

CHAPTER 4

AN APPROACH TO DESIGN

THE TERM DESIGN HAS WIDE USAGE TODAY. It is associated with many fields of activity, technical as well as aesthetic. And while the aims may differ, the basic problem in all cases is essentially the same: it involves or implies organization—the establishment of coherent relationships.

From an aesthetic point of view the primary objective of design is to achieve significant and articulate spatial relationships: the framework for an art expression. This is true of all graphic arts.

With products of utility, the emphasis is on a more concrete structural planning. The problem here is to devise a functional relationship between elements that will effect an integrated and efficient working unit.

Both activities have certain aspects in common. One, however, depends on acute intuitive response, the other chiefly on a logical method. Effective designs in most areas will be a composite reflection of these two attitudes.

► GOOD DESIGN IN TEXTILES

All designs are necessarily motivated by purpose. The aims may be large or limited in scope. The hand weaver, for instance, may set out to create a textile, beautiful alone, as a unit in itself—a valid objective, as a means of personal expression. If the material is to be developed for a specific situation, however, it can no longer be considered as an isolated entity. On an architectural level, textiles are secondary matters, but can perform a useful function: they can be provocative and exhibit individual character, but it is necessary that they also be correlated with the larger concept in order to be effective. This calls for restraint—a

measure of simplicity in design and the elimination of pronounced detail. Anni Albers, a prominent designer, says:

Textiles for interior use can be regarded as architectural elements. In contrast to other elements their special characteristic is their dynamic quality. Fabrics above all else are pliable, and being pliable they can change their position. We draw a curtain to let in light or to shut it out; to close off a section of space or to open it up; we spread out a cover or fold it. Where fabrics are used statically they lose their sovereignty and have competitors in other materials, leather competing with upholstery fabrics, paper with wall-covering fabrics. Where the unique characteristic of pliability is the primary consideration, as in drapery materials, there is no substitute for textiles.¹

Such fabrics will exploit the inherent qualities of the materials used in their construction.

A fundamental quality of all woven material is *texture*; the words *weaving* and *texture* are, in fact, synonymous. This tactile and visual aspect of things—rough, smooth, dull, bright, soft, hard, or similar distinctions—is an integral characteristic of all raw material. Yarns possess these qualities and can be combined in a woven construction to produce an endless variety of textural effects.

Hand-woven fabrics are characterized by an interesting textural quality, the slight irregularities that naturally occur in the process of handweaving. The power loom, in contrast, is relentlessly precise, producing an exact number of *picks* (or number of filling yarns) per inch at regularly recurring intervals. Such uniformity makes for a strong fabric—stronger perhaps than that normally attained by handweaving—but, being mechanical, it lacks the personal and intimate qualities that are unconsciously transmitted by the craftsman. It is this variable factor that gives charm to many of the old tapestries and early Indian rugs. The surface of the fabric has been broken up into minute and irregular areas of light and shade by slight variations of beating, by the method used, and from modulations of color that inevitably occur in yarns that have been hand spun and hand dyed. The mixture of slightly unevenly dyed fibers gives an added depth to the texture.

► EXPERIMENTING WITH SMALL WARPS

For the beginner, the study of fabric design should start with fundamentals: a basic knowledge of fibers and yarns, and of simple fabric

¹ Anni Albers, "Fabrics," *Arts and Architecture*, March, 1948, p. 33.

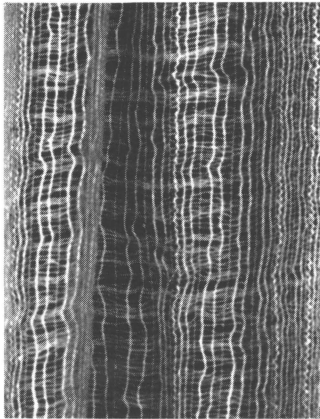


Fig. 4.1A



Fig. 4.1B

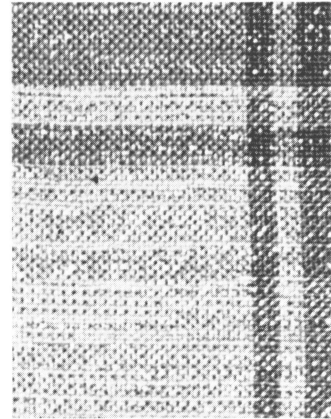


Fig. 4.1C

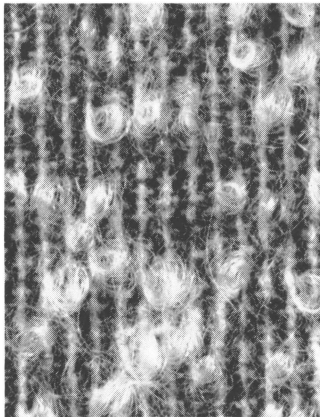


Fig. 4.1D



Fig. 4.1E

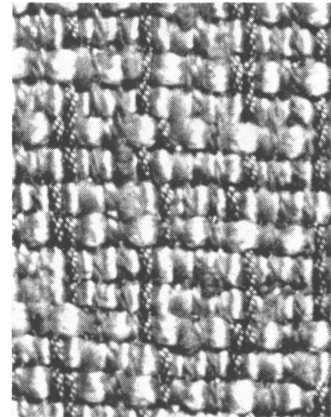


Fig. 4.1F

Fig. 4.1A—Sheer drapery of mohair; warp unit of four different sizes of 2-ply mohair yarns, filler a singles mohair. Fig. 4.1B—Upholstery with tiny checks produced by alternating a heavy, dark-textured wool with a small, light, smooth linen and metal yarn in a tabby weave on a light gray warp of linen and cotton. Fig. 4.1C—Napery where the slick, bright surface is obtained by using single-ply linen and silver in a tabby weave on a warp of cotton and linen. Fig. 4.1D—Coating fabric using loop mohair yarn in warp to give texture.

Fig. 4.1E—Upholstery of fine, smooth cotton and slub rayon yarns set 20 ends to the inch in warp; large nubby cotton filler, woven in a broken twill treadling. Fig. 4.1F—Rayon upholstery with yarns of different construction used as warp; and the "nail head" texture obtained by alternating heavy rayon roving with a very fine yarn in a broken twill weave. This group of six fabrics shows possibilities of texture through use of yarns of varying sizes and constructions.

structure. Such knowledge is best obtained from experimental work with yarn elements, and small fabric samples should be woven. These can employ different sizes, types, and colors of yarns—used alone, or in combination with each other. Such samples may be small, no larger than

6 to 8 inches square. On a warp 1½ to 2 yards long, as many as 8 distinct swatches can be woven.

The use of natural and bleached yarns is recommended at first. Only the simple weaves should be employed—the tabby, the plain twill, and possibly one of the broken twills. In the initial design unit, emphasis is placed upon the development of texture with no regard for end use.

There are definite advantages in this procedure for the beginner:

1. He becomes familiar with a variety of yarn elements and will recognize their limitations as well as their potentialities in fabric.
2. He quickly develops skill and understanding of his instrument by repeatedly making small warps and going through all the manual operations, such as winding the warp, setting up the loom, and practicing other details attendant to weaving.
3. With a growing sense of mastery over manual problems, the weaver is free to concentrate on design development.
4. The weaver acquires new experiences and visual impacts with every group of samples he makes. He develops an awareness of textural and color values, and a keener appreciation of textiles in general. This simple practice with materials and resources, using freedom and imagination, is the basis for all good weaving design.

► SELECTION OF WARP YARNS

After preliminary exercises with simple ply elements, the weaver can then turn to combinations that include different types of yarns. From a group of 12 or more, natural or bleached, he can select 3, 5, or 7 of these, as he likes, as the basis of a warp unit. This unit will appear successively throughout the width of the warp and will set the theme for the fabric.

Before selecting these yarns the weaver should study each of them, handle them, compare them, consider their inherent qualities, and develop a personal feeling about them. In this way he will acquire an appreciation of his materials, and will discover that yarns have individual characteristics such as:

Fiber quality: elasticity, pliability, dryness, or warmth

Difference in size

Variety of construction

Distinct surface finishes

Different degrees of shrinkage and color fastness

These factors make each yarn a potential design element.

To study the effect of these qualities in cloth, it is suggested the weaver try combining yarns of different size—large with small; try those with different surface finishes—mat with gloss or smooth with rough; consider yarn combinations of different fiber content—linen, rayon, wool, jute, silk, and others that may have been blended. Figure 4.2 illustrates the effectiveness of combining strongly contrasting yarns.



Fig. 4.2—Casement cloth showing mixed fibers and variations in weave, by Leah Van P. Miller. (In the Brooklyn Museum Collection.)

In an initial selection of warp elements, there may be a predominance of effect yarns, those of novelty constructions. To establish balance, the weaver should introduce a simple strong yarn, such as a ply cotton, that can be used every third end to help attain uniform tension in the warp. Examples of a few warp units are illustrated in Figure 4.3, A–D and show typical yarn arrangements that have been assembled to achieve an interesting warp distribution.

After the warp unit has been decided upon, the next step is to consider the order, or arrangement, of the yarns. A tentative method of arriving at a satisfactory arrangement is to wrap the yarns in sequence around the index finger, interchanging one with the other until an

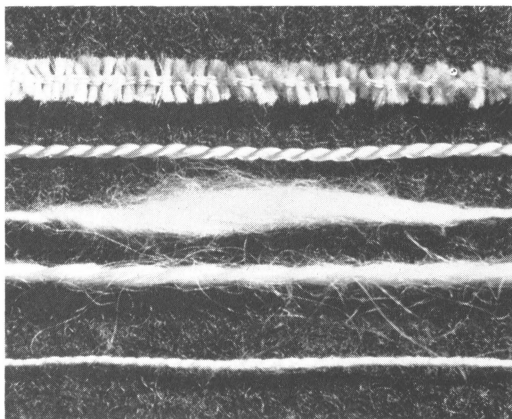


Fig. 4.3A

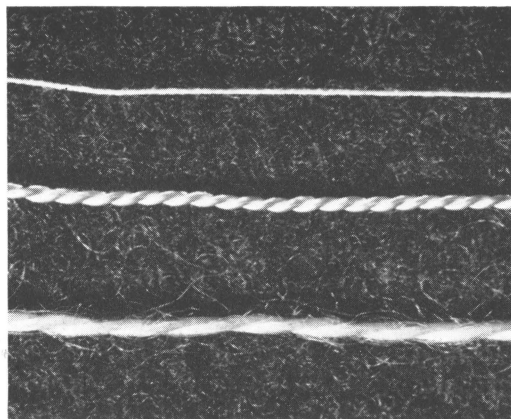


Fig. 4.3B

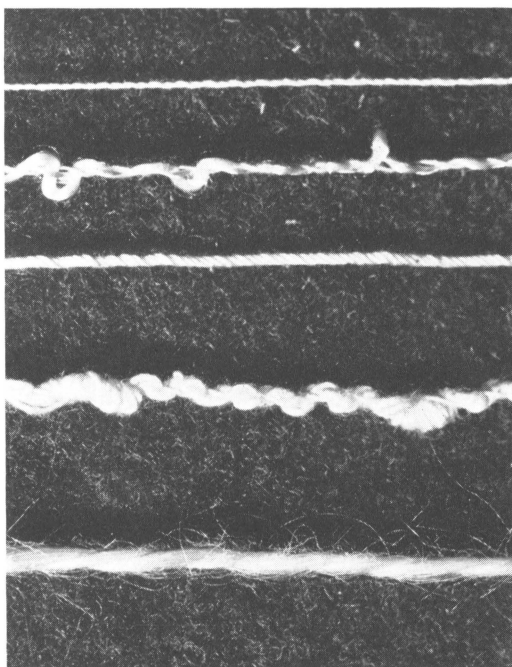


Fig. 4.3C

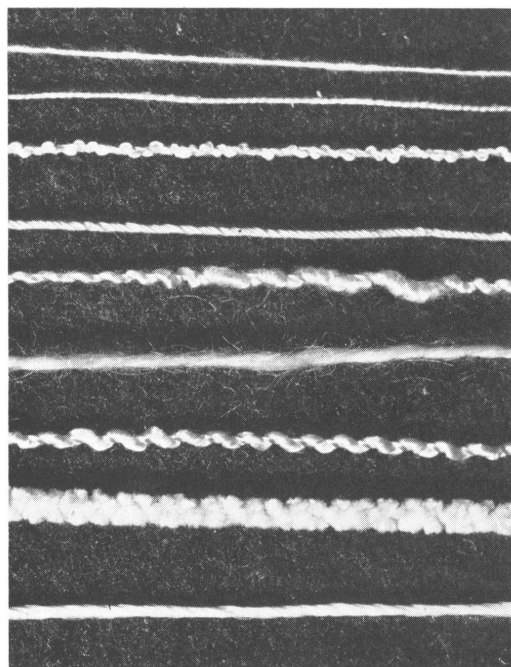


Fig. 4.3D

Fig. 4.3A—Warp unit with chenille, a smooth 2-ply yarn, a flake or slub yarn showing the loosely twisted section, and two softly twisted ply yarns. Fig. 4.3B—A grouping of three ply yarns varying in size and tightness of twist. Fig. 4.3C—Three ply yarns, two of them smooth and firm, are combined with a curl or loop yarn, second from top, and a very irregular lumpy

yarn, second from bottom, called knop, nub, or spot. Fig. 4.3D—This unit has added a soft chenille, a ply composed of two sizes of yarn and a bouclé, these being strengthened by three firm ply yarns. These four illustrations are offered as suggestions for possible warp units. Note each uses one or more ply yarns.

agreeable unit is found. To determine the spacing, the weaver can thread 2 or 3 repeats of the unit through reeds of different size. Figures 4.4 and 4.5 demonstrate this method. Since no particular type of fabric is under consideration—the sole objective being the creation of an interesting texture—the weaver can use his imagination freely and experiment as widely as he chooses. He will find that many of these experimental samples can be adapted later to specific ends; for the moment,

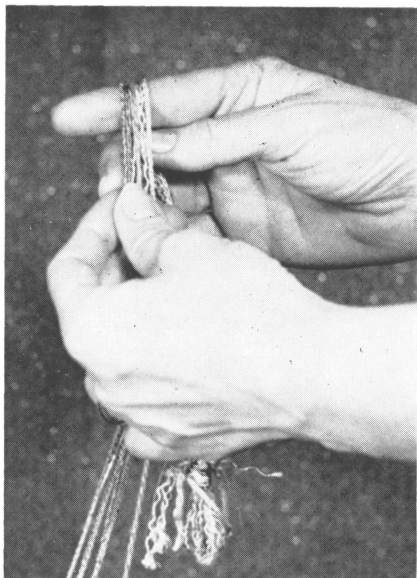
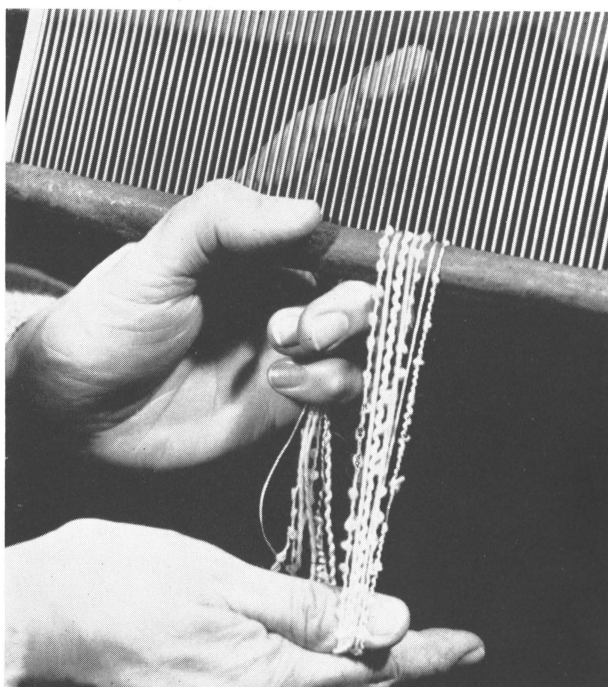


Fig. 4.4—Finding a suitable warp unit, by arranging yarns in different sequences until the most satisfactory one is found.

Fig. 4.5—To determine the spacing before winding the warp, the yarns selected are threaded through the reed. If they seem too close or too far apart a different reed may be selected or the yarns may be regrouped.



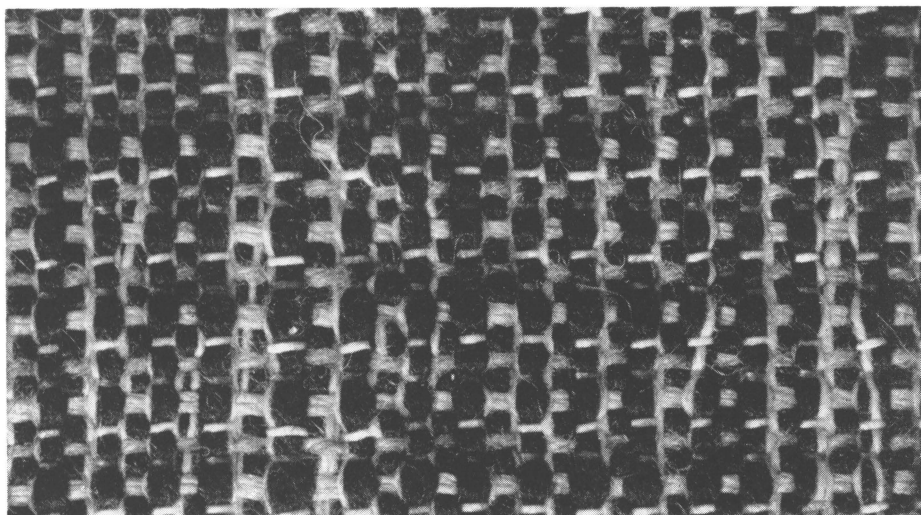


Fig. 4.6—Combination weave in strongly contrasting colors of black and wheat, by Evelyn Hill for Knoll Associates. (Courtesy "Arts and Architecture.")

however, he is interested in learning about his materials: seeing how they behave under different conditions, and comparing the visual aspects they present. Figure 4.6 illustrates an interesting choice of contrasting yarns and colors.

► THREADING THE LOOM

Assistance in setting up the loom and weaving these sample warps can be found in the three chapters immediately following, where directions for setting up a loom and weaving are given in detail. The procedure is the same whether the project is a full width piece of drapery or a narrow warp to be used for experimental purposes as suggested here. By following the directions and the accompanying illustrations the beginner is introduced, step by step, to the mechanical processes of weaving. In these narrow experimental warps mistakes can easily be detected and corrected and the samples are quickly completed.

The first warp should be kept simple, using no more than three different yarns in the design unit, as shown in Figures 4.3B and 4.7. Sixteen warp yarns, or ends, to the inch is a satisfactory arrangement for warps used for experimental purposes. With this warp use an 8-dent reed,

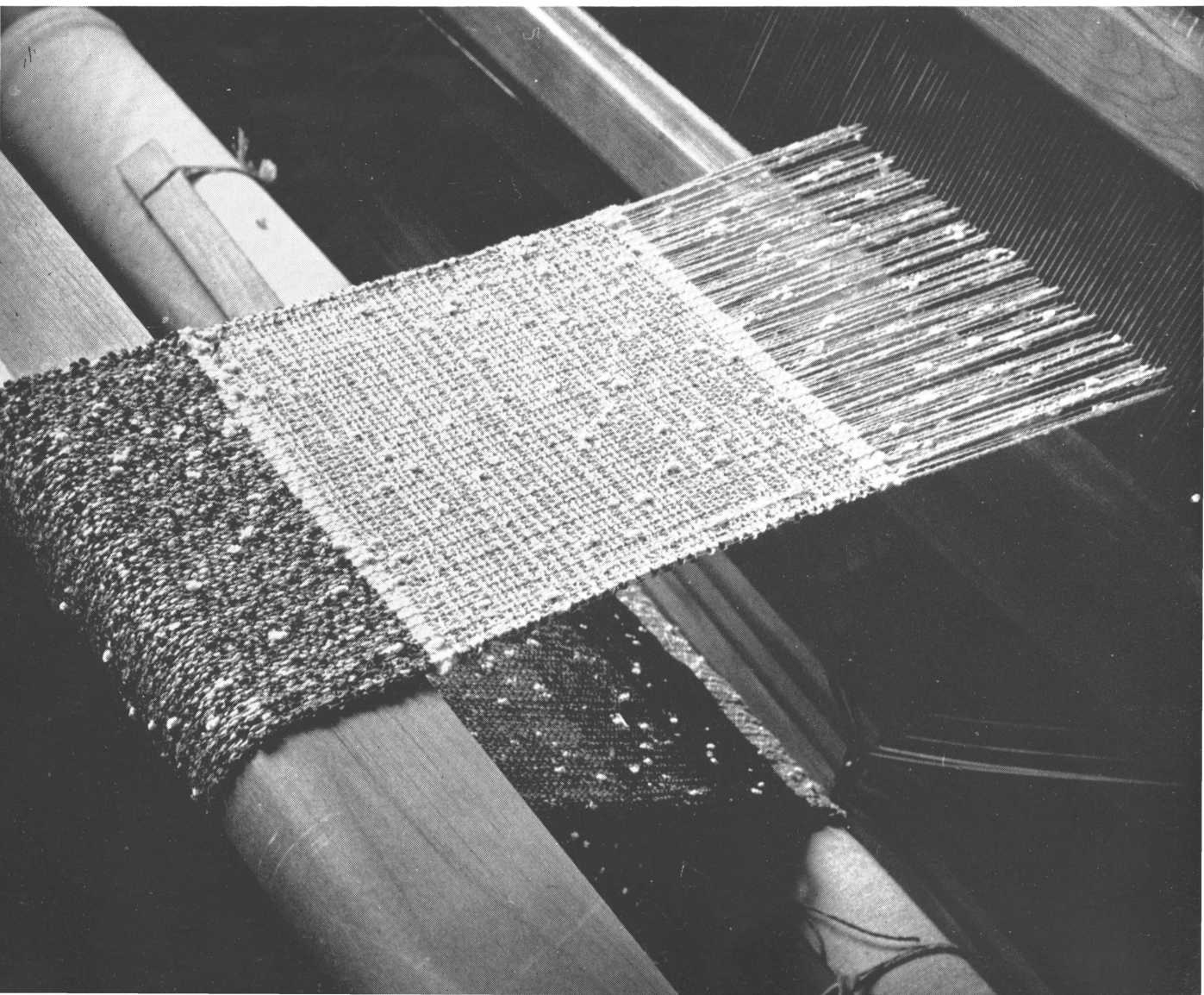
threading two warp ends through each dent. Instructions for threading the reed are given in Chapter 6. The warp should measure $1\frac{1}{2}$ to 2 yards long and 6 to 8 inches wide.

The steps in making the samples are as follows:

1. Wind the warp as directed in Chapter 5. Tie the cross and ends as shown in Figure 5.4 for a large warp.

Insert the lease sticks and wind onto the warp beam, being careful to keep the warp in the center of the loom. This will aid in evenness of beating and weaving. Beginners should use a spreader for the sample warp so the warp

Fig. 4.7—Sample warp centered on the loom. Warp is heavy linen in natural, white nubby rayon, and 2-ply cotton. Differences of texture and value, due to selection of filler yarns, are evident in the individual samples.



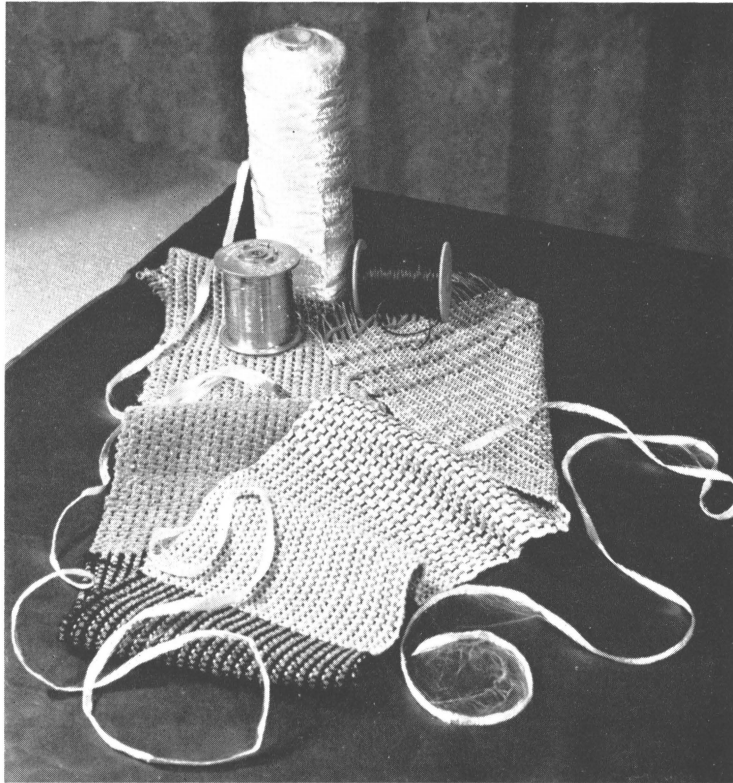


Fig. 4.8—A sample warp removed from the loom. Rayon roving weft or filler, black cord, heavy linen, and chenille used in the warp.

may be kept at its full width while it is being wound onto the warp beam. Then it should be threaded according to the twill draft, the 4, 3, 2, 1 sequence described in Chapter 6. The illustrations and directions show how to hold the warp ends and how to thread the heddles. Continue with the succeeding steps until the loom is ready for weaving. The check list at the end of Chapter 6 briefly summarizes these processes.

2. Next, wind small bobbins from a number of different yarns. (See Chapter 7 for instruction on winding bobbins.)
3. Weave the samples 6 to 7 inches long. Place a few shots of filler yarn of contrasting color before and after each sample to define the length of each design. Weave to the end of the warp or as long as the shed permits.
4. After completing the warp, remove it from the loom and stitch twice between the samples; with space between the stitching so they can be cut apart without raveling.
5. Steam-press, wash, or finish as the material requires.
6. The samples then may be mounted in a folder for future study and reference.

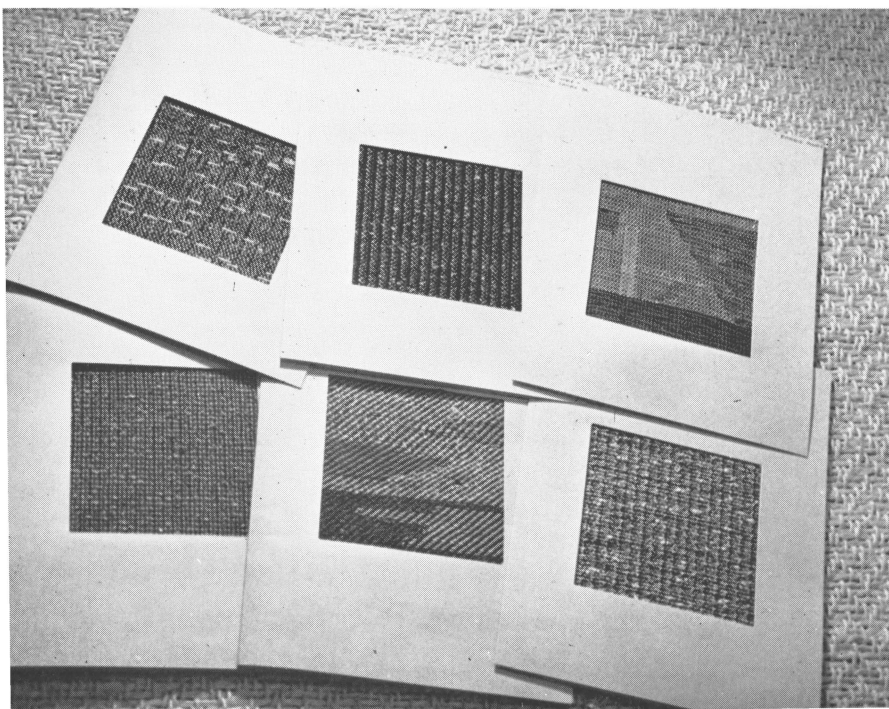
Later, when the weaver plans to make fabric for a specific purpose, the design sample first must be tested to see if it meets the structural

requirements of the job. This is extremely important with fabrics that are subjected to stress and strain, such as upholstery and suiting. Textile mills make experimental tests before weaving yardage and it is equally important for the hand weaver. With limited facilities, he can improvise tests that will satisfy him on the soundness of his structure and its suitability for his purpose. Certain yarns may need to be substituted, the denting or beating perhaps changed, or different finishing methods used. The texture may be slightly altered in this process, but to proceed without first making such an appraisal might be disastrous.

► WEAVING THE SAMPLES

With the warp on the loom, the weaver can now select filler yarns and develop the texture. There can be considerable latitude in the selection of filler yarns since, unlike warp elements, they are not subjected to great tension. Soft, single-ply cottons may be used, or grasses, ribbon, rags, leather, reeds, or short fibers of little strength and of almost any description. Many possibilities will suggest themselves even though the variety of yarns may be limited. In weaving these small samples, however, be careful not to beat too firmly. Figures 4.7, 4.8, and 4.9 show: a sample warp on the loom; a warp removed from the loom; and mounted swatches.

Fig. 4.9—Mounted samples showing possibilities of the 4-harness loom. In the upper left a textured weft predominates; the upper right is an example of flat tapestry; the lower center is flat tapestry with twill weave; the other three samples emphasize interesting warps by using simple wefts.



The beginning weaver who is undecided in choosing a procedure for developing the samples will find help in the suggestions which follow.

1. If the warp is sufficiently interesting in itself, the selection of one filler yarn might be effective.
2. Repeat one of the warp yarns in the filler. This will introduce a dominant note of texture or color.
3. Try repeating the entire warp unit, if there are not too many yarns involved.

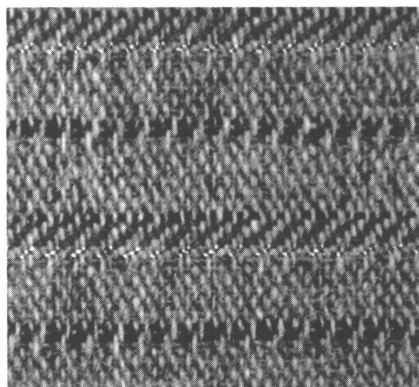


Fig. 4.10

Fig. 4.10—Effect of different treadlings. Fabric shows twill, tabby, and broken twill. Woolen and worsted yarns in brown, rust, and fawn with metal.

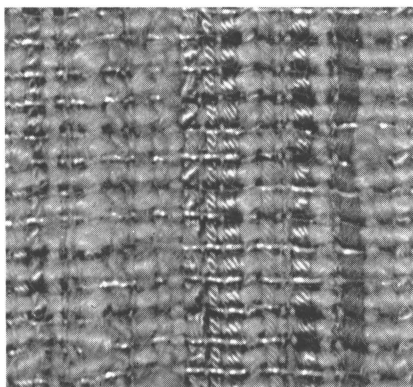


Fig. 4.11

Fig. 4.11—Ribbed effect obtained by using alternately a large and small filler yarn; colors natural and white.

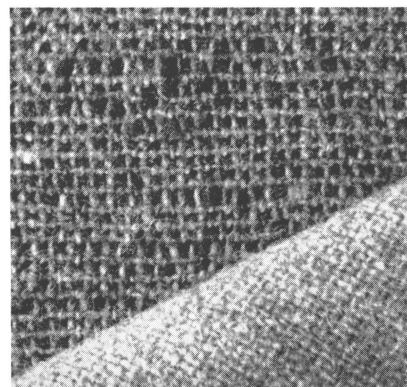


Fig. 4.12

Fig. 4.12—Warp of gray-blue wool set 20 ends to the inch. It is woven with the same warp yarn alternated with a worsted for a light-weight dress fabric, and a textured wool of darker tone used as filler for the coat fabric. (Student project at the State University of Iowa.) Plain weave.

4. Experiment with different treadlings. Change treadling within the same sample. Using the twill threading, try different tie-ups. The tie-up is explained in Chapter 6 and fabric structure is discussed in Chapter 9. Figures 4.10, 4.11, and 4.12 show: effect of different treadlings; of alternating large and small filler yarns; and two samples of combined wool and worsted yarns.
5. Wind two or more yarns together on one bobbin, as shown in Chapter 7. These yarns may be different in size, construction, or fiber. It may be difficult at the start to keep the tension uniform but do not let that stop the experiment.
6. Try variations in beating, to give firmness, sheerness, or other effects, all explained in Chapter 7.
7. Two or more shuttles can be run alternately or in any grouping or sequence desired. If they are not run alternately, watch for tension difficulty in the width of the material. For example, if an inch or more is woven with a soft wool followed by a small area using cotton or linen, the difference in shrinkage and elasticity of these yarns would cause a drawn or puckered effect. Figure 4.13 illustrates the effectiveness of unusual groupings in weft pattern.

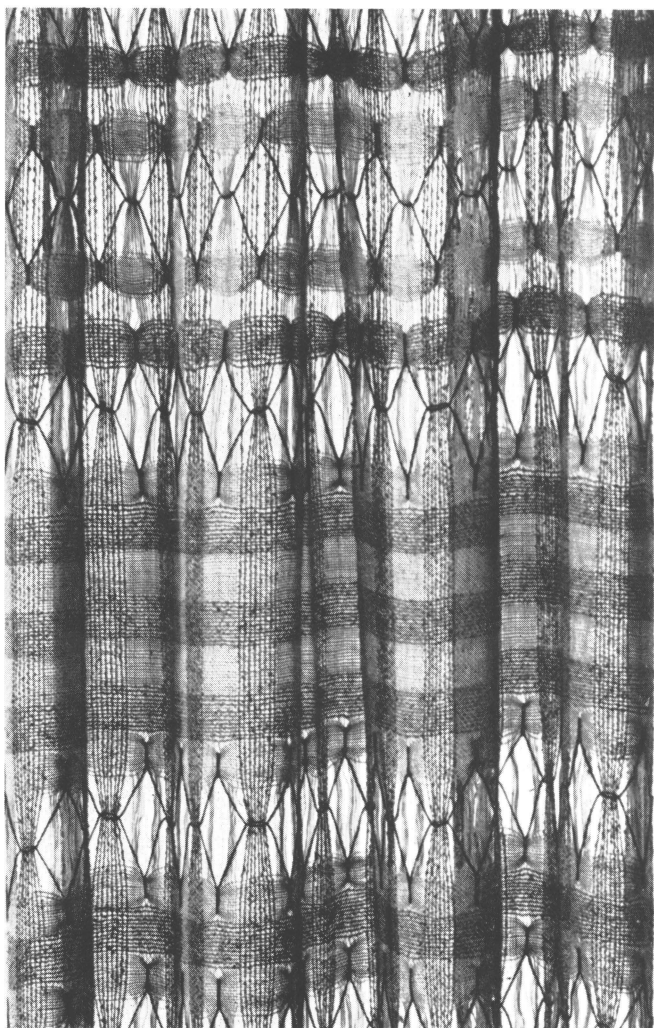


Fig. 4.13—Casement cloth by Roy A. Ginstrom. (In the Brooklyn Museum Collection.)

8. Run a large yarn in a twill shed, alternated with a small yarn in a tabby shed. It will be noted that this emphasizes the large yarn and plays down the small one, or it may accent the warp if the ends are set very close together in the reed. This procedure is often effective in keeping a metallic yarn, or one of brilliant hue, from becoming too dominant. It also produces a ribbed effect that is frequently seen in fabric designs. Example: with a tie-up such as Harnesses 1 and 3, 1 and 2, 2 and 4, 3 and 4, when treadling Harnesses 1 and 3 or 2 and 4, insert the small bright yarn; when treadling 1 and 2 or 3 and 4, insert the larger yarn.
9. Try exaggerated “bubbling” to give additional textural effect. In rug making this is done to cover the warp yarns. The explanation of the “bubbling” technique is given in Chapter 7.

► COLOR NOTES

One of the most fascinating things about weaving is the discovery of what happens when yarns of different colors are interwoven in fabric. In the process of weaving, the colors are broken up into small areas; in the case of two adjacent hues, each will modify the other to a notable degree, and in some instances cause them to lose their individual identity.

When the hand weaver starts combining different colored yarns, he will discover he is not dealing with pigment-color mixing, but the effect of light upon the color combinations. Blue and yellow pigments mixed together give a reflected tone of green. But when two yarns of these colors are interwoven, the resultant color is often a white or grayish tone when viewed from a distance. Similarly, red and green sometimes reflect a yellow cast; and gold against a purple ground may appear as silver. The various results from a juxtaposition of colors will depend on the relative strength of the hues of the color areas.

Other important factors influence the results of this color fusion, however: the relative sizes of yarns, individual fiber qualities, and the type of yarn constructions that have been used. Each of these in itself is a variable, and the resultant tone from any combination of colors is often difficult to anticipate.

For the hand weaver a cumulative knowledge of color blending is best derived from actual practice and experiments with samples, rather than from detailed technical study. There are no formulas to follow, no aides to abide by. The weaver, in creating designs, is not restricted in any way—he is free to be guided by his instincts and strike out for himself.

Often the beginner is hesitant in making a selection of color combinations, even though the work be experimental. The following observations are made to help him overcome his reticence. They may serve as a starting point, from which he can proceed and gain experience on his own.

Color is often used in warp, or filler, as stripes; this is evident in checks and plaids. Each stripe can be enriched by combining yarns of different sizes and construction if all have the same relative hue.

Any combination of colors might be alternated in the warp—blue, orchid, and green; orange, chartreuse, and tan; brown, black, and purple—and if they have relatively the same value, (the light-dark quality of color) they will present a unified and harmonious allover effect.

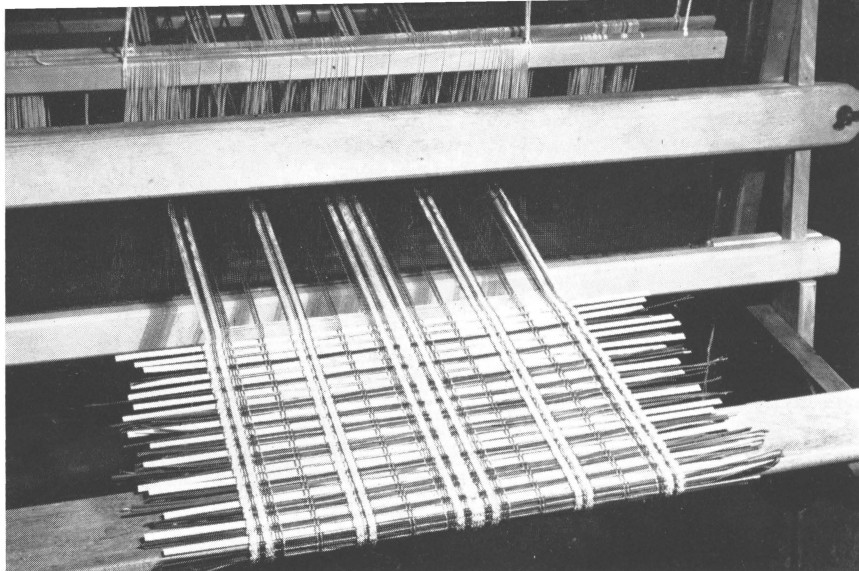


Fig. 4.14—Design for place mats showing open spacing in the reed. Note the harnesses here consist of parallel bars of wood to hold cord heddles in place. Threading is twill, weave is tabby. Warp is brown linen, chartreuse mercerized cotton, and white chenille; filler is natural bamboo and brown Nigerian reed. (Student project at the State University of Iowa.)

Yarns in contrasting value in juxtaposition (a light against a dark) will tend to maintain their original values and appear as modified stripes in the material. Figure 4.14 illustrates definite color distinction attained by contrasting fibers as well as colors.

Accents of intense, brilliant color on neutral backgrounds, if used in the right amounts, may be effective notes, as shown in Figure 4.15.

An interplay of yarns having the same relative hue and value, but with different surface finishes, produces textural interest, as demonstrated in Figures 4.16 and 4.17. Example: wool, smooth linen, and bright rayon each possess different degrees of gloss and dullness. When combined, these qualities are accented. In this connection, fabrics are often woven from yarns of different fiber in an "undyed" state; the finished material is later piece dyed giving an interesting monotone, each fiber absorbing the dye to a greater or lesser degree.

Composing color is largely an intuitive process. The designer unconsciously considers contrasting qualities such as warm colors used with cold colors, light with dark, bright with dull, and then attempts to establish certain interesting and satisfying relationships between these opposing factors as is typified in Figures 4.18 and 4.19. Through experimentation the weaver develops a personal mode of color expression.

It is stimulating to study the work of others: the contemporary fabrics from the mills; those shown in exhibitions of artist-craftsmen; and the great textiles of the past. All of these will enlarge the outlook of the weaver and give him a broader concept of design. He will soon find

Fig. 4.15—Rug in tapestry and Rollakan weave, by Mildred Allmendinger. (In the Brooklyn Museum Collection.)

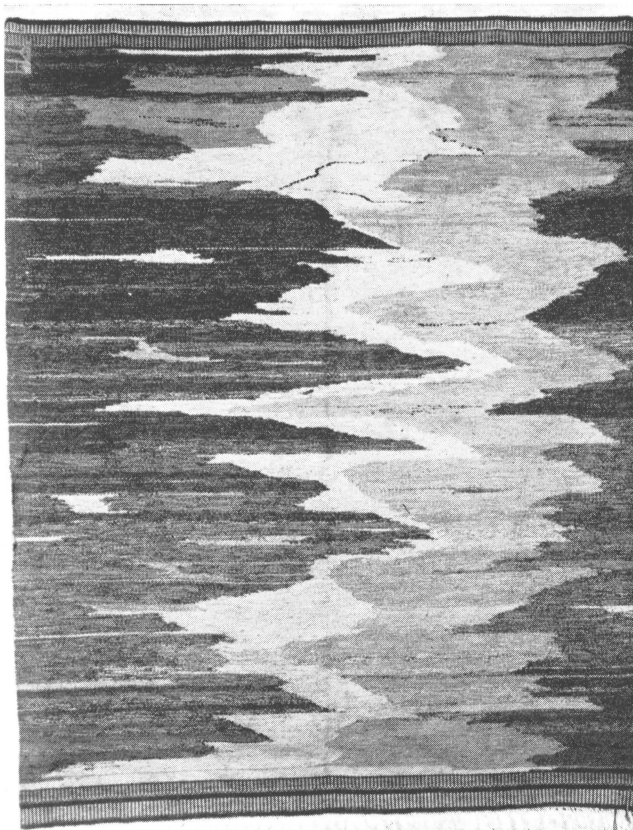


Fig. 4.16—Transparent drapery material of spun rayon and wool ratiné in white, by Lili Blumenau. (Courtesy "Handweaver and Craftsman.") Effect of transparency is enhanced by variation in spacing in the reed.

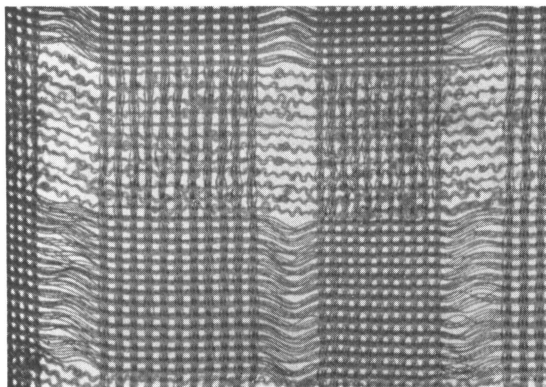
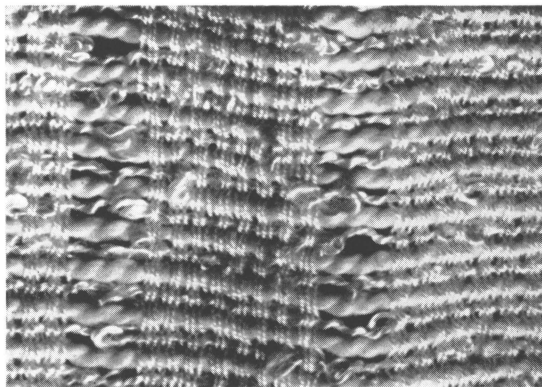


Fig. 4.17—Drapery material woven by Lili Blumenau on the same warp as the transparent fabric in Figure 4.16. (Courtesy "Handweaver and Craftsman.") Here the corded effect with less transparency was achieved by using a heavy filler yarn.



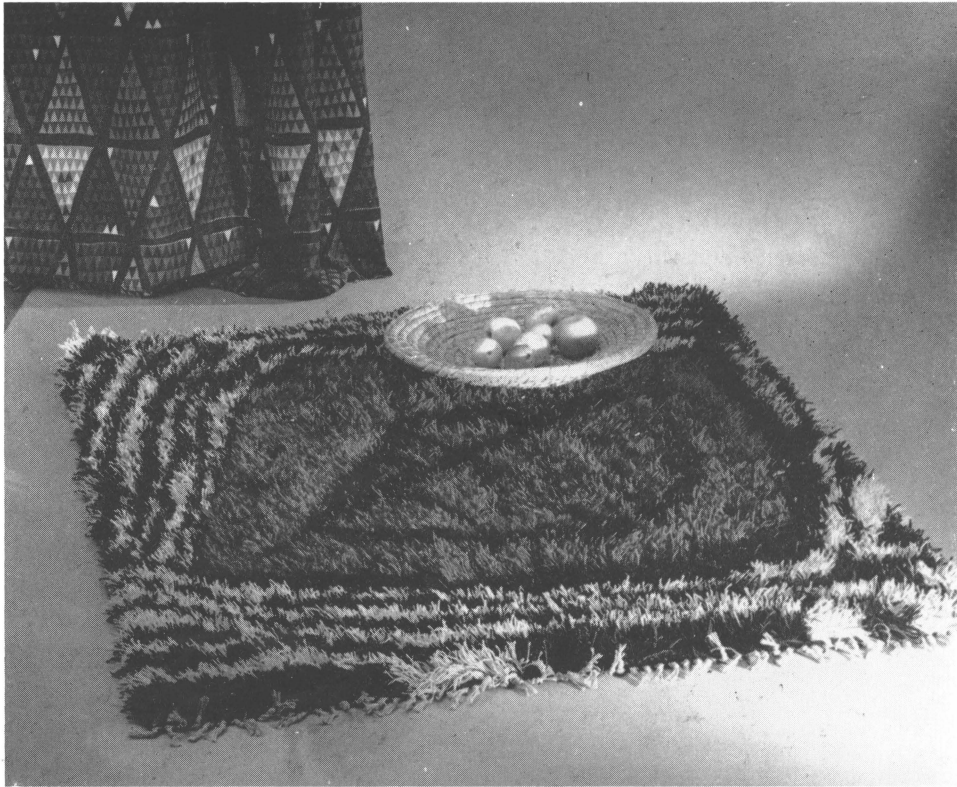


Fig. 4.18—Deep-pile rug by Viola Grästen of Nordiska Kompaniet, Stockholm, Sweden. It is a rya technique in black, white, and red, shown with hanging of printed linen in red, green, and black.

himself critical of his own work, and at the same time he will be developing new ideas, more perhaps than he can ever realize in fabric.

► RECORDS

With the construction of fabric samples it is advisable to record all the details of production. The weaver will find this information useful, and a timesaver, if he later wishes to reproduce the fabric. If a convenient record form is available, it is quite easy to list all of the details instead of depending upon memory. Any improvised form will serve, but it should have provision for the inclusion of all the necessary data, such as the one shown in Figure 4.20.

Samples of all the warp yarns should be attached to this form, and arranged in the order in which they were used in the warp unit.

A record of the draft will be shown. This includes:

Order in which the heddles are threaded

Sleying

Tie-up

Order of treadling

Each texture or sample will probably employ different filler yarns, and samples of these should be attached to the record with a notation on how they were combined for each shuttle. The firmness of the beating will be noted by the number of picks per inch.

Many weavers have found it worth while to compute an estimated cost for each sample. This can then be used to estimate costs per square yard, or cost per article. In constructing a fabric this figure will sometimes need to be adjusted because of a necessary substitution of yarns.

Fig. 4.19—All-linen table mat and napkin, by Joan Patterson. Warp, 20/2 green and natural; weft, blue-green and natural in 14/1 with ribs of 1½ lea blue-green linen. Napkin is 20/2 natural warp, 14/1 natural weft.



Space should be allocated for suggestions or remarks. Any structural disadvantage in the sample can be noted with comments on how the material might be improved. If a single linen, for example, was found unsatisfactory in the sample, a ply linen of like diameter might be substituted with no appreciable change in the appearance of the fabric. Also, the finishing methods should be indicated, since the character of many materials is changed in this process. The shrinkage should also be noted as a basis for estimating warp widths and lengths.

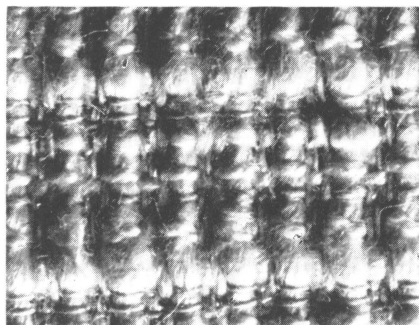


Fig. 4.21A—Upholstery fabric of natural and white linen, by Joan Patterson. A sturdy and attractive fabric with warp of 9/2, 7/2 rug 1½ lea linen with cotton nub; weft 7/1 and 6/2 linen.

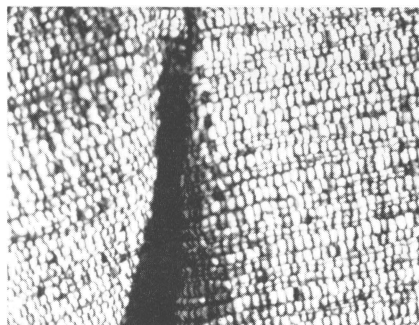


Fig. 4.21B—Upholstery fabric of natural yarns on a dark warp, by Marianne Strengell. Of wool, mohair, and cotton, the heavy filler yarn is balanced by fine, strong yarns, giving a hard texture.

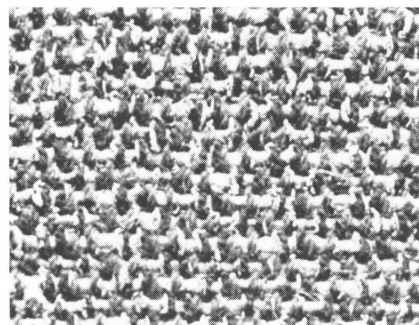


Fig. 4.21C—Upholstery with warp of black, brown, and purple; filler, soft green rug linen alternated with black silk and copper-toned metallic yarn. Upholstery fabrics can be made of a variety of yarns as these illustrations show. Because of its resiliency, some wool is advisable.

► DESIGNING SPECIFIC MATERIALS

As the weaver develops designs for specific fabrics he will find there are controlling factors to be considered if the textile is to serve its purpose satisfactorily. Certain fabrics are subjected to various degrees of stress and wear in the course of their usage; the most common of these are upholstery, drapery, rugs, and suiting. In planning such materials the hand weaver will consider the conditions under which they will be used, note the necessary functional requirements, and incorporate these in his design.

An *upholstery* fabric should be sturdy enough to withstand the strains imposed in applying the material to furniture, it should be reasonably resistant to frictional wear, and not too difficult to clean. While a variety

of different yarns can be used in the warp it is advisable to select rather coarse, strong yarns, set, as a rule, from 15 to 20 ends per inch. This is the basis for a firm, durable structure. Figures 4.21 A, B, and C illustrate these factors.

The possibility of cleaning is an important consideration. Many weavers use a certain percentage of wool in the filler for this reason, and some of the newer synthetics should not be overlooked, as they combine well with wool and other fibers, or may be used alone. While upholstery fabrics should be firm, they need not be stiff. This firmness is attained by double beating; the first beat is in an open shed, then the treadles are changed and a second beat given in a closed shed. In planning material for a specific piece of furniture, it is advisable first to consult the upholsterer to determine the width most practical to weave.

In the design of *draperies* the weaver will be interested in such practical considerations as sag, drapability, resistance to light, and cleaning requirements. As a rule, draperies are loosely woven materials—close enough to secure privacy, yet transparent enough to permit the transmission of light as in Figures 4.16 and 11.5. If unlined, their textural interest is increased, a quality that can be exploited in place of color. Figures 4.22, 4.23, 4.24, and 4.25 show a few of the variety of weaves stressing textural interest.

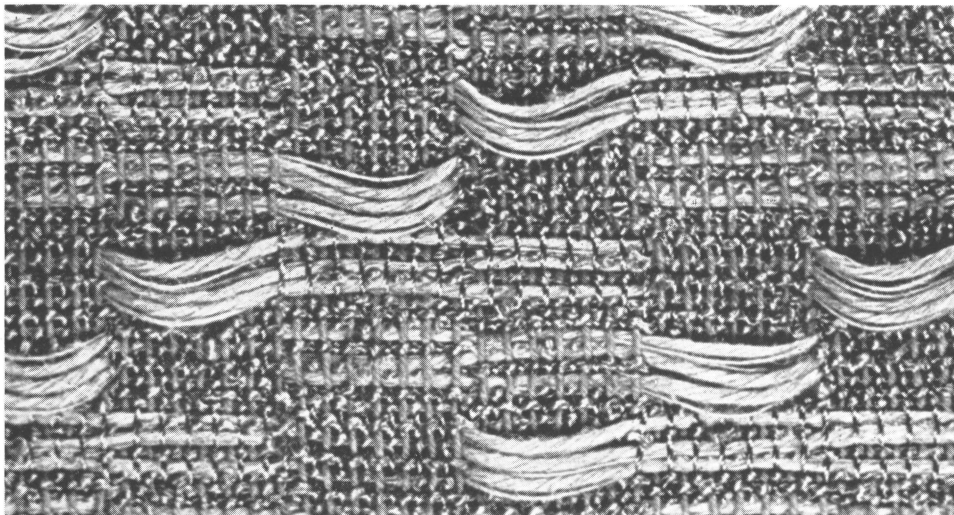


Fig. 4.22—Drapery fabric of chartreuse bouclé and linen yarns, by Else Regensteiner and Julia McVicker.

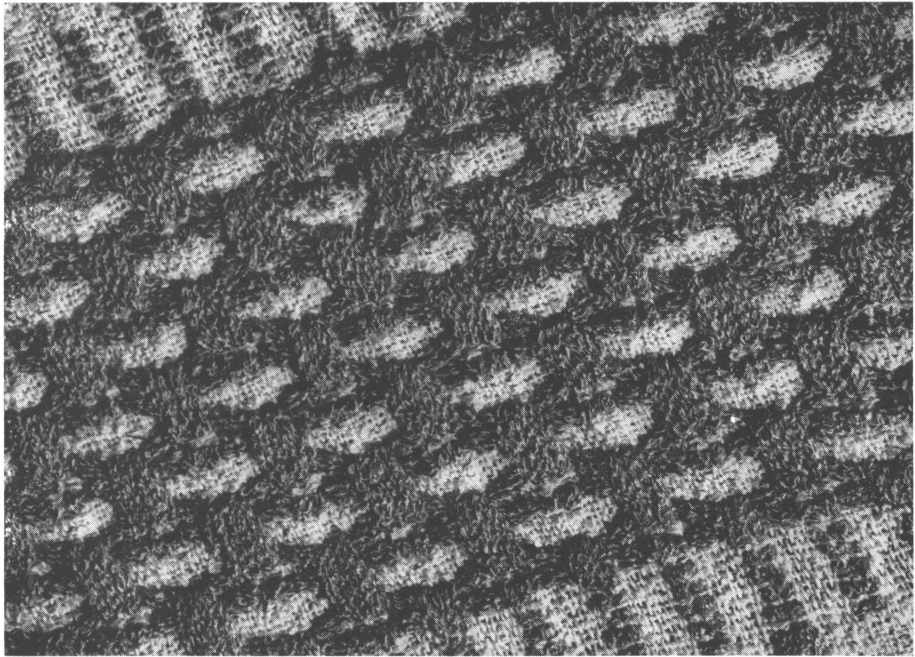


Fig. 4.23—Fabric by Maria Kipp showing rough texture resulting from choice of yarns and weave. (Courtesy "Handweaver and Craftsman.")

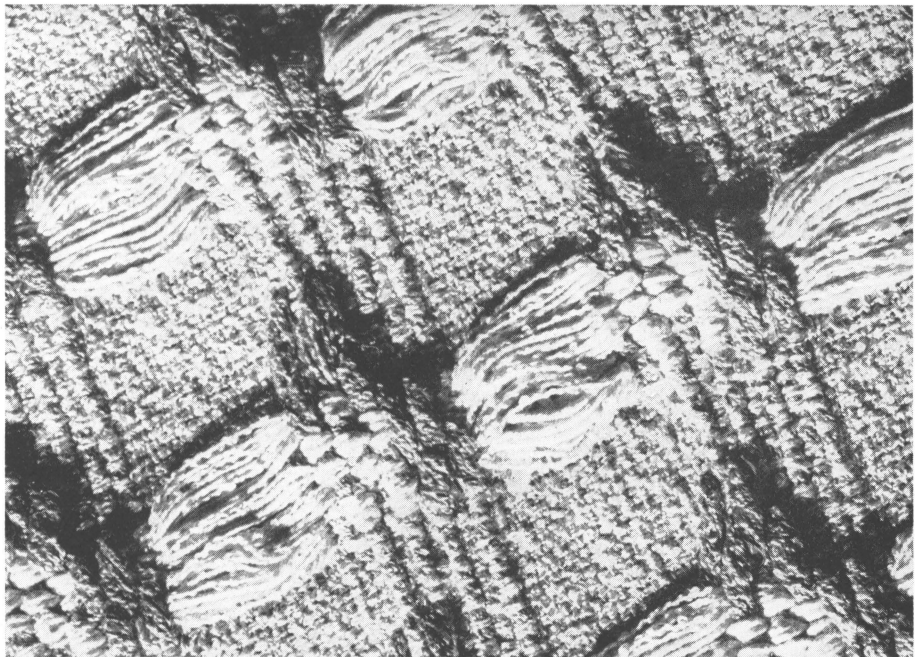


Fig. 4.24—Drapery woven on a double warp-beam loom, by Maria Kipp. (Courtesy "Handweaver and Craftsman.")

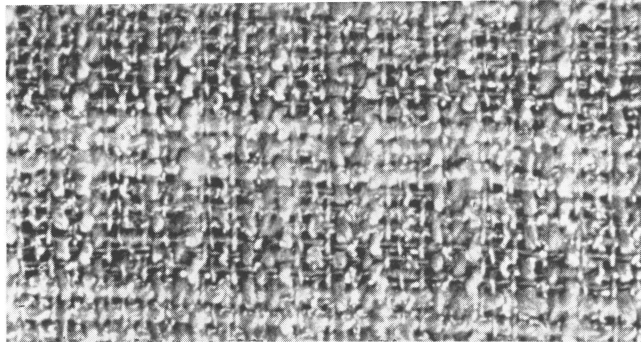


Fig. 4.25A—Self-striped drapery from natural to medium blue-gray; warp and filler of rayon, cotton, silk, and wool in a plain weave.

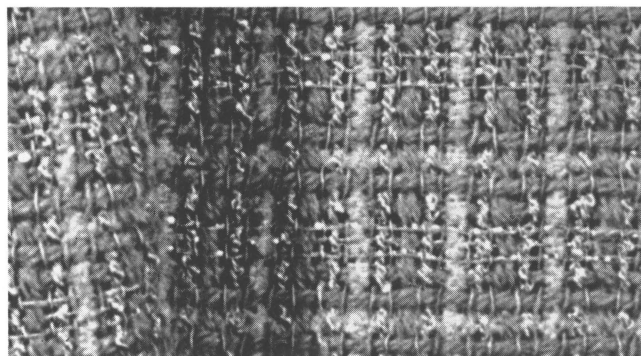


Fig. 4.25B—Sheer drapery of mohair chenille, wool, and rayon in tones of green with copper-toned metallic yarn.

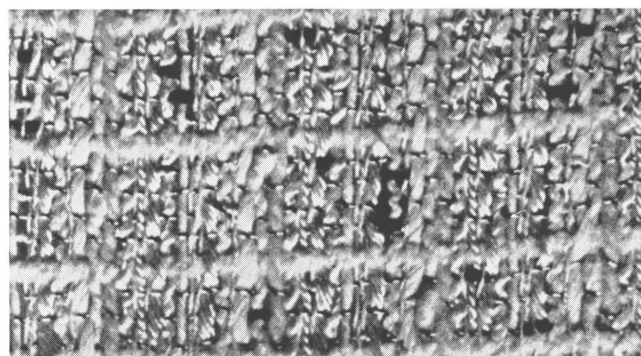


Fig. 4.25C—Filler of chenille and black-and-white nubby silk; warp of several yarn constructions in natural and white.

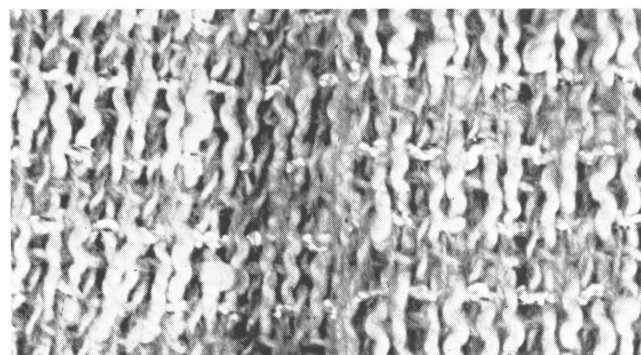


Fig. 4.25D—Sheer drapery where textured yarns give stability. Warp is yellow nubby cotton alternated with yellow rayon ratiné and a 2-ply wool of gray and white; weave is broken twill.

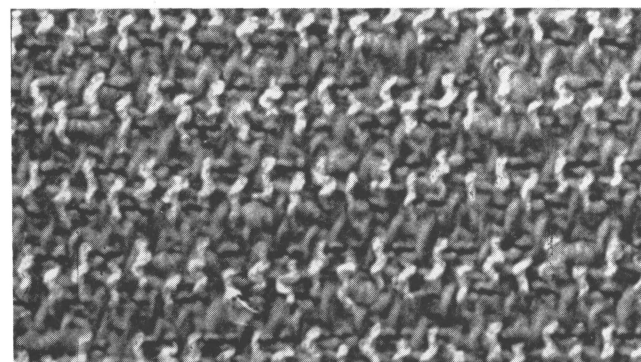


Fig. 4.25E—Drapery with a rich, textured surface. Warp is a 2-ply wool of gray and white alternated with white rayon ratiné; filler, a novelty yarn of wool in black, natural, and flakes of yellow, twisted together. Weave is broken twill.

These draperies suggest countless variations possible with simple weaves and the many yarns available. Such fabrics admit light, yet give privacy.

While the suspended weight of a drapery may not be great, it is essential to use stable warp elements at regular intervals throughout the width to counteract the tendency to sag. Drapability will be achieved by using more flexible yarns in the filler than in the warp. Whenever possible, yarns selected should be of fibers that show no rapid deterioration from the effects of light and sun. Some of the synthetics have remarkable resistance in this regard.

Rugs present a somewhat different design problem for the element of interest is reversed. In most instances the warp is chosen for strength and wear alone and is usually covered by the filler yarn but, if exposed, it is rarely emphasized. The warp will probably be a heavy ply cotton or linen set 6 to 10 ends per inch.

Filler yarns may be woven flat and “bubbled” (*see* Chapter 7) to cover the warp or it may be woven with a pile by one of the knot techniques. The pile may be long or short, cut or uncut; or the pile and flat weaves may be combined.

While a single, over-all texture may be planned for rugs, more often weavers use two or three textures in combination to point up the design. The usual procedure is explained under Fabric Structure, Chapter 9.

Since rug making is slow and involves much detail it would seem worth while to use good materials, selecting them for their wearing qualities as well as for their beauty.

Some of the materials commonly used are linen, wools (including mohair), nylon, hemp, jute, grasses, sisal, strips of woolen or other cloth, and blends of the natural fibers with synthetics for accent. Mohair and rayon blends are effective with wool, or wool and linen. Several yarns may be combined to form the knot in the flossa or rya rug, and are wound together to make the “butterfly” (*see* Chapter 9).

Designing for *wearing apparel* presents a real challenge to the weaver. The material must be soft, sometimes sheer and light in weight, yet able to stand up under hard wear and repeated cleanings. Such fabric must be properly finished to prevent further shrinkage and to hold its shape after tailoring.

The selection of yarns for each design will be determined largely by the weight of the fabric desired. Many types of yarn suitable for apparel fabrics are available to the hand weaver. Yarns of different fiber content may be combined in both warp and filler. A few suggestions are: silk and

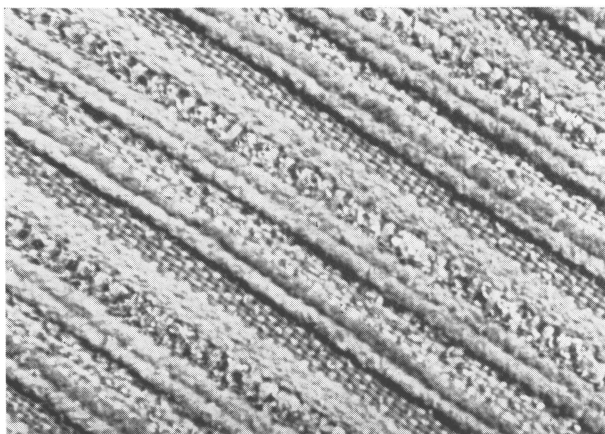
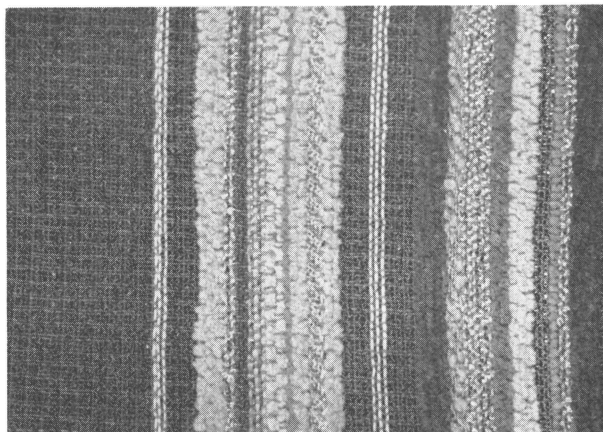


Fig. 4.26—Designing with novelty yarns and yarns of different sizes gives a sculptured effect to a fabric by Kay Geary. (Courtesy "Handweaver and Craftsman.") Note the sharp contrast and appearance of depth between stripes.

Fig. 4.27—Hand-woven skirt accented by effective use of novelty yarns, including chenille, bouclé, rayon frill, and lurex; woven by Ethel Guy of yarns dyed by Mr. and Mrs. Guy. (Courtesy "Handweaver and Craftsman.") Stripes run weftwise.



wool; alpaca, dacron, and silk; cotton, orlon, and linen; or vicara, wool, and nylon. Supported metallic yarns may be used with any of the fibers in either warp or filler. Effectiveness of novelty yarn is seen in Figures 4.26 and 4.27.

Wools are probably the most satisfactory to work with since they present fewer problems in the finished textile. They may be woven fairly sheer without danger of separation at the seams when worn. Wools are light in weight, relatively color fast, and will withstand hard wear. The yarns may be purchased in both the simple and novelty constructions. The weaver often finds that, with experiment, he can introduce yarns of other fibers in a fabric without losing the desirable qualities of wool. Variety of color in design is illustrated in Figures 4.28 and 4.29A and B.

Apparel fabrics must have draping qualities. This results from proper



Fig. 4.28—Fabric for a coat in twill weave. (Student project at the State University of Iowa.) Warp of black worsted and dark blue woolen yarns, light stripe of white loop mohair with a textured yarn in blue and white; filler of the same yarns.

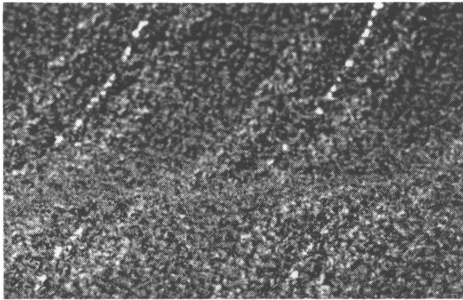


Fig. 4.29A—Fabric for a coat using black wool warp; filler of black and brown textured wool and copper lurex. Fabric by Mary Walker Phillips.

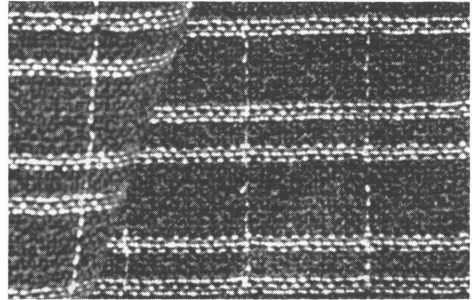


Fig. 4.29B—Sheer suiting material. Black loop wool and spun silk, alternated in both warp and filler, with fine, gold, gimp stripes. Smooth, fine yarns produce sharper contrasts than the textured woolen yarns in Figure 4.29A, where the metal thread is almost buried.

weaving and finishing. If the warp yarns have been set too close in the reed, or the filler yarns have been beaten too firmly, the material will not lend itself to draping or tailoring. Material for men's wear is usually woven narrower than that for women's wear, the latter varying according to the pattern chosen.

The technique of *tapestry* weaving is primitive and very simple but, like rug weaving, it is slow and tedious. The method for weaving tapestries is explained in Chapter 9, Fabric Structure.

To produce a successful tapestry calls for a play of imagination combined with a feeling for color, color blending, and design. Since tapestries are decorative pieces, considerable freedom may be used in the choice of yarns. Old tapestries (Fig 9.16) were woven on a linen or wool warp using silk, wool, or metal for filler. Modern weavers (Fig. 4.30) follow much the same plan but use a wider variety of materials with greater freedom in their designs. Tapestry weaving is perhaps one of the most satisfying of the weaving techniques, and is particularly so when the filler materials are spun, dyed, or tinted by the weaver.

Fig. 4.30—Polish Kilim, "The Dancers," by Eleanora Plutynska.

(Courtesy of the Detroit Institute of Arts.) Kilim technique, used in the Middle East for rugs and hangings, is similar to that of the Navajo blankets and rugs.

Polish weavers are masters of this art.

