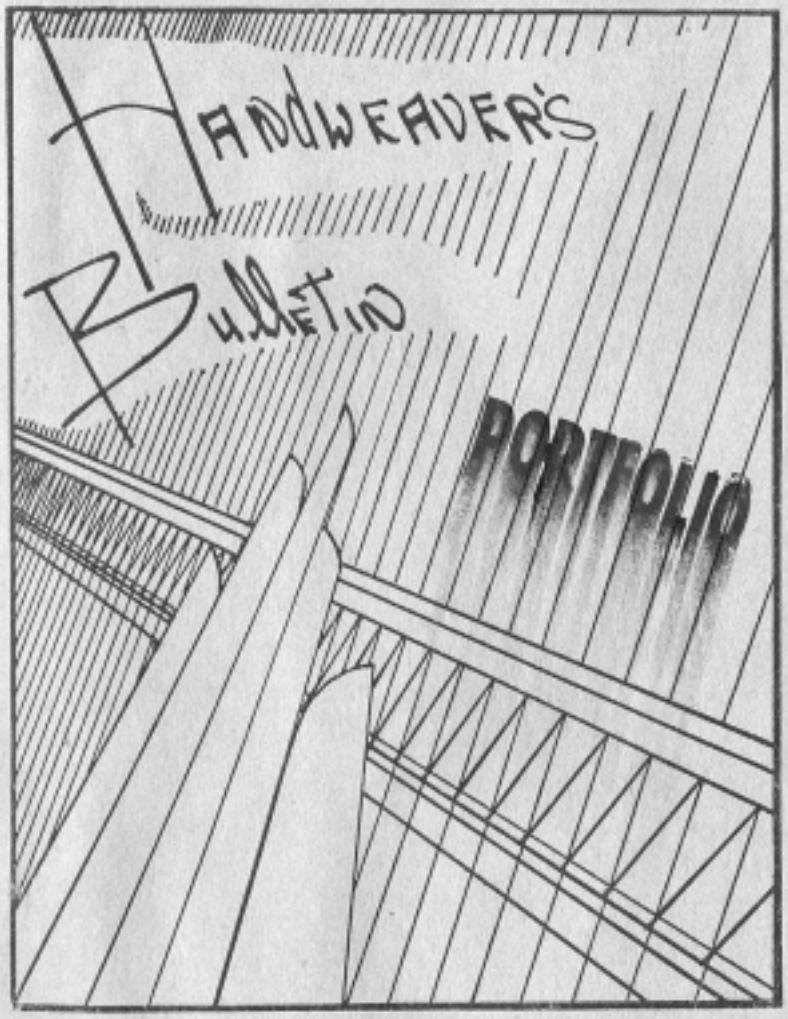

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HANDWEAVER'S BULLETIN
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The CLASSIFICATION of HANDLOOM WEAVES

Any loom threading is made according to a specific system which, when woven, will give a specific texture and pattern effect. The multitudinous types of threadings are called "weaves" or "techniques" and each one is made according to its own system. These techniques fall naturally into groupings, each group or class having different characteristics, and the techniques themselves may be broken down into innumerable variations, each one of which is an individual pattern. Thus, a pattern (Whig Rose, Rosepath, Honeysuckle, Monk's Belt, to mention some of the most common names) is merely the arrangement of the pattern elements of one technique, to give a specific design arrangement. The pattern name is a given name, which often varies widely from place to place, and is seldom adequate identification unless it is accompanied by the technique name which is more broadly recognized. In many cases a specific pattern may be interpreted in a variety of techniques.

A true understanding of weaves and patterns may be gained only through an organized concept of the various threading systems, through a classification. The problem of weave classification is approached in almost all books written for the handweaver, and in many articles. However, in most cases this is merely an approach, and the subject is abandoned in confusion before it is really entered, the writer resorting to miscellaneous listings without true organization.

There is a fundamental reason for the confusion which exists regarding the classification of weaves for the handloom. This arises from the fact that weave classifications as presented in the weaving literature have been made for the power loom designer

instead of for the handloom weaver, and the problem of the power loom is quite different from that of the handloom. The power loom has a great multitude of harnesses which may be used, even when the complications of the Jacquard loom are not considered. The handloom has a limited number of harnesses, in most cases 2, 4, 6, 8, 10, and rarely 12 or 16. The power loom problem is one of economics, which means employing the nimimum number of shed changes to attain the maximum complexity of thread arrangement, and the fewest possible shuttles. The handloom weaver, on the other hand, is free to use shedding combinations up to the mathematical probability of the number of harnesses employed, with as long a succession of shed changes as desired, and almost any number of shuttles may be used. (This is not true of the handloom in which sheds are mechanically controlled by cams and which usually limit the number of harnesses to 4 and the shed changes to 8.) The power loom designer has a wide scope in warp setting and warp complication, whereas the handloom weaver is restricted to fairly simple warps and relatively wide warp settings. Therefore the complications of weaves when interpreted for the power loom are placed in the warp, whereas the complications of weaves for the handloom are largely put into the weft shedding and the shuttle sequence. The warp arrangement of a power loom weave will become the weft arrangement of the handloom weave, in many cases, or the powerloom threading system becomes the treadling order for the handloom; while conversely, the power loom shedding system becomes the threading or draft for the handloom. This explains why handloom weavers may look in vain in the technical books such as Oelsner and Dale for their old, familiar techniques.

In the classification of powerloom weaves, most of the structural techniques fall under three main headings, Plain Weaves, Twill Weaves, Satin Weaves, and the minor classifications, Double Weaves and Twist or Leno Weaves. The handloom interpreter is soon lost when trying to use this classification, as it gives no place for many of the most commonly used handloom techniques, such as Overshot, Summer and Winter, Bronson, Warp Pattern, to mention only a few. And another point, the Satin Weave, which is one of the most important of powerloom techniques,

is seldom used by the handloom weaver because it requires a minimum of 5 harnesses and a very closely set warp.

The handloom weaver must therefore find a logical classification of weaves which is based on the limitations of the handloom, rather than on the potentialities of the powerloom. Several attempts at logical classification have been made on the basis of the number of harnesses required for threading specific techniques, and this approach is useful to the weaver who has only a certain number of harnesses at his command. However, this system is based merely on custom, and it actually limits the weaver's visualization of the potentialities of any weave. Twills, for instance, are commonly given as 4-harness twills and 8-harness twills, whereas actually twills may be threaded on any number of harnesses from three on. Overshot is almost without exception presented as a 4-harness weave, whereas actually it may be threaded also on 5, 6, and more harnesses. Summer and Winter is often considered an 8-harness weave, but it may be threaded on any number of harnesses from four on. There are few weaves which are limited to a specific number of harnesses, the two chief ones being M's and O's which is a 4-harness weave, and Damask which is a 10 or 15-harness weave. It is thus obvious that a useful and accurate weave classification cannot be made on the basis of the number of harnesses used for the different techniques.

A classification is an organization of individual items into groups which have different characteristics, but the components of each group have similar characteristics. The broader the definitions are, the larger will be the groups; as definitions become more specialized, the break-downs become more numerous and contain fewer individuals. Any system of classification starts with broad definitions, by which a few large groupings of individual items are made. To each one of the first large groups, specialized definitions are applied, which will break down the broad groups into small sub-groups. The system of increasing specialization may be applied several times, as in the system used to classify biological forms: first into Phyla, which are subdivided into Classes, further divided

into Orders, these into Families, then into Genuses and finally into species. Classifications in other fields are made in a similar way. In setting forth a Classification of Weaves, the following divisions are used:

Groups, into
Classes, into
Techniques, into
Patterns or Variations.

The value of a classification is to aid in the understanding of the individual weave through a recognition of its relationships to other weaves.

The first classification places all weaves in two large Groups, the Structural Weaves and the Non-Structural Weaves. These may also be called the Loom Controlled Weaves, and the Weaver Controlled Weaves. The Structural or Loom Controlled Weaves are those which have threading systems which produce specific thread arrangements, and the weft is thrown in sheds from selvage to selvage. The Non-Structural or Weaver Controlled Weaves are those in which the threading does not necessarily control the final fabric design, and in which individual warp or weft ends, or groups of warp or weft ends, are manipulated in special ways to achieve special effects. These last include such weaves as Brocades, Tapestries, Open-Work, Knotted Piles, and others -- weaves with which we shall not be concerned at this time. The Structural Weave Group is subdivided into seven Classes, and under each of these Classes there are several Techniques. Further subdivision into individual Patterns is not made here, as this is a subject for several volumes.

THE STRUCTURAL WEAVES

CLASS I - THE PLAIN WEAVES

These are the weaves of simplest denomination in which alternating threads lie up and down in both warp and weft. Theoretically they may be woven on two harnesses threaded alternately; but practically there is too much friction between heddles when warps are set closer than 24 ends per inch, so the closely set Plain Weaves must be threaded to 4 or

more harnesses. There are two possible sheds, with warp ends alternately up and down, and these are woven alternately.

Tabby. The Plain Weave in which warp and weft are identical and are balanced (exactly as many weft shots per inch as there are warp ends).

Warp Emphasis Weave. The Plain Weave in which the warp is more evident than the weft, through being heavier, or more closely spaced, or both.

Warp Rep. The Plain Weave in which warp is so closely set that it completely covers the weft.

Weft Emphasis Weave. The Plain Weave in which the weft is more evident than the warp, through being heavier, or more closely spaced, or both.

Weft Rep. The Plain Weave in which weft is beaten to completely cover the warp.

Log Cabin. The Plain Weave, usually with warp-weft balance but not necessarily tabby, in which alternating light and dark colors produce either horizontal or vertical pin-stripe effects.

Patterned Log Cabin. The extension of the Log Cabin technique in which the horizontal and vertical pin-stripes are threaded and woven to produce 2-block patterns.

Spaced Weaves. Plain Weaves in which warp, or weft, or both, are grouped or spaced irregularly but in definite sequence. May or may not be balanced.

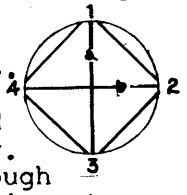
Thread-texture Weaves. Plain weaves in which warp, or weft, or both are composed of several types of threads, so that a rough textured fabric results.

Basket Weaves. Balanced Plain Weaves in which both warp and weft are arranged in consistent groupings: pairs, three together, four together.

CLASS II - THE TWILL WEAVES.

The weaves which are threaded in progressing sequence on three or more harnesses. The twill weaves may be plotted on a circle, with as many

equally spaced points on the circle as there are harnesses involved. The threading progression around the circle is always to an adjacent point, either forward or backward, with never a skipped point. The progression is always from odd to even, even to odd; never from odd to odd, even to even. The so-called basic twills are made by combining adjacent pairs on the circle diagram; A is 1-2, B is 2-3, C is 3-4, D is 4-1. Thus, all twills overlap adjacent twills. All odd-numbered harnesses when combined form one tabby; all even numbered harnesses combined form the second tabby. These are basically balanced weaves, though there are a few exceptions when balance is not necessary.



Straight Twills. Twills which have an uninterrupted forward motion without a reverse. The movement around the circle diagram is continuous in one direction, either clockwise or counter-clockwise.

Point Twills. The Twill threadings which progress forward to a certain harness, or to a specific point on the circle diagram, and then return in the reverse direction the same distance, to form a symmetrical point, which is repeated. The twill combinations where the point occurs (the direction reverses) involve three instead of two threads. Also known as Return Twills, Reverse Twills, or Diamond Twills.

Extended Point Twills. The elaborate Point Twills having more than one turning or reverse point, the turning points falling in most cases on different harnesses.

CLASS III - THE TWILL DERIVATIVE WEAVES.

The weaves which follow all of the basic rules for the Twills, but in which the basic twill combinations are enlarged to form pattern blocks, a block involving a minimum of four warp ends.

The Overshot Weave. The weave in which each one of the basic twill combinations (1-2, 2-3, 3-4, 4-1, for the 4-harness

weave) is enlarged by repetition, to form a block, over which weft floats. Drafts for different patterns of great elaboration may be built up by making frequent reverses in the direction of block movement, and by repeating the basic units different numbers of times to form blocks of different sizes. Blocks in straight successions have even numbers of threads; turning blocks have odd numbers of threads. Every block shares a common thread with the adjacent block on either side of it. Classical Overshot is woven with two shuttles, one used to form a tabby background for the pattern which is woven with the second shuttle, the two used alternately. A balanced weave in which the tabby balances the warp count, the pattern is merely an added thread. Patterns are usually drafted to form symmetrical designs, and are basically woven symmetrically so that there are four axes of symmetry: a vertical, a horizontal, and two 45 degree diagonals. Most commonly a 4-harness weave, but may be more.

The Hybrid Weave. The weave in which both twills and Overshot are combined in the draft. Follows the rules for both.

The Crackle Weave. The weave in which each pattern block is a repeat of a 3-harness Point Twill. The point twill for Block A starts on harness 1, for Block B on harness 2, for Block C on harness 3, for Block D on harness 4, and the points follow the circle diagram. May be drafted on more than 4 harnesses. At the end of each block repeat, a balance thread (incidental thread) is required. Woven on the Standard Twill-combination tie-up, not necessarily balanced. Blocks overlap as D weaves with A, A with B, B with C, C with D.

Because the Classification is lengthy, it will be continued in the September BULLETIN. The next Class is the UNIT, or Profile, WEAVES.

A SUPPLEMENTAL-THREAD WEAVE

In Shuttle Craft STYLES sheet #22, which gave a barbecue apron for a man as the project, a weave of great interest was presented. The limitation of space on the STYLES sheet prevented a full treatment of this weave, the Supplemental-Thread Weave, which gives an unusual texture, and is highly versatile in application. Therefore, further details are presented here.

The Supplemental-Thread technique is a Texture-Contrast Weave, with heavy warp threads which lie on the surface of a tabby fabric and are caught into the fabric only sufficiently to make a practical textile. The technique may be planned from the outset, and the supplemental warp threads beamed along with the base warp. Or the technique may be used as a means for varying a plain warp, to add design and texture interest to it, and the supplemental threads may be entered and discontinued as desired.

The base threading may be made first, though this is not necessary, and the supplemental threads added later. Two additional harnesses, beyond those carrying the base warp, are required. Therefore, if the loom is a 4-harness one, the base warp must be threaded on harnesses 1 and 2 for Plain Weave. This is quite practical if the warp setting is not more than 24 ends per inch, the setting used in 10/2 mercerized cotton for the barbecue apron. The heddle friction of a more closely set warp makes a 4-harness threading more practical, and any 4 or multiple-harness threading which weaves a tabby is suitable, as long as 2 empty harnesses are left at the back to carry the supplemental threads.

If a great many supplemental threads are to be used, it is necessary to use a second warp beam for holding them. After the base warp is ready for weaving (and the weaving started, if desired) prepare the supplemental-thread warp and sley it at the proper places, not more than one supplemental thread per dent, on top of the base warp. This places 3 warp ends in every dent which has a supplemental thread if the base warp is double sleyed, 2 ends if it is single sleyed. Then thread the supplemental

warp to the last two harnesses, according to the planned draft, using string correction heddles or wire clip-on heddles wherever the threads are to fall.Tie the supplemental threads to the second beam and beam the warp from front to back. Make the cloth-beam tie-in on top of the base warp ties.

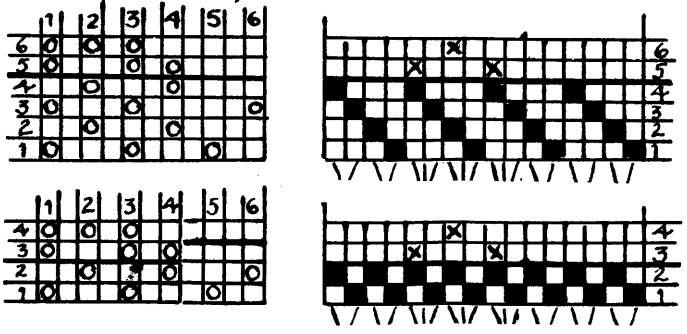
For the barbecue apron fabric, three supplemental threads were used together, spaced every four inches. As the technique was used for only part of the distance on a long warp, the threads were measured for only the desired length. For weaving ten yards of the red fabric with black supplemental-thread checks, 12 yards of supplemental threads were measured. A project using white chenille and gold guimp for the supplemental threads seemed to take up more, and 7½ yards were required for weaving 5 yards of fabric. This indicates that generous calculations on the supplemental-thread length are wise. For the 10-yard length the threads were beamed; for the shorter length, which used more delicate threads, they were carried as floating warps, at the back of the loom. The three threads which fall together were measured on a warping board, and then wound tightly onto an empty cardboard tube and half-hitched about two yards from the ends. Such a tube was prepared for each group of threads required -- eight, in this case. The long ends from the tubes were then threaded and sleyed from back to front, and the threads fastened to the weaving edge with pins. Each tube was then weighted by tying sufficient washers to it to give adequate tension, and they were allowed to hang over the back beam. When weaving had proceded to where the tubes reached the back beam, the half-hitches were loosened and the threads unwound until they were about two inches off the floor, and the weaving continued.

The threading for the group of supplemental threads was: 1 end of 20/6 soft twist cotton on harness 5, 1 end of Lily Stranded Filler (Art 514) on harness 6, 1 end of 20/6 on harness 5. String heddles were placed with 2 base warp ends between each, according to the system shown in the draft. Weaving was done by raising the back two harnesses with the base warp harnesses wherever the supplemental threads were to float on the surface; leav-

ing the supplemental-thread harnesses down where an interweaving with the base fabric was desired. This was done by making the tie-ups as shown, and treadling in the order: 1, 2, 3, 4, repeated. To make the supplemental-thread stripes in the weft, the heavy threads were used on treadles 5, 6, 5. On a 2-harness threading it is impossible to make the supplemental-weft stripes correctly without the help of a pick-up stick. Raise harness 1 and pick up alternate threads from the top shed, across the entire warp, to make the shed for the first and third shots. Make an alternate pick-up on treadle 6 for the second shot (harness 2 raised).

Many types of yarns may be used in the supplemental-thread weave, and with the floating warp method, threads which are too tender to be beamed may be incorporated. Strongly-textured rayon novelty or almost any type of heavy thread or yarn may be used. If the supplemental thread has a great deal of interest in itself, it may be more effective threaded alone, instead of in the grouping of three. In this case, only one extra harness is required. The weaver's imagination may play freely in selecting groupings and spacings.

This free technique has almost limitless horizons for adding a decorative texture touch to otherwise simple fabrics. Interesting table linen effects may be made by adding supplemental threads of 1½/1 linen in colors to a plain base. This is one of the safest ways to add a glint of metallic to a warp with which the metallic could not safely be beamed. In this case, the metallic threads may simply be threaded into heddles which already hold a base warp thread, instead of on an extra harness.



LOOM DRESSING - Threading the Heddles

The threading of a loom can be the most tedious, back-breaking job which a weaver has, or it may be a pleàsant, comfortable task. The wise weaver will make threading enjoyable by making it comfortable. This may be, if the loom is arranged for threading by removing everything from the loom which must otherwise be reached over or around, and by sitting in a comfortable position, with the heddle eyes at about shoulder height. This means taking the loom apart as much as possible: removing the breast beam, removing the beater, and, if possible, removing the cloth beam. With all of this impedimenta out of the way, the threader may pull a comfortable chair or a stool of the correct height directly in front of the heddles.

If the warp has been sectionally beamed for threading from back to front, one bout is unwound to sufficient length and is held tautly (with gummed tape, scotch tape, or by hand) across the top of the harnesses. The threads may then be picked off in order and drawn through the heddles, with or without the aid of a hook. Sometimes a threader can develop great dexterity in using a drawing-in hook, inserting the hook through the heddle eye, and reaching up with it to select the correct thread without touching the warp with the hand, thus saving the left hand for making rapid heddle selection. But this requires practice.

If the warp has been made from a chain and is beamed on a solid beam, place two very long leash sticks through the cross -- sticks which are long enough to rest on the side supports of the loom, just back of the heddles. On some looms it is necessary to tie the sticks to this convenient position, with the cross directly back of the heddle eyes. The threading may then proceed from the cross, without any awkward reaching.

If the warp is being threaded from front to back, remove the reed from the beater and lay it between two tables, or use a reed support on a table, for sleying. Some kind of support for the reed, directly in front of the harnesses, may usu-

ally be devised; for instance, a board placed across the arms which hold the cloth beam, or the cloth beam itsself. If the sley is 2 per dent, place a leash stick in the side of the cross toward the reed and tie it firmly to the reed so that one thread in each dent lies over the stick, the other under, for easy selection. Place the reed on the supports, with the leash stick on the under side, and drop the chains under the harnesses.

Taking a loom apart for threading sometimes requires a little ingenuity. Directions are supplied with some looms, the Norwood and LeClerc for instance, for taking them apart. With the rigid Gilmore, the breast beam may be lifted off and the beater removed; though the cloth beam is not removable, it is placed where it makes a convenient arm rest. The folding Gilmore should be folded to its greatest height; the beater may then be slipped under the breast beam and laid on the floor; the threader sits directly under the breast beam. The Macomber loom may be taken completely apart. The bolts which hold the steel arm supporting the breast beam may be unscrewed at the castle end, and the entire front of the loom laid on the floor. The beater may be laid outside this, or completely removed. The cloth beam may be lifted out.

From these suggestions, the weaver can investigate his own type of loom and determine how the breast beam and beater may be gotten out of the way for threading. It is evident that a removable breast beam and a removable beater are important considerations toward easy threading of a loom. In purchasing a loom, the wise weaver will find out in advance if the loom may be easily dismantled in this manner, since both speed and ease of threading are controlled by the position of the threader with relation to the unobstructed harnesses.

PORTFOLIO CONTENTS: Sample of the Supplemental-Thread Weave, as described. Photographs of Shuttle Craft Guild students Martha Ebener, threading a folded Gilmore, and Helen Bontecou, threading a dismantled Macomber. Separate copies, $1.25 each. Subscription, $10 a year. See the new Guild-member letter, enclosed, for further items of interest.

Harriet D Tidball