

handicrafter

VOLUME VI, NUMBER II, PART II

Warps and Wefts

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IN THE planning of a new fabric there are three main points to be decided—color, pattern, and texture. Of these texture is often the most difficult part of the problem, and for some fabrics—dress-fabrics especially—it is the most important of the three.

Texture depends on the quality of the warp and weft yarns used, their “count,” and the manner in which they are combined. And by this I mean not only the “weave” or plan of interlacing of warp and weft, but also the relative quantities of warp and weft, which depend on the setting of the warp in the reed and on the beat.

When a fabric fails to please, the cause of the failure—nine times out of ten—is an ill-judged setting of the warp. This is natural enough, because it is impossible to formulate rules, and without experience or a good collection of samples to fall back on there is no way to determine the most desirable warp-setting and beat without experiment. The same warp will produce fabrics of very different texture at different settings, and one may set out to make a light-weight dress fabric and find that what one has on the loom is a heavy material suitable for upholstery.

There are three main classes of fabrics, when considered from the point of view of relative values between warp and weft: Weft-face fabrics, in which the effect is entirely in the weft and the warp is covered; warp-face fabrics, in which the effect is in the warp and the weft is covered; and “fifty-fifty” fabrics, in which warp and weft play an equal part.

For weft-face fabrics the warp should be coarser than the weft and set far apart in the reed—so far apart that when the weft is thoroughly beaten up the warp will be completely covered. Tapestry is the outstanding fabric of this type.

Warp-face fabrics are exactly the reverse. In these the warp is finer than the weft and is set very close together—so close that it covers the weft completely. Card-woven textiles, a good deal of Ancient Egyptian weaving, and much primitive and savage weaving are examples of this. Modern textiles of the order are the Swedish warp-face mats we occasionally see.

The type-fabric of the third order is the plain tabby fabric, woven with exactly the same number of weft-shots to the inch as there are warp-ends to the inch in the setting. Most

of the linen weaves and the weaves used for dress-fabrics fall in this group.

The Colonial coverlet weaves are a hybrid form in which the tabby foundation is a fifty-fifty fabric overlaid by weft-floats of other material to make the pattern. Certain Italian fabrics are similar except that the pattern floats are in the warp instead of in the weft.

In planning a new fabric the best guide is a sample in the texture one wishes to produce—and failing that, experiment is necessary. To those who have not the time for experimental work the following “rule-of-thumb” suggestions, taken from my own experience, may prove helpful. But these must be considered suggestions only. I have no idea of laying down laws. The directions if followed will produce satisfactory fabrics of the kinds described, but other combinations of material, other settings, different textures, might be as good or better for some special purpose.

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First, the classic “coverlet” fabric, made in overshot pattern weaving in wool with a foundation of cotton or linen. For this fabric—whether an actual coverlet or in runners, pillow-tops, hand-bags and the like—I find no warp as satisfactory as Egyptian cotton 24/3, set at 30 ends to the inch. Tabby, of course, like the warp. For pattern weft over this warp I prefer either “homespun,” handspun wool yarn, or Shetland worsted yarn. These combinations of material produce a fabric similar in texture to the ancient pieces.

A good deal of variation in beat is allowable in this weave. A close beat produces the firmer, handsomer fabric, and a light beat the softer fabric. The beat is largely a matter of taste, and depends to some extent on the purpose for which the fabric is to be used, but the beat should always be heavy enough to give the foundation tabby fabric the necessary firmness to hold the material together. If the beat is too light the fabric will pull apart and become quite distressing in appearance after a time.

A warp of ordinary 20/2 cotton may be used for coverlet fabric also. This is finer than 24/3 and should be set at 34 to the inch for best results. Warp of No. 20 Perle cotton at the same setting may be used, but not for strictly “period” pieces as the shine of mercerized cotton is a modernism.

For a coarser fabric 10/2 cotton warp or No. 10 Perle cotton set at 24 ends to the inch, woven in knitting yarn or Germantown, give good results.

Rugs are not now much made in this weave, but, if made, ordinary carpet warp at a setting of 15 ends to the inch is satisfactory.

The "summer-and-winter" weave requires a different relation of warp to weft. For a very beautiful light-weight fabric in this weave warp in Egyptian cotton at 30 ends to the inch, use a 20/2 cotton for tabby, and Fabri yarn for pattern weft. For a somewhat heavier fabric warp in 10/2 cotton at 24 ends to the inch, use 24/3 cotton for tabby and homespun or Shetland yarn for pattern weft. Other combinations of material are, of course, possible in this weave, but these seem to me the best. In fact they are to my mind perfect for this weave in its most conventional form. The beat should be just heavy enough to make the figures exactly symmetrical when woven "in pairs" according to the best usage.

Coverlet fabric is sometimes woven over a linen warp. This makes a heavier fabric, of course, and for a bed-cover the cotton foundation is to be preferred. If linen warp is used the warp-settings should be the same as for the linen fabrics to be described below.

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The linen warps most commonly in use are No. 20 "singles," 40/2 and 40/3 "round" linens, and heavy linen floss.

Linens are usually woven in one or another of the "fifty-fifty" weaves, and the setting and beat should be very carefully considered. If the warp is set too close it is impossible to beat up the weft to the same number of weft shots to the inch, and an unpleasantly "warpy" effect results. If the warp is set too far apart and is woven with the same number of weft shots to the inch, an unsubstantial and open fabric results. This open fabric, of course, is what one wishes for curtains, but it is not desirable for towelling or table linen.

The warp I prefer for towelling—and, in fact, for most weaving in linen—is No. 20 singles. Bernat's Special No. 20 linen warp is excellent. Some weavers hesitate to use singles linen for warp because it tends to fuzz in the reed, and broken threads are apt to result. This difficulty can usually be overcome by keeping the warp thoroughly dampened during weaving, but treating the warp with a good warp-dressing is advised.

There are commercial warp-dressings on the market, but as these can ordinarily be purchased only in large quantities they are not generally available to hand-weavers. An excellent warp-dressing may be made by boiling flaxseed. Exact proportions are unimportant. The jelly-like product of the boiling should be diluted to the consistency of thin starch, and can be applied to the warp in various ways: If the warp-material is in skeins the skeins may be soaked in the solution before the warp is spooled. If the loom is warped from the warping-board the chain may be soaked in the solution

before beaming. If the warp is already on the loom the solution can be dabbed on the stretched part of the warp with a cloth or sponge. A thoroughly dressed linen warp can be woven dry, though it is better to weave it damp. Do not, however, weave part of a piece on a dry warp and part on a damp warp. The weft beats up much more firmly when the warp is damp than when it is dry. To keep the warp damp while the loom is not in use lay a wet bath towel over it, and always release the tension on the warp-beam when the loom is allowed to stand for some hours.

The setting I prefer for No. 20 linen warp is 36 ends to the inch, though for certain weaves—"Ms and Os," for instance—a setting of 38 is perhaps a little better. A 40/2 round linen, which has the same "count" should be given the same setting. The most satisfactory setting for 40/3 linen is 26 ends to the inch, for most purposes.

Round linens do not require dressing and can be woven dry, though they beat up better when kept damp during weaving—at least in a dry climate.

Heavy linen floss when used for both warp and weft makes a particularly beautiful heavy linen fabric. Large

towels in this material are handsome and serviceable. When used for warp a setting of 16 ends to the inch is best, though 15 to the inch is allowable. This linen makes gorgeous curtain material in lace-weave, at a warp-setting of 7½ or 8 ends to the inch.

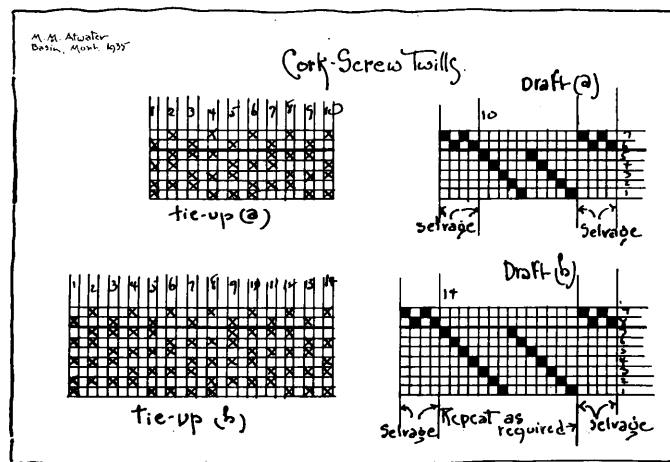
Linens should be well washed when taken from the loom. Soaking for several hours is desirable. Rub out well in hot soapsuds, rinse, wring, and iron while still quite wet, going over and over the fabric with the iron till it is thoroughly dry. This brings out the lustre of the fabric. Linen is improved by repeated washings.

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All-wool fabrics—fabrics for clothing especially—are of much interest. Tweeds for sports wear and fine, filmy wool fabrics for dresses are much in demand. Many beautiful yarns are available, and it is sometimes difficult to select among them, and to determine just how to combine and weave them for the type of fabric desired.

There appears to be some confusion as to just what a "tweed" fabric is. Many fabrics are sometimes called "tweed" improperly. The word is derived from "twill,"—or, rather from the Scotch form, "tweel" or "tweeling,"—and the fabric itself appears to be of Scotch origin. It is a rough, soft, heavy fabric made of single-twist wool (not worsted) yarns, woven in one or another of the many forms of twill. It is a handsome and sturdy fabric, designed for hard service. It happens at the moment to be also very "smart."

The forms of twill commonly used for tweeds are the familiar 2-2 and 3-1 twills, "dornik" and "herringbone" and the "corkscrew" twills. As this last is particularly good for tweeds, and as it seems to be little known among American hand-weavers, I am giving the threading and tie-up for the five-harness and seven-harness corkscrew twills. The



tie-up for the five-harness pattern could be made to seven treadles—the first five as shown, with the ties to the two selvage harnesses omitted, and two additional treadles tied one to harness six and one to harness seven. In weaving on this tie-up it would be necessary to use both feet—one on the pattern treadle and one on the selvage treadle. In the same way the tie-up for treading (b) could be made to nine treadles—the first seven as shown on the draft, with the ties to the two back harnesses omitted, and two selvage treadles tied one to each of these back harnesses.

I use the two selvage harnesses to carry only the selvage threads for each edge of the web because it is difficult to make a good selvage in this weave in any other way. But these harnesses are not necessary to the weave and may be omitted if one chooses. In this case, of course, only five treadles for (a) and seven treadles for (b) are necessary. Special care must be taken with the edges. The treadles, of course, are to be woven in succession, one weft-shot on each treadle, and repeat. There is no tabby in this weave.

For tweeds the same yarn—a single-twist wool yarn—should be used for both warp and weft. These yarns differ somewhat in grist, but a warp-setting of 15 to the inch is satisfactory for all but very fine or very coarse yarns of this type. Exactness of setting is not as important for wool as for linen, because wool shrinks and fills up so much in the finishing process. A loosely woven fabric shrinks much more than a closely woven one, and a fabric of the same materials will, after washing, be of about the same texture whether the warp is set 14, 15, or 16 to the inch.

Warp and weft may be the same color, or different in color; “shepherd’s check” and plaid effects are all used for tweeds. A livelier fabric, however, results from using warp and weft different in color than from the use of a single shade for all yarns.

Commercial tweeds are made with yarns twisted in opposite directions for warp and weft, and this practice results in a smoother fabric than one in which all the yarns are either warp-twist or weft-twist. But as tweed is by nature a rough fabric, this makes little practical difference, and the hand-weaver often uses yarns all twisted the same way.

For a plain tabby fabric in hard-twisted worsted yarns, however, it is important to have warp and weft opposite in twist, unless one happens to like the “crêpe” effect that results from failing to follow this practice. For a lightly made fabric for dresses the crêpiness is not, in my opinion, objectionable, but for a closely woven suiting it is not attractive.

For a closely woven light-weight suiting in tabby weave my favorite yarn is Fabri, set at 30 ends to the inch. A setting in this yarn of 24 ends to the inch gives a lighter and softer fabric, suitable for dresses, and still with enough substance to have excellent wearing qualities. A setting of 20 to the inch is sometimes used, but this appears to me somewhat too open, even though the greater shrinkage tends to correct the fault. For a lighter weight fabric it is better to use a finer yarn.

Bernat’s “Fabricspun” yarn makes an excellent suiting in tabby weave, at a setting of 22 ends to the inch. Shetland yarn when used for warp is good at a setting of 15 or 16 to the inch.

For an extremely beautiful fine, light worsted fabric, with body enough to wear well, choose Bernat’s “Afghan” yarn, the warp set at 36 ends to the inch. A setting of 30 to the inch is also practical, and makes a soft and filmy fabric for summer dresses. The yarn, though fine and not hard-twisted, is strong and gives little trouble on the loom if the batten is used with discretion, but treatment with a light solution of warp-dressing makes it more manageable.

In a general way, any soft, fuzzy, weak or refractory warp behaves better if dressed, and by the use of warp-dressing many beautiful materials can be used successfully for warp that would be impossible without this treatment.

All-wool baby blankets and couch blankets are often made of Germantown yarn. For these pieces set the warp at 10 to the inch and beat lightly. Good weaves for the purpose are any of the linen weaves—“Ms and Os” and the Bronson weave are perhaps the best four-harness weaves to use. The double-face twill is excellent for all-wool blankets whether in fine or coarse yarns, but requires more than four harnesses, of course.

All the all-wool fabrics described are fifty-fifty fabrics, and much care should be taken in weaving to put in exactly the same number of weft-shots to the inch as there are warp-ends to the inch in the setting. A slight allowance should, however, be made to compensate the tension of the warp. That is to say, one actually weaves somewhat fewer weft-shots than would be indicated. The allowance to make depends on the closeness of the weave and on the stretch given the warp. In a general way, a wool warp should be woven at as slight a tension as possible, but, to make sure of the number of weft-shots, let off the tension and allow the warp to hang slack for a little while till the stretch has gone out of it. Then count the weft-shots in your weaving and you can judge whether you are beating too close or not close enough.

A wool warp—especially if made of soft yarns—should be woven off as rapidly as possible, and when the loom is left overnight or even for a few hours, the tension on the warp-beam should be released. Soft yarns pull apart if left at a stretch, and even when this does not happen much of the elasticity and “life” is taken out of them.

All-wool fabrics require thorough washing to give them finish, just as linens do. This applies to the finest and filmiest as well as to the sturdier fabrics, with the possible exception of the blankets in Germantown yarn.

There are, of course, many ways in which two kinds of yarn can be combined with good results. Many of the new and interesting “nub” and “flake” yarns are unsuitable for warp and should be woven over a warp of some other material. Fabri makes an excellent warp for many of these yarns. For instance, Fabri set at 24 to the inch woven in Bernat’s “Lorneau” makes a very beautiful fabric. The “nub” homespun is probably best over a plain homespun. Fabri, set at 30 ends to the inch and threaded double through the heddles, makes an excellent warp for a coat-fabric woven with a Shetland yarn for weft. Space is lacking to mention more of these combinations, but perhaps the notes supplied will prove of assistance, as warps of similar grist will usually work well at the settings suggested for the yarns mentioned.