to its weight, the practice of loading or weighting is used by manufacturers to give greater body to the fabric. A heavily loaded silk is not durable for the salt solution tends to crystalize and break through the cell walls causing destruction of the fabric. To detect weighting of silks, a sample may be placed in a flame. If there is very little or no weighting, the burned edge shows a globular residue. If heavily weighted, the shape of the sample and form of the weave construction remains, for the silk is burned out, leaving the weighting. Silk is not the only fabric which is weighted. A cheap cotton cloth with a loose weave may be made to have a solid appearance by the addition of starch or clay which fills in the spaces between the yarns. If the material is rubbed between the hands, a cloud of dust will indicate weighting and if held up to the light, the loose weave of the cloth will be revealed.

These are some of the simple and

practical tests which may be used by the housewife in detecting substitution, imitation and adulteration of textile fabrics, and thereby aid her in judging quality in relation to cost and in getting the most for her money in the purchase of clothing and household fabrics.

DO YOU BELIEVE IN SIGNS?

When the wind moans is it extremely bad luck to burn rubbish near your buildings.

A crack in your chimney is a sure sign you are going to move.

To see a paper hanger papering over a flue indicates an impending loss.

If you can see your shadow from an oil lamp while filling the tank of a gasoline stove, it indicates a gathering of old friends at your house

If you smell gas or gasoline and look for it with a lighted match, it foretells that you are about to go on a long journey.

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