

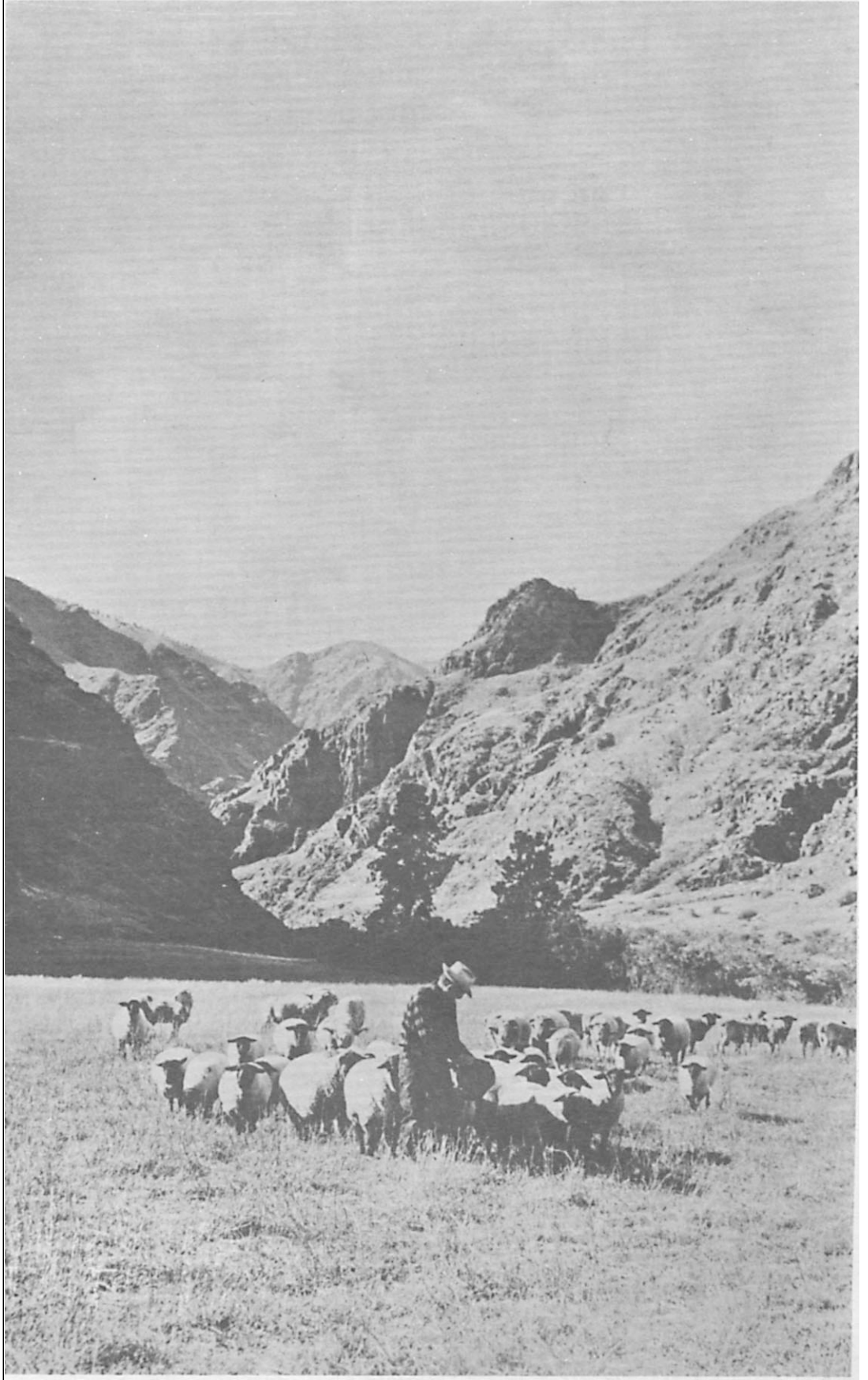
# The Weaver's Journal

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# The Weaver's Journal

Quarterly Journal For Textile Craftsmen

Volume II, Number 2, Issue 6

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## Table of Contents

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Letter from the Editors.....	1
Wool - That Wonderful Natural Fiber by Mary L. Derr.....	2
Tapestry Backpack.....	9
My Life by Lynn L. Weldon.....	11
Woven Woolen Whimseys.....	14
Hints on Weaving and Finishing Rugs.....	16
Preparing a Columbia Fleece for Handweaving by Helen Wilson.....	22
The Vertical Loom (continued) Part III, The Navajo Loom.....	23
Make a Soumak Sampler Into a Tote Bag.....	28
A Christmas Card.....	32
Book Reviews by Clotilde Barrett.....	34
A Survey on The Availability of American Wool by Mary L. Derr.....	36
Weaver's Market.....	38
List of Advertisers.....	38

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## Letter from the Editors

This is our special wool issue. Some articles were written with the cooperation of the staff of the American Wool Producers Council. We thank Le Ann Nelson, Bob Morrison and Helen Kuhn for their help and advice. The cover and the photographs on pages 3, 4 and 5 are reproduced by courtesy of the American Wool Producers Council.

Wool is greatly appreciated by fiber craftsmen and, in this issue, all the projects involve wool. As usual, we have included projects for the beginner, for the advanced craftsman and for the frame loom weaver.

Our January issue will concentrate on clothes and be directed by Barbara Knollenberg, fashion editor. Any contributions of articles, black and white glossies, or comments are welcome and will be considered for publication.

Clotilde Barrett has received a grant from the National Endowment for the Arts, to hire a weaving apprentice. This was most welcome news as a great deal of weaving activity is planned at the studio of "The Weaver's Journal". We have started to design and weave the swatches for the portfolio supplement which we have been promising. Our first project will include draperies, upholstery material and bedspreads.

Once more we must apologize for the many confusing changes of address. We are moving again, this time to 1900 55th Street, Boulder, CO 80301. We think we have at last found the right office, with room for studios, classes and workshops. Perhaps here we can at last begin to realize our dream of establishing a textile research center for handweavers, furnished with a variety of looms, including dobbies and jacquards. If you hear of any of these looms for sale, please let us know.

We welcome visitors at the studio of "The Weaver's Journal."

# *Wool - That Wonderful Natural Fiber*

## *by Mary L. Derr*

HISTORY. Sheep were among the first animals to be domesticated. About 8,000 years ago, men discovered the flocking instinct of sheep and found they could be herded. Since that time, sheep have had an important place in man's world, providing wool fibers for warm clothing and an easy source of meat.

Sheep came to America with the first explorers and settlers. Columbus brought churra or mutton sheep to Cuba and Santo Domingo on his second voyage to the New World in 1493. Cortez brought sheep with him when he came to conquer Mexico in 1521. He started flocks which grew rapidly. Coronado brought sheep in 1549 and, when he departed, he left sheep with the three priests who remained with the Indians. It is believed that the Dutch brought the first sheep to the eastern part of America, for the English king would not allow sheep to be exported. The Pilgrims purchased 40 sheep from Dutch settlers on Manhattan Island about 1635 and some sheep were smuggled out of England. Soon colonial women were spinning yarn and weaving woolen clothing to protect their families from the bitter cold of New England winters. A Massachusetts law in 1664 required that all youths learn to spin and weave. England sought to keep her American colonies as a source of raw materials to be traded for English textiles, but her efforts were in vain. As fabrics were made in America and England's opposition to American manufacturing deepened, the colonists boycotted English goods. This dispute over who could make woolen cloth was an underlying cause of the Revolutionary War.

During this war, spinning and weaving became acts of patriotism. George Washington raised sheep on his Mount Vernon estate. Both George Washington and Thomas Jefferson wore suits of American wool when each was inaugurated as President of the United States. But even their patriotism could not blind them to the fact that American wool was coarse, uncomfortable, and much inferior to the fine apparel woolen fabric made in England. Both presidents encouraged farmers to establish Merino flocks and even imported Merino sheep from Spain. These were cross-bred with the English breeds to improve their meat production while keeping the superior wool-bearing quality.

In the 1800's, settlers began to push west and their sheep accompanied them. Now, for the first time, eastern sheep were mixed with the huge flocks of the southwest. In 1880, government officials became interested in the inbred Navajo flocks and began to seek ways to increase the value of the wool and mutton produced by the Indians. Ewes of the old-time Navajo flocks were bred to rams from other localities. Through these experiments, some of the qualities of Navajo wool that were particularly valuable to Indian spinners and weavers, such as silkiness and low grease content, were lost. Government programs

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are still continuing, with the objective of restoring these qualities to the wool.

**THE WOOL INDUSTRY TODAY.** The first woolen mill was built in the United States in 1760. Others quickly followed. Today the U.S. is the second largest user of apparel wool in the world, with only the United Kingdom using more.

Though the United States uses large quantities of apparel wool, domestic sheep produce only 40% of this wool. The rest must be imported from Australia and other wool-producing countries.

Unfortunately, the American sheep population is declining. With the price of lamb high, farmers and ranchers are more interested in selling their lambs for meat than in building up their flocks. Many farmers have cut the size of their flocks because it is so difficult to find shepherds and shearers.

John Morrison, of the American Sheep Producers Council, said that most breeding experiments today are concerned mainly with meat production and increased lambing. See Plate 1.

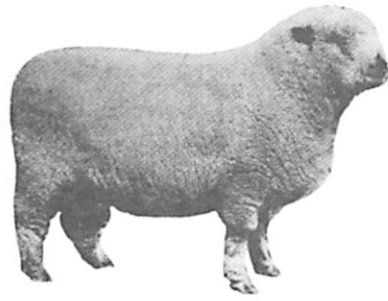


*Plate 1*

But wool production is still very important to the wool producers and consumers. This year buyers are showing more interest in the percentage of clean wool obtained from a fleece (yield) than in the size of the fibers, according to Keith Padgett of the U.S. Department of Agriculture Wool Laboratory in Denver, Colorado. The drought conditions in the western states seem to have had little effect on fiber quality but the fleeces are two or three pounds heavier this year, with 10% less yield. This means that the fleeces have much more dirt and vegetable matter in them than in previous years. Consequently, the per pound price of fleeces has decreased somewhat.



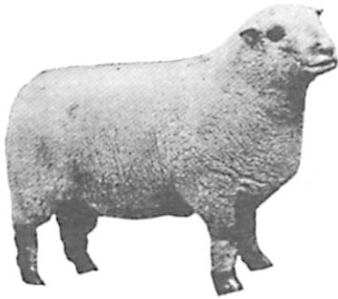
*Rambouillet*  
62's to 70's



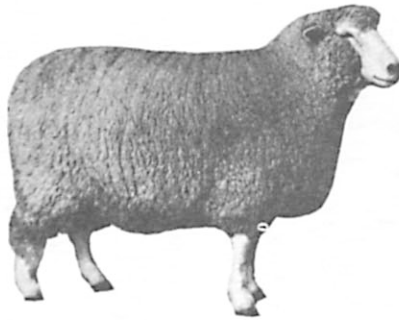
*Shropshire Ram*  
48's to 50's



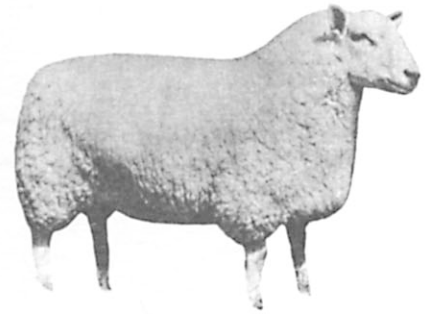
*Columbia Ewe*  
50's to 60's



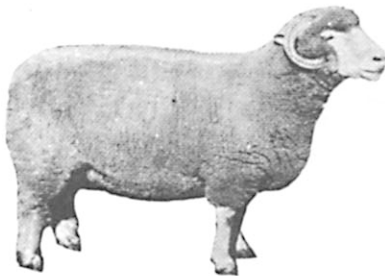
*Southdown Ram*  
56's to 60's



*Romney Ewe*  
40's to 48's



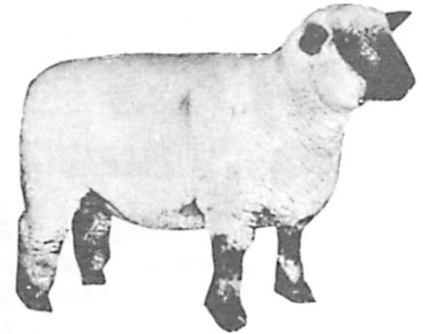
*Montdale Ram*  
48's to 58's



*Dorset Ewe*  
48's to 56's



*Cheviot Ram*  
48's to 56's



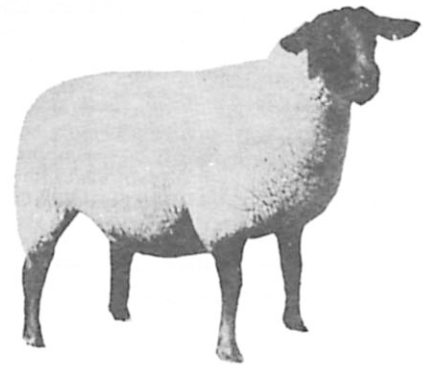
*Hampshire Ewe*  
48's to 50's



*Lincoln Ram*  
36's to 40's



*Corriedale Ewe*  
50's to 60's

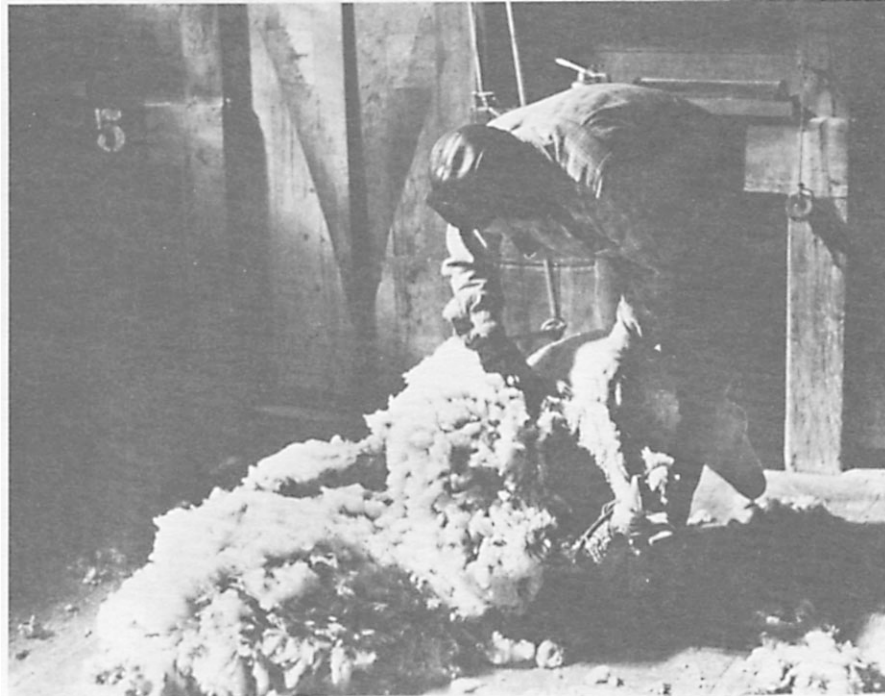


*Suffolk Ewe*  
48's to 56's

*Plate 2 Sheep Breeds And Spinning Count Of Their Wool*

BREEDS OF SHEEP. American sheep represent many different breeds, from the old English sheep to new unique breeds created by scientific breeding. Ten years ago, the Finnish Landracer, a sheep noted for having twins and triplets in twice-yearly lambings, was imported from Finland. Its wool and meat production were poor, so scientists crossed the Finn with the Rambouillet, Targhee, and Dorset breeds to produce white-faced sheep with a 200% lamb crop and good wool and meat.

Some of the principal breeds of American sheep are shown in Plate 2.



*Plate 3*

#### WOOL PROCESSING

Shearing. Though ewes are usually sheared in the spring, shearing can be done at any time. Often the fleece is packed at the farm and sold as original bag wool. It is ungraded grease wool. Wool shorn from range sheep is collected in district wool pools, where it is baled and sold as one unit to marketing groups such as the Mid States or North Central Wool Marketing Companies. These companies have excellent systems of grading which determine the quality control of the wool. They sell the wool in uniform lots to top manufacturers and supply both spinners and the mills where the wool is made into yarn and flat goods. Some mills are completely vertically integrated and process the wool from its purchase as raw wool until it is turned into apparel. The smaller mills, however, specialize in one or two aspects of wool processing.

The relatively small amount of wool produced in the United States, the large variety of sheep breeds, and the different types of sheep production have made the American sheep industry a much more complex one than in countries like Australia.

Grading. A fleece must usually be graded before it is sold. This is done

at wool pools or by sending it to the Wool Laboratory of the U.S. Department of Agriculture in Denver, Colorado. The Wool Laboratory developed the micron grading system and is in charge of the world's standards for grading wool. Three methods of grading may be used.

1. Bloodcount. This is the oldest method. It is based on the Merino breed which produces the finest wool. Cross breeds are graded 1/2 blood, 3/8ths blood, etc., according to the fineness or coarseness of the wool. It is not a very scientific nor accurate method.

2. Spinning count. This method is based on the number of hanks of yarn that can be spun from one pound of clean wool. The smaller the number of hanks, the coarser the wool is. This is the method most used today in commercial sales of wool. The wool is graded from 74's for the finest wool to 54's for the coarsest. Wool coarser than 54's is not used in industry for apparel, but is useful to handspinners for rugs and wallhangings. Not much coarse carpet wool is produced in the U. S. It is imported from Australia and other countries. Therefore, the handspinner is a good customer for the small supply of coarse wool available.

The handspinner should know the spinning count of the fleece he buys. This may not be possible if he buys a fleece directly from the woolgrower whose fleeces are ungraded. In this case, he may have a selection of fine, medium or coarse wool. If he wants quality control, he must buy wool top from a supplier who will have the spinning count from the top manufacturer.

3. Micron. Man-made fibers can be described accurately by their size. This proved to be so helpful to manufacturers of yarn and fabrics that they wanted this same accurate descriptive measurement of wool. Microns express the actual measurements of the wool fibers. For example, a spinning count of 64's would measure from 20.6 to 23.04 microns.

Length of Fiber. Wool is also graded according to length of fiber, though this is not as important as it has been in the past. Combing style, or comb, is 2 1/4 to 2 3/4 inches in length. Fibers that are longer are called staple. Fleeces that have not been allowed to grow a full year are usually the shortest.

Yield. The yield is the percentage of clean wool relative to grease wool. A high yield might be 53%, which would mean that 53% of the fleece is clean wool, while 47% is grease and foreign matter.

#### FROM FIBERS TO FABRIC

Scouring. The wool as it comes from the sheep is full of insects, straw, grass, small twigs and grease. This must be removed by scouring or washing the wool in warm water and rinsing. The resulting clean wool is usually about half the weight of the grease wool. (Refer to "Scouring a Fleece" by Meg Wallace, *The Weaver's Journal*, Vol. I, No. 2 pg. 18). After the scoured wool has been picked apart, spinning oil may be sprayed on it to facilitate spinning. A recipe for the handspinner can be found in *The Weaver's Journal*, Vol. I No. 1 pg. 28.

Carding. This process untangles the fibers, blends them and prepares even layers of wool. At the same time, it knocks out any vegetable matter that hasn't been removed in the scouring. In the mills, carding is done with large cylinders covered with fine wire teeth which revolve at different speeds and

work the wool into a fine veil-thin web. This web then goes into the woolen or worsted system of manufacture.

Such woolen fabrics as tweeds or fleeces are made from loosely twisted, fluffy yarns. Woolen roving, in which there are some short fibers lying in random directions, is used for this softer, fuzzier yarn.

Worsted fabrics are made from harder yarn that can be woven tighter with a smooth surface. To make this kind of yarn, the sliver or web of woolen fibers is put through a combing machine. Short fibers are combed out and combed fibers that are left are called "tops". The fibers lie parallel to the finished yarn. The shorter fibers that were removed are called "noils" and are added to roving for woolen fabrics.

Most handspinners use hand cards. There are also carding drums available to handcraftsmen. These consist of two drums with metal teeth which rotate in opposite directions pulling and straightening the wool. Using the drums, a handspinner can card a fleece in a few hours.

Spinning. The woolen roving or worsted tops are now drawn and twisted into yarn by the power driven spinning frames called mules. The finished yarn is wound onto cones or spools. Unusual effects or added strength can be achieved by twisting two, three, or more strands of wool together to make ply yarns.

Handspinners use spindles or spinning wheels. Some spin the wool in the grease, others prefer it scoured. When purchasing raw wool, handspinners should avoid wool that contains second cuts (produced during the shearing by overlapping strokes), that has too much crimp, or that is very fine. It is best to use long staple, clean wool with a good luster.

Weaving. By interlacing horizontal with vertical threads, yarn is made into fabric. This is done on large power driven looms. A new loom, now being used in some mills, uses a jet of air instead of a shuttle to pass the weft or filling thread across the warp. Electronic controls direct the colors used in different patterns.

Most mills make both woven and knitted fabrics. Knitting is the method by which fabric is made by interlocking loops of yarn. The variations of stitch, yarn and color produce infinite variations, as in weaving.

Pile fabrics are made by looping an additional filling yarn through the warp. Imitation fur, plush, and carpets are made by this method. Sometimes the extra weft yarn is cut, as in plush, or left standing to make certain carpets.

Another woolen fabric, felt, is made without weaving or spinning. Layers of wool fibers are folded in different directions, one on top of another. After steam and pressure are applied, the resulting fabric is put through an acid bath where it is hammered, or fullled. The fibers have become intertwined and tangled, making felt.

Dyeing. Wool absorbs and holds colors so well that dyeing can be done at any stage of processing with equal success. Wool must, however, be free of grease before it is dyed. When dyeing is done before spinning, it is called stock dyeing. It may also be done after spinning into yarn or after the fabric has been knit or woven, when it is called piece dyeing. The newer printing is done



by roller application of dyes of different colors on top of a piece-dyed fabric.

Finishing. The fabric is now washed to remove soil or chemicals it may have collected during processing. Most all fabrics will be "fulled", as in the felting process, but to much lesser extent. If a soft, fluffy surface is wanted, it will be brushed with teasels. Napping is done with wire covered rollers that raise fibers of the fabric. The nap is shorn, -- long for woolens, very short for worsteds. Sometimes the fabric is pre-shrunk by dampening with a sponge, rolling it in moist muslin or by steaming. "London-shrunk", a very popular sponging method, enables the manufacturer to guarantee definite shrinkage percentages under controlled conditions.

#### THE ROLE OF THE HANDSPINNER AND WEAVER

The handspinner and weaver have an important place in the education of the consumer, child, and fiber enthusiast. These craftsmen demonstrate and lecture, keeping alive the methods by which wool fiber is made into yarn and fabric by hand. They communicate with the public at shows, where their beautiful woolen goods gain the attention of consumers. They can explain about sheep to the little boy who wrote the American Sheep Producers Council recently, asking them to "send a wool machine". And they can offer hope to those who are beginning to loathe synthetics as a way of life.

Handcraftsmen have a place in the consumption pattern of wool. Already they buy 1% of the yarn made and their needs are growing. They are bringing back the virtues and quality of woolen goods by using them as a medium to express their individual ideas and to escape from the mediocre world of mass production. With wool, they can create the quality of life they find lacking today in their machine-made culture.

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Plate 1  
 Back Pack woven by  
 Sue Henrikson  
 Modeled by  
 Ken Barrett

# Tapestry Backpack

Boulder weaver, Sue Henrikson, has woven several back packs for herself and her family. Plates 1 and 2 illustrate her very first one.

In subsequent versions she has used leather for the back of the pack because of the scratchiness of wool against the back of the wearer.

The basis for this bag is a Frostline "Day Pack" kit which may be purchased from Frostline Circle in Denver, CO. The kit comes with all the parts and instructions to make a nylon bag, illustrated in Fig. 1. The bag has

two compartments with access through zippers.

The cut cloth included in the kit for the outside of the bag is used as patterns for the leather and hand-woven parts. See Fig. 2.

The top zipper cover included in the kit is omitted as it becomes too bulky when handwoven.

Each of the two woven parts is completely lined by stitching the lining to the woven piece right sides together,

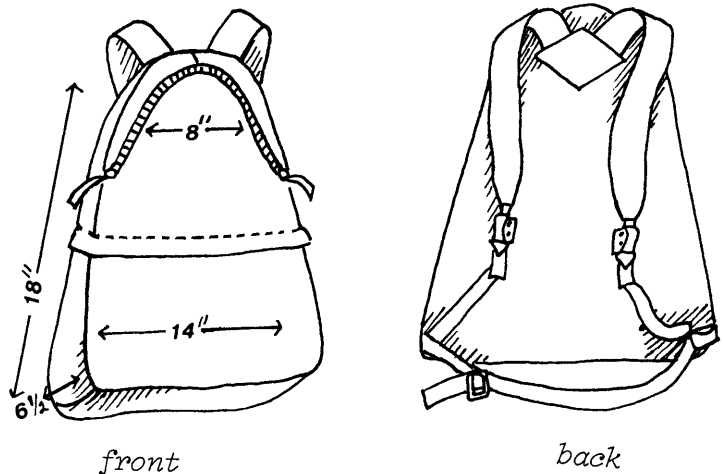


Fig. 1

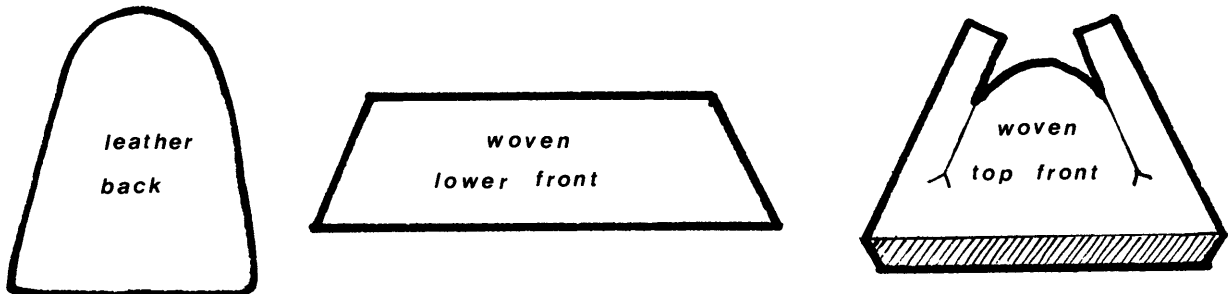


Fig. 2


and turning the piece inside out. The lining eliminates the need for turning in the bottom of the top front piece which makes the middle zipper cover. The cross-hatched section in Fig. 2 may thus be cut away from the pattern.

Weaving Instructions (For a two harness loom)

WARP: Carpet warp  
WEFT: Assortment of wools, mostly rug wool  
SETT: 6 e.p.i. (24/10cm)  
WIDTH IN THE REED: 31" (79cm)  
LENGTH OF THE WARP: 2 yards (183cm: this includes waste and take-up)  
THREADING: Plain weave

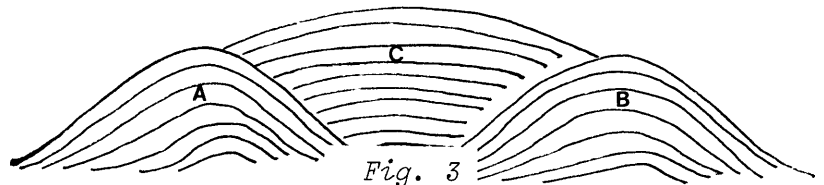
The overall size of each pattern piece was increased by 10% to allow for shrinkage and take-up during the weaving. Each piece was shaped on the loom, starting with the widest part and decreasing by passing the weft under less warp ends, according to the pattern. For the top front it is necessary to weave with three shuttles. Rags or heavy yarn filler should occasionally be woven through the unused warp to avoid tension problems.

When the weaving is done, the loose warp ends are cut as long as possible and darned back in. All the seams are reinforced with fabric cement (VAL-A TEHR-GREEZE, Chicago)

The tapestry techniques, shown in the detail, Plate 2, are simple ones. Weaving with one color at a time, areas such as A and B in Fig. 3 are built up. Then with color C, the depressions are filled and areas are built over A and B. Use a fork to beat in the weft. Occasionally ridges are accentuated with a row of soumak following the contours of a color area. 



*Plate 2, detail showing tapestry technique*



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Plate 1 "My Life" by Dr. Lynn L. Weldon

Navajo-style pictorial tapestry woven on a home-made floor-to-ceiling vertical two heddle loom. 36" (92cm) wide by 37" (94cm) long. 289 vertical warp threads (8 threads per inch, 30/10cm). About 2000 horizontal weft threads (about 52 horizontal threads per vertical inch, 20 per cm). Average number of changes between different interlocked yarn colors in each weft line--about 60. Greatest number of weft line color changes--88. Average amount of time to complete one weft line--20 to 40 minutes. Average amount of time to complete one vertical inch of weft threads--25 to 30 hours. Number of different symbols--over 90. Tapestry started September 1, 1975 and completed December 26, 1976. Time to weave this pictorial tapestry--about 1,000 hours.

# *My Life*

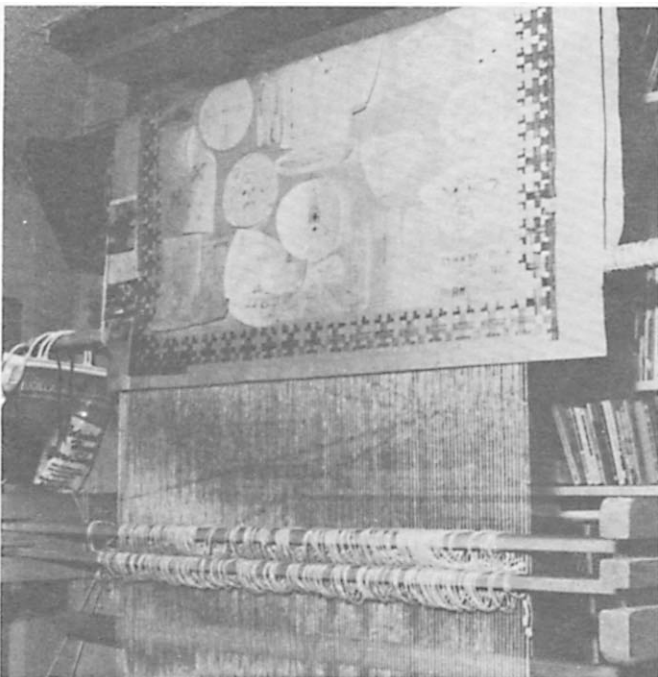
*by Lynn L. Weldon*

Two decades ago my wife, Arvilla, and I moved from Kansas City, Missouri, to Alamosa, Colorado, where I teach human relations courses for Adams State College. Through the years I taught courses on the Jicarilla, Apache, and Ute Indian reservations and travelled across the Navajo reservation. I observed the Indian cultures, but only from a distance.

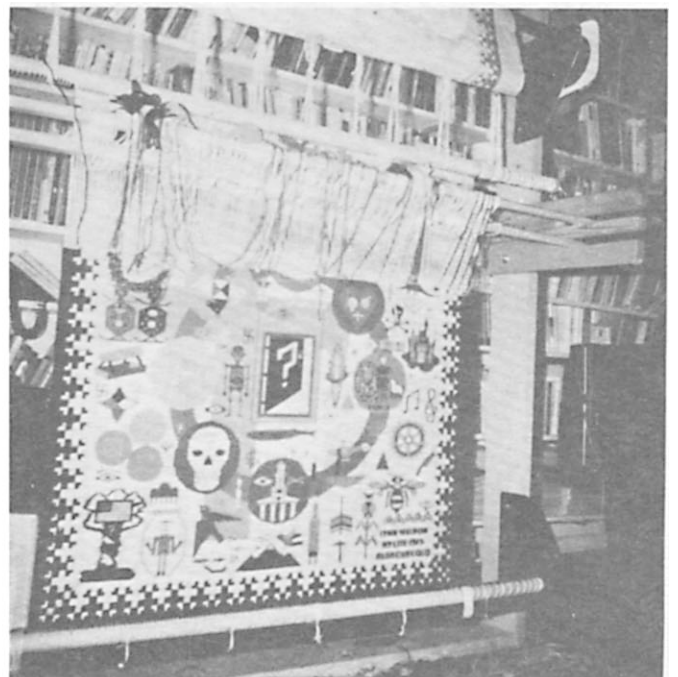
Then, several years ago, a graduate student at Adams State, John DeVaney, told us that he had grown up on the Navajo reservation, knew many of the traders, and could get us bargains on Navajo rugs. My reaction was, "Rugs--smugs, who cares?" In contrast, my wife, a weaver, was very interested, so she borrowed money from the bank and, not having time to go to the reservation, sent me down to the reservation with John to buy some rugs. In two days we looked at thousands of rugs in many trading posts. John patiently explained and illustrated the types and qualities of Navajo rugs. A wonderful new world was opened to me.

I returned home, read all the available books on Navajo weaving and wove a one by two foot yei tapestry, including three figures, a corn stalk and a butterfly on a tuft of grass, on a table loom.

I then decided to construct a floor to ceiling Navajo loom and weave a three foot tapestry illustrating my life (Plate 1). While I was planning and constructing the loom, I spent several months thinking about what things were important to me in my life and what could symbolize those things. As I developed symbols, I taped them on a paper sheet and then spent a year and a half weaving the tapestry of my life (Plate 2).



*Plate 2*



*Plate 3*

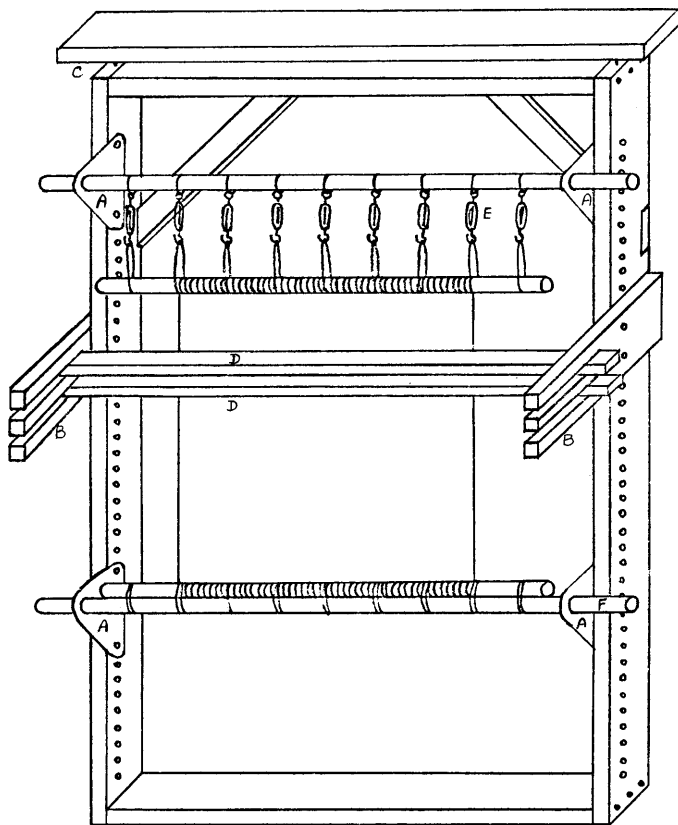


Fig. 1

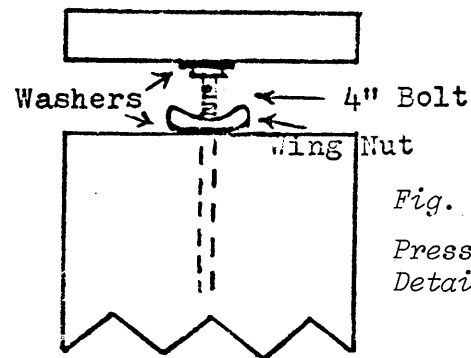


Fig. 2  
Pressure Plate  
Detail

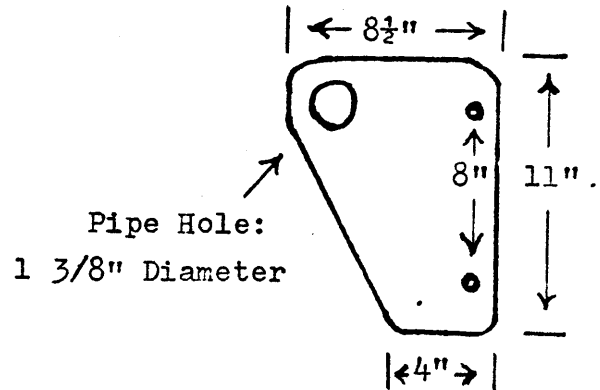


Fig. 3 Pipe Holder Detail

I constructed the Navajo-style loom from two by six inch (5 x 15cm) stock with holes drilled at two inch (5cm) intervals in the side boards so I could move the four metal plate pipe holders A and the two heddle guides B as needed (Fig. 1). Since our home has eight foot (2.5 m) ceilings, I designed the loom so a top pressure plate C (see detail Fig. 2) would hold the loom rigidly erect against the ceiling when I pulled on the heddle rods D. I placed towels between the pressure plate and the ceiling of our family room so the pressure plate would not scar the ceiling. The four metal plate pipe holders A (see detail fig. 3) which held the weaving out in front of the side boards were made by Harold Schall of Monte Vista, Colorado, in his machine shop so that I could insert a five foot (150cm) batten rod or sword all the way across the weaving without hitting the uprights of the frame. I cut and shaped the batten from a piece of hardwood flooring. I originally used a rope cinching system like the traditional Navajo weavers used to tighten their warp. When I toured the Navajo reservation again, I observed that the weavers there were using toggle bolts E, so I shifted to the "modern" Navajo system of tensioning the warp.

Rather than following the traditional Navajo style of using one heddle bar and one shed stick, I used two heddle bars D placed in guides B that I could move as needed. I cut and shaped lengths of flooring for the heddle rods. As the weaving progressed, I moved the four metal plates A down. When doing the last fourth of the tapestry, I took the bottom pipe F out of the lower plates, and placed an additional pipe through these lower plates. Then I shifted pipe F to the back of the loom so that the bottom of the weaving came from the back of the loom under and in front of the additional pipe and then vertically to the top pipe. The last eight inches (20cm) of weaving were too tight to insert a batten rod, so I removed the string heddles and separated the sheds a warp

string at a time. The last inch (2.5cm) of weaving was so tight that I had to use a large needle to insert the weft yarns.

Each one of the symbols depicted in the tapestry has its own explanation. Let me explain the meaning of the open door with a question mark: I grew up in a conservative, fundamentalistic and absolutistic cultural "box." Those were very enjoyable years and I have no regrets about them. In fact, my growing-up experiences were among the best that I can imagine. One day, when I was 21 years old, I walked out of a classroom at Central Missouri State University, Warrensburg, Missouri. As I stepped through the classroom door, somehow I suddenly also stepped through a perceptual "door" in the side of my cultural box into a seemingly boundless relativistic world. My symbolic door reaches from the front of the weaving all the way through and beyond everything else, including Christianity, into the unknown.

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Note From the publisher: For a six-page long explanation of the 69 major symbols, written by Lynn Weldon on the tapestry, mail 50¢ and a SASE to "The Weaver's Journal" 1900 55th Street, Boulder, CO 80301.

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## Woven Woolen Whimseys

FORK WEAVING CREATES FLUFFY RED BERRIES  
(See Plate 1)

Materials needed: Wool, such as 4-ply knitting worsted.

Green - one piece 8" (20cm) long.

Red - one piece 36" (91cm) long.

Four-pronged dinner fork.

Lay the green wool between the second and third prong (see Fig. 1). Weave the red yarn back and forth between the teeth of the fork (see Fig. 1). Bring the green ends up and tie them with a half knot enclosing all the red wefts (see Fig. 2). Tighten the knot as the wefts are slipped off the prongs. Tie a second half knot in the green ends, making a square knot. Fluff the red yarns up.

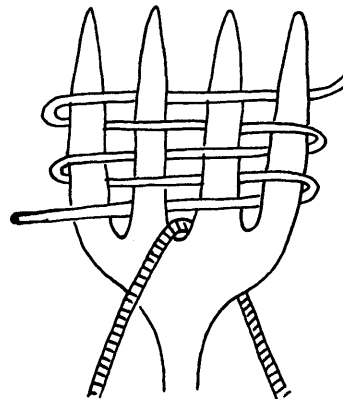


Fig. 1

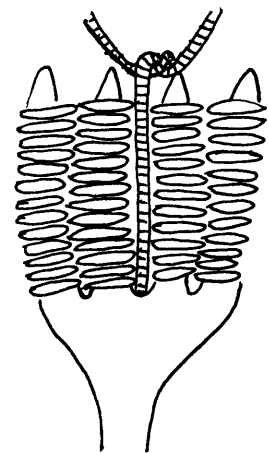


Fig. 2

SPIDER WEAVING CREATES POMPOM  
FLOWERS (See Plate 2)

Materials needed: Wool, such as 4-  
ply knitting worsted. Variegated  
colored yarns are very effective.

For the spokes (warp): 1 piece 4'  
(122cm) long.

For the weft: 1 piece 3' (91cm)  
long.

Blunt-nosed tapestry needle.

Circular piece of cardboard - 4½"  
(11.5cm) in diameter.

Divide the circle in 8 parts and cut  
out notches as shown in Fig. 3.

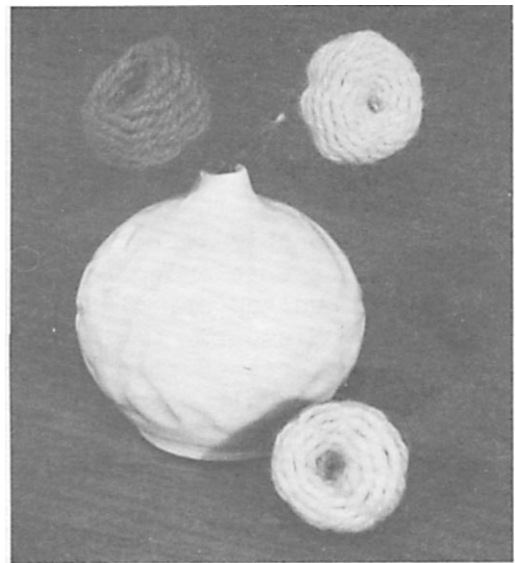


Plate 2

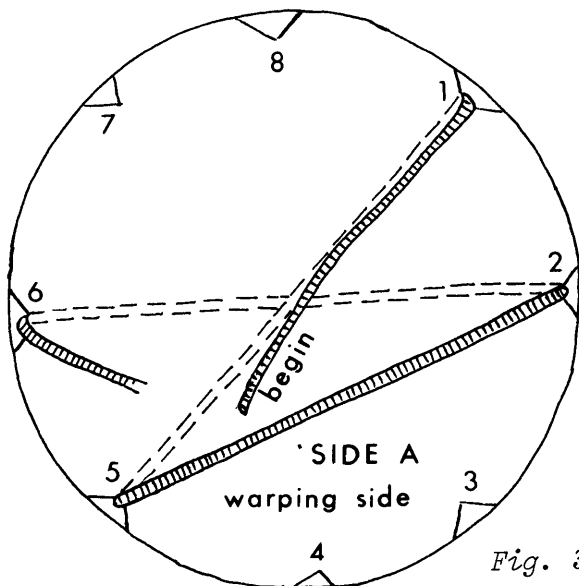


Fig. 3

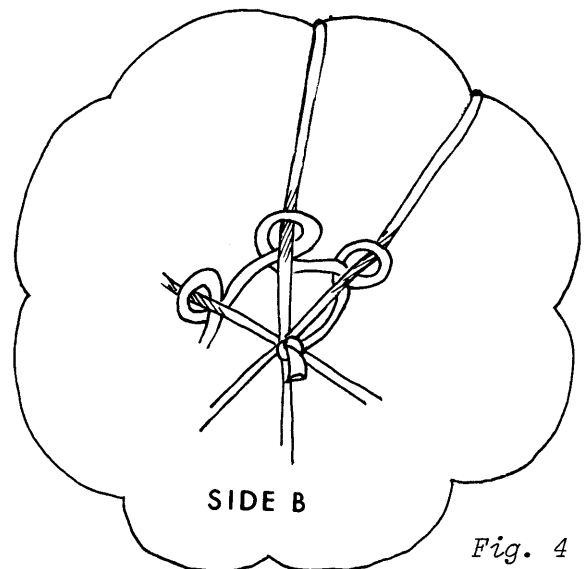


Fig. 4

To warp: Facing side A, Fig. 3, hold one end of the warp yarn at the center, carry the other end to notch 1, then to the back of the card to notch 5, to 2, in back to 6, to 3, in back to 7, to 4, in back to 8. Tie both ends together in the middle of the card, bunching all the warp ends together at the center.

To weave: Facing side B, Fig. 4, tie one end of the weft yarn to the warps at the center crossing. Thread the other end on a needle. Proceeding counter-clockwise, pass under 2 spokes, then back over one. Backstitch around each spoke going around and around until the card is about ¾ filled. Secure the end of the weft yarn with a knot.

To remove flower: Turn again to side A; cut through the warp at the center of the card. Lift the weaving off and turn it inside out. Tie all the unwoven warps together to form a stem.





# *Hints on Weaving and Finishing Rugs*

A rug is only successful when good design is combined with excellent workmanship. The challenge of making rugs lies in the skillful integration of the functional and aesthetic qualities of weaving. A rug should wear well, lay straight and flat, have sturdy selvages and the warp fringe should be tied or woven to protect the weft and to enhance the beauty of the rug. The weaver should realize that the end result depends on the careful handling of each step in the making of the rug.

The hints given here will be helpful to the weaver who has difficulties with craftsmanship. The opinions expressed here are personal ones: techniques and ideas that have evolved from experience. The choices of yarn are dependent on their availability. Although there are alternative methods and variations of techniques that might lend themselves better to good results under certain circumstances, it is hoped that this information will serve as a guide for all weavers to improve the quality of their rugs.

## WARP

Linen: Linen is a very strong fiber in humid climates but tends to be brittle and to fray in dry climates. Linen has a very low elasticity which is a desirable quality for a rug warp. As it is impractical to keep many sizes in stock, it is good to select a medium thin natural linen warp; for instance, size 8/3. It is used single for setts of 5 e.p.i. (20/10cm) or more. It should be used twofold for setts of 4 e.p.i. (16/10cm) or less.

Linen warp fringes fray more when washed than when dry cleaned.

Cotton: Cotton is a very durable fiber in dry climates. The elasticity is slightly higher than that of linen. A good choice for cotton warp is white seine cord, such as 12/12 Swedish "Fiskgarn". The stark whiteness of the yarn may be objectionable in the fringes of some rugs. The cord also tends to unply in the fringe unless the fringe is braided.

Wool: Wool warp yarns have to be selected carefully for strength and low elasticity. These qualities are best found in hard twist yarns. The wool may be single ply, such as the hard twist natural spun from Ironstone, Inc., which comes in white, fawn, grey and dark. The plyed and overspun "freeze wool", available as mill ends from the rug industry makes an excellent rug warp.

A wool warp makes a rug more flexible and thus well suited for saddle blankets and ponchos.

Goat Hair and Camel Hair: These fibers are strong, have low elasticity and a high luster. The yarns come in a wide range of natural color. Camel hair which is spun in a yarn suitable for rug warp is available from Creative Handweavers, Inc.

Acrylic: Acrylic yarns are strong and inexpensive. Acrylic yarn with low elasticity are available as mill ends from the industry. However, these yarns

have wiry cross fibers which exert a great friction on the weft as it is beaten in; this makes them unsuitable for weft face rugs.

## WEFT

Wool is a favorite fiber for rug weft. However, it should be spun from a blend which includes coarse and resilient fibers. A medium thick single ply wool is easy to work with. These weft yarns should be torn apart rather than cut. This leaves ends that taper and are thus easily spliced by overlapping the tapered ends. Plyed yarns may be used, but this weft is harder to join. Ends which are overlapped are bulky and tend to work loose. Instead, the tail end and the starting end should be brought out on either side of a warp end, X, and later darned in along side the adjacent warp ends (Y and Z, Fig. 1). Some weavers prefer to use finer plyed rug wool doubled or tripled.

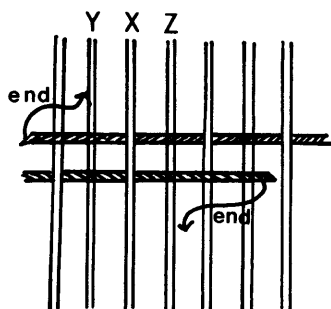


Fig. 1

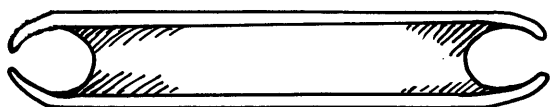


Fig. 2

The bulky weft yarns used in rugs require large shuttles, at least 18" (46 cm), such as the double ski shuttle illustrated in Fig. 2.

## SETT

The sett depends on the weave structure and on the size and properties of the warp and weft yarns. For weft face plain weave and related weave structures the sett should be 3 e.p.i. (12/10cm), 4 e.p.i. (16/10cm), or 5 e.p.i. (20/10cm). For twills, twill derivatives and for most other weaves, the sett should be 5 e.p.i. (20/10cm) or 6 e.p.i. (24/10cm). For

double woven rugs the sett should be 8 e.p.i. (30/10cm).

## BEAMING THE WARP

There seem to be less tension problems when the warp is beamed with a raddle before it is threaded and sleyed. The warp has to be held under great tension during the beaming. Sheets of corrugated cardboard should separate each layer of warp on the beam.

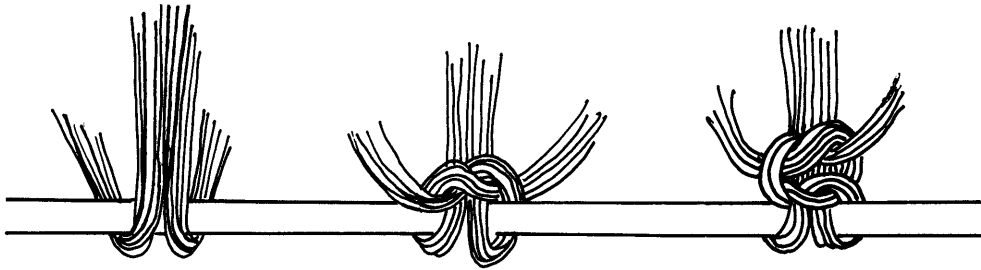
## SELVEDGES

For most rugs in plain weave or with a plain weave ground, the argatch (first and last two warp ends) should be reinforced by tripling or quadrupling these ends in the heddle and in the reed.

Many rug weaves require floating selvedges. These require an additional two-fold warp end on each side which does not go through any heddle and is sleyed in the same dent as the first and last warp end of the rug. These selvedge threads must not be beamed; they can be kept taut by hanging a weight of 9 or 10 oz (250-300g) on each selvedge between the back beam and the floor (a 5½" or 15cm C-clamp is a good weight). The weighted warp assures an even tension of the floating selvedge throughout the weaving. When the shed is opened, the

floating selvedge threads remain in the middle of the shed. The shuttle should always enter the shed above these threads and leave the shed underneath. (See also *"The Weaver's Journal" I/1, p.23*).

#### TYING THE WARP TO THE FRONT ROD



*Fig. 3*

Tie the warp in one inch (2.5cm) sections with a square knot as shown in Fig. 3. The first and the last warp ends should lay straight between the reed and the front rod.

#### FILLER AND HOLDING WEFT

Rugs should be woven on a very tight warp. Start the project by weaving in a filler of thick soft yarns or strips of old sheets, in plain weave whenever possible. Beat this filler in firmly. Tighten the warp often to take up the slack from the compressing of the warp on the warp beam. Next, weave 4 or 6 plain weave picks with a holding weft. This yarn should be thin in a color which contrasts with the rug. End the rug by weaving another 4 or 6 picks of holding weft. When the rug is taken off the loom, the filler is removed but the holding weft is left in until the warp fringes are being finished.

#### USE OF A TEMPLE (TEMPLATE)

It is absolutely necessary to use a temple when weaving rugs. Adjust it so that the distance between the points of the pins is the same as the width of the rug in the reed. Dig the pins into the argatch just below the fell of the rug. Move the temple after each 2" (5cm) of weaving.

#### WEAVING THE RUG

To start weaving the rug, insert the weft into the open shed leaving a 2" (5cm) end hanging out. Change the shed, tuck in the 2" (5cm) end and weave the next weft pick. Pull the weft tight against the temple to assure firm selvages. However, the weft should then be relaxed in the shed and bubbled or angled before beating it in.

In most instances, color changes need not be done at the selvages but should be handled as any other weft joint.

When a weave requires several shuttles, these should be picked up and laid down in a systematic manner to assure a smooth rotation of weft yarns.

## FINISHING THE WARP FRINGE

Lay the rug on a table with the warp ends extending just over the edge of the table. Weight it so the rug cannot slip. Remove the picks of holding weft, a section at a time while you finish the fringe.

### WOVEN EDGE



Fig. 4

Begin at left on back of rug. Hold the first 4 ends taut in the right hand. Weave end 1 under end 2, over end 3, under end 4 and pull end 1 up. Let it lie on the rug. Weave end 2 under 3, over 4, under 5 and pull it up. Repeat across the rug. Make a pigtail with the remaining 3 ends, ending it with an overhand knot. If a fringe is desired, draw each end back through the edge with a crochet hook. Otherwise weave each end back into the rug with a blunt nosed darning needle. Avoid forming a ridge by darning in ends of unequal length.

### PHILLIPINE EDGE

Begin at left with the front side of the rug up. Hold ends 1 and 2 under tension in the left hand. Take end 3, half-hitch it over ends 1 and 2. Tighten upward. Swing end 3 down at right of end 2 and drop end 1. Pick up end 4 and repeat the knot over ends 2 and 3. Swing down end 4 and discard end 2. Repeat across. One row is quite secure, but to repeat the row, turn the rug over and start at near left. The last remaining end has to be darned back into the rug.

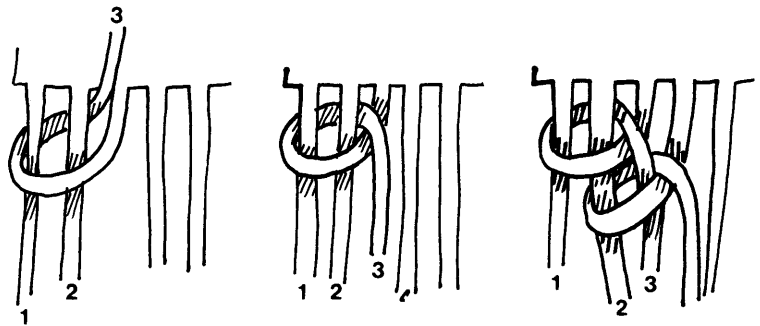


Fig. 5

### HALF DAMASCUS EDGE

Begin at right on the back of the rug. Hold end 2 taut and half-hitch end 1 over end 2. Pull tight upward. Hold end 3 taut and knot end 2 over end 3. Pull tight upward. Continue across the rug. Darn each end back into the rug.

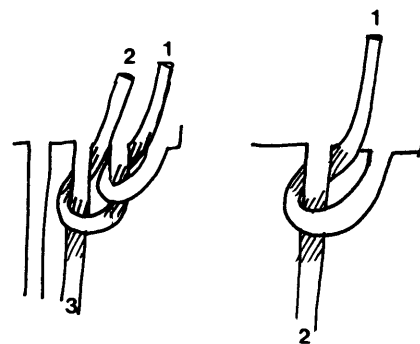


Fig. 6

### DAMASCUS EDGE

Begin at right with the front side of the rug up. Knot the half Damascus edge across the rug. Turn the rug around, still keeping the front side up. Begin at the right again and repeat the half Damascus edge across the rug. This finish makes a firm warp ridge which makes a good weft protector. The fringe may be left as is or may be tied in bunches of 3 or 4 with small overhand knots.

## INDIAN EDGE

Begin at right with the front side of the rug up.

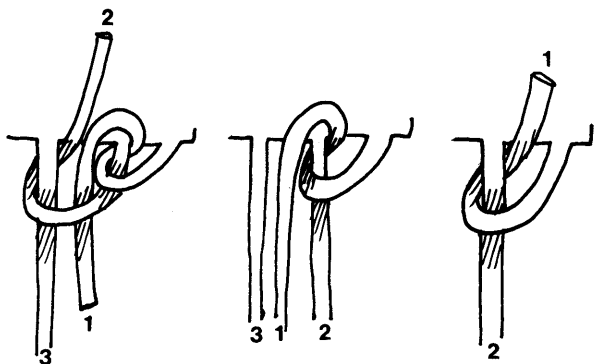


Fig. 7

Hold end 2 taut, half-hitch end 1 over end 2 and pull upward as in the half-Damascus edge. Next bring end 1 down between end 2 and end 3. Half-hitch end 2 over end 3, taking care it passes over discarded end 1. Continue across the rug.

## CHAINED LOOPS

Begin at right with the front side of the rug up. Hold end 2 taut, start as if end 1 half-hitches over end 2, but instead of pulling the end through, pull only a loop of end 1 through. Do the same with ends 3 and 4. Repeat across the rug, leaving the loop lying on the rug.

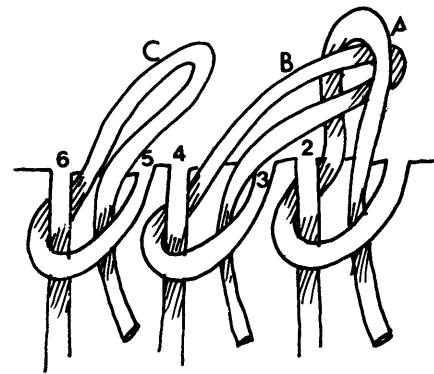


Fig. 8

Slip loop B through loop A and take up the slack by pulling downward on end 1. Slip loop C through loop B and pull downward on end 3. Repeat across the rug.

## TWINED EDGE

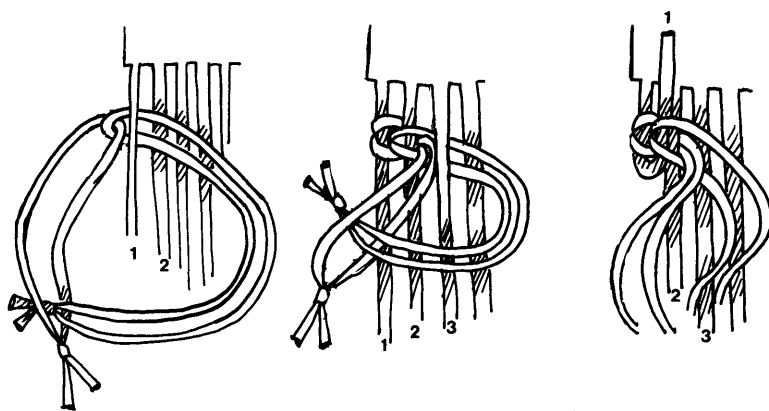


Fig. 9

Fig. 10

Make two long interlocking loops with a suitable rug wool. Each loop has to be 25% longer than the width of the rug.

Start at right with the front side of the rug up. Lay end 1 between the two loops. Pass the right-hand loop through the left-hand one. Lay end 2 between the two loops, pass the right-hand loop through the left-hand one. Continue across the rug.

Start as before but at the same time as end 2 is laid between the loops, end 1 is swung back and laid alongside end 2, Fig. 10. The ends are later darned into the rug.

If no fringe is desired, work on the back side of the rug.

## MAORI EDGE

Lay the rug with the backside up but so that the edge runs up and down, with the warp fringe to the left.

Step One (Done only in the beginning): Pass end 1 under end 2 and bring it to the right. Then pass end 2 under end 3 and pull it to the right. Then bring end 1 back to the left and pass it under end 4 and pull it again to the right. This results in 4 strands, two pointing to the right (A & B) and two pointing to the left (C & D), Fig. 11.

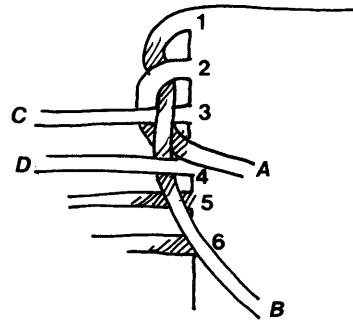


Fig. 11

Step Two: Consists of making a 3-strand braid. The strand in the B position is always discarded and the strand in the A position always picks up a new strand from the warp fringe. Bring strand C to the right. Bring strand A to the left, over C. Pass strand A under a new warp end and bring it back to the right. Tuck discarded end B under a book so that it is not picked up by mistake. Rename the four strands A, B, C, D, and repeat the process. Fig. 12.

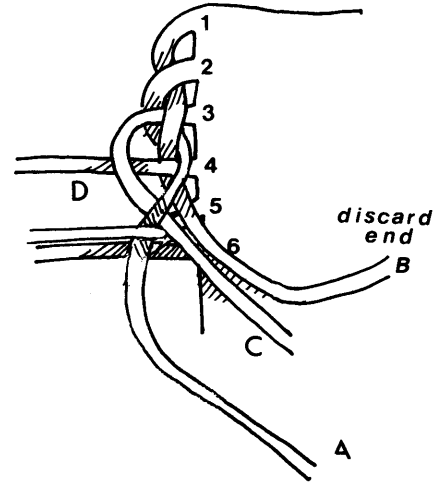


Fig. 12

## PERCHING, MENDING AND STEAMING

Look over the rug carefully, front side and back. Darn in all the ends of the weft joints. Untie all knots and darn in the ends. Check for kinks and unwanted floats in the weft. Ease the kinks out and tie the long floats down with needle and strong thread.

If any spinning grease was left in the weft yarns, dry clean the rug immediately; otherwise just take the rug to the cleaners for steam pressing.

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# *Preparing a Columbia Fleece for Handweaving*

*by Helen Wilson*

## WOOL TO BE SPUN IN THE GREASE

Select the cleanest parts of your fleece which can be teased and carded without washing. Many experienced spinners prefer spinning wool in the grease because they feel it is easier to spin a finer and more even yarn.

## WOOL TO BE SCOURED

There are parts of a fleece that are soiled and stained which must be scoured. It is simple to scour small quantities of wool. Using a small amount of Basic H (a Shaklee-non-polluting, organic cleaner) in slightly warm, soft water, wool may be cleaned with little effort by merely soaking it. This method gives clean wool that retains lots of lanolin for easy spinning.

In a small tub or pan place:

- 2 to 3 gallons lukewarm soft water
- 2 teaspoons Basic H (Shaklees) or (Amway LOC)

Place small chunks of wool, yolk side (dirty tips) down on top of Basic H solution. Let stand without agitating for 6 to 8 hours, or overnight (Steep).

Remove from water, lifting chunks out and gently swishing dirty ends under the water. Lay in colander or strainer to drain and pour dirty water outdoors (Wool fibers or oil may affect your drain).

Refill pan with clear, lukewarm, soft water. Do not crowd wool. Use an extra rinse pan if necessary. Lay wool on top of water and let stand 2 hours or so.

Lift wool out gently. Do not drag through the water. Then lay on clean bath towels in a warm place but not in direct heat. Allow to dry thoroughly.

Larger quantities of wool can be prepared at one time in tubs outside, following the same principles. Air dry on a rustproof screen or rack, not in direct sunlight.

## FACTS TO REMEMBER WHEN HANDLING WOOL

1. Always change water temperatures gradually; never put wool directly from cold to hot water.
2. Always put wool into the water; do not pour water on the wool.
3. Always handle wool gently; do not agitate vigorously.
4. Always support wool with your hands as you remove it from the water; don't drag it.
5. Before dyeing yarn in the skein, be sure to remove all of the oil.



Plate 1  
 Students at the University of Colorado's  
 Center for Lifelong Learning are using  
 homemade Navajo looms to weave tapestries

## The Vertical Loom (continued) Part III, The Navajo Loom

The Navajo loom is basically a vertical frame loom, also called two-bar loom because the warp is supported at both ends by securing it to two beams. The Navajo loom, when it is set up for weaving, is complete, having a tensioning system and a shedding device. Unique, but not exclusive, characteristics of the Navajo loom are the continuous (uncut) warp, the twined heading at both ends of the rug and the twined side selvages.

Instructions to build vertical weaving frames were given in *"The Weaver's Journal"* Vol. I, number 3, p. 21. Fig. 1 shows the finished 4' x 2½' (122 x 76 cm) loom and the list of supplies needed for the construction.

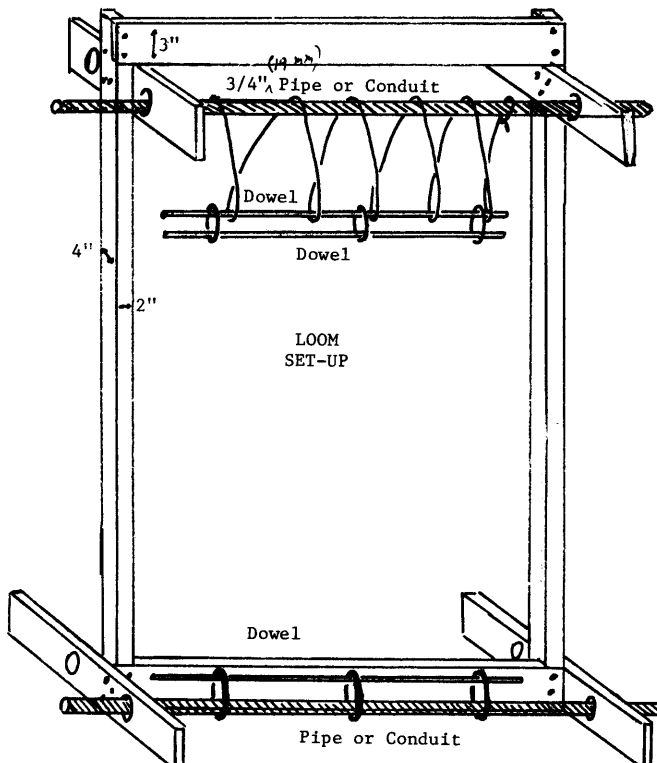
### Additional Hardware Supplies:

- 2 each, 1" (25 mm) diameter conduit 3' (91cm) long
- 3 each ¾" (19mm) diameter dowel 3' (91 cm) long
- 1 each ¼" (6.3mm) diameter dowel 2' (61 cm) long
- 2 each ¾" (19mm) wide flat sticks, 2½' (61cm) long with ¼" (6.3mm) hole drilled at each end.

Note that for a loom larger than 4' x 2½', adjustments have to be made for larger and stronger pieces.

### Additional Software Supplies:

We recommend that the beginner start with a 20" x 28" (50 x 78cm) rug, woven coarsely with the warp set at 6 e.p.i. (24/10cm).



- Frame: Sides, 2 x 4", 4' (122cm) long.
- Top, 1 x 3", 2½' (76cm) long.
- Bottom, 2 x 4", 2½' (76cm) long.
- Legs: 2 x 4", 2' (61cm) long.
- Brackets: 1 x 3", 12" (30cm) long, put on frame with ¼" x 2½" bolts.
- Put together with ½" x 4½" machine bolts.
- 1½" (3.8cm) holes in brackets and legs.
- Distance between frame and center of hole, approximately 2" (5cm).



10 yards (915 cm) of cotton or synthetic rope about  $\frac{1}{4}$ " (6mm) diameter.

One ball of thin cotton seine cord (for example, 12/12 Scandinavian fiskgarn).

10 yards (915cm) of thick strong rug wool, 3 or 4 ply in white or natural (for example, 3 ply rug wool from Henry's Attic).

4 oz. (114g) wool rug warp, strong and thin (for example, frieze wool from Ray's Eclectic).

2 lbs. (910g) single ply rug wool, medium heavy.

### Preparing The Warp:

The warp is measured around two horizontal beams, that is two of the  $\frac{3}{4}$ " dowels, clamped or lashed to supports which lift them at least 6" (15cm) above the ground (see Fig. 2). The outer edges of the dowels are 28" (78cm) apart.

Tie one end of the warp yarn to one of the dowels with a snitch knot as illustrated in Fig. 3.

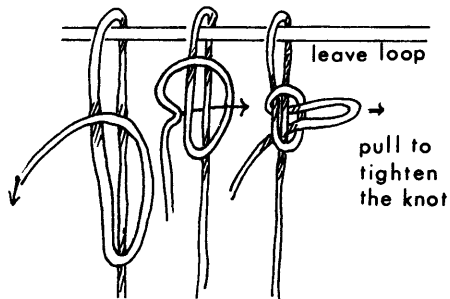
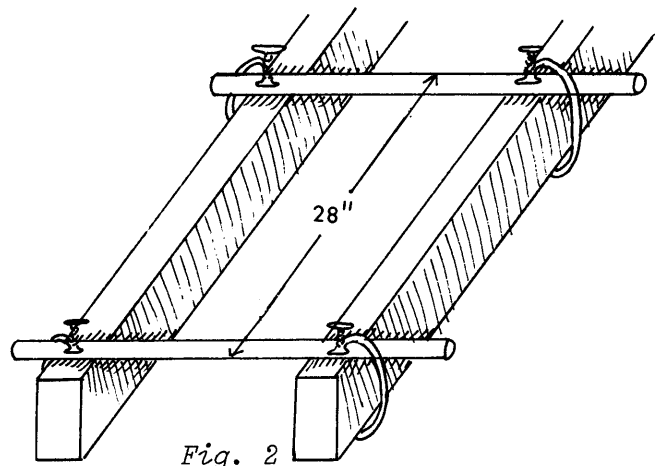


Fig. 3



Wind the warp back and forth around the two dowels in a "figure eight" pattern (see Fig. 4). Keep the tension even but not tight. Arrange the warp loops evenly alongside the dowel. For a sett of 6 e.p.i. the spacing of the warp on each dowel should be 3 loops per inch. Tie the warp off with a snitch knot. Insert a lease stick on each side of the crossing of the "figure eight" and tie the sticks together as shown in Figs. 4 and 5.

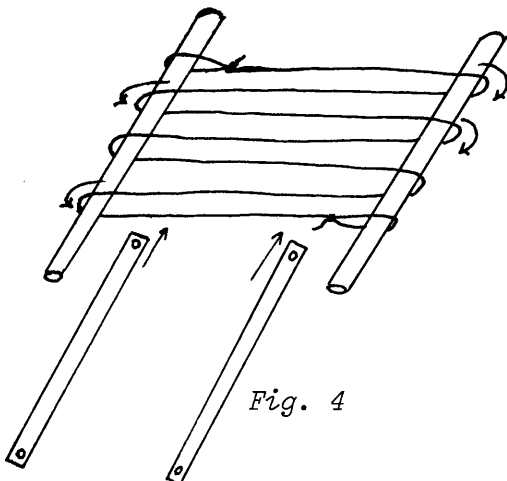


Fig. 4

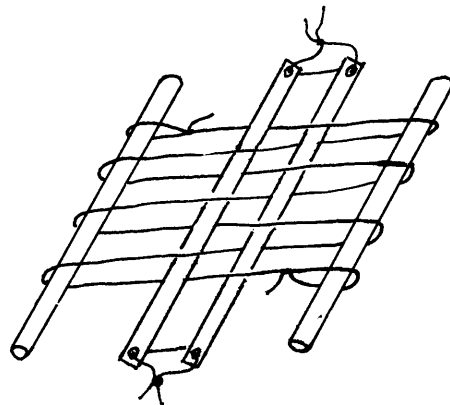


Fig. 5

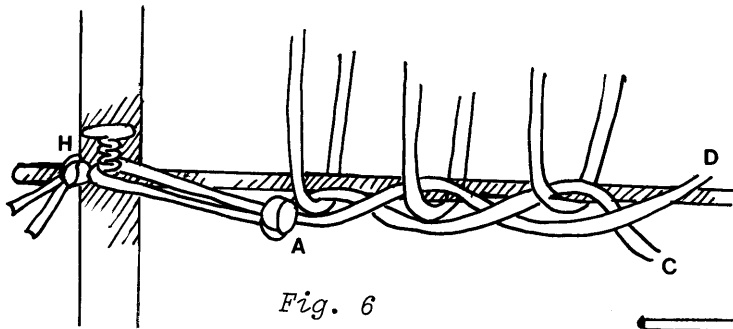


Fig. 6

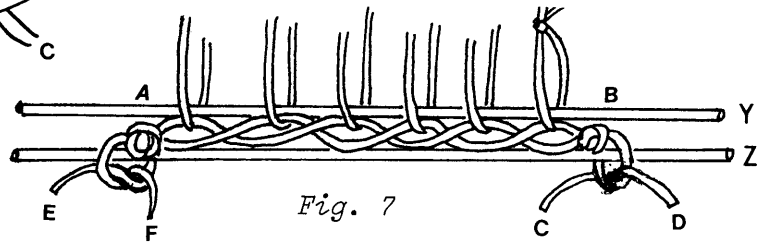


Fig. 7

Twining the Top and Bottom Heading:

For each end, cut two 1-yard pieces of heavy plyed wool. Tie an overhand knot A in the pair, 6" (15cm) from the end. (See Fig. 6).

Temporarily secure the short ends to the clamp H in such a way that knot A is just to the left of the first warp loop. Then, put ends C and D alternately through the warp loops, twisting the cords clockwise as one proceeds forward from left to right. Tug on these cords constantly to the right during the twining. Check the 3 loops per inch (12/10cm) spacing as you proceed. End with an overhand knot just to the right of the last warp loop.

Lacing the Twined Heading to the Dowels:

The procedures should be applied on each of the two headings. Lay a 3/4" (19mm) dowel Z on the outside of the twining cord. Tie ends E and F with a single knot around dowel Z. (See Fig. 7). Wrap the ends around the dowel and tie a second knot. Wrap and tie again. Repeat with ends C and D. Remove dowel Y. Repeat for the other selvedge. Remove the warp from the improvised warping device, (Fig. 8).

Stretch the twining cords AB and A'B' as much as possible. Match knots A and A'; knots B and B' to assure that the distances AB and A'B' are the same. Take a 2-yard (183cm) piece of strong thin cotton cord. Fasten it at point A by wrapping the end around dowel Z and the wrapped twining cord for several turns. Now lace the twining cord onto dowel Z by catching it between knot A and first warp loop and then in between each of the following warp loops (Fig. 9). Do not go through the warp loops. Lace between last warp loop and knot B and tie off by wrapping and hitching.

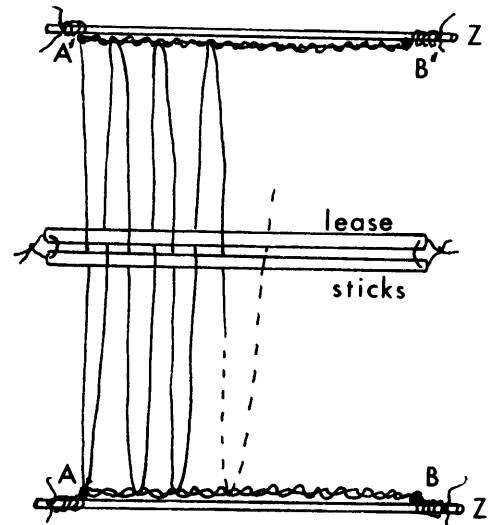


Fig. 8

Prepare the Loom

Attach a strong heavy cord (tensioning cord) onto the upper pipe with a snitch knot. Wrap the cord around the pipe, making around 8 long (7", 18cm) loops. Secure other end with a snitch knot to the pipe, Fig. 10. Insert dowel X into the loops. Tie dowel Z onto lower pipe with short strong cords MM', doubling the cords if necessary. Tie dowel Z' onto X with short

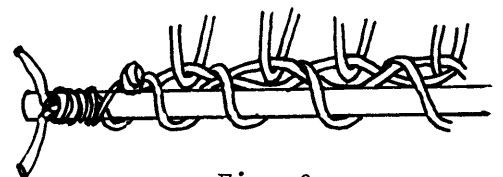


Fig. 9

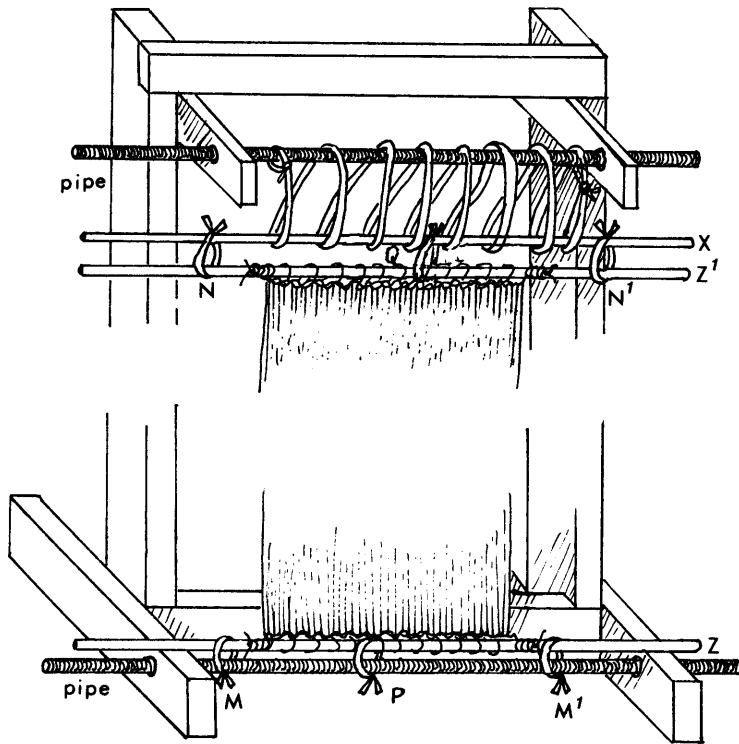


Fig. 10

strong cords N'N' (use square knots). Tie Z and lower pipe together at one or more points in between the first two loops M and M', Fig. 10, for reinforcement. Do the same for Z' and X. These loops P and Q, should be slipped between the dowel and the heading and tied to the pipe.

Tighten the tensioning cord.

### Make Heddles

Keep a ball of thin cotton cord on the right side of the frame loom. Insert one end from right to left alongside the lower lease stick. On the left side of the loom, tie the end of the cord to a  $\frac{1}{4}$ " (6.3mm) dowel (Fig. 11) called heddle bar.

Catch the cord at point A (Fig. 11) between warp 1 and 3. Twist the cord to the right and slide the loop onto the heddle bar (half hitch). Catch the cord at point A for a second time. Adjust length to about 1 to  $1\frac{1}{2}$ " (15 to 38mm). Twist the cord to the left and slide the loop on the heddle bar (reverse half hitch), Fig. 12.

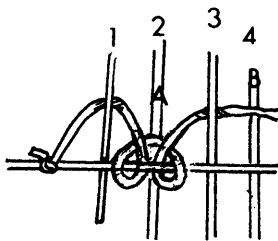


Fig. 12

stable.

The lower lease stick may now be removed. The upper stick remains and assumes the function of the shed stick.

### Side Twined Selvedges (Optional)

For each side cut one 2-yard (183cm) length of heavy plyed wool. Insert the yarn under the heading cord between knot A and the first warp loop, Fig. 13.

Pull half the length through and fold in half.

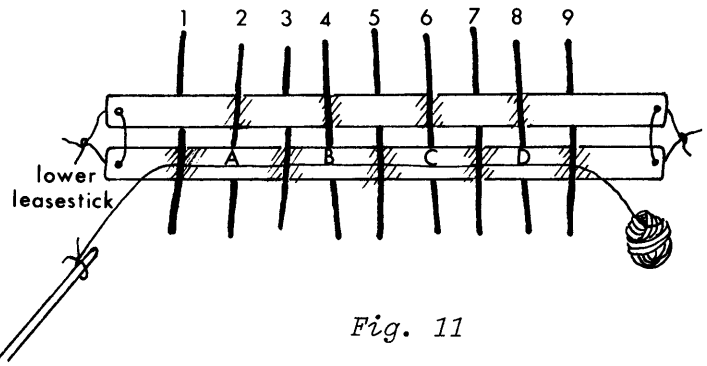


Fig. 11

Do the same at point B, C, D, etc. Cut the cord from the ball and secure the end to the heddle bar. Length of loops at points A, B, C, etc. should be even in order to pull out the warp threads uniformly during the weaving process. Note that the Navajos make their heddles with half hitches only, however the double half hitch is more

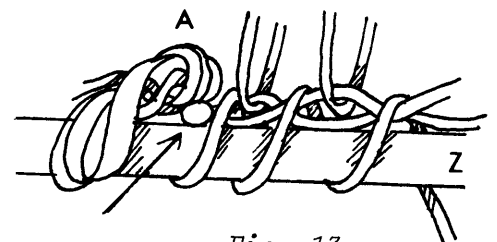


Fig. 13

Twist the folded left selvedge clockwise, the folded right selvedge counterclockwise with about a dozen twists. Then bring those selvedge cords up behind the heddle bar and shed stick and tie onto dowel Z' (Fig. 10) with a snitch knot. Insert the shed stick between the two twisted cords, below the first twist, Fig. 14.

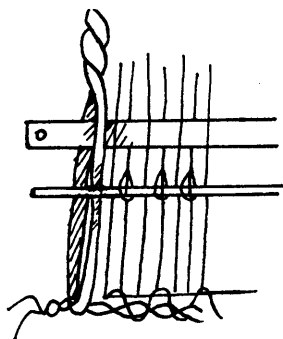


Fig. 14

### Weaving

By putting the shed stick on edge, all the even warps are raised and form the first shed. A sword is inserted below the heddles to enlarge the shed. The weft is passed from right to left through the shed. The end is wrapped around the outer right warp or around the selvedge cord lying in front of the shed stick and folded back into the shed. The weft yarn has to "bubble" to allow for take up. The weft is beaten in with a fork. Remove sword. Flatten the shed stick and push it upward. Now pull on the heddle bar. The odd warps will come forward and make a new shed. Insert sword. Weave from left to right.

Note: For the shed opened by the shed stick, the weft weaves between the two selvedge cords. For the pull shed, the weft is carried in front of both selvedge cords. Thus the weft wraps around the selvedge cord lying in front of the shed stick. After each 3/4" (19mm) of weaving insert a finger in the twist immediately above the shedstick, Fig. 15, and move the shedstick into the position held by that finger. The weft will now wrap around the second selvedge cord.

### Rules to Keep in Mind

- Keep the warp very tight.
- Weave tight around the side selvedges, then relax the weft in the shed.
- Bubble the yarns, if not, the sides will draw in.
- Make sure that the warp does not show.
- Each pick of weft should be horizontal, no waves.
- The warp should be evenly spaced after the first 1/2" (12mm) is woven.
- A temple or stretcher may be used in the back of the loom, right below the fell.

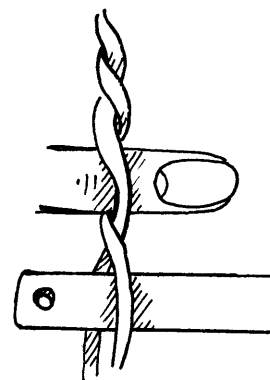


Fig. 15



### **WEAVING CLASSES AND WORKSHOPS:**

Clotilde Barrett, editor and publisher of *"The Weaver's Journal"* and Barbara Knollenberg, fashion editor, give workshops and classes at The Weaver's Journal offices. Other instructors will be scheduled soon. Send inquiries to:

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*Plate 1 Soumak Totebag  
woven by Jeanne Richards*

## *Make a Soumak Sampler Into a Tote Bag*

There is no better way to acquire weaving knowledge than to make samplers. Yet beginning weavers have a strong urge to convert their newly-acquired and often expensive yarns into something that they can use and show off. For them, projects like the soumak bag illustrated in Plate 1 will be most rewarding. It may be woven on a two-harness loom or on a frame loom. The background is a weft face plain weave woven with a dark weft that packs in well. The soumak wefts are plyed yarns wound on finger shuttles (butterflies). The colors are bright. A temple, which stretches the web just below the fell, facilitates the weaving and improves the craftsmanship.

### Description of the Bag Illustrated in Plate 1

WARP: 3/2 cotton carpet warp.

BACKGROUND WEFT: Dark synthetic mill ends.

SOUMAK WEFT: 3 ply rug wool in various colors.

FINISHED SIZE OFF THE LOOM: 17" (43cm) wide x 29" (74cm) long. Note that the warp has to be at least 24" (61cm) longer than the finished project to allow for the loom waste, the take-up and the shrinkage.

WIDTH IN THE REED: 18" (45cm).

SETT: 5 e.p.i. (20/10cm). Total number of working ends: 90.

SELVEDGES: On each side the two selvedge ends (argatch) are twofold through the heddles and through the reed.

THREADING: Plain weave.

WEAVING INSTRUCTIONS: Weave in a filler to space out the warp evenly. Next, weave  $\frac{1}{2}$ " (12.5mm) with a fine weft to avoid bulk in the turned-under seam when assembling the bag. Start and end the project with  $2\frac{1}{2}$ " (63.5mm) of background weave, that is, weft face plain weave. Weave at least  $\frac{1}{2}$ " (12.5mm) of background weave between each soumak pattern.

All the soumak techniques described here are done with the shed closed. The stitches are short or long depending on whether the wrapping is done over one or more warp ends. For this bag, as for rugs, the soumak weft is only carried up to the argatch where the butterfly is brought underneath by passing it between the 2nd and 3rd warp ends. The selvedge warp ends are built up by weaving them back and forth with the ground weft which also weaves one or two full picks between each row of soumak. The soumak butterfly is brought back to the top for the next pattern pick. When starting or ending a soumak weft, let about  $1\frac{1}{2}$ " (38mm) hang out. Open the shed so that the 1st warp on that side is raised and tuck the end into the shed. See Fig. 1.

## SOUMAK TECHNIQUES

Direction of the pattern pick: Soumak may be woven left to right (L-R) or right to left (R-L)

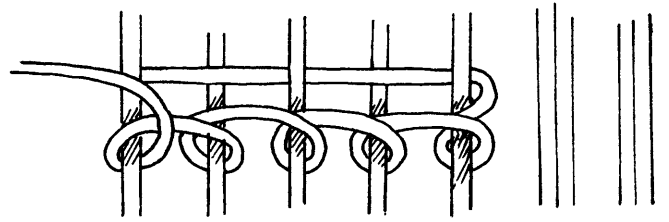


Fig. 1

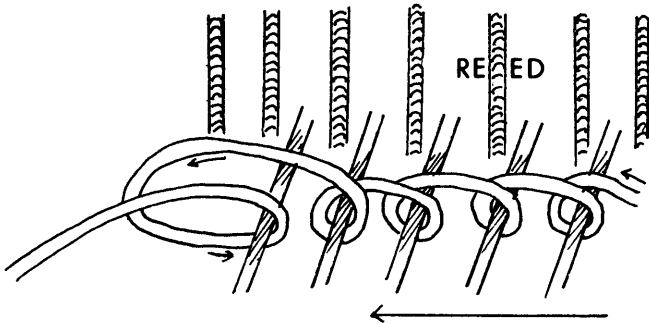


Fig. 2A

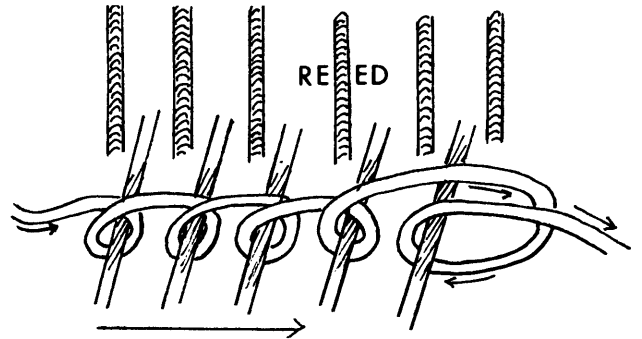


Fig. 2B

Locking Soumak - See Fig. 2A and B

The soumak weft is laid on top of the warp and close to the reed, going forward over 2 (or more) ends; the butterfly is then passed back under one (or more) warp ends and wrapped around it in front of the loop.

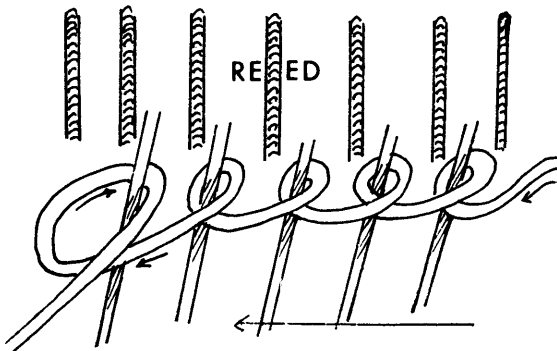


Fig. 3A

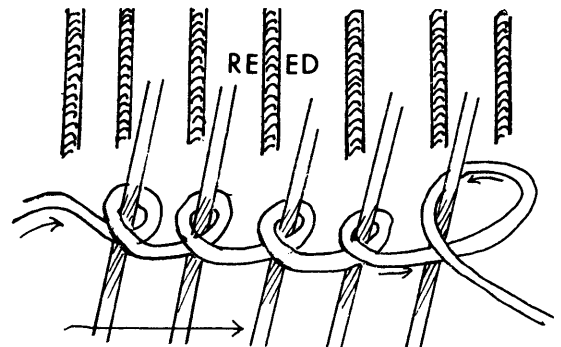


Fig. 3B

Non-locking Soumak - See Fig. 3A and B

The soumak weft is laid on top of the warp and close to the weaver, going forward over 2 (or more) ends; the butterfly is then passed back under one (or more) warp ends and wrapped around it behind the loop.

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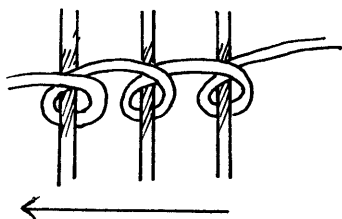


Fig. 4A

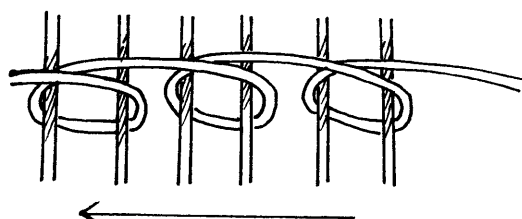


Fig. 4B

Length of the Soumak Stitch - See Fig. 4A and B

When the soumak weft passes over 2 warp ends and then wraps back around 1, the stitch is called a 2/1 soumak. Thus the soumak illustrated in Fig. 4B is a 4/2 soumak. Larger stitches are very decorative while small stitches make a firmer fabric suitable for rugs.

Double Soumak - See Fig. 5

Start the pick by making two locking soumak stitches, wrapping around end 1 then 2. Then go back and wrap around end 1 again with a locking soumak moving backward. Now go forward with a soumak stitch wrapping end 3, then go backward with a soumak stitch wrapping end 2; continue.

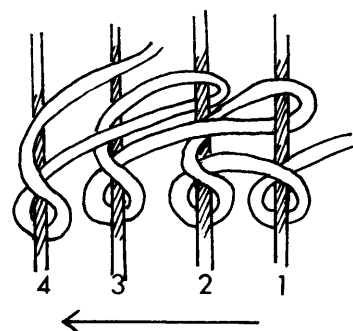


Fig. 5

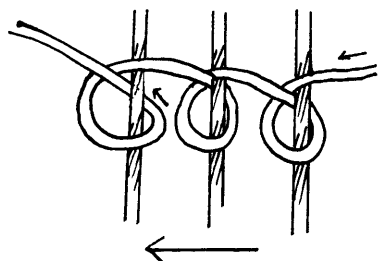


Fig. 6A

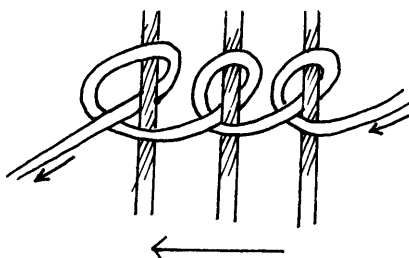


Fig. 6B

Bushongo Soumak - See Fig. 6A and B

For the Bushongo in Fig. 6A the first step is to lay the weft on top of the warp and close to the reed, going forward over one (or more) end. The butterfly is then wrapped around that end, being passed under from right to left.

For the Bushongo in Fig. 6B, the soumak weft is laid on top of the warp and close to the weaver, going forward over one (or more) end. The butterfly wraps around the end and passes under from right to left. Note: an interesting effect is achieved by alternating one stitch of Fig. 6A and one stitch of Fig. 6B.

Gauze Soumak - See Fig. 7

Gauze soumak is so-called because the soumak weft is inserted in the same way as if one were to make 1/1 leno. In leno the weft is pulled taut to force the warp ends to twist. In soumak the weft is so relaxed that the warp ends are allowed to come back in their original position forcing the weft to fold back and forth.

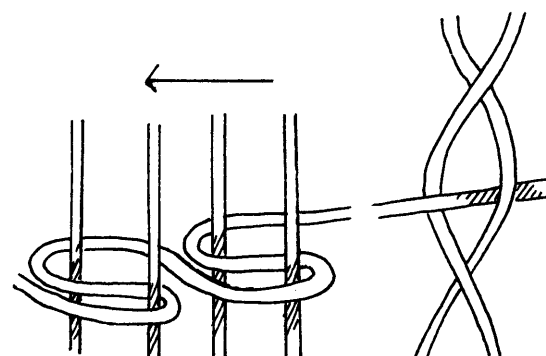
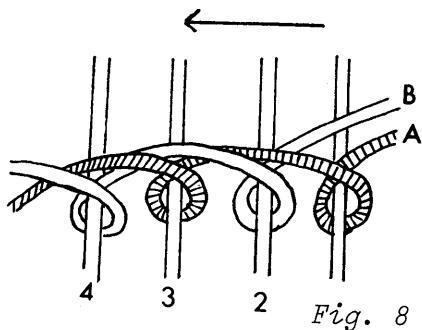


Fig. 7



Two-Color Soumak - See Fig. 8

Fig. 8 illustrates a single locking soumak with pattern wefts of different colors A and B. Weft A wraps around end 1, weft B wraps around end 2, weft A makes a 3/1 soumak wrapping end 3, weft B makes a 3/1 soumak wrapping end 4 and so on.

Two or more color wefts may be used on all other soumak techniques.

**SOUKAK PATTERNS IN THE BAG, FROM TOP DOWN**

- Pink band: R-L 2/1 locking soumak.  
L-R 2/1 locking soumak.  
R-L 2/1 non-locking to center, locking end.
- Violet band: R-L 3/2 non-locking soumak.  
L-R 3/2 non-locking soumak.
- Turquoise band: R-L 4/2 locking soumak.  
L-R 4/2 locking soumak.  
R-L 4/2 non-locking soumak.  
L-R 4/2 non-locking soumak.
- Blue band: R-L 4/2 double locking soumak.  
L-R 8/4 double locking soumak.  
R-L 8/4 double locking soumak.
- Green band: Two rows of Bushongo soumak over paired warp ends.
- Blue-Green band: Several rows of locking and non-locking soumak with two colors, starting each row with the same color.
- Blue-Purple band: Several rows of locking and non-locking soumak with two colors, starting the rows with alternate colors.
- Pink-Violet band: Two rows of double soumak.
- Pink band: Several rows of gauze soumak.

The backside of the bag, (not shown) is a sampler for further study of soumak techniques such as vertical soumak, soumak blocks, and soumak ridges. The weaver may explore these techniques and will find excellent resource material in Peter Collingwood's book "The Technique of Rug Weaving" pp. 191-204.



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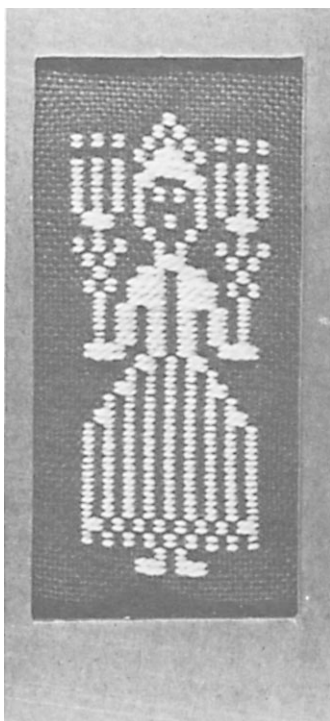
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# A Christmas Card



This 4" x 8" Christmas card, woven in bronze and white wool, will be mailed free to all subscribers who order a two-year gift subscription to *"The Weaver's Journal"* for a friend during October, November and December, 1977. The design is a 12 harness adaptation of a draw-loom pattern by Victoria Strand<sup>1</sup>. This Santa Lucia, celebrating "Light" during the dark winter months, is a typical Scandinavian holiday motif.

The weave structure is overshoot, alternating tabby wefts and pattern wefts. One could consider it as a multi-harness interpretation of "Monk's Belt"<sup>2</sup>. On a regular loom the design requires 22 harnesses (See Fig. 1A), *i.e.* 2 harnesses per pattern block. The use of long-eyed heddles (strung on harnesses 1 and 2) makes it possible to weave the motif on a 12 harness loom. (See Fig. 1B).

The principle of the use of long-eyed heddles in weaving requires two sets of harnesses. The front set (H1 and H2) is threaded H1, H2, H1, H2, etc. and allows plain weave to be woven across the entire warp. These harnesses have heddles with eyes long enough that a shed can be formed through them. These second sheds are the pattern sheds opened by lifting the appropriate harnesses of the rear set of harnesses. Each warp end of the pattern thus passes through two heddles (a regular one and a long-eyed one). See Fig. 2.

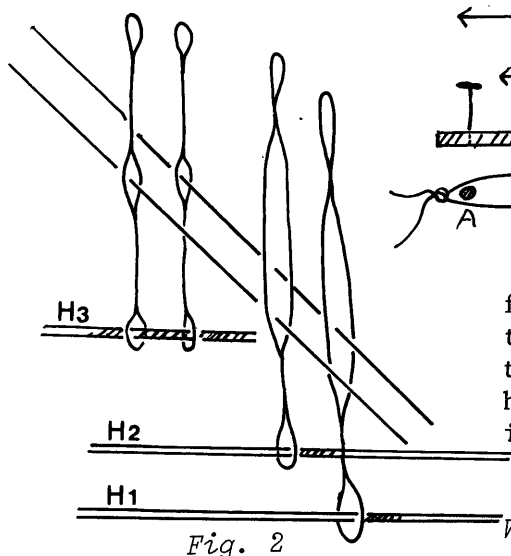


Fig. 2

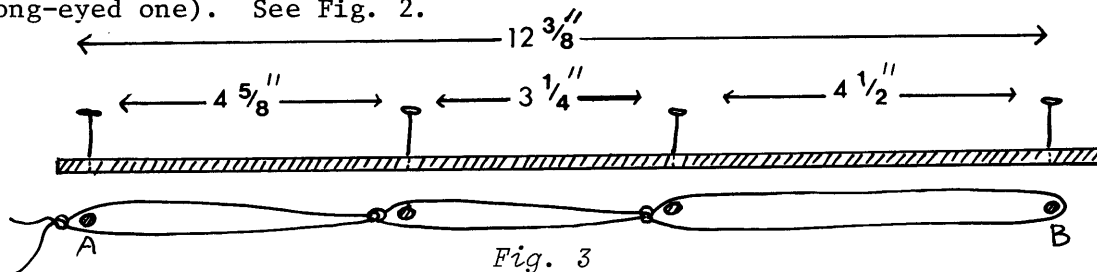
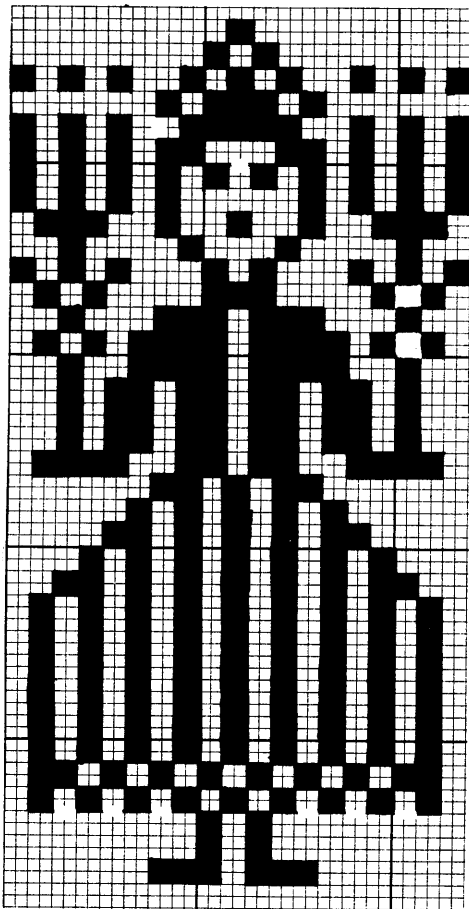


Fig. 3

Fig. 3 shows the measurements of long-eyed heddles for a loom using standard 12" (30cm) heddles. For this project make groups of 19 heddles, stacking them neatly on the nails. Slip them carefully onto holders at point A and B. A total of 104 heddles is needed.

For information on making string heddles see *"The Weaver's Journal"* Vol. 1 No. 2 p. 35.

1. Strand, Victoria. A Christmas Greeting, *Handweaver and Craftsman*. Fall, 1961, p. 17 and p. 45.
2. Black, Mary, *New Key To Weaving*, pp. 234-136.



*The Weaver's Journal*

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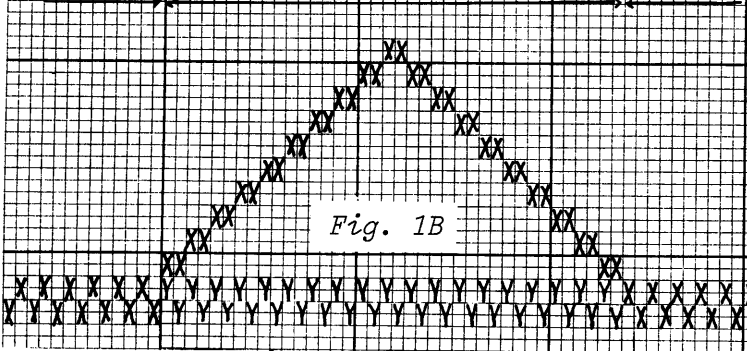
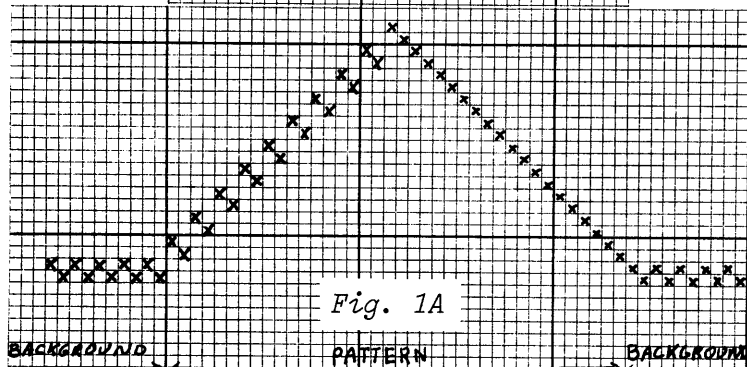
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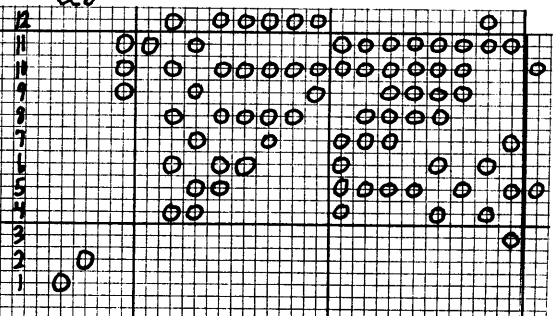
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X for regular heddle  
Y long-eyed heddle

ab



## Weaving Instructions For The Christmas Card:

WARP: Bronze wool worsted capable of weaving balanced tabby at 15 e.p.i. (60/10cm).

WEFT: Tabby: same as warp

Pattern: 2/2½'s Tapestry worsted, white

WIDTH IN THE REED: 12" (30cm) - makes three figures

SLEY: 15 e.p.i. (60/10cm)

TOTAL NUMBER OF WARP ENDS: 180 divided as follows:

14	38	20	38	20	38	14
Background border	Figure	Background	Figure	Background	Figure	Background border

THREADING: Beam the warp first and thread by picking from lease sticks.

Remove all heddles from H1 and H2. Thread the pattern warp ends on harnesses 3 through 12 according to Fig. 1B. On each of harnesses 1 and 2, slip 7 regular heddles, 19 long-eyed heddles, 10 regular, 19 long-eyed, 10 regular, 19 long-eyed and 7 regular.

Now thread harnesses 1 and 2, allowing the pattern warps to go both through a regular and a long-eyed heddle. Weave in overshot fashion, alternating a pattern pick and a tabby pick.

Note that the figure is woven face down. This method was necessary because no additional harness was available to lift the warp ends of the area between figures for the pattern weft to float under them. These warp ends go through one heddle only and this has to be a regular heddle to shed properly.

The use of long-eyed heddles offers the weaver a wealth of possibility of loom-controlled designs requiring more harnesses than he has available, including multiple block double weave.

"*The Weaver's Journal*" will publish more articles on this technique including special tricks for the owners of four-harness looms who normally cannot take advantage of the long-eyed heddle technique.



## *Book Reviews* by Clotilde Barrett

INDIGO AND THE ANTIQUITY OF DYEING by Frederick Gerber.  
Frederick H. Gerber, Florida, 1977, 59 pp. \$4.75.

A great portion of this booklet deals with anthropological and archeological speculation related directly or indirectly to the art of dyeing in prehistoric times.

Indigo dyeing is complex as compared with other natural dye techniques. Yet the extraction of dye from indigoferous plants and its application to fiber as well as the use of insect and shellfish dyes and mordants, is spread worldwide and is of very early date. These facts led the author to study the migration of cultures as well as isolated cultural developments. There are, however, different approaches to the use of indigo and a long chapter is devoted to the different indigo dye techniques, from the more primitive all-organic vats, using urea and ash, to the modern inorganic vats.

The dye methods described here are empirical, the way they came down from antiquity, rather than the result of studio testing. Readers should not expect this to be a mere recipe book.

Woad dye fanciers, too, will find interesting material in this book.

SPINNING AND WEAVING WITH WOOL by Paula Simmons. Pacific Search Press, Seattle, Washington, 1977, 217 pp. \$9.95.

For many years Paula Simmons has had first-hand knowledge of raising sheep, selecting and caring for fleeces, and weaving. Her book, "Raising Sheep The Modern Way" (Garden Way Publishing 1976), is invaluable to all wool producers. Now she is sharing her vast experience with handspinners and weavers.

Three fourths of the book is devoted to spinning; it is valuable both as an instruction book and as a reference book. The author describes the characteristics of fleeces and teaches the reader how to evaluate and how to handle them. The chapter on carding includes descriptions of all types of carders available to the handspinner as well as their use. The informative chapter on the structure, styles and operation of spinning wheels will help the spinner to care for and better adjust his wheel. It will help a potential buyer to evaluate the vast number of wheels that are on the market today. The descriptive and illustrated catalogue of spinning wheels included in the book is especially helpful. The section on hand spindles is less thorough and still leaves open gaps in spinning literature about various ways of spinning and plying with the Mexican malacate and the Navajo and Salish spindles.

Instructions for learning to spin on spindles, spinning wheels and great wheels constitute a large portion of this book. Beginners, intermediate, and advanced spinners will appreciate Paula Simmons' techniques and advice for better control of the yarn and for creative results. Construction plans are given throughout the book for carders, spinning and weaving equipment.

The last chapter deals with weaving and knitting with handspuns. This section starts out as any elementary weaving textbook with definitions and basic weaving concepts. These could have been dealt with by just referring the reader to other, more comprehensive textbooks on weaving. The handspinner will mostly appreciate the author's instruction and advice on dealing with the special problems that occur when weaving and knitting with handspun yarns.



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# A Survey on

## The Availability of American Wool

by Mary L. Derr

For this issue of *"The Weaver's Journal"*, we conducted a survey to find out more about the interrelation between handweavers and spinners and the wool industry. The survey, done with the cooperation of the American Sheep Producers Council, was conducted in the spring of 1977. We thank all who answered the questionnaires and contributed to the success of this project.

The survey was in two parts. A first questionnaire was sent to 105 woolen mills, yarn dealers and others involved in the processing of wool. Of these, 49 questionnaires were completed and returned. A second questionnaire was sent as a follow-up to those who indicated a willingness to answer further questions on yarn production.

The first questions sought to find out to what degree American wool is used in yarns which are sold to handweavers, what control the manufacturer or seller has over the processing of the wool and the selection of the fibers, the characteristics of the woolen yarns they handle, and what form American wool fiber is available to the weaver.

We found that 38 of the companies or dealers sold woolen yarns to handweavers and 35 sold woolen raw fibers to handspinners. Raw animal fiber other than from sheep were handled by 24 of the dealers. Answers from 19 companies or dealers indicated they sell yarns spun from wool and other animal fiber and 26 sell or manufacture wool and synthetic mixed yarn. Of those reporting, 17 sell other yarns as well, including linen, cotton and various synthetics. However, woolen yarn was the most popular, with raw wool fibers a close second.

The response concerning the control of put up, dyeing, spinning, scouring, carding, blending and selecting raw fibers was varied. Some reported no control of any of these steps while others, especially fiber craftsmen who raise their own sheep, said they had complete control of all these processes. The Shelburne Spinners of Vermont wrote, "We pride ourselves in the fact that we have control over the whole process of turning raw fleece into yarn to sell". Specifically, of those who returned the questionnaire, 22 reported control of put up and dyeing, 24 of spinning, 16 of scouring, 19 of carding, 19 of blending and 22 of selecting raw fibers. So it would appear that there is more control of spinning than of any other process, with put up, dyeing and selecting raw fibers next. However, over half of the people surveyed reported no control at all, for they sell manufactured yarn.

Though more people get their wool unscoured, the difference is not great. Those getting their wool unscoured were 28, while 23 got it scoured.

Some companies, like Plymouth Yarn of Pennsylvania, wrote: "We have all our scouring, carding, spinning and dyeing done on a commission basis at many plants in the U.S."

The question, "What are the characteristics of the fibers of the wool you handle?" elicited a great variety of answers. These included "Expensive", "Raw", "New Zealand and domestic skirted fleeces, rovings and tops", "58's to

62's quality", "varied", "fibers selected for worsted spinning", "medium fleece wools, 50 - 54's 3 inch staple", and "med. domestic". Robin and Russ Handweavers in Oregon wrote, "Most of ours is not American wool. I purchase all and have it done in England. Cannot do it here in USA. You have to order tremendous amounts to do this in USA". Straw Into Gold in California reports their yarns are "custom handspun for us on production wheels".

Ginger Shive of The Shearing Shed in Oregon reported that when she selects raw wool she looks for the length of staple, quality, foreign matter and color. She wrote, "Our largest problem . . . is the contamination of the wool -- American ranchers just don't know or care to know how to put up clean wool. They could learn a lot from our English 'cousins'".

The second step of the survey asked recipients whether they knew if the wool they handled was American wool, what breed of sheep it came from and whether they produced special fiber for handweavers. They were asked if handweavers write for special yarns or dyes and whether they can fill requests. What equipment do they use for scouring, spinning and dyeing, what dyes are used, are these dyes available for handspinners and weavers and do they prefer the dyeing done in the fiber or in the yarn? Only 13 of the 33 people who were sent this questionnaire responded, but their answers were interesting and very helpful.

Ten of them, most of whom raise their own sheep, reported they knew the wool they handle is American wool. Two said some of their wool is American and some is from other sources. Seven knew the breeds of sheep that produced their wool, while three said they consider only the quality of the wool, not the breeds, while one person said he sometimes knew, but not always.

Seven of those answering said they produce special fibers for handweavers. All 13 reported they receive requests for yarns and nine were asked for dyes. However, only seven said they could fill these requests, though four more said they sometimes could.

The equipment used to process the wool differed somewhat. Though some commission scourers to clean the wool, those who did their own scouring reported using dye vats, standard scouring equipment; four use bathtubs and wringer washers, and some handwash the wool in a large tub. The spinning was done with treadle spinning wheels; cards, spinning frame and twistors; Bradford Worsted; and mule or Whiting Frames. For dyeing, some used stainless steel pots, a gas stove and bathtub. The mills used a pressure vat or sent their wool to commission dye houses to be dyed.

As for the dyes used, three said they dyed with natural dyes, four used acid dyes and two chrome dyes, but only one person said the dyes were available for handcrafters, and he referred to natural dyes only. Six people preferred their wool dyed in the fiber and seven wanted it dyed in the yarn.

Some people reported they were working to develop good natural black wool or various shades of gray and white. M. Grandin Nettles of Textile Studios Inc. in Massachusetts said his company is developing a new line of wool and silk blend yarn.

From the survey, we learned the following:

1. Wool is the favorite yarn with most handcraftsmen, though most often they

do not know nor care whether the wool is American or imported.

2. Wool users, unless they grow their own sheep, have very little control over the processing of the wool or the characteristics of wool fiber.
3. Though handspinners and handweavers often write mills and dealers for information about yarns and dyes, only a small fraction of their requests are ever filled.
4. The flow of information about dyes between the dealer or manufacturer and the handweaver is very meager and confined only to natural dyes.

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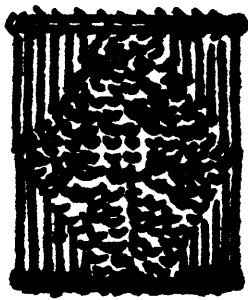
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