



VOLUME VI NUMBER 1 JAN.-FEB. 1941

THE WEAVER

PRICE 25c

QUESTIONS AND ANSWERS

by MARY M. ATWATER

(Questions for this department should be addressed to Mrs. Mary M. Atwater, Basin, Montana.)

Question: What does one do about broken warp-threads?
My warp breaks constantly. How does one avoid knots?

Answer: If your warp breaks a great deal, find the cause. The fault may be in your loom: (1) you may have a roughness in the heddles or in the reed that catches and tears the warp. (2) the loom may be out of correct balance, so that part of the warp is subjected to undue strain. (3) Your loom may be too short from front to back, which strains the warp badly when the shed is opened.

The fault may be in the warp-material you are using. (4) a very soft and fuzzy yarn will always make a troublesome warp, and a weft-linen, if through mistake used for warp is usually impossible to weave. A good warp-dressing, however, helps matters. Boil some flax-seed in water — exact proportions are unnecessary. Strain the resulting solution and if it is very thick thin it down with water to about the consistency of thin starch. This dressing should properly be applied to the warp-material before warping, but in the case of a warp already on the loom the dressing may be dabbed on the stretched part of the warp from time to time as weaving progresses. It is not necessary to allow the dressing to dry before continuing the weaving. In fact fine worsted warps and "singles" linen warps weave better damp than dry. But do not put the dressing on the part of the warp directly in front of the woven web without letting it dry.

The trouble may be in the way the warp has been put on the loom. (5) Warping a soft worsted or fine linen from the chain, drawing it through the reed and heddles during beaming, greatly weakens the warp and gives it a tendency to break. Such warps should be beamed by the sectional process. (6) the warp may be uneven, with some threads much tighter than others. The tight threads will pull apart and break. (7) the warp on the beam may be either wider or narrower than the space in the reed. In this event it goes through the loom at a slant and the edge threads are likely to break. To have the warp on the

beam a little wider than in the reed makes little difference, but to have it much narrower will always break threads. The difficulty may be in the way you weave. (8) If you narrow in badly the selvage threads will saw off in the reed, inevitably — keep the weaving out to almost the width of the warp in the reed. (9) perhaps you stretch your warp too tight. Fine, light warps must be woven fairly slack. (10) perhaps you do not always remember to release the tension when leaving the loom. If left at a tension a fine worsted warp, unless very hard-twisted and strong, will pull apart if left at a stretch overnight, or even for a few hours. Then (11) your beat may be too heavy. Do not use a single heavy thump with the batten but beat this way: open the shed, give two sharp, not heavy, strokes with the batten; throw the shuttle; with the shed still open, beat again in the same manner. Change the shed, beat, throw the shuttle and beat, and so on.

A few knots are allowable in a cotton warp under overshot pattern weaving, as they show little or not at all in the finished piece. However if a warp-thread breaks do not attempt to tie the two ends together. Take a length of warp-material and tie it — with a "weaver's knot" — to the broken end at the back of the loom; draw this new thread through the correct heddle and the correct dent in the reed, and attach it to the web by winding it around a pin set in the web below the break.

Knots, however, are very disfiguring in a tabby fabric or a wool or worsted twill piece. If this is the type of weaving you are doing, take a strand of the warp-material and tie it to the broken thread at the back of the loom, close to the warp-beam. Tie with a bow or slip-knot and leave long ends. Attach the new thread to the web around a pin as described above, and weave till it is possible to bring the original warp-end back into the fabric. Weave in both the original and the new thread under a few weft shots and then eliminate the repair thread. By this procedure the knots are avoided and there is no repairing with a needle to be done after the fabric comes off the loom.

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Paul Bernat, Editor

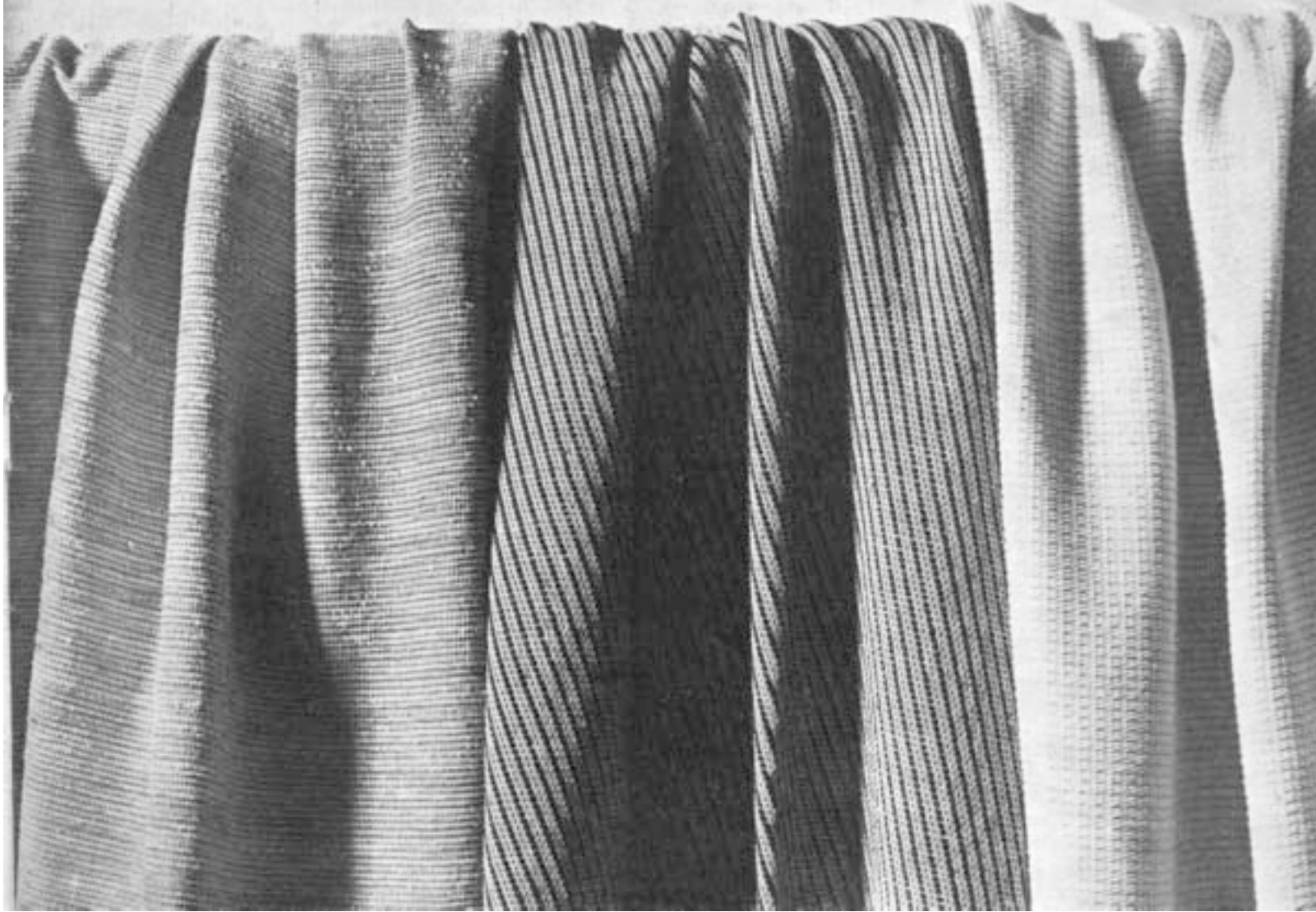
The Weaver, published quarterly in months January, April, July and October by Emile Bernat & Sons Co. Editorial offices, 89 Bickford Street, Jamaica Plain, Mass.

Price, U. S. A. - \$1.00 per year
Canada - 35c per copy
Foreign - 50c per copy

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Drapery Materials, Models for Industrial Production, by Ruth Bailey, Don Page, Agatha Schurman, Students of Black Mountain College

HANDWEAVING TODAY

Textile Work at Black Mountain College by ANNI ALBERS

Almost all textiles today are products of machine looms. They are turned out in great quantities, at high speed. Quantity and speed reflect on the design. In general we think today of more and more, of faster and faster, and only then of better and better.

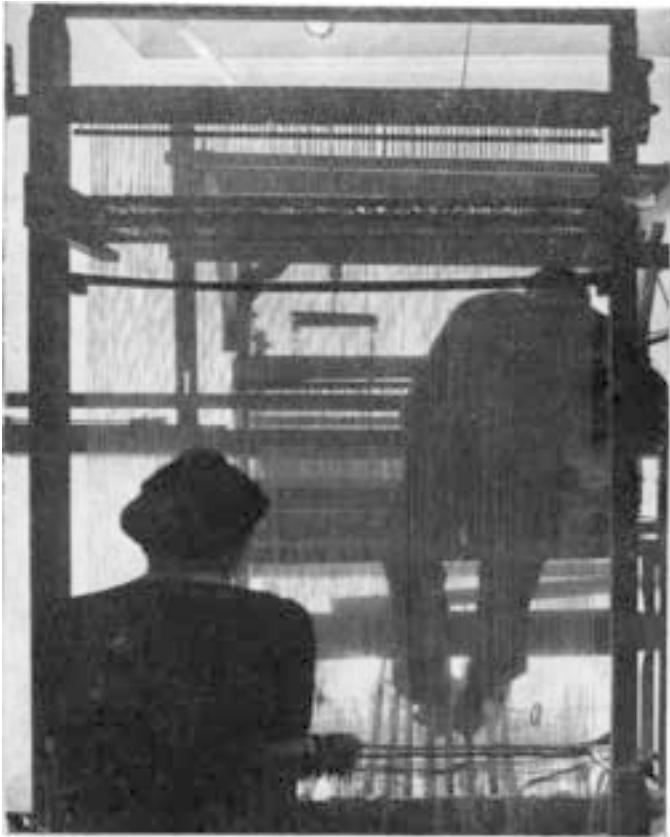
In this situation the attempt to deal with textiles on a small scale, in a slow manner, with quality mainly in mind, may seem rather futile. This may appear to be retreat and seclusion, but actually have quite a different result. It is true that such work is often no more than a romantic attempt to recall a *temps perdu*, a result rather of an attitude than of procedure. But, if conceived as a preparatory step to machine production the work will be more than the revival of a lost skill and will take responsible part in a new development.

Handweaving the slow, and machine-weaving the fast method of the same process contrast only in velocity. Sameness of procedure is one of the justifications for handwork preliminary to work for mass production. Weaving in any form is a constructive process; it is also a combinative

process demanding aesthetic judgment as to surface, form and color qualities of the materials. Other problems enter, such as functional and social demands. All of these factors engage intellect and imagination if the craft is looked upon as still in formation.

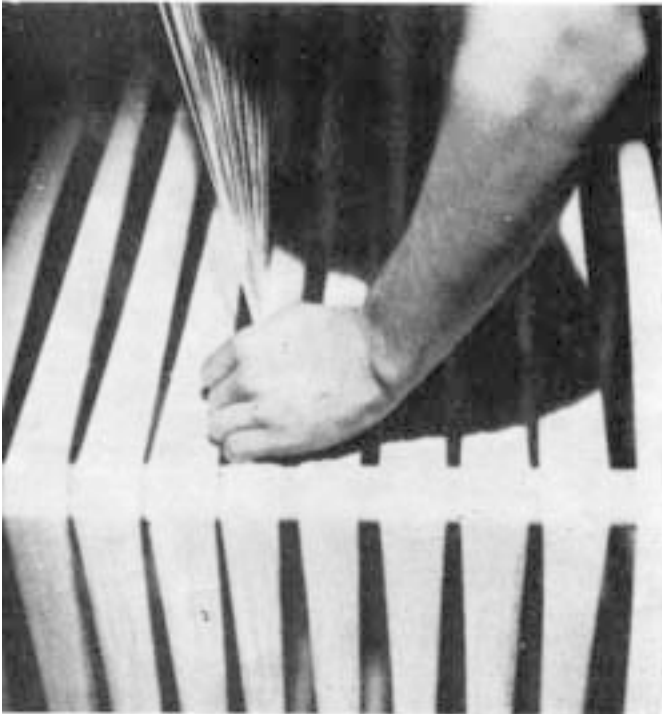
Unfortunately today handweaving has degenerated in face of technically superior methods of production. Instead of freely developing new forms, recipes are often used, traditional formulas, which once proved successful. Freshness of invention, of intelligent and imaginative forming has been lost. If handweaving is to regain actual influence on contemporary life, approved repetition has to be replaced with the adventure of new exploring.

Such an attempt needs a careful foundation. It is only possible if we go back to the elements. Materials have accumulated to themselves set rules of working them. In going back to the fundamental principles we can open the field again for invention, imaginative use of intellectually recognized facts.

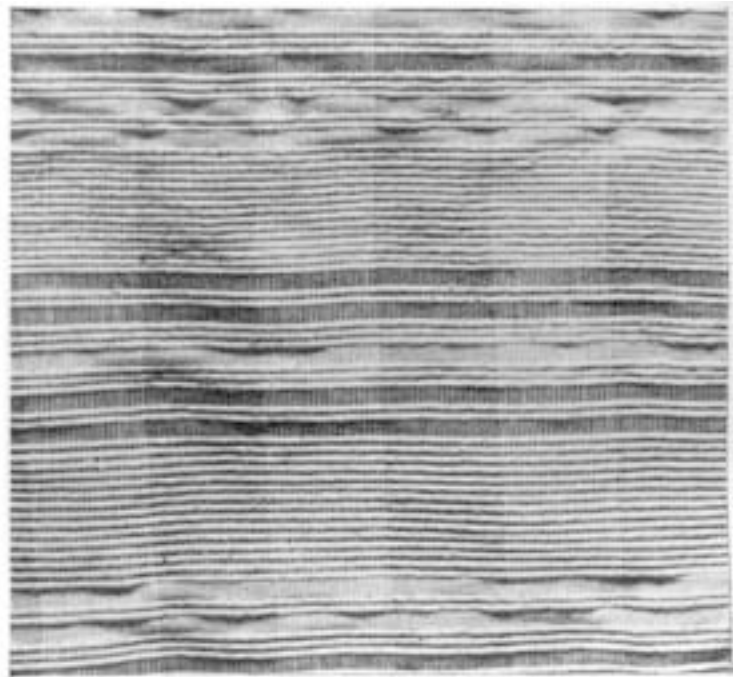


In the Weaving Department of Black Mountain College

We have stated before that hand and machine weaving are fundamentally the same. The theory of the constructive process, the draftwriting, can therefore be taught so as to include both hand and machine possibilities. Handlooms today are often limited technically. Why fit the theoretical knowledge to the present limitations of handweaving? Rather the theoretical work should be developed, expanding



Making Up the Warp



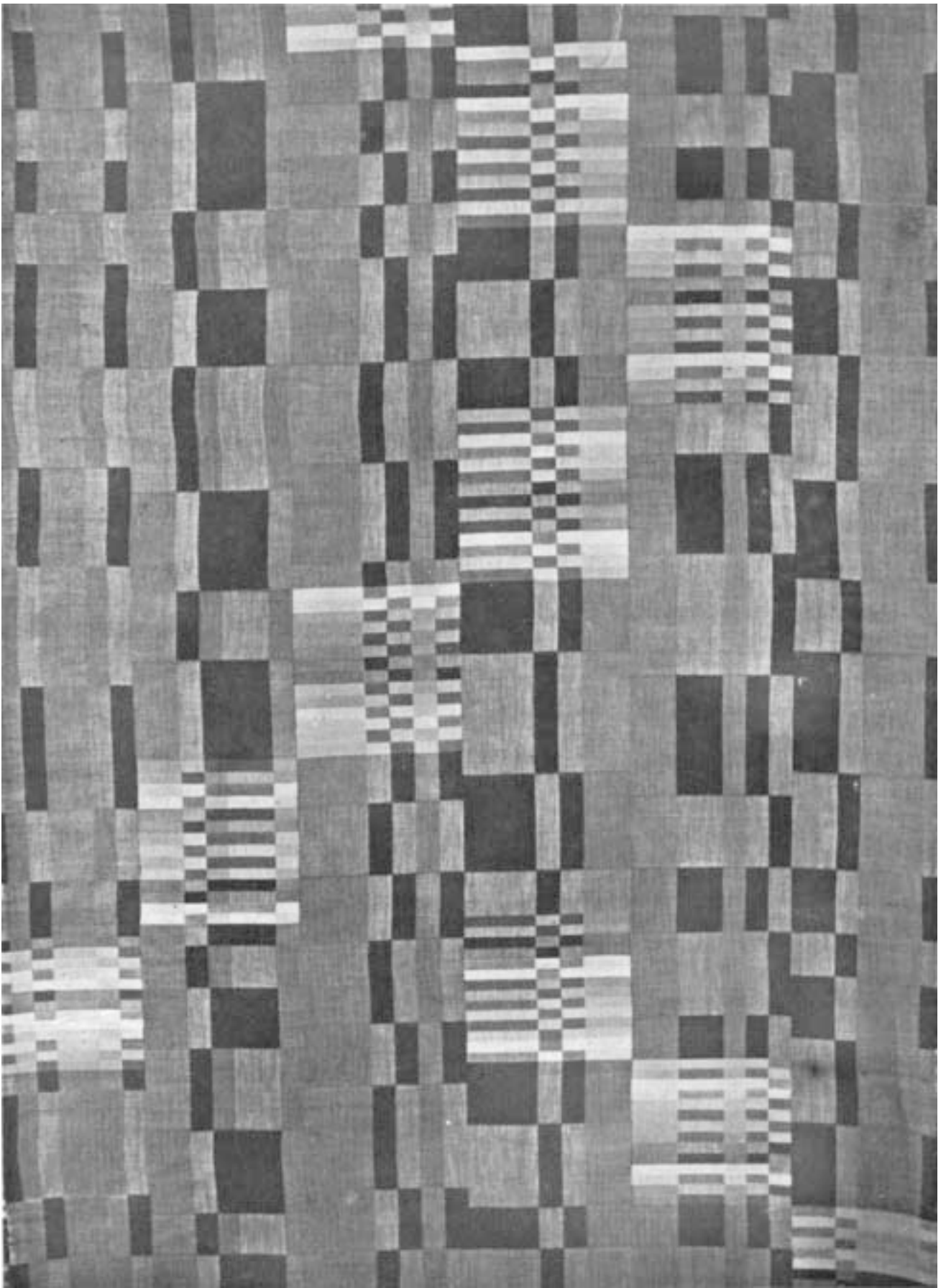
Experiment for Drapery Material by Eva Zbitlowsky, student of Black Mountain College

beyond the boundaries set to it now, in order to stimulate new experimentation. The teaching should be the development of structures, from the elementary weaves to more complicated derivations rather than the passing on of patterns for weaving. Thus the work can be directed toward independent initiative.

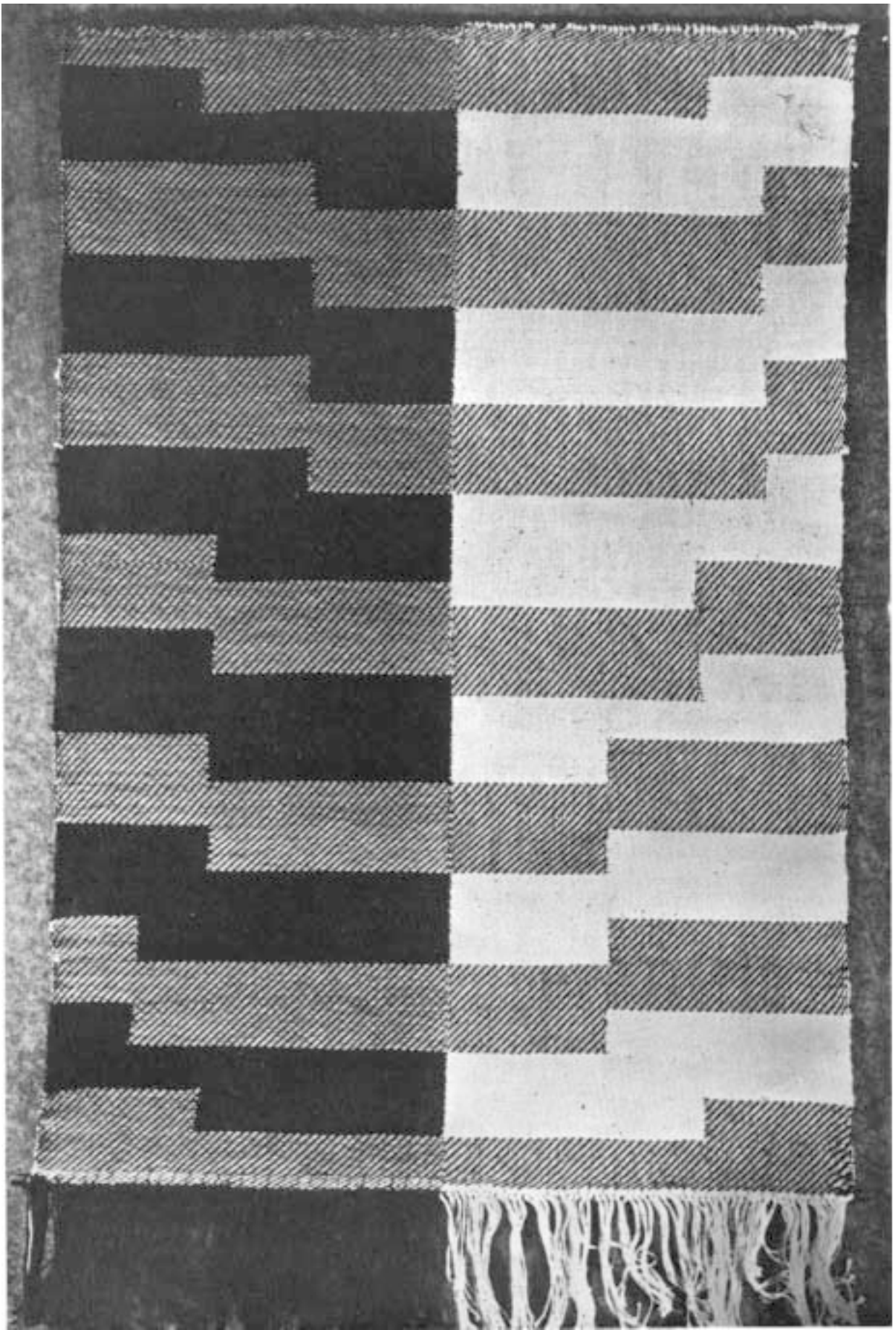
The same return to the fundamentals needed for the structural work is also necessary for the combinative or aesthetic side of it, to clear the way for new forming. For the lack of invention often found in the handweaving of today is a general symptom of this time of standardization. If teaching attempts to direct the development of individuals as well as of peoples, it should try to avert a growing one-sidedness which may prove fatal. For ability to form materials presupposes responsiveness towards the material, a flexibility of reaction, and this flexibility is one of the factors we will need for times to come. Through working with material we can perhaps develop this ability to respond. More than intangible material, than tones or words, tangible material can teach that it has demands of its own and suggestions of its own for its forming, that it asks for a reaction. Creating means this reacting to material rather than the execution of a dream, as the layman conceives it. The first vision of something to be done gives more the mood of the work than its final form. The form emerges as the work progresses.

An elementary approach will be a playful beginning, unresponsive to any demand of usefulness, an enjoyment of colors, forms, surface contrasts and harmonies, — a tactile sensuousness. This first and always most important pleasure in the physical qualities of materials needs but the simplest technique and must be sustained through the most complicated one. For just this satisfaction coming from material qualities is part of the satisfaction we get from art.

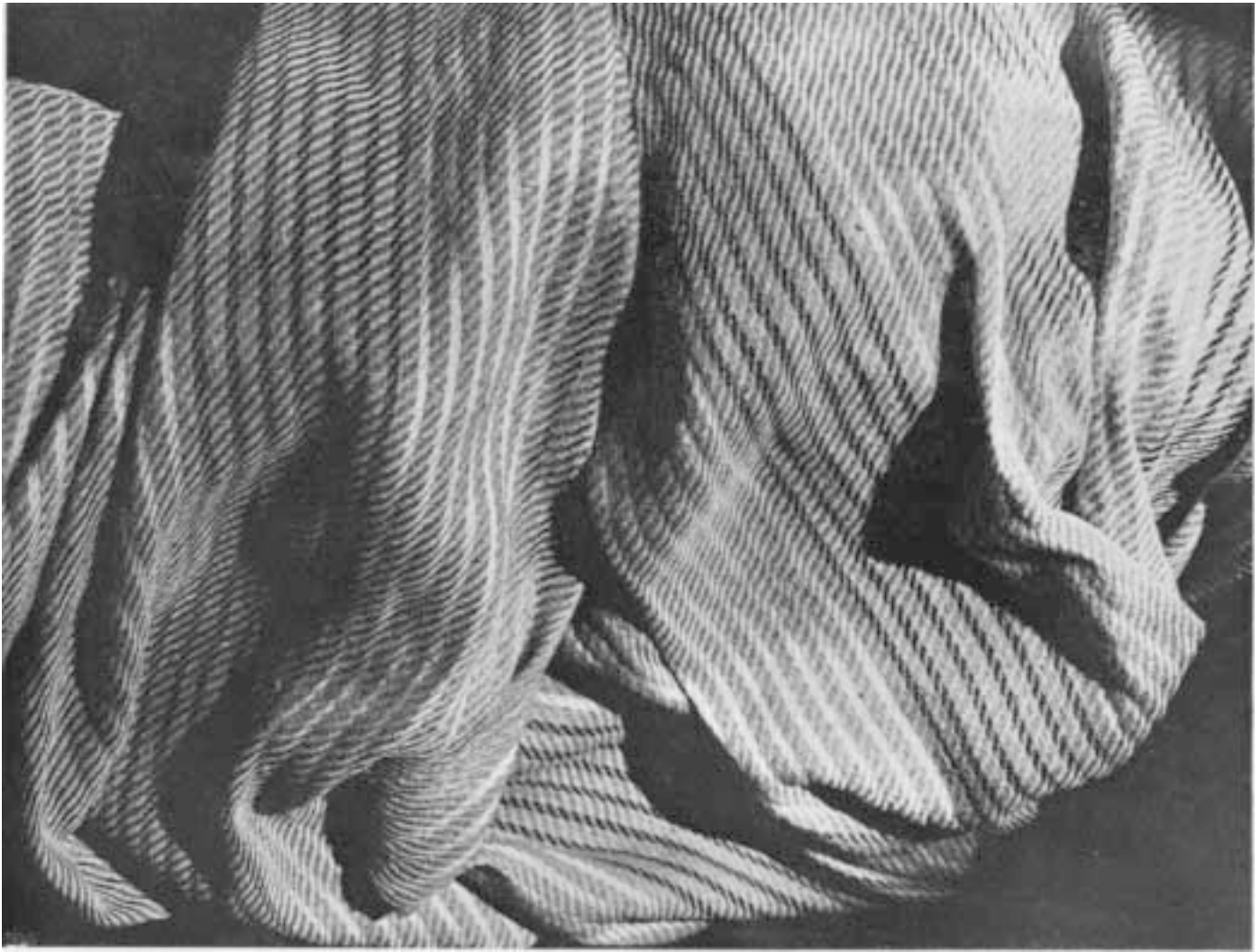
For more advanced work considerations of utilitarian purpose arise. Although for the beginner the thought of practical usefulness has more a constraining than animating effect, conscious deliberations on function and useful objective are in a later stage stimulating, as is the material itself.



Wall Hanging, double weave, by Don Page, Student of Black Mountain College



Tapestry by Alex Reed, Student of Black Mountain College



Display Material by Anni Albers

Demands set by the practical use give the work a certain direction, unthought of before the problem came up, as to construction, choice of material, color and form. An example: The task of weaving a material to be used as wallcovering sets up certain requirements, strongly influenced by the specific tendencies of a period. It brings up the question of a light or dark material, light-reflective maybe, of resistance to dust, the question how it is to be attached to the wall. The answer will probably eliminate fuzzy fibers, loose, stretchable, plastic textures, and suggest straw-like qualities and a stiff, smooth, close construction of weave. The search for the fiber best uniting the requisite qualities may lead to one not used for weaving before. The experiments can result in a fabric equipped with new characteristics, a new fabric.

Awareness of the need for adaptation to purpose introduces one other factor: the importance of recognizing new problems as they appear, of foreseeing a development. "An unspecialized aptitude for eliciting generalizations from particulars and for seeing the divergent illustrations of generalities in diverse circumstances is required. Such a reflective power is essentially a philosophic habit," says Whitehead. The creative impetus, at first coming sensuously from the world of appearance, now receives its stimulus from the intellectual sphere of a recognized need. Only the imaginative mind can transform the intellectual recognition into a material form.

The special inclinations of certain times play a dominant part in the rise of new forms. Today's interest in hygiene, in light, in movable things, in short-lived things even, as far as the serviceable objects of our surrounding are con-

cerned, become manifest in the objects we make. For textiles this means washable materials, transparent or light-reflective ones, materials repelling dust or water, reversible ones and materials which can easily be replaced. For durability need not necessarily be a value in itself, although this seemed a valuation set forever. Accumulation of material values rapidly loses its charm in face of the mutation of a world; thus durability is no longer equivalent to value. There is a close correlation between demands arising in the course of time, being fulfilled by new materials, and new materials bringing about new demands. In the one case the demand acts as motive power, in the other the pleasure of free forming. Fulfillment of a demand confines a product to usefulness — the result of free forming can be art.

Handweaving can go both ways; to become art it needs nothing but its own high development and adjustment in all its properties, — to become utilitarian it needs today the help of machines if it is to be more than a mere luxury.

There is one other aspect of the work, one not intrinsically connected with the idea of future development; it is that of handweaving as a leisure-time occupation and as a source of income in rural communities. The importance of such work should not be overlooked. But it is necessary to keep in mind that handweaving here takes on the character of a means to an end and is not in itself the center of interest. It has to be admitted that at one point we discussed handweaving also as a means, when taking its educational value into account, shifting the emphasis from the result to the process. But the objective was to encourage experimenting which leads back to the core of these considerations.

TEXTURE INDENTITY IN WEAVING

by HENNING-REES

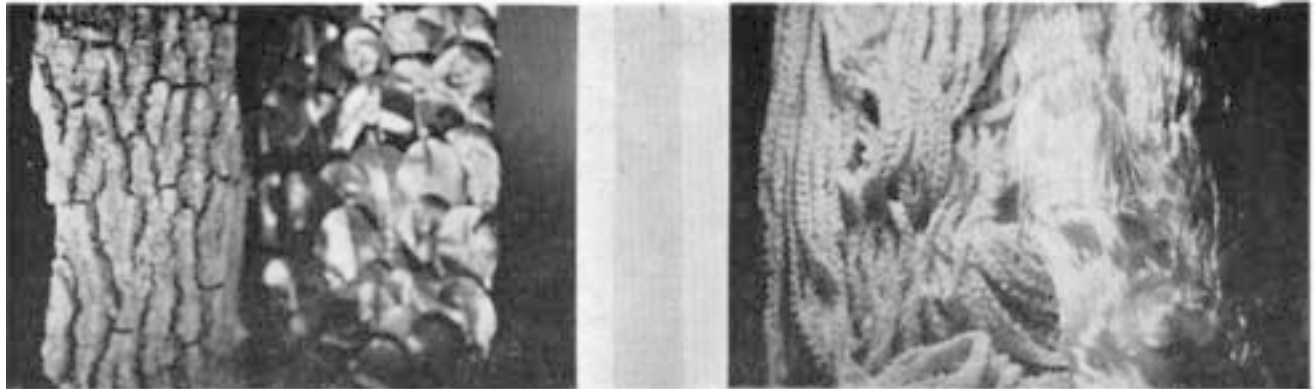


Illustration No. 1. Parallels in nature textures and thread textures: the rough, dull bark and the same qualities in heavy cotton chenille; smooth, shiny Mirror Plant leaves and the same qualities in spun rayon.

How is a textile planned? Is a new weaving going to be the result of trying out a new pattern weave or a variation of an old one; or is the new weaving going to be really new, the product of our own imagination woven on the loom out of materials which the machine age has given us?

There are two methods we may employ in designing textiles: We may either let the loom dictate to us, or we may dictate to the loom. The first method means taking old patterns and varying them with modern materials to see what may come out of the experiment. The second method depends upon a knowledge of color and texture, the real design elements. These elements are the governing factors in developing a textile idea and the loom is employed to produce the idea for us. The second method allows us more freedom in creating because we are not hampered at the start with the mechanical limitations of a machine. But the second method depends for its success on our working knowledge of the designing elements, color and texture. If we are going to do something new, of ourselves, we must work from the colors and textures of the weaving materials themselves. With this approach we will find the new weaving possibilities of the loom.

The textured surface is the simplest and most direct surface the loom produces. Usually when we say "textured surface" we mean a rough surface. This, however, is not the true meaning of the word texture. Every surface has a texture quality, whether it be rough or smooth. And this quality reveals itself to us in two ways: through the eye or through the hand, by seeing or by touching. Most of the time we identify surfaces by using both of the senses, for often a surface is contradictory and it is necessary to use both senses to identify it. Haven't you seen glass objects which have been treated so your eye could no longer recognize them as glass? The old Victorian Easter eggs with the scenes inside them are examples of this sort of surface; they were made of glass to look like sugar. When one looked at the egg its surface appeared to be sugar and one could

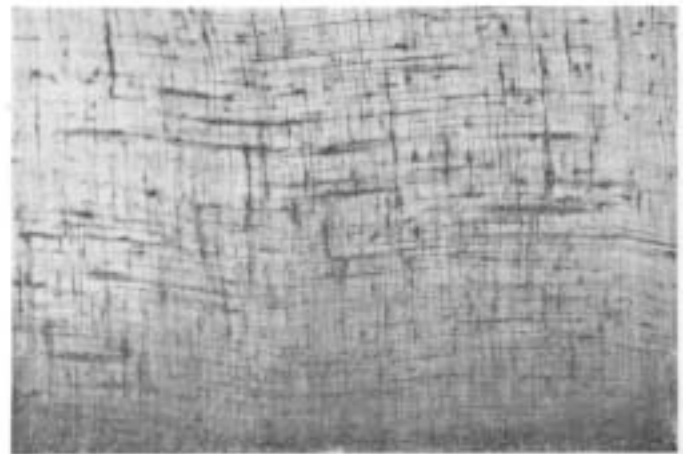


Illustration No. 2. The texture which the uneven spin gave to this linen thread was not lost in the weaving.

only find out for sure by touching it. Thus two of your faculties were employed to identify its surface, and it had both visual and tactile surface texture. In some of the crafts only one of the senses is employed to determine texture. Painting uses only visual texture because it is a graphic craft; it is done on a flat surface. Weaving employs both visual and tactile texture because it is a plastic craft.

Every thread has a visual and a tactile texture quality. These qualities are often very beautiful in themselves, certainly beautiful enough to warrant making the effort to capture them in a weaving. Look among the threads you have been using in your weaving and see if there isn't one worthy of weaving by itself just for its own beauty of texture. Perhaps you will have some heavy silks or raw silks with their dull-sheen surfaces, or some looped or bumpy rayons, or some loosely spun or slubby linens. Isn't there one thread beautiful enough in itself to be worth weaving in a way that will bring out its own intrinsic texture quality?

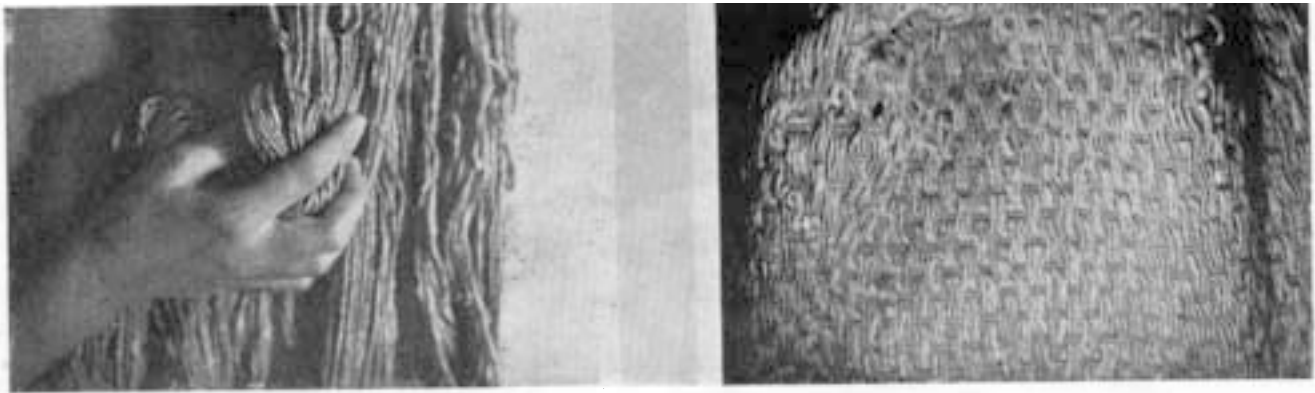


Illustration No. 3. The beauty this heavy silk had in the skein was not destroyed when it was put into cloth.

Illustrated are textures created with this idea in mind. In all of these textiles the thing the eye sees first is the quality of the material itself, not the way the fabric has been put together by the loom.

To capture the identity of a thread in a weaving requires a different solution for each material used. This is how we find the new mechanical possibilities of the loom. We cannot take a standard pattern such as Summer and Winter or Monksbelt and do this, for as soon as the mechanical aspects of the loom become dominant in the fabric the texture identity of the material is destroyed. As soon as the important thing of a fabric surface is the line, circle, or square which a pattern threading weaves material into, the eye can see nothing else. So the simpler a texture is presented to the eye the easier it will be to see its beauty. The objective in solving the technical problems of presenting a textured thread in fabric form is to discover how to incorporate it into a sturdy and practical textile and at the same time lose none of its particular beauty. Usually the texture quality is lost if the thread is packed into the cloth. This is the main technical objection to pattern weaves. Tabby weave is successful when a loose fabric is desired, as in illustration number 2. The weave makes a strong surface and the looseness allows the thread to be seen. If the thread had been packed into the surface of the fabric, the eye would not have been able to perceive it at all and its identity would have been lost.

Where an opaque fabric is desired, the problem is more complicated. Here we can employ a subordinate plain thread to act as the background upon which the important texture thread is to be built. The principle of double cloth weave

can be used to advantage here: the important thread is anchored to a second fabric woven at the same time. This allows the important thread to be woven very loosely so it may be easily seen by the eye, and yet it is an opaque fabric. All the rest of the examples presented here are variations of this idea. Notice how the identity of the thread is clearly visible even in a photograph. In illustration number 3 the important thread was in the warp and was anchored to a plain back fabric. In number 5 the important textured thread was in the weft and was not actually woven into the fabric itself; it was tied to the back fabric indirectly by the warp thread with which it was woven.

Texture identity is not a new idea. Weavers from all the civilizations have practised this principle of surface enrichment and from them we have received great inspiration for our times. These weavers used such materials as grasses, feathers, woepecker scalps, leaves, and porcupine quills in their surfaces as well as the more usual wool, flax, and cotton fibers. They showed great ingenuity in adapting nature materials. It is interesting to note that only when the situation did not offer abundant variety in materials to the weaver did he turn to pattern weaving; this was the only way he could vary a limited amount of textures. Thus pattern weaving is the product of a time and is very interesting historically, but there is no reason for our repeating it now when we have such a wealth of textured threads made for us by the machine age. We will do well to employ these textures creatively and as directly as the weavers of the past have shown it possible.



Illustration No. 4. Four inch warp overshots allow the thread to run loosely over the surface and thus be seen easily by the eye.

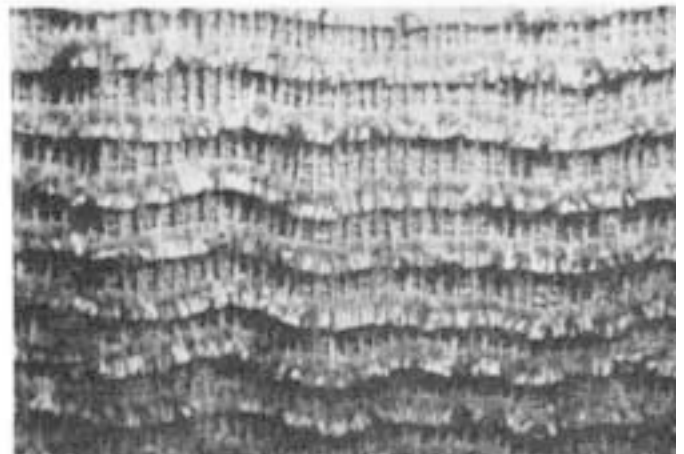


Illustration No. 5. Heavy jute chenille floats over this surface with the aid of a very subordinate warp thread. Do you see the warp or the weft thread first?

SPRING MEANS NEW RUGS

by VEVA N. CARR

To the general public to mention weaving, means rugs, which undoubtedly also calls forth in the mind of the layman, yards and yards of rag carpet, but for those who are interested in the weaving craft, it leaves a little feeling of resentment to have someone say in response to a statement that Mrs. X is a weaver, "Do you have much sale for your rugs?"

However, with spring in the air, who could fail to be interested in new rugs and carpets, and delving into the subject of floor coverings can be a most fascinating occupation, especially in a season like this when the weather man has cheated most of the country out of its usual early spring gardening.

So, with the necessity of remaining indoors for a while longer, let's make some new carpets.

Carpets of solid color, being so popular at the present moment, can so easily be made the spring objective of our home work.

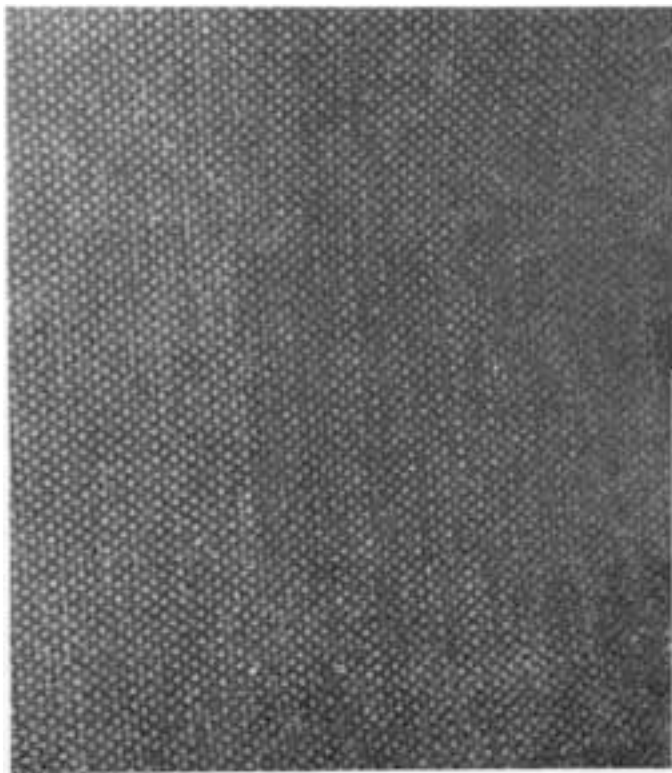


Illustration No. 1 shows a plain carpet of solid color made of cotton chenille, and woven in the Herringbone stringing (Draft a), with three strands of the material used for the weft, and a single strand of the same color and material used for the tabby shots.

The warp in this carpet is of No. 3 Perle Cotton set at fifteen threads to the inch, and the weaving is done on opposites, using treadles one and three throwing one shot on each.

This makes a soft, velvet-like carpet, and was carried out in a solid color by using the same shade for warp, pattern and tabby thread, the only variance being in the sheen of the warp threads as compared with the dull tones of the weft material.

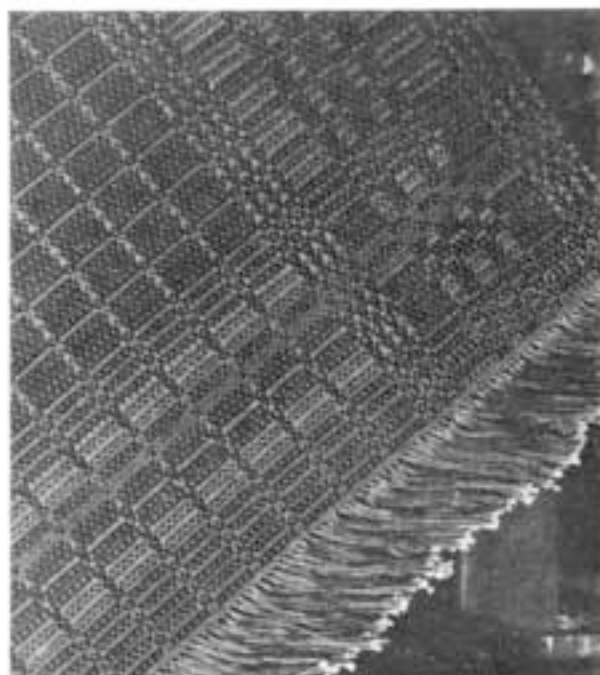
Illustration No. 2 (Draft b), shows a rug made from one of Mrs. Mary M. Atwater's designs, modified somewhat to fit the warp on the loom, and is a little two-block summer and winter draft worked out in shades of yellow green.

The warp, Bernat's taupe (color No. 1014) Perle cotton No. 3, was also set at fifteen to the inch, the pattern thread (Bernat's Rug Wool color No. 479) was used double, while their green rug wool (color No. 478) was used single for the tabby.

Because of the weight of the materials used in rugs, it is necessary to modify the usual process of the summer and winter weave, and instead of throwing two pairs of shots to each block, one pair of shots is sufficient.

Thus, throw a shot each on treadles 1 and 2 for the first block, and one shot each on treadles 3 and 4 for the second block, with a tabby between each pattern shot. The tabby, of course, will be handled as in a regular weave, for it makes no difference which is thrown first.

To start either the carpet or the rug, weave a few shots of the same material as the warp. If the ends are to be finished with a hem, weave enough with the warp material to turn under for that purpose, but if the rug is to be finished with a fringe, four or five shots of the warp is sufficient, after which allow enough warp ends to knot the fringe. It should, of course, end in the same manner.

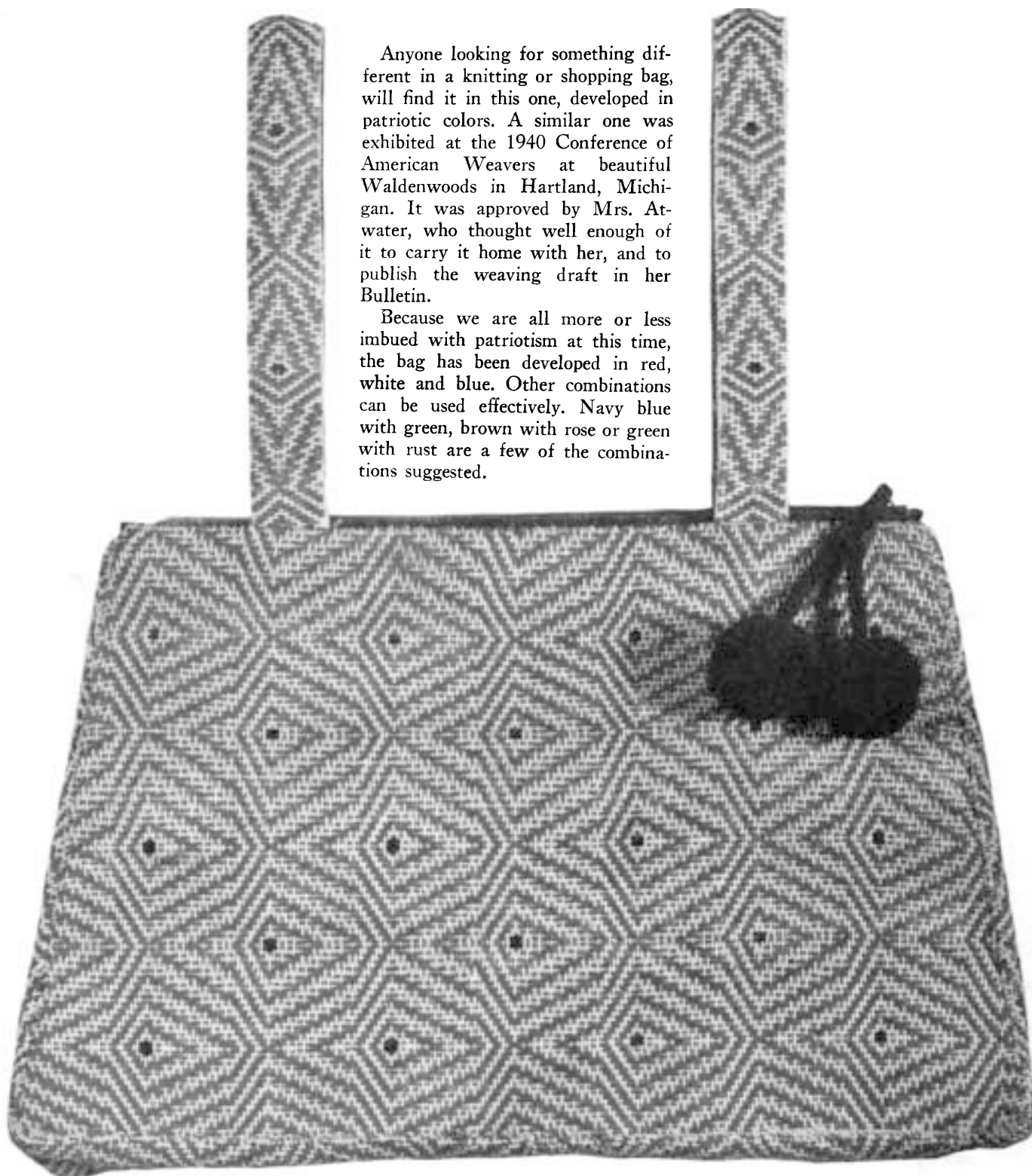


BAG IN FEATHERSTITCH TECHNIQUE

by BERTHA GRAY HAYES

Anyone looking for something different in a knitting or shopping bag, will find it in this one, developed in patriotic colors. A similar one was exhibited at the 1940 Conference of American Weavers at beautiful Waldenwoods in Hartland, Michigan. It was approved by Mrs. Atwater, who thought well enough of it to carry it home with her, and to publish the weaving draft in her Bulletin.

Because we are all more or less imbued with patriotism at this time, the bag has been developed in red, white and blue. Other combinations can be used effectively. Navy blue with green, brown with rose or green with rust are a few of the combinations suggested.



The personal touch in weaving may make a slight variance in the width of the different parts of the bag, but the canvas can be cut to conform with the weaving. An eighth, or even a quarter of an inch will make no material difference in the appearance of the bag, so long as the general plan is followed. If one likes, a smaller bag can be made, using the same proportions.

This bag is especially good for knitting, as the yarn, coming out at the end of the closed zipper, is held securely in the bag. It can also be used for shopping without danger of losing small parcels if the zipper is closed.

It is most modern, both in weaving design, and in its shape, and should find approval among those who like something out of the ordinary.

Materials

Warp—White carpet warp, 300 threads, set 15 to the inch.

Tabby—White Perle cotton No. 10.

Pattern—Flag blue Saxony—one 2-oz skein.

“Eye”—A small amount of flag red knitting yarn.

Interlining—One yard heavy canvas or buckram.

Lining— $\frac{3}{4}$ yard flag red silk or rayon.

One 12-inch bright red zipper.

Thread the loom draft as follows

1-2-3-4	4
4 repeats of draft	248
First 44 threads of draft	44
1-2-3-4	4
	300

Featherstitch Technique

In doing the featherstitch technique, follow the treadling as indicated, making only *two* shots of each row, regardless of what the draft calls for. Begin by making a right to left shot with Saxony. Then make a tabby shot with the perle cotton, and then a left to right shot with Saxony like the one from right to left . . . Change to the next pattern shot, and proceed as before. In other words, use a tabby between the two like shots, and omit tabby when changing shots. By using a fine tabby and a fairly fine wool, together with the carpet warp, the effect is that of rows of featherstitching.

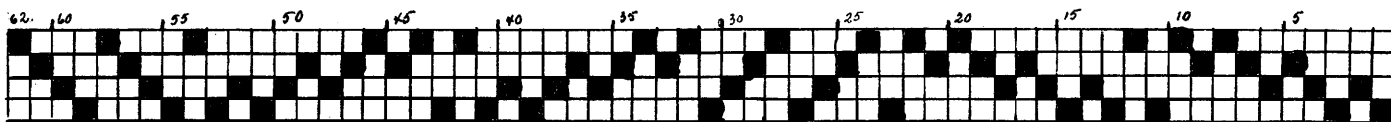
Knitting wool can be used in place of Saxony if a coarser effect is desired.

To introduce the color in the “eye” — Diagram No. 5

It is best to use a stick shuttle in doing this. At the point in the weaving where the “eye” is (indicated by the circles), the 1-4 threads—three of them—will be underneath. As you run your shuttle through from right to left, pass it *under* these three threads, bringing them to the top. After the shuttle has been drawn through, run a piece of red knitting wool through the shed, letting the color come on top at the points where the three under threads were brought to the top. This can be done easily with the fingers. There will be a long thread underneath between the “eyes”, but this won’t matter, as it will be covered by the lining. Should you wish to make a runner using this technique, the threads must be finished invisibly on the back each side of the “eye”. Weave in the featherstitch technique until you reach the next row of “eyes”, and proceed as before.

To make the bag

Cut four pieces of canvas like Diagram No. 1. Cover two of these with weaving, and two with lining. Cut two pieces like No. 2, cover with weaving and line with silk. Baste the *right* side of the zipper to the *wrong* side of the front and back at the top. Then baste on the handles, two inches from the sides, over the zipper as indicated (No. 4). Stitch in the zipper from the *right* side of the lining, and continue stitching all around the edge of the lining. Lay the weaving sides of the bag over the lining and sew together with over-and-over stitches. Cut a strip of canvas $2\frac{3}{4}$ inches wide and 36 inches long (No. 3). Join the two wider woven strips at one selvage, and baste over the canvas. Then line with silk. Fold in half the long way, with the weaving inside, and press with a hot iron. Also, if each part of the bag is well-pressed before putting together, the effect will be much more tailored. Sew the folded strip around the three sides of the back and front, joining them. Full a little at the corners, and cut off and finish at the top if too long. Make two bright red pompons or tassels, and attach to the end of the zipper, and the bag is finished. A suitable fancy ornament can be attached to the zipper instead of the pompons if desired. Crochet a red wool cord to connect the pompons and the zipper.



Treadling for Bag

Front and Back

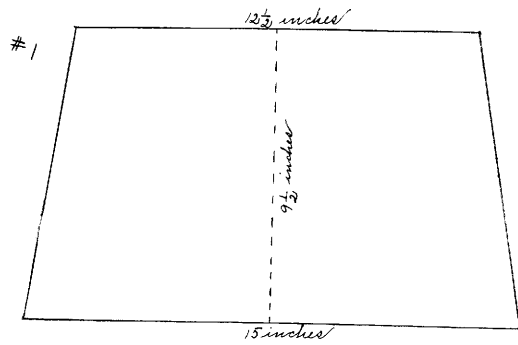
1-2	1 7 1	1-2	3 1 3	3-4
2-3	2 7 2	2-3	2 7 2	2-3
3-4	3 7 3	3-4	3 7 3	1-2
1-4 (1)	4 7 4	1-4 red “eye”	4 7 4	1-4 (1)
1-2	3 7 3	3-4	3 7 3	3-4
2-3	2 7 2	2-3	2 7 2	2-3
3-4	1 7 1	1-2	1 7 1	1-2
1-4 (2)	4 7 4	1-4 (3)	4 7 4	1-4 red “eye”
1-2	3 7 3	3-4	3 7 3	3-4
2-3	2 7 2	2-3	2 7 2	2-3
3-4	1 7 1	1-2	1 7 1	1-2
1-4 (3)	4 7 4	1-4 (2)	4 7 4	1-4 (3)

Make three repeats and weave two pieces.

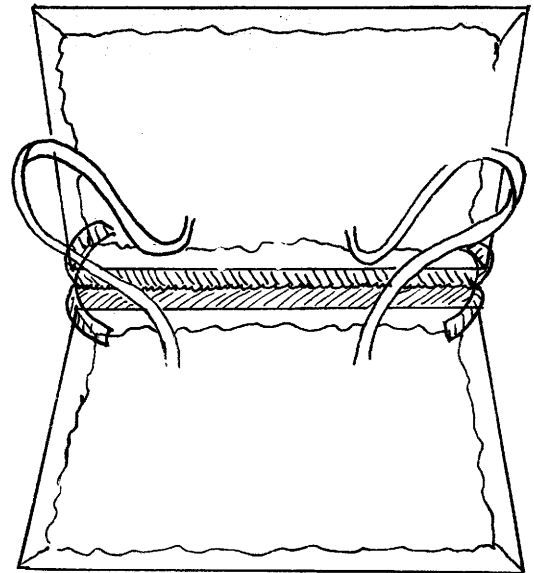
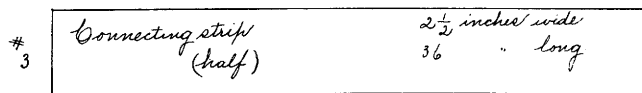
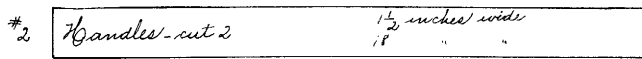
Connecting Band

1-2	1 7 1	1-2	3 1 3	3-4
2-3	2 7 2	2-3	2 7 2	2-3
3-4	3 7 3	3-4	3 7 3	1-2
1-4 (1)	4 7 4	1-4 red “eye”	4 7 4	1-4 (1)
1-2	3 7 3	3-4	3 7 3	3-4
2-3	2 7 2	2-3	2 7 2	2-3
3-4	1 7 1	1-2	1 7 1	1-2
1-4 (2)	4 7 4	1-4 (3)	4 7 4	1-4 (2)
1-2	3 7 3	3-4	3 7 3	3-4
2-3	2 7 2	2-3	2 7 2	2-3
3-4	1 7 1	1-2	1 7 1	1-2
1-4 (3)	4 7 4	1-4 (2)	4 7 4	1-4 (3)

Make two. These will be a little less than three inches wide.



Diagrams



No. 4

Handles

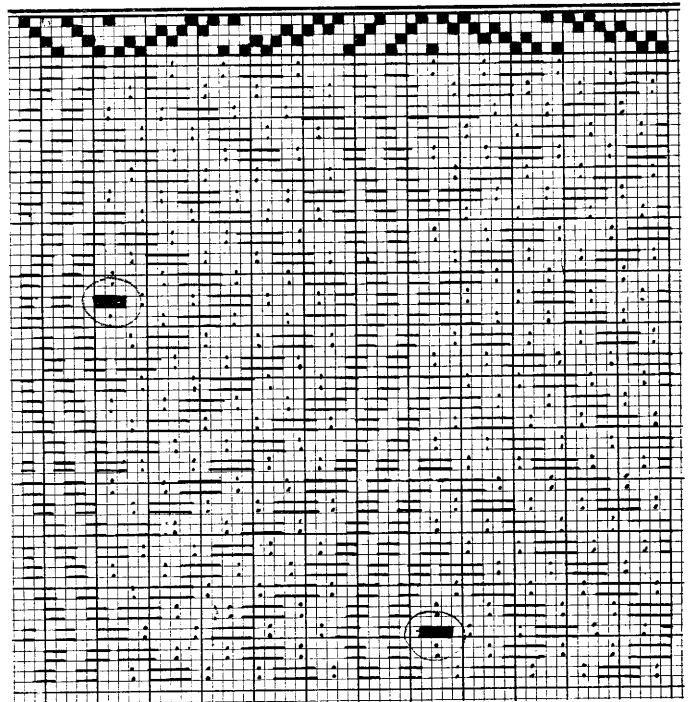
- 3-4
- 1-4 (1)
- 1-2
- 2-3
- 3-4
- 1-4 red "eye"
- 3-4
- 2-3
- 1-2
- 1-4 (1)
- 3-4

For Structo Weavers

- Weave 3-4 for 1-2
- Weave 1-4 for 2-3
- Weave 1-2 for 3-4
- Weave 2-3 for 1-4

Weave two, these will be about an inch wide.

Two shots of each combination with tabby between.
No tabby when changing combinations.



Red eye in circle



Illustration No. 1

THE KITSAP WEAVING and SPINNING GUILD

by DORIS McMULLEN

The guild organized in Kitsap County might well be an inspiration to weavers in other sections to band together for the common cause of better weaving. Anyone familiar with the lonely Olympic Peninsula will agree that the very topography of the country adds interest to the guild work. Our members live in the many small settlements, reaching the weaving rooms by car, bus and small boats.

In April, 1938, three weavers, encouraged by Margaret Bergman, founded the guild. One member very generously donated the use of a building so that Mrs. Bergman's lessons would be available to the community. The guild meetings are held once a month and the original group of four has increased to forty. The rooms are open two days every week for weaving. When I read Miss Carr's story of their guild I felt a twinge of remorse. Those people have started with one loom, weaving in turn while we have had the use of ten of Mrs. Bergman's. However, I feel sure Mrs. Bergman has felt that the results have justified her generosity. We have learned to look upon her not as a teacher but as a friend.

On Oct. 27 and 28, 1939, the guild held its First Annual Exhibit in the Bremerton Library. The Seattle guild was invited to exhibit with us as many are members of both guilds. The exhibit was given chiefly to acquaint Bremerton with the work of the local craftsman. The work shown represented those who weave purely for artistic expression as well as those who weave for profit.

Looms demonstrating different techniques and spinning wheels in operation added great interest. Two members exhibited their collection of old glass. The combination was a happy one.

Great tables, covered with linen sheets woven from hand-spun linen signed and dated 1877, held an amazing display of bags, scarves, towels, runners, miscellaneous pieces and luncheon sets done in every weave from novelty cellophane to Bronson lace and twelve harness Damask.

Walls were hung with coverlets both old and new, drapery material, lengths of men's suiting, curtains and wall hangings.

One coverlet attracting much attention was woven by General Nathaniel Green's wife during the Revolutionary War Period. Another which is shown in the background of Ill. No. 3 was woven on a Jacquard loom in 1834 by Edgar Leslie Blake. The wool and flax for this coverlet was grown, prepared and woven at Mr. Blake's grandfather's farm in New York State over a century ago.

The rug in the foreground of Ill. No. 3 was the most interesting of the many exhibited. It was woven on a primitive loom, similar to those used by the Navajos and East Indian rug makers. The technique is that of an oriental. The pile was made with the Ghiordes knot, 128 knots to the inch. The pattern is a copy with variations from Tapis d'Orient published by Edouard Bouchant, in Paris. The rug took 95 hours to weave.

Ill. No. 4 shows two types of colorful Swedish aprons, both done in Rose path design. The pleated ones are done with Bernat's weaving special and would make elegant skirts for ice skating.



Illustration No. 2

Another entry which attracted much attention was a sample of material woven for her wedding gown by the daughter of a Seattle weaver. The material used was "A" silk, supplied in 400 yd. tubes. 21 tubes were needed. The warp was set at 80 threads to the inch and the work took about 100 hours. It was woven in the North Carolina Beauty pattern.

Illustration No. 2 shows a wall hanging done by Margaret Bergman. The design was taken from a very small illustration in the Handcrafter. It is set on a black spun silk warp, woven in Dukagang in gold metallic thread.

Illustration No. 1 shows samples of upholstery material done by Mary Elizabeth Starr while at Cranbrook Academy. During the second afternoon Miss Starr displayed samples of weaving which she brought from Sweden and gave a very interesting talk on the development of hand weaving in that country. Other pieces in this illustration were contributed by various members.

Mrs. Michael Hoaglund is shown at her spinning wheel in Ill. No. 5. She has very generously offered to teach any member interested in spinning. This member exhibited hand spun linen and wool woven into beautiful fabrics with the charm of individuality founded on self expression.



Illustration No. 3



Illustration No. 5



Illustration No. 4



Illustration No. 6

Illustration No. 6 shows a view of one room in which the weavers worked.

It is difficult to do justice to the many lovely pieces in the exhibit. It was gratifying to note the large number of

pieces done on multiple harness looms as well as the number made for personal use.

The Kitsap Weaving and Spinning guild has achieved much in its first year and a half of work.

CASUAL TABLE MATS

by DOROTHY S. ROBERTS

In nearly every home there is one particular heirloom which insists on a special setting all its own. It may be an old copper kettle, glass vase, or colonial earthenware jug, but to enhance its beauty it needs a mat to complete the ensemble. It is with this thought in mind that I designed a few casual table mats which I am sure will suggest new ideas to you.

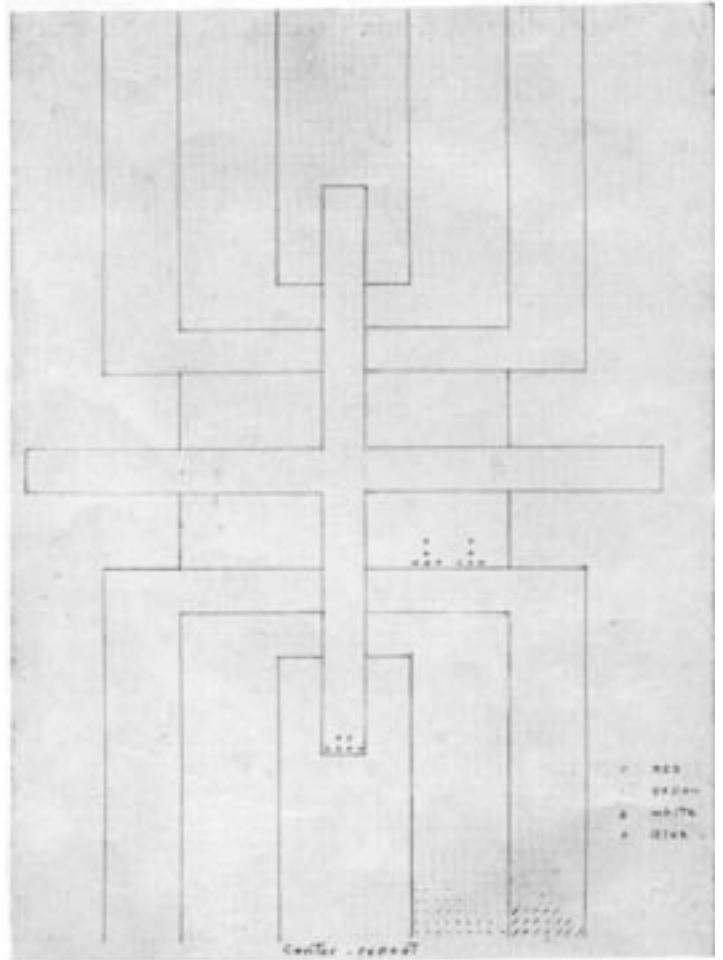


Mat Number I.

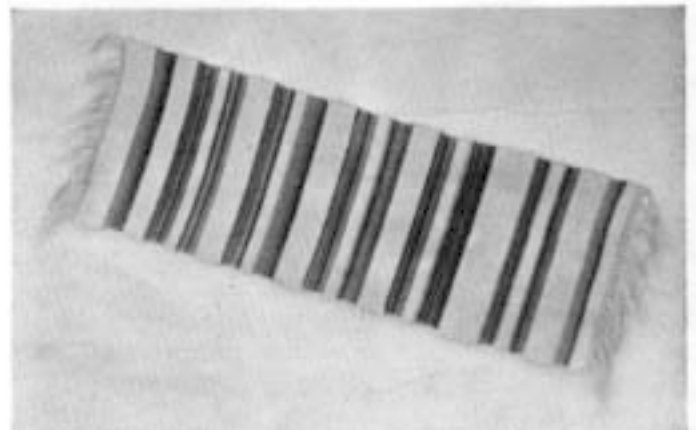
This mat of geometric design is 10 by 20 inches. It is woven of Natural Tan Linen No. 20, and Vittora Strand Blue No. 34, Scarlet 37, Yellow 20, and White 27, the Strand being used for the design. The loom is threaded for plain weaving, with 30 threads to the inch. The pattern is inlaid with small shuttles on 2, 3, 4 and 1, 3, 4 for the treadle loom. One half of the design and the colour placement is indicated on the accompanying cartoon. I might suggest that this design lends itself very well for a floor rug.

Mat Number II.

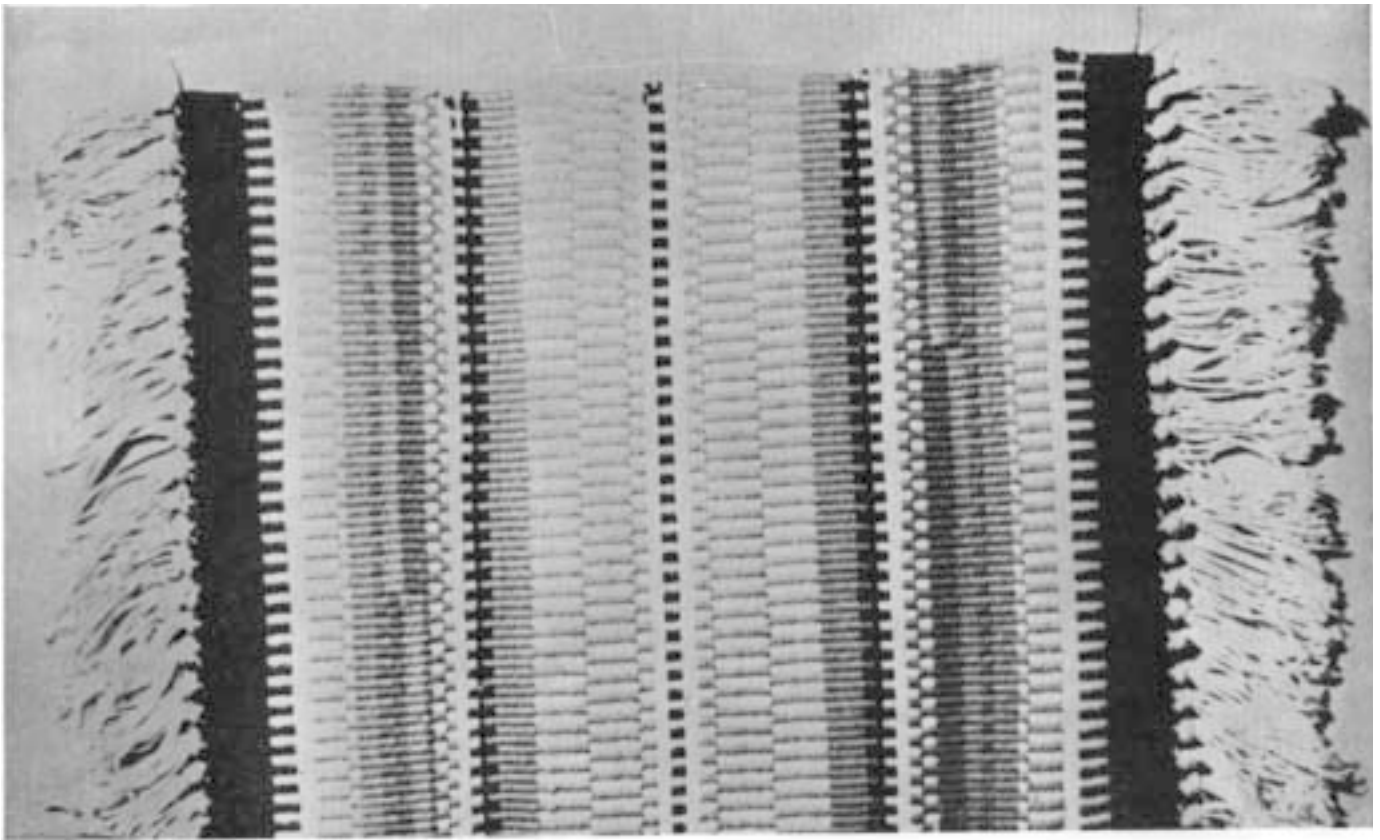
This mat weaves into a most unusual texture and with my colour scheme reflects a gay peasant mood. The same threading and warp is used as in the preceding example. The white stripe of the weft is White Rugro, the darker stripe is bright coloured wools in effective combinations. The size



is 10 by 27 inches. It is woven on 1-2, 3-4 treadles, except when using a stripe of linen, then 1-3, 2-4. The colours in the wool sections may reflect any colour arrangement you prefer to use.



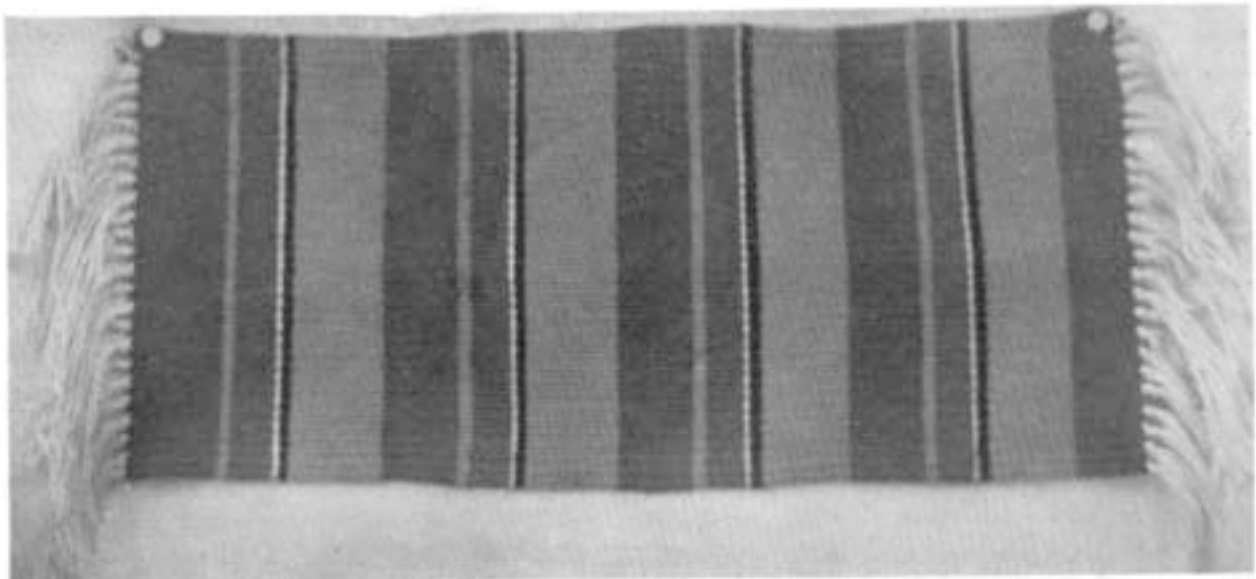
Mat Number II



Mat Number III.

Thread your loom with white carpet warp for the plain weaving, one thread to the dent in a fifteen dent reed. The size of the mat is 10 by 12 inches. The weft is Knitting Worsted Brown, White, Beige, Rose, and Blue Green. The entire mat is woven alternately on treadles 1-2, 3-4. The

pattern is obtained by using one colour on 1-2, another on 3-4, then by beating the weft down sufficiently hard so that the warp is entirely covered. The texture will resemble that of the Navaho rug technique. Many variations of stripes may be obtained in this manner, and the colours may be blended in an interesting geometric pattern.



Mat Number IV.

This mat 10 by 18 inches, is woven. The warp, threading, and treadling is the same as Mat No. III. It requires a little more wool for weaving, but the reward in texture is well worth using a very fine weft. The sequence of the stripes is as follows:

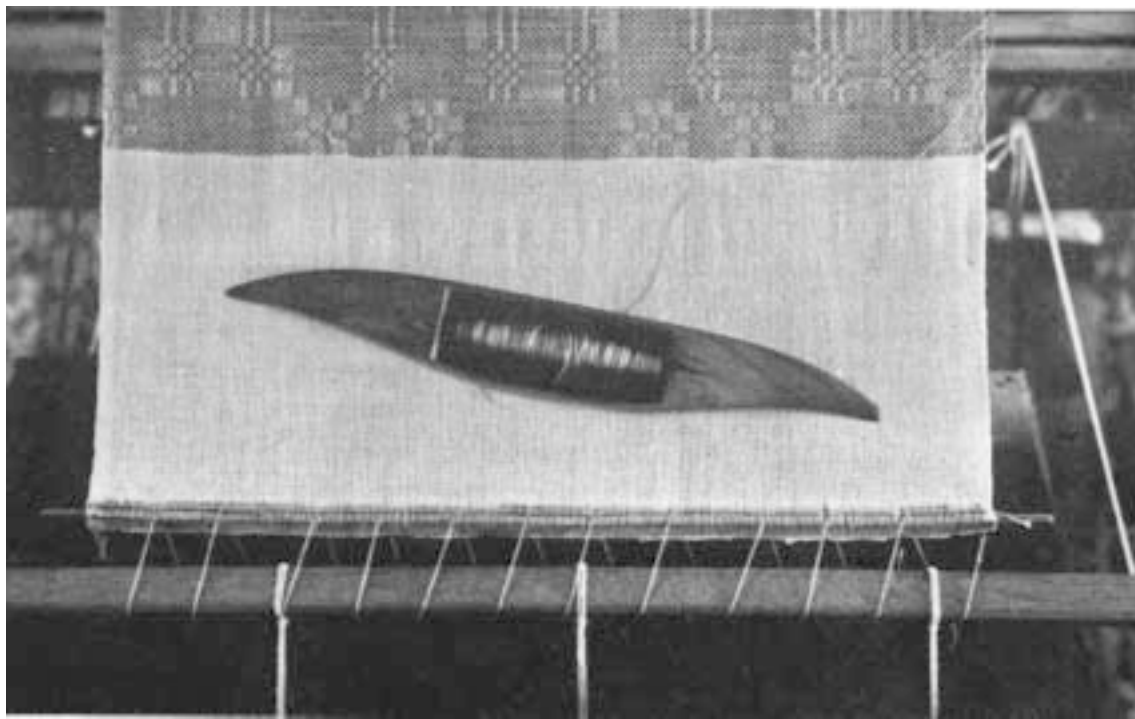
1½ inches Blue Green

¼ inches Tan
 ¾ inches Rose
 ⅛ inches White
 ¼ inches Brown
 1¾ inches Tan

Repeat four times and add a 1½ inch stripe of Blue Green to balance both ends.

GLUE METHOD SAVES TIME and WARP

by FRANCIS MUNGER



A wedding present was due immediately. We had just finished weaving it—a forty inch Rose and Star linen runner, in summer and winter weave — but there were five yards of warp still attached to it on the loom waiting to be woven. Because of the time and annoyance involved in having to readjust the tension, especially of a linen warp, and because about eight inches is wasted in retying, we had never before cut off a finished piece until the entire warp was used up.

This was not a new problem to me. I had often before wished that I could remove the first piece of a new material, to see how much it was going to shrink when washed and pressed, or even just out of curiosity to see how it would look when finished. But I hate to waste warp.

After some thought a pot of glue and a piece of heavy wire one eighth inch in diameter solved the problem.

Four tabby shots of cotton rug warp were woven in, then the wire followed by another shot or two of rug warp. Hot glue was then painted on the cotton threads adjoining the wire. Even before the glue was completely dry the wedding present was cut off for final finishing.

When the glue was dry, with the tension now accurately preserved on the wire, the warp was easily bound with cord to the cloth beam stick as shown in the illustration. We were then able to proceed with the weaving once more, having lost but little time and less than half an inch of warp.

A little hot paraffin, melted on to the wire before it is woven in, will keep the glue from sticking to it and facilitate removing it from the cloth later.

COTTON TOWELLING

by MARY M. ATWATER

It has always seemed odd to me that we American weavers, who live in a cotton-producing country, use cotton so much less — and so much less cleverly — than European weavers. We seem to have a prejudice against cotton, and a feeling that for a really handsome piece of work it is not a suitable material.

This attitude toward one of the most satisfactory materials for textiles is, I think, largely the fault of our manufacturers, who insist on supplying us with hard, shiny mercerized cottons instead of the soft, unmercerized cottons we prefer for our work. We are forced to send abroad for the cottons we like to use, and that seems remarkably stupid. Occasionally through the yarn jobbers we are able to obtain "flake" and other "fancy" cottons that are soft and pleasant in texture, but otherwise if we wish a fairly coarse unmercerized cotton there is nothing available but carpet warp, which is harsh in texture and not suitable for all uses, and some knitting and crochet cottons that are supplied only in natural, bleached white, and sometimes in ecru. Perhaps if the handweavers use a little team-work on this problem and demand cottons of the type and quality we have been buying from Sweden some yarn manufacturer may some day take the hint and put out a line of this material.

In the meantime, for fine work, we have Bernat's "Perugian" and "Vittoria Strand" cottons, which are excellent for some purposes. Specifically, these materials may be used for cotton towelling similar to the handsome pieces sometimes seen in the better shops marked "made in Italy," or "made in Sweden."

To be absorbent and agreeable for use as towelling the cotton fabric must be thick and soft. A cotton tabby fabric will not serve, even when made with the unmercerized materials. The weave used in the imported pieces is a simple four-harness weave that gives very handsome effects, and that appears to be unfamiliar to most American weavers. Notes on this weave appeared in the Shuttle-Craft Guild Bulletin some months ago, and the weave was presented at the series of summer "institutes" held in various parts of the country, where it proved of much interest. It therefore seems likely to interest the readers of the *WEAVER*. Whether the weave is Italian or Swedish I am unable to state. I have seen pieces almost identical, even to the little arrow-head figure in the tufting, from both countries. If a piece is decorated with a large pottery bead or a knotted tassel it undoubtedly hails from Italy. If it is free of these somewhat lumpy embellishments it may come from either country. However as the Scandinavian books I have seen all fail to show this weave it is my impression that the original source is Italy and that the Swedish weavers have simply adopted something useful — as I propose we do also in America.

Any small four-harness overshot pattern may be used for this weave, with certain limitations: In the pattern used there should be no very large blocks made up of long skips, and there should be no very small (two-thread) blocks. The

best effects result from the use of a pattern in which all blocks are of four or five threads. Several such threadings are given on the accompanying diagram. The threading for the Italian piece shown in the illustrations is No. 3 on the diagram.

For this weave the warp should be set somewhat further apart than for plain tabby weaving. Bernat's Perugian, set at 24 or 26 ends to the inch will give a good effect. Warp in white or natural. In this weave the warp shows very little.

The tabby sheds are not used in this weave except in the bands with the tufted decoration. The body of the fabric is woven as for plain twill: treadles 1, 2, 3, 4 one shot each, and repeat, on the standard six-treadle tie-up as given on the diagram. On a loom tied to four treadles the sheds, of course, are 1-2, 2-3, 3-4, and 1-4. (Levers 3-4, 1-4, 1-2 and 2-3 on the table loom.) Many of the decorative bands are treadled in the same manner, the pattern effects being produced by changes of color in the weft, as will be given in detail below. The Perugian cotton may be used for weft, with Vittoria strand for the tufted band. However, if obtainable, a somewhat coarser and softer cotton than Perugian would be better for weft. In weaving the beat should be firm enough to make a solid fabric with the warp well covered. The desirable texture is clearly shown on the photographs.

In writing the detailed treadlings below I am indicating the run of four shots: treadles 1, 2, 3, 4, by the symbol (u) — for "unit of the weave." For the rest, the treadlings are written as for the six-treadle tie-up, and those weaving on four treadles or on a table loom should make the suitable transpositions.

Illustration No. 1 shows the border of a piece in natural cotton with decorations in brown and green. Treadled as follows:

Section (a)

(u) twice in natural
(u) once in brown
(u) twice in natural
(u) once in brown
(u) twice in natural

Section (b)

treadles: 4, 1, 4, 1, 2, 1, 2, 3, 2, 3, 2, 1, 2, 1, 4, 1, 4. All shots in green

Section (c)

(u) three times in natural
(u) once in brown
(u) twice in natural
(u) once in brown
(u) three times in natural

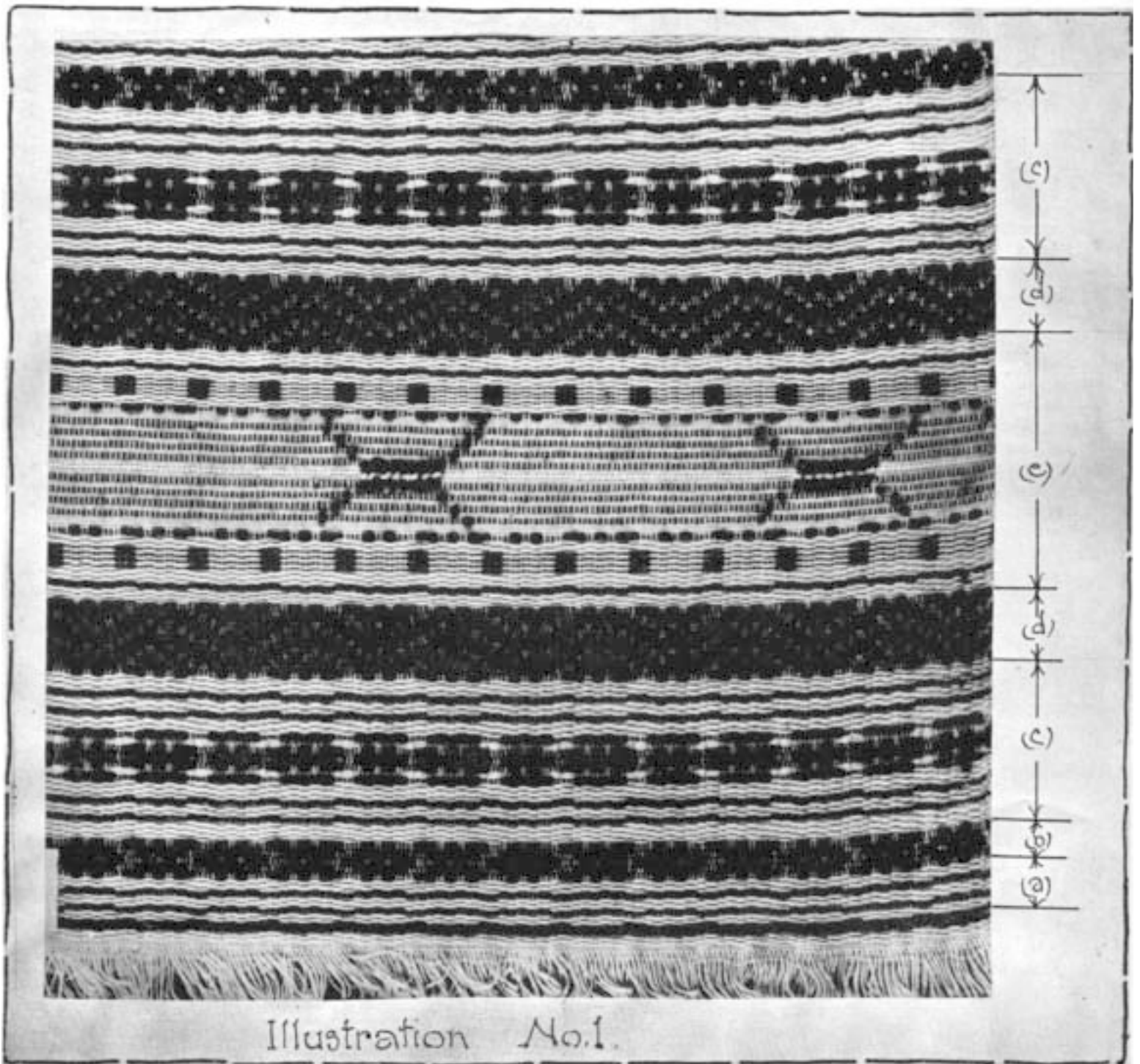
treadles 2, 1, 2, in green

treadles 3, 4, 3, 4, in natural

treadles 1, 4, 1, 4, 1, 2, 1, 2, 1, 4, 1, 4, 1, in green

treadles 3, 4, 3, 4, in natural

treadles 2, 1, 2, in green



- (u) three times in natural
- (u) once in brown
- (u) twice in natural
- (u) once in brown
- (u) three times in natural

Section (d)

- (*) treadles 1, 4, 1, 4, 1, 4
- treadles 1, 2, 1, 2, 1, 2
- treadles 3, 2, 3, 2, 3, 2
- treadles 3, 4, 3, 4, 3, 4

Repeat from (*)

- treadles 1, 2, 1, 2, 1, 2
- treadles 3, 2, 3, 2, 3, 2

Section (e)

- (u) three times in natural
- (u) once in brown
- (u) three times in natural
- treadles 1, 2, natural, treadles 3, 4, green. Repeat four times.
- (u) twice in natural
- treadles 1, 4, 1, 4, 1, 4, 1, 4, brown
- Four tabby shots in natural

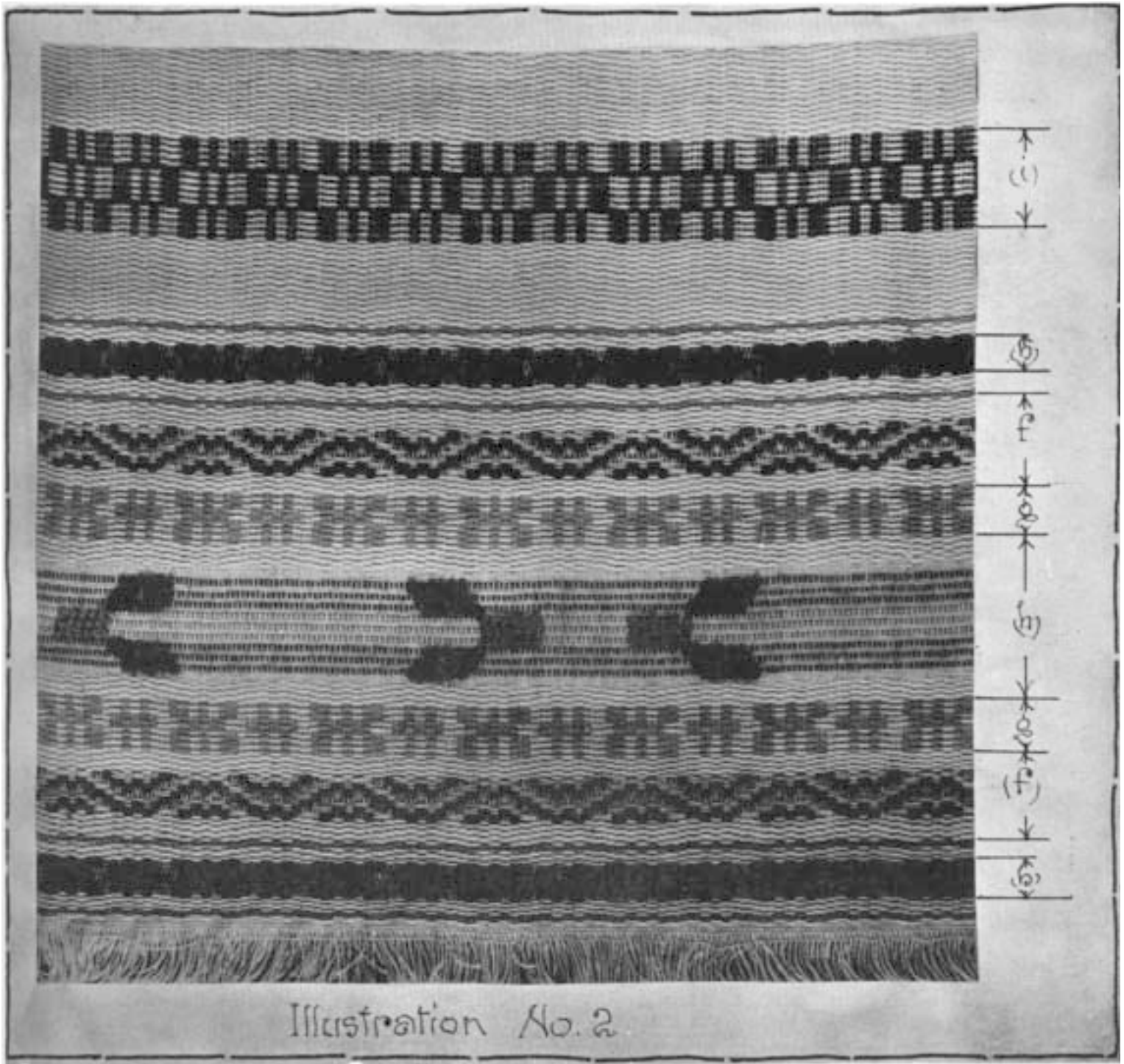


Illustration No. 2

Weave the tufted figure as follows, using Vittoria strand cotton in green.

Tabby, right to left, in natural. Through the same shed pass a strand of Vittoria, and pick up between two warp-ends where a tuft is desired. Take up these small loops of material on a fine knitting needle or small stick. Toothpicks will serve. Take the tufting strand around a selvage thread and bring it back from left to right through the same shed. Weave two tabby shots in natural. Through the same shed as the last tabby shot, pass the tufting strand and pick up again. This is repeated four times in green. The center pick-

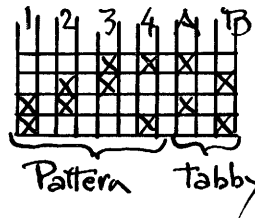
up is in natural. Repeat the four green tufting rows and the series of borders in reverse.

Weave the body of the piece in the (u) treadling, in natural, and repeat the whole series of borders at the other end. Or, if the weave is used for a runner rather than a towel, repeat one or another of the narrow borders at intervals for the entire length.

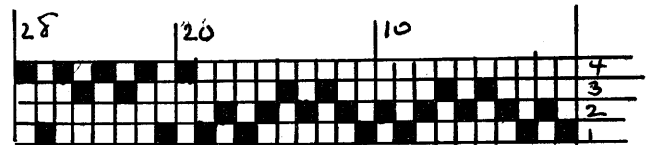
Illustration No. two was woven in blue and red on the same threading as piece No. one. The bottom border, as will be apparent, is the same treadling as (b) on illustration No. 1. It was woven in dark blue, with the (u) lines in red.

Cotton Towelling — threading Drafts

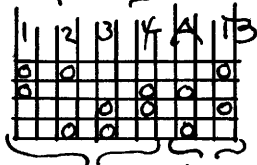
Standard tie-up —
Sinking Shed



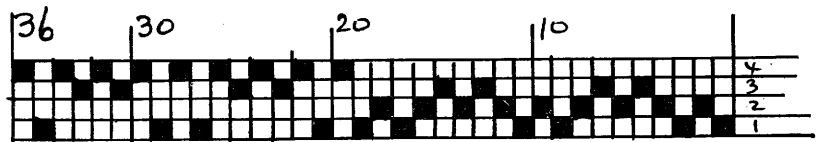
Draft No. 1



Standard tie-up —
Rising Shed

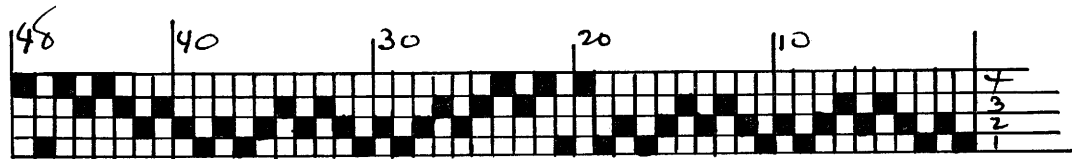


Draft No. 2



Pattern tabby

Draft No. 3



(threading used for the Italian pieces illustrated)

M.M. Atwater
Basin, Mont.

Section (f) should be treadled as follows:

(u) in natural, four times

treadle 4, natural; 1 blue; 4 natural; 1 blue; 2 blue; 1 natural; 2 blue; 1 natural; 2 blue; 3 blue; 2 natural; 3 blue; 2 natural; 3 blue; 4 blue; 3 natural; 4 blue; 3 natural; 4 blue; 1 blue; 4 natural; 1 blue; 4 natural; 1 blue; 2 blue; 1 natural; 2 blue; 1 natural; 2 blue; 3 blue; 2 natural; 3 blue; 2 natural; 3 blue.

(u) in natural, four times.

Section (g)

Treadle 1, red; 2, 3, natural; 4, red, — repeat four times

Treadle 1, 2, red; 3, 4, natural, — twice

Treadle 1, red; 2, 3, natural; 4, red — repeat four times.

Section (h), the tufted decoration, is set off by (u) in natural, repeated four times. Then three shots of tabby in natural, and the picked up tufting — three rows in dark blue, three rows in red, three rows in dark blue. The red stripe is the center of the border and the treadling should from this point be repeated in reverse back to the beginning.

The body of this piece is woven in bands of (u) in natural, repeated 14 times, between two alternating pattern stripes, only one of which is shown on the illustration. As follows:
Section (i)

treadles 1, blue; 2, 3, natural; 4, blue — repeat four times

(u) in blue, once

treadle 1, natural; 2, 3, blue; 4, natural — repeat four times

(u) in blue, once
treadle 1, blue; 2, 3, natural; 4, blue — repeat four times

Section (j) — not illustrated —

(u) in red, once

(u) in natural, twice

(*) Treadles 4, 1, 4, 1, 4, 1, blue

Treadles 2, 1, 2, 1, 2, 1, blue

Treadles 2, 3, 2, 3, 2, 3, blue

Treadles 4, 3, 4, 3, 4, 3, blue

Repeat from (*)

treadles 4, 1, 4, 1, 4, 1, blue

treadles 2, 1, 2, 1, 2, 1, blue

treadles 3, 2, 3, 2, 3, 2, blue

treadles 1, 2, 1, 2, 1, 2, blue

treadles 1, 4, 1, 4, 1, 4, blue

treadles 3, 4, 3, 4, 3, 4, blue (center)

treadles 1, 4, 1, 4, 1, 4, blue

treadles 1, 2, 1, 2, 1, 2, blue

treadles 3, 2, 3, 2, 3, 2, blue

treadles 1, 2, 1, 2, 1, 2, blue

treadles 1, 4, 1, 4, 1, 4, blue

(*) treadles 3, 4, 3, 4, 3, 4, blue

treadles 3, 2, 3, 2, 3, 2, blue

treadles 1, 2, 1, 2, 1, 2, blue

treadles 1, 4, 1, 4, 1, 4, blue

Repeat from (*)

(u) in natural, twice

(u) in red, once.

Of course many similar but different treadlings may be devised, and several colors — as many as one chooses —

may be combined in this weave. The above treadlings simply show some of the possibilities.

The above treadlings may be used with any one of the three threadings given, and will produce somewhat different figures with each. Draft No. 1 was used for a handsome cotton towel from Sweden, woven in brown, orange and yellow over a natural base. It will be recognized as the little overshot figure we know as "Sweet-Briar Beauty." Draft No. 2 is the familiar "Dog Tracks" pattern. Draft No. 3 — the threading used for the Italian pieces shown in the illustrations — will be recognized as the star-and-rose figure from the pattern known in overshot weaving as "Queen's Delight." The smaller the pattern the smaller the figures, of course, and the larger the pattern the more splashy the effect.

Other overshot patterns that might be woven in the cotton towelling technique include the "Diamond" in its various forms — drafts 1 and 2, page 158 of my Shuttle-Craft Book; draft 7 on the same page; drafts 32 and 34, page 167; draft 71, page 173; The first 50 threads of draft 77, page 177; the first 32 threads of draft 98, page 185; The first 42 threads of draft 141, and the last 76 threads of draft 142, page 200.

The weave is definitely a weave for soft cottons. It is unsuited to linens, or to mercerized cotton, or to rayon, or any other stiff or wiry material. However this method of weaving can be used with attractive results in silks, — for bags and the like, — and might be developed in wool yarns if a heavy, soft fabric is desired. It is best in cottons of the proper texture and affords a method of making a handsome article in this somewhat neglected material.

NATIONAL CONFERENCE OF AMERICAN HANDWEAVERS

All weavers are welcome at the fourth annual session, held June 15 to 28, 1941, at Waldenwoods Estate and Wild Life Sanctuary in the heart of Michigan. Supervision by Helen Louise Allen, director of Weaving at Wisconsin University, author of American and European Handweaving Techniques. Miss Allen will give two lecture courses: I. The History of Weaving, both European and American; II. Design in Weaving and Rendering for Appropriate Techniques. Draft writing by Rupert Peters, director of Visual Education, Kansas City, Mo. Instructors: Josephine Estes, teacher and writer of weaving; Osma Gallinger, Director of Creative Crafts School. Emphasis on authentic weaving methods and international techniques. Two samples

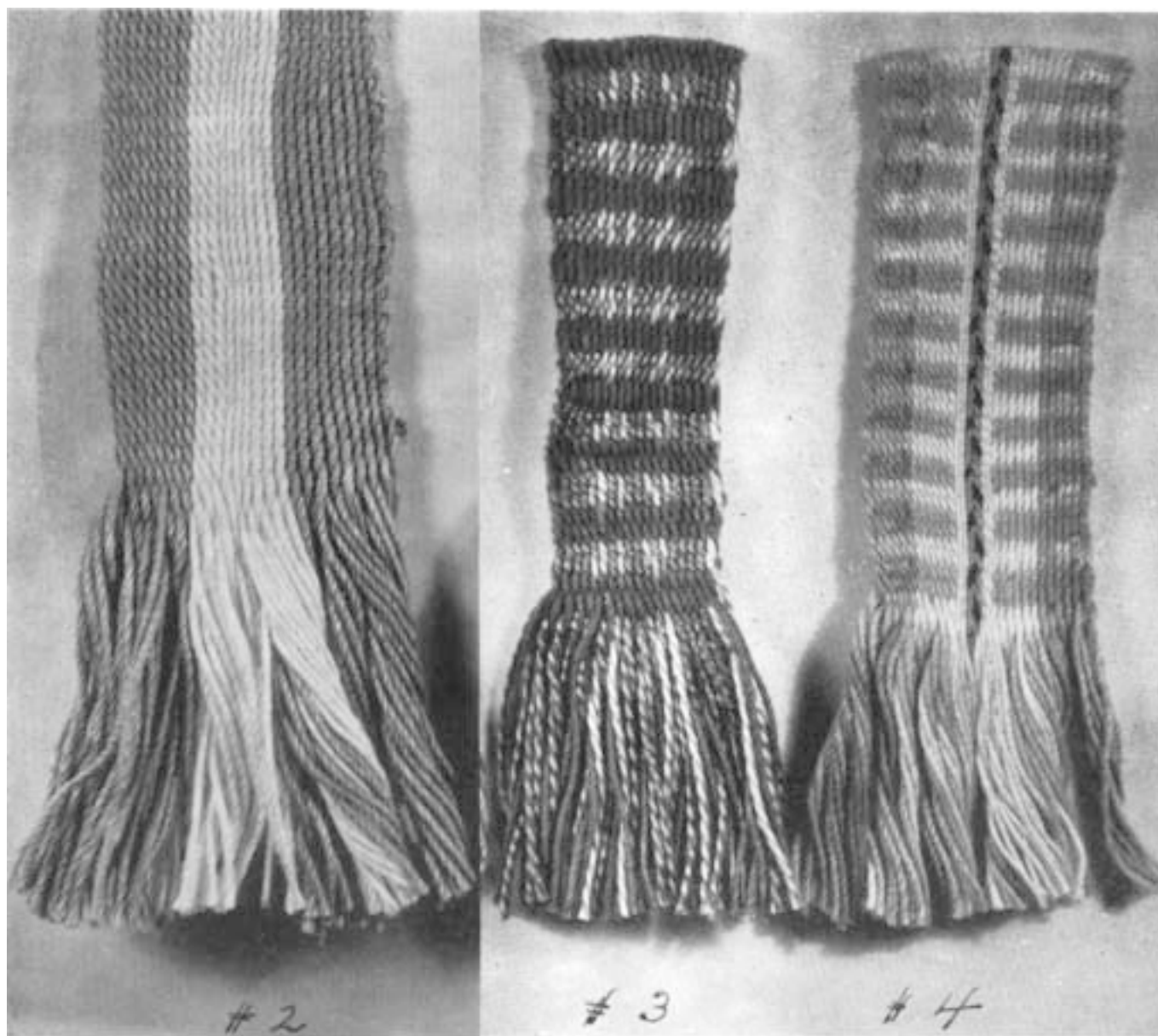
a day available in "round robin" of looms; over 30 techniques; weaving finishes; knots; braids; belts; lectures illustrated with representative fabrics. Trips to Cranbrook Academy, Ford's Industrial Museum, Hartland Area Industries, Gallinger Crafts Loom Factory. Michigan University textile collection 28 miles away.

Combine a vacation with delightful study and comradeship with weavers from many states. Splendid dormitories; accommodations for friends, husbands or wives; swimming, boating, woodland walks, evening fireplace gatherings. Write for descriptive folder to:

Creative Crafts Weaving School, Hartland, Michigan.

CARD WEAVING TECHNIQUE

by CLARA M. YOUSE



Card or tablet weaving has been the subject of many interesting chapters in the *Weaver* magazine, and no doubt many of the readers are familiar with some of the patterns described; but this article has been written with the purpose of describing the subject so that beginners will have less difficulty in mastering this fascinating branch of weaving.

This little craft should be carefully studied and the principles thoroughly understood at the very beginning in order to become a successful weaver.

The studies given here have been carefully worked out and the threadings woven and used as braids for hat bands, belts, wrist watch ribbons, handles for bags, trimmings for dresses and many other uses.

In card weaving the weaver turns backwards and forwards a bundle of cards, each perforated with four holes threaded with various colored warps. Now, in order to master this seemingly simple operation we will start at the very beginning and describe the cards that may be the means of producing some very beautiful braids.

A tablet is a square made of very tough cardboard, very thin and smooth, having all corners and edges nicely rounded so that the delicate threads will not catch and fray during the weaving. Each card must have four circular holes very smoothly bored and their edges carefully rounded, through which the threads pass. After experimenting with cards made at home I found the far better plan was to purchase the beautifully made cards by the hundred from Emile Bernat

and Sons Company. For the beginner the first braid should be made on twelve tablets, and it will be found that there is no limit to the number of designs possible, even on twelve tablets.

Let us imagine we have twelve tablets that we would like to use as our card loom. The first thing to do would be to find threads to use for the weaving. In this branch of weaving the warp is of the utmost importance, and threads must be firm, strong, smooth and pliable, so as to bear without fraying the friction caused in the continual turning which they have to bear as the weaving proceeds. In some branches of weaving the warp threads may be combinations of materials of different texture and quality, and the weft threads chosen to suit the fancy of the weaver, but in tablet weaving each thread of the warp must be of the same grist and quality in order to bring out the pattern clearly. Weft thread should always be of a finer grist than warp thread. Mercerized cotton, spun silk and pure twisted silk are the best yarns to use for warps. Wool yarns may be used if smooth, fine and strong. Linen thread, is the least suitable of all because of its harsh and uneven nature. The colors of the yarns are of the utmost importance, they must be strong, bright, and of sharp color contrast so as to bring out clearly the designs, which for the most part consist of thin lines and spaces of contrasting color. Thread for weft should be strong, fine and inconspicuous and plays no part in the design, its office is to bind together the cords of the warp and should be the same color as edges of braid.

Suppose we select mercerized thread No. 5 for our first braid and measure off the number of threads needed on our warping board. Let us try the simplest braid we can weave which is made with only one color, perfectly plain. Four threads are needed for each card, and for twelve (12) cards we will need forty eight (48) threads, each thread 54 inches long. The cards are lettered A, B, C, D. Pass one thread thru each hole starting at A — then B, C, D, from left to right (from front of cards to back). Continue to thread second card in same way and place on top of first card.

Thread all twelve cards in same way. See that ends of threads are even and tie in knot at right hand side. Grasp pack of cards in right hand and pass back and forth over threads until they are separated and even. Take a piece of very strong card, twelve inches long, tie firmly over knot and fasten to back of chair which weaver will use when working. Keep passing cards along threads until threads are even and tie knot in other end. Tie another piece of cord twelve inches long over knot and fasten to door knob or any other stationary object. The tension of threads is regulated by weaver's body.

The cards are now ready for our first steps in weaving. The texture peculiar to card weaving depends on the warp threads being twisted together between each throw of the weft. This twisting of the warp is effected by turning the whole pack of cards over in the direction parallel with the warp threads. By turning the tablets a quarter, half, three quarters or a whole turn a complete twist is given the entire warp. From this we can readily see that card weaving is a warp effect. In order to make a firm foundation to work upon we must first weave in place of weft a few slips of thick cardboard or very thin wood, about $\frac{1}{4}$ of an inch wide and two inches long. Grasp pack of cards firmly in

right hand and pass them along threads to end of warp next to weaver. Insert one piece of cardboard in shed, grasp cards firmly and turn to the right (or away from weaver) one quarter turn. Take a paper cutter and insert in shed pushing piece of cardboard firmly toward weaver. Repeat this process three times, or until a firm foundation is made. In this first study we must see that all the tablets move in the same direction and that the pack of cards is moved only one quarter round in the same direction each turn.

It is now time to start using weft thread for weaving, which should be of same color as warp. Wind thread on small shuttle and insert in open shed, turn tablets $\frac{1}{4}$ turn and press weft firmly in with paper cutter. Continue to turn cards $\frac{1}{4}$ turn away from weaver and draw weft thread just tight enough to bind warp threads together, but not so tight as to close them in too much, or the braid will be too narrow and drawn looking. As soon as shuttle has been passed six times from right to left and six times from left to right in twelve successive openings thus laying twelve lines of weft, a square of braid will have been made, its size depending on size of weft thread used. Before going on, the braid must be closely examined to see if the warp cords are all the same distance apart and if not, the spacing must be corrected by using a pointed instrument and pushing between them in places where they are too close together. Continue to weave until a point is reached when the warp threads get twisted beyond the cards. The knot at right hand side must be untied and the warp threads untwisted, adjusted and retied the same as when we started to weave. Keep on weaving until about ten inches of warp is left or when the cards will no longer turn easily, always in the same direction, and the first braid will be finished. Remove from chair and stationary object and cut ends even for fringe.

Many beautiful designs can be made in tablet weaving by means of using various colored threads for warp and arranging them in different positions. This is the foundation of all ornamental pattern design for textile fabrics, and simple as it may seem it affords great opportunity for the artist to display his skill and taste.

Our second braid will be made of stripes and woven in exactly the same way as the first braid. Let us use 16 tablets and select five bright colors of strong contrasting shades in No. 5 mercerized thread for warp. Each stripe in this braid is to represent four threads entered thru each tablet, consequently four threads of warp will be needed for every line of the design. The colors of the design are to be red, blue, yellow, green and black. Allowing 18 inches on each card for fringe and waste, measure off on warping board 24 black, 8 blue, 16 yellow, 8 green, 8 red threads. Follow directions given for first braid except when weaving turn cards to left (towards weaver).

SPECIFICATION FOR BRAID NO. 2

Tablet	Direction		Color
1	Left	A, B, C, D	black
2	Left	A, B, C, D	black
3	Left	A, B, C, D	blue
4	Left	A, B, C, D	yellow
5	Left	A, B, C, D	green
6	Left	A, B, C, D	yellow
7	Left	A, B, C, D	red
8	Left	A, B, C, D	black

9	Left	A, B, C, D	black
10	Left	A, B, C, D	red
11	Left	A, B, C, D	yellow
12	Left	A, B, C, D	green
13	Left	A, B, C, D	yellow
14	Left	A, B, C, D	blue
15	Left	A, B, C, D	black
16	Left	A, B, C, D	black

As we have said before, card weaving is entirely a warp effect, the office of the weft being simply to bind the fourfold twisted warp threads together. Therefore any ornamental designs must be arranged in the threading of the warp by manipulating the tablets in different ways. The simplest ornamental effect is achieved by arranging the tablets in pairs. If alternate tablets are arranged so that the left turn of one faces the right turn of the other throughout the pack, the twist of the alternate cards of warp will turn to right and left. It is easy to turn any one or any portion of the cards so as to make them work in pairs. Most of the designs for tablet weaving consist of different arrangements of vertical lines, horizontal bands or checker patterns. The threading which produces horizontal bands and checkers is the same, the difference of the two effects is brought about by placing the tablets in different positions in relation to one another. As the third braid will be threaded for a horizontal stripe pattern we will arrange the tablets in pairs before the weaving begins. Each tablet will be threaded with two dark threads and two light threads. Let us select mercerized thread for warp in black and white as these two colors have strong color contrast.

Select twenty cards and measure length desired for warp. We will need 40 black threads and 40 white threads.

SPECIFICATION FOR BRAID NO. 3

Tablet	Direction	Color	
1	Right	A, B dark	C, D light
2	Left	A, B dark	C, D light
3	Right	A, B dark	C, D light
4	Left	A, B dark	C, D light
5	Right	A, B dark	C, D light
6	Left	A, B dark	C, D light
7	Right	A, B dark	C, D light
8	Left	A, B dark	C, D light
9	Right	A, B dark	C, D light
10	Left	A, B dark	C, D light
11	Right	A, B dark	C, D light
12	Left	A, B dark	C, D light
13	Right	A, B dark	C, D light
14	Left	A, B dark	C, D light
15	Right	A, B dark	C, D light
16	Left	A, B dark	C, D light
17	Right	A, B dark	C, D light
18	Left	A, B dark	C, D light
19	Right	A, B dark	C, D light
20	Left	A, B dark	C, D light

Follow directions for weaving turning cards always in the same direction, and a horizontal striped braid will result.

For our fourth study we will make a clear cut checker design and add a few stripes to give this braid diversity and distinctness of feature. We will arrange the tablets for the right and left twist by threading them in groups before the

weaving begins, so many with the light threads at the top, and so many with the dark threads at the top. Let us select twelve cards for our loom and a color combination that is rich and effective, such as black, yellow, red, blue, purple and green. Measure on warping board the desired length of threads, always allowing 18 inches for waste and fringe: 16 red, 8 blue, 8 yellow, 6 green, 2 black, 8 purple — a total of 48 threads.

SPECIFICATION FOR BRAID NO. 4

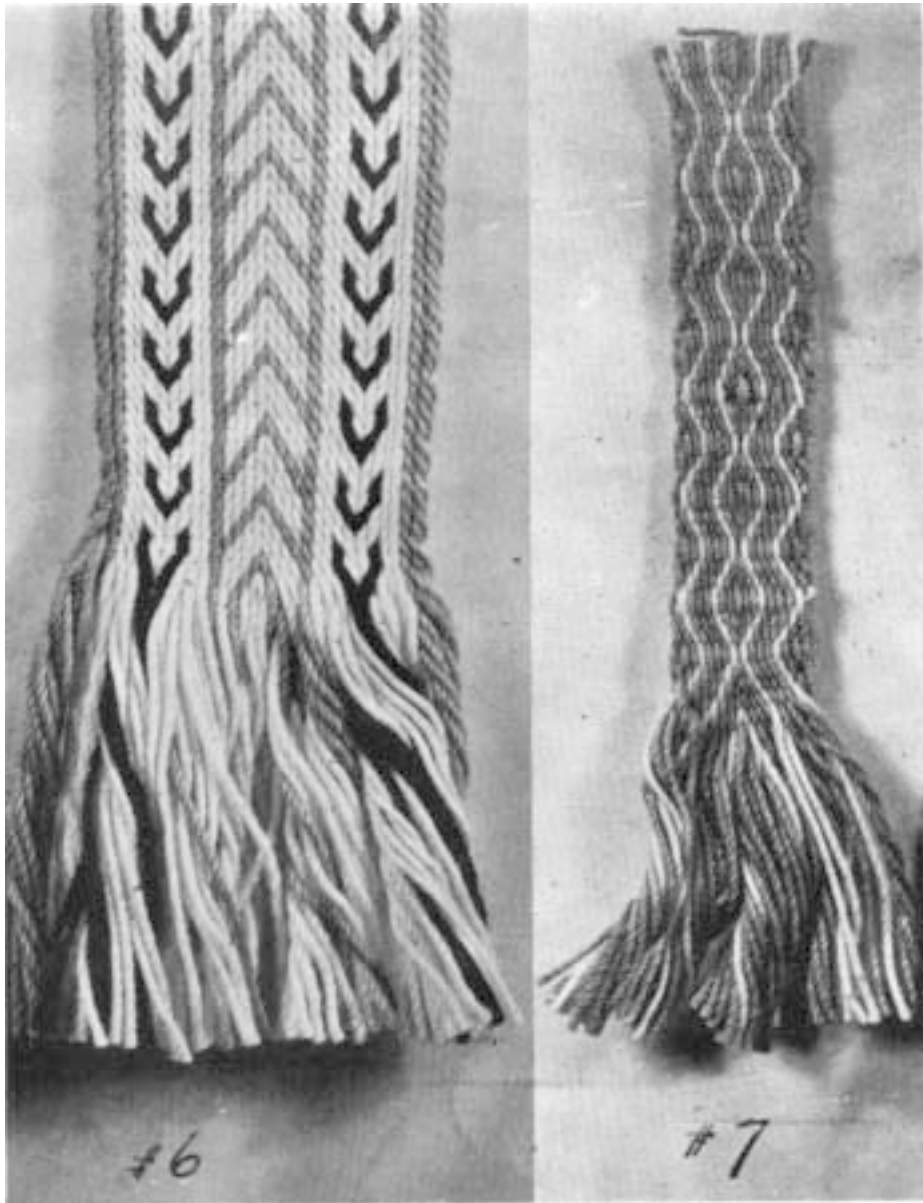
Tablet	Direction	Color	
1	Left	A, B red	C, D blue
2	Left	A, B red	C, D blue
3	Left	A, B yellow	C, D red
4	Left	A, B yellow	C, D red
5	Right	A, B, C, D purple	
6	Right	A black	B, C, D green
7	Left	A, B, D green	C black
8	Left	A, B, C, D purple	
9	Right	A, B yellow	C, D red
10	Right	A, B yellow	C, D red
11	Right	A, B red	C, D blue
12	Right	A, B red	C, D blue

Follow directions given for weaving and a checkered braid with a black stripe on each side of a single card checker for centre will result. The new features we have in this braid do not result from new threadings, but from the order in which the similarly threaded tablets are placed in relation one to the other before starting to weave. If the tablets are correctly placed at the beginning, the pattern, however complicated, will work out automatically as weaving proceeds, no matter which line of the design it starts on. The use of diagonal lines which have the effect of twills in ordinary weaving, and triangular forms, in addition to squares and checkers, vertical lines and bands, largely extend the scope and interest of designing for this fascinating branch of weaving.

When weaving the fifth braid the effect of reversing should be tried, which is simply ceasing to turn the tablets one way backward or forward, and turning them in the opposite direction. If this method is used many beautiful designs will result, chevrons will appear in the middle stripe and the chevron may be turned up or down to suit the fancy of the weaver. Suppose we select a color scheme that is striking in appearance and a trifle exotic. Measure on warping board 8 red, 4 black, 12 orange, 8 green, 20 purple, 12 yellow threads in mercerized cotton No. 5. The fifth braid calls for sixteen tablets and sixty-four threads — the length to suit the fancy of the weaver.

SPECIFICATION FOR BRAID NO. 5

Tablet	Direction	Color	
1	Left	A, B, C, D red	
2	Left	A black	B, C, D orange
3	Left	B black	A, C, D orange
4	Left	A, B, C, D green	
5	Left	A, B, C, D purple	
6	Left	A, B, C purple	D yellow
7	Left	A, B purple	C, D yellow
8	Left	A purple	B, C, D yellow
9	Right	A purple	B, C, D yellow
10	Right	A, B purple	C, D yellow
11	Right	A, B, C purple	D yellow



- 12 Right A, B, C, D purple
- 13 Right A, B, C, D green
- 14 Right B black A, C, D orange
- 15 Right A black B, C, D orange
- 16 Right A, B, C, D red

Follow directions for weaving and turn tablets twelve turns to right — then twelve turns to left and so on throughout the whole length.

It will be clear to the student that as the number of tablets is increased the scope of the design is extended, and the difficulty of manipulating the bundle of cards will be proportionately greater. It is said that some expert card weavers have been able to work with as many as 250 cards in a pack.

In our sixth study the braid is quite handsome and calls for 24 cards. The design consists of 12 cards plain stripe on each side followed by 12 cards chevron design, 8 more cards plain stripe, then the middle section in diagonal lines (which has the effect of the twill in plain weaving). The color scheme is most effective and the woven braid would make a lovely band for a felt hat.

If No. 5 mercerized cotton is used the braid will measure one inch wide. Measure desired length on warping board — 28 silver threads, 24 green, 20 black, 24 yellow — a total of 96 threads.

SPECIFICATION FOR BRAID NO. 6

Tablet	Direction	Color
1	Left	A, B, C, D green
2	Right	A, B, C, D silver
3	Right	A, D black B, C silver
4	Right	A, C, D black B yellow
5	Left	A, C, D black B yellow
6	Left	B, C black A, D silver
7	Left	A, B, C, D silver
8	Left	A, B, C, D green
9	Left	A, B, C yellow D green
10	Left	A, B, D yellow C green
11	Left	A, C, D yellow B green
12	Left	A yellow B, C, D green
13	Right	A yellow B, C, D green
14	Right	A, C, D yellow B green

15	Right	A, B, D yellow	C green
16	Right	A, B, C yellow	D green
17	Right	A, B, C, D green	
18	Right	A, B, C, D silver	
19	Right	A, D black	B, C silver
20	Right	A, C, D black	B yellow
21	Left	A, C, D black	B yellow
22	Left	A, D black	B, C silver
23	Left	A, B, C, D silver	
24	Right	A, B, C, D green	

Follow directions for weaving and try reversing.

In our study of braid number seven the wavy line, or river motif as it is sometimes called, is attractively threaded with four colors — 16 red, 16 yellow, 16 green, 16 blue — total 64 threads.

Select 16 cards and thread as follows:

SPECIFICATION FOR BRAID NO. 7

Tablet	Direction	Color			
1	Right	A red	B blue	C green	D yellow
2	Right	A blue	B green	C yellow	D red
3	Right	A green	B yellow	C red	D blue
4	Right	A yellow	B red	C blue	D green
5	Right	A red	B blue	C green	D yellow
6	Right	A blue	B green	C yellow	D red
7	Right	A green	B yellow	C red	D blue
8	Right	A yellow	B red	C blue	D green
9	Left	A yellow	B red	C blue	D green
10	Left	A green	B yellow	C red	D blue
11	Left	A blue	B green	C yellow	D red
12	Left	A red	B blue	C green	D yellow
13	Left	A yellow	B red	C blue	D green
14	Left	A green	B yellow	C red	D blue
15	Left	A blue	B green	C yellow	D red
16	Left	A red	B blue	C green	D yellow

Follow directions for weaving and turn cards from right to left for four $\frac{1}{4}$ turns — then reverse for 4 turns.

If the directions given so far have been carefully carried out and the braids finished, the weaver should have a clear understanding of card weaving, and only needs practice and perseverance to become an expert weaver. It will be seen that this branch of weaving is not merely a playful little game, but as technical as any other branch of the craft.

If the braids are carefully examined it will be seen that several of them are of an entirely different texture than others, altho made of thread of the same grist. This is due to the threading of the tablets and not to the method of weaving nor to the firmness with which the weft is beaten in.

For instance, in the fourth threading the thread is planned to be exactly the same as for threading No. 7, and it will be seen that the texture of the two braids is entirely different. No. 4 will be pliable and silky while No. 7 will be stiff and strong. In a threading of plain stripes the finished braid will be less firm than one of the more complicated patterns.

Some weavers hesitate to turn to card weaving because the fabrics thereby made are of narrow width and of little use; but if the technique is fully understood and the actual weaving mastered, the many intriguing possibilities will make this little craft so interesting that they will want to try out new designs again and again. The braids will vary in width according to the number of cards used and the size of thread used for warp. Fifty or sixty cards in a pack seem to be the largest number that a normal hand can manage successfully, and if thread No. 5 is used a braid made on fifty cards will be two inches wide. The braids can be sewed together in strips using threadings exactly alike in design for pattern, such as all checkers, all stripes and so on, for we have seen from our studies that texture is due to threading selected, therefore all braids should be of like texture so that when they are sewed together they will fit together without wrinkling in the seams.

In the braids here illustrated the plain stripe, horizontal stripe, checker, chevron, diagonal line and wavy line are shown. From these simple patterns a diversity of design may be made owing to the skill and originality of the designer.

BOOK REVIEW

"Weaving at the Little Loom House"

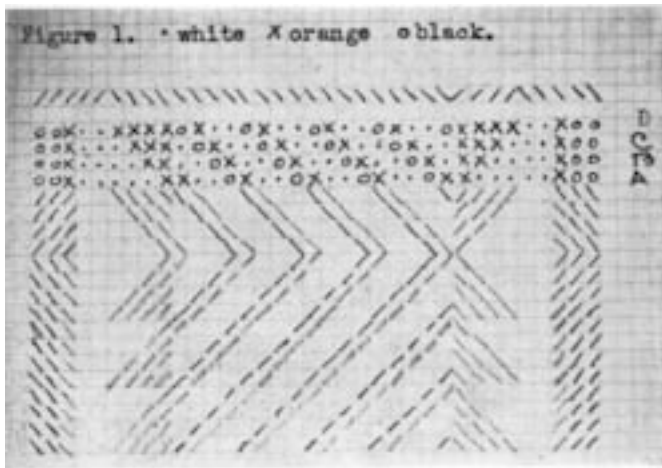
by LOU TATE

"Weaving at the Little Loomhouse" is a 36-page instruction manual as a part of the Little Loomhouse project. The manual is amply illustrated and is especially valuable because so much of the material in it, as well as illustrations, covers work of children. The manual discusses the simpler looms which can be made in school workshops, goes into the details of weaving from the warping through various techniques; also a part of it is devoted to advanced weaving with ample illustrations.

This manual is a worthwhile addition to any library on handweaving. It is priced at \$1.00 and orders for it can be sent to Emile Bernat & Sons Company, Jamaica Plain, Mass.

DRAWING DOWN CARD WEAVING DRAFTS

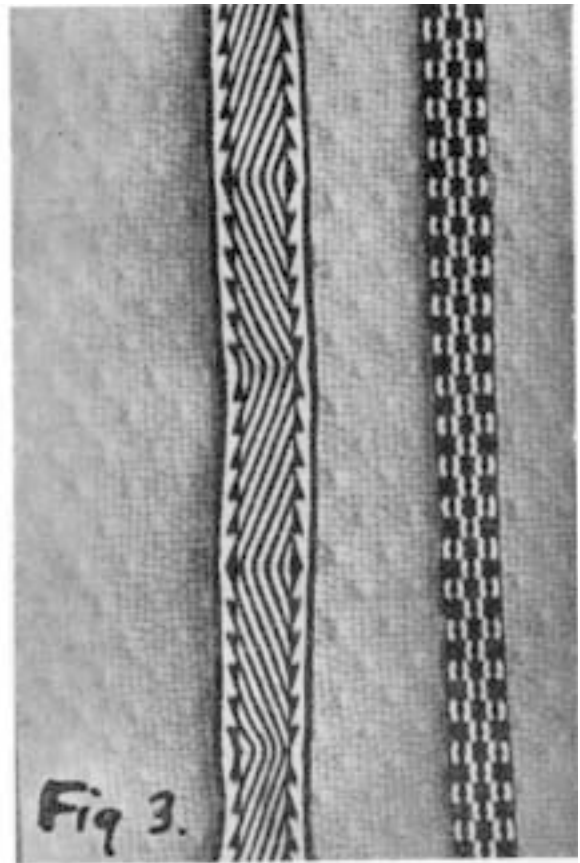
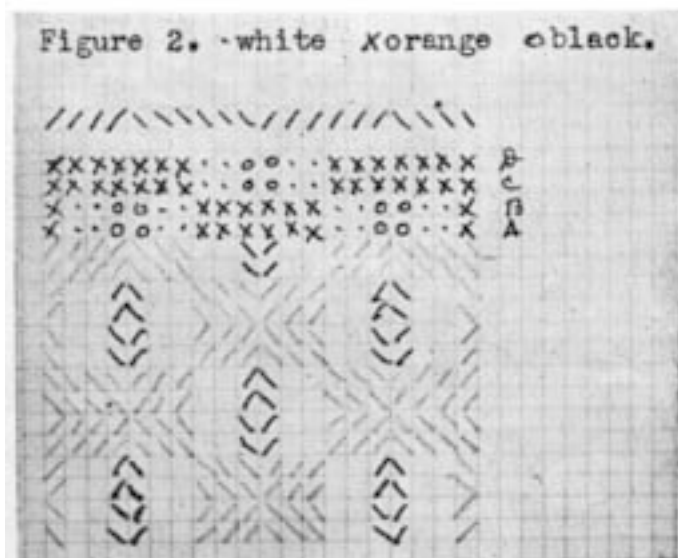
by MRS. W. F. McNULTY



Those who have done a little card weaving have, perhaps, wanted to do more. Those who have done more have, no doubt, been surprised at the possibilities this simple craft offers. It is a most pleasing medium of creative expression. One cannot but marvel at the ingeniousness of those ancient people who first devised this method of twining threads.

Card weaving may be as simple or as complicated as one chooses. Three, four or six holed cards may be used. While the hexagonal card allows somewhat more freedom of design, this is offset by the increased difficulty in handling the cards as well as resulting in a thicker fabric. Square cards with four holes are the most practical.

Herewith is presented a method of drawing down the drafts that may, perhaps, be of interest to those who are card weavers. This simple method of procedure shows, on paper, the way a completed band will look and is not only helpful in



working out an original draft but also in selecting, for use, a draft already written.

Figure one shows the draft for a band bought in Stockholm, Sweden. It is of orange, black and white linen but is equally good in cotton as well as in other colors. In drawing down this draft we will use black and orange pencil marks, slanting these lines, first, in the same direction as the lines at the top, which show the way the cards are to be threaded. The part of the draft showing the white threads need not be drawn down, as the pattern stands out more clearly if the white is omitted. Draw down the four lines D, C, B and A as shown in Figure one. Now let us reverse the slant of the lines, which will be equivalent to reversing the cards in actual weaving . . . The first line of the reverse will be the line marked A and the next one B. In the original band the weaving was done twenty-four turns forward and twenty-four turns backward. Drawing down the draft on squared paper in the two ways will show this. The effect is, of course, quite different from four turns forward and four turns backward.

Figure two is a draft from Denmark. The draft is shown drawn down as in weaving four turns forward and four turns backward.

The two bands are shown in Figure 3.

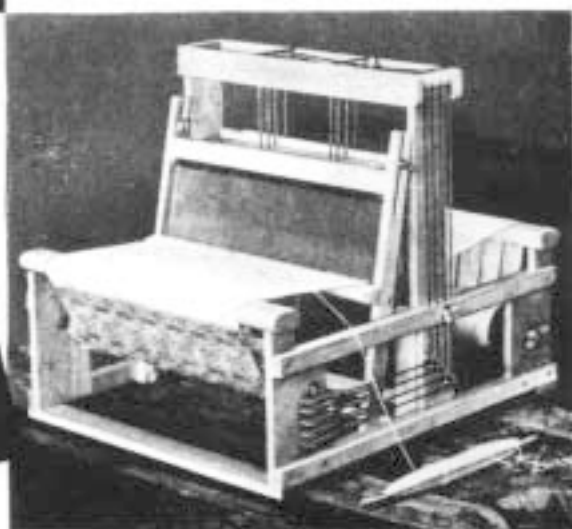
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