

The Weaver's Journal

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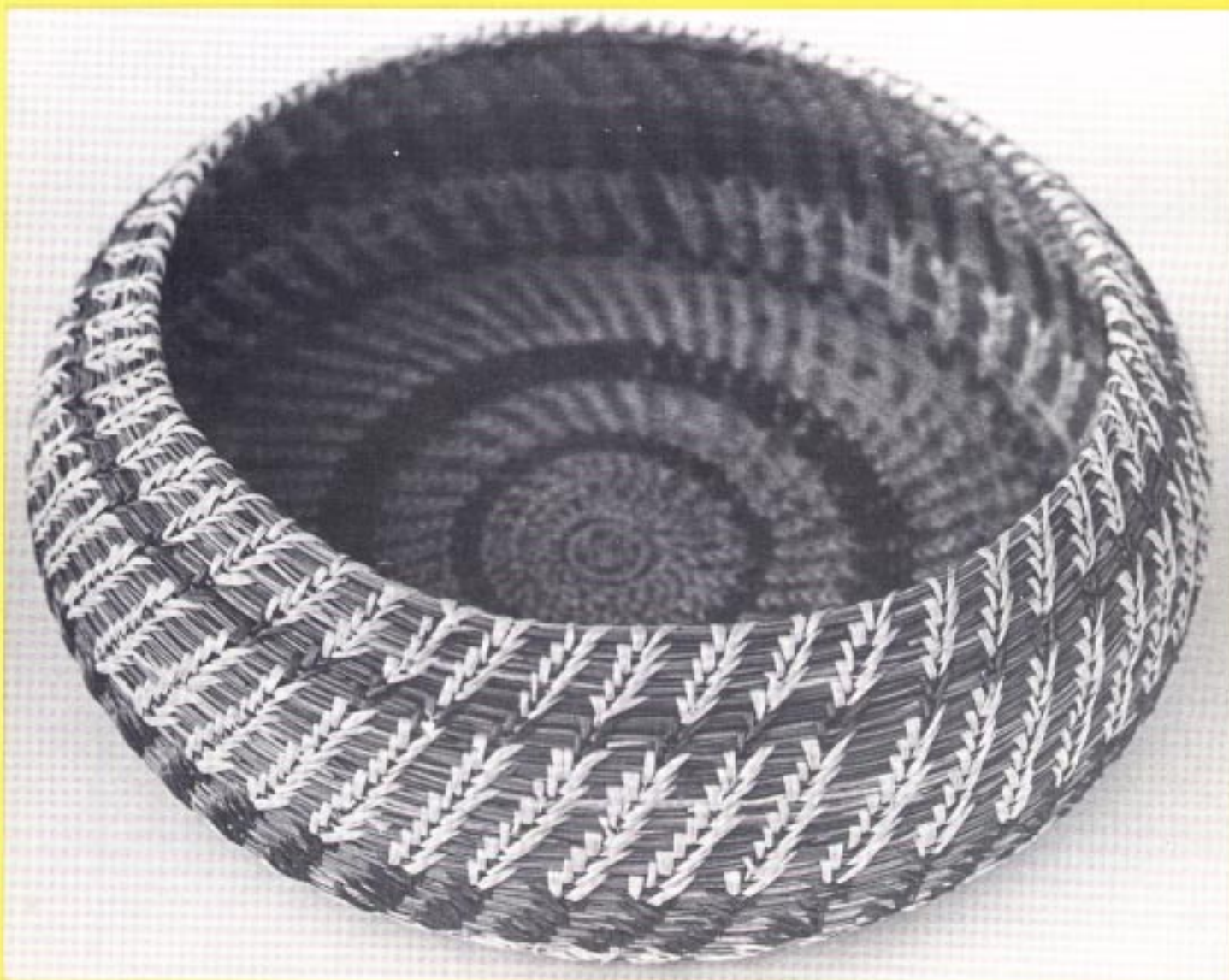
VOLUME V

NUMBER 1

ISSUE 17

SUMMER 1980

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Quarterly Journal for Textile Craftspeople
Volume V, Number 1, Issue 17 Summer, 1980

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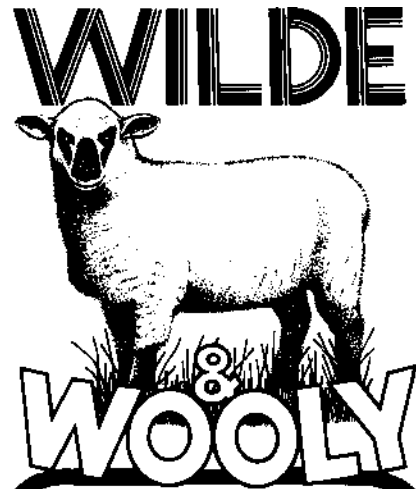
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



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Letter from the Editor

With this issue we are starting our fifth year of publishing *The Weaver's Journal*. As each year rolls by, we do a great deal of reevaluating the content and the appearance of the magazine in order to meet the needs of all people working with fiber, especially the loom weavers.

We have been pleased with the quality and the variety of articles that have been contributed by our readers. Many are textile crafts people who have had extensive training abroad; some are weavers who live outside the U.S. *The Weaver's Journal* hopes to keep you abreast of the textile techniques used all over the world. We want to thank all our contributors, all the weavers who have been sharing their ideas with us and all our readers who write to us with comments, questions and suggestions.

The appearance of *The Weaver's Journal* has also been changing over the years and will change more in the future. The white paper seems to be popular and should be ideal for the reproduction of photography. We have still to work harder with the printers to improve the tonal range of our photos.

Each one of our articles is well illustrated with line drawings, graphs and photos. We will continue this and do it better all the time.

We thank our subscribers for their support and hope that you will tell your weaving friends about *The Weaver's Journal*.

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Threading

Profile Draft

Appearance of Rug

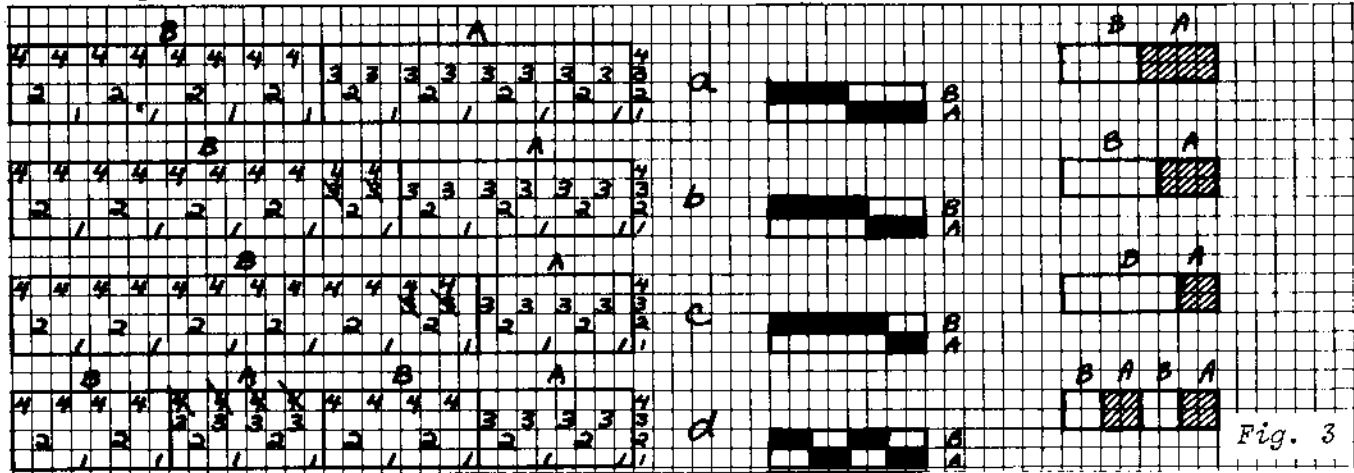


Fig. 3

To weave section IV:

- Lift 1 weave black
- Lift H1 + H3 + H4 weave white
- Lift H2 weave black
- Lift H2 + H3 + H4 weave white

To weave section V:

- Lift H1 weave white
- Lift H1 + H3 + H4 weave black
- Lift H2 weave white
- Lift H2 + H3 + H4 weave black

H1 + H3	weave white
H1 + H4	weave black
H2 + H3	weave white
H2 + H4	weave black

repeat

One way of performing the changes shown in Fig. 3 is to put all the pattern warp threads (those on Hs 3 and 4) on repair heddles.

A metal repair heddle has open slots at both ends that can be slipped off and on to the heddle bars.

A string repair heddle can be tied with a knot to the heddle bars.

In order to go from draft a to draft b, slip two heddles off the heddle bars of H3 and secure them on H4.

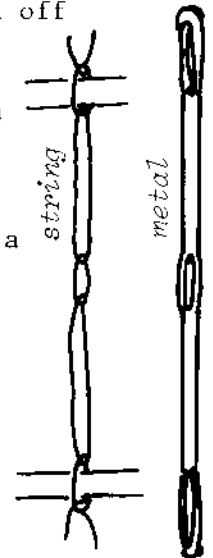


Fig. 4

Now let's take a closer look at the edge between block A and block B of section I. The 4-pick treading sequence of section I will be repeated over and over again.

Fig. 3a is the threading, profile draft and the appearance of the rug at the edge between block A and block B.

Fig. 3b: Two warp threads have been removed from H3 and put on H4. The A block is now one unit smaller and the appearance of the rug has changed.

Fig. 3c: Two other warp threads have been switched from H3 to H4.

Fig. 3d: Four warp threads have been switched from H4 to H3. A new A block has been created within the old B block.

Note that the shaft switching can only be done at the end of a *complete* sequence of the 4 weft picks shown:

Practical suggestions for shaft switching.

1. Thread the loom so that the pattern harnesses (H3 and H4) are closest to you. See Fig. 5. Balance the threading with a warp thread on H1.
2. The outer warp ends (on H1) are threefold through the heddle and put into a 5 dent reed as shown in Fig. 6. No floating selvedge is required but the two

The s/s device can also be made with string loops which are threaded through the eyes of the heddles on H4 and H3, around the floating pattern warp thread and tied to the harness frames. (See Fig. 12).

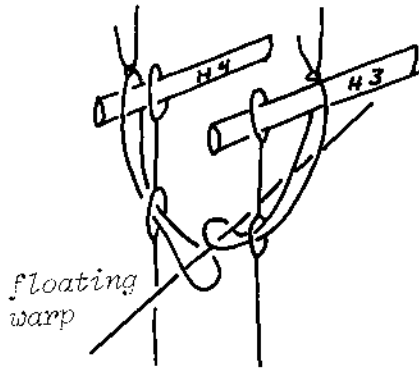
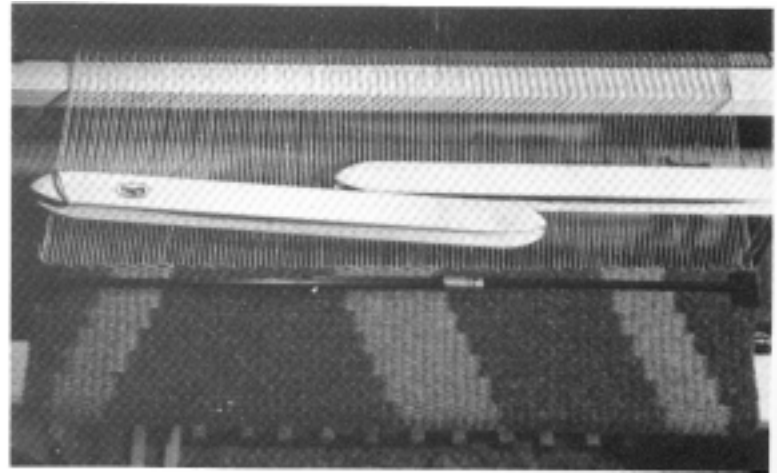


Fig. 12



taut. Then slide the control tie along the strings until it is snug on top of the other harness.

If the string is pulled tight around the harness frame 3 while the string around the harness frame 4 is released, the warp thread will move close to the eye of the heddle on H3 and move as if it were threaded on H3. The tightening and releasing of the strings can be done with slipknots or with the device described by Jane Busse in the April, 1980 issue of *The Weaver's Journal* page 13. (See Fig. 13).

A cotton cord about 38" (96 cm) long is passed through the eyes of the pattern heddles, around the floating warp thread and over the harness frames as shown in Fig. 13. These are the tie-in strings of the s/s devices.

5. Select a design that is appropriate for the technique.

Designs with horizontal stripes as in Fig. 14a require a lot of shaft switching and are to be avoided in favor of designs with vertical stripes. Designs with diagonals are well-suited for s/s and are easy to keep track of. (See Fig. 14b). In Summer and Winter there are two pattern threads per unit. They do not have to be shifted in pairs. Fig. 14c shows a design in which only half of the Summer and Winter unit is shifted at any one time.

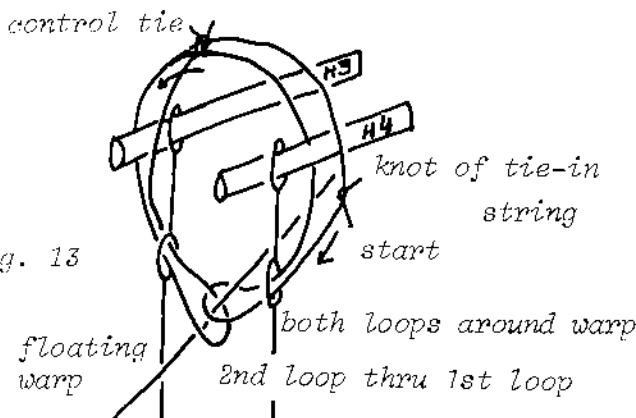
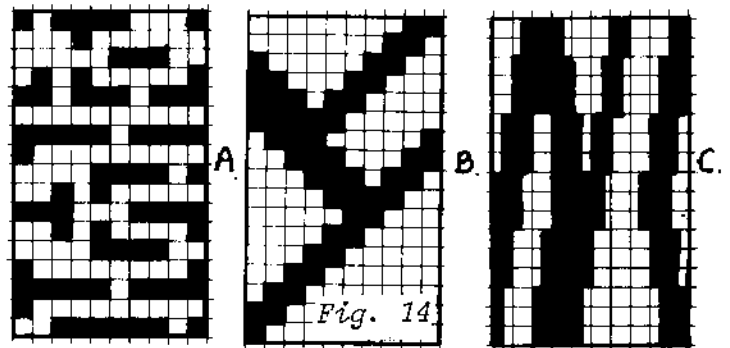


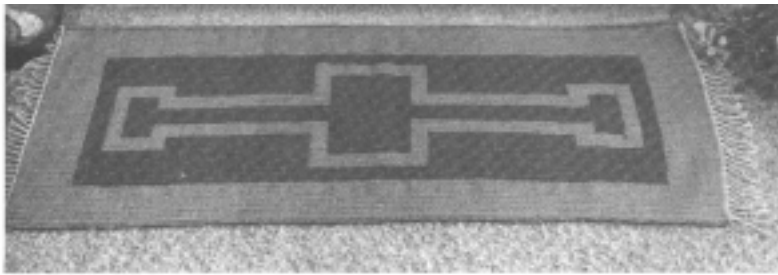
Fig. 13



Some designs lend themselves well to an arrangement in vertical bands. In this case, only the pattern warp threads of these bands need to be set up for s/s while the others could be on H3 or on H4 or in a block arrangement.

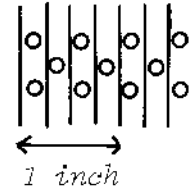
The control tie is a short strand of woolen yarn which is wrapped firmly several times around both strands of the tie-in which lie on top of the harness frames and is then tied. Start out by putting the control tie of the shaft switch device snug against the top of one of the pattern harnesses. To shift shafts, pull the two strings held by the control tie so they are

6. To make good selvages, start the two wefts from opposite sides. The color that weaves the face at the selvedge should be kept on top and never crossed with the reverse color. In so doing the face color will cover the reverse color at the selvedge.



3-end draft S/S rug by Maggie Stineman

The fabric structure shows that the weft floats only over 2 warp ends before it is tied down, therefore the sett does not have to be as close as for Summer and Winter. Peter Collingwood alternates a double warp thread with a single through-out the rug. For a rug sett at 4 working epi, he has thus to measure 6 threads per inch.



7. Consider the use of a 3-end draft versus a 4-end draft.

Summer and Winter has two tie-down harnesses which carry the warp that ties down the pattern floats. The weft floats over 3 warp threads before it is tied down as shown in Fig. 15.



Fig. 15

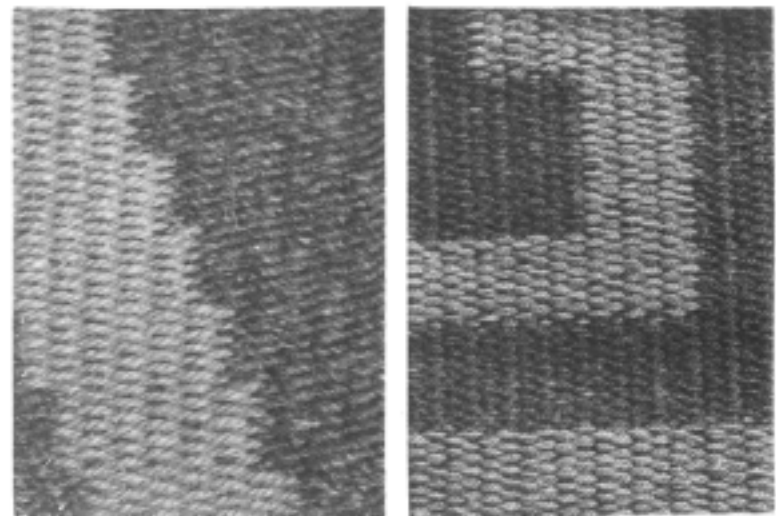
A 40" (100 cm) 3-end draft rug at 4 epi (16/10 cm) requires 160 ends. Every third pattern warp is a pattern warp. Therefore, if the s/s design is to be carried out across the entire rug, the rug would require 53 s/s devices, about half the amount for Summer and Winter.

Because a Summer and Winter unit has 4 warp threads (2 pattern warp threads and 2 tie-down warp threads) this threading is called a two-tie four-end draft.

The advantage of the Summer and Winter (4-end draft) is that the 3-thread float covers the specks of the reverse color on the surface and one can create designs of bold contrasting colors. With the 3-end draft, the 2-thread float does not cover as well and the opposite color shows through.

A 40" (100 cm) Summer and Winter rug sett at 5 epi (20/10 cm) requires 200 ends. Every other end is a pattern warp thread. Therefore, if the s/s design is to be across the entire rug, this project would require 100 s/s devices.

Peter Collingwood prefers the two-tie three-end draft for s/s (See Fig. 16).



4-end draft 3-end draft
details of S/S rugs

Pattern Harnesses
Tie-down Harnesses

repeat
at lib.
repeat
at lib.
balance

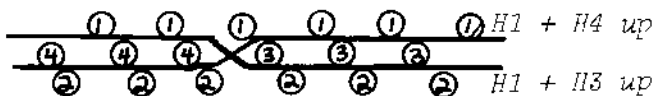


Fig. 16

By carefully selecting and blending the two colors of the rug, this can be turned into an advantage because the color blocks may gain more color interest and more depth by the fact that one color shows through the other.

Pine Needle Basketry

by June Clark
Photography by Helen Lou Running

Basketry is the oldest form of art. Pine needle basketry is a form of weaving that will inspire even the beginner to various forms of structural design. The pine needle basket is also considered to be the most delicate of all baskets in appearance and yet it can be a very strong and useful work of art.

To construct a pine needle basket the following materials are required:

WARP: Pine Needles 8 inches (20 cm) or more in length

WEFT: Any of the following:

Raffia a natural fiber
Swistraw a synthetic raffia
String hard twist only
Any other strong fiber suitable for sewing or wrapping

NEEDLE Curved upholstery needle is recommended, or Strong straight needle with large eye

SCISSORS

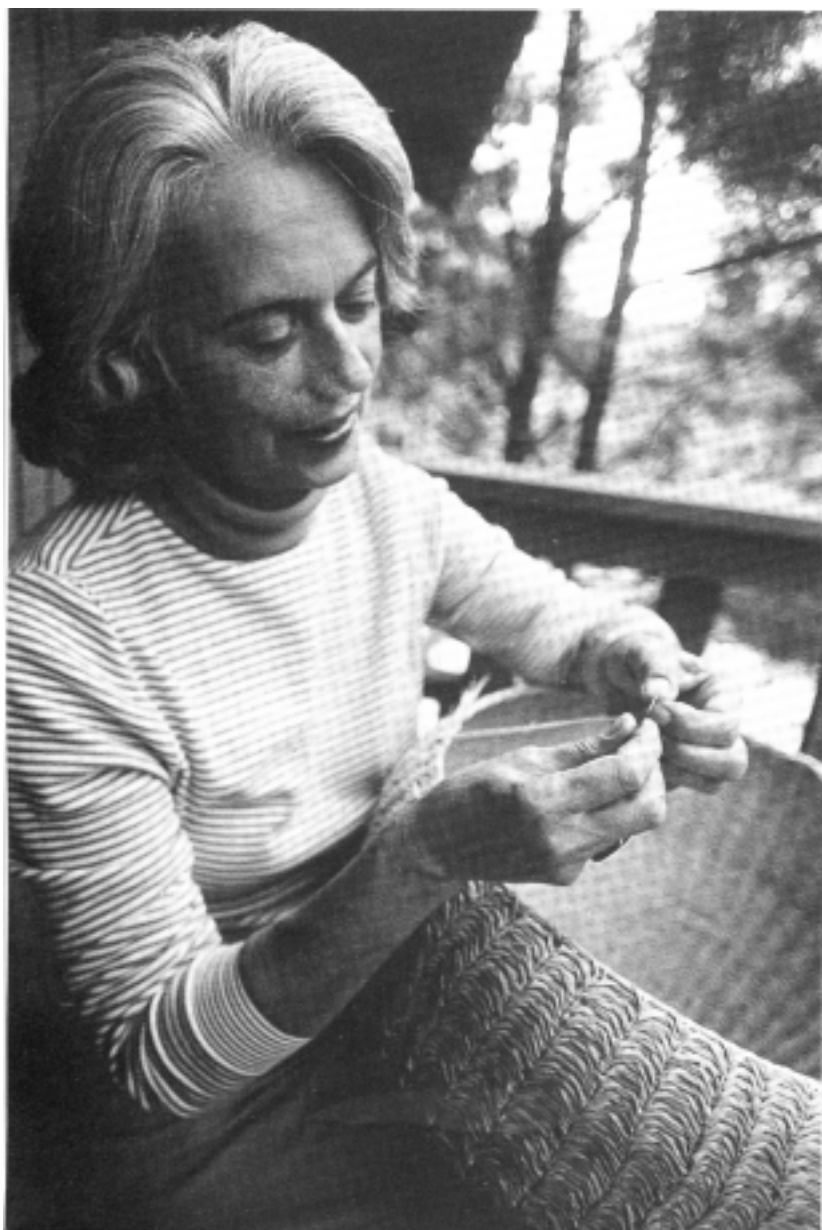
TAPE MEASURE

CONTAINER FOR WATER

GAGE A drinking straw is quite adequate - cut to 1" (25 mm)
Plastic tubing 1/4" (6.3 mm) in diameter cut to 1" in length

Gather needles in the late summer or fall when they are fresh and plentiful. A soft brown color will distinguish the fresh needle from the old. When picked up, the needle is usually ready to use. However, if it has been a wet season or you live in a humid climate, the needles will be damp. Spread them on a wire mesh and dry them for several days in a cool, dry area. After they are thoroughly dry, they can be stored in bundles for many months. Do not store the needles in plastic bags.

June Clark at work on a large basket using the "wing stitch"



If you would like to work with green needles, pick needles from the tree.

Choose only those needles that are long and strong. Take care not to damage the tree. Remove the needles from the branches, spread on wire mesh sparingly and store in a cool, DARK, dry place. Every day or two, turn the needles on the mesh to circulate the air around them. Allow needles to dry for approximately two months. They will cure slowly and you will have a lovely shade of sage green needles with which to work. To test, snap off the sheath end of a needle. If it snaps with a crisp snap, the needle is dry or cured.

Careful preparation of your needles will insure a clean, even basket. Prepare the needles for use by snipping off the sheath end. Look carefully at the needles. One side is rounded, shiny and smooth, the other side is flat and rough. When working with the needles, always try to keep the shiny side on the outside of the bundle.

Cleaning the pine needles is very important. Wipe each needle, sheath to pointed end, with a very damp paper towel. At this time, discard any broken, soft or short needles. Keep the ends of needles pointed in one direction. This will insure easier handling while working. After the needles have been cleaned, take a small handful, rinse under cold water, shake off excess, and wrap in dry paper toweling. Store in a plastic bag until ready for use. Do not prepare more needles than will be used in one or two days. Pine needles prepared in this way will be pliable but not soft. If the needle is too crisp, it will break. If it is too soft, it will swell; then, after drying, your basket will be loose and unpleasant.

Should the needles become crisp during the work period, redampen them.

To begin the basket, approximately 25 very soft needles will be needed. Rinse this group of needles under hot water, wrap in wet paper toweling and store in a plastic bag overnight. These very soft, pliable needles will be used only to start the basket.

Several materials can be used for the weft of the basket: (a) Raffia, from the Raffia Palm that grows on the Island of Madagascar off the coast of Africa; (b) Swistraw Ribbon, a synthetic raffia, does not have to be dampened as does raffia (however, Swistraw Ribbon cannot be pulled as firmly as the natural raffia and thus your basket may not be as firm); (c) ordinary twine or thread may also be used. The twine should have a very hard twist in order not to unravel.

You now have a bundle of very soft needles, several bundles of pliable needles, a container of water, raffia, curved needle, scissors, tape measure and gage. You are ready to begin your basket.

Put several strands of raffia in the water. Raffia is not always the same width or size. Split if necessary to obtain a consistent width. Always maintain the same width throughout the basket for evenness of stitches. Use a piece no longer than 18 inches as continual friction tends to ravel the raffia. Remove a strand from the water, squeeze out excess moisture. Thread curved needle. If necessary, cut the raffia to obtain a piece 18 inches (46 cm) in length. Place 8-10 very soft needles in the gage, pointed end to the right. Lay the end of the raffia strand along the bundle 1-1/2 inches (38 mm) from the tip of the needles. Begin wrapping at

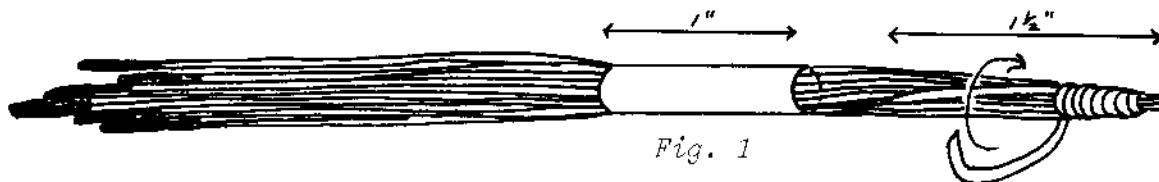
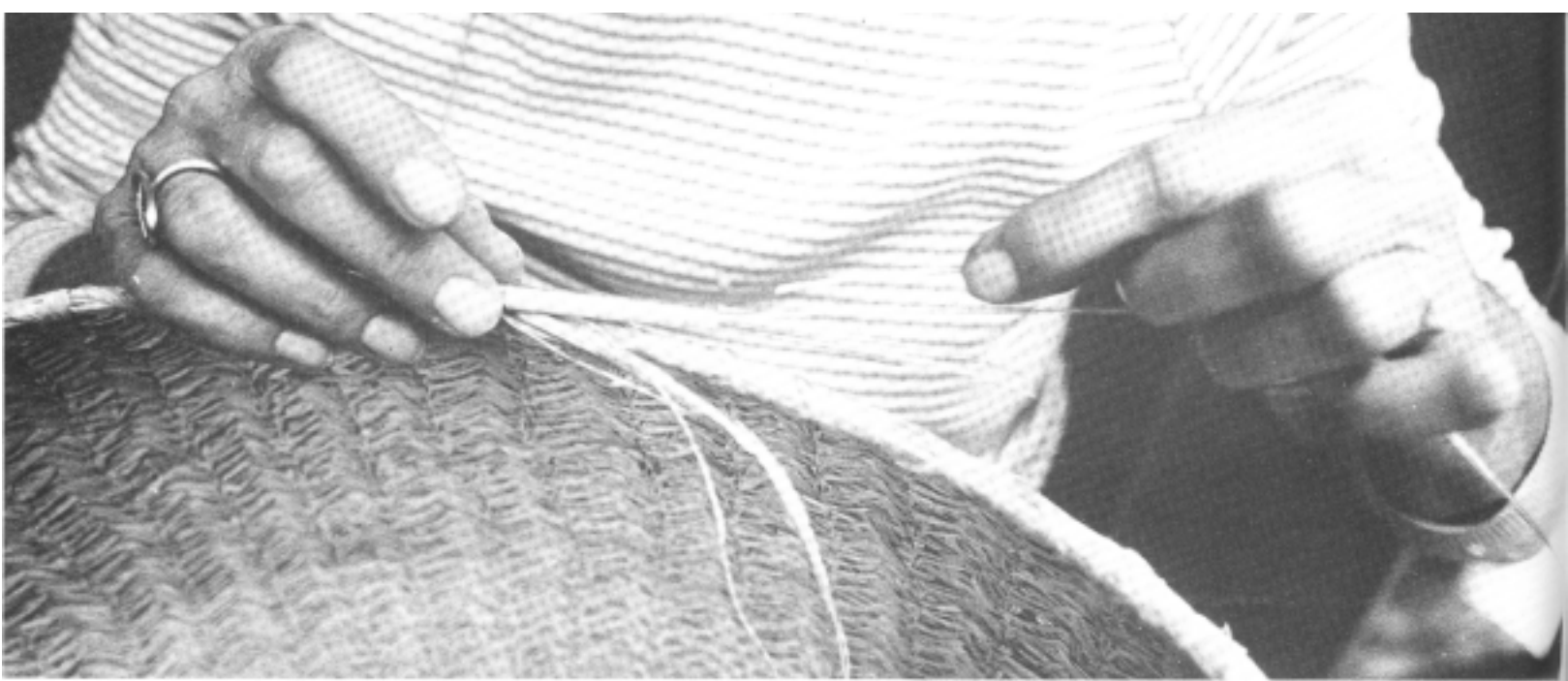


Fig. 1



Fig. 2



Author is filling the gage with pine needles.

the tip, back down the bundle covering the strand. Wrap firmly. When the strand end is reached, form the wrapped portion into a small, tight circle. Insert the threaded needle, from the back to the front, through the center of the circle pulling the raffia tight. Now work from right to left (Fig. 1 and Fig. 2).

Before continuing, please remember that the needle is used only to draw the raffia through the bundle. To pull the remainder of the strand through, grasp close to your work and pull gently but firmly until the stitch is completed. Use a strand of raffia only 18 inches (46 cm) in length. Every three to four stitches, move the needle along the strand to change the point of stress so as to prevent cutting the raffia at the needle eye. Fill the gage gradually, then keep it full at all times to insure that your basket will be even. The gage is filled by inserting the blunt end of the pine needles into the center of the bundle. Keep the shiny, smooth side of the needles on the outside of the bundle at all times. This will give a smooth appearance to the bundle. The very soft needles are to be used in the beginning only; thereafter use the pliable needles.

First Row:

Stitch through the center, from right to left, all the way around the circle

filling the gage gradually until full. The gage is always on the left. When the stitching is completed and the gage is full, your circle will be a small, tightly wrapped core and you are ready for the second row.

Second Row:

Make a complete round of stitches around the core, pressing the needle each time through the center. Space the stitches evenly. This is the *plain* stitch. It can be used throughout the basket.

Another technique used to begin a pine needle basket is covering a ring with a double buttonhole stitch. The ring can be wire, brass or plastic. The size depends upon the size of basket to be constructed.

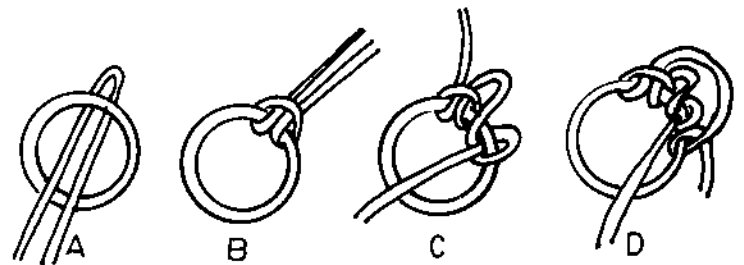


Fig. 3

Select a piece of raffia at least a yard (92 cm) long. Be sure it is even in width; dampen. Hold both ends together;

run your fingers down the strand until you reach the center loop. Holding the ring in your left hand, attach the loop to the ring with a larkshead knot, (Fig. 3A, B) and pull snug. Use one strand of raffia for the outer edge of the ring and the other strand for the inner edge of the ring. Pull the strand selected for the inner edge straight down, take the end around the ring to the right, come back through the ring, pull up next to the first stitch on the inner part of the ring (Fig. 3C). Taking the strand selected for the outer edge, bring the end through the ring on the right from back to front. Put the end of the strand around the ring and through the loop from front to back (Fig. 3D). Now, pull up tight. Position this stitch on the outer edge of the ring. Alternate these stitches, first inner edge then outer edge until the ring is completely covered.

When the ring is completely covered, thread the raffia of the inner ring into your needle. Fill in the center of the ring by stitching through the loops of the buttonhole stitch. Use any design preferred. A simple way of filling the center is to begin stitching through the opposite stitch across the ring, return to first stitch to the right of beginning, return to first stitch to left across the ring, continue until ring center is filled (Fig. 4). Weave into center several times to anchor the end, cut off excess raffia.

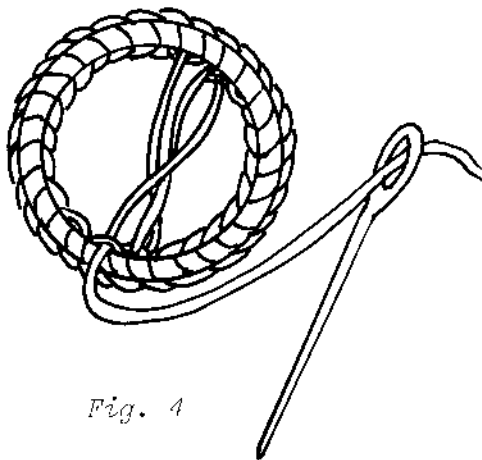
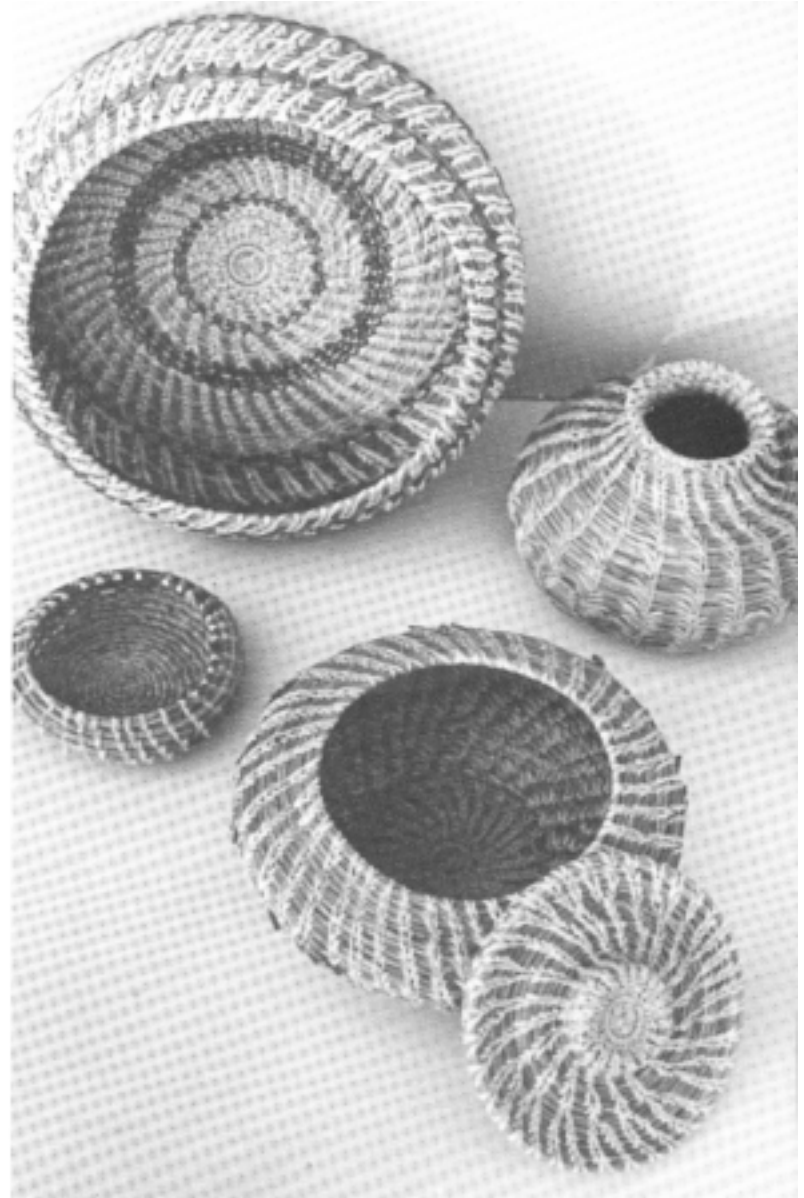


Fig. 4

To add pine needles to the ring, begin with several (5 or 6) very wet needles inserted in the gage. Thread the sewing needle with raffia strand from the outer edge. Dampen if necessary. Take one stitch through the first loop on the right



Collection of baskets showing several starting techniques and various pine needle basketry stitches.

to anchor the row. Lay the wet needles you have formed into a point, pointed end along the outer edge of the ring. Working from right to left fasten the needles to the outer edge of the ring by using a plain stitch around the needles and through the small loops formed by the buttonhole stitch. With one row completed, the gage should be full and any pattern stitch desired may now be used to complete the basket. Remember to add needles to the gage as you work around the ring.

FERNSTITCH:

Stitch through the bundle below, taking two stitches between each stitch of the second row. The first stitch leans

to the right, the second stitch leans to the left. This will form V's very close together. Complete row. Space evenly while making the V's. This is the beginning of the FERN stitch.

For the following rows stitch only between the V's of the previous row making a V within a V.

When four or five rows have been completed, the fern stitch should be clearly defined. Since you have spaced your stitches evenly in the beginning, you now have an expanding spiral of evenly spaced FERN stitches.

As the circle enlarges it will become necessary to add stitches. This is done by starting new stitches midway between the existing stitches. Do this when the space between stitches is 1/2 inch (12.7 mm). Spacing of more than 1/2 inch could result in a loose basket.

Start new pieces of raffia at the beginning of a stitch. Tie the new strand

to the old one very close to the base of the stitch. The second half of the stitch should cover the small knot made when joining the two pieces. The ends will be covered as you continue around the coil. Avoid joining strands at the same place as this added material will develop unevenness.

The FERN stitch can be used for the entire basket. However, to make a larger basket I recommend either of the two following stitches. Also, when making a larger basket, use a larger gage.

LEAF STITCH:

The sewing strand is inserted into the bundle as described for the FERN stitch. Then once again insert the strand into the same opening, carry it to the left to the next FERN stitch, continue around the coil. There will be a V, plus a longer strand to the left. Again, in the next row, insert the needle into the V below, complete row as described above.

WING STITCH:

Follow directions for the LEAF stitch. When one row is completed, reverse direction and pass back over the same row, left to right, inserting strand only once through base of each V, making wings at right of stitch. When back at starting point, reverse again and make another row of LEAF stitch, from right to left. Reverse at end of each round.

SHAPING BASKET:

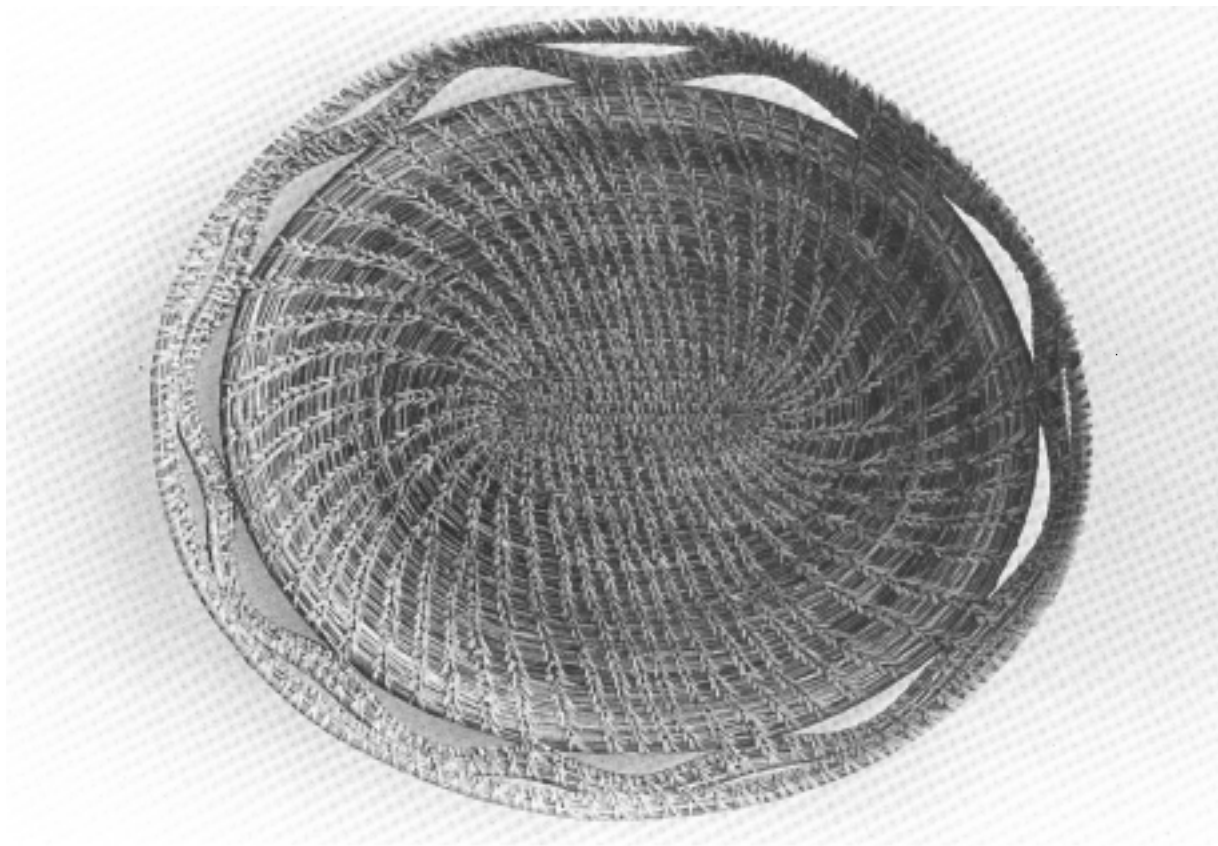
- STRAIGHT: Add new row precisely on top of row below.
- OUT: Add new row on top of row below but off center and out depending upon the angle desired.
- IN: Add new row on top of row below but toward center again depending upon the angle desired.

BINDING OFF:

When the desired size of the basket is reached, do not add needles to the gage. Continue along the final row until all the needles are covered. Fasten securely by



Lidded basket with FERN stitching.



Oval basket

carefully weaving the sewing strand on the inside of basket through several stitches. Cut the strand off close to the work.

OVAL BASKET:

Begin with very wet needles as for the round basket. Place the needles in the gage, lay a strand of raffia along the needles, wrap from the tip of needles down the bundle. The length of the wrapping will depend upon the shape and size of the basket. When the desired length is wrapped, bend the needles sharply for the turn and stitch with plain stitch through the core just completed. Stitch completely around the core, bending sharply at the second turn. Continue the basket with any stitch given here.

COVERS, LIDS OR TOPS:

The covers are made in the same way as the basket, developing knobs, shapes, etc. A loose lid is not pleasant or functional. Put a lip on the basket by adding two or three rows straight up. The cover is made to fit over the lip. The lip can also be made on the cover. In that case, the cover seats down into the opening of the basket.

To prevent the cover with the lip from slipping down into the opening of the basket, add one or two rows as follows: Place 8-10 pliable needles in the gage with the pattern stitch. Sew those pine needles onto the row where the lip turn was made. Fill gage gradually and complete one or two rounds. Bind off by reducing the number of needles in the gage completing the final round where the added rows were begun.

Use the tape measure frequently to keep the size of your basket as planned. Usually the cover that fits over the lid will be one row wider than the basket opening and the lid that fits inside the opening will be one row smaller. Measure carefully to be sure.

The basket is a finished product when you have completed your work. It is not necessary to spray it with lacquer, etc. To freshen your basket, immerse it in cool water and set aside to dry.

Creating sculptural shapes with pine needles can be very rewarding. Happy basket making.

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Corkscrew Weave

by Clotilde Barrett

Corkscrew weave is a twill derivative weave that is woven into a warp face fabric.

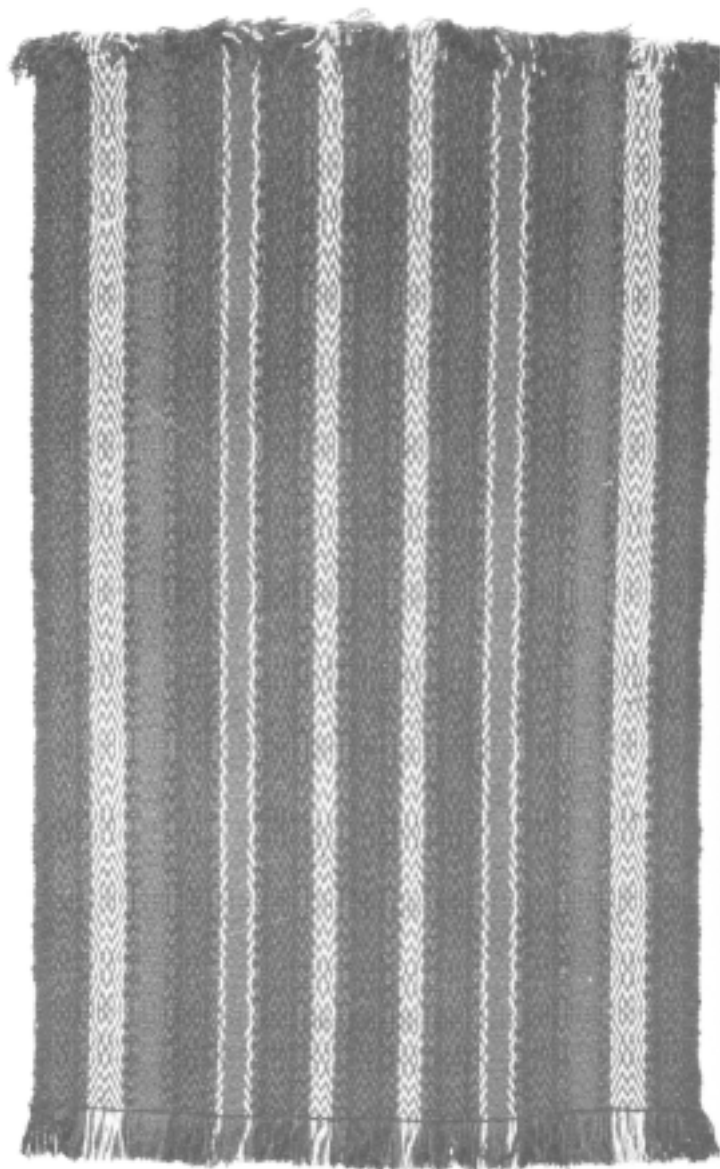
With the knowledge of the basic twills (straight, broken, pointed, undulating) it is easy to design corkscrew weaves for four or more harnesses. The theory of deriving corkscrew twills from regular twills is discussed elsewhere in this issue in the article Multiple Harness Weaving Course, Part III, page 40. Here we will give some practical examples of the weave.

The warp yarn has to be chosen carefully. It has to be a smooth strong yarn. Woolen mill ends that always have a lot of spinning oil and sizing, some wool worsteds, cottons, smooth linens, and rayons are all suitable. Acrylics are to be avoided. It is usual for two colors to alternate in a 1/1 order in the warp arrangement. We will call these colors L (light) and D (dark) for convenience. In a specific project, neither L nor D have to be a single color throughout as, for example, in the four harness rug shown here. The designer may also choose to have solid color stripes, especially at the selvages. In that case, L and D are alike.

From the structure of the weave (see Figs. 2d and 4d), it can be seen that in corkscrew fabric there are long warp floats. The floats for a 4 harness project are at least over 2 weft picks; for a 7 or 8 harness project, over 4.

For this reason one should choose a thinner weft, when weaving on a larger number of harnesses. For a 7 or 8 harness corkscrew, the weft may be the same as the D warp thread. For 4 harness corkscrew, the weft may be the D warp yarn used three-fold.

The sett should be close, about twice as close as for a balanced plain weave. For example, if a 5/2 pearl cotton weaves a balanced plain weave when it is sett at



*Four harness corkscrew weave rug
by Clotilde Barrett*

15 epi (60/10 cm), the same yarn should be sett at 30 epi (120/10 cm) for corkscrew weave.

For wider projects, one should have a loom that gives a good shed and work with a non-sticky warp. It is ill-advised to start corkscrew weave with a project that is over 24" (61 cm) wide.



Fig. 1

CORKSCREW RUG ON FOUR HARNESSES

WARP: 4 ply woolen mill ends in red, bur-gundy, gold, brown and beige.

WEFT: Brown wool, same as warp, used threefold.

SETT: 16 epi (60/10 cm) (2 ends per dent in an 8 dent reed).

WARP CALCULATION:

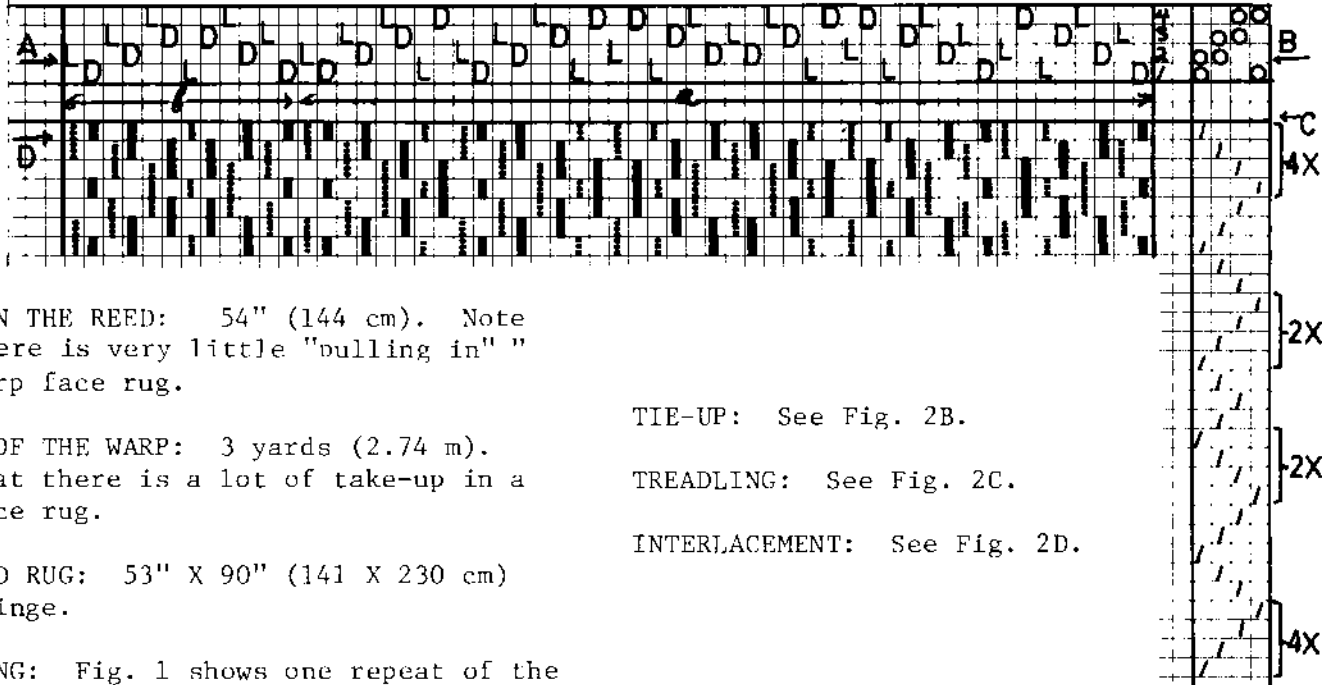
There are 28 D-L warp pairs in one re-peat, therefore 14 repeats need 392 pairs.

There are 22 D-L warp pairs in the bal-ance a, which needs 22 pairs.

There are 8 D-D warp pairs in each selvedge border, which needs 16 pairs.

For a total of 430 pairs.

Fig. 2



WIDTH IN THE REED: 54" (144 cm). Note that there is very little "bulling in" in a warp face rug.

LENGTH OF THE WARP: 3 yards (2.74 m). Note that there is a lot of take-up in a warp face rug.

FINISHED RUG: 53" X 90" (141 X 230 cm) plus fringe.

THREADING: Fig. 1 shows one repeat of the original twill from which the corkscrew twill has been derived.

TIE-UP: See Fig. 2B.

TREADLING: See Fig. 2C.

INTERLACEMENT: See Fig. 2D.

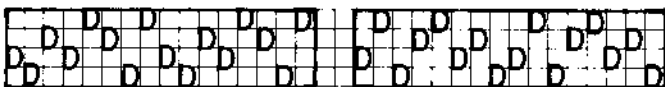
WEFT PROTECTOR:

For each end of the rug, prepare two long loops of D rug yarn, each 1 1/2 times the width of the rug. Tie them together on the left-hand side of the rug and wind some of the length into butterflies A and B. Put groups of 4 warp ends between the lower and the upper loop. Then press the lower loop through the upper loop ex-changing the positions of A and B. Put a new group of 4 warp ends between the two loops, etc. Push the twining close to the woven rug.

The rug has 14 repeats and the threading is balanced by adding section a.

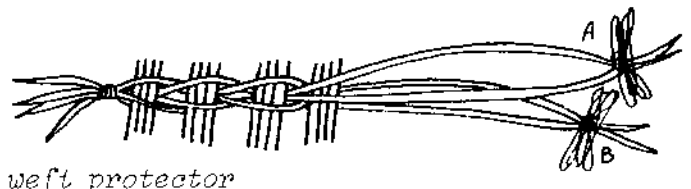
Fig. 3 shows the threadings for the solid right and left borders.

Fig. 3



left selv.

right selv.



weft protector

FINISHING:

Either dry clean the rug or cover the rug overnight with wet bath towels. Let the rug dry flat after the towels have been removed.

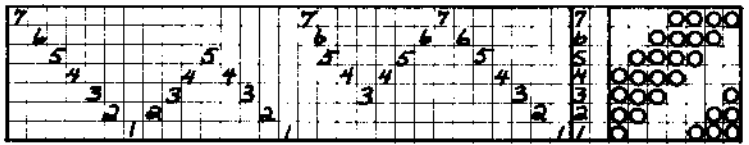


Fig. 4

SIZE OF THE PLACEMAT:

Off the loom: 19 1/2" X 14 1/2" (46.7 X 34.8 cm)

After washing: 18" X 13 1/3" (43 X 32 cm) plus fringe.

THREADING: Fig. 4 shows the original twill from which the corkscrew twill has been derived.

Fig. 5A shows one repeat of the corkscrew weave. Note that the D twill, starting on H1 and threaded on the odd numbered warp ends interlocks with the L twill, which starts on H5.

Thread 5 repeats across the warp. Add the right and left border.

Fig. 6 shows the threadings for the right and left solid D selvages.

CORKSCREW PLACEMATS ON 7 HARNESSSES.

Although corkscrew weaves can be done on an odd or even number of harnesses, some designers prefer the odd number. This produces a non-reversible fabric with a very smooth right side.

WARP: Linnay in blue (D) and pewter (L). (Slightly less than 1 lb. of each).

WEFT: Linnay, blue (1/2 lb.)

SETT: 24 epi (100/10 cm) (2 ends per dent in a 12 dent reed).

WIDTH IN THE REED: 14 3/4" (35.4 cm).

LENGTH OF THE WARP (for 6 placemats): 4.5 yards (3.88 m).

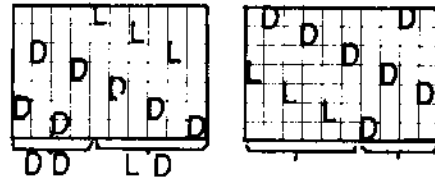


Fig. 6

selvage left border right selvage border

WARP CALCULATION: There are 34 D-L warp pairs in one repeat, there are 5 repeats, therefore one needs 170 warp pairs.

There are 3 L-D pairs for each border for a total of 6 border pairs.

There are 2 D-D warp pairs for each selvage. The total number of warp pairs needed is 180.

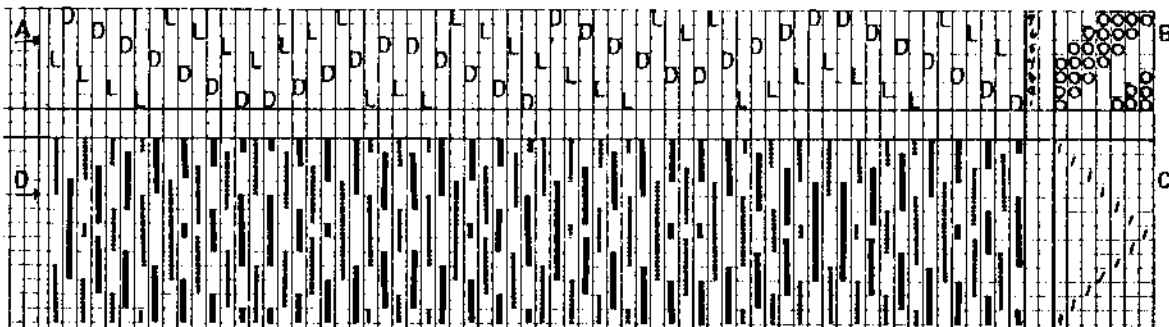


Fig. 5



TIE-UP: See Fig. 5B.

TREADLING: Treadle as the draft of Fig. 4 is drawn in: trl, 2, 3, 4, 5, 6, 7, 6, 5, 4, 3, 4, etc.

INTERLACEMENT: See Fig. 5D.

WEFT PROTECTOR: Make a row of small machine stitches at each end of the placemat.

CORKSCREW WALLHANGING ON 12 HARNESSES.

The original twill of this hanging is a 12 harness broken twill. The yarn used is 6/2 worsted in black and white, sett at 24 epi (100/10 cm). The same treadling sequence is repeated 4.5 times, with weft yarns of gradually-increasing thickness.



Handspun Cotton



by Olive and Harry Linder

An authoritative guide for craftsmen interested in learning the secrets of cotton spinning; tools, preparation of fibre, scouring, mordanting, natural dye recipes, shrinkage formulas, uses of handspun thread, plus directions for building your own Charka wheel. 6 x 9, illustrated, paperbound 50 pp. 6.25 post paid. Dealer inquiries welcome.

to THE COTTON SQUARES
1347 E. San Miguel Avenue
Phoenix, Arizona 85014

Four Harness Damask—A Pick-up Weave

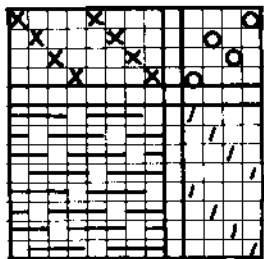
by Elveana Merritt

Damask is a patterning technique produced by juxtaposing areas of warp floats next to areas of weft floats. The weft float structure is the same as the warp float structure but is "turned" 90°. What is usually considered the right side or top surface of the cloth will have a pattern of weft floats against a background of warp floats. The same pattern appears on the back of the cloth but the float effect is reversed, the pattern having the warp floats.

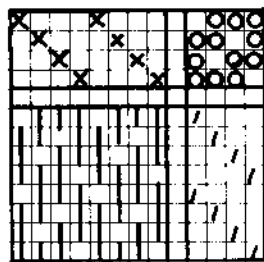
Satin damask is the most commonly used. In a $\frac{4}{1}$ satindamask fabric, the pattern

is produced by contrasting areas of 4-thread weft floats and 4-thread warp floats. Each one of the areas has the structure of a 5 harness satin weave.

Twill damask, sometimes called false damask, is the one most frequently used by handweavers.



Weft face broken twill



Warp face broken twill

Fig. 1

In a $\frac{3}{1}$ twill damask fabric, the pattern is created by contrasting areas of 3-thread weft floats and 3-thread warp floats. Each one of the areas has the structure of a 4 harness broken twill as shown in Fig. 1. Broken twill is used

instead of regular twill in order to break up the diagonal twill line and scatter the floats in a manner similar to satin weave.

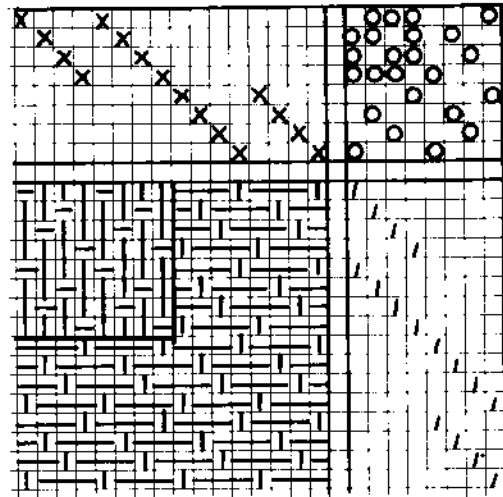
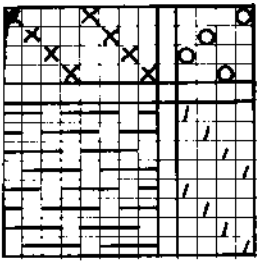


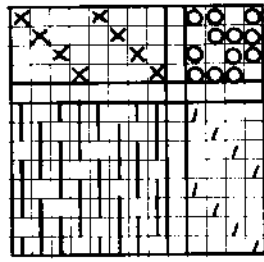
Fig. 2 Draft for a two block twill damask.

When twill damask patterns are produced through harness control, each block of the design requires four harnesses as shown in Fig. 2. In order to sharpen the delineation between two adjacent blocks, there should be a perfect break in the floats from one block to the other as is accomplished in the draft of Fig. 2.

On four harnesses, one can weave a variation of twill damask patterns with pick-up techniques. Pick-up damask is one of the simplest and quickest of all pick-up weaves. The resulting fabric compares favorably with the cloth woven on very complex, many harness looms. Each unit of the weave consists of four warp threads and four weft threads. The structure of the pattern area and the structure of the background area are shown in Fig. 3. Fig. 4 shows how these two



Weft face broken twill



Warp face broken twill

Fig. 3

structures combine to produce patterning. By comparing Figs. 2 and 4, one can notice that the horizontal break between the pattern area and the background area is not as clean in Fig. 4 as in Fig. 2. Nevertheless the structure of Fig. 4 is desirable for damask pick-up technique. The reason is that for the structure of Fig. 4, one only has to make a pick-up for every other weft shot while the structure of Fig. 2 would require a pick-up for every weft shot.

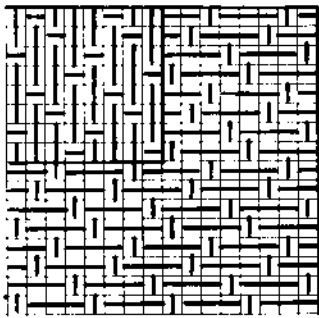


Fig. 4

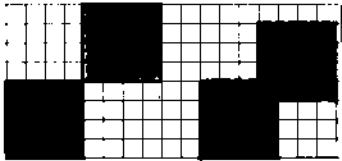


Fig. 5

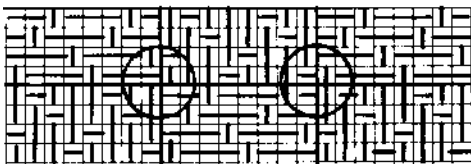


Fig. 6

For a first effort, a simple pattern with blocks of no less than two units would be a good choice. As you become familiar with the weave, you will find that the design possibilities are practically unlimited! Ideas are everywhere. Patterns for cross-stitching, hooked rug designs and overshot patterns are a good source for inspiration. When planning a pattern, do avoid blocks that just touch at the corners. Let them lap a bit by sharing one or more units. See Fig. 5. You will find that blocks that touch will join each other differently in the left corner than in the right corner. See Fig. 6. Horizontal stripes of background weave (warp floats) tend to get lost between stripes of pattern (weft floats). You may wish to add a sequence or two to the background stripe for proper balance. A little experimenting is in order.

Most important to this weaving adventure is the weaving plan. The first step is to draw one complete repeat of your design on squared paper, letting each square stand for one unit of weave (four warp and four weft threads). See Fig. 7. With a soft

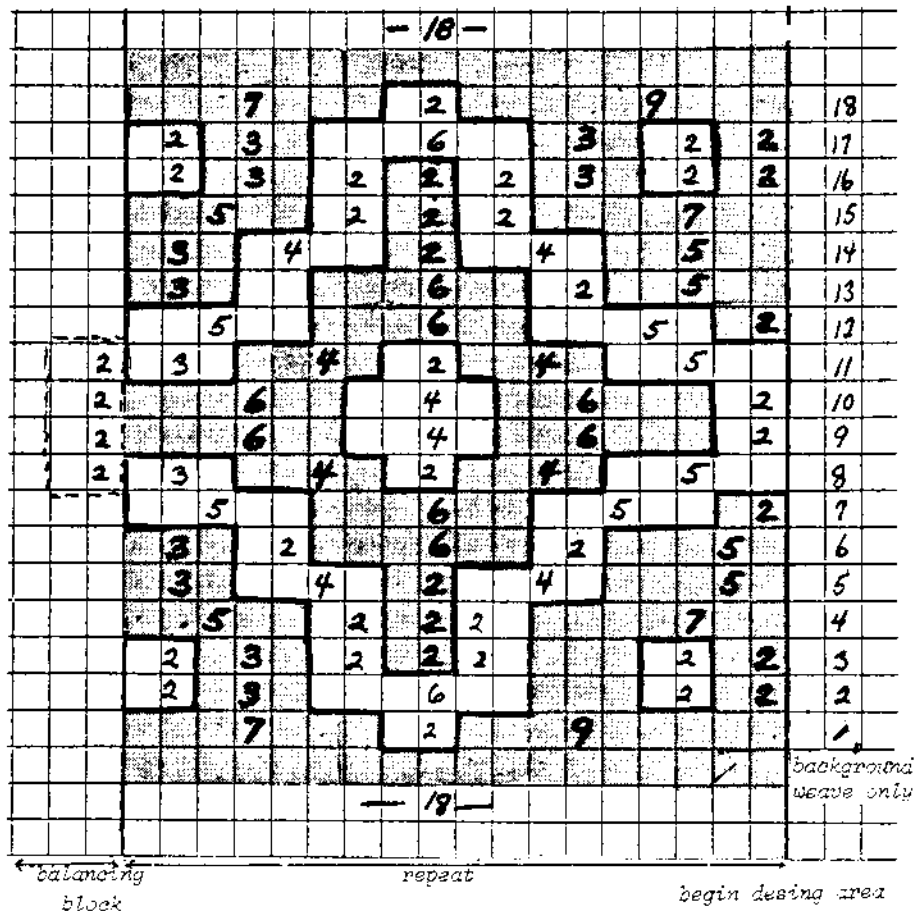


Fig. 7

pencil, lightly shade all the squares in the background areas. Leave the pattern areas unshaded. With ink, outline the pattern areas. Count the squares on each line within each area. With pencil, write the number obtained on the graph. For example, examine the graph of Fig. 7. The first nine squares of line 1 are shaded, then two unshaded, then seven shaded. Check your count carefully, then ink over the penciled numbers.

The loom is threaded to a simple 1-2-3-4 twill. The warp and weft should be about the same size but of different texture. Avoid coarse, hard twist yarns and strong color contrasts. Desiring the weave to show up well when photographed for the samples shown, I used a warp of 8/2 rather soft, rust colored cotton sleyed at 24 ends per inch (100/10 cm) and weft, similar in size, of an off-white, very soft twist, 2 ply synthetic having a slight sheen. The fabric is soft but firm, about right for a medium weight place mat. Frances Foster when writing about this weave for the *Handweaver and Craftsman Magazine*, winter 1957-58, page 23, recommended a warp of 20/2 cotton or 40/2 linen sleyed at 40 e.p.i. (160/10 cm) and a weft of pearl cotton or singles linen

with a very firm beat to pack the weft. Light weight woolen yarns should work well for a bordered skirt or jacket. A fine all white linen would be lovely for a luncheon cloth, dresser scarf or such.

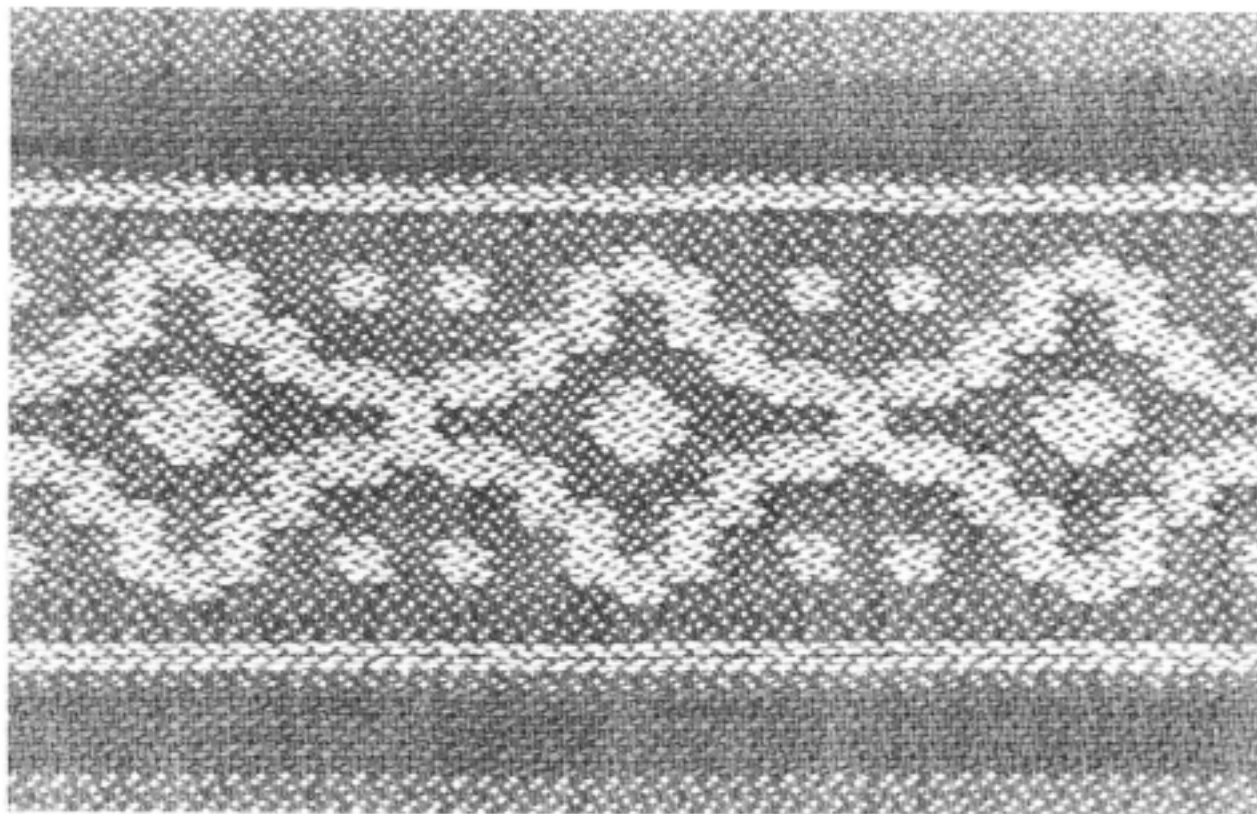
You will need a way to mark the warp to simplify the count for the pick up. I find the following method works well for me. At the beginning of each repeat of the design (in Fig. 7) and at the end of the last, just before the balancing block, drop one end of a string (carpet warp is fine) down through the warp in front of the beater. Take the string back up through the warp *behind the beater* and on up to the top of the beater. Knot the string ends, forming a loop around the beater. Secure the knot with a bit of tape to keep it from slipping about.

You will need a weaving sword or narrow pick-up stick a bit longer than the width of the planned cloth.

A flat stick type shuttle is preferred as the shed will be rather shallow.

This is a one shuttle weave, using the same weft throughout.

Pick-up damask. Design of Fig. 7.



The numbers used shall refer to harnesses used, not to treadles.

To weave a line or unit of background weave only (no pattern), raise the following harnesses, three at once and weave in succession: 1-4-2, 1-4-3, 2-3-1, 2-3-4. See Fig. 3B. Repeat these four shots for each unit or line of weave desired.

For a line of all pattern (no background), raise these harnesses one at a time and weave 2, 3, 1, 4. See Fig. 3A. Repeat these four shots for each row needed.

Let us assume you have some background woven and the last shot was in the 2-3-4 shed, and you wish to start weaving the design. Raise harnesses 1 and 4 and, referring to your graph, use the weaving sword to pick up one pair of the raised warp threads for each shaded background square on line one of the graph. Skip over the unshaded pattern areas.

Lower harnesses 1 and 4; push the weaving sword close up to the reed. Raise harness 2 alone and weave; with sword still in place raise harness 3 alone and weave. Now remove the sword and beat these two wefts in rather firmly, beating once with harness 3 up, then with harnesses 2 and 3 up.

With harnesses 2 and 3 still up, make the second pickup, still working with line one of the graph, and in the same fashion, picking up warp pairs for the shaded background areas only as before.

Lower harnesses 2 and 3, push the sword to the reed, leave in place. Raise harness 1 alone and weave, then raise harness 4 alone and weave. Beat as before. This completes one unit or line of the weave. Follow the same steps for each line of the graph.

The marker strings are very helpful when making the pickups. For example, the graph

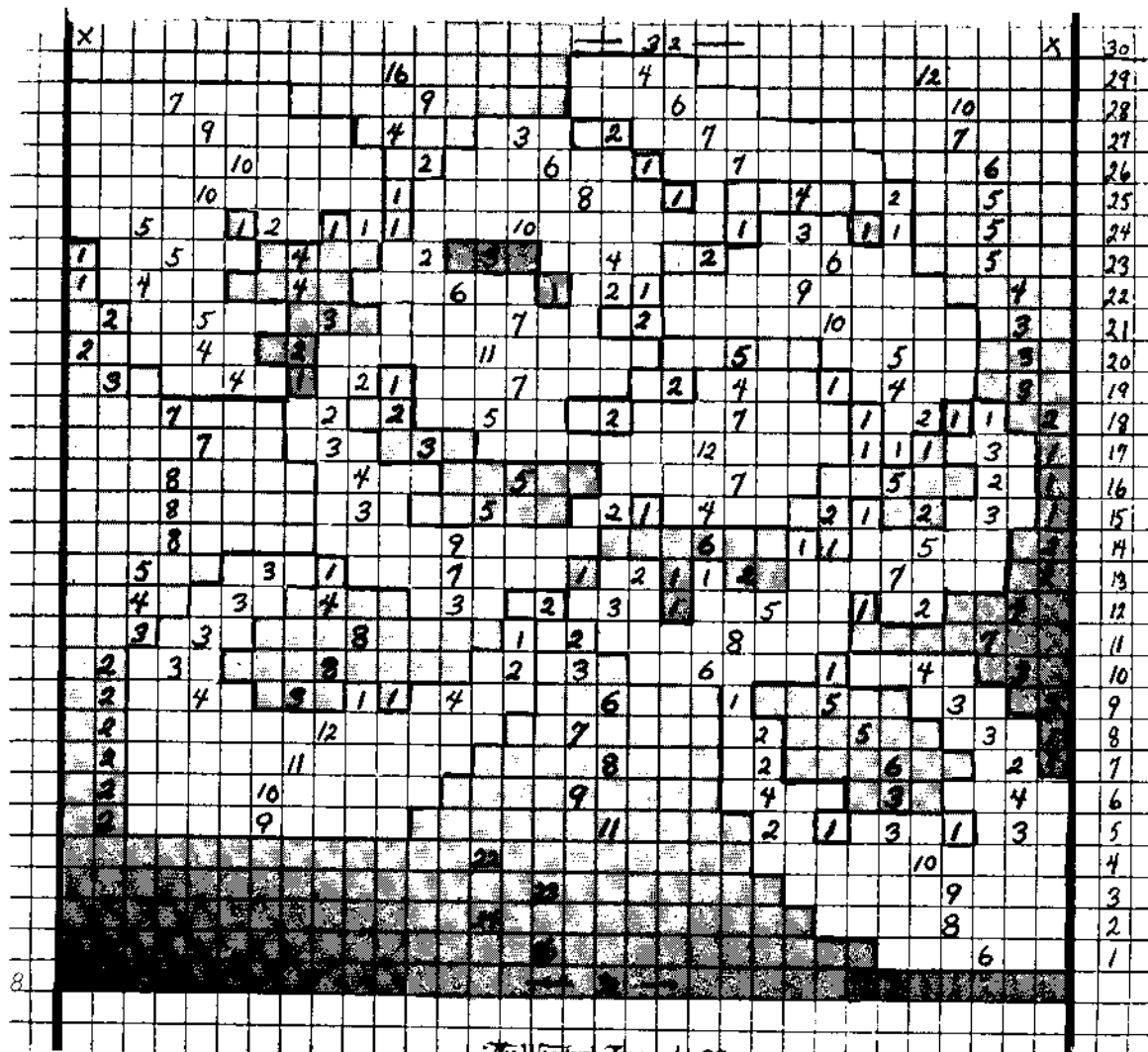


Fig. 8

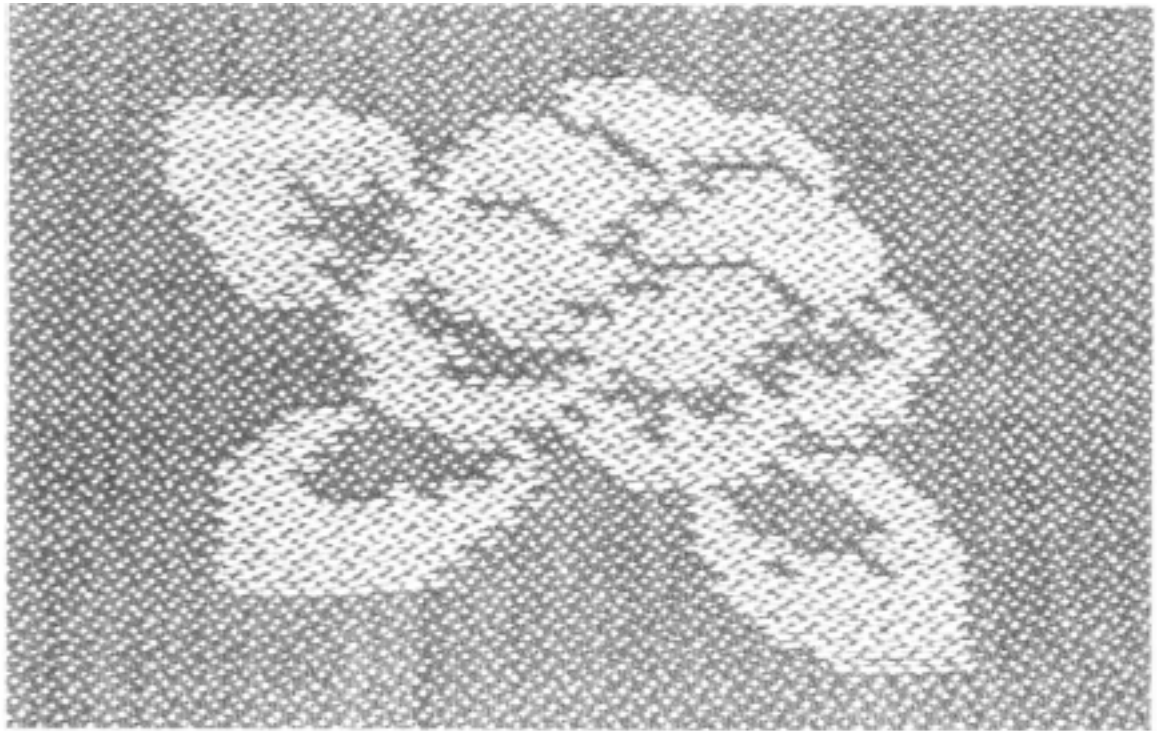


Plate 2:

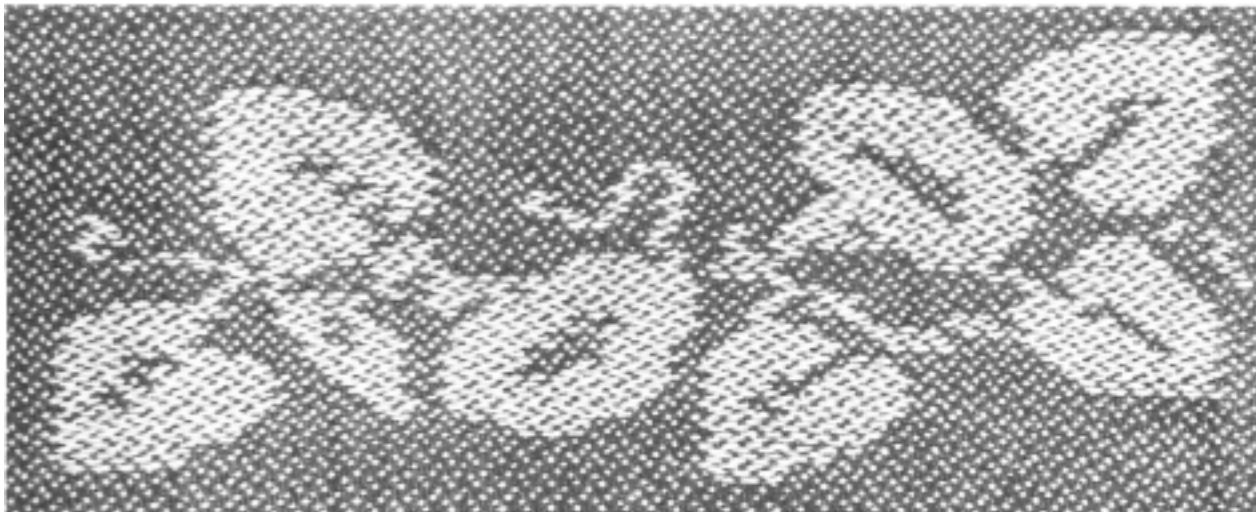
*Pick up damask.
Design of Fig. 8.*

of Fig. 7 shows there are eighteen units of warp in each repeat of the design and two extra units at the left for a balancing block. To make the pick-up for line one, raise harnesses 1 and 4, pick up all the raised pairs, starting at the selvedge and up to the first marker (these are the warps lying outside the *design* area). Then pick up 9 pairs (first shaded area) of the design, skip 2 pairs, pick up the next 7 pairs, second marker reached, 1 repeat picked up. Use the marker as a starting place. Pick up the next repeat and so on. Follow the same procedure for the 2-3 pick up.

Fig. 8 shows another example of pick-up damask.

Although the proper pick-up and weaving sequence must be followed throughout, it is possible to weave a pattern area on one pick-up and a different pattern area on the second pick-up of the four pick sequence. This would give you a half unit or line of pattern weftwise. This method is handy when you need a narrow line of pattern for stems and such. See Plate 3.

*Plate 3:
Pick-up damask using half units (weftwise)
to obtain rounded curves.*



TURNED TWILL PICK-UP.

These principles of damask pick-up may be used for turned plain twill patterning. The patterning is produced by weaving $\frac{1}{3}$ twill, pattern areas on a $\frac{3}{1}$ background.

Plate 4 and Fig. 9 show an example.

The only difference between turned twill and damask is that the weaving harnesses are raised in a plain twill succession: 1-4-3, 1-4-2, 2-3-1, 2-3-4, for the background and 3,2,1,4 for the pattern.

I prefer a counter balance loom for pick up weaving; but because I wanted to see what problems, if any, would arise, I wove the samples shown here on a jack loom. About the only difference was a little less shed depth; also, with the pick-up stick in place and the weaving harness raised, the lower warp will be somewhat slack, causing a little difficulty clearing the shed. To correct this, grasp the pick-up stick at both ends, pull it straight forward to the fell line, then push it back to the reed. This usually clears the shed.

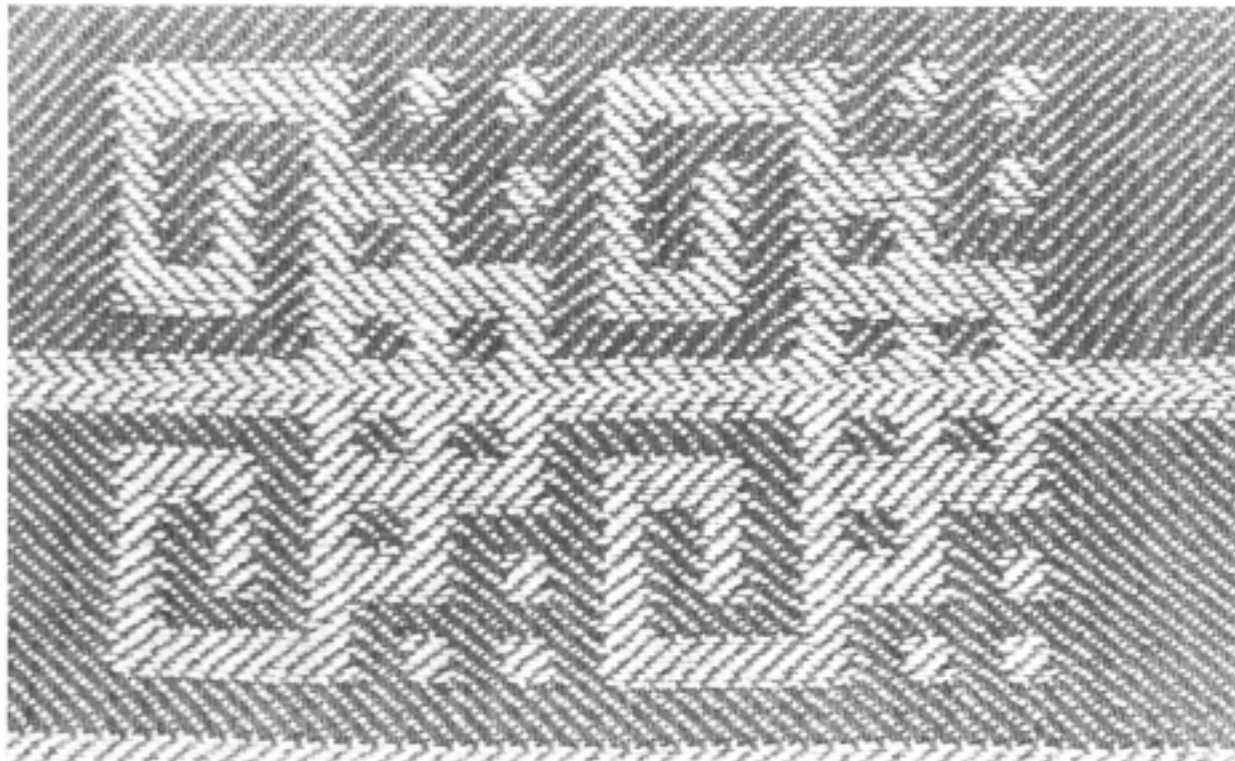
Fig. 9

Stanislaw Zielinski, when discussing damask in "Master Weaver", called the four harness version "Damasse". He also explained use of "long eyed" heddles to produce the weave. Other sources of information are: *The Shuttle Craft Book of American Hand Weaving* by Mary M. Atwater, Chapter 19, page 293; Chapter 15, page 247, *The Manual of Swedish Hand Weaving* by Ulla Cyrus Zetterstrom, page 58.

Copyright: Elveana Merritt



Plate 4: Pick up twill patterning



Accurate, Knotless Tie-ups Using Loop Loom Cord

by Gorel Kinersly

Tying up a loom is a handweaving necessity and an exacting chore. In order to acquire a clear shed and/or to change treadle-harness combinations, one can spend considerable time under a loom adjusting loom cords. Presented here are ways of rapidly and accurately setting up a variety of looms using a new method developed in Sweden.

The method* came to my attention during a recent trip to Stockholm. A visit to a damask weaver (her looms have up to 75 harnesses) left me impressed with her weaving and intrigued by her neat, precise tie-ups. At first glance, I noticed the absence of knots in the flat cords and smooth heddles. Upon inquiry, I learned that both cords and heddles are made of polyester, machine-crocheted in two parallel chains with loops at 12 mm (about $\frac{1}{2}$ inch) intervals

(Figure 1). The heddles look like regular string heddles, but have no knots (Figure 2). The cords and heddles are very supple, non-stretching and strong (the cords have a 180 lb. breaking point.)

You never tie knots with these cords. If your loom has hooks, just attach a loop to one (Figure 3). Or, you can loop the cord around various loom parts by threading the cord through itself and securing the end with a small, straight nylon peg lodged in a loop (Figure 4) or by making a self-tightening loop (Figure 5). You also can anchor a cord loop to a flanged, nylon anchor peg placed in a hole in a treadle or lam (Figure 6). The anchor peg fits a 5.5 mm hole (about $\frac{7}{32}$ inch, a nylon bushing is available for slightly larger holes). Both types of pegs are easy to insert and remove.

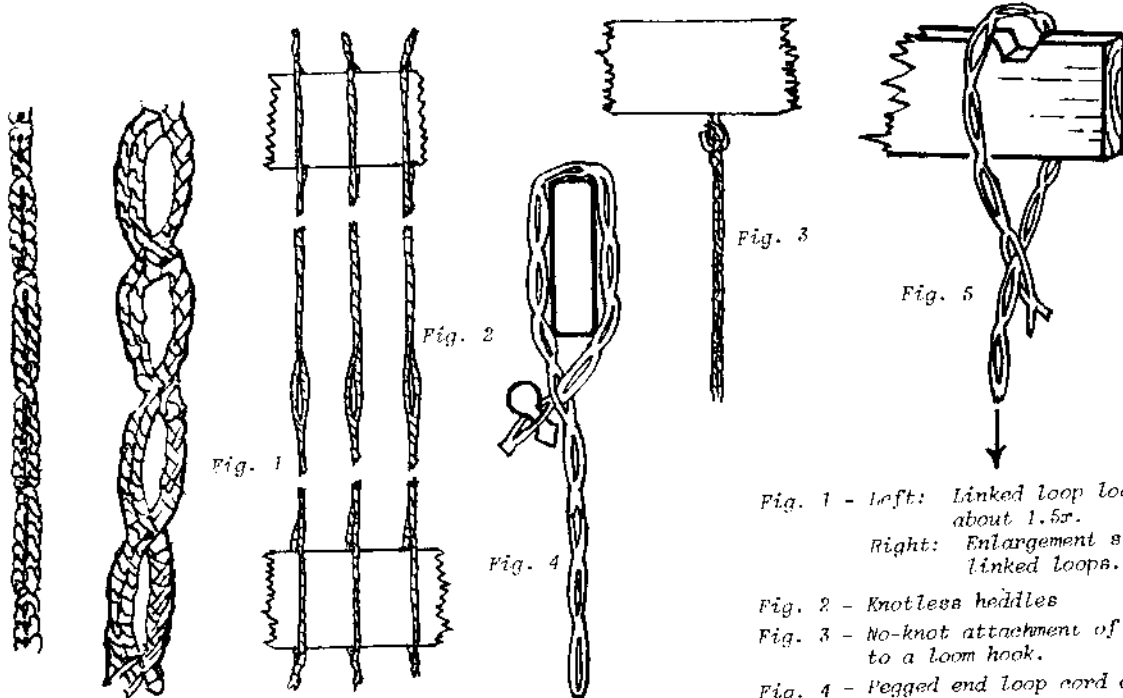


Fig. 1 - Left: Linked loop loom cord, about 1.5x.
Right: Enlargement showing linked loops.

Fig. 2 - Knotless heddles

Fig. 3 - No-knot attachment of loop cord to a loom hook.

Fig. 4 - Pegged end loop cord attachment to a loom part.

Fig. 5 - Self-tightening, knotless loop around a loom part using loop cord.

* Texsolv System, Textilsolv Co.,
Nol, Sweden.

An obvious use of the new type loom cord is as a replacement for linen cords which require knots on Scandinavian type looms. Both cords and heddles are now marketed in many parts of western Europe. Some loom manufacturers in Scandinavia are using them as original equipment. What appears intriguing to me are the possibilities and rewards of changing any loom to the new system; I therefore acquired samples of the cord and heddles and equipped two of my looms, one counter-balanced and one counter-march. Next I used the cords at the school where I teach. The looms there include two-harness rug looms, four-harness table looms, counter-balanced floor looms, and multi-harness counter-march looms. Some are old and well-used. The loop loom cord has proved itself applicable to all; it even has made some of the nearly useless old looms functional again.

On the rug looms, I use the cord as an extender. A loop of the cord is attached to a peg of the sectional warp beam. The other end of the cord is doubled back through itself and pulled to make a tight loop around the strand of warp threads intended to fit in that section of the beam (Figure 7).

Almost all table looms with which I am familiar have hooks for cords attaching the harnesses to the levers. Loop cord is not only simple to connect to a hook, but in addition its use eliminates having to make knots, particularly in slippery and unwieldy cords.

The four-harness counter-balanced looms of American design I have seen have one upper and two lower roller bars (equivalent to pulleys and horses on Scandinavian looms) and harness frames with hooks. Attaching to hooks is simple with loop cord (Figure 3). Harness frames without hooks can be tied with self-tightening or pegged loops (Figures 4 and 5). Tie-up cords extending from the lower heddle bars to the treadle are often double; with two harnesses being tied to one treadle. If you want to keep this basic, standard arrangement, hook the loop cord to the lower heddle bar, then down through the eye in the treadle, then thread the cord through itself and back up to the appropriate other heddle bar (Figure 8). If you want to make your treadle-harness

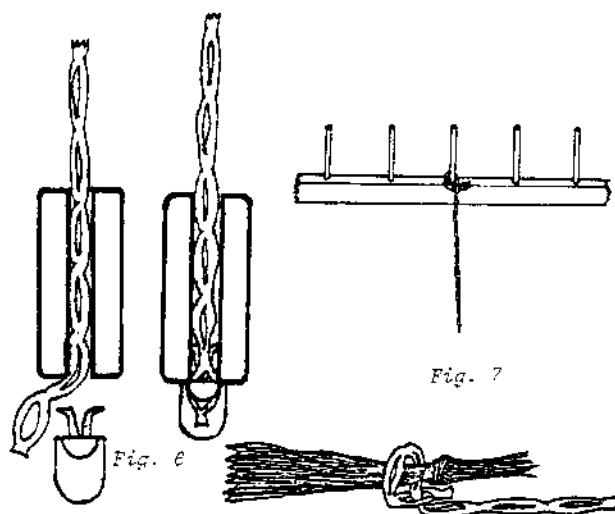


Fig. 6 - Anchor peg holding loop cord to a treadle or lamn.

Fig. 7 - Loop cord used as an extender on a rug loom.

Upper: Loop cord attachment to a sectional beam.
Lower: Self-tightening loop around warp threads.

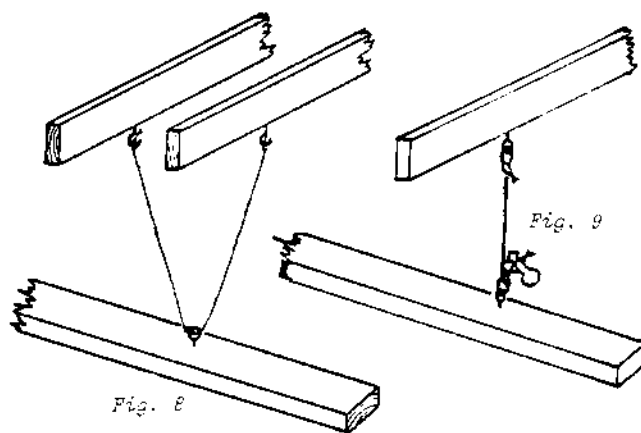


Fig. 8 - Loop cord treadle-harness double tie-up on a four-harness counter-balanced loom.

Fig. 9 - Loop cord single tie-up to eyes on a harness and treadle of a four-harness counter-balanced loom.

combinations more variable, use individual loop cords fastened first at the treadle eye then up to attach to the lower heddle bar, or vice versa (Figure 9).

Cord attachments I have found on counter-march looms are hooks, eyes, wire or string loops and/or holes in loom parts. Any attachment discussed so far could be used to re-tie one of these looms (Figures 3, 4, 5 and 6). Also, one cord can be tied to another to provide a center attachment from the jacks to the lower lams (Figure 10). The elimination of a forest of knots makes the loom look much neater and also reduces the possibilities of error when doing tie-ups.

If your loom has a moveable continuous cord and/or an apron connecting the warp or cloth sticks to their respective beams, it can be replaced with individual lengths of loop cord. If the beam has holes through it, a strong anchor can be made by passing the cord around the beam then both through itself and the beam (Figure 11). The other end can be fastened to the stick with a self-tightening loop (Figure 5). I prefer to use a loop secured with a straight peg (Figure 4); because the cord is easily unfastened it is necessary to spread out warp evenly in a lateral direction. Bent warp and cloth sticks are often encountered with narrow warps on wide looms if their full length is tied to the beam with continuous cord connections. Replacement with individual lengths of loop permits one to easily drop the outside cords and suit the tie-ups to the width of the web (Figure 12). One more advantage of loop cord is that its flat shape minimizes the need for padding on the cloth beam.

Another use of loop cord applies to jack-type looms with treadle connections consisting of a row of metal or string loops, a rod, and a treadle-harness cord of fixed length. If you change the treadle-harness cord from a front harness to a back harness, the height of the treadle varies. Substitution of loop cord in place of fixed length cord makes it easy to adjust the treadle to the exact height wanted for a good shed and to suit the height of the treadle to the convenience of the weaver. Changing to loop cord has another advantage: you can much more accurately change from single tie-up to multi-tie-up than you can with fixed length loom cord.

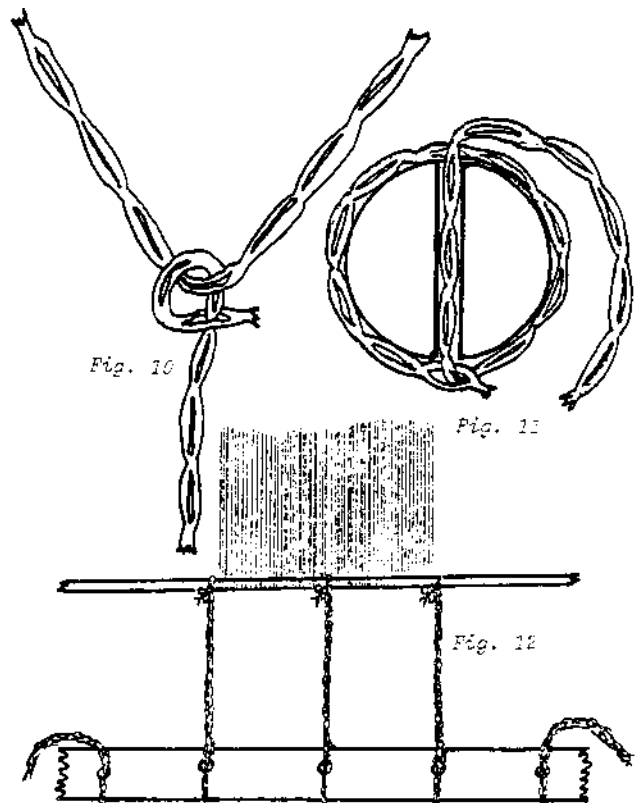


Fig. 10 - Loop cord center attachment on a counter-march loom. Lower cord connects to lower lamm. Upper V cord connects to jacks.

Fig. 11 - Cross-section of strong loop cord anchorage to a beam with holes. End of cord is attached to warp or cloth stick.

Fig. 12 - Loop cord connecting a wide warp beam to a wide stick holding a narrow warp. Outside cords are dropped to avoid bending the stick.

As for the heddles, their smoothness and absolute evenness makes for a very clean shed. The eyes have no protruding knots where a fine warp might get caught. Their flexibility and large eye sizes make them ideally suited for supplementary warp techniques and loom-controlled surface brocading. The weaver using hand-spun and/or novelty yarns will find their smooth texture an added bonus.

As I see it, the primary advantage of using these polyester cords and heddles is accuracy. Tie-ups on looms so equipped are neat and tidy. Re-tying old looms with loop cord is not only fast and easy, but very rewarding. The universality and uniqueness of the method offers weavers an opportunity to exercise their ingenuity in application.

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Techniques of Tapestry Weaves Part III: Shading and Other Matters

by Kate O'Callaghan

Illustrated by Jonell Loeffler



Charlene Hartenstein

Begin weaving your second sampler by first weaving a two inch plain heading. At the end of this, weave two rows of soumak in a pleasantly contrasting color. When the entire sampler has been completed and taken off the loom, this two-inch heading will be turned under at the soumak line. The soumak gives the edge a crisp, regular appearance. Now to begin.

SHADING: In the first sampler, color areas were sharply defined by building each area independently with the slit tapestry technique. In this sampler, you will learn how to create *grey* areas by shading, mottling, blending and hatching.

Begin by *shading down* from dark (black) to light (white). See Photo.A.

This area is all plain tapestry weave:

- 1 row (2 shots, one of each shed) of white
- 5 rows of black
- 2 rows of white
- 4 rows of black
- 3 rows of white
- 3 rows of black
- 4 rows of white
- 2 rows of black
- 5 rows of white
- 1 row of black

Now try a *grey* area:

Plain weave 1 row (2 shots) of white
Plain weave 1 row black, and repeat, white then black, for about two inches.

Next try the *diagonal pinhead*:

1 row (2 shots) of white
Then 1 shot of black, and repeat, for another two inches of weaving.

Then weave the *straight pinhead*:

3 shots of white
Then 1 shot of black, and repeat, for another two inches.



Hatching

Irregular Hachures

Vertical Stripes
and Grid
Checks

Straight Pinhead

Diagonal Pinhead

Grey Area
(Diagonal Stripes)

Shading Down

Circle with

Diamond

Photo A

Next, try *vertical stripes*:

1 shot of white

Then 1 shot of black, and repeat, for one inch of weaving.

Then weave *checks*:

Weave 1/2 inch of vertical stripes (1 shot of white, then 1 shot of black),

Then reverse (1 shot of black, then 1 shot white) for another 1/2 inch,

And reverse again (1 shot of white, then 1 shot black) for another 1/2 inch,

And reverse again (1 shot of black, then 1 shot white) for a final 1/2 inch.

Now try the *vertical grid*:

1 shot white, then 1 shot black for 1/2 inch

Then weave two shots black,

And 1 shot white, then 1 shot black for another 1/2 inch.

Are you ready for the *hachure*? A *regular hachure* is simply a series of long thin triangle shapes across the warp. It is begun by weaving a flat black slope by decreasing two warps after every row of weaving. Then weave the corresponding white slope, increasing two warps after each row of weaving. When the white shape is within an inch of the opposite (black) edge, begin decreasing the white two warps after each row of weaving. This will give a symmetrical long, flat, thin white hachure. Now repeat the entire process with the black hachure, then the white, several times, until you have woven four or five hachures. (Fig. 1)

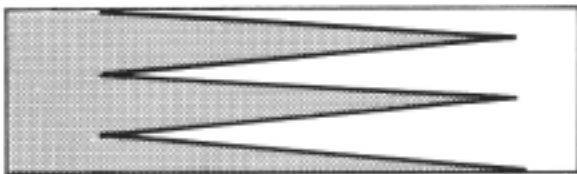


Fig. 1 Hachure

The *irregular hachure* is created in a similar manner but here you increase and decrease irregularly. For example, in building the black hachure, decrease by two warps after one row of weaving, by

two again after the next row of weaving, then decrease by one warp after the next row of weaving, and so on, irregularly changing your rate of decrease to build up a curved rather than straight hachure shape. Then weave the white hachure by a symmetrical, but reversed process of increases after each row of weaving. Next, decrease the white quickly to create a long thin, curved hachure, as in the sample illustrated.

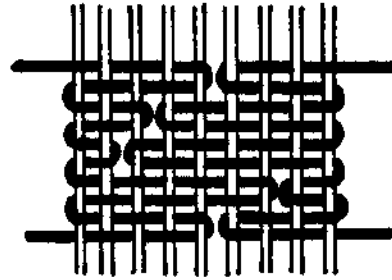


Fig. 2 Hatching

Now try *hatching*:

To hatch an area you begin by weaving two adjoining color areas simultaneously, shot by shot, beginning with each of the colors in the same shed. Weave the black from the right border over to somewhere near the middle, then weave the white over from the left border to the black. Then weave the black back to the right border and the white back to the left border. The next shots are woven the same way but simply vary the distance across the warp which each color is woven, as in Figure 2, so that the border between the two color areas (black and white) changes with each row of weaving. This is an excellent method for creating depths of color and shade within and around a figure, as in photograph B. Weave an area of hatching for about two inches.

If you have warp enough left, you should try the *mottle*:

Basically, to create a mottled effect begin weaving with the dark yarn. Then randomly weave in a light weft every so often across all or part of the warp. Gradually increase the white and decrease the dark until you have completely changed from dark to light.



Photo B
Detail: *Earth Memory* by Kate O'Callaghan
(the warp runs horizontally)

FINISHING:

This sampler should now be complete. Once again, finish the back side of it by needling in the weft ends, and cut the sampler off the loom.

The bottom edge, where you wove the heading, will be turned over at the soumak line and stitched flat against the back of the sampler. First, however, you must knot the warps in pairs to secure the woven area, and trim the warps up to 1/4 inch from the knots. Then stitch the heading against the back of the sampler with an invisible running stitch (I usually use a clear acrylic thread).

At the top of your sampler, try the *Swedish braid*.

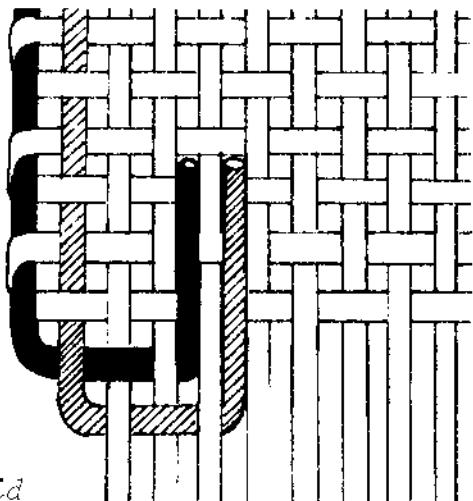


Fig. 3

Swedish Braid

Swedish braid: Working from the back side of the tapestry, take the first four warp threads on the left side, and weave the first thread through the next three, as in Figure 3. Then take the second warp thread and weave it through the next three, and so on, all the way across the tapestry. As you make the braid, push the woven warp up as close as possible to the tapestry. Take each of the remaining 3 warp threads at the right edge, thread them through a tapestry needle and weave them back through the braid. Then trim the warp threads so that the turned-over braid will cover them, and sew the braid over them to the back of the tapestry. The warp threads, if not too heavy, could have also been needled back into the tapestry weaving and trimmed.

Other methods of finishing include:

Woven tabs: Here you simply slit weave the warp by dividing it up into parts and weaving each area separately, as in Figure 4.

Knotted fringe: Here you simply knot the warp ends in pairs or groups. It often helps to frizzle the ends to make the fringe more attractive.

Wrapped fringe: Begin with a length of yarn and, holding a group of warps together with one hand, carefully wrap the yarn around them, to form a tight coil, as in Figure 5.

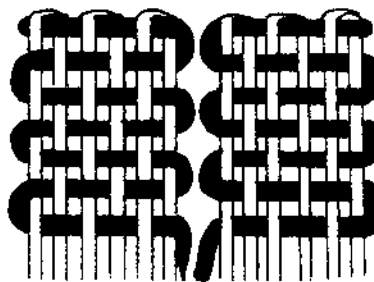


Fig. 4 *Woven Tabs*

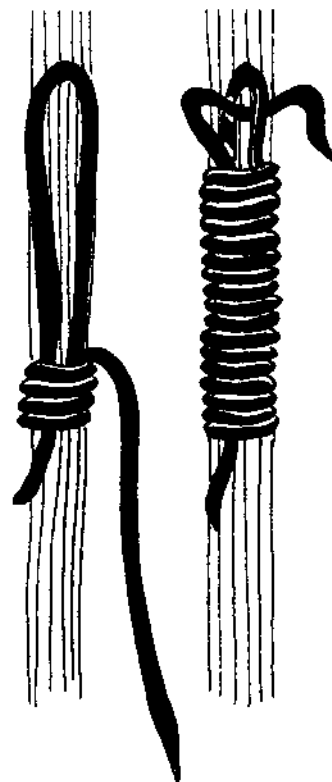


Fig. 5 *Wrapped Fringe*

HANGING METHODS:

I have two favorites:

(1) Sew a stiff, durable cotton tape (several inches wide) to the upper back margin of the weaving, with a firm, close running stitch. Obtain a metal or wooden dowel or slat the width of the weaving and insert it into this sleeve. Now get small metal rings (available at sewing notions) and sew these at regular intervals to the tape. You can then string wires through the rings for hanging the weaving.

(2) Obtain a metal or wooden dowel the width of your piece. Lay your piece out on a table with the dowel laid next to its upper edge. Thread a large-eyed tapestry needle with a long length of yarn of the same color as used at the upper margin of the tapestry. Now, begin by sewing the dowel to the tapestry by wrapping the yarn around the dowel with each stitch through the upper margin of the tapestry. Hide the ends (at beginning and end) in the back of the weaving by needling them in.



*Pinton-Felletin
(Contemporary)*

*Mortlake
(17th Century)*



Fig. 6

LABELING:

First, consider developing a *mark* with which to sign your work which you would weave in as part of your design on the face of the tapestry (See Figure 6). This would set your stamp on your work. At any rate, you must prepare a label for the back of your work. The label may be hand or machine embroidered, or made with permanent ink on a durable fabric and should include: The title of the piece, your name and general location or studio name, and © 1980. This notice of copyright will serve as notice for all that you are protecting your rights to the design. If you don't wish to make the label yourself, look under "emblems" in the yellow pages for monogram/embroidery companies. They will often take on special orders for labels.

BLOCKING:

If your piece is not as perfectly flat as you would like it, there is a relatively safe and simple way to block it, especially if it has been woven with good, preshrunk commercial wool yarns. (Don't block it if it is dirty, as heat will set the stains).

A steaming apparatus, such as a portable steamer used on clothing, will remove simple wrinkles.

To square up the piece however, you will need to fully block it. There are two methods: (1) Thoroughly wet the piece in a tub of water. Then gently place it on a sheet of plywood on which you have tacked towels. Stretch the piece gently into the shape it ought to be, and mount it on the plywood with staples. Then let it dry. (2) Mount the dry weaving on the towel-covered plywood with staples, place hot wet towels on top, and gently press a medium hot iron to it, quickly removing the iron as steam forms. Remove the wet towels and leave the weaving mounted on the board while it dries.

CLEANING:

Take the gentlest modes first: (1) Very gently brush the face of the piece with a soft-bristled brush, or (2) gently vacuum the surface of the piece. If neither of these methods does the trick, you may have to wash the piece, but only if the yarns are colorfast.

To wash it: Prepare a lukewarm bath to which 1/2 ounce of Ivory dishwashing detergent (or other mild detergent) is added for each gallon of water. Submerge the tapestry in it for up to an hour. If still soiled, you may repeat this. Do not agitate the fabric in the water as the fibers are in a weakened state and may be damaged. Then, empty the tub and fill it with a lukewarm rinse water. Now submerge the tapestry in the rinse water. Take the tapestry out, run clear rinse water and submerge the tapestry in it again. It should have four rinses in clear rinse water. Be sure not to leave any soap in the weaving as it will damage it. Then block the piece on plywood, as above, and gently press a towel to it

after it is mounted, to remove excess water, and leave it to dry.

Dry cleaning: If the piece has oil-borne stains on it, take it to a professional dry cleaner who handles art or fine rug cleaning.

Further information on care is available in the booklet *Considerations for the Care of Textiles and Costumes* by Harold F. Mailand, Indianapolis Museum of Art, 1200 W. 38th St., Indianapolis, IN 46208.

MOTHPROOFING:

Many commercial yarns are permanently mothproofed so check to find out if yours already have been.

Edolan U. Highly Conc. is the standard mothproofing agent. It is available by mail order from Verona Dyestuff Division, Mobay Chemical Corp., P. O. Box 385, Union Metropolitan Park, Union, NJ 07083. Information on how to use it is available from the manufacturer. Basically, it is diluted in warm water and the fabric is immersed in it for a short time. Then acetic acid or vinegar is added to the bath to fix the mothproofing. Safety information is also supplied by the manufacturer, but use standard safety precautions, of the type used when dyeing: Good ventilation, rubber gloves, and goggles. Further information is also available from Merrimack Valley Textile Museum, 800 Massachusetts Ave., North Andover, MA 01845.

A simpler, but less desirable method of mothproofing is to spray the back of your tapestry with an art matte fixative.

FIREPROOFING:

Dissolve three ounces of boric acid in a small amount of water. Add two quarts hot water and seven ounces of borax. Stir until dissolved. This solution may be sprayed or soaked onto your weaving. Fireproofing is often required for fiber pieces which will be hung in public places such as restaurants and theaters. Check with your local fire department to find out what the regulations are where you live.

LAID-IN BROCADE (HAV-GOBELIN) WEAVE:

A Hav-Gobelin, or brocade weave, may be woven on any type of loom, but four harness floor looms are particularly well suited for this type of tapestry. In Hav-Gobelin, the tapestry is woven as follows (See Figure 7).

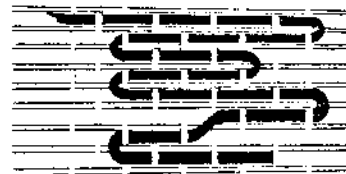


Fig. 7

Hav-Gobelin

- (1) Background weft is woven in the first shed, all the way across the warp.
- (2) Pattern wefts are *laid in the same shed* in each of the pattern (or color) areas across the warp.
- (3) The background weft is woven back across the warp in the second shed.
- (4) The pattern wefts are *laid in the second shed* in each of the color areas all the way across the warp.

The difference then, is that a background weft is traversing the warp with each pick, thereby tying together all the color areas as the weaving progresses. This creates a strong fabric. (See Figure 7)

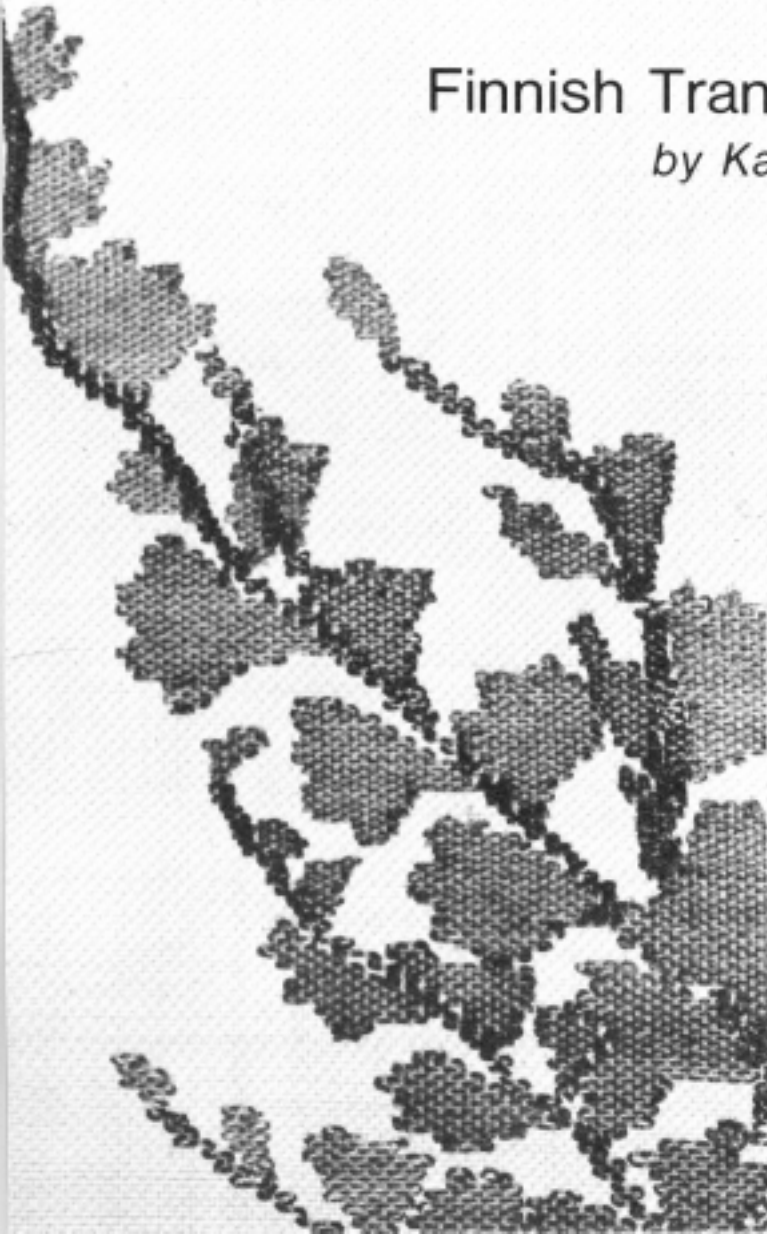
Many variations on this basic technique are possible, from using fine warp and weft for the background weave with a floating, densely woven pattern area to a solidly filled pattern (identical to a slit woven tapestry) strongly tied together with the background weft.

Now that we have gotten all the practical issues settled, what about design for tapestry? And how do you weave your design? What, for example, is a cartoon? How is it made and how is it used? How do you adapt design techniques (sketching, painting, collage) to tapestry? All of these issues will be dealt with in the final article in this series which will appear in the next issue.

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Finnish Transparent Weaving

by Karin Utzinger



"Tree Branch" by Mary Ann Kirkpatrick

A web of multi-hued gossamer suspended in space: that's a Finnish transparent weaving.

The interplay of light on a well-conceived combination of design, color and delicate fiber produces the ethereal, see-through quality of this technique. Popular in Finland in the early 1900's, woven transparencies achieved frequent use in the 1930's, primarily in window and door curtains. Today the weave, characterized by an open tabby ground and colorful weaver-controlled inlay, has won

a place in contemporary use both functionally and artistically.

It appears mainly in window and wall hangings, room and space dividers but also in other forms such as tablecloths and mats, window draperies and shades and in clothing.

A fine singles linen is the Finns' choice for the plain weave ground. Although weavers in this country, where linen is sometimes hard to obtain, have substituted other fibers, linen is preferred for its firmness and generally stable hanging and lying qualities. Obviously, the thinner the threads in warp and ground weft, the finer and more airy the hanging. Weavers opting for double ply linens for strength give up some of the traditional delicacy.

The supplementary wefts, which are "laid-in", can range from fine linens through nubby wools, although here again, sheerness can be sacrificed for texture. Experimenting with a variety of threads will illustrate the pros and cons of each and allow the weaver to decide which threads best suit the purpose for which the individual piece is intended.

DESIGN

Design is a critical factor in creating a transparent hanging. Here the use of positive (filled in) and negative (open) space can combine in creating effects limited only by the weaver's imagination. The weaver can lay in the design, allowing the ground to recede, as in Jeanne Batson's cattail design for a long, narrow window beside a front door (Plate 1) and Ellen Alvord's window hanging (Plate 2).



Plate 1 - 60" long window hanging
suspended from two pieces of wood
screwed together.
by Jeanne Batson

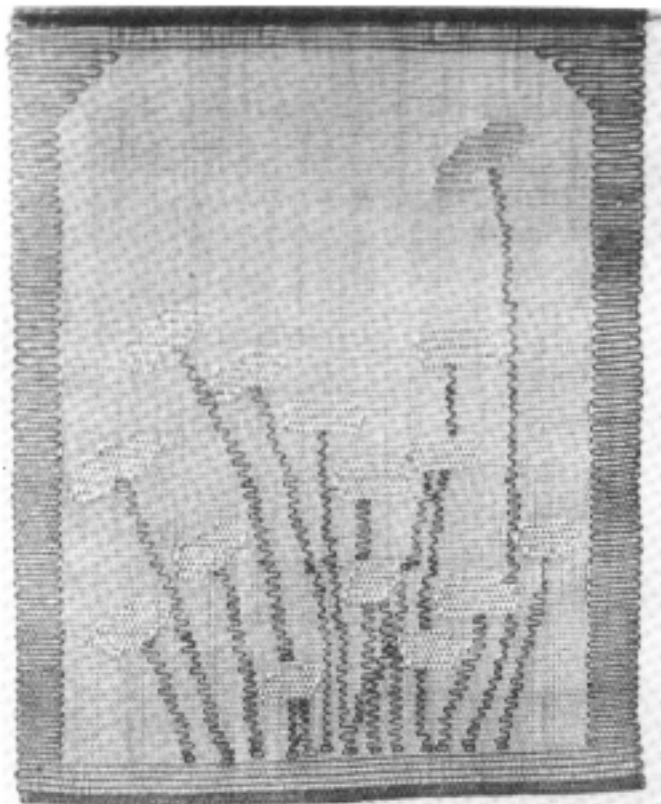


Plate 2 - Ellen Alvord's floral hanging

The weaver can also let the ground weave carry the design motif, filling in the visual background with the inlay. Plate 3 illustrates a mirror-image effect where the author switched positive and negative spaces in her first transparency attempt. Where she used inlay in the bottom half of the design, she substituted open tabby in the top half, and vice versa.

Mary Ann Kirkpatrick took the weave a step further, superimposing one woven area over another to achieve a shadowy, almost three-dimensional effect (Plate 4.)

PROCEDURE

The yarn sett depends on materials used. The finer the yarn, the closer the sett. The Finns generally used a 16/1 linen at about 15 epi (60/10 cm). Our 14/1 and 20/1 approximate that yarn and are easier to obtain in the United States. A No. 4 tow linen would be sleyed about 12 epi (50/10 cm).

The loom generally is threaded as a 4-H straight draw (1-2-3-4). A heading is woven in plain weave or inlay, whichever

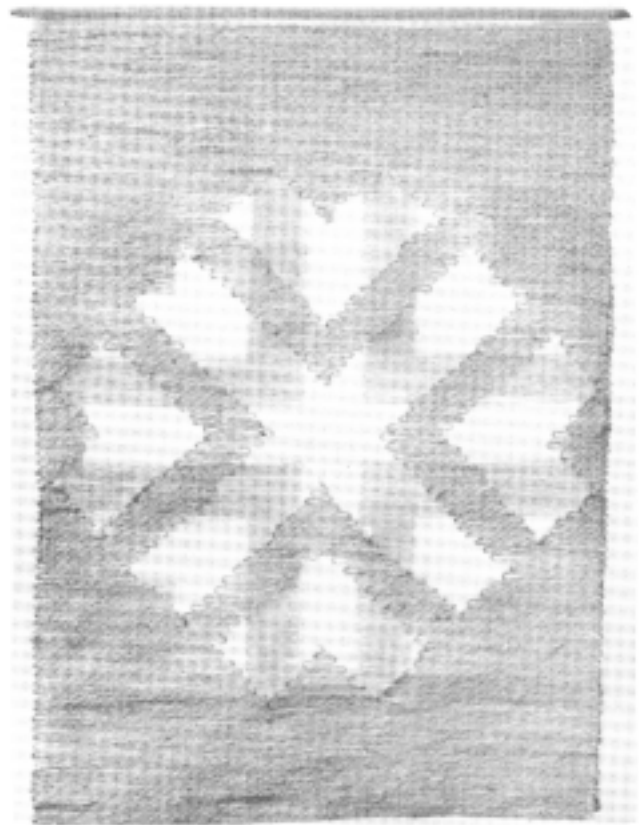
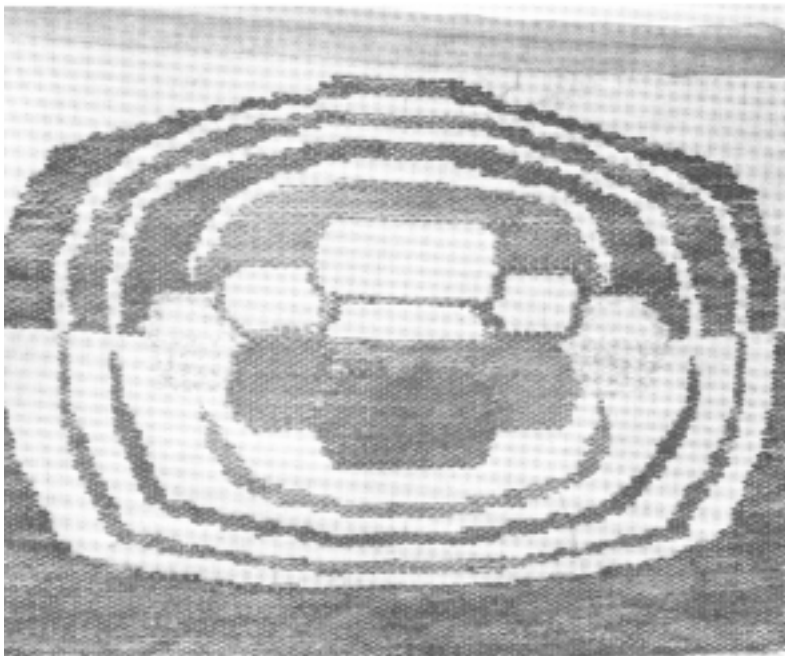
is the weave of the design background. This heading is turned in for the hems.

Weaving may proceed in several ways. Inlays may be done in the same shed with the tabby (i.e. tabby 1-3, inlay 1-3; tabby 2-4, inlay 2-4, etc). The following sequence also may be used: tabby 1-3, inlay 1-2; tabby 2-4, inlay 3-4, etc. A ribbed effect can be achieved by keeping the inlay in the same shed with alternating tabbies between (i.e. tabby 1-3, inlay 1-2, tabby 2-4, inlay 1-2, etc., or tabby 1-3, inlay 3-4, tabby 2-4, inlay 3-4, etc.), or combinations of the above.

TECHNIQUE

Work proceeds from a cartoon (full-scale drawing of the design) fastened under the warp with tape or pins to the partly woven piece or to strong cords tied to front and backbeams parallel to the warp at both sides. The cartoon is moved as weaving advances. Tabby is woven with a shuttle, inlays with butterflies. The weaver should change shed and beat lightly but squarely after each pick to achieve open, screen-like tabby. Tapestry techniques avoid slits between woven areas. Small metal rods or wooden dowels can be inserted in hems for hanging.

Plate 3 - Hanging showing reversals of positive and negative areas.



*Plate 4 - Double layered hanging
by Mary Ann Kirkpatrick*

OTHER HINTS

In dry climates, fraying of the delicate singles linen warp can be minimized by placing a dampened towel over the warp beam or by lightly misting the warp with a spray bottle of water or use of a humidifier. Weft threads should be laid in at an angle to avoid drawing in and subsequent snapping of side warp threads.

Backlighting creates the greatest transparency, front lighting the greatest color. When using a transparency on a wall, suspend it slightly away from the wall.

Sources:

Varpapuu International Summer Weaving School, Kouvala, Finland, 1977.
Swedish Weaving, edited by Thelma M. Nye
Manual of Swedish Handweaving, Ulla Cyrus-Zetterström.
McCall's Needlework and Crafts, Fall/Winter 1976-77.

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Hopi sash

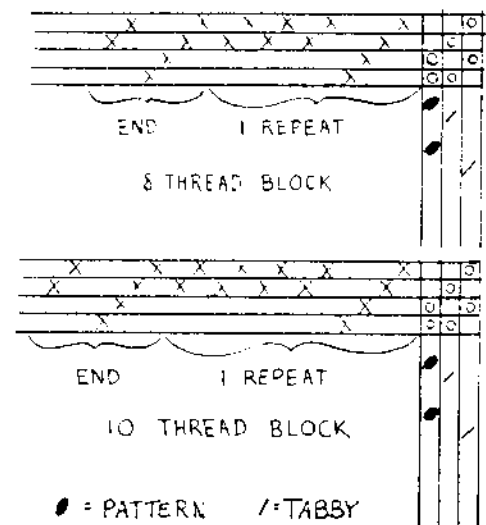
Hopi Embroidery Weave As a Technique for Tapestry

by Betty Atwood

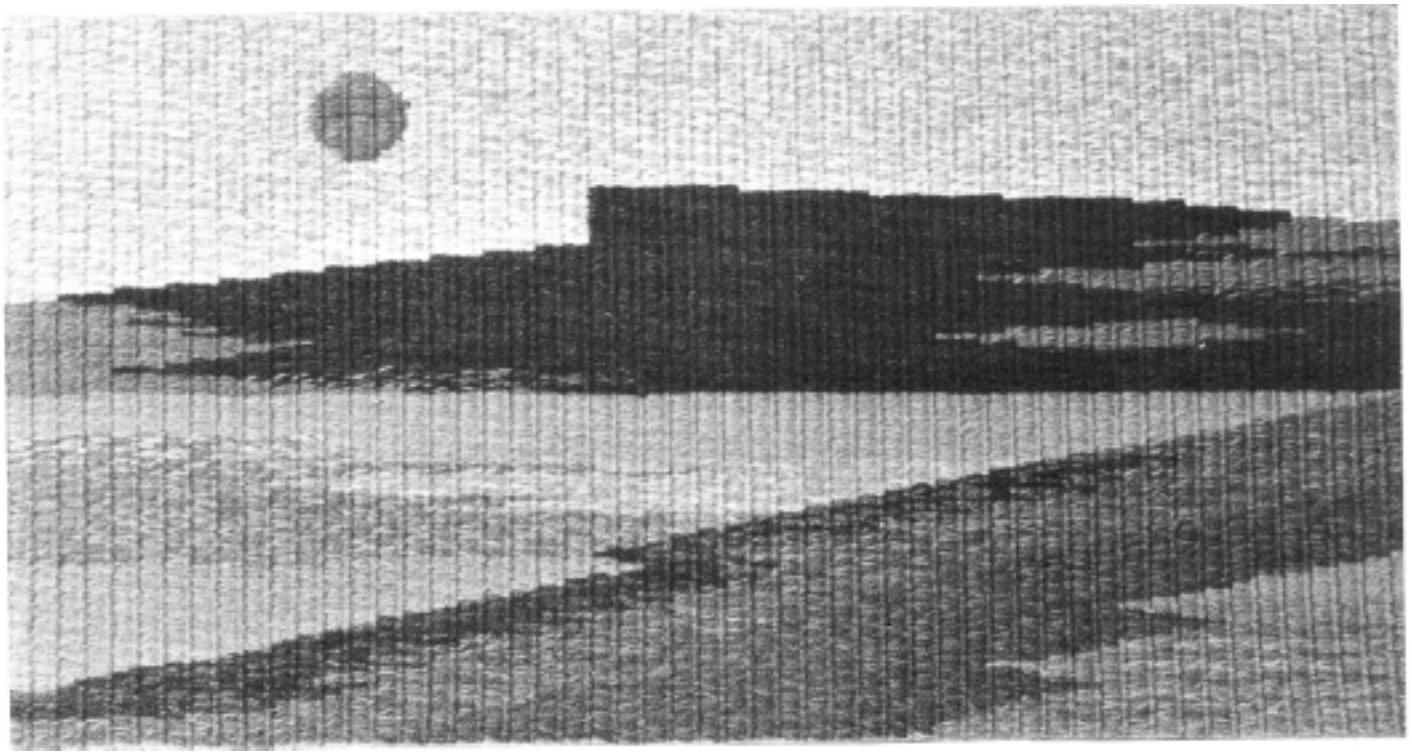
The embroidery weave practiced by the Hopi Indians of the Southwestern United States is a unique way of embellishing woven textiles with brilliantly colored patterns. Sometimes called semi-brocade, this technique has traditionally been used to decorate the borders of sashes worn at dances and ceremonies by the Pueblo Indians. It has no exact counterpart in the repertory of weaves of the white man. Also, unlike many contemporary Indian textiles, it does not appear in the prehistoric weaving done by the ancestors of present-day Pueblo Indians. It has been suggested that it was developed as an attempt to imitate the brocaded fabric brought to the Southwest by the early Spanish people but no one is absolutely sure of its origins. It is traditionally woven on an upright frame loom such as the one on which the Navajo weave their colorful blankets and rugs.

The sash, as it is woven by the Indians, follows a prescribed pattern of triangles, blocks, vertical and horizontal lines that go to make up a "Broad-faced Kachina" border design. With some imagination the uninitiated can visualize the face of the Kachina with its large diamond shaped eyes set in a black mask. The sash is woven in two sections and laced together at the middle making it from 80 to 100 inches (2 to 2.5 meters) in length. The outstanding characteristic of this weave is the series of vertical ridges made by the wrapping of the pattern weft around paired warp threads.

My admiration of these sashes as well as an abiding interest in Indian weaving led me to experiment with this weave. Not having a blanket loom at my disposal I adapted the weave to my four harness floor loom. The drafts, tie-ups and treadlings I developed are for the 8 thread block that the Indians most commonly use and the 10 thread block which I have found better suited for the type of designs I like to do (See Figure 1).



Countless samplers and experiments later I still have not exhausted the many uses and variations of this versatile and exciting weave. But it has been a technique for tapestry that I have found most rewarding. There are two distinct methods that can be used for tapestry - either singly or in combination.



"Mesa" Tapestry in natural dyed yarns, by Betty Atwood

The first one might be compared somewhat to an overshot weave; it has a tabby between each pattern weft. However, when the harnesses are lifted for the pattern shot, instead of going under the raised threads as in true overshot, the pattern weft is wrapped around pairs of raised warp threads, skipping across the blocks between. (Figure 2) The pattern weft is always made into a butterfly for ease in handling. In the second method, following careful graphing one can "dip" behind warp

threads with the pattern weft and produce shapes in plain weave that are in "hollow relief." The pattern weft produces the background, with the same wrapping around paired warp threads as in the first method. (Figure 3). A tabby is also used between each pattern shot in this method. Using this second method the weaver carefully plans the color of his warp so that the plain weave areas will be compatible with the pattern weft. In my tapestry "Animal Crackers" three wide stripes of color were used in the warp resulting in vari-colored animals. Figure 4 illustrates 3 variations of the Hopi embroidery weave.

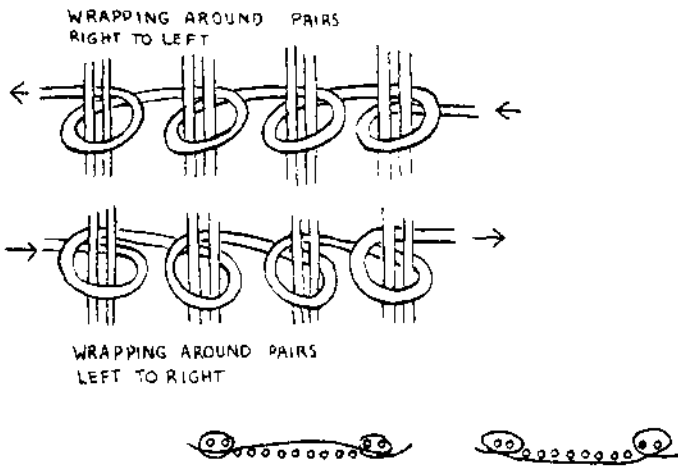


Fig. 2 cross section



Fig. 3 cross section

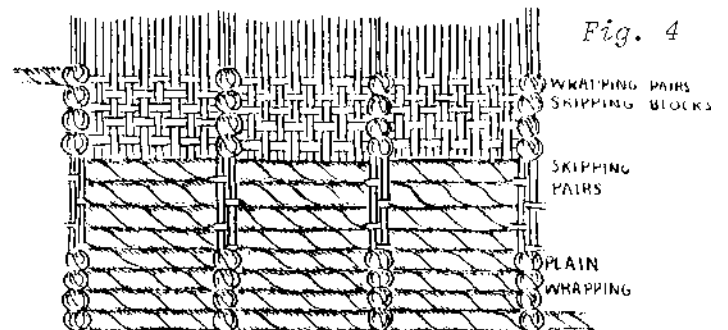


Fig. 4

The material I have found satisfactory for warp is 5/2 cotton sett 20 threads per inch (80/10 cm) in a 10 dent (40/10 cm) reed. Tabby weft should be finer - a 10/2 cotton or comparable size linen thread. Pattern weft is usually a knitting worsted

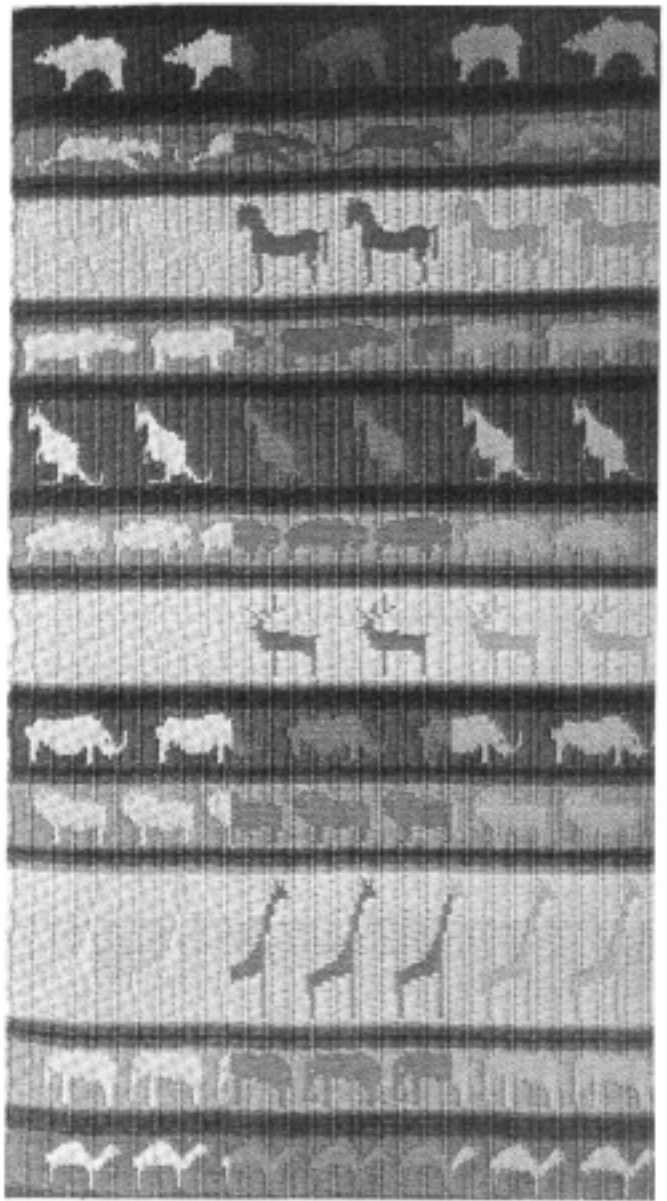
but in my natural dyed tapestries I have used a 2 ply weaving wool doubled in the butterfly.

In graphing out the designs for the Hopi embroidery weave I use graph paper with 10 squares to the inch. There are thus 20 warp threads per inch of graph-paper; this corresponds to the sett in the reed. The actual size of the design on the warp will vary some depending on the packing of the weft but as a rule it should be approximately the same size as the graphed design.

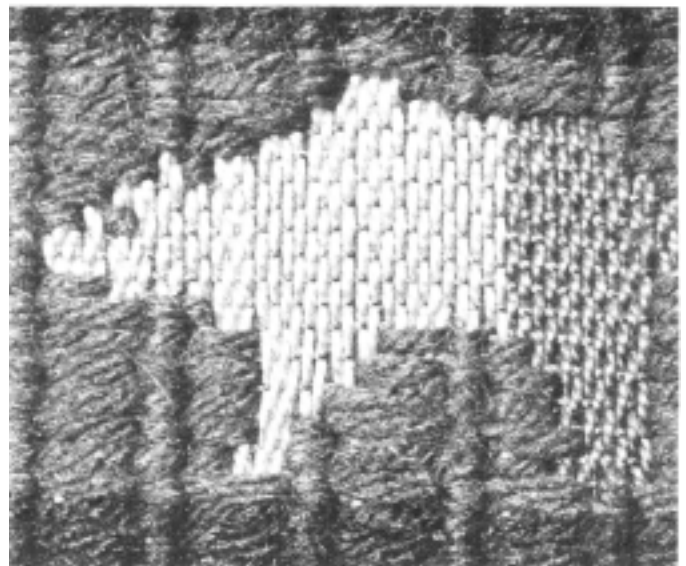
Mini-tapestries are great fun to do using this technique. With a warp four inches wide I did some to be hung as pictures, some for Christmas tree ornaments, and still others to be used as "patches" on clothing or pillows. A popular design with my friends was a gnome done in a combination of the two methods for tapestry described above. He served both as a Christmas tree ornament and as a tiny hanging.

Quite small details can be achieved with this weave either in the "hollow relief" method or the entirely wrapped surface method by adding and dropping colors. A butterfly can be carried under the warp for a short distance but it is best to add a new butterfly for a long carry-over. Like the back of any true tapestry weft ends can be left hanging, tied, or sewn in carefully afterward.

I have found that the tapestries done in this technique lend themselves best to being stretched or mounted on frames. My usual approach is to leave some plain weaving at the top and bottom of the piece and to staple this to the back of the frame. Since the sides of the tapestry do not have this extra fabric I put a series of staples on the back of the frames' sides. Then tying a filament such as a fishline to a staple, I thread a needle with the line and go through the edge of the hanging, then back through a staple, all the time lashing the fabric to the frame. The selvages should be even with the edge of the frame. Because the fishline is transparent it is not conspicuous on the edge of the frame.



*"Animal Crackers"
Tapestry in "hollow relief"*



As a painter mostly turned weaver I have found the Hopi Embroidery weave gives me an altogether pleasurable feeling of painting with yarns.

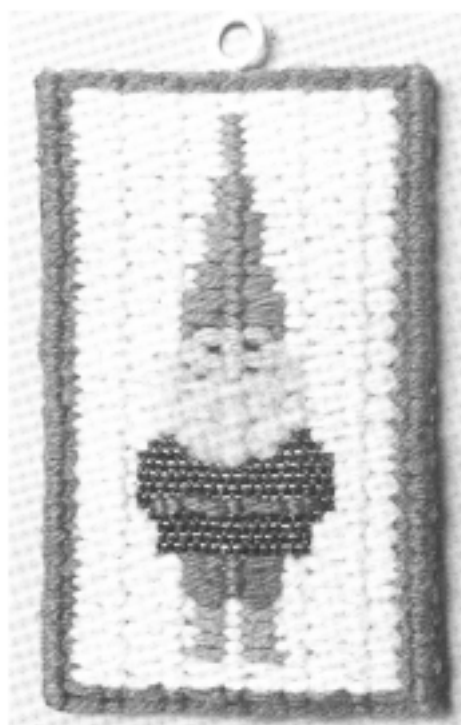
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Copyright: Betty Atwood



"Gnome"

Multiple Harness Weaving Course Part III: Twill Derivatives

A good understanding of the basic twills and of satin weaves allows the textile designer to create many other weave structures suitable for hand weaving.

Designing a weave structure that can be translated into useful fabric is not difficult. The main problem is to design a cloth that is more exciting, more beautiful, more personal and better adapted to its function than any industrially-produced fabric that can be bought in the store. The important factors to consider are the fiber content and the quality of the yarns, the use of color, the texture of the yarn and of the weave structure, the pattern created by the weave structure and by special color effects. Handwoven fabrics are designed with the finished product in mind. The use for which the fabric is in-

tended will demand certain qualities which have to be integrated in the design: Transparency, opacity, insulating properties, resistance to wear, reaction to light, drapability.

In order to avoid some of the pitfalls of designing fabric, especially those related to fabric structure, it is best to start out on paper with the study of graphs. Next, weave samples experimenting with several yarns and color combination.

Designing new weave structures that are based on twills can be done through the modification of the original structure, the rearrangement of parts of the structure, the combining of twills and the combining of twills with other weaves.

STEEP TWILLS

A steep twill, also called whipcord, is a diagonally corded weave with steep inclination. The design is based on a straight twill that can be drawn on twice as many harnesses as you have available on your loom. For example, if you have an 8 harness loom, select a 16 harness straight twill as in Fig. 1A. From the draft 1A, remove the warp ends which are threaded on the even numbered harnesses. A new weave is created that can be woven on half the number of harnesses as the original weave. See Fig. 1B. The weave structure of draft 1B (steep twill) is derived from 1A by drafting only the alternate warp threads of the regular twill. The twill lines of 1B make an angle of more than 45° and are close together.

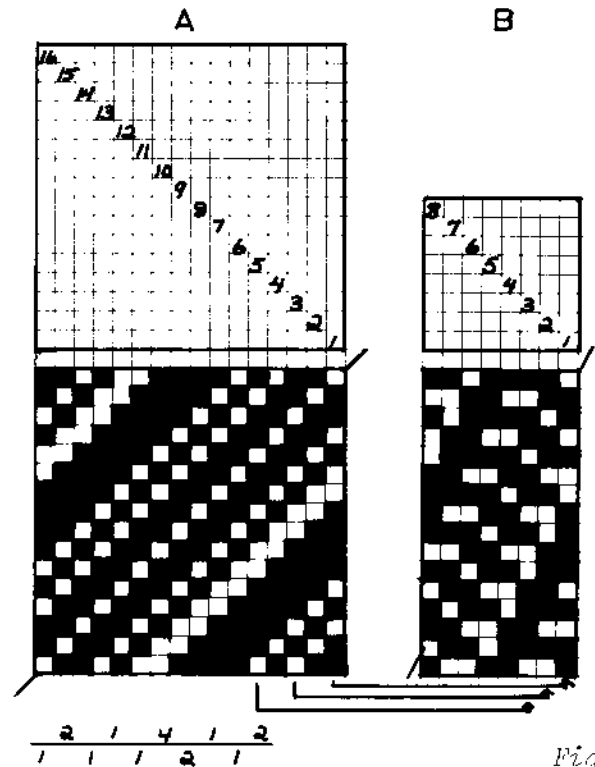


Fig. 1

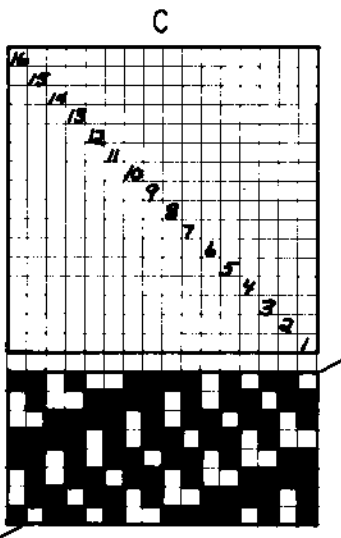


Fig. 1

Note that if the regular (original) twill is on an odd number of harnesses, say 15, the resulting steep twill will need as many harnesses as the original.

The opposite of steep twills are reclining twills. They are derived from a regular twill by drafting only the alternate weft threads. The reclining twills are drafted on as many harnesses as the original twills and are not commonly used. See Fig. 1C.

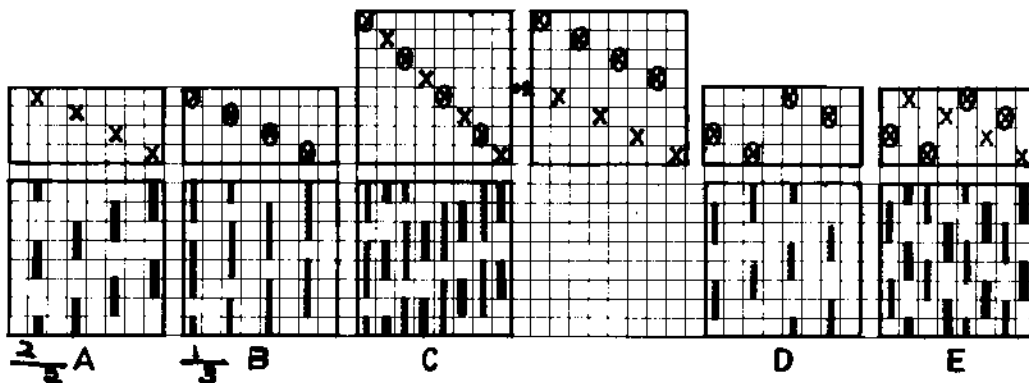


Fig. 2

INTERLOCKING TWILLS

An interlocking twill is a weave whose draft is designed by combining two (sometimes more) twills. In these drafts, alternate warp threads interlace according to a certain twill while the other warp threads interlace according to another twill. This second twill may or may not be the same as the first one.

Example 1:

Fig. 2A shows a $\frac{2}{2}$ twill on which the odd warp threads of the final weave will be threaded.

Fig. 2B shows a $\frac{1}{3}$ twill on which the even warp threads of the final weave will be threaded.

Fig. 2C is the draft of the interlocking twill resulting from the combination of the first two drafts.

Example 2:

Fig. 2A shows a $\frac{2}{2}$ twill on which the odd warp threads of the final weave will be threaded.

Fig. 2D shows a $\frac{2}{2}$ twill on which the even warp threads of the final weave will be threaded.

Note that both twills are the same but the repeat of each draft starts with a difference warp thread.

Fig. 2E is the draft of the interlocking twill in which a twill interlocks with itself. In this case, the resulting draft requires no more harnesses than the draft from which it is derived.

These drafts are especially effective when a light and a dark thread alternate in the warp. This results in one of the original twills being drafted on the light warp, the other on the dark.

Corkscrew weave and shadow weave are based on this system of drafting. Their threadings are interlocking twills in

which a twill interlocks with itself as in Fig. 2E.

Fig. 3 is a typical 7H corkscrew twill draft derived by combining (interlocking) two $\frac{4}{3}$ twills.

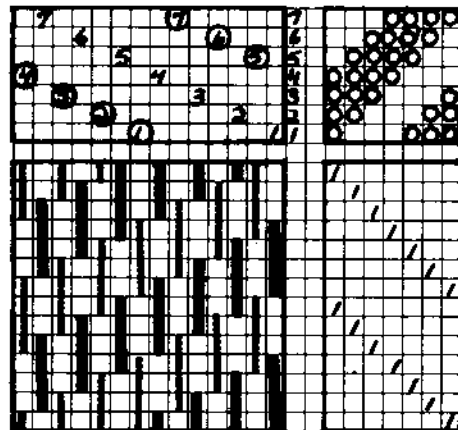


Fig. 3

Fig. 4 is a typical 8H shadow weave draft. The threading is derived by interlocking two $\frac{4}{4}$ twills.

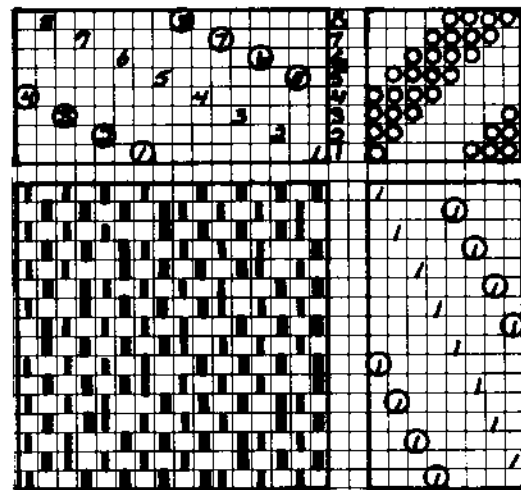


Fig. 4

Shadow weave fabric is woven on opposites (a pick woven in a certain shed is always followed by a pick woven in the reverse shed). This causes the weave structure to lose its twill characteristics and to look more like plain weave.

In the next part of this course we will study more ways of designing twill derivative weaves.



How to Dye and Starch Silk

by Kay Bromberg

Since silk, like wool, is an animal fiber, any chemical or natural dye that can be used for wool can also be used for silk. The main difference in the dyeing procedure is in the handling of the yarn. Silk yarn is very fine and delicate, so extra care must be taken to prevent it from tangling. Instructions for preparing a chemical dye are usually provided by the manufacturer. When dyeing with natural dyes, however, the process is not as direct and there are three decisions to be made at the outset. First, of course, there is the question of what dyestuff to use. Second, a mordant must be chosen. This important ingredient fixes the color in the yarn by combining with the natural dye to form an insoluble compound. It is as much a part of the dyeing process as the dye itself and will determine the final color of the dyed fiber. With different mordants, the same dye can be used to produce a variety of shades and colors. The third question is whether the yarn should be treated with the mordant before or after dyeing. In some cases (alum, for instance), it is better to apply the mordant beforehand, while in others, it may not make much difference aside from some slight variation in color. If the silk is treated with the mordant after dyeing, however, the yarn should be returned to the dye bath for a second dyeing. Besides deepening and strengthening the color, this step ensures that any excess mordant clinging to the fibers combines completely with the dye. Rinsing will not remove the mordant completely, and the silk may be damaged if any remains. Either way then, the process should end with dyeing.

Below is a table of some mordants commonly used with silk.¹

MORDANT	LIGHT-DARK COLOR	ADDI- TIVES	TEMP.	TIME
<u>Alum</u> AlK (SO ₄) ₂	2% - 8%	sodium carbo- nate, 1/10 amt. of alum	90 C. (194 F.)	30 min.
<u>Potassium</u> <u>Bichromate</u> K ₂ Cr ₂ O ₇ or	0.3% - 3%		90 C. (194 F.)	30 min.
<u>Sodium</u> <u>Bichromate</u> Na ₂ Cr ₂ O ₇				
<u>Ferrous</u> <u>Sulfate</u> FeSO ₄ 7H ₂ O	0.3% - 3%		40 C. (104 F.)	15 min.

(Mordant percentages in proportion of weight of chemical to weight of fiber)

1. PRE-DYE MORDANT METHOD (Mordant - Dye)

Preparing the Mordant

Materials:

mordant
water: 20 X weight of fiber
ammonia
stainless steel or enamel vat
stainless steel or enamel bowl
bamboo, plastic or stainless steel rod
rubber gloves

Fill the vat with water twenty times the weight of the fiber and heat it. While it is heating, tie a string through the skein loop, soak the yarn in warm wa-

ter in a separate bowl, and then wring gently. Straighten out the tangles in the skein by placing both hands, palms together, inside the skein loop and pulling them apart sharply in opposite directions. Repeat this action several times until the threads fall naturally into place. Then pass a rod through the skein loop. Dissolve the mordant (and additives, if any) with hot water and add the solution to the vat of water. Dip the yarn into the mordant bath and rest the ends of the rod on the edges of the vat. Using rubber gloves, hold the rod steady with one hand and with the other pull the top of the skein (the end resting on the rod) straight up out of the mordant bath until it is taut. Then dip the upper end of the skein into the mordant bath. Rotate the yarn around the rod in this manner as the mordant bath continues to heat up. Occasionally shift the position of the yarn by bringing the skein only half way out of the water. Lift up the rod and let the skein stretch out and adjust to its new position. For alum and potassium bichromate, bring the water to a boil, then remove the yarn from the rod and submerge it completely in the mordant bath. Simmer for twenty to thirty minutes. Turn the yarn over once or twice to give it even exposure. Then turn off the heat and let the yarn cool in the mordant bath for two to three hours. For ferrous sulfate, bring the temperature of the mordant to 40 degrees centigrade and turn off the heat. Soak the yarn for fifteen minutes, then remove it from the mordant bath. After treating the yarn with mordant, wring it well and transfer it to a solution of four cc of ammonia per one liter ($\frac{1}{2}$ ounce per gallon) of water. One hundred grams (3.5 ounces) of yarn requires approximately one liter (34 ounces) of this solution. The ammonia fixes the mordant in the yarn. After about a minute, remove the yarn and wring it gently. Rinse it in clean water. To minimize tangles when rinsing, hold the yarn by the skein loop and swish it back and forth (not sideways) in the water. Gradually rotate it. Wring the silk when done. The yarn is now ready to be dyed.

Extracting the Dye

Materials:

dyestuff (standard proportions²)
dried material-- $\frac{1}{2}$ weight of fiber
fresh material--double weight of fiber
extract-----10% weight of fiber

water: 20 X weight of fiber
stainless steel or enamel pitcher or bowl
stainless steel or enamel vat
bamboo, plastic or stainless steel rod
rubber gloves

To obtain a deep color, double the above proportions of dyestuff; for a light color, halve them. Although boiling a large amount of dyestuff all at once will produce a deep, bright color, it is also wasteful. Instead, use the minimum required amount and boil it thoroughly several times. For example, using the pitcher or bowl, boil the dyestuff in half the total amount of water for twenty minutes. Let the liquid settle (but not cool completely), and then skim the clear liquid from the top or strain it through a fine sieve (a nylon stocking works well) into another vat and set it aside. Repeat, using the same dyestuff and the remaining amount of fresh water. This step can be repeated as often as is necessary to extract the dye. But remember that the amount of water must be adjusted accordingly. So if the dye is extracted three times, use one third the total amount of water each time; if four times, use one fourth the prescribed amount of water. If necessary, add extra water to the dyebath if the combined liquid after boiling is less than the total amount needed. When the dye is ready, use it as soon as possible because it fades.

Dyeing

Pass a rod through the skein loop and dip the yarn into the dye bath. Heat the dye. As the temperature rises, rotate the yarn around the rod in the same manner described in the section on the mordant bath. Continue to rotate the yarn steadily until the dye liquid comes to a boil, which should take from ten to fifteen minutes. Then take the yarn off the rod and submerge it completely in the dye bath so that the color will penetrate to the fiber core.

Reduce the heat and simmer for thirty minutes. Occasionally take the yarn out, wring it gently and aerate it before returning it to the dye. After thirty minutes, turn off the heat and let the silk cool in the dye bath for two to three hours or overnight. Then remove the yarn, wring gently, and aerate it once more before rinsing it in clean water. Vigorous squeezing and washing is unnecessary, and may in fact dislodge the dye. Rinse just enough to remove the excess dye and mordant. Wring well. Straighten out the tangles in the skein until the threads fall into place naturally. Pass a rod through the skein loop and set it in a sunny place to dry. Some colors may change under direct sunlight, so it is important to turn the yarn inside out several times to give all sides even exposure. If a dye or color is particularly sensitive to sunlight (as are many bright yellows, for example), it is better to dry the yarn in a shady place. Drying not only removes the water, but also fixes the color of the yarn.

2. POST-DYE MORDANT METHOD (Dye - Mordant - Dye)

The techniques for this method of dyeing are basically the same as those used in the pre-dye mordant method; the order in which they are used, however, is different. Start by dyeing the yarn in the manner described above. After the yarn has been allowed to cool for two to three hours or overnight, take it out of the dye, wring it tightly and aerate it. Do not throw out the dye bath. After straightening out the tangles in the skein, place the yarn on a rod and dip it into the mordant. As the temperature rises, rotate it steadily to avoid uneven coloration. The color will quickly begin to emerge when the temperature reaches 30-40 degrees centigrade. For alum and potassium bichromate, continue to heat the mordant bath to 90 degrees centigrade. For iron compound mordants, stop heating the mordant at 40 degrees centigrade since iron can damage silk at high temperatures. This procedure will take from ten to thirty minutes. When the color looks as if it has stabilized, remove the yarn from the mordant bath, wring it well, and, without rinsing it in water, return it to

the dye bath, letting it simmer there for another ten to thirty minutes. As mentioned earlier, dyeing the yarn a second time ensures that no excess mordant is left in the fibers. Rinse and dry the yarn as described above.

STARCHING

Silk is far easier to use if it is starched. The very fine fibers which compose a single strand of silk tend to stick out slightly from the main body of the strand, enough to catch on each other and make weaving difficult. Starching the silk minimizes trouble later by smoothing out each strand.

The traditional Japanese method which calls for a type of seaweed called *funori* (*gloiopeltis furcata*) has yet to be equalled. This seaweed is not widely available in America, but as it is vastly superior to other types of starch for silk, its preparation will be described below.

Ingredients for starch base:³

- 3% *funori* (in proportion to weight of yarn)
- 200% water
- 6% wheat starch or cornstarch
- 0.6% olive oil (1/10 amount of wheat starch, usually a few drops)

Tear the *funori* into small pieces and soak them in the water overnight. The next day mix the wheat starch and olive oil in a separate pan. The oil will keep the starch from making the silk too stiff. Fingers are best for working the oil into the starch. Gradually add the *funori* liquid and mix well. Heat the mixture to 80 degrees centigrade or 176 degrees Fahrenheit (no higher). Stir constantly to prevent the starch from sticking to the bottom of the pan. When the milky white liquid turns translucent remove it from the heat and strain through a gauze cloth or bag. This liquid is called the *motonori* or starch base. For warp threads, dilute the starch to one-half strength--that is, one cup (or any other unit) of water per one cup of starch. For the weft, dilute it to one third (two cups water, one cup starch) if weaving cloth, and to one fourth if weaving a scarf or shawl. In general,

starch liquid four times the weight of the yarn is necessary for even absorption.

Alternative method:⁴

10% wheat starch or cornstarch
2% olive oil
200% water
(a few drops of an emulsifier,
liquid dish soap will do)

Because this method has the disadvantage of slightly dulling the gloss of the silk it should be used only if *funori* is unavailable. The ingredients are basically the same, but minus the *funori*. Work the olive oil into the starch. Then add water, a little at a time, and mix well. Heat to 80 degrees centigrade or until the starch turns translucent. If it is difficult to work the oil evenly into the starch, prepare the starch separately. Then mix the oil and an emulsifier together, add a little water and combine this with the starch liquid. Dilute the starch as described above.

Once the starch has been prepared, hold the silk by the skein loop and place it in the starch. Squeeze the yarn all the way around the loop so that the starch liquid penetrates the inner fibers. Then let it soak for two or three hours or overnight. Make sure the yarn is entirely submerged in the liquid, since any exposed section may dry out. Afterwards, take the yarn out of the starch and wring it well. Then run a hand around the skein loop in one direction to make the tiny fibers lie flat.

The yarn will unwind smoothly later if the order of the thread layers is re-established before it dries. To facilitate this, two leases, placed opposite each other, have been wound into the skein.

First straighten out the tangles in the skein loop. Then pass a rod through the loop and brace the edges of the rod against something so that both hands can be used to pull the yarn into place. Find one of the lease strings and starting at the point where the string crosses itself, separate the skein as far as possible in both directions. Do the same with the other string. Using another rod, tug sharply at the skein to get the threads to fall into place. Gradually, the neat criss-crossed order of the skein should appear. If the starting point of the skein is not clearly marked (and often it is not), it can be found once the order is re-established. Look for the thread that is on the very top of the layers. Follow it around in either direction until you come to the knot indicating the beginning and end of the skein. Likewise, if in the course of unwinding the skein, the yarn breaks and is lost, look for the thread on top. If this order is not established, it becomes very difficult and time-consuming, if not impossible, to find the ends. Dry the silk in a sunny place. The starch works best if it dries quickly, so avoid starching on humid or rainy days.

¹Yoshitaka Yanagi and Ankitsu Kariya, *Kōgei Senshoku Nōto* (Handbook of Dyeing Techniques), Tokyo: Bijutsu Shuppansha, 1974, p. 77.

²Keiichi Murano, *Teori no Subete* (All About Hand Weaving), Tokyo: Iseikatsu Kenkyukai, 1975, p. 78.

³Yanagi, *op. cit.*, p. 58.

⁴Keiichi Murano, in private correspondence with the author.

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Book Reviews

by Clotilde Barrett

A PORTFOLIO OF AMERICAN COVERLETS compiled by Carol Strickler Vol. 1 © 1978, Vol. 2 © 1979, Vol. 3 © 1980. Carol Strickler, 1690 Wilson Ct., Boulder, CO 80302. Each portfolio has 26 loose-leaf pages \$4.00 + .75 postage.

IRISH CROCHETED LACE edited by Jules and Kaethe Kliot, 1980, Some Place Publications, 2990 Adeline St., Berkeley, CA 94703, paperbound, \$5.95 + .75 postage and handling.

This is a reissue of portions of three publications on Irish crochet lace written about 1910. The instructions are compiled in such a way that the very complex patterns are broken down into simpler motifs and connecting grounds. Each pattern and each motif is illustrated and the instructions are adjacent to the picture. This makes the text very valuable to the beginner.

The handsome patterns illustrated in this book will delight the advanced crochet worker and also the collector of costumes and old laces.

WEAVING TECHNIQUES FOR THE MULTIPLE-HARNESS LOOM by Pierre Ryall, 1979, Van Nostrand Reinhold Company, New York, N. Y., Paperback, 384 pp. \$9.95.

This book could be called a pattern book because 300 of its pages are devoted to drafts. There are patterns for 3 to 12 harnesses, mostly twills and variations thereof. Each draft shows the threading, treadling and cloth structure (I like to avoid the word "draw-down"). Some threadings are shown with several treadling variations. The introductory chapters deal with fabric structures, fabric analysis, designing drafts, and color effects. These subjects are treated too briefly and the discussion may at times be more confusing than clarifying, especially to American readers.

The author discusses his attitude toward weaving and gives us a very appealing image of a French weaver with great sensitivity toward his craft.

The wealth of patterns presented here makes his book a good reference work for weavers of all levels of skill.

Carol Strickler is publishing a series of portfolios, each containing 25 coverlet information sheets and a list of reference books. At this time, three portfolios are off the press.

Carol Strickler has a great interest in 19th Century American coverlets, both as a collector of antiques and as an appreciator of fine hand crafts. She is a weaver and a connoisseur of weaving patterns, especially of weave structures that were used in coverlets. Each time a new specimen comes her way, she analyzes it with a skill that she has acquired from many years of experience. She even checks the accuracy of her analysis with the use of a computer.

In her portfolio series, Carol Strickler shares the result of her studies by publishing the information she has gathered on all the coverlets she has analyzed. Most sheets contain the draft, the pattern as it is produced on the screen of a computer, an overall picture, a close-up photo and a short description of a coverlet. Included is technical data such as sett, size and some documentation.

These portfolios are good reference material for collectors and for weavers interested in patterns which are produced by overshot, Summer and Winter, and other typical coverlet weaves.

HAND-LOOM WEAVING by Luther Hooper. First published in Great Britain in 1910. Paperback edition 1979, Pittman Publishing Ltd., 341 pp. approx. \$9.95.

The reissue of this classic book written at the beginning of this century is perhaps one of the most important weaving publications in recent years. This is a comprehensive book which includes fibers, spinning, weaving equipment, the dressing of a loom, and the function of its parts. The weave structures discussed go from the simple to the very complex. The chapters on special

looms and on complex weaves are the most important ones for today's weaver because there has been a big gap in the hand-weaving literature on these subjects.

Since Hooper wrote his book many books have been written on fibers, spinning and weaving. Most of them appeal only to the beginning textile artist and repeat the same things over and over. The serious weaver will, however, enjoy this old book with its wealth of information bringing to life the techniques used before the era of industrial weaving.

This book has a distinct old time flavor and some of the equipment described is rarely seen in the studios of contemporary American hand weavers. Yet everything Hooper writes about is interesting and educational. The author gives his readers a better understanding of the equipment used in the craft of weaving so that the weaver can check on and improve the functions of his own studio equipment. He also touches on many aspects of pattern weaving. These include Coptic pattern weaving, brocading with long-eyed heddles, and many more techniques with historical and ethnic interest. The chapter on single harness weaving describes the weave structures most commonly used by handweavers today. After the chapter on satins and double cloth, the weaving patterns become much more complex and require special equipment. This is a real challenge for the weavers who have draw looms.

INTO INDIGO: African Textiles and Dyeing Techniques by Claire Polakoff, 1980. Published by Anchor Books, Garden City, N.Y. 269 pp. Paperbound \$7.95.

The diversity of African textiles is still by and large unknown to all but a few experts in the field. Claire Polakoff is making a tremendous contribution by sharing her knowledge of, and research on, the large variety of African textiles whose patterning is obtained through the application of dyes. She deals with five major techniques of surface decoration: tie-dye, batik, hand-printed cloth, mud cloth, and Korhogo cloth. The dye used is often indigo but the author includes many other natural dyes and processes. Each type of cloth is placed in its historical

perspective, its geographical location and its social environment. Claire Polakoff explains the techniques clearly and scholarly but never loses the warm contact with the people for whom these techniques are a means of creating art: "The finished fabric is the tangible product of that precise process through which the human spirit finds nourishment and pride."

At the end, the book includes a series of standard indigo recipes, a glossary, an excellent bibliography and an index.

Not only does the book bring African textiles to life through a pleasant and often narrative style of writing, it is an authoritative work that is well researched and carefully documented. This book gives new insights on the arts and traditions of the African people.

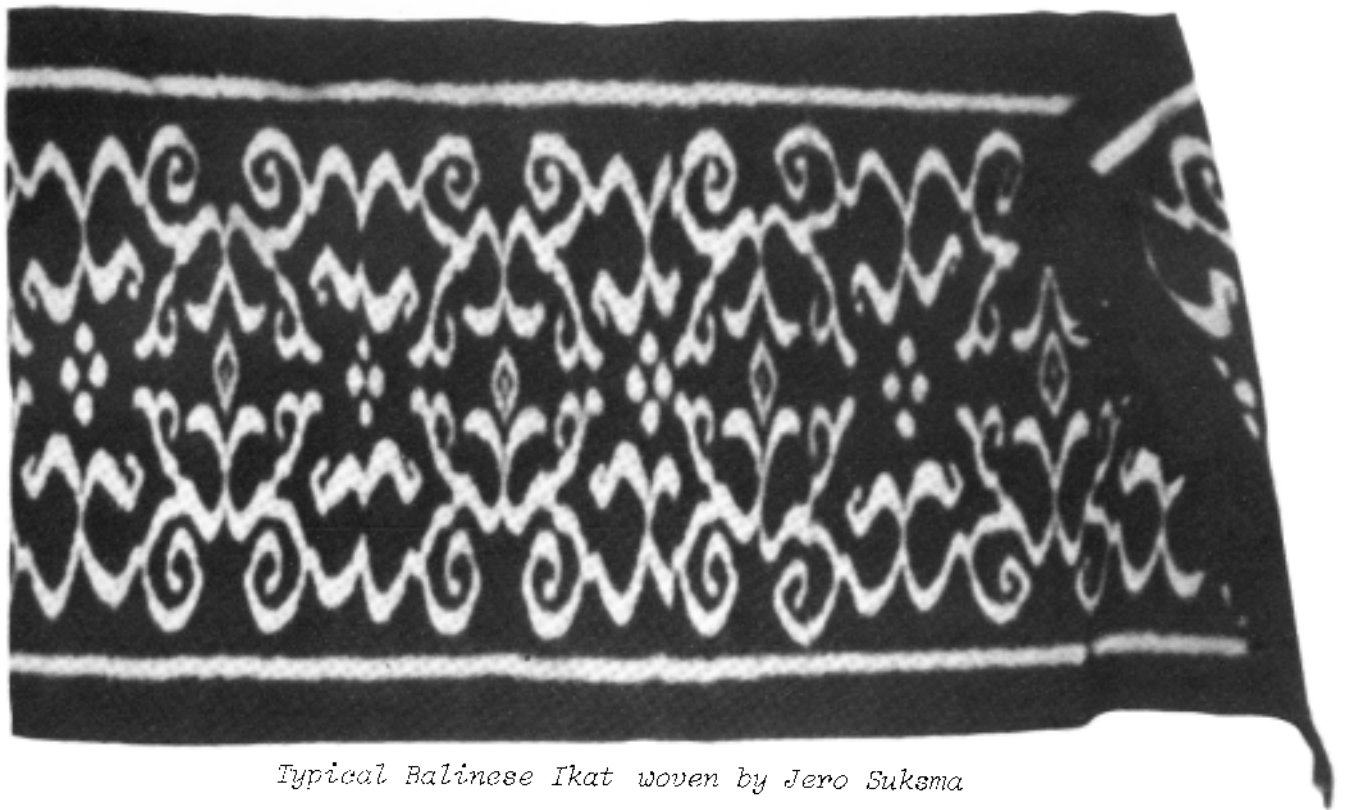
REPS, TECHNIQUE DE CREATION DE TISSAGE TRADITIONNEL ET MODERNE by Bibiane April Proulx, 1979, Les Editions La Tirelle, 176 Rue des Frenes Ouest Quebec, G1L 1C5, 157 pp. paperbound, \$11.95 + \$1.00 handling.

This book may be called a study book and will be most useful for the weaver who wants to explore warp face weaving. Teachers and study groups will find this a good guide for some unusual explorations of warp rep.

The author is a teacher and the pages of her book are organized as lessons, exploring techniques but stressing the importance of personal design and creativity.

The first chapter deals with weft rep. However, this is not thoroughly explored. The chapters on warp rep present an in-depth study of this technique. The author discusses two and multiple harness variation with emphasis on 4 H warp rep. She discusses the traditional style which has patterns related to those of colonial coverlet (example: weaving warp rep "rose fashion"). Then she goes on to the modern style which has bolder geometric blocks. One chapter deals with shadow weave, using several weights of yarn for weft. Others deal with the textural possibilities of warp rep with 2 warp beams by alternating tight and loose warp threads. Interesting!

oooooooooooo



Typical Balinese Ikat woven by Jero Sukma

Balinese Ikat

Ikat is a very old method of tie-dyeing threads before weaving them. This produces the characteristic blurred edges which are part of their charm. Ikat comes from the Malay work "mengikat", meaning to tie or bind. The technique involves stretching out the threads, and then wrapping tightly the areas to remain undyed. After the threads are dyed they are unwrapped and, if warp, arranged on the loom, or if for weft, wound on bobbins. Since ikat is tabby weaving, it can be easily woven on a two harness loom.

The yarns for Balinese ikat are wound on a revolving frame. The width of the frame must be as wide as the fabric to be woven, plus allowance for shrinkage of the thread when dyed. The length of the frame depends upon the size of the pattern you are using. In a "weaving factory" in Bali a hundred yards of one pattern may be woven, while in a village compound only enough thread for one or two sarongs would be dyed and woven at one time, even though forty to fifty yards of warp was put on the loom.

by

Farrell Hannon



*My
Balinese
Ikat
skirt*



Winding yarn on reel

MEASURING THE YARN

1. Determine how many shots will be required per inch. This is very important if you wish your design to come out as planned. One-fourth of this amount will be the number of threads in one bundle. Balinese ikat is based on curving forms, originating from vines and plants, sometimes with birds and flowers included. More than one-fourth of an inch (ca. 6mm) in a bundle would prevent a smooth transition from one part of the design to another and would cause a stair-step effect. Remember that you count the threads on both front and back of your frame, so eight times around the frame will make sixteen threads to a bundle.

A revolving frame makes it easier to wind the thread and keep the tension than using a stationary frame with nails, when stretching threads. The thread is wound in bundles across the frame and back, where the beginning and end threads are tied together. The threads may be wound back and forth several times before tying them together.

The frame may be made of 3/4" (19 mm) pine, drilled at the sides to fasten it to the uprights of the stand. One side of the frame must be removeable so the skein of thread can be removed for dyeing. (Fig. 1) The frame must also have some means for loosening the top bar, as tying or binding the top and bottom layers of threads together naturally shortens them somewhat. The Balinese have an extra space cut out of the sides of their frames which they fill with pieces of twig while winding and remove when beginning to tie. When making a pine frame one can make slots at the tops of each side, instead of holes, for bolts, so that by loosening the wing nuts at the top, the top bar can be moved down. Tightening the nuts will then hold it at any position. A one-inch (25 mm) slot is sufficient. See Fig. 2.

The Balinese frame stands are not very high because the weavers sit on the floor to wind thread. However, I found three feet to be a better height as it enabled me to sit on a chair when winding thread.

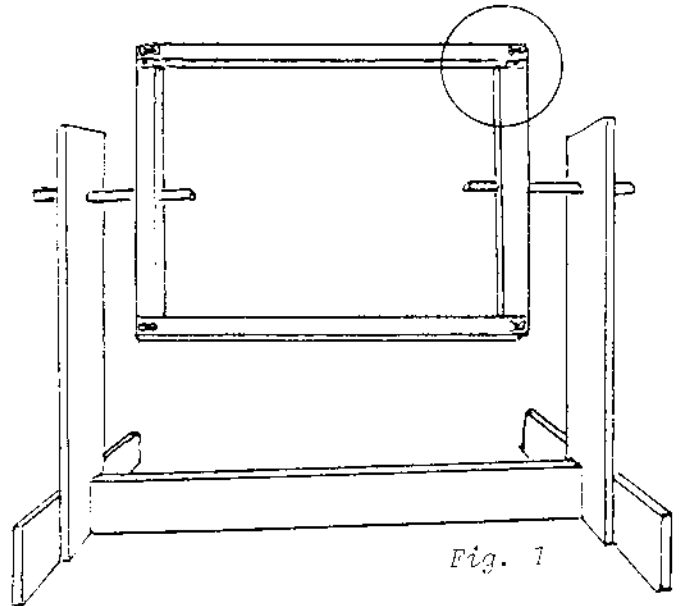


Fig. 1

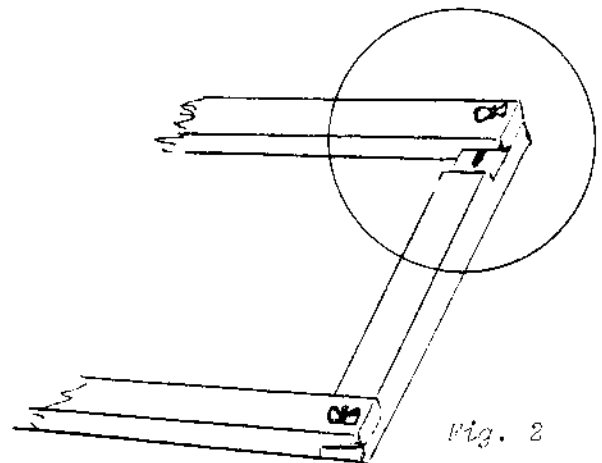


Fig. 2

2. The size of your pattern will determine the number of bundles to be wound across your frame. You may wish to plan your pattern on squared paper first, then count the number of bundles necessary to make one repeat.

3. Bundles must be wound across the frame and back again so the beginning and end threads can be tied together. This will make a pattern and a reverse pattern. Determine the number of complete patterns you will need for the length of your material. This will tell you how often you have to wind across the frame and back again. Rather than winding back and forth across the frame too many times it is easier to wind with a number of threads at a time. (I used 5 threads and went back and forth twice, making four layers of bundles. This is enough weft for 10 complete patterns).

WINDING THE YARN

1. Place as many spools of thread as you are planning to use together on a bobbin rack. If you are winding no more than two or three threads together, the spools may be placed in grocery sacks large enough so they won't bounce out. Fig. 3.

2. Fasten a piece of plastic tape or cord across the top and bottom of your frame. A little masking tape will hold it on.

3. Tie the threads you are using to the side of the frame at the bottom left side. Carry them to the top and around the back to the bottom with one hand while turning the frame with the other. Continue until you have wound as many threads as are needed for one bundle, then carry the threads about one-fourth inch over at the top and continue with the second bundle.

4. When all the bundles needed have been wound across, tie a piece of tape around the frame near the top to facilitate counting when winding bundles back toward the beginning. See Fig. 4. Go over each bundle the same number of times as before, except for the last bundle in the first row, where you reversed your winding. This will make a second row of bundles on top of the first row. This forms your pattern and reverse pattern.

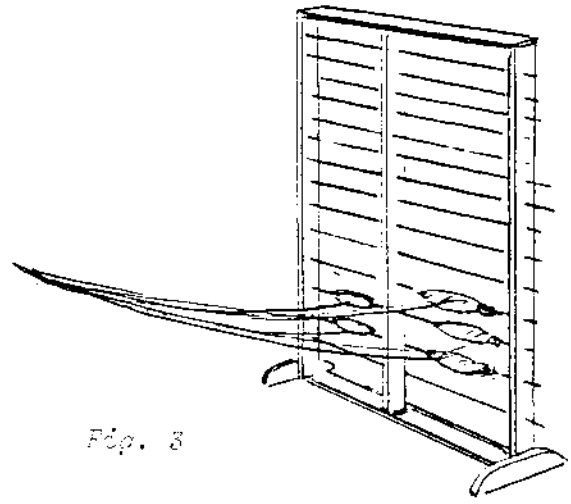


Fig. 3

5. If you are going to wind your threads more than twice, untie the tape, pull it out, and re-tie it around the frame over the top of the bundles each time. (I wound my yarns back and forth twice, making four piles of bundles.) Remember, each time you reverse your threads you will not go over the last bundle again.

6. When the thread is all wound you will have returned to the starting place on the frame. Untie the first threads from the side of the frame and tie the first and last threads together in a half bow so they will not tangle but can be easily untied.

DESIGNING AND TYING

1. If your fabric is wider than 12 to 14 inches (30 to 35 cm), twine the bundles together across the center. Take

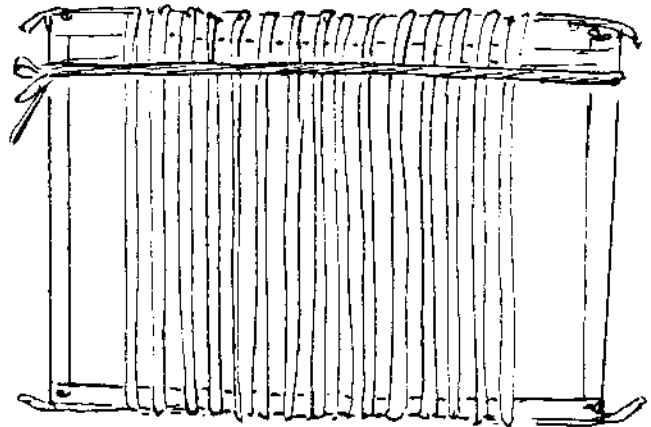


Fig. 4

a piece of cord or plastic tape more than twice the width of the frame. Tie it at the edge of the frame near the center. Twine around each bundle, all the way across, and then tie the cord to the other side of the frame. This will keep the bundles from slipping when tying the pattern. See Fig. 5.

2. Using charcoal, draw the design on the threads. If you have planned it on graph paper, use that as your guide.



Design partly sketched, beginning to tie.

3. Usually a straight line is made along one edge of the cloth. This is the first tying. Each bundle is tied for a distance of $\frac{1}{4}$ to $\frac{1}{2}$ inch (6 to 12 mm), close to the frame. This line is a help in putting the threads in their correct position during weaving.

4. Using a plastic strip, wrap it tightly around the bundle of threads where you wish the original color to remain, leaving an end. Pull it tightly as you go. Wetting your fingers from time to time helps to flatten and stretch the plastic. When you have covered as much as you need for that part of the design, wrap the tape back to

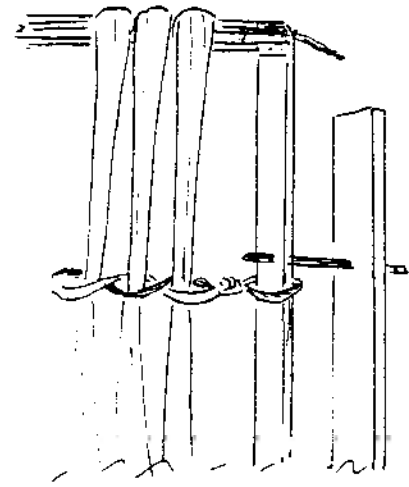


Fig. 5

the start and tie the two ends together. It is most important to have each end of the wrapped strip pulled very tight. End two may be made into a half hitch with end one pulled through it, or a knot, using the two ends, may be tied. Both methods are used by weavers in Bali.

5. Continue wrapping the design areas until they are all tied. No two tied areas on one bundle must be closer than one inch or it will be difficult to get dye in that area.



Tying the design in the weft thread.

DYEING

1. After the design has been tied the cords from top and bottom of the frame are untaped. The bundles of thread, along with the cords, are removed from the frame. The ends of the cords are then tied together to form loops. These keep the bundles together when they are dyed. See Fig. 6.

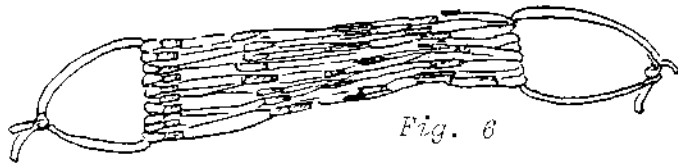
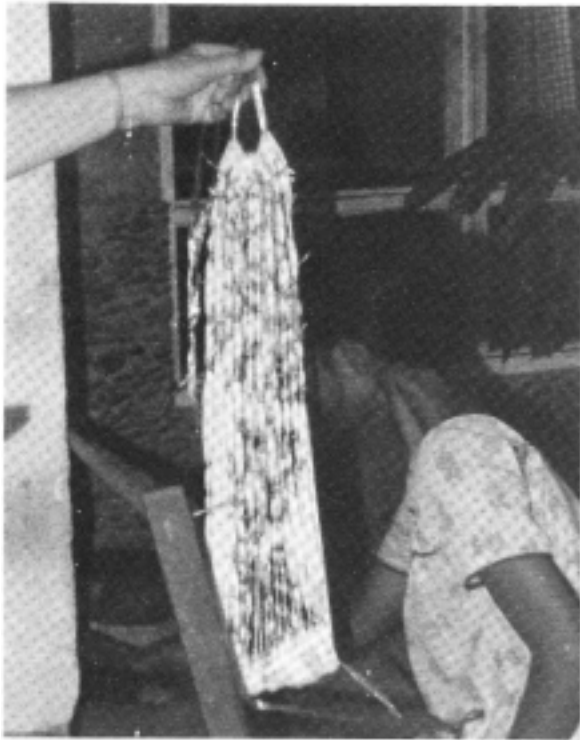


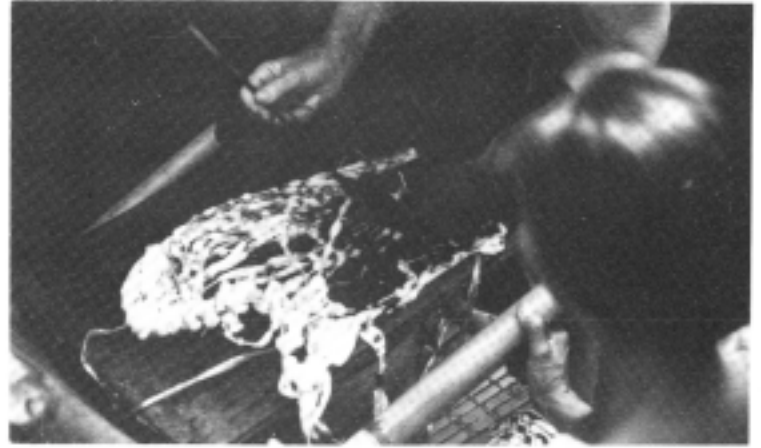
Fig. 6



Thread with pattern tied in, before dyeing

2. Soak the thread for one hour or more in hot water. A few drops of vinegar may be added to the water, or, if the water is "hard" add a little Calgon.
3. Prepare the dye according to directions with the dye, and for the kind of fiber you are using. (wool, cotton, rayon, etc.) Use the same color dye as the color of your warp threads.
4. Remove the ikat-tied thread from the soaking water and pull apart the unbound sections of bundles with the fingers so dye can enter the areas more easily. On

any spaces that are less than three inches, dab dye close to the tied areas, using a swab dipped in the dye solution. (A stick wound with a rag makes a good swab.)



Dabbing dye close to ties before dyeing.

5. Place yarn in dye bath and dye for required amount of time and temperature, according to dye and fiber used. Stir often to make sure the threads are dyed evenly.
6. Rinse well, and hang up by the end string to dry, reversing several times during the drying period.

UNWRAPPING AND WEAVING

1. After yarn is dyed and dried it is put back on the frame before it is unwrapped. When it is unwrapped the complete design will appear just as it will look when woven. (Be careful in cutting the knots when untying so as not to cut the thread. If that happens just tie the ends together. That section will then be discarded when you are weaving.)



Separating the weft into individual threads in order to rewind bobbins.

2. When more than one thread is used to wind bundles on the frame they must be separated in order to wind the bobbins for weaving. This is done by winding them on a reel with holes or screw eyes at the top. See. Fig. 7.

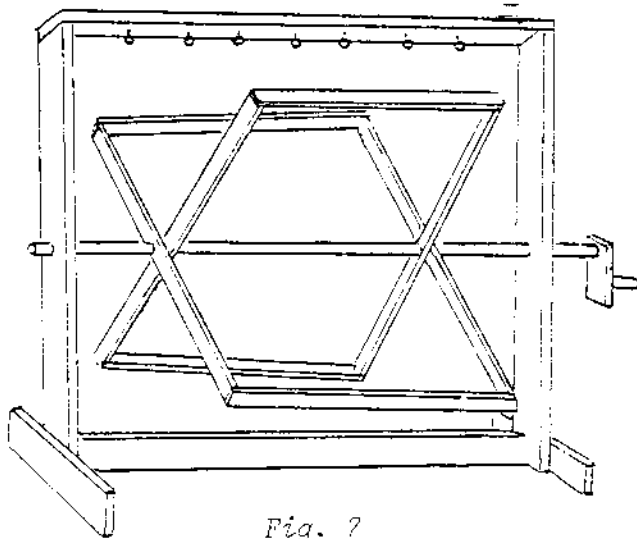


Fig. 7

The threads from the winding frame are now untied (the first and last ends that were tied together before dyeing). The group of threads you ended dye with are now separated into their individual threads, each one threaded through a hole or screw eye, and then tied to the center rod of the reel. Hold these threads with your left hand and turn the handles of the reel with your right hand, being careful not to break the threads. (It is helpful to have someone turn the winding frame for you). You will now have as many groups of thread on the reel as you had spools on the bobbin rack when you began.

WINDING BOBBINS

1. Wind only one group of threads from the reel on your bobbins and weave it before going on to the next group. As you wind your bobbins number them in order, 1, 2, 3, 4, etc. The last bobbin will be the one where you untie the thread from the center rod. Begin weaving with this bobbin, and weave in reverse order: 4, 3, 2, 1.

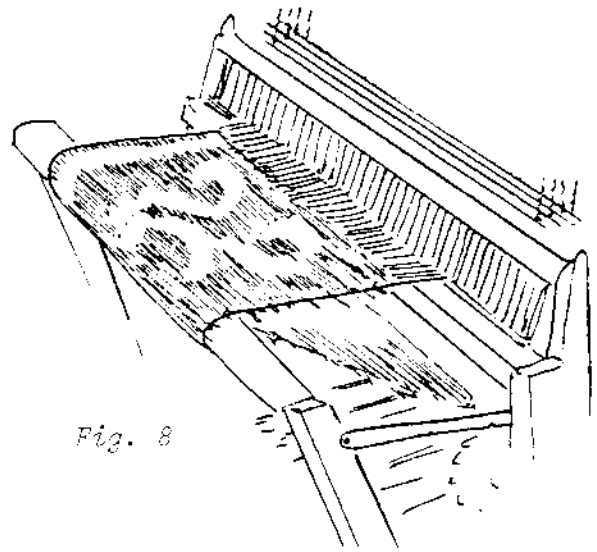


Fig. 8

WEAVING

1. Begin weaving after spreading the warp with a few shots of heavy thread, then weave with plain thread for a few inches before beginning the ikat. When you begin your ikat place your ikatted thread so the straight line along the edge lies the same distance from the selvedge as it did from the edge of the frame. This line usually lies on the left side of the material. If there is any adjustment to be made, allow the thread to extend on the right edge. See Fig. 8.

2. When ending a shuttle of thread and beginning another you will need to remove one pattern length if you are using cotton, as you cannot overlap threads without changing the position of the design. If your thread is fine, one less thread will not cause any pattern distortion. If you are using wool it may not be necessary to do this as there is enough stretch in wool yarns so that you may still be able to place the pattern in the correct position.

3. In warping remember that most yarns will shrink and the width of the warp should equal the width of the reeled weft after dyeing. If you find that your weft shots are consistently too long you may add a few warps, or you may remove a few if your weft is too short.



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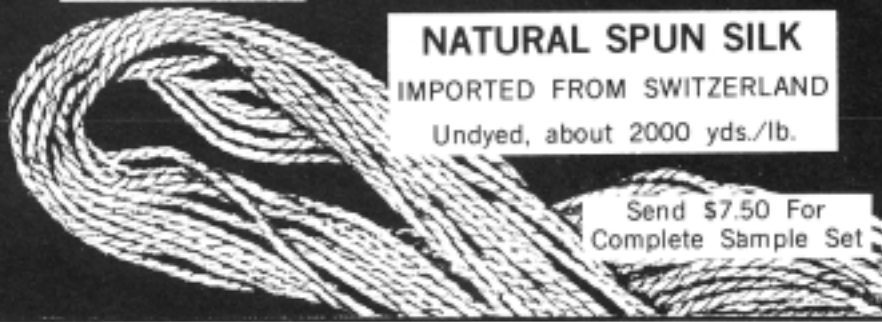
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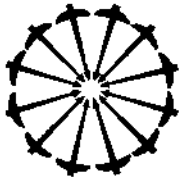


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Multiple harness, IV/3, pp. 15-17, Yardage
and IV/4, pp. 16-18.
Twill, IV/3, pp. 9-10.
- Lady's*, IV/3, pp. 24-25.
Lady's, IV/3, pp. 28-29.
Lady's, IV/4, pp. 43-44.
- Wallhangings
Kathleen Hagen, IV/2, pp. 12-13.
Elaine Nixon, IV/1, pp. 10-14.
- Yardage
Draperies, IV/2, p. 30.
Draperies, IV/3, pp. 26-27.
Stoles, draperies, IV/2, p. 28.

Errata—Volume IV

#2 pp. 32-37. Multiple Harness Weaving Course.

Note: The draft chosen to illustrate the different methods of drafting used by various authors is not claimed to be the correct draft for damask. The draft chosen as an example for this text is draft 8, E1 p. 39 from "*Designing on the Loom*" by Mary Kerby. It has been rearranged according to the drafting systems used by various authors.

#4 p. 22

The title of the article is Complementary-Weft Plain Weave. (not complimentary).

#4 p. 11.

The author of the article Shaft Switch Techniques is Jane Busse (not Jean).

p. 13.

Under Fig. 4 add the following paragraph. The woolen yarn for the control-tie is wrapped firmly several times around both strings of the tie-ins which lie on top of the harness frames and is then tied.