

CHAPTER 8

FINISHING TECHNIQUES

WEAVERS HAVE ALWAYS SOUGHT ways and means to improve their textiles to make them more durable and better adapted to the purposes they had in mind. For years this interest was centered on such improvements as could be effected through manual proficiency. Flax, wool, and cotton were fibers found amenable to spinning and, although the methods remained essentially the same, spinners developed such skill with these fibers that they were able to make yarns with more and more uniform twist. This marked an important step toward the improvement of textile quality.

Technical progress in the field of finishing would probably date from 1850, when mercerization was discovered. John Mercer, an English calico-printer, accidentally dropped a cotton cloth into an alkali solution. When it was discovered, he removed the cloth and stretched it on a frame to dry. Later, he was surprised to find it had taken on luster. Moreover, on testing the material, he found it had apparently lost none of its strength. Further experiment with caustic alkalies resulted in the process known today as mercerization—a process that not only gives luster to cotton but greatly increases its strength and affinity for dye.

► COMMERCIAL PROCESSES

Since then numerous chemical and mechanical innovations have appeared. With our modern technology it is now possible to alter completely the natural characteristics of a fiber or a cloth after the cloth is woven. As an example, a cotton cloth of plain weave can be converted to simulate the appearance and “feel” of silk, linen, or wool. Or, after

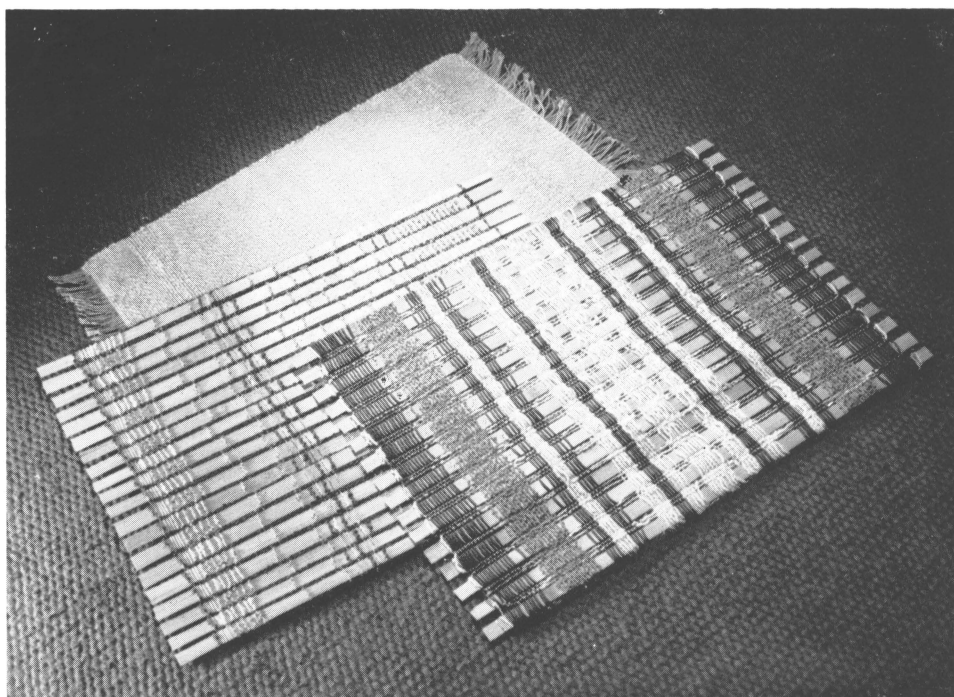
being subjected to various chemical reagents, it may emerge as a crisp organdy, a transparent muslin, or as a soft, sheer fabric.

Other processes can be used to effect decorative changes. From one process alone—using a combination of resins, heat, and mechanical pressures—a basic woven cloth can be changed into as many as a dozen distinct types of fabric.

Through its finishing methods, the wool industry has been able to achieve close control of the shrinkage factor in woolen and worsted fabrics. They have also found means to prevent knit and sheer woolens from losing their shape. Many of the soft textures, such as camel-hair cloth, owe their effects chiefly to mechanical processes that involve napping and shearing.

These examples are typical of what has occurred with fabrics of other

Fig. 8.1—Work of beginning students in a student project at the State University of Iowa. After experimenting with yarns in small samples, students choose a major project in which design and execution are stressed. Mat at top is of cotton; the other two are of bamboo woven with cotton and rayon. Designs show interesting spacing and contrast in light and dark.



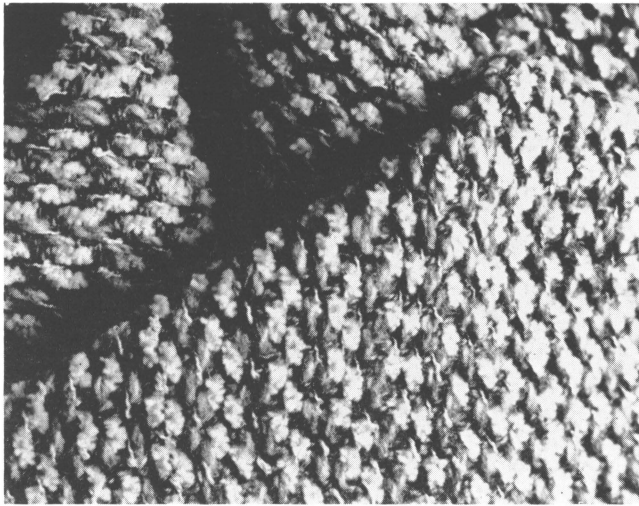


Fig. 8.2—Heavy drapery in a twill variation, by Ed Rossbach. Wool weft on a warp of chenille, wool, and rayon; in white, brown, and gray. Richness obtained through depth of texture and play of values.

fibers, man-made as well as natural. It is common practice to make material crease resistant, shrinkproof, waterproof, mildew and spot resistant, and even fireproof. All of these accomplishments are the result of finishing processes.

► HOME PRACTICES

It is impossible, or questionable, for the hand weaver to attempt such results. He is restricted to limited means in finishing his fabrics and he uses these, not primarily to enhance the material, but to resolve some of the practical needs. Dry cleaning, washing, bleaching, preshrinking, and piece dyeing are elementary procedures, but to the hand weaver they present special problems.

The primary considerations in finishing hand woven textiles include:

- Removal of dust, lint, soil, and spinning dressings
- Means of softening fibers, such as wool and linen
- Shrinkage control

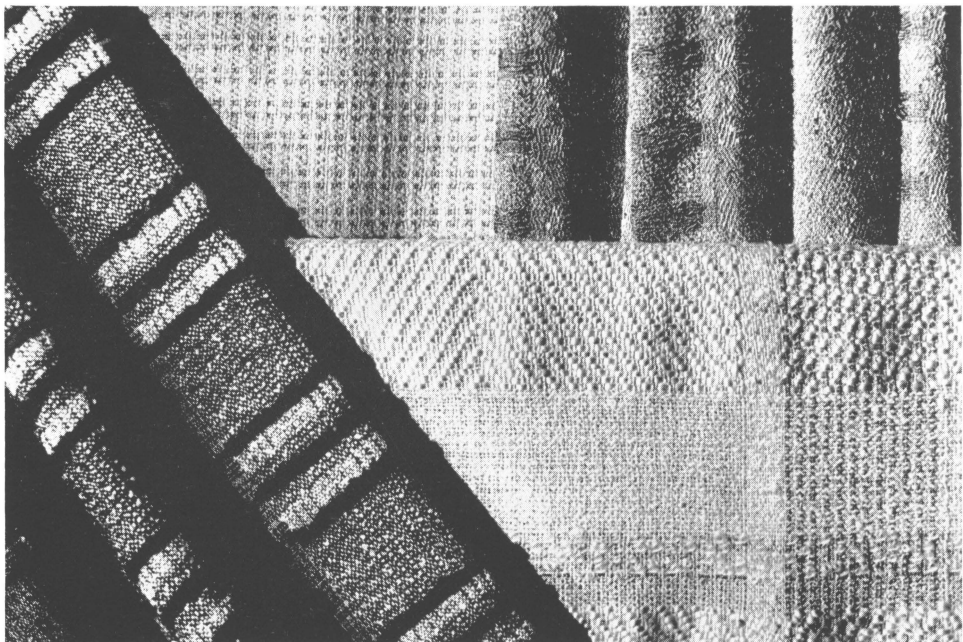
After removal from the loom, a fabric should be placed under a strong light and examined carefully on both sides to see that all repairs have been made. It is difficult to make adequate repairs after the finishing process is completed, since yarns often become closely interlocked by shrinking. It is advisable at this point to clip all loose ends, to shake and brush well to remove dust and lint.

The next step depends upon the fabric—its end use, and the fibers

from which it is woven. Some fibers require very little in the way of processing; others, a great deal. Screens and mats, for example, made from bamboo, reeds, rushes, and other woody materials, are generally cleaned before weaving. The only attention they require would be inspection for repairs, clipping loose ends, and brushing. When they become soiled, wiping with a damp cloth is usually sufficient. They may, however, be immersed in lukewarm, soapy water, rinsed thoroughly, and laid flat to dry.

Linen fabrics, as they come from the loom, are stiff and unyielding. To be softened they should be washed in hot water, thoroughly rinsed, then pressed with a hot iron while still very damp. When linen yarn is combined with yarns of other fibers, as is often done in textiles, the temperature of the water and the iron is governed by the limitations of

Fig. 8.3—Drapery fabrics showing variety in structure and yarns, by Georgia Chingren. Upper left: cotton chenille, pearl cotton, rayon nub, and irregular, colored lurex; color, yellow-gold and chartreuse. Upper right: heavy and fine pearl cotton, rayon nub, and irregular, heavy, linen nub; color, two shades of gray, soft blue, and white; over-all effect, gray-blue. Lower left: cotton chenille, curly silk chenille, wool loop, pearl cotton, linen, and rayon irregular; color, gold and black. Lower right: wool loop and nub, mohair loop, pearl cotton, colored lurex, and spun glass.



the most perishable fiber. Rough surface textures of novelty yarns may be retained in these fabrics by pressing, face down, on a turkish towel.

Shrinkage is an important factor. Allowances must be made at the planning stage. If this is not done, the weaver may find, among other things, that he lacks sufficient yardage to complete his project.

► PRECAUTIONS FOR MIXED FIBERS

Textiles the weaver creates will often be composed of different yarns. From one fabric to another these will vary—in size, type, and fiber content. This influences the percentage of shrinkage of the woven materials; one fabric will be found to shrink more than another with a variance that is sometimes considerable. The weaver soon discovers this fact from his experience in finishing design samples; since these, however, are generally small in size, he sometimes neglects to transpose this factor accurately to yardage.

In making a design sample, to be duplicated later in a large piece, shrinkage that occurs in the sample should be measured closely, widthwise as well as lengthwise. This factor is then computed on the basis of shrinkage per yard. Any change or adjustment that might be made in the original sample would necessitate separate finishing and computation. The weaver can well avoid any pat formulas for estimating shrinkage—there are too many variables involved. He may weave many samples to arrive at a satisfactory design, but the design is judged after finishing, not before.

Cleaning methods are contingent upon the yarns; and an important consideration here is whether they are color fast to washing or merely sunfast (fast to light). Some yarns may be relatively fast to both light and washing, others may have only one or neither of these qualities. The end use of the textile determines which yarn to choose. Often the weaver must discover by his own experimenting if the yarn is washable or fast to light only.

Yardage for drapery and upholstery is given preliminary inspection for repairs, then brushed and sent to the dry cleaner for preshrinking. If such textiles are soiled, it is better to have them dry cleaned than to attempt washing. Different fibers are often used in the construction of this type of fabric. The length and weight of such yardage usually prohibits individual handling in home laundries, since quick and efficient

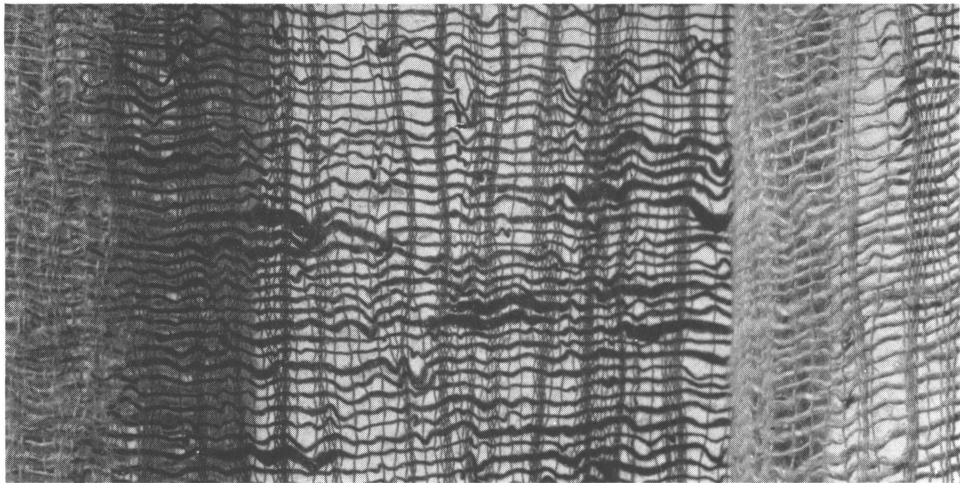


Fig. 8.4—Casement fabric of 20/2 unbleached mercerized cotton warp with a rayon-jute singles filler, by Maxwell Hawker.

water extraction is necessary to prevent spotting. Sheer draperies are especially susceptible to damage by washing.

A different problem is presented with woolen textiles. The apparel fabrics, mohair, alpaca, and other animal fibers that fall in the category of wool, react differently under finishing processes. Before the weaver attempts yardage he should make samples from the yarns he expects to use and study these fibers—alone or in combination—noting their behavior in respect to shrinkage, firmness, and filling quality.

A fabric constructed from soft, clean woolen or worsted yarns that contain very little spinning oil may be sent to the dry cleaner to be cleaned, preshrunk, and pressed. If these operations are properly done further shrinkage is unlikely.

Coarse wools, often single ply, may contain considerable oil and a certain amount of foreign matter. Cloth from such yarns first should be sent to the dry cleaner for processing (as above), then washed, and sent again to be pressed. In washing, use a heavy solution of mild soap or a detergent in a small amount of water. Washing has been found most successful in an automatic machine run about five minutes. If there is considerable soil, the washing will have to be repeated. Finish by several rinsings to remove all soap. The water for both washing and rinsing should be the same temperature—about 120°, or fairly warm to the

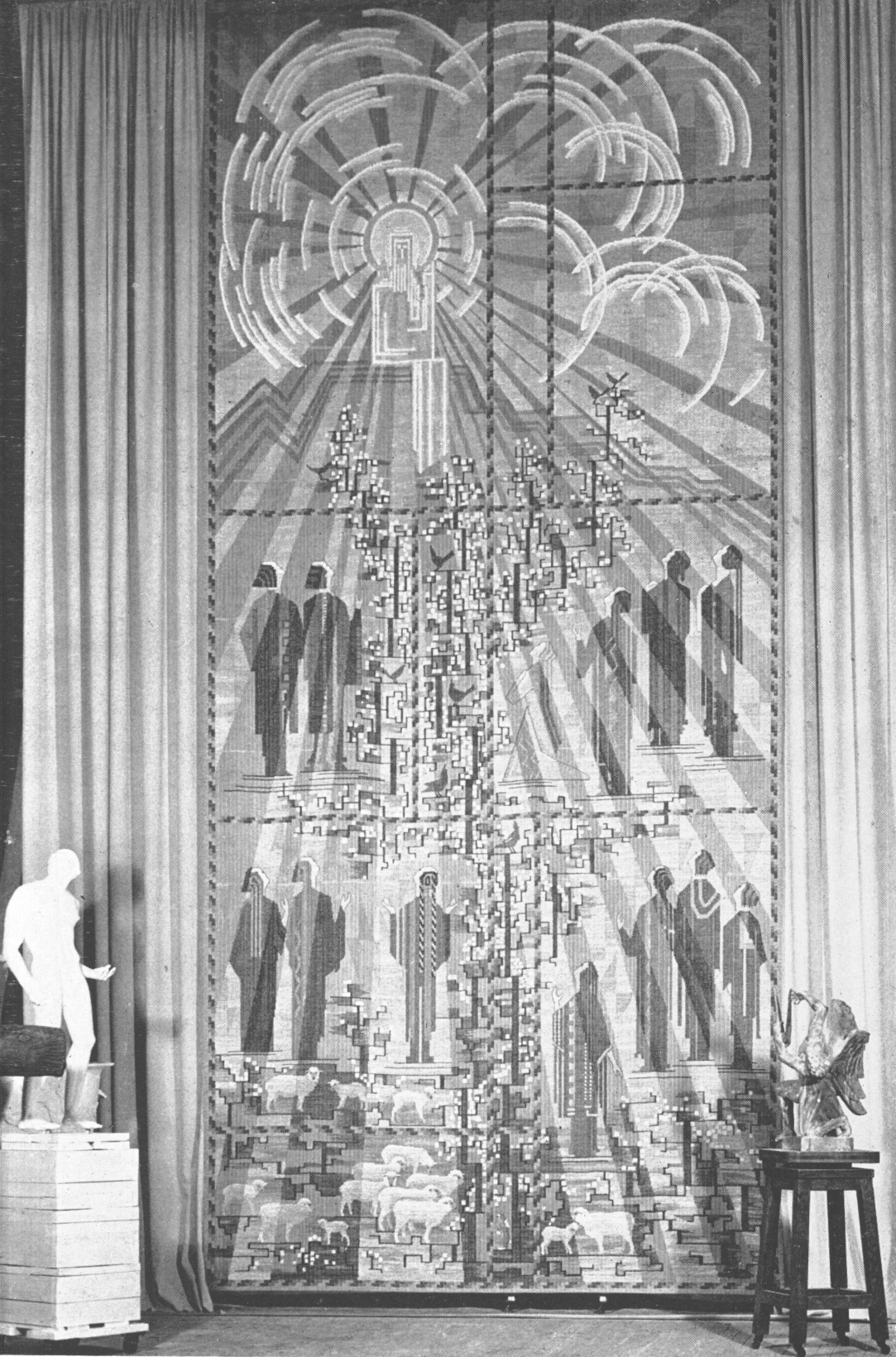


Fig. 8.5—Tapestry for Tabernacle Christ Church, Columbus, Indiana, called "Sermon on the Mount." Designed by the late Eliel Saarinen, it was woven by Loja Saarinen. (Courtesy Mrs. Saarinen.)

hand. It is important that the water be extracted quickly and thoroughly; otherwise, spotting will take place. If the machine is not equipped with an extractor or spinner, washing of yardage should not be attempted.

Small woolen pieces can, of course, be successfully washed by hand. Simply press and squeeze the fabric, alternately, for 10 or 15 minutes. The weaver must be careful not to wring the cloth as wringing a woolen fabric at this point causes creases and wrinkles that are almost impossible to remove. The material should be well rinsed and hung in the air to dry. When completed, it should look fresh and alive.

Apparel fabrics that combine synthetic fibers with animal fibers should be finished the same as drapery. Each fabric will be different from the one before, and allowances and adjustments must be made in finishing to meet the individual situation. This must be done at the planning stage, with design samples, and not after the fabric has been woven. Successful finishing may take some experimenting to bring about the desired results. Weavers often weave a strip of duplicate samples, after a satisfactory design has been decided upon. This enables them to explore several possibilities of finishing a given material.

Only general directions can be given for finishing tapestries and hand-woven rugs. Tapestries may need pressing only. If they have become soiled in weaving they should be dry cleaned.

There are many rug types and combinations being woven today so each rug must be considered separately. Rugs firmly woven of wool, especially pile rugs, may need only clipping of loose ends and brushing, providing they lie flat when placed on the floor. To shrink and flatten, rugs may be tacked to a wooden frame the same size as the rug. Tack the rug face down at half-inch intervals around the border. With a sponge, dampen thoroughly on the wrong side. Allow to dry completely before removing. This method is almost a "must" for rugs made of jute, hemp, sisal, and such materials.

It is well to remember that finishing is the last step in the completion of a fabric. A badly designed or a carelessly woven textile cannot be changed to a satisfactory one by any finishing process.