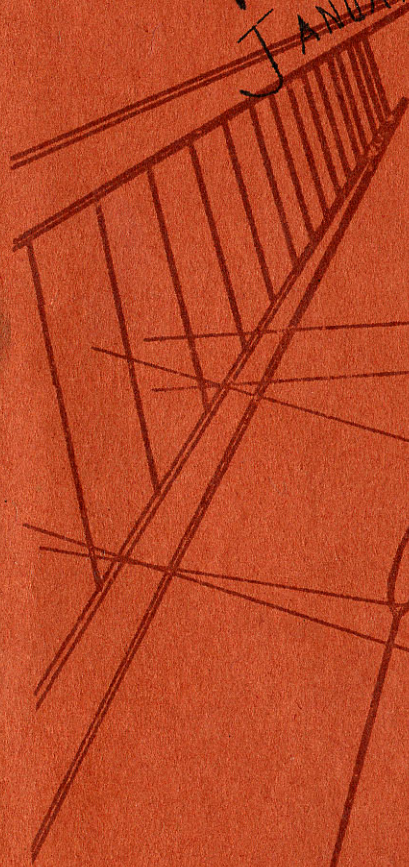
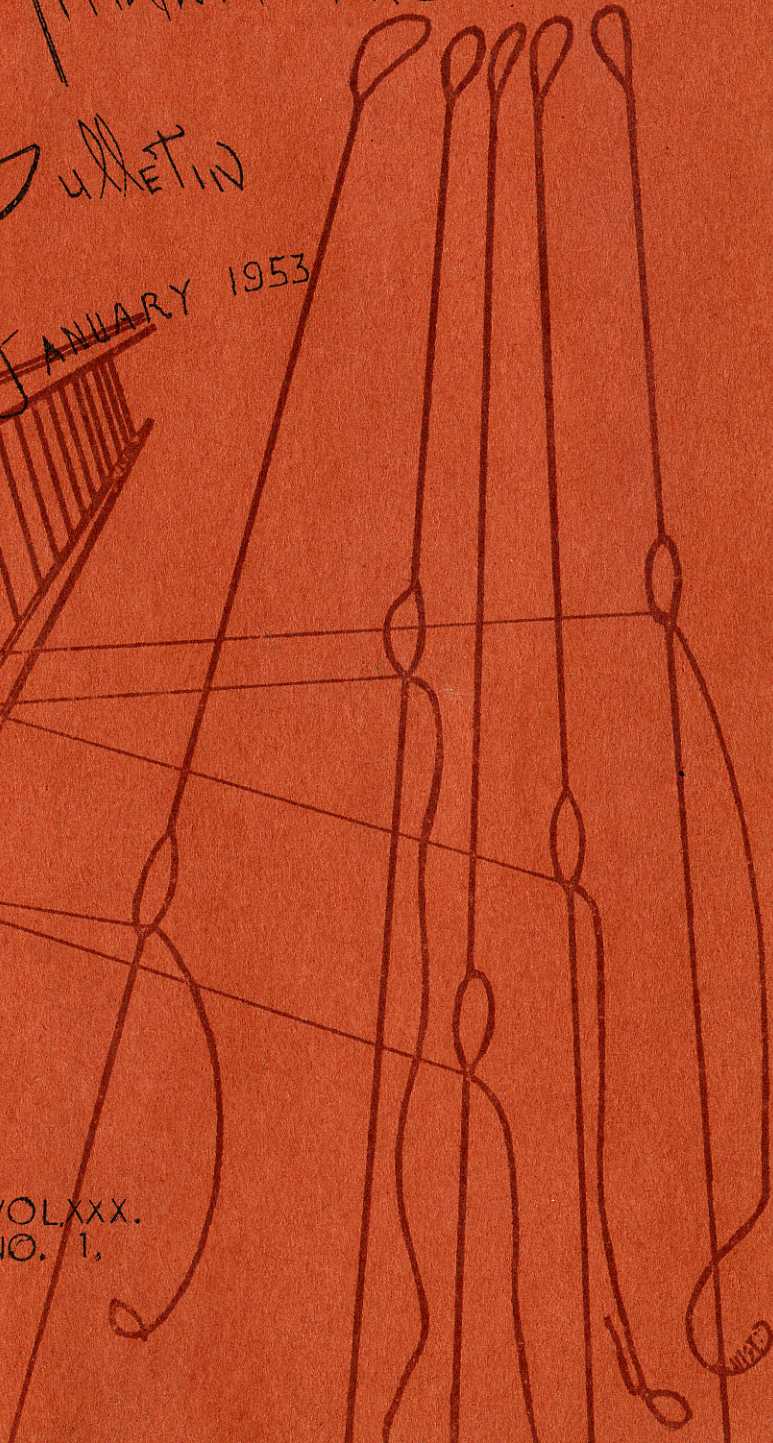


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The COMBINED WEAVES

The Combined weaves are those which utilize two basic techniques in the same fabric to give a textile with two differing texture qualities. Most Combined weaves employ two single-shuttle, balanced weaves, the most commonly used pairs of weaves being tabby-and-basket, tabby-and-twill, twill-and-basket. There are two ways of arranging the combinations, the simpler way being to thread the two techniques alternately so that they weave in warp stripes, each one in its own threaded area. The more complicated system is the threading of each technique so that the two may be woven in alternating squares or oblongs, one replacing the other according to the weaver's wishes. This latter method requires more harnesses than does the former.

The Combined weaves are useful in clothing fabrics, particularly for sporty tweeds in which strong texture contrasts are desired. The weaves which will produce alternating squares, or squares of one texture surrounded by the other texture, are best for this purpose. The texture stripe fabrics for clothing are best if woven in fine, closely set material. These weaves are excellent for baby blankets and for shawls and stoles, as the closely woven areas give body to the fabric, while the more loosely woven ones give good draping quality. This makes them good drapery fabrics when woven in stripes, in cotton, linen or other drapery material.

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If carefully planned (well sampled in advance) they can make interesting upholstery.

The drafts given for the Combined weaves are to be interpreted as "unit" drafts, and each unit (A and B) repeated as desired. The repeats may be all the same width, or they may be of varying widths, according to the design the weaver prefers.

Basket-and-twill, as given at #1, may be woven on 4 harnesses. The standard twill tie-up is used and the treadling order is 1, 2, 3, 4, repeated. The same effect is gained if the B unit is threaded to 2,2, 4,4, instead of 1,1, 3,3, with the same treadle order.

Basket-and-tabby are combined in draft #2, and this weave requires the special tie-up given at #3. The treadling again is 1, 2, 3, 4, repeated. If the standard tie-up is used treadle: a, 2, 4, b, repeated

The weaving of twill-and-tabby stripes requires a 6-harness threading, as given at #4, since the two must be threaded individually. The tie-up which lets these two weave simultaneously is given at #5, and the treadling order again is 1, 2, 3, 4, repeated. This set-up has the advantage that tabby may be woven across the entire warp on the a and b treadles, so squares of twill may be surrounded on four sides with tabby. This may be woven as tabby-and-basket on harness combinations: 1-2-5, 1-2-6, 3-4-5, 3-4-6.

Twill-and-basket squares, which enable the weaver to produce either twill or basket in both positions, require 8 harnesses. The draft is given at #6 and the full tie-up at #7. Four different arrangements are shown in the tie-up: the A units woven as twill with the B units as basket, the A units as basket with the B units as twill, both units as twill, or both as tabby. To weave both units as basket simultaneously

only two treadles are required, the first tied to 1-2-5-6 and the second tied to 3-4-7-8, two shots each.

The identical threading, as shown at #8, is used for weaving Twill and Tabby squares. The four tie-up groups shown at #9 produce the two arrangements of twill-and-tabby, all twill, and all tabby. (This draft, by the way, is that extremely useful one which is used for False Damask, for patterned Double-faced Twills, for pattern Double Weave and, if the two sets of 4-harness twills are tied to weave identically may be used for any variation of 4-harness Twill, 4-harness Double Weave or double width cloth, or tabby.)

TENSION PROBLEMS in Combined Weaves

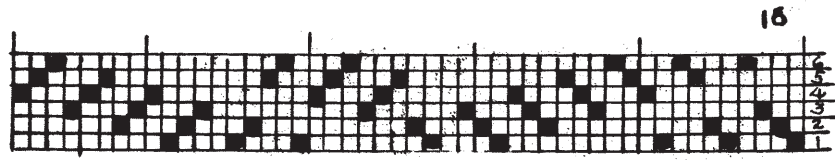
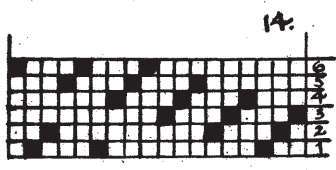
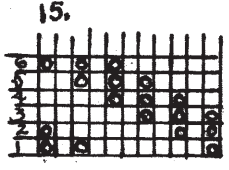
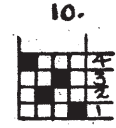
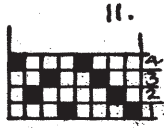
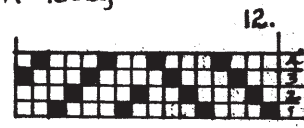
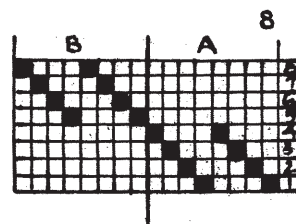
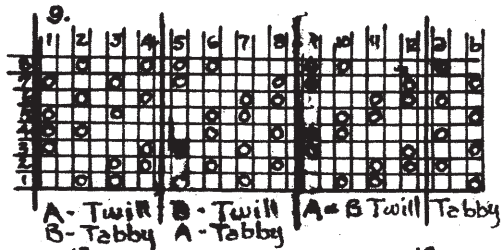
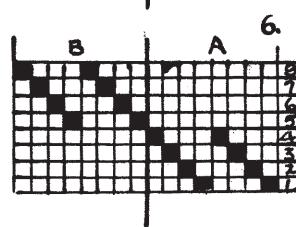
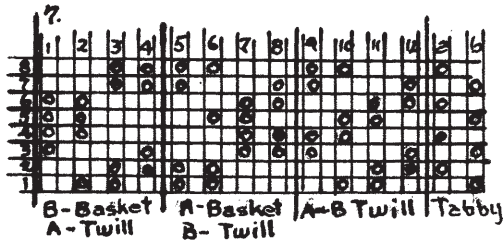
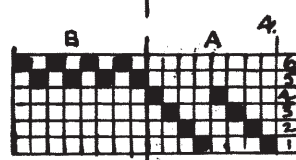
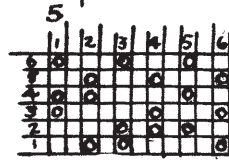
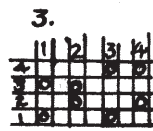
A technical problem which must be met in the combining of any two of the three weaves, tabby, twill or basket, is that of warp take-up. There is severe warp take-up and weft take-up in a tabby weave since the alternation of one thread up and one thread down in both warp and weft is maintained throughout. With the Twill weave in which there are two threads up and two down throughout, the take-up in warp and weft is greatly reduced. This take-up is reduced slightly more in the Basket weave unless the warp is very closely set. This problem of different warp-take-up must be met in planning any Combined weave project. If the second type of threading is employed for alternating squares of each texture, and an equal amount is woven on each texture within each area of the fabric, the problem may be overlooked because the take-up in one vertical area will compensate that in the adjacent one. But if the threading for stripes is made, or simply stripes are woven on the threading for squares, in tabby-and-basket or in tabby-and-twill, a notable sag in tension in the twill or basket areas occurs after only a few inches have been woven. This loss of tension will increase

as the weaving progresses until weaving becomes impossible.

There are several ways to handle this take-up differential. The simplest is through the use of a very elastic warp material. Wool yarns being the most elastic of all fibers make the most satisfactory of warps for Combined weave stripes. The natural elasticity of the yarn will take care of the take-up for at least several yards, but on a long warp it will be necessary to cut and re-tension the warp occasionally. Some cotton warps, particularly unmercerized cottons, have sufficient elasticity that the yarn handles the take-up if the length of the woven piece is not too great. No dogmatic statements may be made regarding this as different thread weights and warp settings partly control the take-up, so the weaver must follow the dictates of his own warp. Linen is practically lacking in elasticity and the warp sag is noticeable after only a few inches, and unweavable very soon unless some artificial means is used to control it.

The best way to handle the uneven take-up for an inelastic warp, and also if long yardages are to be woven on any warp, is to use two warp beams. Beam all the warp which is to be threaded to the tighter weave on the loom beam which carries the brake, and the looser weave on the second beam. Then when the slightest reduction of tension in the twill or basket areas is detected, the tension on the tabby area may be released to compensate this.

The weaver who has only one warp beam may devise a make-shift tensioner. As soon as groups of warp ends begin to sag, raise the harnesses which control them and slip a leash stick under the offending threads, back of the harnesses. Push this leash stick to the back beam and tie it in place. It will compensate the warp sag for further weaving. When the warp sags again, insert a dowel at the back beam,



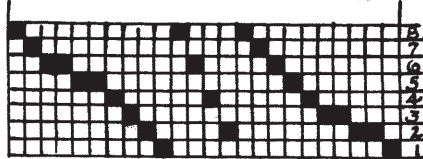
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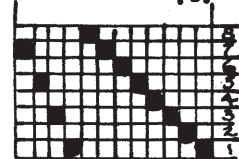
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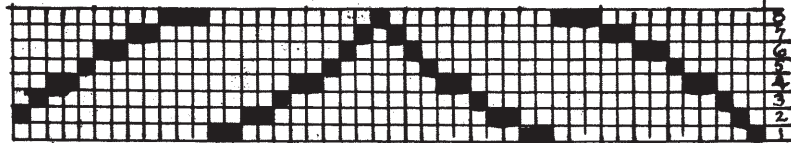
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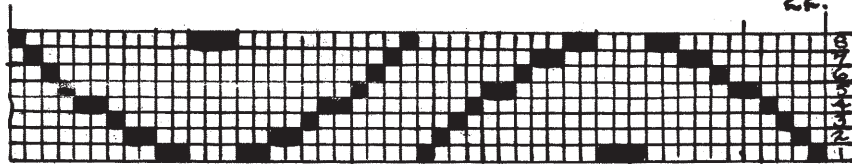
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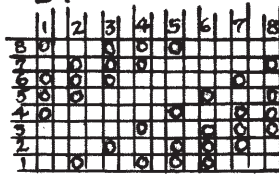
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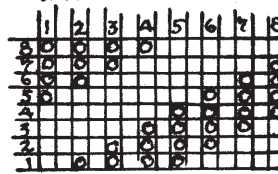
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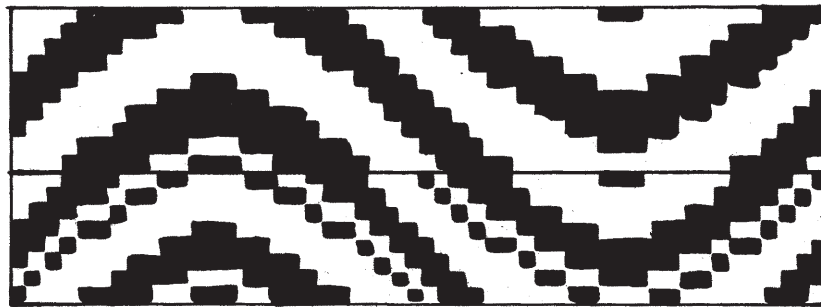
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along with the leash stick. Further dowels may be added as the weaving progresses, until as many as possible are incorporated. However, if a considerable yardage is to be woven, it is wise to slip the first dowel around the back beam and the warp beam so that it hangs under the warp beam. Then attach it with double cords and snitch knots at each end to the stretcher at the back of the loom base. Then these knots may be snitched up each time the warp stripes loosen, to give even tension. Or it is often possible to develop a system of hanging weights onto this dowel (use a 1" dowel or a broom stick) sufficient to give normal warp tension automatically. Any of these artificial means for securing even warp tension is satisfactory for only limited yardages. When the dowel which holds the looser warp sections reaches the base of the loom and no further tensioning is possible, the cloth must be cut off and the entire warp re-tensioned. Before cutting off an artificially tensioned warp, be sure to remove the tensioner devices or the tensioned warp ends will pull through the reed and heddles when tension is released by cutting. (This last bit of advice is based on painful experience, and should be well heeded.)

BROKEN TWILLS

Broken Twill threadings are those in which certain harnesses are dropped from the regular Twill threading at specific intervals. These Broken Twill weaves will not, in most cases, produce a tabby, as will all straight twills. The threadings are used to reduce the diagonal effect of a straight twill fabric, to increase the wearing quality of a herringbone fabric, or to give unusual texture and pattern interest in multiple-harness interpretations.

The smallest Broken Twill threading is made by reversing the positions of the second and third

threads in the straight 4-harness Twill draft, giving the 1,3,2,4 order of threading as shown at #10. This draft is commonly woven on the Standard tie-up in the usual twill order of treadles 1,2,3,4 repeated. Texture variations may be made by weaving it in point order: 1,2,3,4,3,2, repeated, or by breaking the treadling order by weaving as threaded (1,3,2,4) or by treadling a broken point order (1,2,3,1,4,3, or 1,2,3,4, 2,1,4,3). For this threading the two Basket weave combinations (opposite pairs of threads up and down) are produced on the usual tabby combinations of harnesses 1-3, 2-4, while tabby is woven on treadles 1 and 3 alternately (1-2 and 3-4). For straight twill use the harness order: 1-3, 2-3, 2-4, 4-1.

Draft #11 shows a broken texture of 6 ends in straight twill order followed by a 2-thread twill break. This threading, whether woven in the straight twill combinations or in a fancy arrangement will not produce plain twill or tabby.

The Dornik form of the Herringbone (or Extended Point Twill) is shown at #12. The breadth of the twill sections in either the forward or the reverse direction may be increased or decreased simply by adding or subtracting twill combinations from the draft (1,2,3,4, or 4,3,2,1). It will be noticed that the only change from the plain Herringbone to the Dornik Herringbone is the removal of one warp thread at the point where the reverse in direction is made. The reason for this lies not in the design but rather in the improved wearing quality of the fabric produced. In the case of the plain Point Twill, each fourth shot at the reverse line floats over three warp ends, with a consequent weakening of the fabric. By simply removing the warp end involved in this 3-thread float, this weakening is obviated. However, this procedure eliminates the possibility of weaving tabby on such a threading, as

two threads weave together at each reverse point when the tabby treadles are used alternately.

Draft #13 is merely a variation of #10, made by adding a reverse pair of threads.

Intricate and interesting pattern and texture variations may be made in Broken Twills threaded on 6 or more harnesses. Drafts #14 and #16 show two possible 6-harness variations, one with a straight forward succession, the other arranged with a return. The tie-up for both is given at #15, though fancy twill tie-ups may also be used. The twills in these weaves progress in rhythms and are consequently better classified under the Rhythmic Weaves, so they are not extensively treated here.

CURVED or UNDULATING TWILLS

These irregular twills are known by various names and those weavers who are familiar with Mrs Atwater's former Bulletins will know them as MODIFIED TWILLS. For these, the twill draft is modified so that the twill line weaves in curving undulations instead of at a straight 45 degree diagonal. Although simple Curved Twills may be woven on four harnesses, as shown at drafts #17 and #18, (which are woven on the Standard tie-up) the more striking figures are woven on 6, 8 or more harnesses. The system by which the twill line is curved is simple and it is an easy matter for the weaver to devise Curved Twill drafts. Start with a straight Twill draft. If one wishes to flatten and thicken the twill line, thread two threads side by side on the same harness for several ends. This effect may be exaggerated by threading 3 threads on the same harness, but this practice is not advisable for very many repeats as it reduces the quality of the fabric. To make the twill line steep and thin,

simply skip alternate threads of the twill draft for the desired distance. This effect is exaggerated (for drafts of 8 or more harnesses) by skipping two harnesses between each thread. Thus, for an 8-harness draft one may start with a straight twill succession of 1,2,3,4,5,6,7,8; then curve the line upward with 1,3,5,7,1,3,5,7; make it steeper with 1,4,7,3,5,8,3,6; return it to normal with 1,2,3,4; then flatten it with 5,5,6,6,7,7,8,8. (This basic arrangement is used for the Curved Twill PORTFOLIO sample; draft #2 is the second sample.)

Drafts #19, #20, #21, #22 all show variations of Curved Twills, some designed with returns and some without. The usual tie-up for the Curved Twills is the straight, balanced one, as given at #23, for the twill treading order 1,2,3,4,5,6,7,8. But the twill may be shaded, as shown at #24, to give added interest, reduce the length of the floats, and add strength to the fabric. The development at #25 shows draft #22 with tie-up #23 at the top and tie-up #24 at the bottom.

The Curved Twills are seldom woven as balanced fabrics and are rarely used in clothing textiles. The long weft floats and the irregularity of the interweaving make the fabrics difficult to tailor, particularly since the warp is much more closely interwoven than the weft. These very qualities, however, make these twills highly desirable for drapery. Strong and interesting texture effects are gained when a smooth thread is used for the warp and a heavier thread of quite different texture for weft. The novelties -- cotton, rayon, metallic twists, and combinations -- make excellent weft. Color contrasts between warp and weft lead to good effects, but as the nature of the varying interweaving automatically changes the color values from one area to another, warp color stripes are seldom good unless carefully coordinated with the threading.

The Best in Weaving

1953

