



Shuttle Craft Guild Virginia City, Montana
Volume XXIX Number 10 October 1952





SOURCES OF SUPPLIES FOR WEAVERS

All of the products recommended here have been thoroughly tested in the Shuttle Craft Guild Studio and found satisfactory and to meet with all advertised claims. The firms have been found to be reliable in all respects. In most cases, payment is required with the order, and shipping charges are added. Please mention the Shuttle Craft Guild when writing to these distributors.

LOOMS

The Macomber Ad-A-Harness. Manufactured and distributed by L. W. Macomber, 166 Essex St., Saugus, Mass. An exceptionally efficient, strong, well made jack-type loom which folds conveniently. All looms made to hold 10 harnesses but may be purchased with 4 or more, also 12 and 16. Solid and sectional warp beams available and beam brake if desired. Widths: 32", 40", 48", 56". Also Tensioner and spool rack.

The Gilmore. Manufactured and distributed by E. E. Gilmore, 330 S. Commerce St., Stockton 34, Calif. An exceptionally strong, well made, Jack-type loom—the original pushup harness loom. 4 to 8 harnesses, folding or rigid, sectional warp beams. Widths: 22 to 56 inches. Also excellent shuttles, tensioners, and Inkle Looms.

The Leclerc. Manufactured by Nilus Leclerc Inc., L'Islet Station, Quebec, Canada. Distributed direct and through agents. The "tops" in 4-harness counter-balanced looms. Widths: 27", 36", 45", 54", 90". Also fine auxiliary equipment and Tapestry Looms.

The Structo. Manufactured by Structo Mfg. Co., Freeport, Ill. Distributed directly and through agents. A hand-operated 4 or 8 harness table loom of sturdy construction, equipped with solid warp beam and steel beam to hold Structo Ready-Warped Spools. Widths: 8", 20", 26". Stands available.

GENERAL WEAVING SERVICES

Searle Grain Farm Home Weaving Service, 318 Grain Exchange, Winnipeg, Manitoba, Canada. A general service specializing in looms and materials, particularly imported materials: Irish, French and Canadian linens; Canadian rayons, U.S. and Canadian novelties, Egyptian cottons, Scotch, English and Australian wools.

Hughes Fawcett, Inc., 115 Franklin St., New York 13, N.Y. A general service to handweavers, selling looms of many types, a wide selection of all kinds of materials, equipment of all types, and standard weaving books. Also certain specialties.

MATERIALS

Lily Mills Co., Handweaving Dept., Shelby, N.C. An exceptionally wide selection of cottons in many colors, fast dyes. Also weaving wools, linens, metallics and some novelties. Belt shuttles.

Contessa Yarns, 3-5 Bailey St., Ridgefield, Conn. Excellent source for a wide variety of specialty and novelty yarns at low prices. Samples of special offerings sent monthly. Also regular stock of fast-color carpet warp and linens. Searching service for that unusual yarn.

Royal Society, Inc., 230 Fifth Ave., New York 1, N.Y. Highest quality standard tweed yarn in wide color range and heather mixtures, novelty flecked tweeds, and 2/18 worsted in 22 colors.

Tinsel Trading Co., 7 W. 36th St., New York 18, N.Y. Metallic yarns, and metallic combinations in all types and colors, including the ever-useful supported metallics.

The Weavers' Workshop, Dodgeville, Wis. Those unusual, hard-to-get yarns such as spun silk and silk noils, Bernat Afghan, imported Irish linens, novelty wools, silks and linens, Bobbin Lace materials.

PUBLICATIONS

Craft and Hobby Book Service, Box 1931, Carmel, Calif. Almost all weaving books, foreign and domestic, in stock. Will order any others. Special searching service for out-of-print books. Also Art and Design books and books on other crafts.

Handweaver And Craftsman, 246 Fifth Ave., New York 1, N.Y. The all-inclusive periodical for all handweavers. Published quarterly. (Send them your news items too.) Mary Alice Smith, Editor.



Shuttle Craft Guild Virginia City, Montana
Volume XXIX Number 10 October 1952

The Shuttle Craft Guild
HANDWEAVER'S BULLETIN
Published monthly in
Virginia City, Montana by
Harriet and Martin Tidball



HANDWOVEN WOOL YARDAGES

Wool is one of the "permanents" in textiles for clothing and domestic uses, and consequently for the handweaver: always in fashion, always useful and always delightful to work with. In Volume 22, 1952 of AMERICAN FABRICS the assertion is made that although one marvels at the miracle fibers science has produced, the natural wool fiber remains at the top, the only one which "only Divinity could fashion." The Wool Bureau Inc has presented through AMERICAN FABRICS an analysis of the qualities of the natural wool fiber, which summarizes as follows. Wool can be stretched 30 to 50% of its length and still springs back to its original dimensions. It can be twisted, pulled out of shape, subjected to great strain under the driest or wettest of conditions, and it always returns to its original size and form. It absorbs up to 30% of its weight in water without becoming appreciably damp. Wool is the most wrinkle-resistant of all fibers. It has the greatest warmth without weight and the greatest insulation power. It takes dye the most beautifully and permanently of all fibers. Wool is non-inflammable, which means that under intense heat it will char but does not burn with a free flame. Fiber wool is produced in an infinite number of diameter thicknesses and lengths. With a tremendous difference in degrees of crispness, softness, bloom and resiliency, it provides ideal fibers for thousands of different fabrics in all weights. It weaves into plain or fancy designs, into beautifully subdued color blendings or glowing combinations.

Thus, the handweaver who works in wools often finds this the most rewarding of all handweaving. But, -- and this "but" is a large one -- if the wool fiber is to be used to produce a fabric worthy of its potentialities, the greatest care must be applied to the designing and production of the fabric.

Worsted and Woolen Yarns

The worsted yarn is the most refined, highest quality of wool yarns, though all worsteds are not of top quality so one cannot rely merely on the fact that a yarn is worsted. The wool for worsted yarn has been carded and then combed until all short fibers have been eliminated and the remaining long fibers all lie in parallel alignment. This gives a yarn of high luster and considerable strength, which may be spun very fine. The worsted is measured on a scale of size 1 containing 600 yards per pound. The most common worsteds used by the handweaver are 2/16s with 4800 yards per pound, 2/18s with 5600 yards per pound and 2/32s with 9600 yards per pound. Bernat Fabri is the highest quality French-spun worsted, 2/16 with 4800 yards per pound, mothproofed, and exceptionally strong, elastic and lustrous. English Weavecraft comes in 2/16 and 2/32, and domestic worsted for handweavers in 2/18 and 2/32. Royal Society Tam'O Shanter is 2/16, and Lily Mills Weaving Wool is 2/14, with 4200 yards per pound. Coarser worsteds are commonly sold for knitting and are variously called baby wool, sports wool, knitting worsted, and by a variety of trade names. These have varying yardages, sizes seldom given, so the weaver must measure a ball or skein to determine the yardage per pound. Worsted fabrics require little or no finishing or processing.

The woolen yarn is made of short fibers which are carded but not combed, and therefore lie in all directions, twisted into a yarn. Tweed yarns, homespun and homespun-type yarns are woolens. They are most generally used in single ply, tightly twisted form. The standard measurement system for wool yarns is the "cut" with size 1 or 1-cut yarn having 300 yards per pound. The most common woolen yarn size is 9-cut, with 2700 yards per pound, and this includes Beehive Tweed, Waterside, Kent, St Stephen, and others. The Handweaving Yarn Co tweed is 12-cut, with 3600 yards per pound. Scotch and English tweeds come in these two sizes and also in 6-cut, with 1800 yards per pound, in 16-cut, with 4800 yards per pound.

Woolen yarns are used for tweeds, rough woolens, blankets, and for any fabric on which a nap is desired. Worsteds are used for hard-surface, high quality, light weight fabrics. The domestic and English worsteds make excellent suitings, while the French-spun worsted is tops for suitings but is also more

versatile and may be used for scarves and baby blankets and other fine fabrics. Worsted and woolen yarns should not be combined in the same fabric except in special circumstances such as when worsted and cleaned woolen yarns are used in both warp and weft. The practice of weaving tweed weft on a worsted warp should be deplored, as this is simply a make-shift which is sometimes suggested to beginners because a worsted warp is easier to handle than a woolen warp. Woolen yarn should be fulled, whereas fulling reduces the quality of the worsted, and the combination produces an off-balance fabric which does not drape and tailor to best advantage. It is suggested that the beginner in wool weaving start with the highest quality of worsted yarn for both warp and weft.

Planning the Yardage

In most cases the first step in making a wool yardage is sampling. Fortunate is the weaver who keeps on his shelves small quantities of various types of yarns, so that the sampling may be done without a special yarn order. Sampling is the guide to the quantity of yarn needed, as well as to the color arrangement, the warp set and the weave. Set up a short warp (perhaps 2 yards long) and at least 6 inches wide. Weave this in tabby, in twill, and in fancy twills, and with various color arrangements if such are desired; then change the warp setting and repeat, until several seemingly satisfactory samples have been woven. Weave 6 to 8 inches of each arrangement which seems worth considering. Then finish the material by steam pressing or washing and steaming as required, and cut each sample into a separate swatch for judging. In a sample warp colors or different types of yarns may be subtracted and added to the warp simply by cutting out unwanted warp ends and hanging new ones on bobbins at the back of the loom.

When the final fabric is determined, estimate the yarn requirements by the formula: warp width in inches, times the number of threads per inch, times the total warp length. This gives the warp requirement, and only slightly less is required for weft. Always order a little more than the figures indicate, the safety margin being about 1/6th more. Remember that delivery of yarns takes considerable time, and that dye lots change; that wiring for a few ounces of yarn to be air mailed is more expensive than ordering an extra

pound at the outset. A weaver can always use left-over yarns. A yardage which requires several colors or types of yarn cannot be figured as closely as one which uses a single color, or one color for warp and another for weft. If the beaming is to be done by the sectional method, order extra yarn for spool waste. Do not expect your yarn dealer to plan your yardage, or even to advise you. The yarn dealer does not know your tastes, nor does he have time to read a length discussion of them. The margins on handweaving yarns are so narrow that if prices are not to increase, the dealer cannot afford to answer questions by letter. Some dealers offer suggestions regarding yarn requirements and warp settings on their sample cards. Others advertise consultation service, which may be taken advantage of, though this does not mean designing service. The weaver who wishes to have actual designing done must seek a competent designer and be prepared to pay a rather stiff fee (usually about \$3 an hour for time required) for the designing and sampling. The serious weaver will wish to do his own designing through sampling.

Length and Width of Warp

Wool yarns, which are tender, must be handled with considerably more care than cotton warps. The very long warps often used with cottons are not feasible with wools because when wools are held under tension on the loom for long periods, the yarn becomes brittle and breaks readily. Wool yarns have a much greater tendency to break or pull apart than cottons or linens; consequently each yardage project is commonly warped separately, though if a long yardage is to be woven off immediately, a warp of from 20 to 24 yards may be handled.

Suiting and yardage materials are commonly handwoven in single widths or 27 to 28 inches finished. The standard double width of 54 to 56 inches is too wide for the handloom. Most tailors say that the single width is the most economical width for cutting -- that is, as many yards of 36" material will be required for a suit as if the material were 28" wide. For dressmaker patterns or for non-standard articles of clothing, the wise weaver will purchase the pattern before planning the fabric, and will determine from the pattern what length and width will cut to best advantage. The average man's suit requires 7 yards of single-width cloth, and the average woman's

tailored suit 5 to 6 yards. A woman's coat takes 4½ to 5 yards, a jacket about 3 to 5 yards, a shirt about 2½ to 3 yards. Without extra fullness or large sleeves, one may calculate 2 lengths, plus the sleeve length, and a safety margin of ½ yard extra.

The amount of shrinkage in wool yardages cannot be calculated with exactitude in advance, as this is determined by several factors: mainly the warp set and the amount of final processing required. For woolen or tweed yarn, the warp width of 32" will usually give a finished width of 27" or 28". Worsteds which are not fulled after weaving have practically no shrinkage and may be calculated on the basis of loom take-up, so a warp width of 30" will usually give a finished width of 28".

There is considerable length take-up in wool, due to the beam tension as well as to shrinkage. An allowance for loss of 1 yard for 6 to 8 finished yards is advisable for woolens. In most cases a warp length of 9 yards is advisable if a finished 7-yard suit length is desired, 6½ to 7 yards for a finished length of 5 yards. The loom waste will vary with the weaver's experience, loom habits, and the experimenting to be done at the outset. Worsted yardages may be calculated much more closely, and usually an allowance of 3" per yard is sufficient for take-up.

Warping Wool Yardages

In most cases wool warps are wound on the warping board or the warping mill, and are chained for beaming. Some weavers prefer the sectional method, though the necessity for winding the wool onto spools and then carrying it through the tensioner is additional handling which weakens the warp and increases breakage. The sectional method is uneconomic of time and yarn for short warps, though with the use of the yarn measurer sold by Mr and Mrs Fred J Blum, Jr, RR 1, Box 114C, West Chicago, Ill, spool wastage is reduced. If only a sectional beam is available, it is suggested that a guide-stick holding pegs which correspond exactly to the pegs of the sectional beam, be fastened to the back beam to guide a chained warp onto the beam. Making and beaming an individual chain for each bout is wasteful of time and leads to unreliable tension.

In warping on either a peg-board or a warping mill, measure the wool warp with as little tension as

possible. Warpers, except for the very experienced, will find it easier to carry a single thread at a time on the board. If more than one thread is warped at once, there must be no twists between them, except at the end pegs where the direction is reversed, and the cross must be exact, thread-by-thread. If the warp is to be raddle beamed, a cross is required at both ends, though the second cross may be made in groups which correspond to the number of warp ends to be placed in each raddle space. The thread-by-thread cross is called the 'porrey' cross and the secondary one is called the 'portee' cross, and the chaining must start at the porrey cross. If the warp is made on a mill, a number of threads may be warped together (as many as 7 or 9 if desired) by carrying them through a warping paddle containing holes and slots. The same rules for the cross must be followed.

If the warp is composed of two or three colors which are to occur in regular sequence, wind each color individually, and make the color arrangement when slewing or raddling the warp for beaming. Do this by arranging one color across the entire reed or raddle, leaving dents or spaces for the other colors. Then place the second chain on top of the first and arrange this; then the third and fourth chains if there are further colors. When weaving plaids or fancy stripes, it is advisable to make the exact color arrangement while winding the warp, though this requires winding only 1 or 2 ends at a time.

Make several chains of from 100 to 200 ends as several small chains are easier to handle than one or two large ones. Never permit the warp to remain on the warping board or mill under tension. If warping is interrupted, always chain off what has been warped before leaving the job.

A good skein-holder or swift is important to the wool weaver, as many wool yarns come in skeins. The squirrel-cage or the umbrella types are usually most satisfactory, and large ones will hold 2 or 3 skeins together. When winding tubed or balled yarns, a good system is to place the tube or ball on the floor (on a peg or in a bowl) and then carry the strand up to a cup-hook in the ceiling, in front of the warping board. Otherwise, the tube may be held on a spool rack which is placed several feet behind the warper. Though tubed yarns are easier to handle in warping, the wool deteriorates faster on tubes than in skeins, so yarn

which is to be kept for any length of time is safer on skeins. Skeined yarns may be wound with a ball-winder and slipped onto an empty tube for warping.

Beaming Methods for Chained Wool Warps

The most rapid wool beaming is done by the raddle method. Raddle beaming is the gentlest of all methods and should be preferred if the warp is tender or of dubious quality. The raddle is a board the length of the warp beam which is divided into $\frac{1}{2}$ " sections with pegs, and has a removable top. A satisfactory home made raddle may be made of a narrow piece of hardwood (a length of flooring, for instance) into which finishing nails are driven, in a perfectly straight line, at half-inch spaces. A narrow piece of grooved lumber or flooring may be clamped or tied securely over the nails when the warp is in place. (For a make-shift, stout rubber bands may be stretched over the nails to keep the warp in place.) All wood must be sanded perfectly smooth. The warp is distributed evenly in the raddle (10 ends per dent if the warp set is 20 per inch, 12 per dent if it is 24, etc) from the secondary or portee cross, at the end where the chain opens. The tie-in is simplified if the loops are left at the end of the chain and a leash stick is placed through these before the warp is raddled. This stick may then be tied directly to the warp-beam stick to eliminate the knotted tie-in. The position of the raddle on the loom depends somewhat upon preference, and somewhat upon the nature of the loom. In some cases it may be fastened upright to the top-castle, the warp carried down and around the back beam to the warp beam. It may be fastened to the back beam and the warp carried over the top-castle if this has no obstructions; or the harnesses may be removed or the heddles pushed aside and the warp carried directly through the loom.

Two people are required for raddle beaming, one to turn the beam and insert the beam padding, the other to hold the warp at tension for beaming. The loom is placed so that there is the longest possible distance in front of it. The maximum length is unchained and the holder grasps the chains (it is best to divide the warp in half, holding a half in each hand) and simply walks up to the loom, supplying the tension while the beamer turns the beam. The original tension of the warping-board is transferred to the warp beam, and the warp is never pulled or

handled to readjust the tension on individual threads. The only handling of the warp chains is a shaking motion to separate the threads as much as possible, though sometimes the beamer finds it advisable to beat the tensioned warp with a flexible stick to help this separation. When the holder is as close to the loom as is feasible for maintaining good tension, additional yards are unchained and the process is repeated. When the beaming is completed, the thread-by-thread cross, or porrey cross, hangs over the back beam ready for threading.

There are several disadvantages to raddle beaming, the first one being that the weaver must have an assistant. Another is that tension is not always uniform and perfect. Perhaps the most important disadvantage is that the warp threads do not go onto the beam in perfect threading order. Since $\frac{1}{2}$ " of warp is beamed in a group, the individual threads in the group are apt to be twisted around each other, necessitating constant straightening of the warp ends during weaving. The threading cross is kept in the warp throughout the weaving, between the harnesses and the back beam, with leash sticks. Each time the warp position is changed these sticks must be pushed to the back beam, so that the twists occur between the back and warp beams and the warp is in order between the back beam and the harnesses. Thus, time saved in beaming is lost during weaving, and weaving rhythm is constantly interrupted.

A common beaming method is the substitution of a reed for the raddle, by sleying the warp and then attaching it to the warp beam and beaming. For this method only one cross is necessary in the chain and the chain is made in the usual manner, the original thread-by-thread cross being used for the sleying guide. The beamer places leash sticks in the cross in front of the reed and pulls these the full length of the warp to organize the thread order. At the conclusion of the beaming the cross is transferred to the back of the reed, and the reed is removed so that threading may proceed. Although the warp goes onto the beam in perfect order, the original warp tension is lost through the friction of the reed and the leash sticks. It is this method which leads to the endless warp tangles, combing, pulling, and broken warp ends which have prejudiced so many weavers against the use of wool warps. If a reed must be substituted for a raddle, secure a 4-dent reed and try to warp by the raddle method without carrying the cross throughout.

A third warping method is a refinement of the reed-spread method, in which the warp is both sleyed and threaded before beaming. Although the system is not practical for very tender or very fuzzy warps, the solo weaver will prefer it as it offers a means for beaming at perfect tension, with every warp end in exact order, without the help of an assistant. The warp is sleyed from the cross, threaded, and the cross is removed. The easiest threading is done if (on a 2 per dent sley) a leash stick is placed through the side of the cross toward the reed and this is tied flatly against the reed so that the pairs of sleyed warp ends emerge through the reed separated. The cross may then be abandoned and the threads for drawing-in selected in up-down or down-up order, according to the position of the edge thread. Dismantle the loom for threading, and support the sleyed reed in front of the harnesses. When threading is completed, make the warp beam tie-in and reassemble the loom. Grasp the warp as far from the breast beam as possible and tension it strongly (an assistant is helpful for this one simple process). Step on tabby treadles, alternately, for four sheds and insert a $\frac{1}{2}$ " or $\frac{3}{4}$ " dowel in each shed. The dowels must be longer than the warp width, and are tied together in pairs, at each end.

Unchain the warp as far as possible, and tension it at the farthest distance from the loom by pulling and shaking until it is stretched as perfectly as possible. Then tie the chains around a chair or a small table, which is weighted sufficiently to hold the warp off the floor. Pull the two dowel sticks which are resting away from the reed about a yard down the warp. This gives a perfect thread arrangement between the two pairs of dowel sticks, and between the second dowel sticks and the harnesses. The pair of sticks which rest at the beater serve as tensioners, putting an even tension on every individual warp end. If the loom is jack-type, it is wise to prop the harnesses to a position where the warp will extend straight from the reed, through the heddles, to the back beam, without being drawn down at an angle by the heddle eyes. Then turn the warp beam, winding on the warp, until the first pair of dowels meets the second pair. If the tension on the warp beam is too great, remove the dowel nearest the reed to reduce it. Repeat this process, pulling down a pair of dowels for one yard and then beaming, until the warp holder has reached the loom. If more warp remains chained, loosen the chains and repeat the entire process, until the warp is in the

tie-in position, completely beamed.

Considerable straightening, and pulling out of twists, is required when the two front dowels are pulled down the warp, though this is partly dependent upon the perfection of the thread order in the original warping, and the care with which the chains are tensioned in the first handling. Handle the warp as little as possible and as lightly as possible. As with other beaming processes, the wider the warp set, the easier the beaming. It is advised that the weaver using this method for the first time make a fairly short warp of narrow width, possibly a scarf warp.

Sleying

Wool warps should be sleyed at 2 ends per dent. Sleying at 1 per dent creates a friction which makes shedding difficult, if not impossible. A sley of 3 per dent is usually satisfactory, and the sley of 2, 1 alternately may be used if necessary. A sley of 3, 2 alternately is also feasible, though the regular sley of 2 per dent is always best.

Warp Settings

A wool warp allows the handweaver a good bit of freedom in warp setting. However, a wool warp which is too widely set must be fullled more and will consequently shrink a great deal more than a correctly set one. A too closely set warp will lead to either a stiff, board-like fabric, or to an unbalanced weave, which should be avoided at all costs in weaving wool. If the weaving is to be done in tabby, the warp may be set more widely than if it is to be twill. A closely set warp, woven in perfect balance (exactly as many weft shots per inch as there are warp ends) gives a hard-surfaced fabric which crease and wrinkle resistant. A fabric set and woven too loosely will be sleazy, susceptible to wrinkling and to pulling out of shape, and will have a tendency to develop fuzz balls on the surface. For tweed or homespun-type yarns woven in twill, 6-cut yarn sets well at 14 to 16 ends per inch, 9-cut at 20 per inch, 12-cut at 24 per inch, 16-cut at 32 per inch. Worsteds of 2/16 size set for twill at 28 to 32 ends per inch, 2/18 at 32 to 36, 2/32 at 40 or more. For tabby weaving, set 6-cut tweed at 12 to 14, 9-cut at 16 to 18, 12-cut at 20 to 22 and 16-cut at 24 to 28. Among worsteds the

the French-spun types, including Bernat Fabri, permit greater freedom in tabby warp settings than do the more wiry worsteds.

Selvages

If the threading is a straight twill, usually no special handling of selvages is required. The selvage will be cut off, so occasional loops or uncaught threads are of no moment. However, the twill may be threaded 1,3,2,4 for the first and last succession, which in plain twill or herringbone will weave as tabby. If the twill weaves with an uncaught thread at each selvage, merely break the weft and change it to the opposite side, and the edges will weave in. If there is an unwoven warp on one side only, changing the weft direction will merely shift this to the other side, so the solution is to remove the thread. A warp which has an uneven number of total warp ends will have one loose thread. If the threading starts on harness 1, and proceeds 2,3,4, it should end on either harness 2 or 4 to give a good selvage on both sides. Under no circumstances double the warp ends in the selvage threading, or sley the selvages closer or wider than the body of the fabric. Rely on good weaving practice to produce a good selvage.

Weaving Wool Yardages

The warp tension for wools should be strong enough to permit the easy separation of sheds, but still as light as possible. Tension should always be loosened when weaving is not in progress. Twill sheds separate more easily than tabby sheds, and easiest if the new pair of harnesses is raised before the old pair is released. This action is automatic with a counter-balanced loom, but with a jack-type loom requires "walking" of the treadles, which is the most rhythmic and energy saving treadling motion there is. For "walking" the center two treadles must be tied in reverse position when weaving a straight twill, so that the operating order is: treadle 1 with left foot, 3 with right, 2 with left, 4 with right.

It is imperative in weaving wool fabrics that the beat be such as to give a perfectly balanced textile. There should be exactly as many weft shots per inch as there are warp ends, and the balance should be judged (or counted) with released tension. The twill line

should make an exact 45 degree diagonal. The perfect balance is best maintained if the weaving is rhythmic. Determine at the outset how the beat is best made. This may be one tap of the beater before the shed is changed, and one after shed changing; it may be a single beat before shed changing, or a double beat, or it may even be a single or double beat on a closed shed, if the weave is rather open. The most efficient beat usually occurs when the weaver can rhythmically coordinate beating and shed changing so that the reed hits the weaving edge at the exact moment the shed changes. If the beater is not slung at the floor, all beating should be on open sheds. Throw the shuttle on the shuttle race, and never touch the edge of the warp with either the shuttle or the hand. Do not interrupt the weaving rhythm to adjust selvages. A perfect rhythm will lead to good selvages. Six inches is far enough to weave without changing the warp position as weaving a greater width will lead to a tightening of the warp tension near the reed, and consequent streaking and irregularity in the fabric. A good practice is to release the tension on the cloth beam by one notch after weaving 3 or 4 inches. If a weaving error is made more than 2 or 3 shots back, the weft should be cut out rather than unwoven, as unweaving is apt to make the warp weak and fuzzy. Cut the weft at both sides just inside the selvages, through the error, and pull it out, opening the sheds if there is great friction. Never allow an error to remain in a yardage. If an error is made and not discovered in time for correction, cut the yardage at the error before taking it to a tailor, or at least darn a bright colored thread across it as a warning. When a bobbin runs out, never cross two weft ends in the body of the weaving; always discontinue at the selvage and enter the new weft there. Crossing or otherwise fastening weft ends into the selvage is not necessary in a yardage which is to be cut. Never permit a knot to occur in the weft; break the weft at the knot and take it back to the selvage. If a warp end breaks, do not tie a length onto the broken end and continue with a knot in the warp; make a bobbin of the warp material and let it hang over the back beam of the loom, weighted if necessary, to have exactly the same tension as the warp. Substitute this for the broken end, through the heddle and reed dent, fastened around a pin to the weaving edge. All such loose ends must be darned into the fabric, over and under several wefts, as soon as the fabric is removed from the loom. If the warp has been well beamed

the entire warp may be woven in one piece. However, should the warp tension become irregular the only solution is to cut off the woven fabric, retie, and start weaving again. An occasional loose warp end may be tensioned by hanging a thread weight onto it, under the back beam. This may be one of the thread weights distributed by Mrs Hayes of Rochester, N Y, or a clip-on clothes pin will serve.

Finishing Wool Fabrics

There is some debate about whether or not worsted yardages should be washed after the weaving. For medium or poor quality worsteds which have made troublesome warps, washing is advisable. Use a light washing in luke warm or cold water with a mild soap, and rinse in water of the same temperature. Do not wring or twist, but extract the water in an automatic washer, or rush it to a laundry for extraction. Pull the yardage into shape. For drying, the best method is to hang crosswise across many clothes lines, or between two clothes racks, with not more than a yard between supports. Lacking these facilities, hang it with the warp parallel to a clothes line, with clip-on clothes pins every 2 or 3 inches holding the selvage. Do not hang in the direct sun, or allow to be exposed to cold air or to wind. When the yardage is dry, have it professionally steamed.

A high quality worsted such as Fabri or Tam 'O Shanter needs only steaming as finishing. Have this done professionally, by a reliable cleaner, and be sure that he simply steams the material and does not put the iron on it. Ironing flattens the fabric, removes some of its life, and makes it more susceptible to wrinkling. The more a wool fabric is ironed, the more it must be ironed. This method of steaming only, should be used for all wool yardages.

Woolen fabrics must be "fulled" or washed and felted after they are removed from the loom. This removes the oil which woolen yarns contain, or should contain, and loosens the fibers, to make a compact, closely knit cloth. Do not be alarmed if your tweed seems on the loom to resemble a burlap sack, or if the yarn is dirty or greasy. This is as it should be, and the full beauty of the fabric will emerge only after the fulling. Dry cleaning is not a true substitute for washing, though sometimes circumstances necessitate

it. Some contend that the washing water should be luke warm and other weavers adhere to the traditional cold water method originating when tweeds were fullled in running streams. Either temperature seems to be equally satisfactory, provided the water remains at the same temperature for the entire process. Use a mild soap generously for the washing. The yardage may be placed in a bathtub for fulling, and trod on until sufficient nap is raised, but an automatic washer which does not have an agitator provides the easiest method. The length of wash will depend upon the amount of nap and shrinkage desired; usually about 12 minutes is adequate, but sometimes 24 or 36 minutes are not too long. When the extraction is completed, it is well to pull the yardage lengthwise and crosswise to eliminate wrinkles and obviate undue shrinkage. Drying may be done as described under worsteds, or the yardage may be rolled very tightly in wool blankets and left over night, before the professional steaming.

Tailoring

Only the finest tailoring is worthy of a piece of handwoven yardage. The "home made" appearance should be avoided at all costs. Often the handweaver meets with resistance from a good tailor, who may say that handwoven fabrics are difficult to work with. This usually means one of two things: that the tailor has been confronted with poorly woven fabrics in the past, or that he does not think the fabric the weaver is showing him will tailor well. A poorly woven or unbalanced fabric will not drape or tailor well, and no good tailor wishes to use a fabric which will not do his craft justice. A correctly woven and finished handwoven fabric presents no problems which are not presented by a comparable machine-woven fabric. It is always wise to consult the tailor as soon as the basic sampling has been done, and to have him make suggestions and select the sample he thinks will work up best.

This is the first of a series of articles on weaving with wools. Included in the series will be the subjects of color effects in fabrics, threading and weaving unusual fabrics, and methods for making fancy twill tie-ups. The information is intended to replace and supplement that given in the TWILL booklet which is out of print.

The CLASSIFICATION of HANDLOOM WEAVES
Concluded from Aug and Sept 1952

CLASS VI - THE DOUBLE WEAVES

These are the weaves which produce two independent fabrics, or two fabrics which are woven together throughout even though the two surfaces appear to be independent. In both cases the weaving of both surfaces proceeds simultaneously. Double fabrics may be produced on 4, 6, 8 or more harnesses. Patterned Double Weave might be considered here, though it fits better under the Unit Weave classification.

The Single Warp Double Weave: Threaded on a 4-harness twill, the single warp Double Weave produces two tabby fabrics if the warp is set twice as close as for tabby. The many variations include tubular and double width cloths, Finnweave, quilted fabrics. Threaded on 8-harness twill, two twill surfaces may be woven, or any two 4-harness weaves may be combined in an 8-harness threading for Double Weave.

Single Warp Double-Faced Weave: The weave in which the two surfaces are interwoven at regular intervals to give a single cloth composed of two individual surfaces.

Two-Warp Double Stuffer Weave: The weave in which a second warp, beamed independently, falls between two surfaces of a fabric. One of the finest of rug weaves.

Warp Pile Weave: A weave in which a second warp, beamed independently, is used to form a pile.

CLASS VII - THE LENO WEAVES

These are the weaves in which warp ends are twisted around each other by means of doups, to form an open or marquesette fabric. The doup technique was made available to handweavers by the research of Mary M Atwater, and is adaptable to almost all jack-type looms.

Plain Leno: The weave which twists pairs of warp ends together across the entire warp, the alternate weave being tabby. Woven on 4 harnesses with the basic tabby threading on harnesses 3 and 4, the doups on harness 2 and standards on harness 1.

- Leno with Plain Weave Stripes: Six harnesses are required, leno areas threaded as above, and tabby areas on harnesses 5 and 6.
- Pattern Leno: Leno alternated with tabby blocks, in which each pattern block requires 4 harnesses, threaded similar to the above.
- Three-Thread Leno: This weave for 8 harnesses which produces two pattern blocks makes an unusual leno twist, but no true tabby.

CLASS IX - THE RHYTHMIC WEAVES

This may be considered a "catch-all" or miscellaneous class into which many weaves which have little relation to other techniques are placed. The name has been selected because there is a definite threading system for each of these weaves which seems to follow a rhythm rather than a unit, block or twill system. Although there are many minor weaves which fall into this Class, there are three important weaves.

Broken Twill Variations: These are the twills which do not follow the twill rules throughout. They include the Dornik Point Twill in which certain threads are dropped to improve the textile quality. Other Broken Twills are used for pattern and texture variations and provide a wide designing scope.

The Opposites Weaves: Although many of the Opposite Weaves could be classed as variants of the Overshot, there are others which do not follow the twill rules. The weaves have an importance in the designing of modern textiles which exceeds the usefulness of strict Overshot, and therefore deserve separate consideration.

The Shadow Weave: This is another weave which handweavers owe to the research of Mary M Atwater -- a technique which has not yet come into its own, though it has the potentialities for an important medium for modern, interpretative textiles. The drafts are based on rhythmic alternations of light and dark threads, and the weave is tabby except for 2-thread skips outlining the vague shadowy patterns.

The PORTFOLIO has 4 samples of woolen and worsted in twill and tabby.

Harris D Tidball

SOURCES OF SUPPLIES FOR WEAVERS

All of the products recommended here have been thoroughly tested in the Shuttle Craft Guild Studio and found satisfactory and to meet with all advertised claims. The firms have been found to be reliable in all respects. In most cases, payment is required with the order, and shipping charges are added. Please mention the Shuttle Craft Guild when writing to these distributors.

LOOMS

The Macomber Ad-A-Harness. Manufactured and distributed by L. W. Macomber, 166 Essex St., Saugus, Mass. An exceptionally efficient, strong, well made jack-type loom which folds conveniently. All looms made to hold 10 harnesses but may be purchased with 4 or more, also 12 and 16. Solid and sectional warp beams available and beam brake if desired. Widths: 32", 40", 48", 56". Also Tensioner and spool rack.

The Gilmore. Manufactured and distributed by E. E. Gilmore, 330 S. Commerce St., Stockton 34, Calif. An exceptionally strong, well made, Jack-type loom—the original pushup harness loom. 4 to 8 harnesses, folding or rigid, sectional warp beams. Widths: 22 to 56 inches. Also excellent shuttles, tensioners, and Inkle Looms.

The Leclerc. Manufactured by Nilus Leclerc Inc., L'Islet Station, Quebec, Canada. Distributed direct and through agents. The "tops" in 4-harness counter-balanced looms. Widths: 27", 36", 45", 54", 90". Also fine auxiliary equipment and Tapestry Looms.

The Structo. Manufactured by Structo Mfg. Co., Freeport, Ill. Distributed directly and through agents. A hand-operated 4 or 8 harness table loom of sturdy construction, equipped with solid warp beam and steel beam to hold Structo Ready-Warped Spools. Widths: 8", 20", 26". Stands available.

GENERAL WEAVING SERVICES

Searle Grain Farm Home Weaving Service, 318 Grain Exchange, Winnipeg, Manitoba, Canada. A general service specializing in looms and materials, particularly imported materials: Irish, French and Canadian linens; Canadian rayons, U.S. and Canadian novelties, Egyptian cottons, Scotch, English and Australian wools.

Hughes Fawcett, Inc., 115 Franklin St., New York 13, N.Y. A general service to handweavers, selling looms of many types, a wide selection of all kinds of materials, equipment of all types, and standard weaving books. Also certain specialties.

MATERIALS

Lily Mills Co., Handweaving Dept., Shelby, N.C. An exceptionally wide selection of cottons in many colors, fast dyes. Also weaving wools, linens, metallics and some novelties. Belt shuttles.

Confessa Yarns, 3-5 Bailey St., Ridgefield, Conn. Excellent source for a wide variety of specialty and novelty yarns at low prices. Samples of special offerings sent monthly. Also regular stock of fast-color carpet warp and linens. Searching service for that unusual yarn.

Royal Society, Inc., 230 Fifth Ave., New York 1, N.Y. Highest quality standard tweed yarn in wide color range and heather mixtures, novelty flecked tweeds, and 2/18 worsted in 22 colors.

Tinsel Trading Co., 7 W. 36th St., New York 18, N.Y. Metallic yarns, and metallic combinations in all types and colors, including the ever-useful supported metallics.

The Weavers' Workshop, Dodgeville, Wis. Those unusual, hard-to-get yarns such as spun silk and silk noils, Bernat Afghan, imported Irish linens, novelty wools, silks and linens, Bobbin Lace materials.

PUBLICATIONS

Craft and Hobby Book Service, Box 1931, Carmel, Calif. Almost all weaving books, foreign and domestic, in stock. Will order any others. Special searching service for out-of-print books. Also Art and Design books and books on other crafts.

Handweaver And Craftsman, 246 Fifth Ave., New York 1, N.Y. The all-inclusive periodical for all handweavers. Published quarterly. (Send them your news items too.) Mary Alice Smith, Editor.