The Weaver's Journal

$3.50 Volume VI Number 2 Issue 22 Fall 1981

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The Weaver's Journal

Quarterly Journal for Textile Craftspeople

Volume VI, Number 2, Issue 22 Fall 1981 ISSN #0160-3817

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Typeset by WESType Publishing Services, Inc.
Printed by Mountain West Printing and Publishing, Ltd.
Color separation by Spectrum, Inc.

The Weaver's Journal is published on the first of each January, April, July and October by the Colorado Fiber Center, Inc., P.O. Box 2049 Boulder, Colorado 80306. Telephone (303) 449-1170, 444-2088. Subscription rates are $15.00 U.S. Currency for 1 year (4 issues) or $29.00 U.S. Currency for 2 years (8 issues) Colorado residents add 3% sales tax. Outside U.S.A. - 1 year $18.00 U.S. Currency, 2 years - $34.00 U.S. Currency. Second-class postage paid at Boulder, Colorado and additional mailing offices. *The Weaver's Journal* USPS 384-210. The editorial committee takes no responsibility for the goods advertised in this journal. POSTMASTER: Send address change form 3579 to The Weaver's Journal, P.O. Box 2049, Boulder, CO 80306-2049

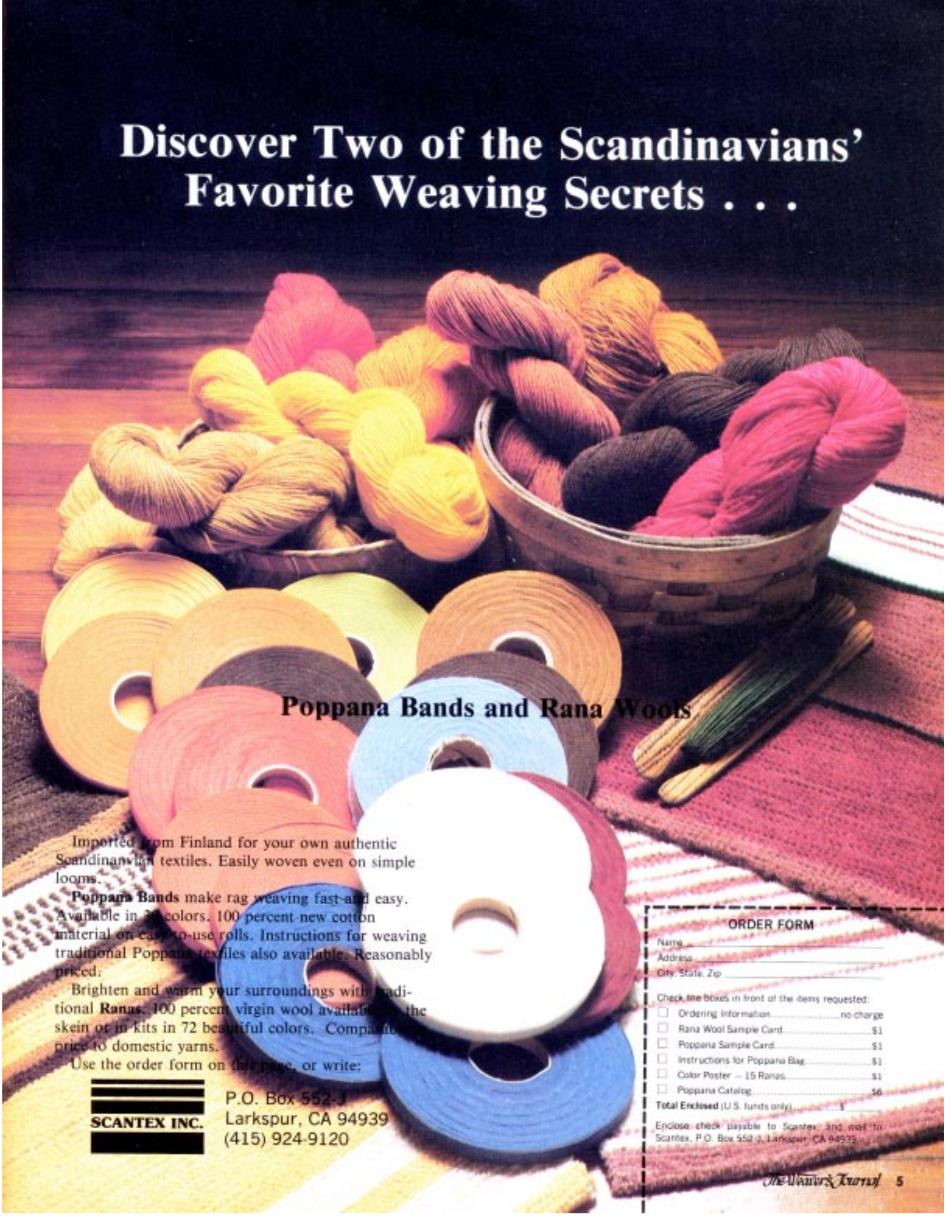
Letter from the Editor

This issue features many handspun-handwoven items. We hope you enjoy these articles.

The Weaver's Journal continues to grow. With this issue we are giving you 64 beautiful pages, twice as many as there were in our first issue six years ago. You will see that we have increased the product and book reviews as well as the number of weaving projects. What do you think about this? Are product reviews useful to you? Do you find the book reviews helpful? Let us know your likes and dislikes. We appreciate hearing from you and make it our policy to answer all your questions and respond to all suggestions. Please include a self-addressed stamped envelope (SASE) if you wish a reply. With the postal rates climbing, we can now only answer those letters which arrive with a SASE.

You will see an ad in this issue for our new mail order service, featuring weaver-spinner related gifts made especially for you by talented craftsmen and artists. We hope you will think of these items and of subscriptions to The Weaver's Journal as holiday gifts for your relatives and friends who appreciate textile arts.

Discover Two of the Scandinavians' Favorite Weaving Secrets . . .



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NATIVITY SCENE

by Bessie Mae Vargo

Photo by William Sala

"And she gave birth to her first born son and wrapped him in swaddling clothes, and laid him in a manger." (Luke 2:7).

All garments for "Nativity Scene" are handwoven, dyed with natural materials and hand sewn as in Biblical times. The figures are size 3 dolls. They take a size 3 of child's clothing and are 3 feet tall.

It took almost a year to research the garments' construction and loom usage and colors available. The Library of Congress, Smithsonian Institute, and several seminaries and libraries were contacted.

Mary's garments are woven of cotton and all others are of wool. Mordants used include: alum, chrome, blue vitriol, and chamber-lye. Logwood, cochineal, walnut hulls, dandelions, day lily, madder, indigo, canna flowers, goldenrod, salts and onion skins were used for color and overdyes.

Yarn to be dyed was first mordanted and then dyed. As the pot used for dyeing can change the color of dyes, I used white enamel pots in order to give only true color. Some of the dyes used for "Nativity Scene" have been stored in our freezer since 1974 and 1976.

The fabric structure for the garments was all plain weave because the looms of Biblical times had only two sheds.

The seams were all sewn by hand with the yarn it was woven with. Seams were overset a quarter of an inch and each edge sewn with running stitch or made with flat-fell where raw edge would show. Biblical times instructions are: "sewed two times".

The *kamis* of Joseph, the shepherd boy and the kings, were woven with 10/2 wool set 18 ends per inch (70/10 cm) to look coarse.

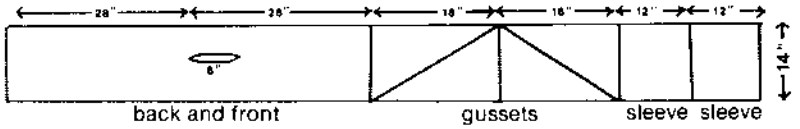
Most yarn was dyed in the skein, but some overdyes were done when the garment was completed.

Two shuttles were used for neck openings. Extra pieces were made to use for gussets on sides and were zig-zagged before cutting. Pieces were also added to make some sleeves longer. The Old King's garment was dyed with dandelion and overdyed with logwood for charcoal grey and gold cast. The cape and hat were woven with logwood and stripes of cochineal, blue vitriol, canna flower, and goldenrod dyed yarn. Shoes are handmade of black vinyl.

The Black King's garment is natural wool with over-skirt of stripes of three inch woven pieces sewn together. His headress is woven with madder dyed yarn and his handmade leggings are brown vinyl.

The Young King's garment is woven with yarn dyed with day lily. The coat and hat were woven with goldenrod dyed yarn and then overdyed with cochineal. His handmade long-toed shoes are yellow vinyl.

Joseph's *aba* (coat) is woven with wide stripes of yarn dyed with walnut hulls and dandelions; worsted size yarn set 12 ends per inch (50/10 cm) in a 12 dent reed. The embroidery along the seams, down the front and around the sleeve edges is dyed with goldenrod. This coat is made of two lengths of material, laid side by side and joined with a seam which runs around the garment. Only in Nazareth were the looms large enough to weave materials in one piece. Hence Our Lord's seamless coat. The looms were usually 27 inches (68 cm) wide. I made the garments half size; so made them 14 inches (35 cm) wide on loom. His girdle is woven on an inkle loom using logwood, walnut hulls, blue vitriol and canna flower dyed yarn. It is long enough to "gird his loins". He could tuck the front of his kamis into the girdle or pull the tail between his legs and tuck it in front. The headdress or *tarbush* is held in place with *akai* or coil braided with horsehair, two ends joined and tied with strings. His handmade sandals are of leather.



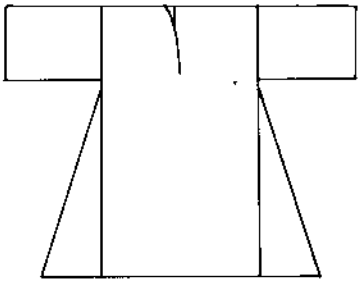


FIGURE 1. Kamis, Old King's coat

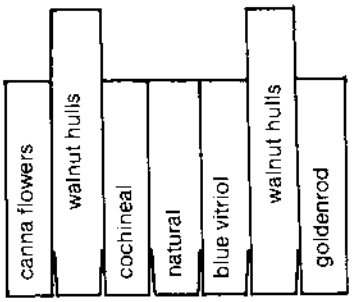
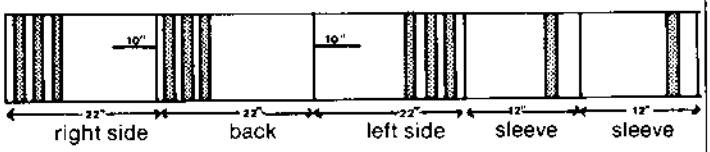
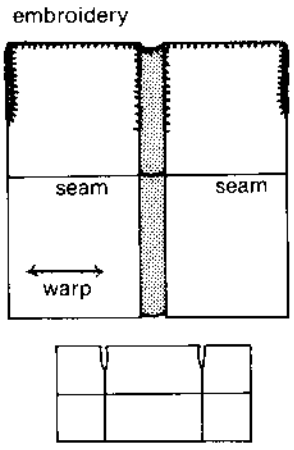


FIGURE 2. Black King's garment





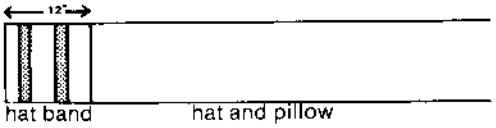
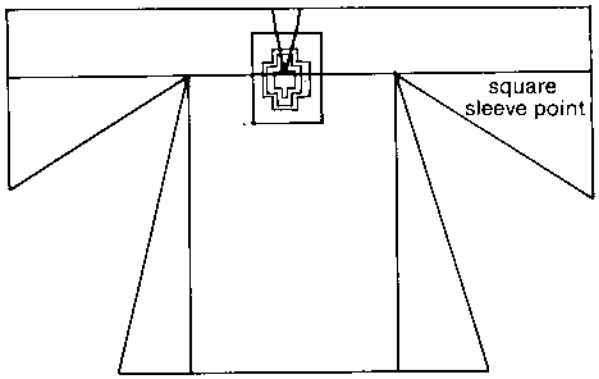


FIGURE 3. Young King's coat

FIGURE 4. Joseph's aba (coat)



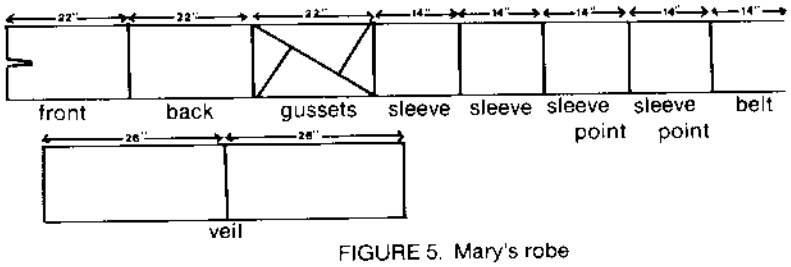


FIGURE 5. Mary's robe

Mary's robe is woven of cotton and dyed with indigo made with chamber-lye. Her bleached white veil is square. Red, yellow, green and orange is embroidered in center of the robe front. Her robe has long pointed sleeves that were made with squares sewed in as gussets. Yarn was 10 2 unmercerized cotton set 20 ends per inch (80/10 cm) in 10 dent (40/10 cm) reed; two per dent.

The swaddling clothes of Baby Jesus are woven of natural wool and wrapped to keep arms and hands inside.

The shepherd boy's kamis is woven of natural wool and shoulder cover is made of natural sheepskin. His girdle is made of four-braided yarns dyed with walnut hulls, onion skins, logwood and madder. His handmade sandals are of leather.

Tassels on garments or girdles are to remind the Hebrews of the commandment of God, Deut. 22:12; "you shall make yourself tassels on the four corners of your cloak with which to cover yourself."

The jewelry is handmade and the sheep are purchased. The manger is made of paper maché to resemble the stone boxes for animals' feed in the stable. The gift boxes are of metal and the crown handmade of paper maché and jewels and fur.

Warp thrums or ends of yarns are used for manger straw and floor coverings.

There are problems with displaying a group of 3 foot dolls. Stands were welded with heavy bases and posts to tie the dolls upright. Another challenge came when a black doll couldn't be found large enough. A series of trials and errors followed and then a solution in the form of shoe polishes, gently applied to a white doll, created the "Black King".

About the author: Mrs. Edward J. Vargo (Bessie Mae) is from Cortland, Ohio. She has been weaving for 30 years and has won numerous prizes. She has her apprentice and journeyman certificates from the Boston Weavers and hopes to earn a master certificate by doing a project "Dolls of the Nation".

Bessie and her husband Ed, operate Edlevar studios and are dealers for the Leclerc loom.

RUG WEAVING: HOW TO AVOID DRAWING-IN OF THE WARP

by Martha Stanley

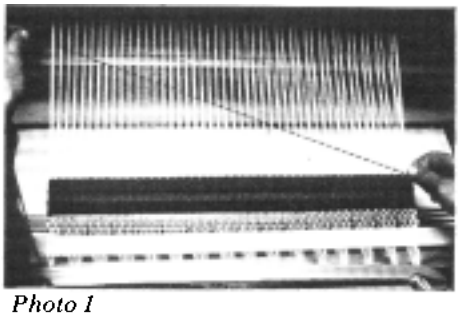


Photo 1

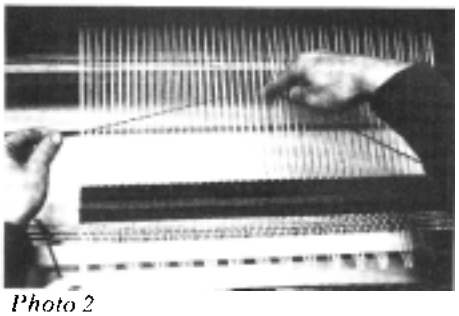
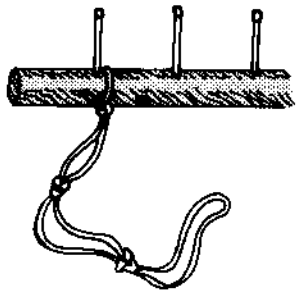


Photo 2

The problem of draw-in in weaving, particularly weft-faced weaving, is not always accurately understood. It is often presumed to be caused by pulling the weft too tight at the selvedge. Not only is this not accurate; it leads to solutions which make the rug's selvedge both loose and sloppy and quick to wear out.

In a weft-faced weave only the weft takes a meandering path in its interlacement with the warp. The warp moves straight through the cloth. The weft must traverse above and below each succeeding warp thread. Its path is thus a crooked one and longer than simply the width of the weaving. If the weaver does not work in enough extra weft with each throw of the shuttle, the weft will exert pressure on *all* the warp threads to move closer together, narrowing the piece. Of course this phenomenon is apparent at the selvedges. But it actually is occurring across the entire cloth. To see this, bring your beater forward to within an inch of the fell of the cloth. You see the selvedge warps spaced at a different width at the fell of the cloth than in their dents in the reed. Obviously draw-in is occurring here at the selvedge. Now follow the line of warp threads in from the selvedge a few inches. Look at these warps where they emerge from their dents in the reed. When there is draw-in you will note that each warp is bearing hard on the inner edge of its dent; you may note a deflection or draw-in of these warps also. The symptom of draw-in is usually perceptible everywhere but the few inches in the very center. To correct it we must work in extra inches of weft evenly waved or bubbled clear across the fell of the cloth. There are many ways of executing this. One such method is using a bubbler.

The bubbler in its simplest form is made from a dowel 5/8" (16 mm) in diameter or thicker. My 60" (152 cm) one is 1¼" (32 mm) thick. It should be light weight but not flex as it performs its job. The bubbler must be as long as the width of the rug you will weave and not longer than the width of the loom. Every 2 inches (50 mm) in a straight line the length of the dowel a 1/16" (1.6 mm) hole is drilled, then a 1¼" - 1½" (32-38 mm) finishing nail is pounded in until the point penetrates the dowel but doesn't protrude from the other side. So much for the carpentry.



The bubbler is most efficiently located hanging loosely from the front side of the beater but suspended high enough that the nails do not interfere with the passage of the shuttle in the open shed. A practical and simple way to attach it is with a chain of rubber bands larksheaded together, with an overhand knot near the end of the last one. Put the small loop by the overhand knot over the bubbler, encompassing it and the final finishing nail at one end. Attach the other end of this rubber band chain to some convenient protrusion on the top at the end of your beater. Often a bolt and wing nut holding the top of the beater over the reed serve this function. Attach a similar length of elastic from the other end of the bubbler to the opposite end of the beater. You may have to add or subtract some rubber bands until the bubbler hangs high enough not to tangle in the shed, yet with enough elasticity to be pulled close to the fell of the cloth. You may prefer a heavier elastic if your dowel is thicker and longer. My large bubbler is attached with short bungee cords to cup hooks near the ends of my bubbler.

Now, to weave. Throw the shuttle from left to right. Grasp the final left hand warp with the left thumb and forefinger just above the weft and hold this warp so it won't move to the right. Now take the weft a few inches beyond the right selvedge with the right hand and tug firmly so that there is NO excess weft looped around the final left warp thread (Photo 1). Maintain this tautness of the weft with the right hand and with the left forefinger move to the center of the warp (Photo 2) and bring up the weft to make a triangle (Photo 3). Close the shed. Bring the bubbler down into the weft and pull forward toward the fell of the cloth so that it transforms the triangle into a series of uniform small 2 inch waves or bubbles (Photo 4). Don't bring the bubbler closer than ½ - 1" to the cloth (Photo 5). Change to the opposite shed and beat in this pick of weft.

The height of the triangle, that is, the distance from the fell of the cloth to the peak of the triangle, determines the amount of extra weft length you are bubbling in. The correct amount varies with the coarseness of the weft, the coarseness and sett of the warp, and the weave structure. Plain weave would require more than a twill, for example. For any given project you will need to experiment for 2 - 3"

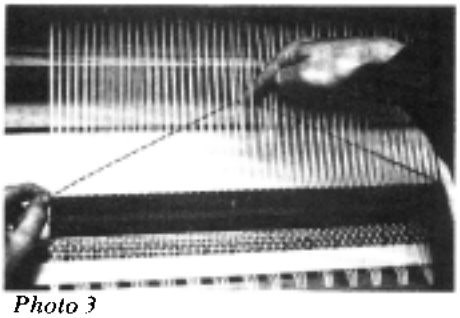


Photo 3

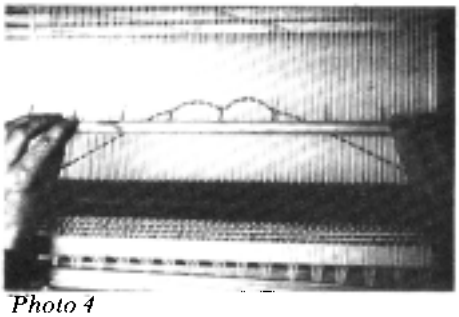


Photo 4

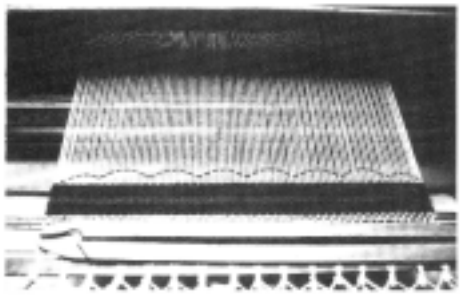


Photo 5

(50-75 mm) of weaving to establish the correct amount. Once you determine this you will need to repeat accurately the same triangle size and shape with each pick. This size is a constant distance from the fell of the cloth, not from the beater. As you weave an inch or two closer to the beater, the peak of the triangle accordingly works its way toward the beater. In addition to making the right sized triangle, the bubbles need to be of uniform size across the cloth.

Learn to read the cloth; let its appearance tell you how you are progressing. Bring the beater forward and check to see there is no draw-in. The rug surface should appear smooth, even, sleek.

Symptoms of some problems you may encounter:

- Draw-in: Your triangle needs to be higher.
- Weft not covering warp: 1) You are not bubbling enough; make the triangle higher. 2) Your warp sett may be too dense for 2" (50 mm) bubbles. I have found a 1" (25 mm) bubble does a better job on 8 epi (30/10 cm) and so have added extra nails to one of my bubblers. 3) Your weft may be too coarse for the size space between warp threads. Use a finer weft or resley the warp somewhat further apart.
- One selvedge fine, the other drawn in: You are not making the triangle in the center of the warps. Consequently one side of the warp is getting more weft than the other. Glue a tape measure to the front vertical face of the beater's shuttle race. For each new warp locate the exact center of your warp and note the reading on the tape measure. Always make the point of the triangle between the appropriate warp threads.
- Lumpiness or roughness on the surface of the cloth at 2" intervals: You are bringing the bubbler too close to the fell of the cloth. There is too much weft at these points and correspondingly too little by comparison in between. You may also be bubbling too much.
- Bubbles not of uniform size: 1) The nails may not be in a straight line. If so try bending some to correct this. 2) Your triangle is not shaped properly; either "mesa-like" with no point at the top, giving larger bubbles toward the edges, smaller in the middle; or the sides of the triangle are almost concave, forming an "Alp." The latter will give large bubbles in the center, small ones further out.

There is a limitation on how wide one can weave a rug making just one triangle to provide the necessary amount of extra weft. This limitation is best expressed as the width of the cloth compared to the depth of the weaving area. The beater can travel only so far toward the breast beam before it loses its effectiveness as a weft packer. With the fell of the cloth advanced close to this critical point on a wider rug you still might not have enough depth between the fell of the cloth and the beater to make a high enough triangle. You shall have to make two smaller triangles. (This occurs above about 36" (91 cm) width on my looms.) It is a bit trickier to make more than one triangle and keep the bubbles a uniform size across the cloth. Modify the spacing and shape of these two peaks and the valley between them until the bubbles are uniform. Refer to the tape measure on the beater to maintain the constancy of your solution.

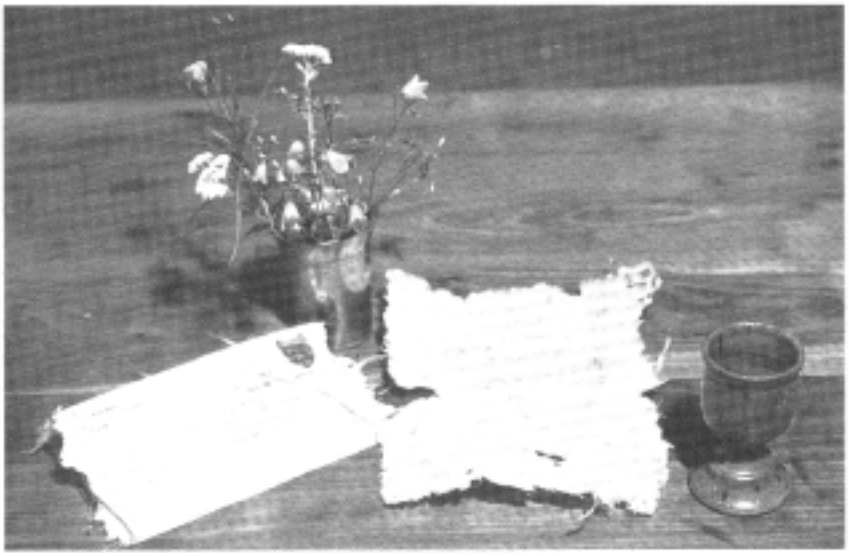
At this point you may well ask "Why bother with the bubbler? Why not just make the triangle, change shed and beat?" If that works well for you, indeed, why not? My experience has been that to avoid draw-in and use one or several large triangles I either had to weave in too much excess weft and the surface did not look as sleek, or I had to resort to a templet stretching the cloth out at the selvedges just below the fell. The latter must be advanced every inch or so and does not allow the weaver uninterrupted vision of the woven area. It is also difficult to use if the shuttle is not weaving selvedge to selvedge.

There are always both intimacy and distance existing between the weaver and the cloth being woven. Tools are introduced to make the work more efficient, easier. We must use these tools to help bridge the distance, to understand better what we are doing and improve our rapport with it. If after having tried the bubbler for a bit it does not function as a close ally, strike out for other solutions. It may not be your tool.

About the author. Martha Stanley will share her knowledge of rug weaving by writing a series of articles for WJ on that subject. They will deal with yarns and setts, techniques, design, cardwoven selvedges and more. Martha is an award winning handweaver from Watsonville, California. She puts her analytic and imaginative mind to work by exploring techniques and interprets her newly developed skills and ideas so that they become practical systems for contemporary handweaving. She is well known for sharing her explorations and developments through classes, lectures and workshops.

HANDMADE PAPER

by Kristin Nicholas



Ever since the beginning of written history, paper has been a medium through which facts have been recorded and passed down to following generations. In the beginning man beat bark and other fibrous materials together to form a surface on which to write or draw. Today we take paper for granted, never thinking about the many steps a tree must go through to become a thin, smooth surface which we use so often.

Through experimenting with handmade paper, one may begin to appreciate some of the many processes that go into producing a single sheet. Handmade paper will not be as smooth as that produced commer-

cially but will take on unusual qualities. Paper is a medium which lends itself to endless exploration. It is simple and exciting to produce and can become addicting once the technique is mastered.

SUPPLY LIST

Artist stretcher frame (slightly larger than desired size of paper).
Window screening (enough to cover frame).
Thumbtacks or staple gun.
Blender.
Plastic tub quite a bit larger than frame, OR a sink can be used as long as window screen is placed at the drain to prevent clogs.
Sponge.
Lots of recyclable paper—brown bags, newsprint, tissue paper, cotton rag.
Dyes if colored paper is desired.
Interesting cellulosic material which could be added to pulp—flowers, leaves, thread, cooked vegetables.
Newspaper and space to spread it and finished paper.

INSTRUCTIONS

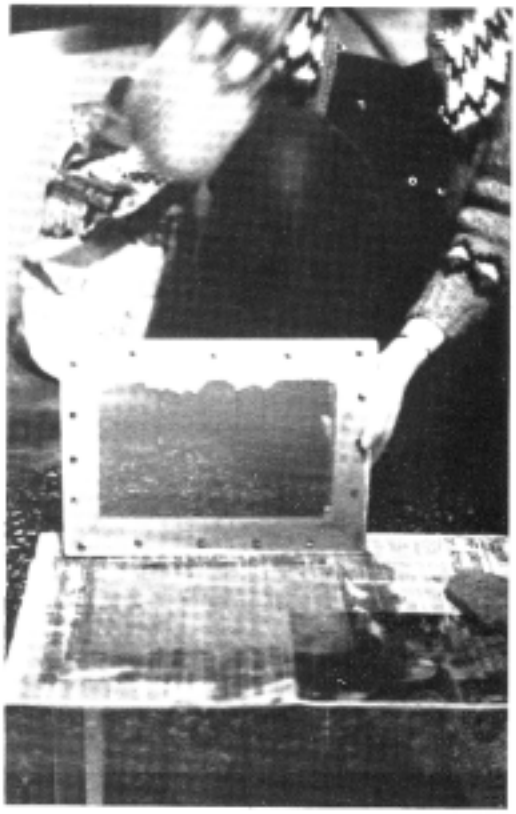
To make the screen, assemble stretcher frame. Attach window screen tautly to frame with tacks or staples. If you desire, cover edges with heavy duty tape.

Paper is produced from a pulp which is made by soaking torn paper for a couple of hours. It is then put in small quantities into a blender and processed until smooth. The pulp is deposited into the tub which is filled with water. If desired the dyes, flower petals, leaves, left-over weaving yarns and more may be added at this stage to add texture and interest to the finished product.

The pulp mixture should be very runny. Stir it up with your hands causing the fibrous material to suspend itself at the top of the bath. Slide the screen in at an angle and lift it straight up. Flip the screen over onto the newspaper and blot on the wrong side with the sponge to absorb extra water. The screen should lift off easily. Let the paper dry overnight and then peel off the newspaper. (Note: A few drops of glycerin added to the pulp will solve the problem of felt tipped pens bleeding. Usually this will not happen if recycled paper is being used as the basis for the pulp.)

After learning the technique of handmade paper, one may begin to experiment freely with all the possibilities. Different colors of pulp may be layered over one another. Surface texture may be introduced by flipping the screen onto a drying surface such as fabric or paper towels. The pulp is easily molded and will retain shapes when dry. It can also be torn and gathered upon itself to create interest.

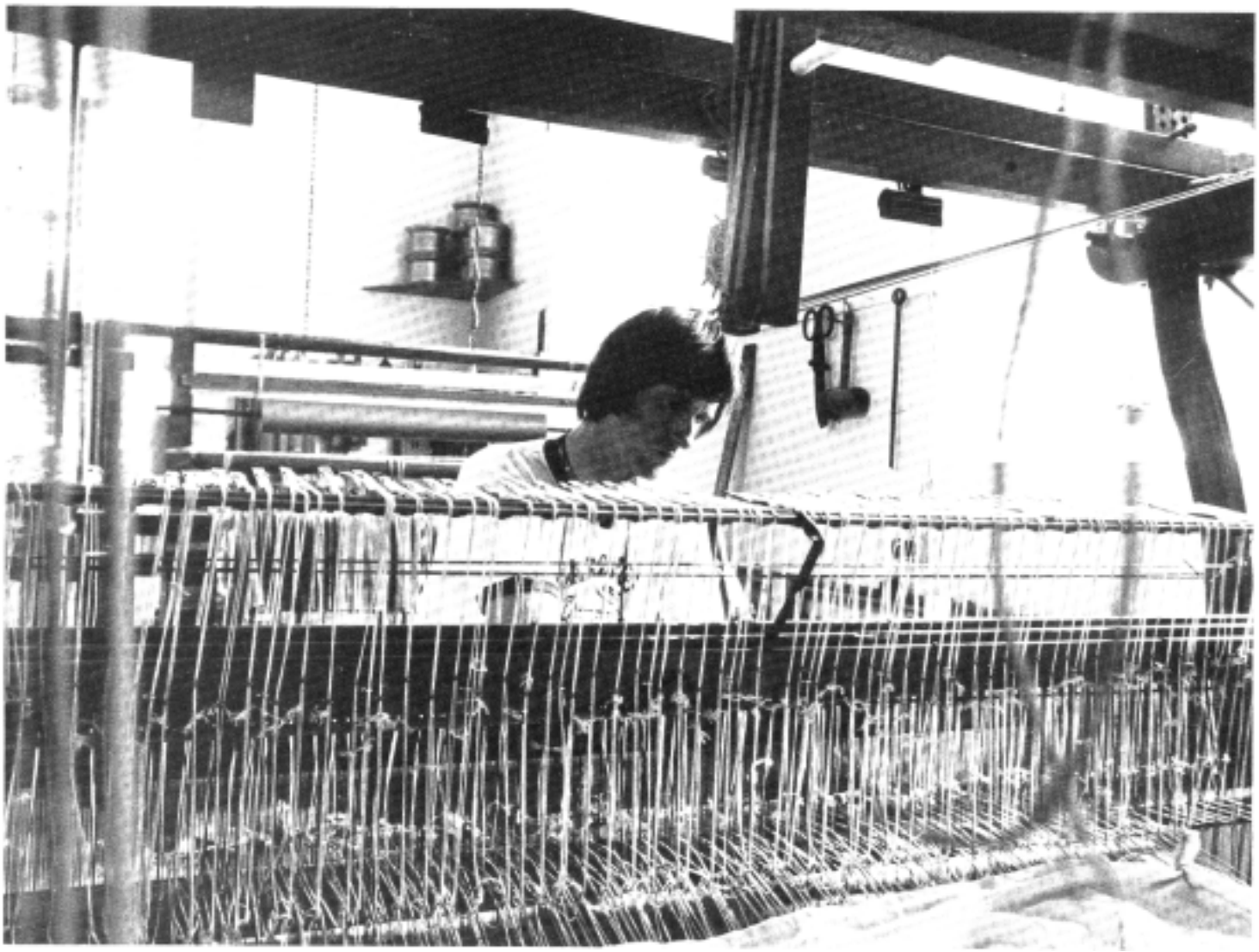
The pictured note paper was constructed with use of the sewing machine and various colors of thread. In some places, the stitching lines followed the lines of the feathered edges; others were merely functional. The loose threads served as ties used to close the envelopes. Matching notepaper is shown. For messages, an insert of commercial paper could be worked into the design, thereby making the matching set a gift which could be passed on by the receiver.



HOW SHAFT-SWITCHING BEGAN

by Peter Collingwood

The shaft switching idea really grew out of my annoyance at being confined within the rigidities of block-weaves. Weaving hundreds of rugs, in which the position of the blocks was completely determined by the warp threading, kept a part of my mind ticking over, looking for a way out. I cannot remember exactly when I saw the solution, I only know it was the result of a student's remark when I was teaching in Cambridge, England. He was half way through a sample and said something like "Shame I can't change the threading now and get some other shape than a rectangle."



Peter Collingwood working with his shaft-switching platform.

But it was months later that this seed of an idea grew into a practical method and I wove a sample. This embodied the basic principle of an *unthreaded* warp end passing between *empty* heddles. The latter were on shafts 3 and 4, as I was then using the 132, 142 threading. The other warp threads were entered on shafts 1 and 2 normally. So only every third warp end was treated in this special way and could be attached either to shaft 3 or to 4, depending on the demands of the pattern. The whole of the rest of the shaft-switching story is really concerned with the various ways this attachment can be effected.

Just tying the warp end to either heddle, or clipping it with some small spring clip, is the obvious and most direct way. Though slow and a little awkward to do, it does not involve the building of any additional equipment, so it is ideal if you are only going to weave one or two rugs in this technique, or only want to be able to change the blocks in a few areas of the rug.

Having tried the above method only once, I decided I wanted something quicker, so thought of the double loop idea, used by most shaft-switchers today. This involves two loops of thin cord (heddle twine is excellent), one passing through the empty eye of a heddle on shaft 3, one through the empty eye of shaft 4's heddle—and both encircling the unthreaded end. I then had to find a way of being able to tighten either of these loops at will, thus forcing the relevant thread to rise or fall as if threaded on shaft 3 or 4. A simple way was to make the two loops from one piece of cord and fasten a choke tie, which could be slid from th top of shaft 3 to that of 4, and vice versa—see Fig. 1 in Jane Busse's article in *Weavers' Journal*, April 1980. I usually teach this method in rug weaving classes.

But the way I used for many years was the one illustrated in Fig. 258 in my "*Techniques of Rug Weaving*." First for convenience I reversed the threading so the switching was between shafts 1 and 2, the two nearest the weaver. I fixed two strips of wood above these shafts with screw eyes on their undersides and nails along their top edges. Each loop was led up through the screw eye and when it had to be tightened was simply lifted onto the nail above. The knots on the loops prevented them falling back through the screw eyes.

This worked well, but it had a disadvantage in that, through an oversight, you could put both of the loops controlling one warp end onto their nails, and then when you made the shed something had to go! Also I became interested in designs involving the natural diagonal found in the three-end blockweave I was using; this involved putting several loops on and off the nails after every four picks, a very slow procedure. These two facts led me to my present system of controlling the loops: a set of levers, fixed above the shafts, which makes the whole operation foolproof and very quick. I puzzled over this method for a long time as there seemed to be an insuperable obstacle to its working. If the loops were to be attached to the levers and these were pivoted on some fixed board (perhaps fitted between the swords of an overslung batten), what would happen when shafts went up and down? Would not all the tightened loops become loose as the relevant shaft was raised, and vice versa? At last I saw the simple solution: do not fix the board to a static part of the loom, but join it to the two shafts involved in the shaft switching. Then however these harnesses moved, the board and its levers would always be equidistant from them and the problem would vanish.

I transposed the threading once again, so that the switching was between shaft 1 and 4, and built my lever board or platform, which was to be fitted to these two. As usual I made it all out of something else. The main woodwork was from old shafts, the metal work was cut from the end-pieces of industrial shafts. The levers were aluminum and were sold as 'valance rails', used for hanging a pelmet form, above a curtain. The springs under the levers, which kept them firmly in one of their two positions, were broken sections of hacksaw blades. The whole thing, with my very low grade technology, took a week to make. A friend painted resin onto the heddle eyes, through which the loops were to pass, to reduce friction and wear. This platform was fitted by means of flexible pieces to shafts 1 and 4, and also had springs passing upwards to the top of the loom to keep it in position. The loops were made on a jig, threaded through the heddles' eyes and fixed to a hole at the end of each lever. One advantage of the lever method is that the switch is done in one movement. If the lever is pointing towards you, then the shaft 4 loop is tight (and the shaft 1 loop is loose). Flip it away from you and the shaft 1 loop is tight and shaft 4 loop is loose. Another advantage is that many levers can be flipped over at once; they do not have to be moved singly. So large areas of color can be quickly changed in the design. The only disadvantage is that once the lever platform is fixed in position, it may prevent you using other non-switching techniques. But of course a spare set of shafts overcomes this.

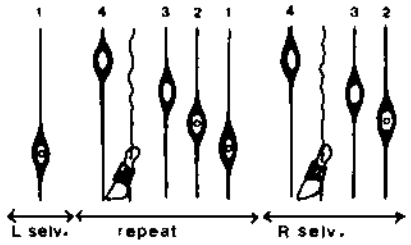
I initially used the shaft-switching idea for the block weaves based on the three-end draft and on the straight three-shaft draft; and it was firmly linked in my mind with these structures. But as with other weavers exploring this method, especially those in America, I now think of shaft-switching as a principle which can be applied to other structures, not necessarily block weaves (I got some unexpected results recently from using it with the block weave based on a six-end block draft). Maybe it will eventually be used in other textiles than rugs.

Peter Collingwood has a set of working drawings which are not professionally prepared but which should enable a weaver to make the lever platform. You can order a set from "The Colorado Fiber Center" by sending $5.00 (U.S. currency) to P.O. Box 2049 Boulder, Colo. 80306.

SHAFT-SWITCHING ON 3-END DRAFTS

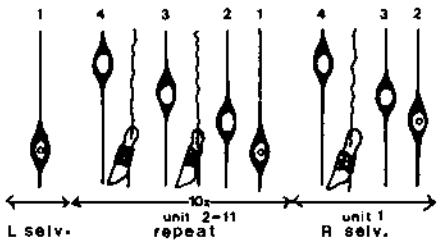
STRIPED PATTERNS PART II

The three-end draft is a unit weave in which each unit is threaded on 3 warp threads. For common shaft-switching the units are threaded as follows: thread shaft 1, thread shaft 2, leave an empty heddle on shaft 3, leave a warp thread unthreaded (a floating end on which a safety snap is strung), leave an empty heddle on shaft 4. Remember that shaft 4 is the closest to the reed.



Part I dealt with shaft-switching designs with vertical stripes that are the width of one repeat. Part II deals with designs that have vertical pinstripes half the width of a repeat.

In order to be able to weave two of the three types of designs discussed here, I would suggest a sampler of 33 working ends. Cut 4 extra ends to reinforce the 2 selvedge threads on each side of the project. This threading allows 11 units and should be set on the loom as follows: for each repeat thread shaft 1, leave an empty heddle on shaft 2, have a floater with safety snap, leave an empty heddle on shaft 3, have a floater with safety snap, leave an empty heddle on shaft 4.



Throughout the project use the following treadling and color sequence:

Lift shafts 1 + 3 weave D
Lift shafts 1 + 4 weave L
Lift shafts 2 + 3 weave D
Lift shafts 2 + 4 weave L

and start the two shuttles from opposite sides.

FIGURE 1

A. Designs with solid areas of one color (D) and areas of two color pinstripes (L,D) Fig. 2.

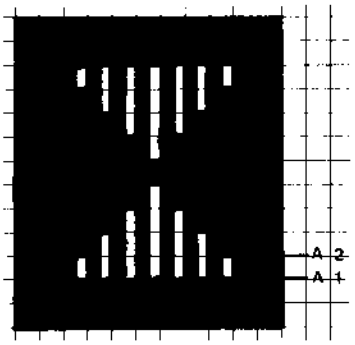
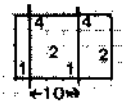
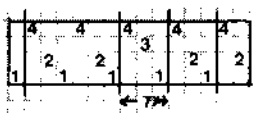


FIGURE 2

To begin the weaving pin all the floating warp ends to shafts 2 and 4. The resulting threading is:



The project will weave D on the face and L on the back. At level A1, unpin the 7 central warp ends which are on shaft 2 and pin them on shaft 3. This shifting will change the design from D to pinstripes. The resulting threading is:



At level A2 return the warp threads at the outer edge of the triangle from shaft 3 to shaft 2 (pinstripe to D). Continue this procedure.

The reverse of the rug will show a pinstripe triangle on an L ground.

B. Designs with solid areas of two different colors (D and L) and areas of 2-color pinstripes (D-L). Fig. 3.

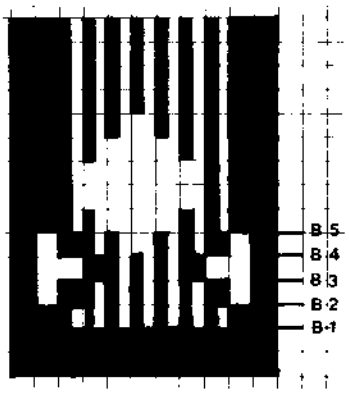


FIGURE 3

Start as for the A design, through level 1. At level B2 proceed as follows:

Unit 1 - unchanged
Unit 2 - shift from 4 to 3 (D to L)
Unit 3 - shift from 3 to 2 (pinstripe to D)
Unit 4 through 8 - unchanged
Unit 9 - same as 3
Unit 10 - same as 2
Unit 11 - same as 1

At level B3:

Unit 1-2 - unchanged
Unit 3 - shift from 4 to 3 (D to L)
Unit 4 - shift from 3 to 2 (pinstripe to D)
Unit 5 through 7 - unchanged
Unit 8 - same as 4
Unit 9 - same as 3
Units 10-11 - unchanged

At level B4 (start L pattern in pinstripe area):

Units 1-2 - unchanged
Unit 3 - shift from 3 to 4 (L to D)
Unit 4 - shift from 2 to 3 (D to pinstripe)
Unit 5 - unchanged
Unit 6 - shift 3 to 2 *and* shift 4 to 3 (pinstripe to L)
Unit 7 - same as 5
Unit 8 - same as 4
Unit 9 - same as 3
Units 10-11 - unchanged

The resulting threading is:

At level B5

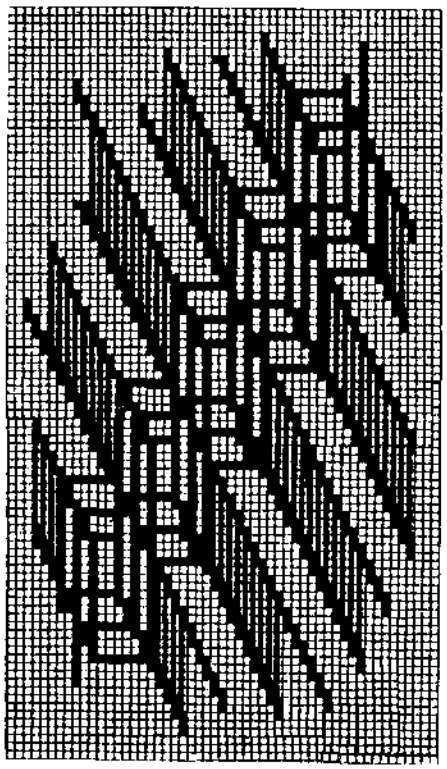
Unit 1 - unchanged
Unit 2 - shift from 3 to 4 (L to D)
Unit 3 - shift from 2 to 3 (D to pinstripe)
Unit 4 - unchanged
Unit 5 - shift 3 to 2 and 4 to 3 (pinstripe to L)
etc.

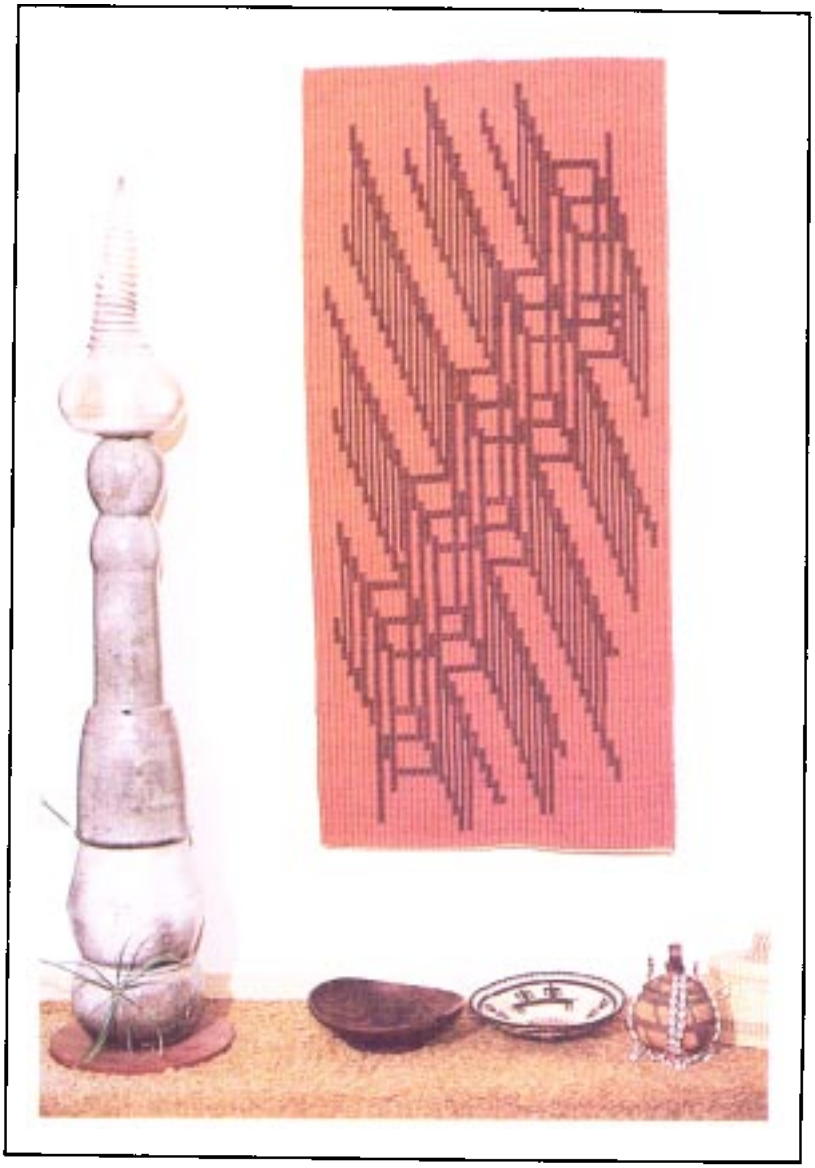
Thus the threading unit of the D areas is:

The threading unit of the L areas is:

The threading unit of the LD areas is:

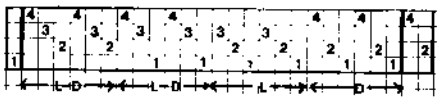
The tapestry illustrated here is woven on 53 units with a 10/6 linen warp sett at 5 epi (20/10 cm) and "Iran" tapestry worsted weft.





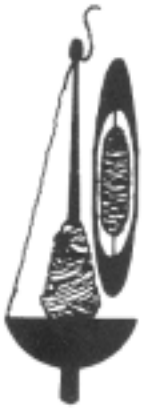
C. Designs with 2 color (D-L) pinstripe areas on a 2 color (L-D) (same colors) pinstripe ground.

This design cannot be woven on the sampler with the treadling shown in Fig. 1. The loom would have to be set up so that both the threads on shafts 1 and 2 can be shifted to either shaft 3 or 4. Instead of threading shaft 1, one has to leave empty heddles and use a floater. One could thus shaft-switch to obtain the following units:



Note that there is another way to weave the A designs and the pinstripe on pinstripe designs of C, even with several colors. These techniques require only the shifting between shafts 3 and 4 but the color sequences are different from those in Fig. 1. For the A designs use the color sequence DDDL and for pinstripe designs use DDLL. These sequences require floating selvedges and the reverse of the A tapestry will show a black triangle on a pinstripe ground.

KASURI-LIKE-EFFECT WEAVING



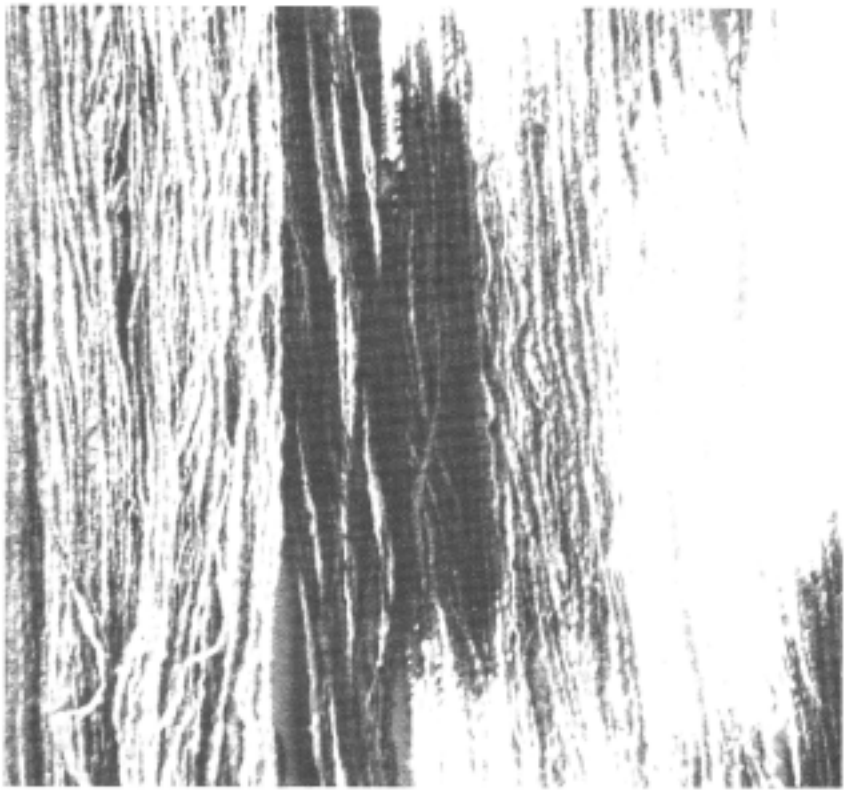
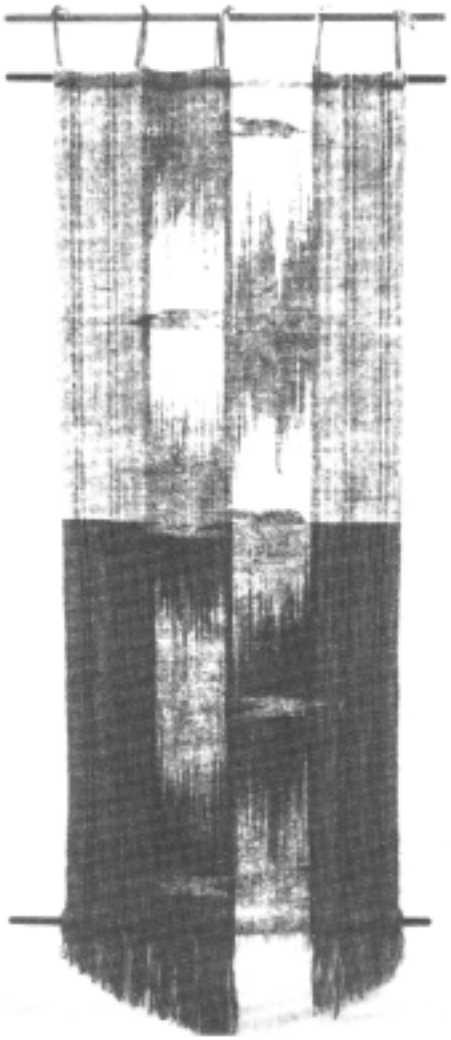


Photo 1



by Mariko Olivia Akita

"A touch of Japanese Ikat weaving by taking advantage of the rich natural colors in Australian fleeces."

It has been a wonderful experience for me, a visitor from Japan, to find in Australia so many variations of fleece and such a wide range of natural colors. Over the last two years I have been particularly interested in the use of handspun wool for weaving; as a result, there have occurred to me such questions as "how can I experiment with the natural colors from these fleeces (which are very subtle)," and "what adventure will handspun effect yarns such as knopp, cloud, flamme, marl, tufted or slub lead me into." So, I set myself the task of trying to marry together the Australian yarn with Japanese techniques.

I would like to introduce you to a unique technique which I developed for my handspun woven projects: "Kasuri-like-effect."

Kasuri is Japanese resist-dyed Ikat. Although pieces of Ikat fabric were found in the 6th Century as a gift from the South-East, it was actually in the 17th and 18th Centuries that Ikat technique came to Japan from Southeast Asia through Okinawa. Japan then started to produce Ikat in a variety of ways, combining it with their own particular advanced dyeing techniques, producing Kasuri. This Kasuri method is not only produced by traditional tie-dyeing but also with the addition of dyeing with a paper pattern or a pair of wooden boards.

Kasuri is often double-ikat fabric. The most typical and simplest pattern of Kasuri is done as follows: Areas of warp and weft bound by string retain their original color (natural white) and show up in contrast to the dyed area (usually indigo blue). After weaving, a resist-dye pattern shows forth with extra color values of warp and weft blurring against the solid white of the overlapping area and the solid blue of the background.

The work in both my wall hangings looks similar to that of Kasuri, the principal difference being that the warps and wefts used in them were not resist-dyed. Instead, they were spun in a particular way, taking advantage of the different shades of

the rich natural colors of the wool fleeces found in Australia.

First, the fleeces were sorted by shades, separating dark-brown from greyish-brown and plain-grey from white. (The colors came from two different breeds of sheep, the white from Corriedale, and the others from Romney Marsh.) Then each color was carded individually. I spun in "frotte yarn" style, spinning small amounts of first one color then another so as to form individual solid color areas throughout. This assured that each solid color was spun to a certain length required to fit my pattern. Photo 1 shows the result of this process giving the yarn a resist-dyed effect.

These yarns were then set up on the loom for the warp and weft. Then came the decision to use a plain-weave which would give the closest resemblance to Kasuri texture.

One of my works (Photo 2) is a typical example of Kasuri-like-effect. Bird motifs and geometrical designs are very popular patterns for double-Ikat.

In this project I used single, worsted, handspun yarn. Two shafts were used on the loom with 12 e.p.i. (50/10 cm).

If you choose a 3/1 twill, or any warp-faced type weave, this will result in the changing colors of the warp showing-up more distinctly and a different texture will be obtained. By the use of chemical-dyed fleeces, bright color combinations can be achieved.

Another technique, which could also be effective, would be to spin the warp-end yarn as follows: Using colors A and B from fleeces, first spin a quantity of A, then spin the same quantity of grandrell, (using A and B), and lastly introduce color B. Repeat these steps. Some exciting color variations will be produced throughout the warp length.

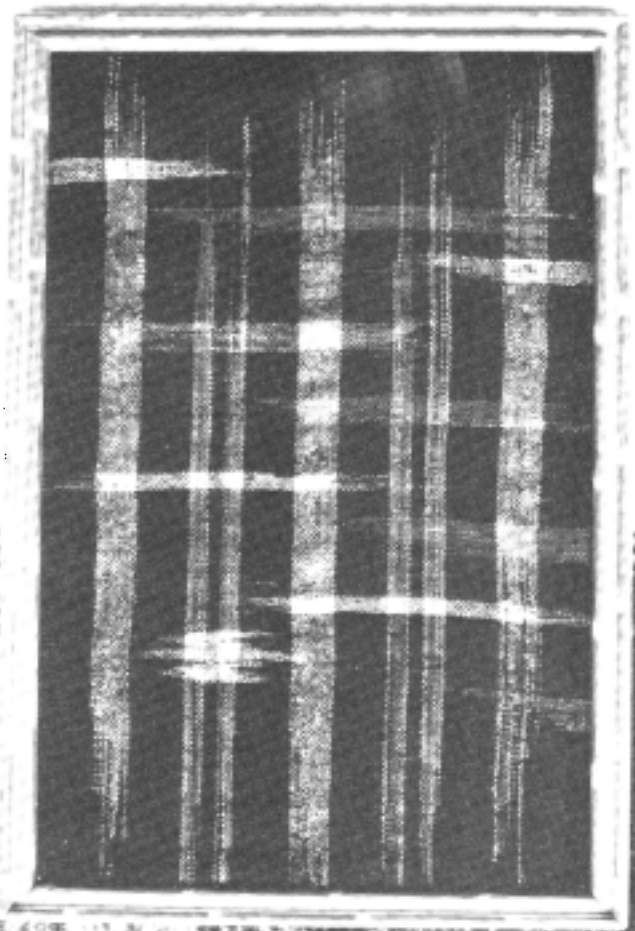
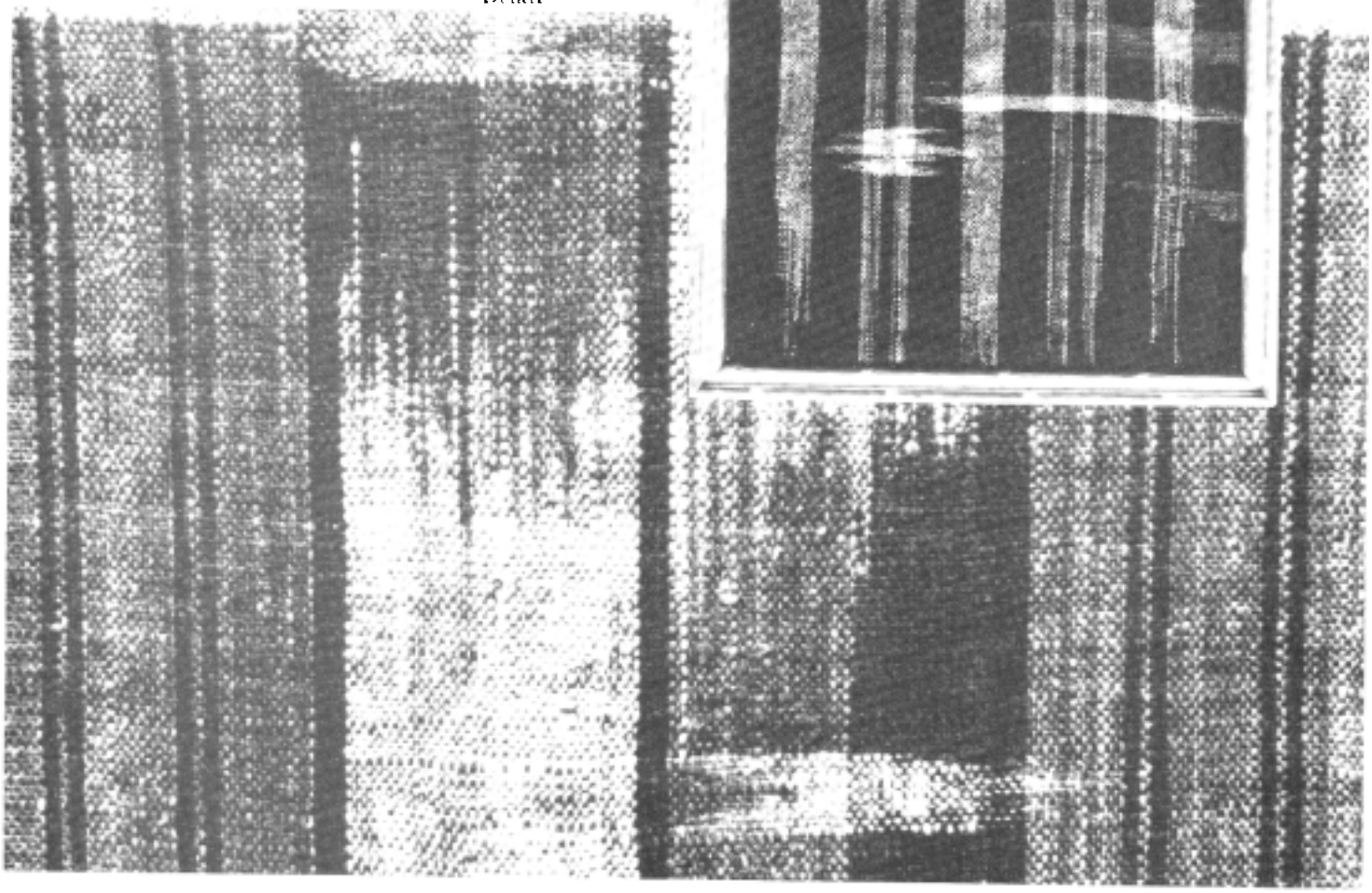


Photo 2

Detail



TEXTURE WITH HANDSPUN

by Judy Page

I am primarily a domestic weaver making woolen primitive jackets, bedspreads, table covers and knee rugs. I love color and enjoy creating warps of adjacent colors. The colors chosen for the warp depend on the colors in the fleece I have selected for the weft; e.g., blue blends extremely well with the dark grey and brown wools.

I spin my own weft yarn using an Indian Spinner for my chunky but lightly spun yarn and my Little Peggy Upright wheel for finer yarn. Sometimes I throw in tufts of dyed fleece, the color chosen from the warp. When washed and lightly brushed my rugs have a soft handle, good texture and subtle coloring.

We are so very fortunate to have the most superb wool bred in New Zealand. It gives us the opportunity to use our imagination to create highly individual fabrics. Therefore it was a challenge for me to try and create a fabric using handspun wool that wouldn't be too thick and yet would have the effect I had achieved in my rugs.

For my first effort I used a soft 2 ply millspun warp threaded in a bird's eye pattern and a single ply handspun weft, but the finished fabric was too heavy. I felt there needed to be a balance of millspun and handspun in the weft, and that I should keep to the tabby weave as in my rugs. I decided on a basic texture pattern of 1 thick yarn and 2 thin yarns in the warp with the same sequence repeated in the weft. For my thick weft yarn I selected a pale grey Coopworth fleece with a long free silky staple and a good lustre. I sorted it through for any strong color change. There can be subtle color differences but streakiness must be avoided. The silkiness of the wool made it very easy to spin straight from the fleece. Spinning very quickly and close to the orifice I occasionally allowed some camel slivers into the spinning and finished with a soft single ply grey/camel textured yarn. This was spun on my small wheel.

Next I wanted a warp that would highlight this beautiful grey fleece. I chose a Perendale Millspun double knit for the thick yarn in four colors, pale grey, oatmeal, dark oatmeal and camel and a fine grey millspun 2 ply for the thin. Sett was 12 e.p.i. (50/10 cm) in an 8 dent (30/10 cm) reed, with a straight twill threadup.

3x 3x 3x 3x
a x x b x x c x x d x x

a–pale grey thick yarn
b–oatmeal
c–dark oatmeal
d–camel
x–fine 2 ply yarn

The color sequence of 36 threads was repeated across the warp. For the weft I threw 1 row of thick handspun yarn followed by 2 rows of the same fine 2 ply grey used in the warp.

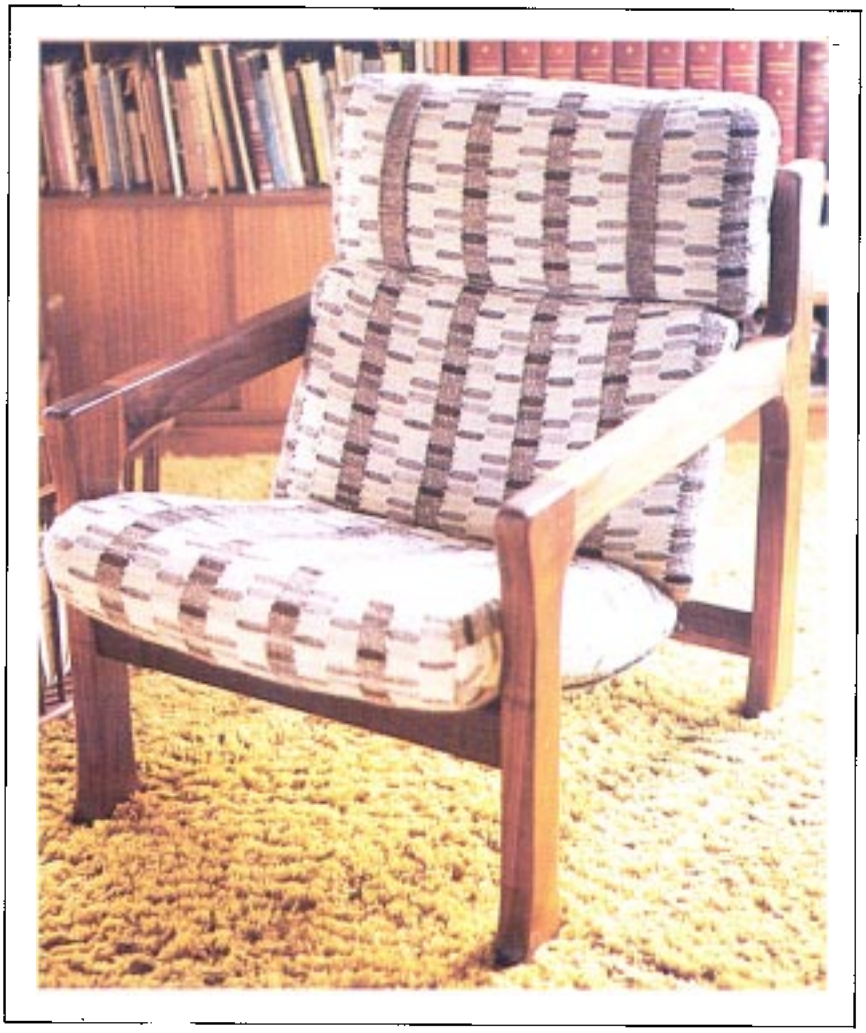
I loved weaving this fabric. The irregularity in texture and color of the handspun yarn made it an exciting piece to watch grow. Because of the handspun I washed the fabric by feet! All the children had turns at stamping the fabric in the bath in bearable water using a commercial wool washing agent. There was enough twist in the handspun to prevent too much fluffiness; all the thick yarns opened slightly and the fine 2 ply fused well. It was soft to handle and made up well into a jacket and 4 gored skirt which moved well.

The fabric in the jacket has a multicolored wool warp using a variety of soft and firm 2 ply, 3 ply and boucle sett at 10 e.p.i. (40/10 cm). As the warp is varied to get color interest, the irregular yarns are spaced throughout so the tension is not affected. The weft is a single handspun yarn from a beautiful brown/dark grey Romney fleece, again spun straight from the fleece on my small wheel. Although I think a mixture of millspun and handspun in the weft makes a better fabric, this weave was balanced and fulled well, this time in the washing machine because of the firmer yarns. It is a very suitable fabric for the type of garment.

If you enjoy texture and variations of color, do try and use handspun. It will give greater enjoyment to your weaving in a tactile and visual sense and one day that special fabric will be yours.

A SEAT FOR ALL SEASONS

by Peg Rasmussen



At the Oak Brook Crafts Exhibition in 1977, a woodworker displayed a walnut-framed chair with three cushions. My husband and I loved that chair, but thought the slick commercial upholstery was wrong.

The more I thought about the chair, the more I knew it was right for us and a challenge to me as a spinner-weaver. The craftsman agreed to provide the chair with basic foam rubber cushions, and I began reading all I could find about weaving upholstery.

Old books stressed function over design and originality. I read about small figures and tight structure, how to beat up a firm fabric, how many ends per inch (the more, the sturdier), about abrasion- and dirt-resistance. This was good, helpful, but dull information. Didn't anyone understand the exciting contemporary look I wanted to create?

Then I discovered the usefulness of long floats on the back of the fabric where they act as padding and provide elasticity when you sit on it. I began to think about a few of my favorite weaves—the ones that work a little magic at the loom. Boundweave would be too heavy. Overshot seemed too time-consuming. Honeycomb could look monotonous but Virginia West, in an old leaflet,[1] described several Honeycomb variations (stripes and multicolors). A switch clicked.

If I could combine several values of natural fleece colors . . . if I repeated the brown of the walnut frame in a vertical stripe . . . if I used Honeycomb treadling to provide texture and integration . . . what would happen? Quickly I spun up enough single yarn to make samples.

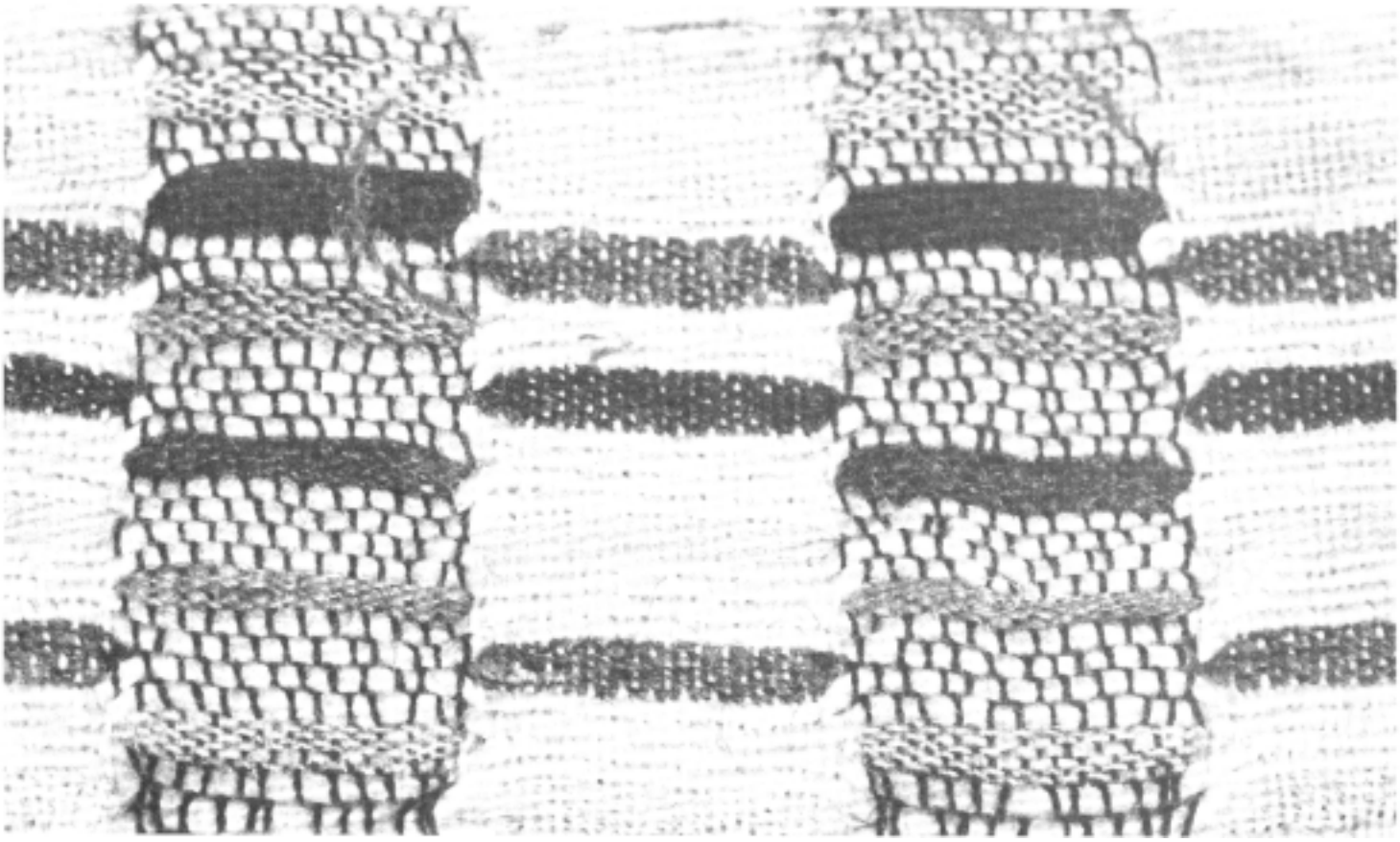
For warp I chose a strong 2/10 commercial worsted sett 16 epi (60/10 cm) in an 8-dent (30/10 cm) reed, two blocks white alternating with one block brown; a striped warp. Narrow blocks did not work at all—the pattern was as busy as scattered marbles.

The outline yarn drew hornrims around recessed "eyes." Widening the blocks and playing with my shuttles, I hit on a pattern of cells 1¾ inches (44.5 mm) in the reed and ¾ inch (19 mm) high. Honeycomb draws in a lot.

In my stock of carded fleece I found as many colors as sheep come by naturally. I selected 9 "sheep"; two were white, the others were golden, silver, light brown, medium brown, light gray, dark gray and black. Deciding how much yarn to spin was tricky because as much weft is hidden as is exposed in a Honeycomb weave.

After spinning 12 ounces (340 g) of each shade in a fine, moderately hard twist, I blocked the yarn, wound the bobbins, and began to weave. I knew I could produce more yarn if I ran out.

The weaving progressed quickly once I got the hang of rotating 10 shuttles. A TV table at one side of my bench was the key. "Pick up the nearest shuttle, weave 8 shots, lay the shuttle at the far end of the table. Weave tabby *a* using the outline yarn (a heavy white Perendale) from the shuttle in my lap. Then pick up the nearest shuttle for the second block of



8 shots in a different shade. Lay the shuttle at the far end of the table. Weave tabby *b*. Continue the rotation."

Because I am stingy with handspun and with my time, I warped no wider than necessary. The three cushions are all the same width (29 inches or 74 cm). I added a few inches for ease, seam allowance and shrinkage. The length was determined by adding the girth of each cushion, seam allowance, take-up, shrinkage and loom-waste. The excess—to my surprise—provided a 14-inch (36 cm) pillow.

Finishing the fabric after it came from the loom was an unexpected challenge. Usually I wash woolens and line-dry. But the Honeycomb sample shrank, bubbled and refused to flatten. Remembering how needlepoint is blocked, I washed the yardgoods (using Joy), and tacked it with brass brads every half inch to a sheet of plywood. This helped retain not only the surface texture, but also the dimensions. I brushed it gently while it was still damp to raise the nap.

Checking the cushion measurements one more time, I boldly applied scissors and cut 3 pieces, one for each cushion. Using tan-colored chalk, I marked the curves of the corners on each piece. As in making slipcovers, I worked toward a snug fit. Each cushion has 3 seams, one at the back and one at each end. To soften and round out the shape, I used the "bottom-of-the-bag" trick, taking up a small triangle or dogear on the inside corners. As interliners I used old pillowcases (Fig. 1)

Giving hidden support to the cushions is a brown canvas sling stapled to the chair frame front and back. Anchoring the top cushion is a pair of straps woven plain weave using a medium brown handspun. The straps are the same width as, and positioned over, the second and fifth stripes. Would Scotchguard be a good idea? It gives the weaver a sense of divine protection, so I used it.

One of the old weaving books said, "Wool wears itself clean."[2] This may be true. The upholstery looks as fresh now as the day it was finished. I will use upholstery cleaner on the cushions when the need arises.

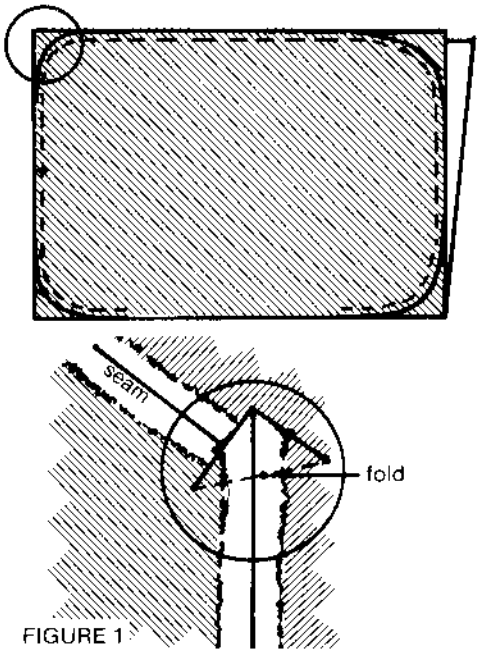


FIGURE 1

Admired by weavers and non-weavers alike, the chair is much loved and much used. I was especially gratified when Ejner Pagh, the chair's designer, looked it over, sat down, and signaled his approval.

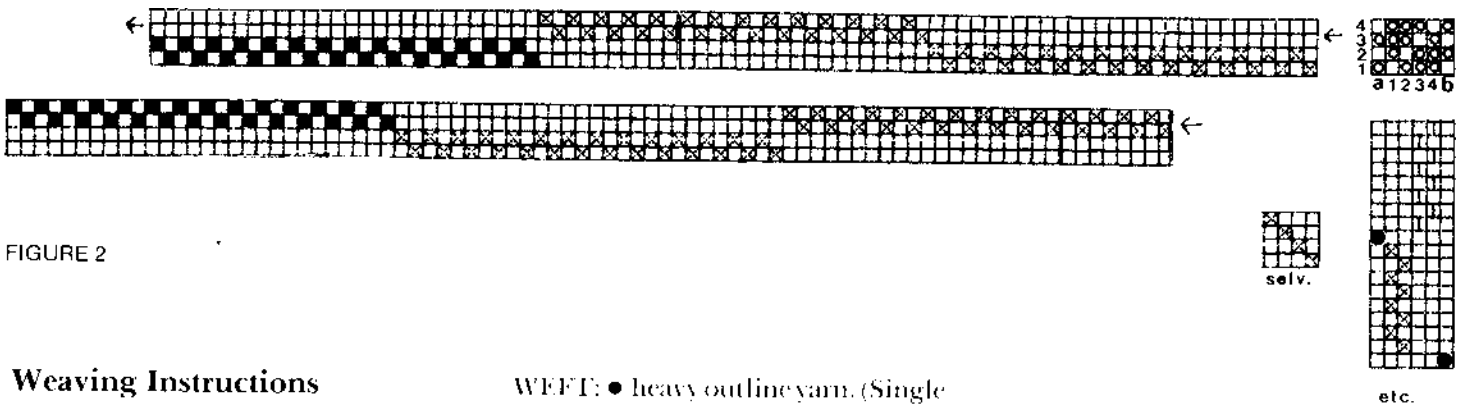


FIGURE 2

Weaving Instructions

WARP: x white, ■ brown } 2/10 wool worsted (Scott's Woolen Mill)

SETT: 16 epi (60/10 cm) in 8-dent (30/10 cm) reed

WIDTH IN REED: 34" (82 cm)

LENGTH OF THE WARP: 5 yd. (4.57 m)

THREADING, TREADLING AND TIE-UP: See Fig. 2.

WEFT: ● heavy outline yarn. (Single natural spun from Ironstone).

- ı black
- x white
- gold
- dark brown
- white
- light gray
- dark gray
- silvery
- light brown

} handspun fine singles

References

1. *Practical Weaving Suggestions*, Vol. 4—63, Lily Mills, Shelby, N.C.
2. Plath, Iona, *Handweaving*, Charles Scribner's Sons, New York, 1964, p. 17.

PRODUCT NEWS

THE RESTORATION ARTS SPINNING WHEEL

Restoration Arts of Williamston, Michigan, is re-introducing a classic reproduction spinning wheel, which was last produced in the 1950's. It is copied from a wheel of Northern European origin which was brought to the United States in 1837.

Originally a flax wheel, it has been modified to meet the modern spinner's needs, without detracting from its authenticity as a reproduction, or its aesthetic appeal. it will spin fine or heavy yarn, wool, cotton, silk, flax, or other fibers.

The mass of the wheel rim has been increased, and the wheel weighted in such a way that it always stops with the treadle in the up position, thus making it possible to start the wheel without using the hand. All bearing surfaces have been improved. The wheel rims are made in eight pieces, offset, so that the wheel cannot warp.

Two different fliers are available, one for fine yarn and one for heavy yarn. One flier (spinner's choice) is included with the wheel, and the other may be purchased separately. The orifice, which has been increased to 3/8" (9.5 mm) is 25½"(65 cm) from the floor. The fliers have hooks on opposite sides of the flier arms, one set of hooks for spinning, and the opposite set to be used when the wheel is reversed, for plying. Interchangeable whorls have been designed to regulate spinning speeds, while the spinner maintains her own most comfortable treadling speed.

The spinning wheel is made of selected hardwoods, stained dark. The turnings are delicate, intricate, and finely detailed. Each turning is surmounted by a tiny white ceramic knob, a typical detail of fine turnings in 18th Century furniture.

The craftsmen of Restoration Arts have had a long career in the museum field, specializing in the production of replicas of specific famous antique artifacts, when the original was unavailable, or for security purposes, not to be displayed publicly. The firm also repairs, restores, or modifies antique spinning wheels.

The Restoration Arts spinning wheel is for sale to dealers only. Suggested retail price is $325.00. Inquiries should be directed to: Restoration Arts, 132 S. Putman, Williamston, MI 48895 (517-655-2609).

THE TAGARI:

A GREEK SADDLEBAG OF HANDSPUN WOOLS

by Joan Boura Koster

Everyone is familiar with the colorful woven bags sold to tourists in Greece. These bags, made of synthetics and cottons on commercial looms are imitations of the sturdy wool *tagari* or saddlebag used by Greek shepherds to carry just about everything—from a loaf of bread for lunch to kindling for the evening fire. Handwoven of handspun wool, the traditional bag lasts through years of daily use, often carrying loads over thirty pounds. The secret of its strength and durability lies in the method used to spin and to weave the locally produced fibers.

A *tagari* begins as the raw wool on the backs of sheep that graze the rugged mountain slopes. The coarse, long fibered wool produced is especially suitable for spinning into durable yarns. In the Greek village, all yarn is spun using a drop spindle and distaff. Village women scorn the spinning wheel which would tie them to the house and prefer the portable spindle and distaff which accompany them wherever they go—whether to herd their flocks or visit their neighbors.

Hand combs

Before spinning, the wool is well washed in the warm Mediterranean sea and picked clean of burrs and thistles. Greek flocks usually include sheep with gray, brown and spotted fleeces and these are carefully sorted to make use of the natural color variations. Wool to be spun by the worsted method is then prepared by combing with long-spiked hand combs.

Picking out burrs and thistles

Spinning

almost garish in the juxtaposition of such bright colors, but the strong Greek sun soon fades them to more mellow tones. Before the introduction of commercial dyes in the late 1800's, natural dyes were obtained from local plants including wood, madder and walnut hulls; these supplemented the natural colors of the fleeces.

Wool to be spun by the woolen method is carded, either by hand using a carding box or it is taken to town to be carded on a turn-of-the-century carding machine.

Of all the yarns used in Greek weaving, the warp for a *tagari* is the most time-consuming to spin. After it is combed by hand, it is spun by the worsted method into a fine, tightly twisted yarn. This yarn is then plied together, with a slight overtwist (16 twists to the inch). The finished yarn is wound into tight balls to set the twist. The balls are stored away until enough yarn (about 12 lbs or 5.4 kg) has been spun to make a warp for 10 *tagaria*. Sometimes if a woman does not have enough warp spun, she may pool her yarn with several other women. Then each will weave on the same loom the number of *tagaria* proportionate to her yarn contribution. The weft is spun from wool that has been carded, rather than combed. Using the woolen method it is spun slightly looser and heavier than the warp. Two strands are then plied together to make a fairly heavy, but soft yarn that will be able to cover the warp in weaving, producing a weft-faced fabric.

Weft yarns are dyed bright colors with synthetic dyes purchased at the village general store. Favorite colors for *tagaria* are white, green, orange, and natural brown on a deep maroon background, but all color combinations can be found. New bags are

The *tagari* varies in size and pattern from village to village and region to region. Most bags are approximately 16 by 18 inches (41 by 46 cm) in size. However, bags may also be made much smaller or larger to meet a variety of needs—a tiny 9 by 12 inch (23 by 30 cm) bag carries a child's lunch to school, a giant 24 by 30 inch (61 by 76 cm) bag carries month-old lambs to market. Most bags are intended for everyday use and feature bold striped designs and patterns based on alternating colored wefts. A few bags are woven with elaborate tapestry designs to be used to carry communion breads to church.

Weaving

The two-harness counterbalanced looms used in Greek villages are very suitable for the weft-faced weaving required for a *tagari*. The length of the loom—about 6 feet or 183 cm—allows great tension to be put on the warp. A special double-thickness reed is used so the weft can be packed down tightly. A weaver is judged on how tightly she can beat the weft together—a well-woven bag has 24 to 30 wefts to the inch (100 to 120 10 cm) on a set of 8 epi (30 10 cm). In order to keep the selvedges even, an iron stretcher or templet is used. Bags are woven in strips, so that when finished and folded in half, they will be 1 to 2" (2.5 to 5 cm) longer than they are wide. The pattern must be planned so that when the strip of woven cloth is folded in half the front and back will match perfectly.

The directions that follow are for one simple everyday bag in a striped pattern of your own design. If woven as specified, the bag will hold 30 pounds (13.4 kg) and last at least 10 years—even if used everyday! Spinning directions for the warp, as well as the weft, are included for those who would like the satisfaction of producing an entirely handspun bag in the traditional manner. However, since much of the warp is covered, spinning just the weft will still produce an attractive, traditional style bag. The sett has also been changed to 4 epi (15. 10 cm) from the traditional 8 epi, since most looms can not handle the extreme tensions or beating used on Greek looms.

Weaving instructions

This project can be woven on any 2 shaft loom.

WARP: You will need approximately 2 pounds (1 kg) or 150 yards (137 m) of strong 2 ply wool rug yarn, or if you prefer to try spinning your own, you will need the same amount of a 2 ply handspun yarn spun from a long fibered fleece with a high percentage of hair such as Karakul. Before spinning, wash the fleece well and then comb the wool. Spin, using the worsted method, a fine tightly twisted yarn.[1] Ply the yarn so that there are about 16 twists to the inch (60/10 cm). Sett the twist by winding the yarn into tight balls and leave them sit for several days.

WEFT: You will need 2 pounds or less of a soft 2-ply handspun yarn in several colors of your choice, either dyed or natural. Use a fleece that has a high percentage of hair and wash before spinning. Hand card it and spin in the woolen method.[1] Ply the yarn together and set the twist as described above.

SETT: 4 epi (15. 10 cm)

WEAVING: You will be weaving a rectangle 32" long by 14" wide (81 x 36 cm). Allow 6" (15 cm) at each end for fringe. Plan your own arrangement of stripes using the illustrations as inspiration. Measure the width of each stripe and keep a record. When you have woven 16" (40.5 cm) repeat the stripes in the opposite direction so front and back will match.

FINISHING: Cut weaving from loom, leaving at least 6" of warp at each end. The warp edges are finished using a simple finger-weaving technique which produces a smooth, durable edge.

Lay the fabric on a flat surface and separate the first 5 or 7 warp threads on the left hand side. Take the first thread on the far left and weave it in and out of the next four or six threads as illustrated. Pull the end down towards the fabric and slightly to the left to tighten it. Now pick up the next warp thread so you will continue to have an odd number of threads. Weave the second thread through the next four or six and pull down.

Repeat the process by picking up a new thread each time and pulling down on the woven warp threads to tighten the edge as you go. When the last group of 5 or 7 is reached, continue weaving the remaining threads in until two remain. Knot these together. The warp will now be lying

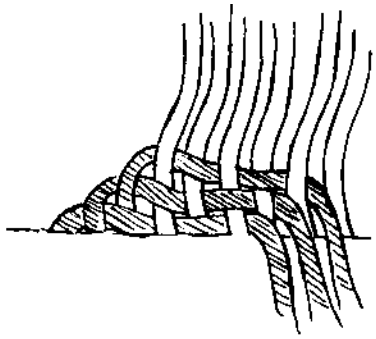


FIGURE 1. Fingerwoven edging

against the fabric. Finish the edge by braiding groups of warp together and tacking it down in an attractive pattern.

Now fold bag in half and sew up the sides using a double button hole stitch. Start your sewing 1" (2.5 cm) in from the side on the bottom of the bag, using a strong 2 ply rug yarn in a matching or contrasting color. Work up the side of the bag keeping the stitches even and matching the stripes.

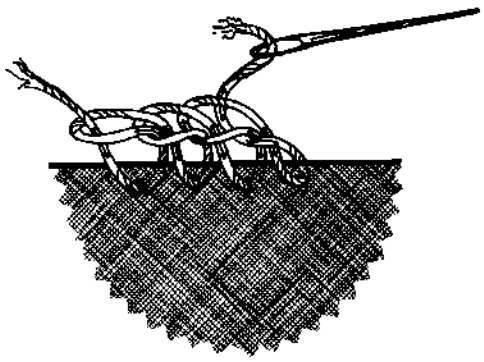


FIGURE 2. Double buttonhole stitch

HANDLE: Use 4 groups of weft yarn twice as long as the desired handle. Tie an overhand knot at one end and fasten the end to a fixed object, such as a doorknob. Wind up each group of weft into ball and braid together in a 4 strand braid. End with an overhand knot.

To attach the handle, make a loose loop using a heavy needle and rug cotton warp at one side of the bag; repeat about 5 times.

Wrap the loop with coordinating colored weft yarn using a series of tight half hitches.

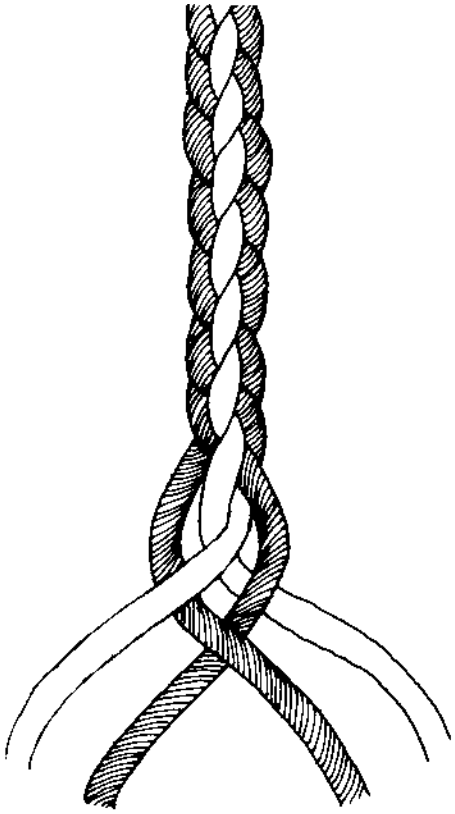


FIGURE 3. Four strand braid

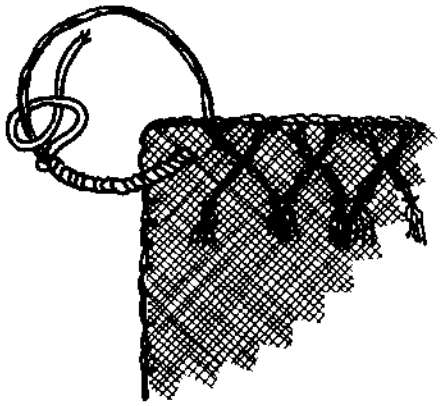


FIGURE 4. Loop for handle

FIGURE 5. Finished bag with handle attached

Repeat at opposite end of bag. Then tie one end of handle to loop. Bring other end through opposite loop and tie end to handle (as illustrated). The length of the handle can be adjusted by sliding the end up or down.

References:

[1]Fannin, Allen, *Handspinning* 1970 Nostrand Reinhold New York N.Y. pp. 122-129 and pp. 116-167

About the author: Joan Boura Koster learned to spin and weave while living with a shepherd family in a Greek village. Of the past 10 years she has spent over 3 years traveling and studying in Greece. She presently teaches art in the Maine-Endwell School district, New York, publishes and gives lectures on topics related to spinning and weaving in Greece.

AN INTERVIEW WITH ALLEN FANNIN

Allen Fannin

Photos by Alex King

Dorothy Fannin

Allen Fannin is well-known in the weaving world. He is a designer, a spinner and a weaver. He lives in Westdale, N.J. where he and his wife Dorothy own and operate a small textile mill, by which they earn their living producing a growing line of woven men's and women's accessories as well as piece goods for various small clothing designers. The Fannins at one time exhibited their handspun handwoven art pieces at weaving shows where they attracted much attention and recognition but few sales. They have since concentrated almost exclusively on production work for which they are equally well known and which earns them their livelihood.

Fannin has given numerous weaving and spinning workshops and has written many articles. His books, *Handspinning, Art & Technique*[1] and *Handloom Weaving Technology*[2] are highly regarded. Fannin is completely self-taught and his ideas are fresh and stimulating.

The Weaver's Journal recently interviewed Allen Fannin by phone to ask his views on present day spinning and weaving. The following is a slightly edited version of his comments.

Q Why are you in the business of handspinning and handweaving?

AF Well, basically and from the beginning it has been to earn my living. It is my trade.

Q What is your philosophy of handspinning and handweaving in today's industrialized society?

AF One of the things I find, contrary to what a number of people seem to think, is (and I've investigated it for years) that, except in a very small highly specialized market, whether or not something is handspun and whether or not it is even handwoven, really doesn't have very much meaning. I've found that in the larger market situation in which we're involved, the principal criteria are how things look and how much they cost. The importance of handspinning and handweaving lies in the design process. Unless you are spinning the fiber in some way, whether by hand, machine or otherwise, you are probably only doing half of the fabric design.

Q Do you do the handspun-handwoven combination more for aesthetic or for practical reasons? Does it produce a better material?

AF It's not really a question of producing a better material. The majority of what I see today as handspun yarn, I would not judge to be better simply because it is handspun. Aesthetic and practical reasons come into consideration where the smaller quantity that is required of a particular yarn makes it practical to handspin it and where the aesthetic requirements demand that it be handspun and where the financial situation can support the price. Then,

1. *Handspinning, Art & Technique* by Allen Fannin 1970 Published by Van Nostrand Reinhold Co., New York, N.Y. 208 pp Hardcover $16.95

2. *Handloom Weaving Technology* by Allen Fannin 1979 Published by Van Nostrand Reinhold Co., New York, N.Y. 336 pp Hardcover $26.50

of course, it is handspun. We do a lot of spinning for textile restoration and conservation purposes because we are the only people in the country who can spin enough yarn cheaply enough to make that feasible. But recently an order for 1,000 pounds of yarn was staring us in the eye. That is a little impractical as far as spinning by hand is concerned. So, in that case, we had to function as yarn designers and have the yarn spun at a mill.

Q What do you think the future will be for handspun and handwoven?

AF I'm a very bad predictor of the future. I've tried a few times and I failed. It is very difficult to say. What I can talk about is the direction in which it's going. I can't say where it is going to end up. When I compare the level of skill with which early (I mean several hundreds of years ago, very early) handspinners worked with the level of skill at which people work today, I have to say with all honesty that it looks as though we are going downhill. Today's handspuns are often very irregular and highly textured and lack the subtle textural variations that you would find in very early yarn.

There seems to be a move toward handspinning which is more a reaction against the machine than a positive affirmation of interest in handspinning, so you find people trying to spin thicker and thicker and coarser and coarser and heavier and more textured yarns. And I'm finding a loss of people's ability to spin yarns of a textured nature by design rather than by lack of skill. You'll find that when someone is able to produce a continuous strand of yarn, regardless of how irregular, they often tend to stop at that point and develop no further skills.

That's where I see it heading. Of course, I'm not happy with that situation. I hope it doesn't continue that way, and that people increase their skills.

Q Do you think the contact weavers and spinners have made recently with New Zealand and Australian spinners will have a beneficial effect on the American spinners?

AF It might. I've heard and seen some of those efforts as they evolved. I think it is a little too early to say. You see, one of the problems that both the New Zealand spinners and the American spinners have in common is that they have lost a certain sense of the historical perspective of what early spinners were once capable of doing. And I think that unless both of these groups get a little better historical perspective so that they can really see how far spinners have yet to go, this association is not going to work. But it *may*. Because I get the feeling that the Australian spinners are more demanding of themselves and are more self-critical about their skills than the American spinners. It may have a good effect. It depends on how willing the American spinners are to take a harder look at themselves. It's a little difficult to say at this point.

Q Do you work with other fibers than wool?

AF I work with any fiber. We're equal opportunity fiber users around here. We'll work with anything that is normally considered spinnable, and a number of things that are not normally considered spinnable. We don't take a very narrow view of what is handspinning is. For us, spinning is twisting anything together to make a continuous linear strand out of it.

Q I know you are very quality conscious. If you do not find that a fiber is a certain quality, would you be reluctant to spin it?

AF Well, we define quality here perhaps a little more relatively than people think. We define quality as relative to its contingent purpose. If the fiber has the characteristics that are required for the intended purpose, that is fine. If it doesn't, than it's not. And that is really how quality is defined in this whole business. I have seen a great many people who will spin wool, for instance, which has high quality in so far as it doesn't have fiber damage, scouring damage, dyeing damage, etc. but yet it's not properly suited for the purpose for which they are using it.

Q Do you do some dyeing too?

AF No. We don't at this point because the amount that we would have to do would produce a problem in getting rid of the waste. We have very poor soil drainage conditions around here and we have to be somewhat careful of the liquid waste that we have to run off. At some point, I think we may set up a small dye laboratory here in order to do our dyeing.

Q Do you take commissions for dyed work and have it dyed by somebody else?

AF It's hard to say because we don't really do what you would consider commissioned work. It doesn't work quite that way. We either buy fiber because the color is what we need or we have it dyed. So that's the extent to which we're involved in the dyeing process.

Q What are some of the unusual fibers you have spun?

AF Good grief! Oh, I had to spin yarn for a textile restoration job of a Chilkat blanket once which required yarn twisted out of cedar bark and goat's hair—I've done things like that. I've made rope, I have spun peacock feathers. If it can be spun, I've spun it some way or other.

Q In your book, *Handloom Weaving Technology*, you give lots of advice on how to become more efficient as one practices one's craft. How have readers reacted to this?

AF It's funny. That particular concept of skill and efficiency is something that I've lived with since just after I was born. And it was something in the book that was not as well received as it might have been, as if I was trying to turn people into machines or some such thing. Basically I tell people two things: first, that there is nothing wrong with technology and second, that there is nothing wrong with efficiency. It is really a question of how all this is applied and depends on how it is allowed to benefit or not benefit human beings.

A lot of people think because they are not professionals at this business that the concept of efficiency does not apply. I tend to think that in a way it

does. Obviously it applies in our case, for we have to earn a living and we are in a very highly competitive price-conscious business. In the case of someone who is not a professional, I can see the point of applying efficiency too. For instance, in situations of housewives and mothers, which most weavers seem to be, there may be very little time for weaving and efficiency can let you accomplish more in the time you have. Efficiency is a catalyst. It does not alter the design of your work but it makes it a little easier for you to do it. Efficiency does not affect the outcome. It's interesting that one reviewer of my weaving book commented that it is very often a "slowly savored approach that makes it interesting," and there are really people who prefer to do it less efficiently.

I think that there is a correlation of some kind between efficiency and skill because I grew up noticing that among the people who did things with their hands for a living that the most skillful tradesmen were usually the most efficient ones. The ones who had the least amount of wasted motion, the ones who didn't have to think about what they were doing, had the best products.

I used to watch my shoemaker. He'd throw a half a box of nails in his mouth and with his tongue he sorted the nails out until each one at a time stuck out of his mouth head first. Then he'd take a nail out of his mouth with his pliers and pop it into the shoe. Never swallowed a nail in 55 years. That is not only efficiency, but that's skill. I never learned to do it. I once swallowed a nail trying.

Q If you have to deal with a weave that is not an efficient one and is especially time consuming, such as one which requires pick-up, would you give it up or be the genius and devise a mechanism that would help you do it at a fast pace?

AF My answer to that question is both of the above. There are some situations where we do not do certain kinds of weaves because they are time-consuming but also because the effect (that is, the final look) could be achieved by some other weave structure that could be done more easily. There are other situations, especially when there is sufficient quantity involved, when it is worth my effort to invest time developing some kind of mechanism to do it.

I happen to be particularly lazy, although people think the opposite of me, and do not believe that necessity is the mother of invention but I do believe that laziness is. I grew up among a bunch of people who did not give people awards for working hard. They gave people awards for ducking work and finding out how to get the same think done easily. When I was a kid going to school and I got two hours of homework, I was willing to sit down and spend one hour figuring out how to do that same homework in fifteen minutes, so I'd have 45 minutes to play. That's the way my mind works. So, yes, if the quantity warrants, we have worked out some kind of special ways to do what we do. For instance, if we have the need for a lot of weave structures which people usually do with pick-up, we might easily go to a Jacquard system, for you get the same thing but more easily. And I tend to view that kind of problem in that kind of a way.

Q Do you have rather complex looms available to you?

AF Yes, I've got all different kinds available. And we tend, whenever the occasion calls for it, to tear something apart to salvage parts off it or junk it and build something else whenever we need to. We do that. We don't have a love relationship with our looms, as it were. They are our working tools and as long as they work and earn their keep they stay around. And if not, we will tear them down and steal parts off of them and things like that. Whatever the occasion calls for, we do. But most of the things we have are very simple.

Q Do you ever have an open house at your studio?

AF We do not have the facilities for people visiting. Our mill consists, as my wife describes it, of a lot of greasy cast iron. It's filthy in the place and there is a lot of machinery around going at different times. Also we're not a retail business: we manufacture strictly for the wholesale market, though we do a little retail as an accommodation. Also we have had problems in the past for we are not really a very large mill and we are not in a typical handweaving situation either. We are in the middle. We are sort of intermediate. We are in a very highly competitive business and we need to in some degree protect the investments in equipment. A lot of the equipment we have is not made any more. It s very hard to find. If we created too much curiosity about it, we ourselves would suffer very greatly. Another reason we don't have visitors is because we do some production for other designers who don't have our facilities and we offer them the protection of their designs. So we limit visitors. Except for close personal friends who happen to be weavers (although not too many of our friends are weavers), we don't encourage visiting.

Q I'm curious as to how you view the contributions you have made to the field of textiles.

AF It's interesting that you should ask that question because I've never actually thought about how I view them. It's the sort of thing that I do what I do and say what I say and think what I think and I'm always more curious about how other people view what I do and say. And from what I've been able to gather, other people see what I think, say, and do either in black or white. There is no gray material in the middle. That is, people either not necessarily agree but at least respect what I've said or they hate what I've said. And as I've looked back over the past years that I've been in this business, I've generally created that kind of reaction in people. For the most part, I would say that I have not necessarily received the kind of acceptance that weavers who are less vociferous in their mannerism have received. The interview you are doing here is the first time in 17 years that anyone has ever written about me as me and how I think as opposed to me writing some technical sort of thing. Which is understandable, because the kinds of

things that I think and say and write about tend to have made people feel somewhat insecure. I am reminded of what Peter Collingwood wrote recently about Ethel Mairet; while she had the ability to drive some of her students to tears, it was never done out of any kind of malice but it was simply that she was an honest kind of person who didn't think that she had to clothe her honesty in any kind of sugar coating. And Collingwood said that the weaving field at that time in England needed to have that kind of honest criticism in order to shake it out of its self-satisfied kind of attitude. I think the same is true at this point in the United States. We've become very self-satisfied and uncritical about ourselves and I think that the kind of questions I raise need to be raised.

Q Why do your students have mixed emotions of hostility and gratitude during your workshops?

AF My entry into this field was not through art. It was not through schools. And so I come at this from a very different viewpoint. I grew up among very highly disciplined people and from the time I was a child, excuses and what would generally be considered intellectual laziness were not tolerated. Therefore, a lot of people have accused me of taking almost a German-Prussian attitude toward the way I work with people as far as a workshop goes. I demand a lot of myself and I expect a lot from people, but it is because I respect people for being intelligent human beings. So I have seen this kind of dichotomy happen whenever I do something and I realize that there are certain opportunities that have not been open to me because of the way in which I conduct things. I've never been a guest speaker at a large regional or national gathering of weavers for example.

Q What do you think is more important,—the design, color, craftsmanship, weaving or the finishing?

AF Again, all of the above. One of the things that drives people up the wall with me is my concentration on even the minutest detail; I guess I learned that from that shoemaker.

There is not one single characteristic that either makes or breaks something. It's the sum total of all these little details, all put together, and if they are not all together, then you've failed some way. So you have to have all of the above. And again it's the thing that irritates people because you have all these things, especially when you are just learning, you have all of these things to get together and to have them come together at the right time and the right place. And you need them all.

Q You said the field you are in is very competitive. You have succeeded where others have failed. Do you have any advice for others?

AF Obviously there is no such thing as success without hard work. There is no question about that. I think that, first of all, in our case the thing that keeps us going is the sheer matter of survival. We have no other source of survival and I emphasize this to people a lot. I say that if you have another source of income, and I don't care if it's a social security check or whatever it is, coming into your house to supplement what you do as a weaver, that amount, to the extent that it exists, will take away some of your motivation.

Some people say they are not motivated by money. They may not be motivated by money as the dollar but they sure as hell are motivated by the need to eat. Now, we have never had any other source of income into our house but this. I am fortunate that I have always for 28 years been self-employed, so that I didn't come from a reasonably comfortable middle class backgroud where there was always a secure income. I've learned to live on an insecure average income rather than a secure one. But the answer is yes, there is hope for someone to be successful but they have to be willing to redefine what they do and what they are as weavers. A lot of people are trying so hard to make it as weavers, when what they are is artists. Hope for success requires certain purely economic considerations that you have to make. You have to be willing to do a certain amount of mechanization, you have to be willing to do all those other things in order to make it economically possible for you to compete at all. The failure rate in this business is just as high or higher than it is in any other business and it generally happens because people are very impractical in their expectations of what they can do, given the way they presently work. This is why I say that the field really needs an enormous amount of growth before our kind of success can happen. I think we have allowed the art world to define what we do as weavers much too narrowly. And I think because that has happened, it makes it very difficult for others to succeed.

Q How do the weaving shows affect weavers?

A Well, to the extent that they are shows rather than selling propositions, I think that they do two things. First of all, you lose a fortune showing at them. We used to do it, but we quit for that reason. And secondly, I think it can have some negative influence on your thinking about design. If you are thinking of weaving as a business, you have to think of designs for which there is a large market. Things in shows have probably a very limited market. Entering items in shows makes it very difficult for you to think in those terms which will allow you to be economically successful in this business.

We find that a lot of weavers haven't the slightest idea how to design for production. This seems to be because they rely too much for their designs on the shows where weaving is exhibited as a fine art rather than adjusting their creative thoughts to the demands of the marketplace.

Q Where do your business contacts come from?

AF Any way I can get them,—telephone, word of mouth, letter. Any way I can get them. I don't care. I'm not prejudiced.—I'll make contact with anybody any time, anywhere. As long as their credit is good!

Allen and Dorothy Fannin are planning a workshop tour in the Southwest in the Spring, 1982. They may be contacted by writing Fannin, Spinners Weavers, Westdale, N.Y. 13483.

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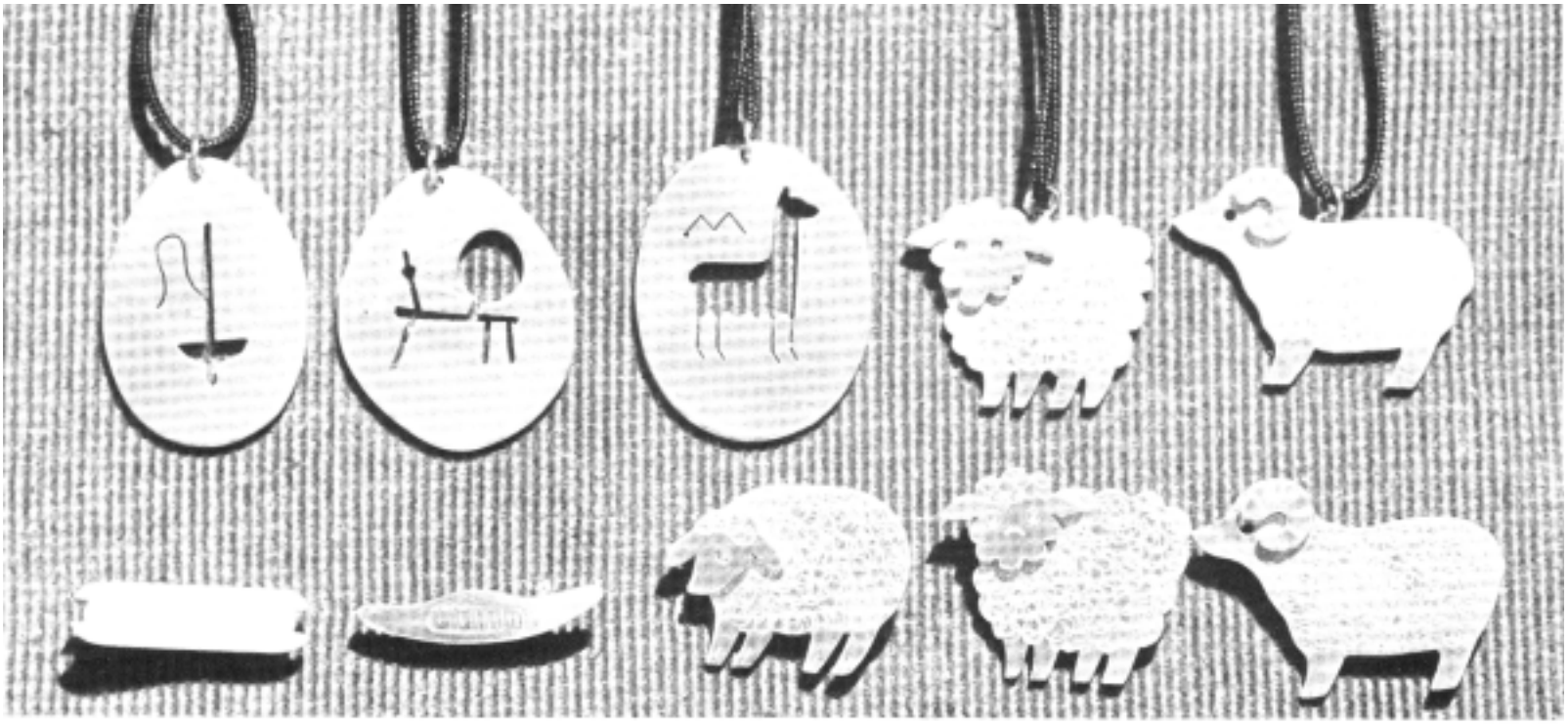

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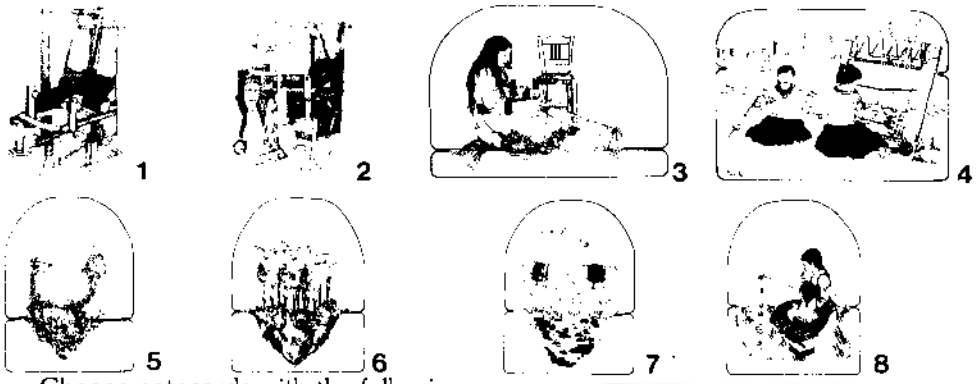

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THE USE OF LONG-EYED HEDDLES FOR PATTERNED DOUBLE WEAVE

by Ruth Howard

Weavers frequently wish to reproduce some of the old patterns found in double-weave coverlets so as to adapt them to other yarns and for other purposes, but find this is impossible to do because the looms they use do not carry enough shafts. Each block of design in a patterned double-weave requires 4 shafts if woven in the traditional method, and many of the most attractive patterns have four or more blocks.

Chapter IX, of the 1924 edition of Edward F. Worst's book *Foot-Power Loom Weaving*, republished in paperback by Dover in 1974 under the title *Weaving With Foot-Power Looms*, contains a detailed description of the method whereby an additional design block can be woven with two extra pattern shafts in addition to four ground shafts. Using this method, 10 shafts will weave three blocks; 12-shaft looms can accommodate four blocks. There is no advantage to this method for 8-shaft looms, since an 8-shaft loom can weave two blocks by the traditional technique.

Many of the patterns in the John Landes book, as transcribed by Mary Atwater in 1925 as well as in other reproductions of old weaving books published since, are of four blocks, and it was the desire to make these more available to multi-shaft weavers that led to the use of the Worst method.

It immediately became apparent that to do this satisfactorily some special considerations would have to be studied, and some changes made to fit modern looms and modern weavers.

The first requirement was a source of a set of long-eyed heddles, at least 12 inches (30 cm) long, with eyes 4½ inches (11.5 cm) long. These could be made from string, using the same technique used in producing normal string heddles, except that the jig must have the central pegs or nails at least 4½ inches apart. Because metal heddles must be specially made, they are expensive, and not worth purchasing if one only wants to do a few articles using this method. String heddles are very adequate.

Whatever type of long-eyed heddles you use, enough are required to equal the total number of warp ends in the double-weave project being planned. Thus, if the warp is 540 threads wide, there must be 540 normal heddles and 540 long-eyed heddles.

The long-eyed heddles are placed on the front four shafts of the loom, divided equally among these four shafts. Normal heddles are placed on the remaining shafts, starting with shaft 5 from the reed. These last shafts are called the pattern shafts, while the front four are called the weave, or ground shafts.

The warp is wound normally, and is threaded on the pattern shafts in the order required by the pattern blocks. Two pattern shafts are required for each of the blocks of the pattern, and the actual number of threads used for a given block is determined by the size of the design block. Block A will be threaded dark on shaft 5, light on shaft 6 for the width of the first design unit, alternating a dark and a light; block B will be threaded dark on shaft 7 and light on shaft 8 for the width of that design block. Block C is threaded alternately on shaft 9 with dark, and shaft 10 with light, and block D will be threaded dark on shaft 11 and light on shaft 12.

When the pattern has been completely threaded, each warp end is rethreaded in one of the long-eyed heddles on the front four shafts, in direct twill order. The first warp thread, which would be dark, will be on shaft 1; the second warp thread, which would be light, will be on shaft 2; the third, again dark, will be on shaft 3, and the fourth thread, light, will be on shaft 4. This order is continued throughout the entire threading. Thus, on the pattern shafts, the dark-colored warp is on the odd-numbered shafts, and this same order holds for the threading of the long-eyed heddles.

Sleying is done as for a normal double weave—twice the density required for a single fabric with the same yarn. Tie-on is completed and the next step is the tie-up of shafts to treadles.

Worst used a special form to draft the tie-up and the treadling sequence for weaving in this manner; he was using, and therefore drafting for, a sinking-shed loom. Because the design which Worst used to detail this method requires a combination tie-up (several blocks working together), this draft form may be confusing. In reality, the weaving is surprisingly simple, and the treadling is not as heavy as it might be with a normal tie-up for a multi-harness double-weave.

A review of the sheds required for weaving any double-weave fabric may be in order. To state these in the simplest form possible: half of the upper surface warp threads must be be raised, followed by raising half of the lower surface warp threads plus all of the upper surface warp ends. The first shed weaves half of the upper surface and the second shed weaves half of the lower surface. These two sheds will be followed by raising the other half of the upper surface

warps, and again raising all of the upper surface warps and the other half of the lower surface warps. As each of these sheds is woven, both surfaces have been completed and interlocked.

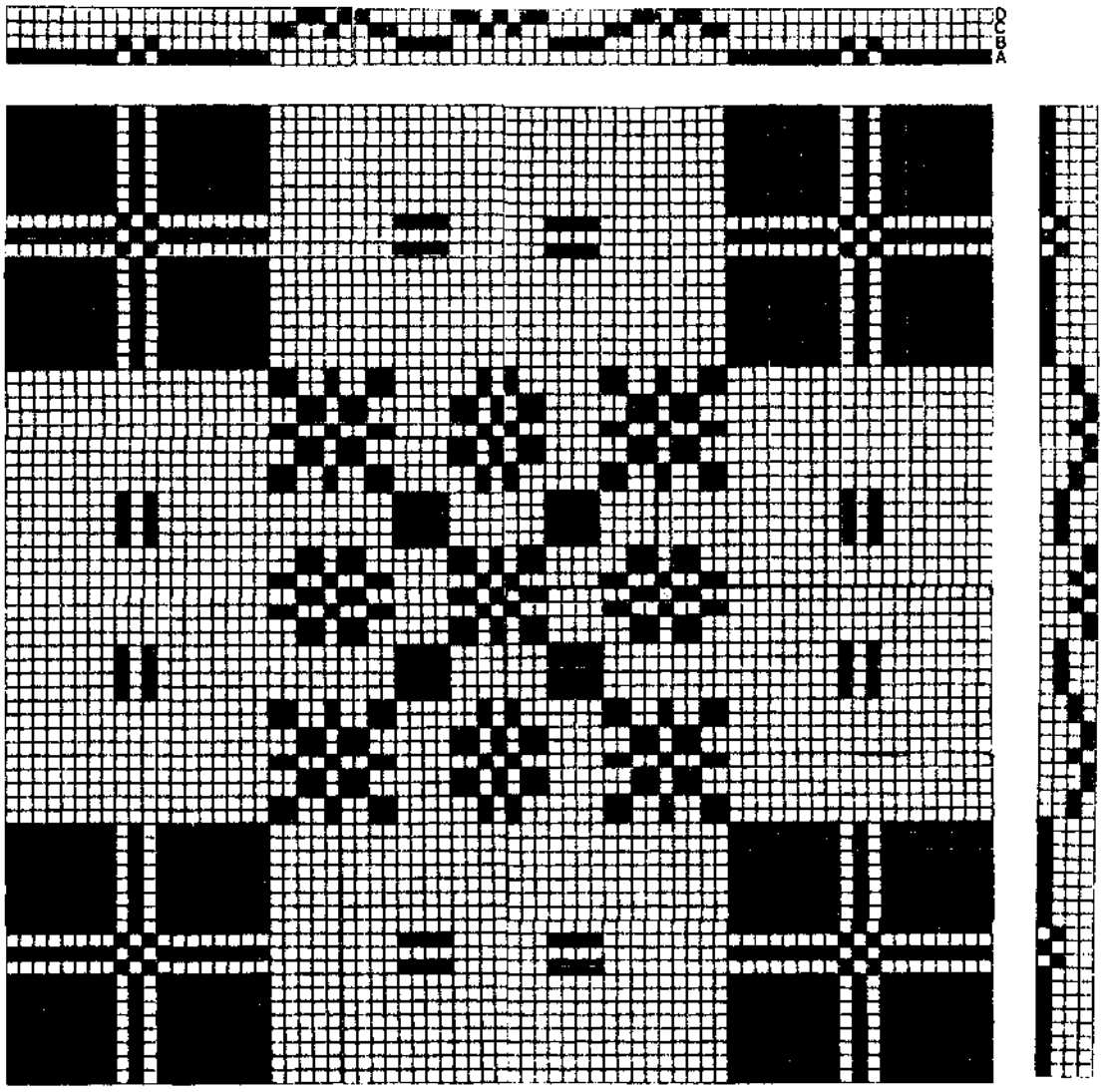
With this general statement in mind, it may be easier to follow the Worst tie-up and treadling sequence, as given in his text.

Two feet are used to weave each shed. The treadles at the extreme left-hand side of the loom are tied to the pattern shafts carrying the dark-colored warp ends—in other words, the odd-numbered pattern shafts (5,7,9,11, etc.). The four front shafts are tied to the four central treadles, one shaft to a treadle. All pattern shafts with light-colored warp ends, the even-numbered shafts, are tied to treadles at the extreme right side of the loom.

Without following his exact treadling sequence, it can be said that the first shed that is opened is done with the right foot on a treadle controlling a light warp pattern shaft (at the extreme right side of the loom), and the other foot is on a treadle controlling the first of the four front shafts. The second shed which is opened is for the other surface of the same block, and uses one foot on the extreme left side of the loom, (on a treadle carrying dark-colored pattern shafts), while the other foot controls the second of the four front shafts. The third shed returns to the first pattern treadle that was used, (on the right-hand side of the loom), with the other foot controlling the third of the four ground shafts (by using the third of the central treadles). The fourth shed returns to the second pattern treadle, (at the left side of the loom again), and the last of the central treadles. All of this requires a great deal of foot shifting and sliding from one side on the loom to the other. This proved to be extremely awkward to do with any rhythm, so a modified version of the Worst tie-up was used.

The four-block Landes pattern which had been selected for weaving the sample did not use a combination of blocks anywhere. This made the tie-up simpler. Also, a **rising-shed loom** was used. The first design block (A) was dark on the upper surface, and to weave that block, treadle 1 was tied to shaft 5 (containing the dark warp ends of block A), treadle 2 to shafts 8, 10 and 12 (containing the light warp ends of blocks B, C and D).

The B block pattern shafts were tied to the next two treadles: treadle 3 was tied to shaft 7 while treadle 4 was tied to shafts



6, 10 and 12, that is, the light warp shafts of the opposite block. The central treadles were tied to the four front shafts, those with the long-eyed heddles, and the first of these was tied to shaft 1, the second to shaft 2, the third to shaft 3 and the last to shaft 4. This put the light-colored warp ends (on shafts 2 and 4), in a position to be controlled by the second and fourth of these central treadles.

The C and D block pattern shafts were tied to the treadles to the right of the ground treadles. When it was desired to weave either of these two blocks, the right foot moved from the ground treadles to these, and the left foot took over the work of controlling the ground treadles as each shed was opened.

During the weaving, when shaft 5 was lifted, the other foot lifted shaft 4. When shafts 8, 10 and 12 were lifted, shaft 3 was lifted also. The other two sheds of the first block were shaft 5, together with shaft 2 and shafts 8, 10 and 12 together with shaft 1 of the ground series. The loom was equipped with 16 treadles, but only 12 were required to weave the four-block design.

The 16 treadles were divided into three groups of four treadles each. Four were on the extreme left side, four were in the center of the loom, and the last four were at the extreme right. Each group of four was separated from the next by two treadles which were unattached to any shafts, and were simply dropped. These acted as spacers, to keep each group by itself, and allowed the feet to find their successive positions more easily.

The following table will give the exact tie-up used:

TREADLE	SHAFTS
1 at extreme left side	5
2	8,10,12
3	7
4	6,10,12

These four treadles served as the pattern treadles for the first two blocks of the pattern, Blocks A and B.

Treadles 5 and 6 were dropped, to serve as spacers.

7 in center of loom	1
8	2
9	3
10	4

These four treadles served as the ground treadles and worked with the pair of treadles which controlled each of the four design blocks of the pattern.

Treadles 11 and 12 were dropped to serve as spacers.

13	9
14	6,8,12
15	11
16	6,8,10

With this tie-up and with the treadling sequence which will be given in detail below, each foot lifted a maximum of 3 shafts. The spread necessary to reach any two treadles used together, was, at most, only from treadle 1 to 10, or from treadle 16 to 7, a not uncomfortable width, even with the spacers. If one wanted a minimum of stretch, only the twelve central treadles need to be used—no spacers—and there would be only a maximum stretch over 8 treadles.

Combining blocks, as is necessary to weave certain patterns, is not difficult either. If a combination of blocks A and B were desired, treadle 1 would be tied to shafts 5 and 7 for the first shed, while for the second shed 10 and 12 would be tied to treadle 2. A combination of blocks A and C would tie shafts 5 and 9 to the same treadle, etc. It would even be possible to tie single blocks to the treadles as given above and, if one occasionally desired to combine blocks A and B for only a portion of the design, there would be enough treadles left for that additional combination.

The actual treadling which was done for the trial sample woven with a warp of No. 3 Perle cotton and a weft of the same was as follows:

Left foot	Treadle 1	Raises S. 5
Right foot	Treadle 10	Raises S. 4
	Weave with orange.	
Left foot	Treadle 2	Raises S. 8,10,12
Right foot	Treadle 9	Raises S. 3
	Weave with green.	
Left foot	Treadle 1	Raises S. 5
Right foot	Treadle 8	Raises S. 2
	Weave with orange.	
Left foot	Treadle 2	Raises S. 8,10,12
Right foot	Treadle 7	Raises S. 1
	Weave with green.	

These four weft shots completed one repeat of block A. It required 5 repeats to square block A for the first unit of the profile draft.

Left foot	Treadle 3	Raises S. 7
Right foot	Treadle 10	Raises S. 4
	Weave with orange.	
Left foot	Treadle 4	Raises S. 6,10,12
Right foot	Treadle 9	Raises S. 3
	Weave with green.	
Left foot	Treadle 3	Raises S. 7
Right foot	Treadle 8	Raises S. 2
	Weave with orange.	
Left foot	Treadle 4	Raises S. 6,10,12
Right foot	Treadle 7	Raises S. 1
	Weave with green.	

These four weft shots complete one repeat of block B. It was used only once for the second unit of the profile.

These two blocks were woven as drawn in on the profile: block A, repeated 5 times to square; block B, once; block A once; block B once; then block A 5 times to square.

Since the next unit on the profile was a block C unit, the right foot moved to the pattern treadles at the right side of the loom, and the left foot took over the operation of the tabby treadles.

The treadling sequence for blocks C and D of the sample are as follows:

Right foot	Treadle 13	Raises S. 9
Left foot	Treadle 10	Raises S. 4
Weave with orange.		
Right foot	Treadle 14	Raises S. 6,8,12
Left foot	Treadle 9	Raises S. 3
Weave with green.		
Right foot	Treadle 13	Raises S. 9
Left foot	Treadle 8	Raises S. 2
Weave with orange.		
Right foot	Treadle 14	Raises S. 6,8,12
Left foot	Treadle 7	Raises S. 1
Weave with green.		

These four weft shots complete one repeat of block C. It was necessary to do three repeats in order to square this unit of the profile.

Right foot	Treadle 15	Raises S. 11
Left foot	Treadle 10	Raises S. 4
Weave with orange.		
Right foot	Treadle 16	Raises S. 6,8,10
Left foot	Treadle 9	Raises S. 3
Weave with green.		
Right foot	Treadle 15	Raises S. 11
Left foot	Treadle 8	Raises S. 2
Weave with orange.		
Right foot	Treadle 16	Raises S. 6,8,10
Left foot	Treadle 7	Raises S. 1
Weave with green.		

These four weft shots complete one repeat of block D. It was necessary to do three repeats in order to square this unit of the profile.

Repeat each 4-shot sequence for each block as it appears in the profile draft, ending with block A, block B, block A, block B and block A as at the beginning to balance the pattern.

There are a few minor problems connected with the use of long-eyed heddles in the manner described. One is that the sheds are shallow, and not always perfectly even. This is probably due, in part, to the different weights of each shaft. The use of stick shuttles helped to prevent the skips which would sometimes occur on the bottom surface and show up as long floats.

All profile drafts are not to be woven as drawn in. The order in which the design blocks are to be woven should be determined from the draw-down, and worked out carefully before starting to weave. This is especially true where blocks are combined in parts of the design. If this is not carefully done, the woven sample can be quite different from the drawn-down design.

For the weaver who wishes to weave fabrics of patterned double-weave which had previously seemed impossible and beyond the capabilities of the loom, the answer is in the use of long-eyed heddles, two feet on the treadles, and a somewhat simplified tie-up.

DOUBLE-WEAVE FOUR BLOCK PATTERNS ON TWELVE HARNESSES from Landes No. 4. Profile by Mary M. Atwater.

Each square of the draft equals 2 warp threads, 1 dark, 1 light.

WARP: Dark green No. 3 Perle cotton
Burnt orange No. 3 Perle cotton

WEFT: Same as the warp.

THREADING: Block A—shafts 5 and 6 threaded alternately, with green on shaft 5 and orange on shaft 6.

Block B—shafts 7 and 8 threaded alternately, with green on shaft 7 and orange on shaft 8.

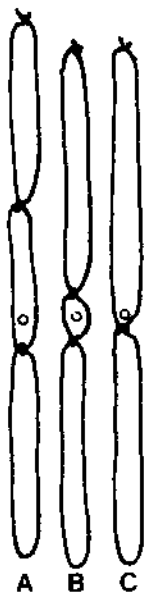
Block C—shafts 9 and 10 threaded alternately, with green on 9 and orange on 10.

Block D—shafts 11 and 12, threaded alternately with green on shaft 11 and orange on shaft 12.

Selvedges were threaded on shafts 5 through 12 for 5 repeats, plus shafts 5, 6, 7, 8 on the right, a total of 44 threads; shafts 5, 6, 7, 8, 9, 10 were added to the other 40 threads of the left selvedge. This was done to keep the sequence of the colors in order so that the green could be started on shaft 5 for the threading of the profile.

Once the pattern shafts, 5 through 12, were completely threaded, each warp end was threaded through a long-eyed heddle, in straight twill order, on shafts 1 through 4.

SLEY: 2 warp ends per dent in a 12 dent (50/10 cm) reed, to equal 24 threads per inch (100/10 cm).



A regular long-eyed heddle (countermarch loom)

B standard heddle

C upright long-eyed heddle (rising shed loom)

warp at rest

A B C Long-Eyed Heddles

Editor's note: In this example where long-eyed heddles are used with a rising shed loom for patterned double weave, the regular long-eyed heddles may be replaced by upright long-eyed heddles.

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Atwater, Mary M. *Shuttle-Craft Book of American Handweaving*, 1951, McMillan Co., New York, NY.

Landes, John, *A Book of Patterns for Handweaving*, arranged by Mary M. Atwater, 1977, Southern California Handweaver's Guild, Inc., Hollywood, CA.

Worst, Edward F. *Weaving with Foot-Power Looms*, 1974, Dover Publications, New York, NY.

BOOK REVIEWS

TREADLED TOGS. A PATTERN BOOK OF LOOM-FASHION CLOTHING by Kerry Evans, © 1981 Kerry Evans, 2308 East Euclid Ave. Milwaukee, WI 53207. 76 pp. coilbound $9.95 + 63¢ postage.

This book contains some 22 patterns which require a minimum of cutting to create clothes that fit well and have pleasing original designs. The patterns are for capes, coats, shirts, and jackets, vests, dresses, jumpers and skirts. They are ladies' wear but some could be adapted for men. A few pointers on weaving and sewing are given in the beginning but the book is mainly a clothing pattern book. Each garment is shown as a black and white photo and a cutting diagram, and has assembling instructions. As there is no table of contents and no cross reference between the photos and the patterns, one tends to get somewhat lost in this otherwise uncluttered layout.

The concise directions for the construction of the garments will appeal to some readers while others would prefer more guidance all the way from selecting the yarns, through all the steps of clothmaking to the final finishing of the project.

Clotilde Barrett

MULTIPLE TABBY WEAVES. BASED ON DR. WILLIAM G. BATEMAN'S MANUSCRIPT. Edited by Virginia I. Harvey. © 1981 Virginia I. Harvey. Published by HTH Publishers, Box 468, Freeland, WA 98249. 92 pp. paperbound $9.95

The research, experimentation and sampling in the field of weaving which the late Dr. Bateman is noted for will be shared with all interested weavers, thanks to the dedicated publishing efforts of Virginia Harvey. "Multiple Tabby Weaves" is the first monograph of a series which is based on Bateman's weavings and manuscript. Virginia Harvey's dedication to the project is evident by presenting a thoroughly edited version of the manuscript and by including the complete text of Dr. Bateman's original "multiple tabby" chapter. The monograph starts with two important chapters "Definitions" and "Explanation of forms". It is necessary to become familiar with the terminology that has been adapted to this particular study. The following chapters show the endless variations of exciting weave structures and color effects that can be woven on block systems that are obtained by permuting four warp threads on a set of four shafts and by treadling numerous sequences of balanced sheds (2 up, 2 down).

The exploration of the system goes beyond the combinations of 4 different threads on 4 shafts. It expands to all the 3 shaft point twill variations that can be woven on 4 shafts (crackle) (pp. 37-43).

In subsequent chapters Bateman is concerned with the expansion of the block. The resulting samples do justice to Bateman's quote "It is hard to believe that only 4 shafts are at work".

Yet the research is pushed still further by exploring the use of 6 or 8 shafts.

Bateman has opened the way to a new way of designing weave structures and Virginia Harvey has put it within the reach of all weavers.

Dr. Bateman's mind must have worked like a computer; his theory of multiple tabby weaves will surely be taken up by computer enthusiasts who like to play at generating beautiful and useful weave structure on their monitors and printers.

Clotilde Barrett

THE GUIDE TO SUCCESSFUL TAPESTRY WEAVING By Nancy Harvey ISBN 0-914718-55-X © 1981 Nancy Harvey. Published by Pacific Search Press, 222 Dexter Ave. North, Seattle WA 98109. 116 pp. $10.95 + $1.00 P/H.

The main purpose of this book is to offer tutorial guidance for making tapestries. The author's intention is to spare the weaver from making many unnecessary trials and errors. The book will teach you how to get started, how to develop technical skills and how to go about designing.

Nancy Harvey's techniques have been developed through research, experimentation and through analyzing the process of tapestry weaving. Her approach to teaching is very systematic starting with definitions, basic tools and equipment, and important information on yarns.

The chapter on "getting ready to weave" leads the beginner through an entire project and comes through as if a patient friendly teacher was standing by to help every step of the way.

The chapters beyond these are more advanced and deal with important technical aspects of tapestry weaving. "Finishing, mounting and tapestry care" deals with the finishing touches for successful tapestries.

The book goes beyond purely technical considerations and includes a chapter on inspiration and on creating a design.

The book is clearly written, well laid out and profusely illustrated with drawings and photos. There is a suppliers' list, a listing of useful books and an index.

Nancy Harvey has an exciting and personal approach to guiding the weaver through the many techniques and learning processes in order to produce successful tapestries.

Clotilde Barrett

STORA VÄVBOKEN by Laila Lundell © 1976 ICA - Förlaget AB, Västerås Sweden. 360 pp. Hardcover. In Swedish.

This Swedish book has a refreshing approach to the teaching of handweaving. It is suitable for self-teaching because the diagrams are very clear and the entire first half of the book is project oriented. The projects have great visual and practical appeal and are described in minute detail. After learning the essential loom parts, the weaver gets ready for a first project which is a set of colorful plain weave placemats woven with rag weft. The steps in dressing the loom are very detailed and well illustrated. Following projects lead to an understanding of stripes and plaids, twills, basic drafting, pattern weaves, weft face and warp face webs, turned weaves, twill blocks, double weave and tapestry techniques.

The second half of the book is the equivalent of a more advanced weaving course. It deals with fabric analysis, the designing of fabrics including selvedge treatment, balancing patterns, yarn calculations, ideas on setts, etc.

Next comes some know-how on the operation of a weaving studio. This includes tips on yarn buying, more information on studio equipment and a better understanding of the loom including the many parts and types.

This book goes into a lot of technical and practical detail and is so well illustrated that a lot of information can be gleaned without any knowledge of the Swedish language. It will serve as a good reference book for many weavers especially those who admire the Scandinavian weaving tradition.

Clotilde Barrett

COLOR AND WEAVE by Margaret and Thomas Windeknecht. © 1981 by Litton Educational Publishing, Inc. ISBN 0-442-23329-9. Published by Van Nostrand Reinhold Co. 135 W. 50th St. New York, NY 10020. 192 pp. Hardcover $22.95.

Color and weave effects are visual patterns which result from arranging the warp and the weft of a fabric structure according to certain dark/light sequences.

Computers can be programmed to display weave structures which can be printed out as drawdowns with a black warp and white weft. Programs can also be designed to change the color sequences both in warp and weft. In that case the computer prints out the drawdown of color and weave effects. Computers make it possible to do systematic exploration of these effects and generate a wealth of possibilities.

In this book there are 900 photographs of woven swatches showing patterns selected by the authors from among thousands which

were generated by the computer which they programmed. Many are woven in plain weave and simple 4-shaft twills. There are 8-shaft patterns and a selection of color and weave effects on special weave structures such as summer and winter, overshot, etc. The layout of the book is carefully done so that each pattern can be duplicated without having to search for additional instructions.

The book serves best as a recipe book. One can pick one or more favorite patterns and weave them off alone or in combinaton with others.

Clotilde Barrett

CONSIDERATIONS FOR THE CARE OF TEXTILES AND COSTUMES — A HANDBOOK FOR THE NON-SPECIALIST by Harold F. Mailand. © Indianapolis Museum of Art, 1200 W. 38th St., Indianapolis, IN 46208. Third revised printing 1980. 24 pp. paperbound $4.75 ppd.

The preservation and conservation of textiles is an important concern of all of us who work with fiber. This booklet is written to introduce the non-specialist to correct methods of handling, storing and exhibiting textiles. Although some information such as climate control is geared more toward museums, other techniques are invaluable for the handweaver and private collector. These are: lighting, mildew, insect and rodent control, cleaning.

The book also contains good advice on storing textiles and on mounting them for exhibitions.

A good source list of supplies and an extensive bibliography add to the great value of this booklet.

Clotilde Barrett

OLDER WAYS — TRADITONAL NOVA SCOTIAN CRAFTSMEN by Peter Barss, © 1980 Van Nostrand Reinhold Ltd. Toronto. 141 pp. Hardcover $16.95.

Carl Bush, born 25 February 1906, Fish Nets; Edith Zillig, born 4 August 1915, Sheepskin Tanner; Grace Russel, born 14 September, 1906 Quilts; Peryle Lowe, born 31 May 1907, Weaver: These are typical headings for some 30 chapters of this book that deal with old timers living in Nova Scotia who are still practicing a craft which has been made obsolete through industrial developments. This well-illustrated book deals with nostalgia. People and their crafts are depicted with love and appreciation. Peter Barss lets the "old timers" speak for themselves and documents their monologues with excellent photography.

Many chapters include valuable technical and historical information as well. The craft notes are credited to Joleen Gordon.

This book is a record of some aspects of human life that, within a few years, will belong entirely to the past.

Clotilde Barrett

FUN WITH FELT by Annette Feldman. © 1980 by Litton Eductional Publishing. Published by Van Nostrand Reinhold Co. New York, NY 8¾" X 11¼" 176 pp. Hardcover $15.95.

This book contains over 50 attractive projects a craftsman can make using felt. The projects are presented under the headings of Fashion, Patchwork, Toys, Home Accessories, Trims and Christmas Accessories. Attractive photos, some in color, show the finished project and the list of materials needed for each project is very helpful. The directions are written for people with some knowledge of sewing and embroidery. Many of the patterns given must be enlarged and a few reduced. The author explains how to do this in a special section at the back of the book, which also includes preparing and cutting, transferring pattern markings and seaming the felt. The project instructions are adequate and are well illustrated.

Mary L. Derr

BACK TO BASICS: HOW TO LEARN AND ENJOY TRADITIONAL AMERICAN SKILLS. © 1981. Published by Reader's Digest Association, Pleasantville, N.Y. 8½" x 11", 454 pp, Hardcover. $19.95

Have you wondered how to build a house, tan leather, make a broom? Then this book is what you have been looking for. The editors have given clear instructions for all the old skills, but they use modern tools and products in pursuing these skills.

The book is organized into six main sections. The first deals with shelter, the second with energy, the third with raising food, the fourth with preserving food, the fifth with home crafts and the sixth with entertainment. It is the fifth section, "Skills and Crafts for House and Homestead" that I found most interesting.

The article on natural dyeing with plants and flowers gives clear and easily understood instructions for dyeing yarn. The chart on the following two pages is invaluable. It presents 24 natural plants, giving the color you can expect from each, the mordants to use, and the quantity you will need to gather to make a four gallon dyebath. It is clear, compact and easy to use.

The section on handspinning is written for beginners. The instructions and drawings on carding are excellent, as are those showing how to use the spindle. The two pages that follow describe the use of spinning wheels—both low and high wheels, with helpful diagrams of each wleel identifying the parts. A boxed article at the bottom of the page explains now to empty the yarn from a bobbin.

The short article on weaving that follows must have been written a number of years ago, for among the weaving periodicals *Fiberarts* is listed at the old Albuquerque NM address and *The Weaver's Journal* is omitted completely.

You won't get much out of the article on weaving unless you are a complete beginner. You are shown, with instructions and photos, how to weave with a rigid heddle loom. And the following two pages give detailed directions for making a rag rug on the rigid heddle loom. The directions are clear and easy to follow.

The chapter on the jack loom seems to be the poorest, perhaps because the editors tried to cover too much. You'll find the instructions for multiple-shaft weaving very general and not very clear. It is very doubtful that you could use a jack loom without more help than this chapter provides.

The other chapters on textiles include hooked rugs, braided rugs, and three chapters on patchwork quilts. There is also a later chapter on basketry.

BACK TO BASICS is quite an achievement. The book is valuable if you would like to try a new craft. it is also fun for browsing through or to satisfy your curiousity about how to make a basket or a rope hammock. This book was a major undertaking, involving a large number of people. It is successful and will be a valuable addition to any craftsman's library.

Mary L. Derr

THE FIBERARTS DESIGN BOOK from the editors of Fiberarts Magazine. ISBN #0-837274-003. © 1980 Fiberarts. Published by Hastings House Publishers, 10 E. 40th St., New York, NY 10016. 175 pp. Hardcover, $24.95.

This book is a photo collection of textiles which have been selected by the editors of Fiberarts through slides from some 18,000 entries submitted by 1,300 artists. It documents the current trend toward moving traditional crafts into the realm of the fine arts. To quote the editors: "Three basic considerations governed our selections for this book: aesthetic appeal, technical expertise and innovative ideas".

The 500 selected works are reproduced in black and white or in color. They are sensibly organized and carefully laid out. Each work is documented with the name of the artist, the title, some information on the technique and material used, the size and often a short statement by the artist. Regretfully the date of execution of the piece is never mentioned.

To the outside world this book represents somewhat the "who is who" and "who does what" in the fiber arts around 1980. Surely there are important omissions but one gets an overall feeling about what is happening in the field. The exact date of execution would enhance the historical perspective of the book and would make possible some interesting comparisons with future books of this type.

Clotilde Barrett

HANDSPUNS FOR TAPESTRIES

WHERE THERE'S SMOKE, THERE'S FIRE
by Norma Szumski

"Where There's Smoke There's Fire"
38½" x 61"

It has long been my desire to make a woven item directly from the fleece to the finished project. I bought two fleeces from a friend who raises sheep in the Blue Ridge Mountains: one white for dyeing, the other natural black, or charcoal gray. I decided that my project would be a tapestry, the subject for which was inspired from witnessing a rather devastating fire which, while tragic, was also beautiful in color.

I washed and dyed the white fleece in the various colors needed, from blue to red, through the orange range, into yellow, and finally into the palest yellow representing white heat. I further blended the colors while carding, then spun the yarn as needed.

I wove a deep dark border at the bottom that represented the smoke with occasional flashes of blue and red throughout, blending the colors into the white heat of the fire at its height, then back into paler gray for wisps of smoke, and finally back to the dark smoke color again.

"Winter"

WINTER
by Clotilde Barrett

A Samoyed and a Border Collie gave up their winter undercoat for me to spin and weave this tapestry inspired by winter snows. The tapestry is 17" X 22½" (43 X 57 cm), woven on a wool warp sett at 5 epi (20/10 cm). The loom is a RAM'S loom which is reviewed on page 61 of this issue.

This is a good project for a beginning spinner and/or weaver.

Photo 1

DOGGIE BAG

Phyllis Clemmer, an ingenious and imaginative artist from Dewey, Arizona is a strong advocate of the "do it yourself" school and is often using recycled materials. She invented the circular loom shown in Photo 1. It is

Photo 2

ideally suited for tubular tapestry weaving such as the "Doggie Bag" (Photo 2). The fiber is mostly dog hair in natural colors plus a little angora goat hair and rabbit fur strips. All handspun, of course.

Photo 3

The project, shown in progress in Photo 3 is 4" (10.2 cm) wide and 30" (76 cm) long.

A quote from Phyllis: "I am really enjoying weaving things that I don't think can be done on a conventional loom".

MULTIPLE SHAFT WEAVING

THREADING FOR 2-OR-MORE-TIE BLOCK WEAVES

There is a vast number of interesting weave structures whose potentials can be best explored and understood if their threadings are considered as belonging to the family of multiple-tie block weaves.

Chart I shows a few examples of threadings of 2-tie block weaves, 3-tie block weaves and 4-tie block weaves for which each block requires only one pattern shaft. The units have been separated by vertical lines.

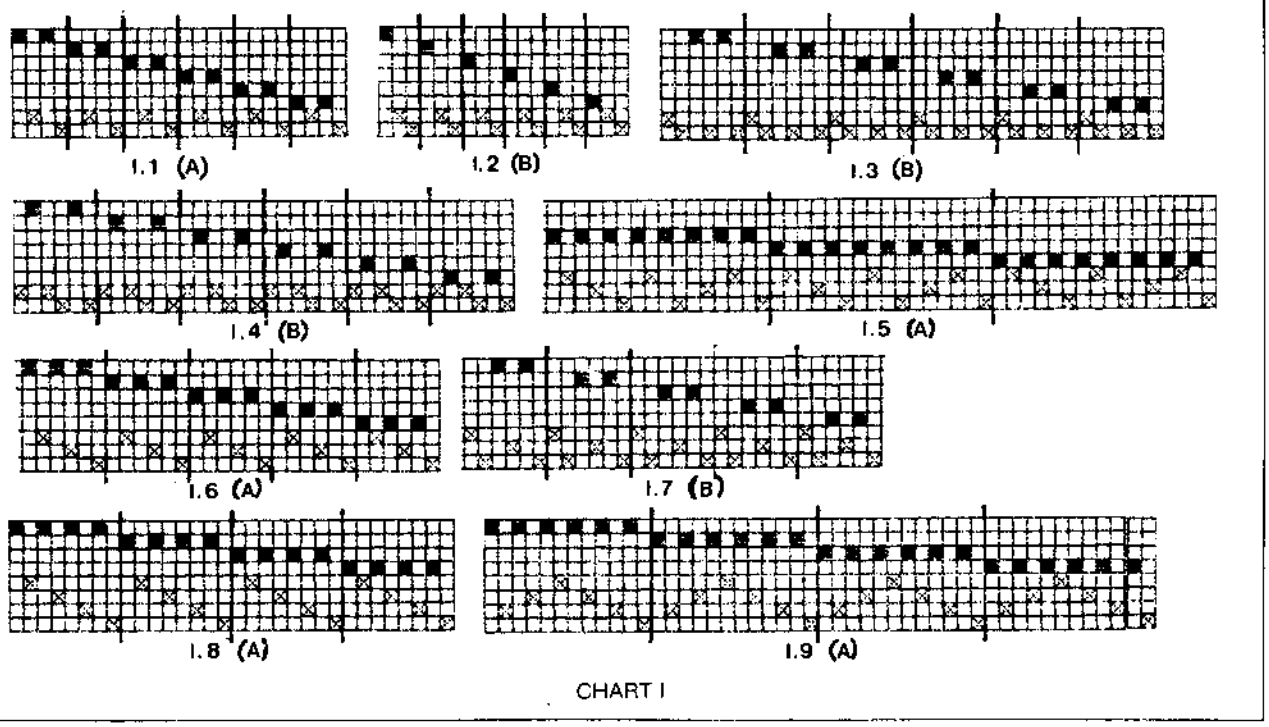


CHART I

I.1 is a 2-tie 4-end draft (4 warp threads per repeat)
x are the tie-down warp ends.
■ are the pattern warp ends.
This threading weaves Summer and Winter.
I.2 is a 2-tie 3-end draft. This is the threading often used by Peter Collingwood for rugs and shaft-switching.
I.3 is a 2-tie 6-end draft. This is the threading of Atwater-Bronson lace. Note the frequency of tie-down warp threads on shaft 1.
I.4 is a 2-tie 6-end draft.
I.5-9 are 3 and 4-tie drafts.

By studying these examples one can note the following:
- Each unit may be repeated ad lib and the juxtaposition of identical units will create blocks.
- Each block requires only one pattern shaft. The front shafts are usually assigned as tie-down shafts, the remainder are the pattern shafts. The number of possible design blocks is equal to the total number of shafts minus the number of tie-downs.
- The examples can be divided into two types:

A: I1 (A), I5 (A), I6 (A) I9 (A)
The tie-down ends alternate with the pattern ends.

B: I2 (B), I3 (B), I4 (B), I7 (B)
The 1 1 sequence of tie-down and pattern end is not maintained.

- The major function of the tie-down warp is to prevent the pattern weft from floating across the block. I3 is a special case in which one of the tie-downs produces a plain weave shed. This threading is on the borderline of this study.

Chart 2 shows a few examples of threadings of multiple-tie block weaves in which each block requires two pattern shafts. For example: II.1 is a double two-tie, 4-end draft also known as double Summer and Winter.

Chart 3 shows examples of threadings requiring more than two pattern shafts per block. III.3 is unusual because adjacent blocks share some pattern shafts.

By studying these examples one can note the following:
- The number of blocks that can be woven on a set number of shafts is drastically reduced.
- The drafts of Charts II and III can be woven with advantage on a loom with a double harness system and long-eyed

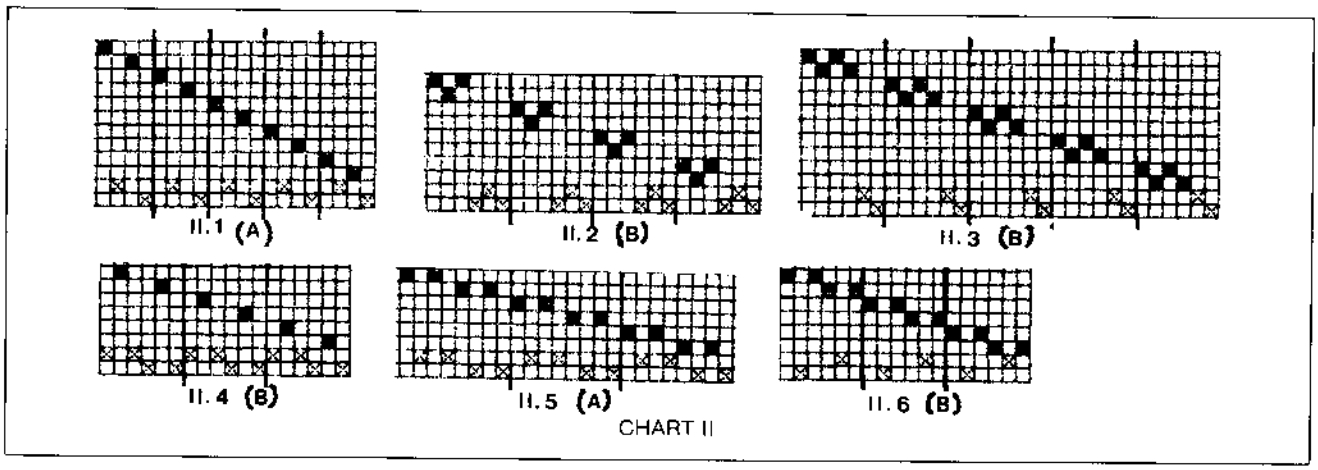


CHART II

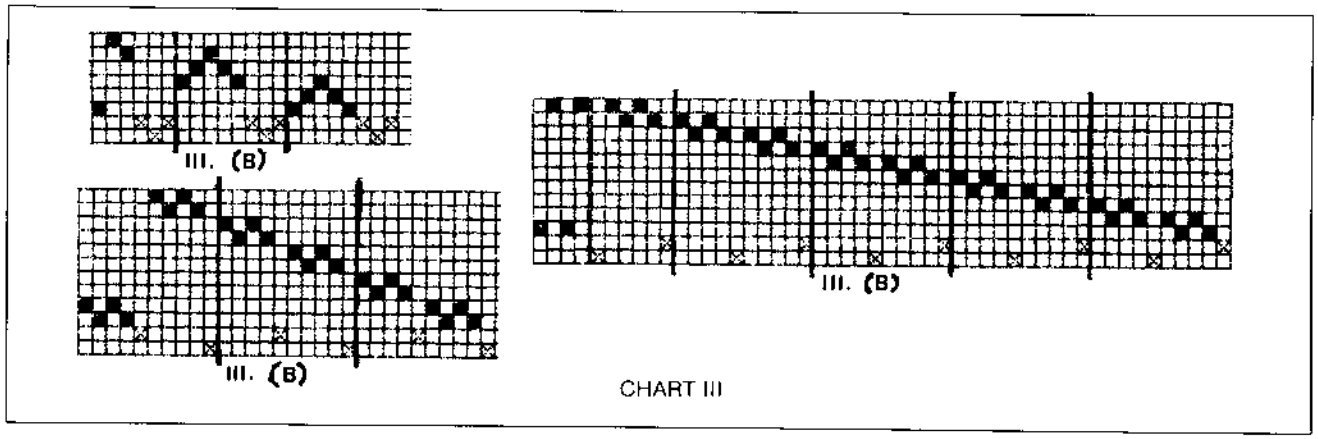
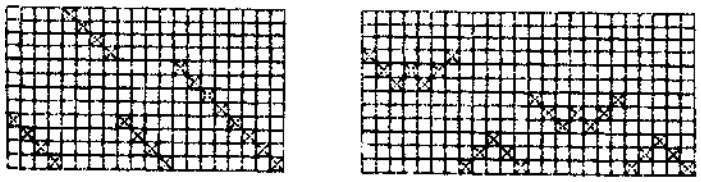


CHART III

heddles. The front harness would have long-eyed heddles and as many shafts as there are pattern shafts per unit. Next would be the tie-downs shafts with regular heddles. In the back would be the pattern harness system with one shaft per block. The pattern warp is threaded through both regular and long-eyed heddles.

- When designing on these threadings the edges of the pattern do not have to graduate in steps of full units. These graduations of half units work smoothly only when the blocks are a single unit wide.
- A few of the threadings may be considered as lying on the borderline for this study. For example II.2 could be considered as a compound weave and could be classified in the same family as twill blocks or satin blocks. For example:



In general all these 2 or more-tie block threadings may be regarded as manifold threadings. In the type A types, every odd end belongs to one basic weave structure, (tabby (I1); straight twill (I8); pointed twill, etc). Every even end belongs to another weave structure. In chart I they are threaded on multiple twills with the number of repeats of each shaft always divisible by the number of tie-down ends per unit. The B type threadings are more complex manifold draft systems, but one can clearly distinguish the threading system of the tie-down warp and the threading systems of the pattern warp.

The threadings of this study are easy to design and to classify although one runs into snags when the threadings become borderline examples and should be best studied as part of another family of drafts.

Note that the principles of shaft-switching can be applied to all these drafts if the loom does not have the shaft capacity for a desired pattern. Shaft-switching is best suited for weft face fabrics in which the warp sett is low and with few pattern warp threads per repeat.

If a pointed or reversed arrangement of the pattern block is desired one will run into problems of symmetry in the draft. If a symmetrical draft is needed one may have to make certain adaptations in the unit of the threading.

The number of weave structures that can be woven on any of these threadings could be the subject of a lifelong study. The late Dr. Bateman has sampled many of these weave structures and his experimentations will be the subject of a forthcoming monograph edited by Virginia Harvey (see book reviews).

Even if we limit ourselves to block weaves, we have to study weft face structures and the many balanced weaves, some with supplementary weft, some with supplementary warp, some double or backed cloth.

To be continued in the next issue of The Weaver's Journal

WEAVING IN SAN FRANCISCO

PART I

by Evelyn Bingham Prosser

INTRODUCTION TO THE SAN FRANCISCO TAPESTRY WORKSHOP

The San Francisco Tapestry Workshop is a center for learning French Tapestry techniques. To introduce a weaver or non-weaver to the workshop is to introduce that individual to: its history; students; the differences in French tapestry weaving; its techniques, what supplies are necessary; cartooning; the Workshop as a center; and the Workshop as an educator of the public. All aspects of the Workshop are equally important and the people who make it work have meshed these aspects well.

HISTORY

From October 1976 to February 1977, a weaving demonstration was held in conjunction with a show 'Five Centuries of Tapestry'. Both were at the California Palace of the Legion of Honor Museum in San Francisco. Anna Bennett, Mark Adams, Jean Pierre Larochette, and Marjorie Livingston came together to coordinate the demonstration. Anna Bennett organized the exhibit. Mark Adams, whose tapestries are seen internationally, created the cartoon 'California Poppies'. Jean Pierre Larochette designed and built the loom. Marjorie Livingston, who heads the textile department at San Francisco State University, provided the weavers from her department and from other institutions.

Weaving at California Palace of Legion of Honor Museum.

At the close of the exhibit, three weavers (Ernestine Bianchi, Phoebe McAfee, and Ruth Tanenbaum) joined Jean Pierre Larochette to form the San Francisco Tapestry Workshop. Another weaver, Laura Fernandez, has worked at the Museum and has helped weave at the Workshop periodically. During 1977, the group incorporated as a non-profit educational corporation, gave a second demonstration at the San Jose Museum of Art and wove a new design 'White Block' by Mark Adams. That year they also wove a second edition of 'California Poppies'. In November of 1977, the Workshop leased space in San Francisco's Noe Valley at 3747-23rd Street (94114).

Projects for 1978 included several major accomplishments. A new design of Mark Adams 'White Petunias' was woven. Early in that year, Judy Chicago, after studying the principle of cartoon designing with the Workshop, produced designs for a series of six banners for her 'Dinner Party' exhibition, displayed at the San Francisco Museum of Art from March 16 to June 16, 1979. A unique high-warp loom was designed and built for the project by Jean Pierre Larochette, and the tapestries were woven by students within the Workshop. After completion of the 'Dinner Party' banners in 1978, five tapestries were woven from cartoons by Yael Lurie for Temple Emanu-El in San Francisco.

Detail of "Irides" by Mark Adams.

The year 1979 was a year that produced six major works. Four tapestries by Mark Adams ('Irides', and three Hawaiian sunsets: 'Haena Point', 'Sunset with Palms', 'Firecliffs') were completed. Yael Lurie won a competition for a commission for a tapestry to be presented by Isaac Stern to the government of the People's Republic of China. Two editions of this cartoon 'Harmony' were woven.

The beginning of 1980 saw the completion of 'Resurrection' by Evelyn B. Prosser. 'Grapes', a 'Sunset with Palms', and two editions of 'White Petunias', all by Mark Adams, were also completed in 1980.

PEOPLE

There are two essential elements that make up the Workshop; the people, and the process of tapestry weaving in the Aubusson manner.

Jean Pierre Larochette and Mark Adams are the connections of this Workshop with the past. Jean Pierre Larochette comes from a family of Aubusson weavers. His family moved with their looms to Argentina in the 1930s where they set up a school and workshop in Bariloche, Argentina. Jean Pierre helped Lean Lurcat to set up the atelier (workshop) connected to the Nazareth, Israel, Tapestry School. Jean Pierre, in 1965, was invited by Israeli painter Marcel Yanco, to the Ein-Hod Artist Village to teach a six month course in loom building, cartoon design and weaving. From 1967 to 1968, Jean Pierre gave a two year course in history of tapestry, loom building and tapestry at Instituto de Cultura Superior in Mexico. From 1969 to 1972 Jacques and Jean Pierre Larochette wove a 55 x 25 foot tapestry by H. Butler, a commission from the Argentine government for the Church of San Francisco in Buenos Aires. This tapestry is the second largest in the world. Summers of 1973-1975 found Jean Pierre teaching weaving and tapestry at San Francisco State University. It was at this time that Anna Bennett contacted him to build the loom used at the California Palace of the Legion of Honor Museum.

Jean Pierre Larochette weaving "Harmony".

Mark Adams, a water colorist, went to France in 1953 to study tapestry cartoon designing with Jean Lurcat. Until the weaving demonstration at the Palace of the Legion of Honor Museum, and formation of the San Francisco Tapestry Workshop, Mark Adams sent all his cartoons to be woven in Aubusson, France. He now has had at least nine new designs woven by the Workshop. This has been very educational to the students who study at the Workshop, as they can see the processes necessary to make a commissioned work.

Ernestine Bianchi and Phoebe McAfee completed their MAs while starting the Workshop. Ernestine has become the teacher of beginning students while Phoebe is treasurer and one of the two staff weavers. Ruth Tanenbaum is currently completing her MA and has taken a leave of absence from the Workshop until this is done. When the Workshop first started, Jean Pierre, Ruth, Phoebe, and Ernestine taught the students jointly. This rotating teaching system remained in effect until Rudi Richardson joined the staff after completion of his apprenticeship. There were benefits and drawbacks to this rotation system. The disadvantages lay mainly in the inconsistency of teaching but the advantages were that the students learned all aspects of weaving. Jean Pierre focused on tradition, clarity of cartoon, good design. Phoebe emphasized consistency of technique and color balance. Ernestine pointed out exceptions to rules and taught basics. Ruth emphasized the necessity for perfection at all times and was also strong on design. When this rotation terminated, Ernestine became the main teacher. Jean Pierre could then concentrate on aiding the advanced students and working with the apprentices. Ruth and Phoebe became staff weavers along with Rudi and they aided in teaching only when necessary.

Beginning student weaving at student loom.

Three weavers from the Judy Chicago 'Dinner Party' project have remained very close to the Workshop. Jan Marie Dubois discovered a technique (to be discussed later in the article) which is still taught and referred to, at the Workshop, as 'Jan's Law'. Elaine Ireland submitted a cartoon to a student contest. The cartoon was chosen to be woven as a tapestry demonstration at the Transamerica Pyramid in 1979. The tapestry is part of the collection of the Workshop. Rudi Richardson, after the completion of the 'Dinner Party' weaving, apprenticed on the Temple Emanu-El pieces and joined the staff in 1979.

EVOLUTION SINCE INCEPTION

As we just discussed, the Workshop started as a group of weavers who, because of their individual interests, could come together as a group to take on various aspects of running the Workshop. The rotation teaching was appropriate at the time so all could learn as they taught. As the staff grew by one, and two apprentices were taken on, and as the student numbers were growing, it was necessary to have each staff person take on more specific tasks. There was more paperwork and more commissioned weaving to be done. Teaching also expanded to lectures outside the Workshop, month long workshops outside the Workshop, docenting groups through the Workshop, weaving demonstrations outside the Workshop, and weaving demonstrations at weavers' conferences.

In the last year several peripheral projects have been formed. The Friends of the San Francisco Tapestry Workshop help to raise money through poster and postcard sales and a drawing. The Newsletter is being developed to keep former students and interested persons informed about the Workshop, about tapestry techniques, and about events involving tapestries. Mini-workshops in the San Francisco Bay Area and elsewhere are projected. A program called 'Artist Collaboration' is in the works to train artists who would like to have some of their work made into tapestries. Two tapestries of each cartoon would be woven; one for the artist, the other as part of an ongoing collection of the Workshop (that could be shown at other places different from those where the artist might show).

The 'Artist Collaboration' program aims toward the creation of a public tapestry collection from the cartoons of professional artists. This program is to complement the advanced student class where weavers will study and work on cartoons by professional, contemporary artists, and will study historical pieces. This class is part of the advanced student program and will last three months starting August, 1981. The class will be taught by Jean Pierre.

STUDENTS

Students at the San Francisco Tapestry Workshop start as beginning students and usually number five to a class. This basic class consists of a minimum of two months, three days per week (Tuesday, Wednesday, Thursday), 10:00 a.m. to 5:00 p.m., or a minimum of twelve sessions a month. The basic class covers an introduction to French Tapestry weaving in the Aubusson technique, history of tapestry, contemporary tapestry design, study of various looms, cartoon design, finishing, hanging, and caring for tapestries. During the course of instruction, field trips are made to galleries, museums and artists' studios in the Bay Area. Students then weave a small cartoon designed by the Workshop to familiarize them with the technique. After completion of that sampler, the student, having worked on a cartoon, weaves a small (perhaps 9" x 13") tapestry of their own design. The above two pieces are woven on the small upright treadle 'student' loom. The cost of the class is $150.00 per month, which includes use of the loom and equipment. Materials woven in the tapestry are extra and average about $6.00 per piece. Two or three months of study are required to complete the basic class.

Student weaving lettering sample. Note line cartoon.

Student weaving color sample and sample of hatching and hachure.

A second category of students is the advanced students. They work an additional two to three months on larger pieces of their own design. The cartoon they weave is critiqued by the staff as part of the students' learning. Larger upright looms (the ones designed for the 'Dinner Party' project), four lammes wide, are used, but usually a segment of the full cartoon is woven first, one lamme (40 cm) square, to see how the cartoon is going to translate. The advanced students also learn to calculate their own yarn amounts, to submit a yarn order to the Workshop inventory and to purchase their yarn in advance of weaving the piece. Warp is also purchased by each person in advance.

A third category, associate, along with the fourth category, apprenticeship, are made upon certain qualifications of the Workshop: (1) commitment to professional work; (2) quality, consistency and speed of weaving; (3) availability of loom space and commission work. Advancement from student looms (the upright looms) to the Workshop's Aubusson looms is dependent, also, upon an evaluation review of student work by appointment with the staff. Associates of the Workshop work on their own designs while apprentices work with the staff on the commissioned pieces. The associate weaver works five days a week and pays $100.00 per month for the use of the Workshop facilities. The apprentice does not pay a fee, but rather does a work exchange. Apprentices work a minimum of 20 hours a week, maximum of 30 hours. They work on Workshop commissions

under constant supervision of staff weavers. They work a minimum of six months as an apprentice before an evaluation is made, perhaps to advancement to staff weaver status.

Beside these regular categories of beginner (basic), advanced, associate, and apprentice, there are three special types of basic classes given: one month, weekend, and mobile workshops.

For people who live and work outside the San Francisco Bay Area and can not commute, there is the one month class, given usually in July. In that month the basic curriculum is covered five days a week, Monday through Friday, 10:00 a.m. through 5:00 p.m. By the end of that month the student will have completed the Workshop sampler and a small tapestry of original design.

Student weaving with line cartoon on large upright loom.

The weekend workshop usually occurs during the weekend preceding the two months basic course, when the student looms are most available. The student looms are warped with three sections (portees, 9.5 cm) of the lamme, and the heading is woven and a Workshop sampler cartoon is sewn on prior to the class. This class is geared for those who want a 'taste' of what tapestry weaving is. A slide presentation of the history of tapestry is made and a brief session on cartoon design is included. The mobile workshop has occurred several times. In this instance one or more of the staff have gone to places like Mendocino, Calif., Portland, Ore., or Fortuna, Calif. to teach a one-month intensive type workshop using the looms that are available locally.

Other functions of the Workshop are to lecture to groups outside the Workshop on tapestry, its history and techniques. Also there are tour groups arranged by a tour agency which goes to various artists' studios in San Francisco and to the Workshop to explore art and tapestry in San Francisco.

FRENCH TAPESTRY

This leads up to our next topic discussion. 'What is French Tapestry?' There are essentially two schools of French Tapestry—Gobelin and Aubusson. Their similarity is that the weft-faced weave is balanced, in other words is generally worked so that each pass is at right angles to the warp. The high even tension, produced by both types of looms, helps to prevent warp distortion—a necessity for well-produced flat tapestry. French Tapestry portrays images through the juxtaposition of colors. Pieces woven in the Gobelin and the Aubusson methods are woven from the back and usually, when the tapestry is hung, the warp goes from side to side.

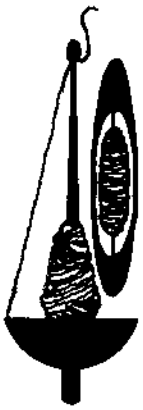
Gobelin weaving is mainly produced on a high-warp (upright) loom and the design of the tapestry is transferred in small sections by a tracing to the warp from an exact size painting (cartoon), painted in the same direction as the finished piece. On the Gobelin loom string heddles hang in front of the loom and loop around the warp threads that are back of a dividing rod. One shed is created by the dividing rod; the other is created when the heddles are hand-pulled forward. The advantage to this type of loom is that the weaver can move to the back of the loom to observe whether the image being created is like the image of the painted cartoon and/or that the weaver can use a mirror set in back of the loom to compare the woven and painted images.

The Aubusson method is done on a low warp (horizontal) loom. The cartoon, the same size as the finished image, is painted in reverse from the finished tapestry. The cartoon is sewn to the underside of the warp and resewn every three or more inches as the piece progresses. As the piece is rolled, the cartoon is resewn and the previous sewing taken out so that the cartoon will be rolled up separately from the tapestry. The sheds are produced by heddles attached to the lammes and pulled down by foot treadles. The advantage to the use of this type of loom is comfort, the fact that both hands are free to weave, and speed becomes greater. Whether the accuracy in this method is as good as in the Gobelin method is debatable and one of the reasons for the two schools of French tapestry weaving. Because of the ability of the speed of weaving in the Aubusson method a weaver can make a living at it more easily. It is important to mention that the Gobelin is a state supported institution, while Aubusson is a town with many private-enterprise workshops, varying in size and quality.

In Aubusson workshops (ateliers) as well as the San Francisco Tapestry Workshop, the fineness or density of the weave is gauged by the portee method (not by ends-per-inch). This is a division of 40 cm (a lamme) into sections (portees), each section having 12 threads. For instance, when referring to a '13 portee' piece one is referring to the division of 40 cm into 13 parts, or a '10 portee' piece is 40 cm divided into 10 parts.

To be continued in the next issue of The Weaver's Journal

Lacy triangular stole



A LACY TRIANGULAR STOLE OF HANDSPUN WOOL

by Edna Maki Kniskern

Every handspinner should be as lucky as I. For the past three years, I have received a gift from a local farmer of the fleece from two prize-winning Cheviot sheep. In gratitude, I have used some of the fleece to spin and weave a thank-you gift in return. This year, my gift to the farmer's wife was a lacy, triangular stole of handspun yarn.

In the past, I have woven several triangular stoles of purchased yarns, and I derived a great deal of satisfaction from the technique used to make them as well as from the finished products. A stole of that kind proved to be an ideal use for handspun yarn: the yardage required was simple to calculate, the design was a challenge, and the finished stole was unique.

The origin of this technique for weaving a triangle is difficult to ascertain. It is likely that several weavers arrived at the idea independently, and each undoubtedly felt a sense of pleasure and accomplishment when a perfect triangle developed as the weaving progressed.

To accomplish this feat one need only warp the loom (45" (114 cm) width or more) with two-yard (1.83 m) lengths at six ends per inch (25/10 cm). No separate weft is required because the warp becomes the weft as the warp threads are cut one by one at the warp beam and woven across, thus creating a web that is a triangle. It seems natural to me to begin the cutting of warp at the weaver's right, but working from the left would accomplish the same end result.

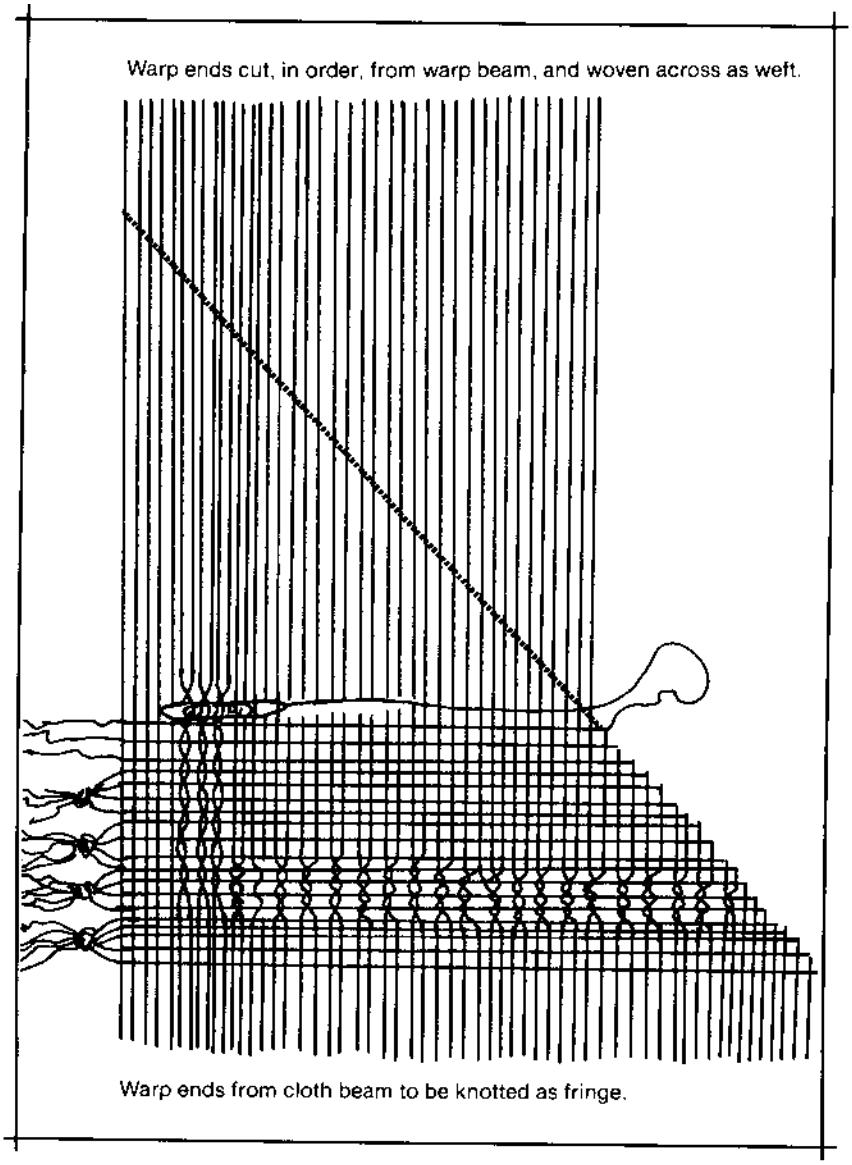
Design in such stoles is usually achieved through the use of color and/or through the use of textured yarns of varying grists. That is the case because the technique itself seems to restrict the weaver to the use of plain weave. The stole I envisioned out to handspun yarn was light, lacy, and all white. How to achieve an attractive pattern without color presented a challenge. I discarded the idea of spinning yarns of different grists because heavy yarns would have added to the visual and actual weight of the stole. Instead, I decided on evenly spun singles with a grist slightly greater than that of fingering yarn. A leno band along two sides, meeting at the apex of the triangle,

was the picture that presented itself to my mind's eye and that proved to be amazingly simple to accomplish.

The loom on which I planned to weave has a weaving width of 50 inches (127 cm), and I decided to use the entire width so as to achieve a stole of ample size. To determine the amount of handspun I would need, it was a simple matter to multiply 6 (epi) by 50 (loom width) by 2 (length in yards of warp). As I spun the needed 600 yards (548 m), of yarn, I wound off six skeins (since the sett was to be 6 epi) of 100 yards (91.4 m) each. After washing and setting the twist, I wound the skeins into six balls of yarn and, using a strand from each ball, I was able to make the warp chain with great ease.

Once the loom was warped, the weaving proceeded without a hitch. When weaving a triangular stole, it is helpful to have someone stationed at the warp beam to cut each warp yarn in order so that it can be pulled through the heddle and woven across. However, if one does not mind the exercise of going back and forth from the bench to the warp beam over and over again, the procedure can be done solo.

The stole I had in mind had a band of four inches (10.2 cm) of plain weave before the leno band began, and on the actual stole, that was done with rapid ease. To weave the leno band, I inserted a flat stick across the warp in the manner prescribed for achieving leno, but I stopped four inches from the left-hand edge of the warp. When I wove the yarn through the shed created by the inserted stick and then through the rest of the warp without tabby treadling, the characteristic leno twist was created, and the terminal four inches became plain weave, thus beginning a four-inch plain weave band on the vertical side of the triangle.



Proceeding in this manner, I wove a three-inch (7.6 cm) band of leno along the horizontal edge. Then, to continue the leno band only up the vertical side, I did plain weave up to a point that was three inches from the left hand end of the existing leno band. That three inches was woven in leno, and the final four inches was again plain weave. This procedure was followed until the triangle was complete.

It was helpful to knot several weft ends together at the left-hand edge as weaving progressed. That served to hold the end warp threads in place as fewer and fewer threads remained as the triangle neared completion. Furthermore, knotting at this time made finishing easier when the stole was taken off the loom. Having knotted in groups of four, I was able to separate each group into two and reknot the fringe at measured intervals—a touch that added to the overall appearance of the stole.

The finished product matched my original mental picture: it was light and airy, and the all-white look was enhanced by a band of lace—a unique touch. The stole was presented to the appreciative farmer's wife with a note that read THANK EWE FOR THE FLEECE.

THE VERY BASICS OF WEAVING

DRAFTING: TWO AND THREE SHAFTS

by Joyce Marquess Carey

Understanding the principles of drafting is very important to the weaver who wants to create original designs, or who wants to develop a better understanding of weave structures. Traditional weave patterns are invaluable and there's no reason for each person to re-invent the wheel, but it is limiting to be stuck with printed patterns with no idea of why they work as they do or how to change them.

A good place to start is with two and three shaft weaves, for they show very clearly some of the possibilities and limitations of weaves requiring four or more shafts.

The very simplest weave is plain weave, or tabby, on two shafts. Fig. 1.

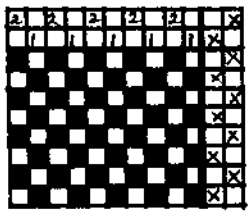


FIGURE 1. Plain weave (tabby)

There are only two possible lifts—either shaft one or shaft two. When one and two are lifted alternately, every weft interlaces with every warp, giving the most stable weave possible. Once the loom is set up the threading is fixed, but one is free to experiment with the lift sequence. Repeating either row two, three, or more times in a sequence will lengthen the pattern. This is the most basic creative option of designing within *any given threading*. On paper, there is no limit to the number of times you may repeat a weft row, making verticals as long or as short as you please. Of course, there's a limit with real cloth. Too many wefts in one shed will pile up and the cloth will be sleazy. Figure 2.

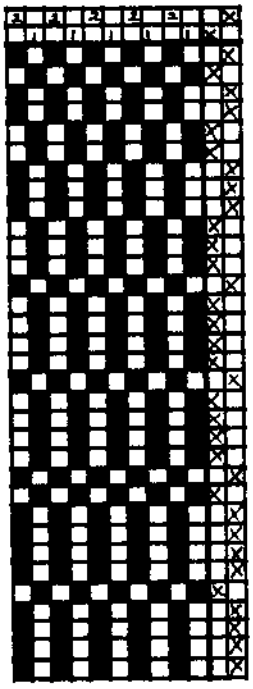


FIGURE 2. Plain weave with extended treadlings

Just as any pattern may be lengthened by extending the treadling, any pattern may be widened by threading more than one warp in sequence on a given shaft. With two shafts, either the ones or the twos or both may be repeated as many times as you like. On paper, there's absolutely no limit to the width or length of your units; playing with two shaft combinations without regard to whether or not they would actually make a decent fabric is a very good way of beginning to design two-block weaves. With the addition of more shafts, and by applying basic and traditional weaves such as monk's belt or summer-and-winter, these two-shaft (or two-block) designs can be turned into very handsome patterns. Figure 3.

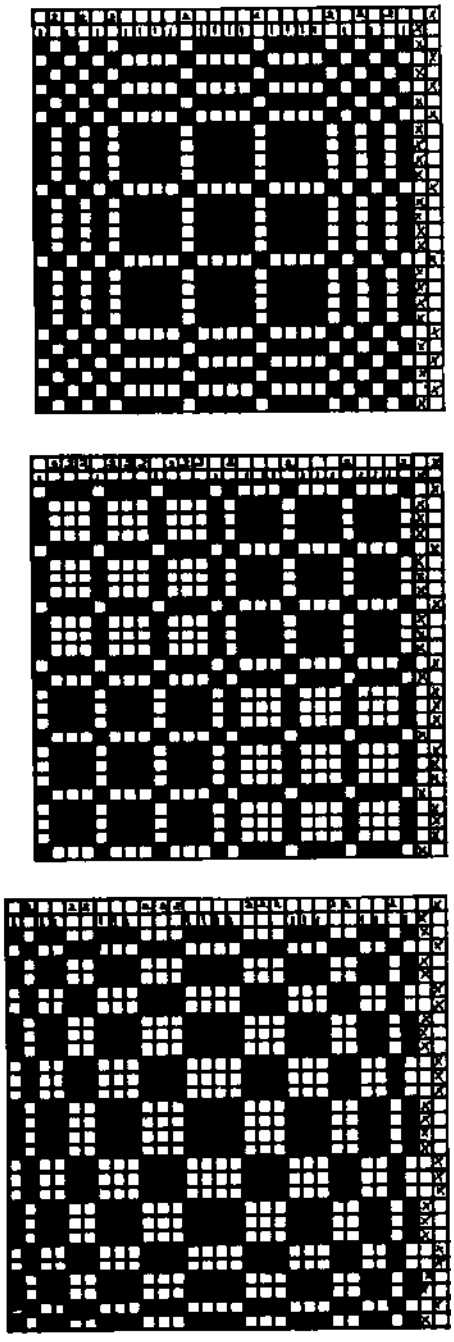


FIGURE 3. Two-shaft drafts

The addition of one more shaft increases geometrically the number of possible combinations for an original threading draft. Just to get a feel for the increased number of threading combinations, let's compare what can be done with just two adjacent warp threads with two shafts and with three shafts. The possible combinations of two threads and two shafts are 1-2, 2-1, 1-1, or 2-2. With three shafts, you can arrange two threads in *nine* different orders: 1-1, 1-2, 1-3, 2-1, 2-2, 2-3, 3-1, 3-2, and 3-3. Using two threads, the number of combinations are equal to the *square* of the number of available shafts. If you care to pursue this, two threads and four shafts can be arranged sixteen different ways. The number of combinations in a three-thread sequence equals the number of shafts to the *third* power. For instance, ten threads on three shafts can potentially be arranged 3^{10}, or 59,049 different ways! That's close enough to infinity so that next time that someone complains that there's not enough that can be done with a four-shaft loom, you can just pull out your pocket calculator and stop them in their tracks.

Of course, this is somewhat silly, because some combinations, such as 1 1 1 1 1 1 1 . . . . . wouldn't weave at all, and most of the others wouldn't weave anything worth bothering with. Nonetheless, such numerical proliferation does rather take your breath away, and hopefully makes you realize that there is nothing inherently built into the loom that insists on a particular order.

Generating treadling sequences for any given weave offers exactly the same overwhelming possibilities as threading drafts do. And to further multiply your options, you may raise more than one shaft at a time, unless you are working with only two. With three shafts, you may raise either one or two at a time in any row. I'll spare you the mathematics of the situations, but with four shafts, you may raise any one, two, or three—and with eight, any one through seven, and so on. There has to be at least one shaft up and at least one down, but beyond that there are no unbreakable rules on lift plans.

Random drafting does have its place, and is a useful classroom game that will free students from feeling that printed threadings and treadlings are written in stone. Have a group of people call out numbers from one to four, and write them down for the threading; then generate some random treadlings by having each person call out any one, two, or three numbers between one and four. Do a drawdown and see what was invented. This "monkey with a typewriter" approach to drafting doesn't usually yield much in the way of interesting or useful patterns, although sometimes if you isolate a small section and repeat the threading and treadling a few times, something attractive and workable may be salvaged from chaos.

In real life, however, what you are looking for is some *control* over the appearance and structure of your weaving. Threading drafts are generally orderly compositions, just as a piece of music is. You could invent a piano composition using the rule that the next note can be any one of the available eighty-eight, and that the accompanying chord must be one note or as many as eighty-seven, but the resulting cacophony probably wouldn't have much to recommend it.

One of the principal ways of organizing a weave is into twills.

Three shafts is the minimum number necessary for creating the diagonals that characterize twill weaves. Threading one, two, three (or three, two, one) repeatedly is the simplest possible straight-draw twill. The simplest point twill is one, two, three, two, one, two, three . . . etc. Almost any combination of right-hand straight-draw, left-hand straight-draw and points is going to give you a pleasing weave. You can arrange the twill so that it is symmetrical from the middle to both sides, or so that the straight and pointed parts are spaced in regular intervals all the way across the draft. You can add a little counterpoint by just alternating any two numbers for awhile instead of using all three. And, of course, you can double or triple any of them at any time. Since it's already been established that there are more combinations than you will have time in your life to explore, let's take one simple combination and see what can be done with it. Figure 4.

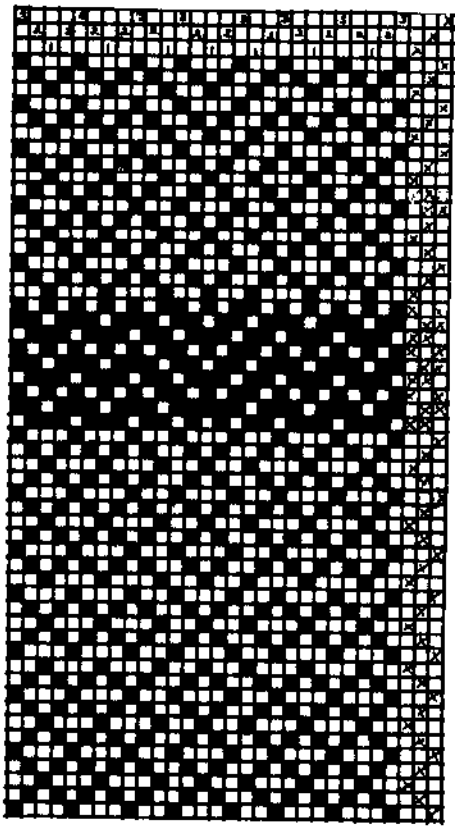


FIGURE 4a. Some variations on a point twill

The first thing to try is to treadle it 1,2,3—1,2,3 repeatedly several times. This will give you one repeat after another, as alike as if they had been rubber stamped. Then, try a point treadling—1,2,3,2,1,2,3 and so on for several repeats. All of your little points will turn into little diamonds. Then try the common treadling style of transferring the threading draft into treadling. In weaving parlance, the term for this maneuver is "as drawn in". The old-fashioned term for the same thing is "tromp-as-writ". I like tromp-as-writ. It has a nice no-nonsense descriptive ring to it. In any case, if you have composed a symmetrical threading, and repeat it in your treadling, the result is

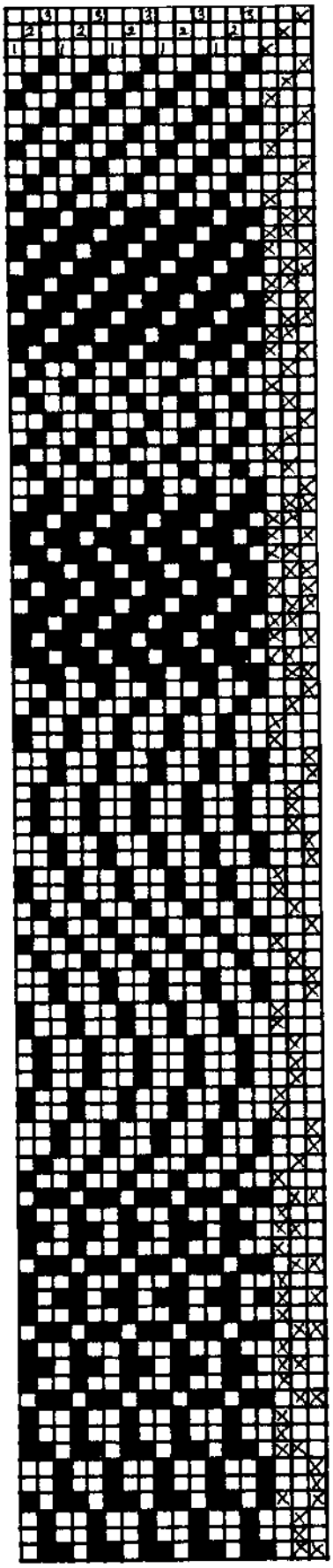


FIGURE 4b. A few of the possible treadlings with straight-draw three-shaft twill

always a symmetrical design, like a four-sided snowflake—each one unique and with endless variations.

Twill and point twill patterns are easy to design. The threading order is as logical as putting beads on a string. Threading three, two, one, three, two, one ad infinitum and treadling it in the same order invariably gives you a set of unbroken diagonals, going one direction. Reversing the threading reverses the direction of the diagonals. You can reverse the threading wherever and as many times as you like. All the diagonals will reverse along a vertical wherever the threading is reversed. You can reverse the twill on any number. Just set your mental (or actual) mirror down on the number and read backwards.

Exactly the same thing happens whenever you reverse the treadling order, except that the diagonal reverses along a horizontal line. Reverse both the threading and the treadling, and you have diamonds. The woven diagonals are reflections just as if you set mirrors on edge on a sheet of diagonally lined paper. Figure 5.

The principles of diagonals and reversed diagonals are exactly the same whether you have three shafts, four, six, eight, or any other number. For now, let's stick with three for the sake of simplicity, and design a twill patterned fabric. You can either take a piece of paper the size of the proposed piece, or use graph paper and let one square equal one inch (or one half inch) so that you can determine the final proportions of the design. I used 12 x 12 squares of graph paper to demonstrate how this works. First, I drew a line vertically through the middle. Figure 6. The diagonals are sketched freehand just to see the overall effect. They reverse along the vertical just as they would if you reversed your twill threading once in the middle. Drawing another line horizontally across the middle represents reversing the treadling once half-way through; again the diagonals reverse along this line. In the next example, I bisected the areas

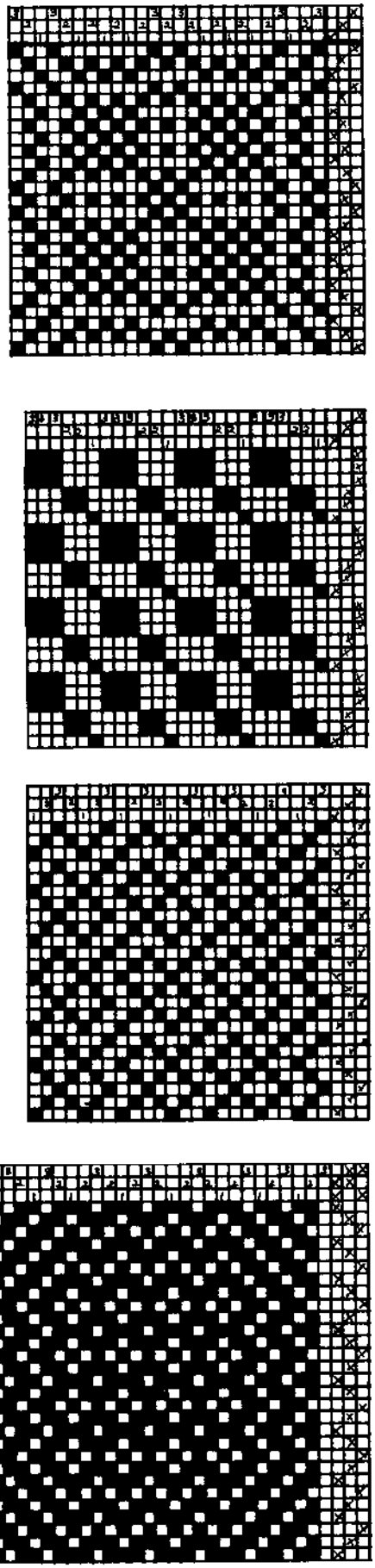


FIGURE 5. A few of the thousands of possible three-shaft drafts

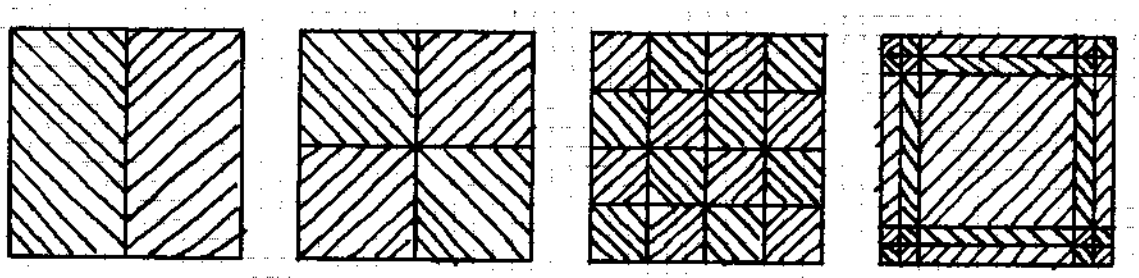


FIGURE 6. Freehand sketches of diagonal effects

again, which equals three reversals in the threading and in the treadling. All alternate squares have diagonals that lean the same direction, like a checkerboard. The space can be divided in any way, with sections of any width and height, as long as the divisions go all the way from top to bottom or all the way straight across from side to side. In the last example, there is a border one square wide, one square in from the edge.

How do you translate this into a piece of weaving? If, for example, you are designating a square for an inch, and if the yarn you plan to use is sett at ten to the inch, draw a threading draft that starts with three, two, one and repeat it until you have used up ten spaces. You will end on a three, so start your next section one, two, three, and so on for ten more spaces. Reverse again and repeat three, two, one across the center 10", or 100 spaces. Reverse for the boarder stripe, and again for the last inch. Treadle it exactly the same way.

With your three-shaft twill, when you raise one shaft at a time, there will be one shaft up and two down. This is called a $\frac{1}{2}$ twill, (pronounced one-two, not one-half). If you raise two at a time, the weave is a $\frac{2}{1}$ twill. The first number always refers to the number of *raised* shafts; the total always equals the number of shafts used in the twill. Four-shaft twills can have three combinations:-$\frac{1}{3}$, $\frac{2}{2}$, and $\frac{3}{1}$. The first has more weft showing, the second is balanced, and the third is predominately warp-faced. I think of this as "thickening" the twill line, from the skinniest possible diagonal to the fattest. An eight-shaft twill has seven degrees of "thickness" from $\frac{1}{7}$ to $\frac{7}{1}$.

Twill variations are not the only things you can do with three shafts, of course, but they may be the most predictable and understandable way of constructing a well-organized weave when you are just beginning to create original designs. All the things you learn about handling twills on three shafts will apply directly to those requiring more shafts. Also, there is more to be derived from three-shaft structures that relates directly to summer-and-winter, crackle, overshot and other weaves.

Here's a brief summary of the above design basics:

1. You can lengthen any pattern by repeating weft rows.
2. You can widen any pattern by threading more than one warp in sequence on the same shaft.
3. You can put any warp thread on any available shaft.
4. You can raise any one, two or more shafts at a time, up to one less than the number of shafts in the weave.
5. Twills can be reversed at any time either in the threading or treadling or both.

If you really get hooked on creating original designs, you will be carrying around a pad of graph paper, a pencil and a chisel-pointed felt-tipped pen wherever you go. One little insight will lead to another, and soon something you were just taking on faith becomes obvious and will join your bag of tricks for use in future designs. Keep a notebook of all your experimental ideas. Write yourself notes when you think of something to try (. . .keep the ones constant, double the twos, and omit every other three . . . .). Try not to mutter to yourself in public as you mull over drafting ideas. Remember, we weavers are still a small minority in the world, and most people simply won't understand you!

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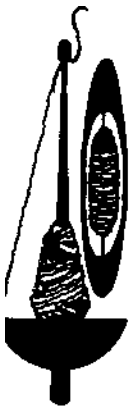
About the author: Joyce Marquess Carey is assistant professor in weaving, University of Wisconsin-Madison. Her workshops, lectures and publications cover a vast array of topics from technical to historical to philosophical. She also is a very active exhibiting artist with many honors and awards to her credit.

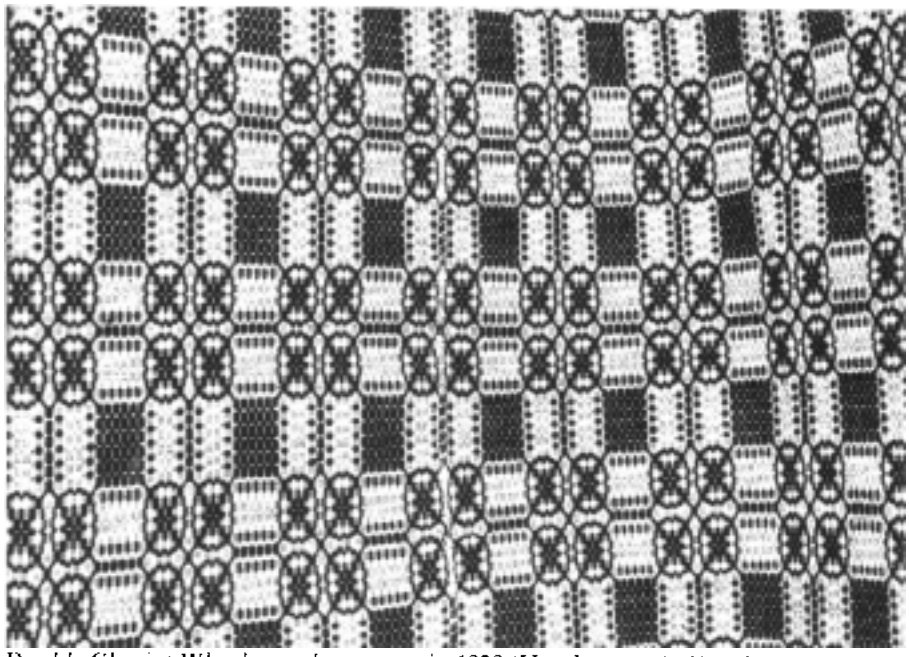


FIFTY YEARS AS A COVERLET WEAVER

by Harriett H. Bright

The word "Coverlet" has an interesting derivation. In early Colonial days, the word "kiver" or "kiverlid" was used. This was later changed to coverlid or coverlet. My Grandmother Jenkins would call to her children and grandchildren on a very cold night and say, "Children, do you have enough kiver?" She was asking if we had enough bed coverings to keep us warm.

If you check with Webster's definition of a coverlet, it will include all types of bed covering. Today there are many types of handwoven coverlets. The weaves include: overshot, opposite overshot, twill, summer and winter, crackle, honeycomb, dimity, double weave and others. Some of these weaves require a four-shaft loom and some a multiple-shaft jack loom with 6 to 24 or more shafts.



Double Chariot Wheel coverlet, woven in 1928 (Hand spun, indigo dyed yarn)

Looking back over fifty years in the creative art of hand weaving, spinning and the use of natural dyes takes me back to the words of Miss Katherine Pettit, founder and director of the Pine Mountain Settlement School in Eastern Kentucky, when she said, "I think I will put this little girl in the weaving room to learn how to weave coverlets."

At the young age of ten, my parents took me to the Settlement School to continue my education. After I learned to weave, my father bought a floor loom for me for the sum of $12.00. I started weaving coverlets then, on my own loom. At the age of fourteen, I had my first hand-woven double chariot wheel coverlet for sale. It was made of wool from my parents' sheep. Mother and I spun the wool into yarn and dyed it in the old fashioned indigo blue pot. This coverlet was purchased by a member of the Colonial Coverlet Guild of America for $25.00, which was used to help pay my school expenses. This Coverlet Guild was incorporated in Chicago, Illinois, in 1921 and gave an annual scholarship to the Pine Mountain Settlement School. Miss Pettit was a charter member.

The seven years' experience in the Fireside Industries at the school started me out on a life-time career of teaching spinning, dyeing and weaving. After further study at Berea College and George Peabody College, I received B.A. and M.A. degrees in Home Economics, Arts and Crafts. This was a good foundation for over 40 years' teaching experience in Kentucky, Tennessee, North Carolina, Alabama, Ohio, Indiana, Illinois, and at West China Union University, Chengtu, Szechwan, China.

An intensive study of coverlet designs, patterns, and weaves has brought many hours of real joy and happiness to me as I share the knowledge and skill of a beautiful finished coverlet coming from the loom of one of my students who has produced a real life-time treasure to be passed on to future generations.

The names of the coverlet patterns make a fascinating study: Whig Rose, Double Bow Knot, Queen Anne's Lace, Snail's Trail and Cat's Paw, True Lovers' Knot, Wheel of Fortune, Snowball and Pine Tree, Pine Bloom, Double Chariot Wheel, etc. These are just a few out of thousands of patterns. (The threading draft and weaving for the Morning Glory coverlet pattern are shown in the following pages.)

My greatest thrill comes when a coverlet is woven with hand-spun yarn which has been dyed with natural dyes. This indigo blue-pot recipe was used to dye yarn for many of my coverlets.

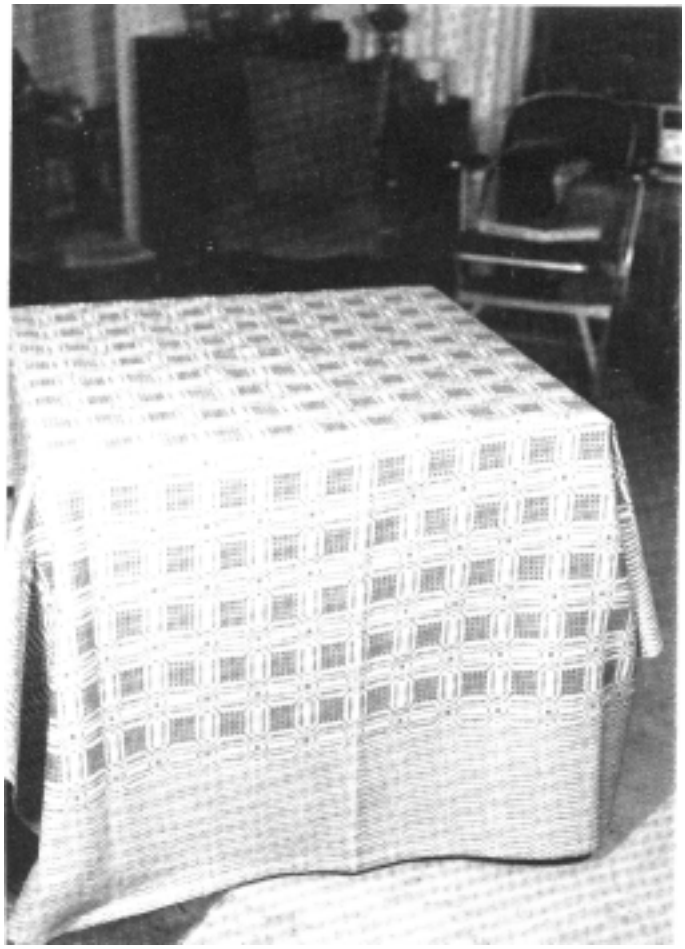
Indigo Blue-Pot Recipe

Place the following in an iron pot:

One-half gallon (1.89 liters) of yeast from an old blue pot (I knew one blue pot that was in use for over 90 years)
2 1/2 gallons (9.46 liters) warm clean rain water
1 1/2 cups (354 ml) of soda lye (or washing soda)
1 1/2 cups (354 ml) wheat bran
1 cup (237 ml) madder dye powder
1/2 lb. (227 g) indigo powder placed in a linen bag

Let the indigo soak in the bag over-night. Rub through the bag the next day. Keep pot covered near the stove or, better yet, by a fireplace so that it remains milk-warm all the time. Do not overheat as that kills the blue pot. Try a sample of yarn the third day to see if it will dye. The dye is ready when the indigo rises to the top. The dye pot should have a little greenish scum on the surface but does not give very good results when it foams. When it smells just right and tastes a little sour (when touched to the tongue) it is right for dyeing. This will take from 2 to 3 weeks. Mordant the yarn and put it in the dye after stirring—air well, dry, and rinse until water is clear.

Other dye colors are browns, blacks, and grays from walnut and butternut hulls, roots and bark; pinks, reds and lavenders from pokeberries; yellows, orange, and gold from marigolds, goldenrod and onion skins; all shades of reds from cochineal bugs. The dye sources may be roots, barks, leaves, hulls, skins, nuts, flowers, fruits, stems, seeds, or the complete plant.



Queen Anne's Lace coverlet, woven in 1978

There are three basic processes in the making of a coverlet or any hand-woven textile:

1. Spinning of the thread or yarn,
2. Dyeing or coloring of the yarn, and
3. Weaving it into a fabric.

For thousands of years, these processes were done entirely by hand. In Colonial America when a coverlet was woven, nearly a year's time and preparation were required, for the cotton, flax, and wool had to be grown, harvested, and spun into thread before weaving could begin.

The spinning of all natural fibers (wool, cotton, silk, or flax) can be done on a drop spindle, on the flax wheel, or on the large walking wool wheel. I find the large wool wheel most enjoyable in spinning wool.

As an ordained minister in the Church of The Brethren, I find that my fifty years of life experiences of working with my heart and hands is a Good Blend of the Spiritual and Material Blessings of Life. I quote from Proverbs 31:31: "Give her of the fruit of her hands; and let her own works praise her in the Gates."

WEAVING INSTRUCTIONS FOR MORNING GLORY COVERLET

WEAVE STRUCTURE: Overshot.

WARP: 20 2 mercerized cotton (2 1/2 lbs.).

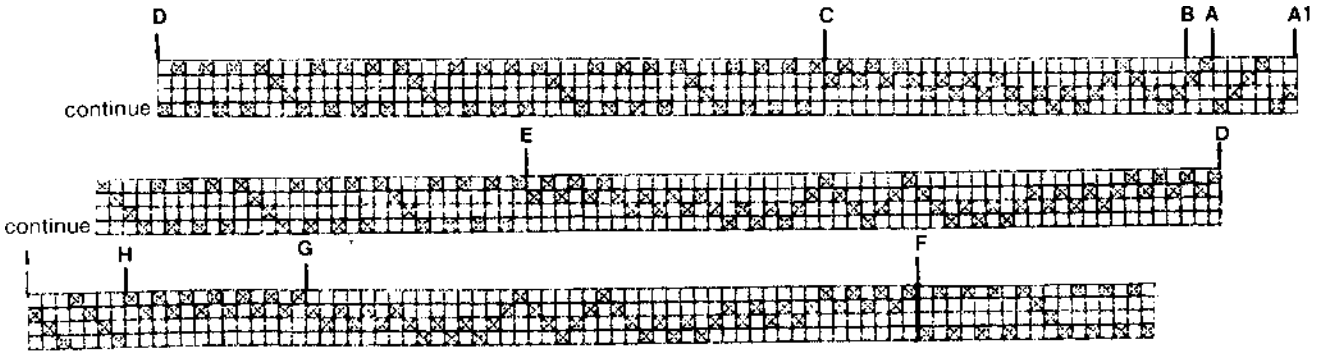
WEFT: **tabby**–20 2 mercerized cotton (1 1/2 to 2 lbs.).

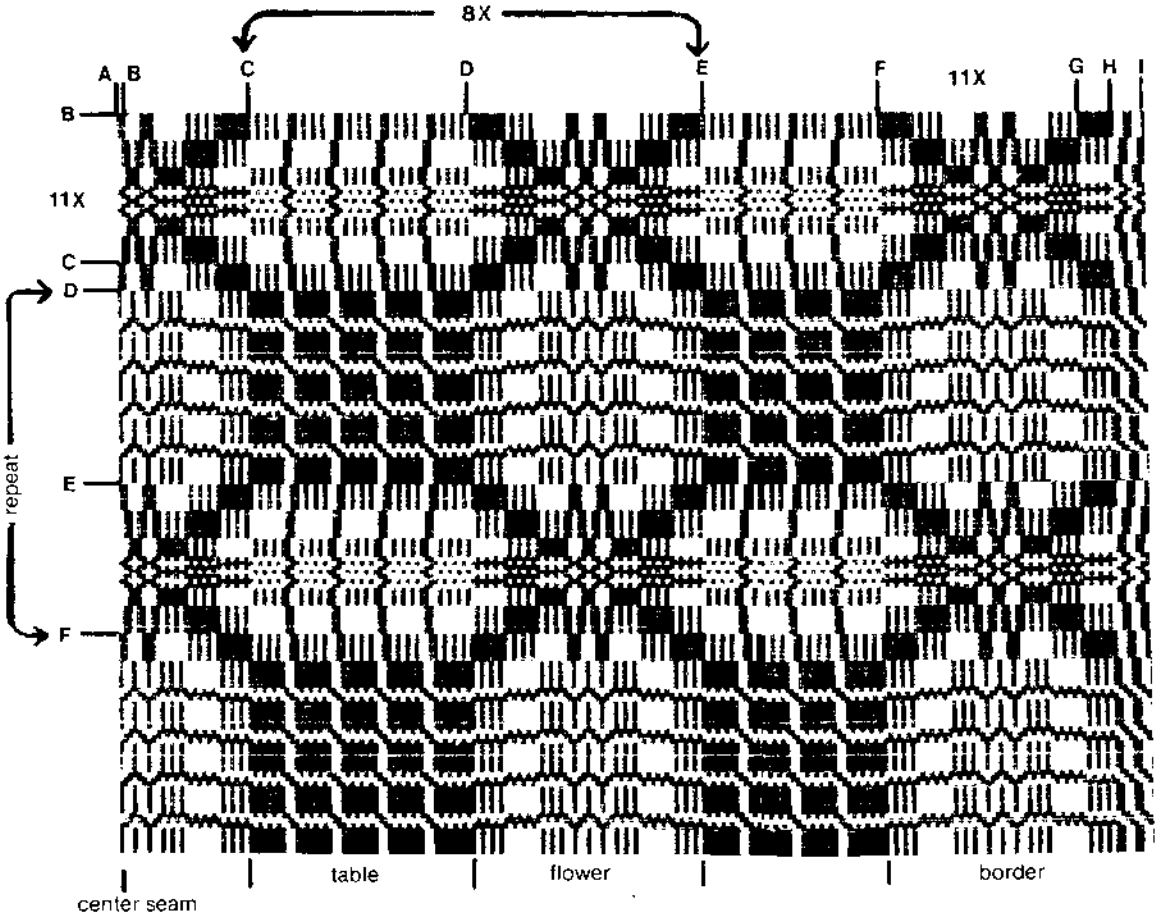
pattern–2 ply wool.

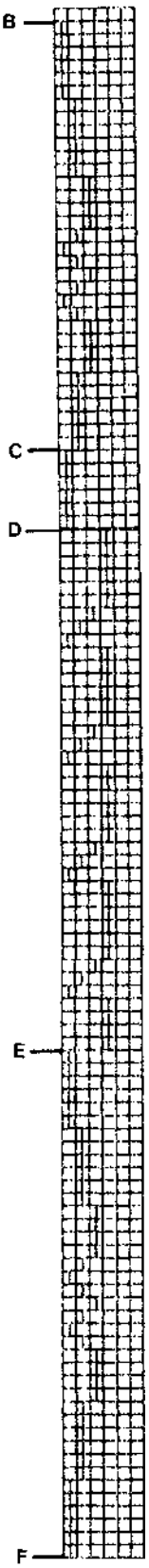
SETT: 30 epi in a 15 dent reed.

TOTAL NUMBER OF WARP ENDS: 1358.

LENGTH OF THE WARP: 15 yards.







THREADING DIRECTIONS:

Thread A to B (seam)	2*
Thread B to C once (½ flower)	26
Thread C to E 8 times	784
Thread E to F once	48
Thread F to G 11 times	484
Thread G to H once	7
Thread H to I once	7
	1358

* Thread A to B if baseball joining seam is used. For regular seam thread from A_1 to B which will add 6 warp threads to the total.

TREADLING:

Weave hem in tabby.
Weave B to C 11 times for the border. Square the border.
Weave C to D once to balance the border.
Weave D to F as often as desired for length of coverlet.
Weave D to E once for balance.
Weave hem.

Reverse the treadling for second half panel of the coverlet.

FROM SHEEP TO SHAWL

by Kay and Stewart Van Ord

The love of knitting and a vacation trip through the New England States led my family to the craft of hand-spinning and natural dyeing. After purchasing a spinning wheel kit and assembling it, I set out to teach myself spinning. A library book and about three months' determination finally produced yarn. With only a couple of months till Christmas we started on gifts. My husband carded all the wool by hand and I spun, dyed and knit thirteen tassel caps. They made very much appreciated gifts.

That was the beginning of a very satisfying and rewarding hobby; we have plans that we hope will work it into a supplemental income. Within a short time my husband learned to spin and we produced more yarn than we could utilize in knitted articles. Thus we became interested in weaving. With the encouragement of a very close friend and good weaver, I purchased a 45", four shaft, counterbalance Leclerc loom. My very first project on the loom had a six yard handspun singles warp, set 16 epi (60/10 cm) in Dornick twill (Fig. 1). This made material for two skirts and two vests. This being my first weaving experience, I thoroughly enjoyed working with our own handspun yarns. Because we put a little extra twist in the warp I had no problems. No sizing was used.

WARP: Handspun wool, singles; natural white, 6 yards (5.5 m) long, 32" (81 cm) wide.

WEFT: Handspun wool, singles; white, natural gray and vegetal dyed with goldenrod.

SETT: 16 epi, (4 ends per dent in a 4 dent or 15/10 cm reed) in order to eliminate wear and tear on the warp.

THREADING, TREADLING AND TIE-UP: See Fig. 1.

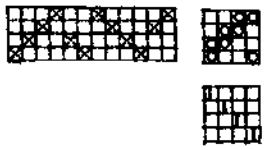


FIGURE 1

Some of our other projects include:
Double woven blanket (folded cloth) approximately 90" x 108" (2.29 x 2.74 m) - black, white & grey plaid, 100% wool.
Two twill woven afghans approximately 45" x 72" (114 x 182 cm) - 100% wool.
Two tabby woven afghans approximately 45" x 72" - wool and mohair (purchased locally).

Scarf approximately 15" x 45" (38 x 114 cm) - singles dyed red with pokeberry.
Two tabby woven afghans approximately 45" x 72" - grey and white plaid natural colors of 100% wool.
I have also done a few projects on commercial warp, such as several scarves, blankets and pillows.

Because of limited housing we had only a few sheep. Last summer we built a new barn and increased the flock to 45, buying what was available locally. We are raising some for good spinning wool and some for meat. We also have a few colored sheep.

After doing our own shearing we skirt the fleece discarding all tags. Next we soak it in hot water with a good dishwashing detergent. If the wool is extremely dirty we repeat, then rinse it in hot water. To dry we pick it apart and lay it on screens. Our carding is done either by hand or drum carder. Then the wool is ready to spin. We spin on different kinds of wheels. I have the original saxony wheel that I use. My husband built his wheel of solid oak cut down on our property. After building that wheel he built our three children castle wheels. After gaining more experience, we bought 2 antique wool wheels and he repaired them. We also enjoy spinning on these.

Four years ago we were asked to teach a course on spinning for the adult education program administered through Edinboro College, Pennsylvania. After a successful experience and requests from others, I started teaching spinning on my own. I have taught over 25 people in our area to spin. To keep these spinners active and together, we formed a group called "Hilltop Spinners" that meets 4 times a year.

Because we found it hard to get anyone to repair wheels, my husband and I started repairing wheels and building lazy kates, knitty-knottys, drop spindles and providing other related supplies.

It has been very rewarding to see so many weavers show an interest in spinning to create different types of yarn and to see the new spinners interested in learning to weave. I feel one craft complements the other, and so I have encouraged an increased interest in the crafts here in Northwest Pennsylvania.

JOY TO THE WORLD

This handwoven nativity scene expresses *The Weaver's Journal* staff's warmest Christmas wishes to our readers. It was designed and assembled by Iris Richards and the fabric was woven by the folks at *The Weaver's Journal*. The fabric was woven with fine silk and cotton with a sett of 60 epi (240/10 cm). The threadings are plain weave, a fancy crepe weave, twills and miniature overshots. The pattern weft for the overshot (king's robe) is a fine metallic (contributed by Folklorico).

The warp was set 7½" (19 cm) wide. From the cutting pattern one can see how much fabric is needed. It is a good idea to do this as a group project where every weaver takes the responsibility of weaving one fabric which is then divided among all.

MATERIALS

Miniature handwoven fabric, thread, lining, sequins, seed beads, wire for staff, 1 yard raffia or swiss straw, beige chenille wire, (7 pieces), 7 ea. 4" X 2½" (10X 6.4 cm) styrofoam cones (body), 7 ea. 1 1 8" (2.9 cm) wooden beads (head), smaller wooden bead (for head of Jesus), 9" X 12" (23 X 30.5 cm) square of white felt, 1 flat metal weight, several yards yarn or mohair, small amount of fleece, 7 ea. small dowel or wooden matches, glue, ¼" (6.4 mm) gold bead, gold foil (1 sheet) or gold ribbon, 1 yard silver ribbon 2½" (6.4 cm) wide, ¼" gold braid 13" (33 cm) long, miniature doll dishes and pots and pans, box, lightweight lining cut in circle 3½" (8.9 cm) in diameter, black chenille wire, fleece.

DIRECTIONS

Draw all the patterns to size by using 4 squares per inch graph paper. Cut the patterns out and use them as guides to cut the fabric. The seam allowances are included.

ROBE

Sew center backs together with ½" (12.8 mm) seam. Press seam open, turn. Stitch the lower edge of sleeve to lining matching notches. Open up and press. Place the unnotched edges together and stitch with ¼" (6.4 mm) seam in the direction of the arrows. Turn and press.

Cut the beige chenille wire 3½" (8.9 cm) long for each arm. Turn one end 3 8" (9.5 mm) back into loops. Hold the other end with tweezers and warp them a few times to make a hand. With needle and thread secure the thread to the loop end of the chenille, pass the needle through the inside of sleeve and sew the loop securely to the point of the sleeve. Bend chenille wire to make elbow. Slipstitch the sleeves to the body piece.

Slide the robe over one of the cones and fit the fabric tightly. Glue the bottom raw seam to the bottom of the cone. Glue a white felt circle to the bottom of the cone for a neat finish. Use the cone to draw the circle pattern.

Mary's robe is cut from a different pattern. The seam of the body is in front. The base cone for Mary is cut in three pieces (see diagram) and is glued back together to make a bending figure.

HAIR

Use yarn or fleece twice the hair length of the figures. Line the strands up and tie them in the middle with a double strand of yarn. Pull the double strand of yarn through the hole of the wooden beads. Pull down tightly and hold with glue.

FINISHING

Make a point at one end of the small dowel. Insert the blunt end into the head, holding it in with glue. Insert the pointed end into the tip of the cone. Push all the excess fabric of the robe into the hole in the bead. Style the hair.

For the angel, cut the wings out of the silver ribbon and attach them by sewing them to the back seam of the robe or with glue. Decorate the angel with sequins.

For the kings, cut the crowns out of foil or gold ribbon, overlap on the inside and glue. Decorate with sequins. Place a little glue around the lower edge of the crown and glue to the heads of the kings. The third king's high crown is made from gold braid and a 3½" (8.9 cm) circle of fabric. Measure a 4½" (11.4 cm) piece of braiding and make it into a circle by overlapping the ends. Secure by sewing or with glue. Cross two 3½" (8.9 cm) pieces of braiding at right angles. Attach the cut ends to front, back and sides of the crown. Gather the raw edge of the fabric circle, draw up to fit and use it to line the crown. Sew or glue the edge to the bottom of crown.

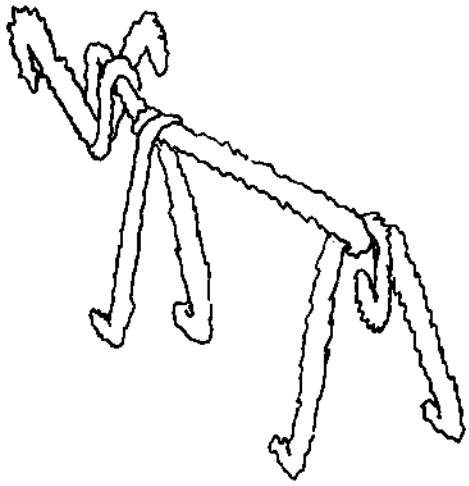
The addition of a tabard contributes to the regal look of the king.

For Mary, make a stole 3½" (8.9 cm) wide and long enough to cover her head, come down over her arms and wrap around. A metal weight has to be placed on the bottom at the back of the figure to keep it from falling forward. Cover with felt.

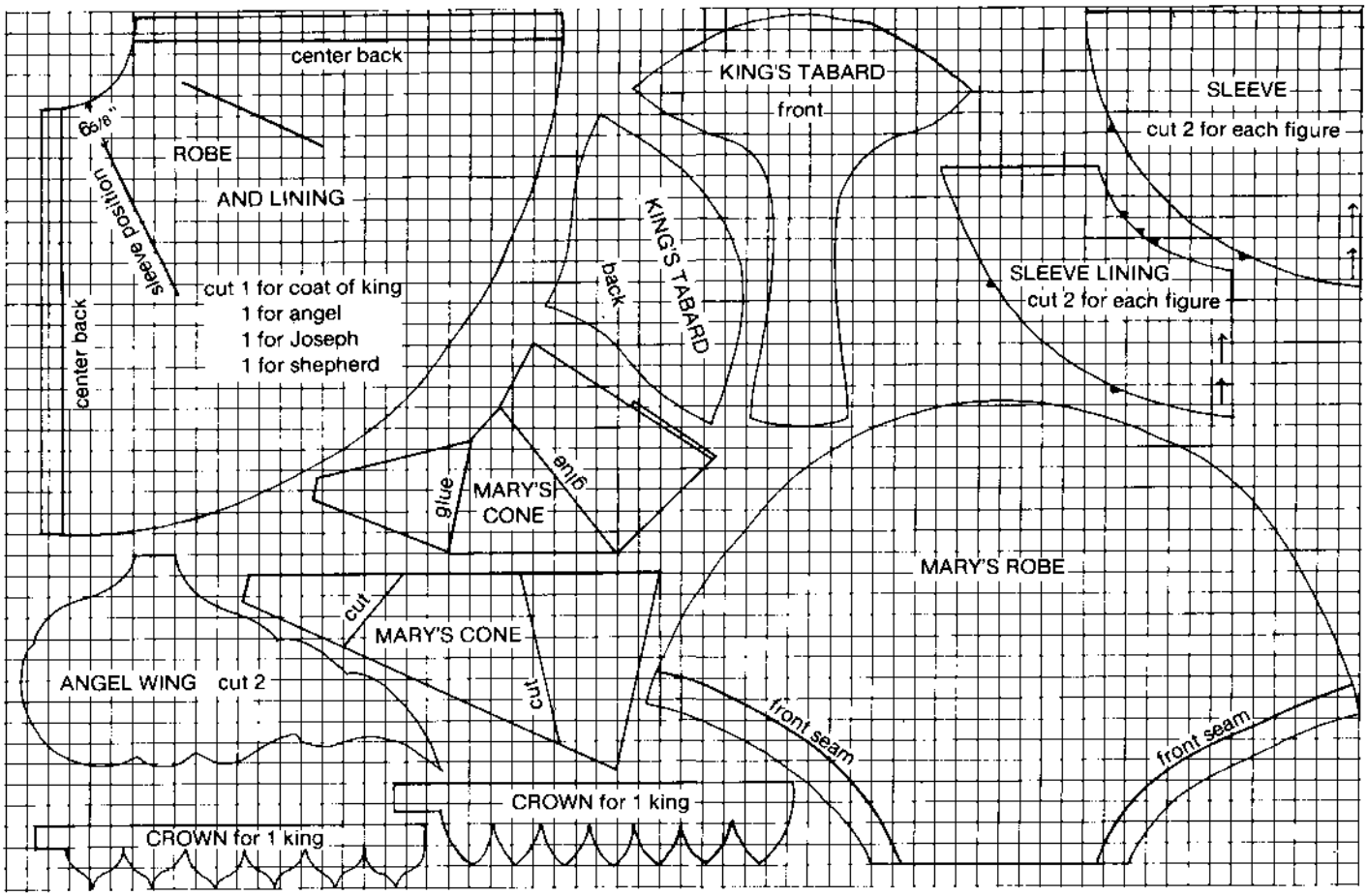
Jesus is made by gluing a 1¼" (32 mm) piece of chenille wire to a small wooden bead. This is covered with cotton and the entire figure is wrapped in fabric.

For the shepherd, wrap some wire with raffia or Swiss-straw and use this for his staff and around his waist.

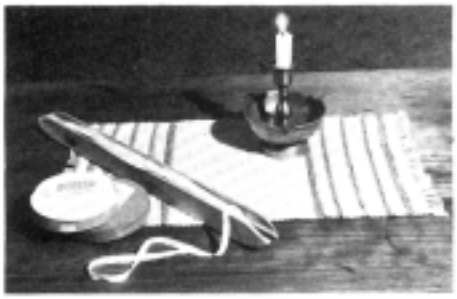
The sheep are made with black chenille wire bent according to the diagram shown. The body is wrapped with fleece.



For a festive look, use beads and sequins with abundance. They may be added by sticking them on the styrofoam with straight pins.

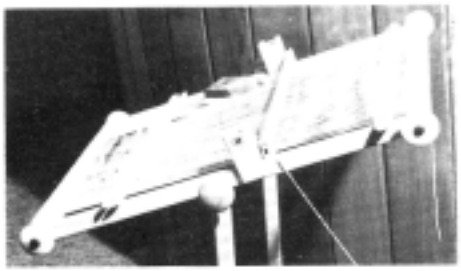


PRODUCT REVIEWS



POPPANA WEFT

Poppana weft are 100% cotton bands 8 mm (0.3 in) wide and cut on the bias. They come neatly coiled on twin rolls. The 100 gr. package yields about 82 yards (75 m). These colorful bands are most often woven in plain weave with a cotton warp sett at 10 epi (40/10 cm). For our sample placemat the warp was 5/2 perle cotton 13½" (34.3 cm) wide in the reed. Allow 12-15% for takeup and shrinkage weftwise and 5% warpwise, although this last figure will vary from warp to warp. The fabric may be brushed with a stiff brush to give it more of a velvety look. Allow two packages per mat. Cost: $3.90 per package + S/H. Send inquiries to Scantex, Inc., P.O. Box 552, Larkspur, CA 94939.



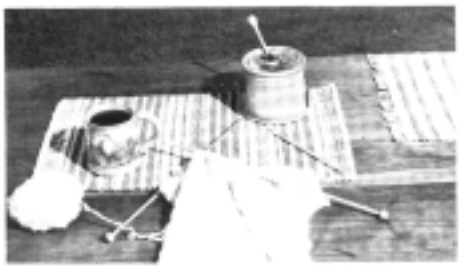
RAM LOOM

The Ram loom is a lap size frame loom with a weaving surface of 17½" X 24" (44.5 X 61 cm) and provisions to roll a longer warp if desired. The warp is normally sett at 5 epi (20/10 cm). It is easy and quick to set the warp up; just go back and forth hooking the thread on the plastic teeth of the top and bottom beam. A variety of accessories is available such as shed stick, beater comb, shuttles and an ingeniously designed heddle rod. The heddle rod is a wooden bar with a row of plastic teeth onto which fits a wooden cover. To make accurate and fast string heddles the heddle bar lies on the warp and is propped up by means of its cover. The continuous heddle string which lies between the odd and even warp ends is pulled up between the notches and secured around the teeth of the bar. The basic loom retails for $13.75, the heddle bar is extra. Send inquiries to Ram Industries, 143 Smith St., Winnipeg, Manitoba, CANADA R3C 1J5.

MONTE CARLO AND POPPANA WEFT

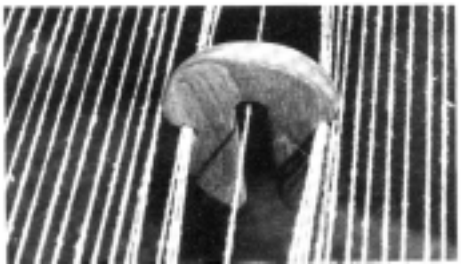
Monte Carlo is a beautiful heavily textured but light weight white 100% cotton yarn distributed by Henry's Attic and available from local retail stores. The yarn has many uses: warp, weft, crochet, knitting. Here it was tested for weft face plain weave on a 5/2 perle cotton warp sett at 10 epi (40/10 cm). The yarn was combined with Poppana weft to make an unusual and strikingly textured fabric suitable for mats, wallhangings and clothing.

Monte Carlo was also tested as a knitting yarn. On #6 needles the sample had 5 stitches per inch (20/10 cm).



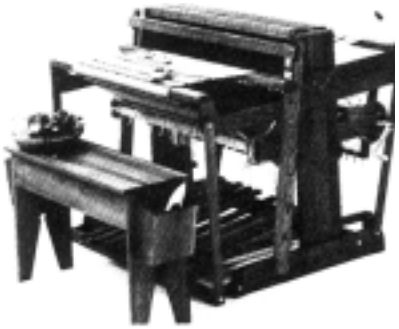
WOODEN KNITTING NEEDLES AND CROCHET HOOKS

Weavers enjoy beautiful wooden tools and will be happy to know they can buy wooden knitting needles and crochet hooks. All sizes are available and they are guaranteed to last forever. In the photo, #6 wooden knitting needles are used to knit a garment with Monte Carlo cotton yarn from Henry's Attic. Send inquiries to Merrill's of Maine, West Str. Kennebunkport, Maine 04046 or ask your local retail store to keep them in stock.



WARP MENDER

The warp mender does not mend a broken warp; it is a small wooden tool that has a very functional shape. It is designed to keep the warp spread out in a certain area so that the weaver can easily move in to repair broken threads, attach a repair heddle or fix a shaft-switching loop. A very useful gadget. Cost is $3.20 ppd. Send inquiries to The Looms, Far End, Shake Rag St. Mineral Point, WI 53565.



NORWOOD LOOMS

When I started weaving in 1963, the only loom I owned was a 10" Leclerc table loom. Can you imagine the smile on my face when a member of the North Shore Weaver's Guild (Illinois) offered me the use of her 8 shaft 50" Norwood loom? I vividly remember the day that two movers carried the fully assembled and warped loom up an S shaped staircase and into one of the bedrooms.

The Norwood looms have been around for over 30 years now and although my loom dated from the 1950's, it was basically not very different from the Norwood looms marketed today.

The oil finished cherry wood gives the loom its characteristic reddish brown color. It comes equipped with a large one yard (91 cm) sectional warp beam except for the 16" (41 cm) model, which is available with ½ yard (45 cm) sectional warp beam. The plain beam option is now available for all the models. The loom is basically a V frame and folds so that it can be easily moved fully assembled and warped. The tie-up has been much improved since the early models. The cord and snitch knot system has been replaced with chains.

The Norwood looms have a jack-type action with free floating lams to provide ease and symmetry of operation. Both beams have a positive lock ratchet and pawl brake system with a warp beam release from the front so it is not necessary to get up from the loom when advancing the warp. The treadles pivot in front. The 8-shaft model comes in weaving width of 40" (102 cm) and 50" (127 cm). The 4-shaft model comes in 16", 22", (56 cm), 30" (76 cm), and 50". The shafts and the beater operate smoothly. The beater comes equipped with a shuttle race. The shaft frames lift out easily for adding heddles.

The Norwood company offers the option of a second warp beam for the larger looms. The beam and the tension system are easy to install.

Norwood has recently introduced a new loom model called the Workshop Loom. It comes with 4 shafts, is 22" wide and has a direct tie-up. This loom is built from maple and has a basic x frame for compact folding.

DRAWDOWNER

Drawdowner is a weaving program written to run on the TRS-80 Model I, Level II with 16K or more RAM. It will also run on the Model III if the program is loaded at the slow Model I rate (500 baud). The program is cassette-based and does not make any use of disks. Cassettes are available from: Salsbury Associates, Inc., 608W Madam Moore's Lane, New Bern, NC 28560, at a price of $35.00 each.

The program generates a complete conventional draft with the threading at the top and running from right to left, the tie-up in the upper right corner, the treadling down the right edge, and the drawdown occupying the remaining space properly aligned with the threading and treadling. A novel feature of this program is that the drawdown may extend beyond the left and bottom of the screen; the missing areas may be viewed upon command from the keyboard.

The program simulates a jack (rising shed) loom with up to 8 shafts and 10 treadles. Initially, the user is restricted to all-white warp and all-black weft. But after the drawdown is completed, one may enter a "color study mode" in which the colors (black or white) of warp ends and weft picks may be chosen at will. The maximum number of warp threads depends on the number of shafts and treadles selected and is computed by the program. The absolute maximum number is 116. The maximum number of weft picks is 120; however, only some 55 warp threads and 30-odd weft picks can be seen at one time on the screen.

A nice feature of this program is that a standard tie-up can be selected simply by entering it in conventional notation, e.g. $\frac{1}{2}$, etc. Non-standard tie-ups are handled as usual by assigning shafts to treadles. Likewise, three automatic treadlings are selectable by a single keystroke: straight draw, herringbone, and "as drawn in". In each of these three modes, one can start the sequence on any treadle. Special treadlings must be entered one pick at a time as usual.

When the drawdown is finished, one uses EXTEND commands to view the off-screen portion, if any. Alternatively, one may enter the "color study mode". Unfortunately, the threading and tie-up are not saved when this is done and must be reentered. It is possible, however, to enter this mode at the outset by interrupting the program and entering a special command.

The strong points of Drawdowner are: the provisions for automatic tie-ups and treadlings, the presentation of the draft and drawdown in standard format; the capability of creating a drawdown larger than the graphics screen, the fast graphics, and, of course, the fact that (as far as we know) it is the only commercially-available weaving program for the TRS-80. A weak point is the present limitation to 8 shafts and 10 treadles. The restriction to eight shafts was an arbitrary decision by Mr. Salsbury and could be changed in later versions (perhaps requiring more RAM.)

Just as this review was being typeset, we received word from Nate Salsbury that he has modified Drawdowner so as to provide hard-copy capability using an Epson MX-80 printer. This enhances the usefulness of the program tremendously.

In closng, we wish to thank Bill Herron of the Computer Store, Radio Shack, Woolco Shopping Center, 1895 28th St., Boulder, CO, for placing a TRS-80 Model III at our disposal for testing this program.

Earl Barrett

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150cm (60") countermarch loom with double warp beam and fly-shuttle beater.

OVERHEAD BEATER
Provides well-balanced, natural beating rhythm. Height and position adjustable. Holds oversize reeds. Laminated to prevent warpage. Massive.

SUPERIOR DESIGN
Open construction facilitates tie-up and dressing. Massive, laminated beams; breast beam lifts out. String heddles and tie-up eliminate fatiguing noise. Wooden wedges, not screws, hold frame right and make relocating easier.

OUTSIDE RATCHETS
Makes full weaving width available. Easily released by weaver. Warping sticks facilitate accurate beaming.

CONVENIENCE FEATURES
Knee beam for weaving comfort. Adjustable bench (no extra charge). Cloth cover board keeps the work clean. Rubber feet prevent "walking."

...for some very good reasons.

You've probably admired the quality of Swedish weaving. But did you know that in Sweden...and in many other countries ...more weavers buy Glimakra looms than any other brand? Why? Because Glimakra looms are traditionally designed, with features that have evolved and been developed by skilled weavers over the centuries. That rich heritage of continuing development, enhanced by modern production methods, assures the joy of Glimakra weaving.

Crafted almost entirely by hand, your steady, sturdy, solid Swedish loom will be a working companion and source of pride for several generations. You can weave everything from fine fabrics to heavy rugs on ALL of our floor looms. And Glimakra offers more than a dozen weaving widths (20" to 72"), so you can select the loom that's "just right" for your projects. (For example, you get a full 48" finished project width on our 54" loom.) We also build damask, table, and large tapestry looms (up to 80"), as well as a line of professional, heavy-duty looms, some with weaving widths of over 11 feet! Our full line of accessories includes kits for long-eye heddle, double warp beam, and fly-shuttle attachments. Looms and accessories are stocked in the U.S.

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Dealer inquiries invited.

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- Over 20 Glimakra looms (including tapestry and damask models) on display for demonstration and classes.
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GLIMÅKRA LOOMS 'n YARNS, INC.
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☐ Please rush the Glimakra looms color catalog (English edition) to me. My check for $2.00 to cover postage and handling is enclosed.
☐ Send me information regarding Borgs of Lund yarns.

NOTE: Present Glimakra loom owners –
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