

ILLUSTRATION NO. 1 — *Showing detail—photograph taken from wrong side of textile*

## *Scandinavian Art Weaving*

### NORWEGIAN LYNILDBORDVEVNING OR LIGHTNING WEAVE

BY ELMER WALLACE HICKMAN

LYNILDBORDVEVNING, or Lightning weave, is closely associated with the Åklæ weaving technique. The Åklæ technique was described in *THE WEAVER*, Volume II, No. 2.

One could weave the Lightning or the Åklæ technique without the knowledge of both, but knowing both weaves affords the weaver greater opportunity for enriching the web. The Lightning weave is different from the Åklæ technique. While the Åklæ weave consists of squares or disengaged lines, the Lightning technique is done by the building of diagonal lines that go in a zigzag manner.

Although, at first glance, one would suppose that the

Lightning technique permitted very little opportunity for extensive designing, nevertheless, the combinations of zigzags and diagonals are almost limitless. A great many finished textiles shown in the Norwegian textile books are combinations of Åklæ and Lightning weaves; others are done only in the Åklæ technique, while scores of other illustrations show wall hangings, etc., woven in the Lightning technique alone. (*Gammal Allmogeslöjd Från Malmöhus Län*, Volumes 1, 2 and 4. All Scandinavian books mentioned in these articles can be secured from Albert Bonnier, 561 Third Avenue, New York City, New York.)

Our own American Indian designs resemble greatly these

Norwegian designs, regardless of the emotional or unemotional content of their characteristic symbols. And I once saw a Hopi weaver using practically the same technique on his two-harness upright loom as that employed by the Norwegians in the Åklæe technique. I tried several times, while this Indian exhibit was at a local department store, to talk with this weaver, but each time that I went to the exhibit he was out on the outdoor stage holding a snake between his teeth and doing his exhibition snake dance. Since his taste — as was my impression — showed a greater appetite for reptiles than for weaving, my limited time prevented me from talking with him.

Because of the similarity of these American Indian and Scandinavian techniques, I have examined several American Indian blankets and rugs. I found that most of the interlocking took place *around* a single warp thread and not *between* two warp threads, as does the Scandinavian weaving. This interlocking around one warp thread produces, at the joining, a fringed effect in the Indian textiles. The Scandinavian joinings, or interlockings, are straight and clean-cut. There is one exception: Picture weaving or, as the Norwegians call it, Billedvevning. Can it be that there is some connection between the Norwegian designs and the designs of the American Indian? I do not know, but I can imagine that such is quite possible.

Gladys A. Reichard, in her excellent new book "Navajo Shepherd and Weaver," doubts that the above is possible, concluding from a statement that she made. In this book (published by J. J. Augustin, 30 Irving Place, New York City, New York) the author describes the zigzag built up in a diagonal technique, instead of a horizontal technique, in order to get a "scalloped" edge. This very trying diagonal building seems to me an extremely laborious process; and certainly the scalloped edge is what we, as weavers, try to avoid. I suppose that the crude looms and, at times, the poor stretching of the warp on the American Indian looms made

this an accident rather than a virtue. Such was the case, also, of the old Scandinavian textiles that were made on crude looms. The weavings show a crookedness of edge and design that might hold for some, today, a sentimental anti-quearianism, but for most of us weavers this crookedness holds only adverse criticism. If a scalloped edge is what is wanted, that is another matter.

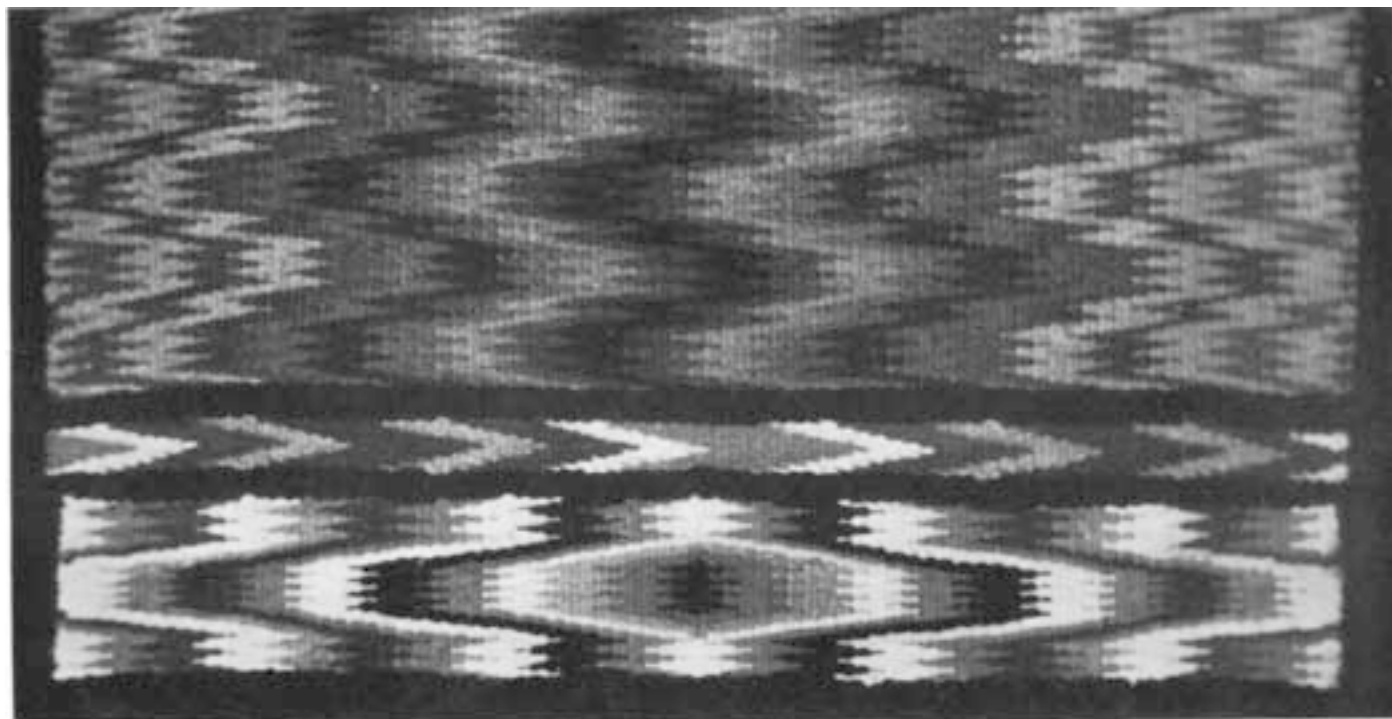
Assuredly, one should not strive for a scalloped edge today. Indeed one need not strive for it at all sometimes, in any type of weaving. A scalloped edge often has a peculiar faculty for stubbornly persisting in asserting itself.

Oddly enough, although our own American Indian weavings designs are strikingly similar to a great many Scandinavian designs, it is worth noting what Nils Lithberg says in a Swedish book called "Hemslöjd." He says:

To speak of Swedish homecraft in textiles in the meaning of one single style of craft with certain uniform features is absurd. The woven webs of Scania and Härjedalen, for instance, are widely different. The knotted rugs of Härjedalen are entirely unknown in Scania, while the tapestries and Röllakan (Åklæe in Norwegian) of Scania are quite unknown in Härjedalen. The Norrland rugs have strong color contrasts, red, green, white, yellow, and so on — resembling the open bearing and gay smile of the Norrlander in the midst of the dark mystery of the pine forests. In the Malmöhus weavings (where we find so much Röllakan and Lightning weaves) we get the same glow as in the evening's sunset, when it flames over the Southern plain of Scania. We get the "Skybragd" pattern in Norrbotten and Västerbotten. The "Skybragd" was, as late as the eighteenth century, the name for the Northern Lights.

I wonder, then, if this Lightning weave is not a reflection of that same aurora borealis — the shooting colored spikes into the heavens and their diffusion into one another. Some of the borders on the huge pieces of weaving, in the colored illustrations in the Scandinavian books, certainly lead one's imagination into that northern region where can be seen at certain times of the year this riot of color.

ILLUSTRATION NO. 2 — *Showing detail — photograph taken from wrong side of textile*



But, for fear of romancing, let us continue by saying that the Lightning technique produces just as heavy a fabric as does the Åklæ. The warp threads are entirely covered by the weft yarns, and the weaving is done, as in Åklæ, from the back of the work. *No interlocking, however, takes place within the Lightning weave, unless straight-side borders are used in the design.* The technique described below is done in such a way that it is difficult to tell the wrong side from the right in the finished product. (The photographs illustrating this article were taken from the wrong side of the weavings, after the ends were clipped off.) The weave can be done in several techniques, but the one given here seems the most satisfactory.

Before beginning the work it will help if the floor or table loom is raised from the back so that the loom will slant forward. In so doing, the work can be more readily seen on the loom. Also, less noise is made by the beater if a rubber kneeling pad is cut into four parts and one placed under each corner of the loom.

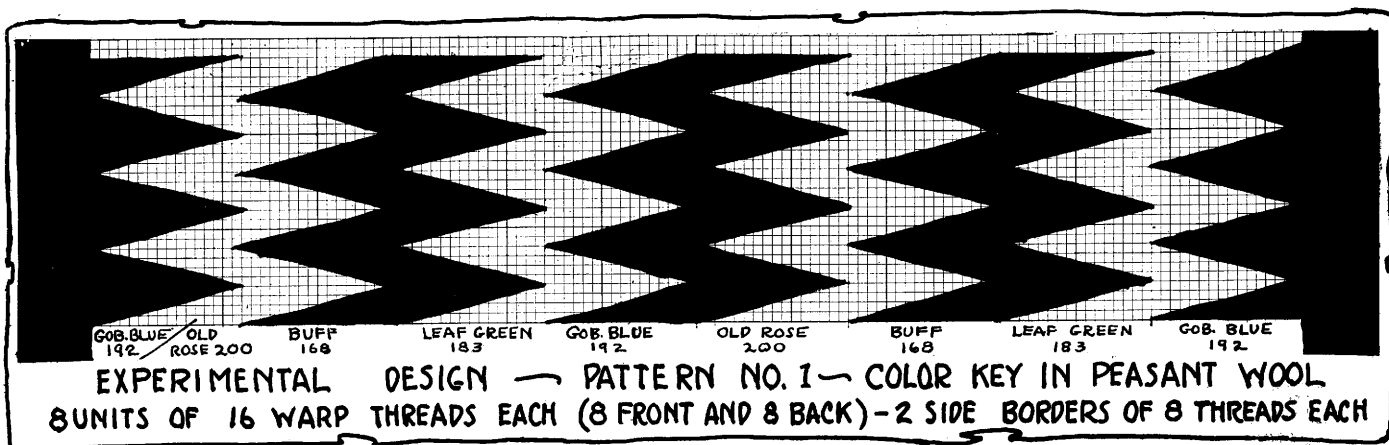
Although some Scandinavian weavers contend that the best effect is had from the use of several strands of single-ply wool for weft, I am sorry to disagree with them, as I have found that it is difficult to keep the strands even. Also the strands break easily when they get caught in the bobbins. I would, therefore, advise the use of three- or four-ply yarns, such as Peasant wool or French tapestry wool. If one cares to try the single-strand wool, use Bernat's Homespun doubled. Use a No. 8 reed and a 20/9 cable thread for warp, if possible. Carpet warp will do for experimental work. Wind the bobbins as described for Åklæ. Of course, as in the Åklæ technique, any loom can be used that will permit the making of two sheds as for plain weave.

For a practice or experimental piece I would suggest that the beginner use Pattern No. 1 for his design. Have an even number of warp threads, say 144; this will give eight sections of sixteen threads each (eight front and eight back warp threads) and allow eight threads (four front and four back) for each selvage or border. Make the colored bobbins — either as designated on the design or of your own selection — and weave the zigzag or Lightning a sufficient number of times, until you feel sure you know the process of advancing to the right; returning to the left; adding new bobbins, when needed; and dropping bobbins when the design no longer calls for them.

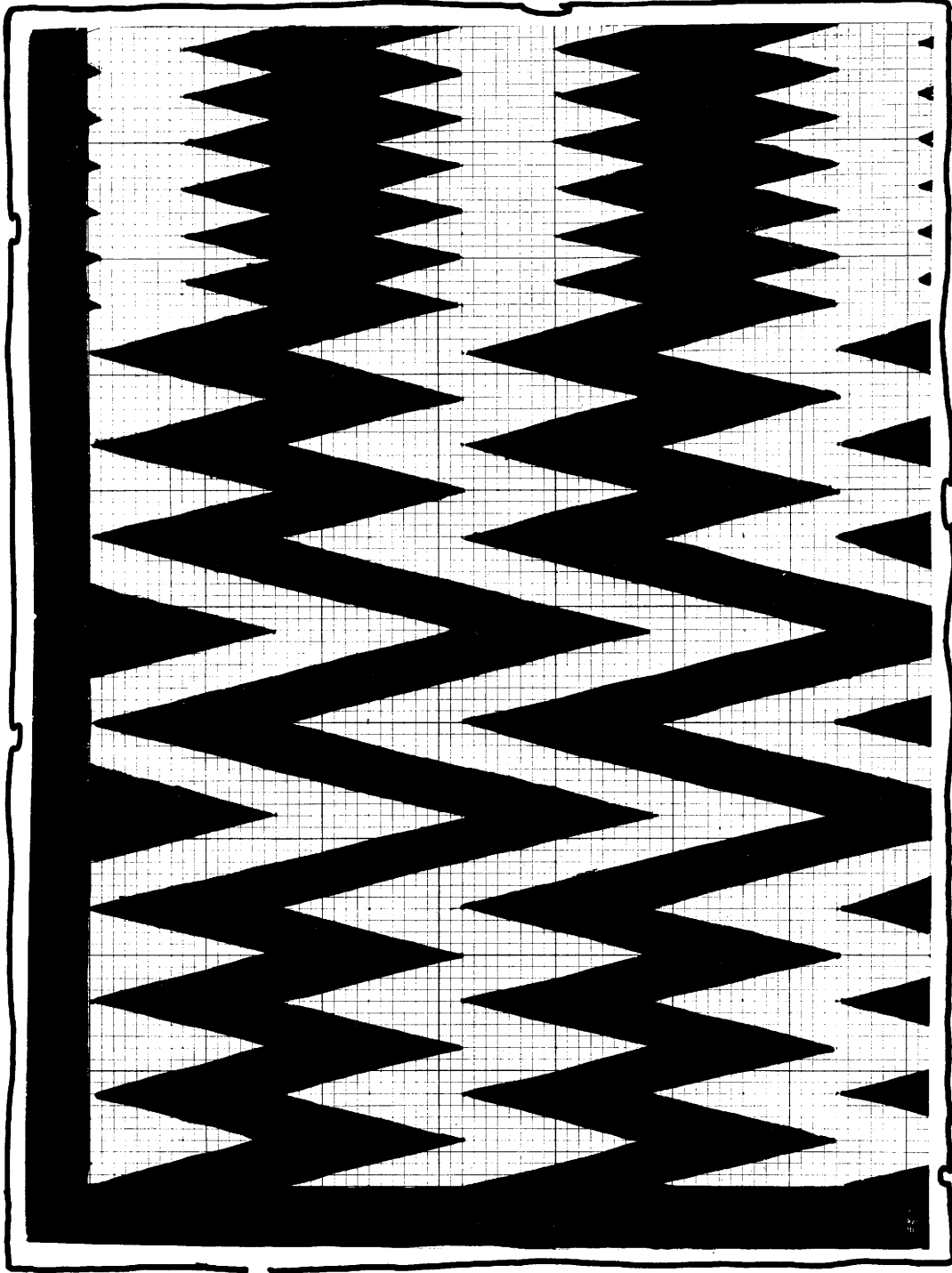
Make an inch heading with black wool weft yarn. This will act both as a heading and a bottom border. After you have done this you are ready to put in the bobbins that will make your zigzag pattern. Be sure that the first shed in which

you insert these bobbins is the same as the Interlocking shed in the Åklæ technique, that is, the first warp thread at the extreme left of the loom is at the back, or at the bottom of the shed, and the last warp thread on the right of the loom is at the front, or at the top of the shed. (The terms "front" and "back" are used for an upright loom, and the terms "top" and "bottom" refer to the position of the warp threads on a horizontal loom — most of our own American looms are horizontal looms.) Now divide your warp into sections of eight front warp threads, leaving four front and four back warp threads on each side of the loom for the border. No interlocking takes place within the zigzag pattern itself, but will occur at these side borders. In other words, you interlock only the black border bobbin at the left of the loom and the first zigzag bobbin beside it or, in this particular case, to the left of it. No interlocking occurs within the zigzag itself, because the weft shots fall one upon another in a diagonal line, so that no join is necessary. But at the sides of the weaving, where you have the borders, the line of meeting of the border bobbin and the zigzag bobbin is a straight line and requires joining or, as we say, interlocking (Figure No. 3, C).

Now suppose you have your Interlocking shed, insert the black bobbin at the left for four front threads, going in the left-to-right direction. The bobbin end of about two inches will be at the left selvage, and the bobbin itself will hang between the fourth and fifth front warp threads. Put in, next, your first zigzag bobbin. The end of this bobbin will be between the fourth and fifth front warp threads, in the same opening as the black border bobbin is hanging, and the zigzag bobbin will be carried through the shed for the distance of eight front warp threads, causing the zigzag bobbin to come out between the 12th and 13th front warp threads. Repeat this same process for the rest of the sections of eight warp threads with the zigzag bobbins (eight zigzag bobbins in all), and then there should be left four front and four back warp threads for the right-side border bobbin. Put the black bobbin through these four front warp threads. The end of this bobbin should be between the 68th and the 69th front warp threads, and the black bobbin itself will hang out at the right of the loom or weaving. There should be a bobbin and an end of the next bobbin hanging between the same two warp threads throughout the width of the weaving. Let the weft yarn lie loosely in the shed. If the weaver forms an arc with the weft, this will allow for the excess weft yarn necessary to cover the warp when the weaving is beaten down. In Colonial weaving we usually let the weft yarn lie on a diagonal line in the shed so that there will be sufficient yarn to cover the warp when the weft is



PATTERN NO.2 FROM ILLUSTRATION NO. 1



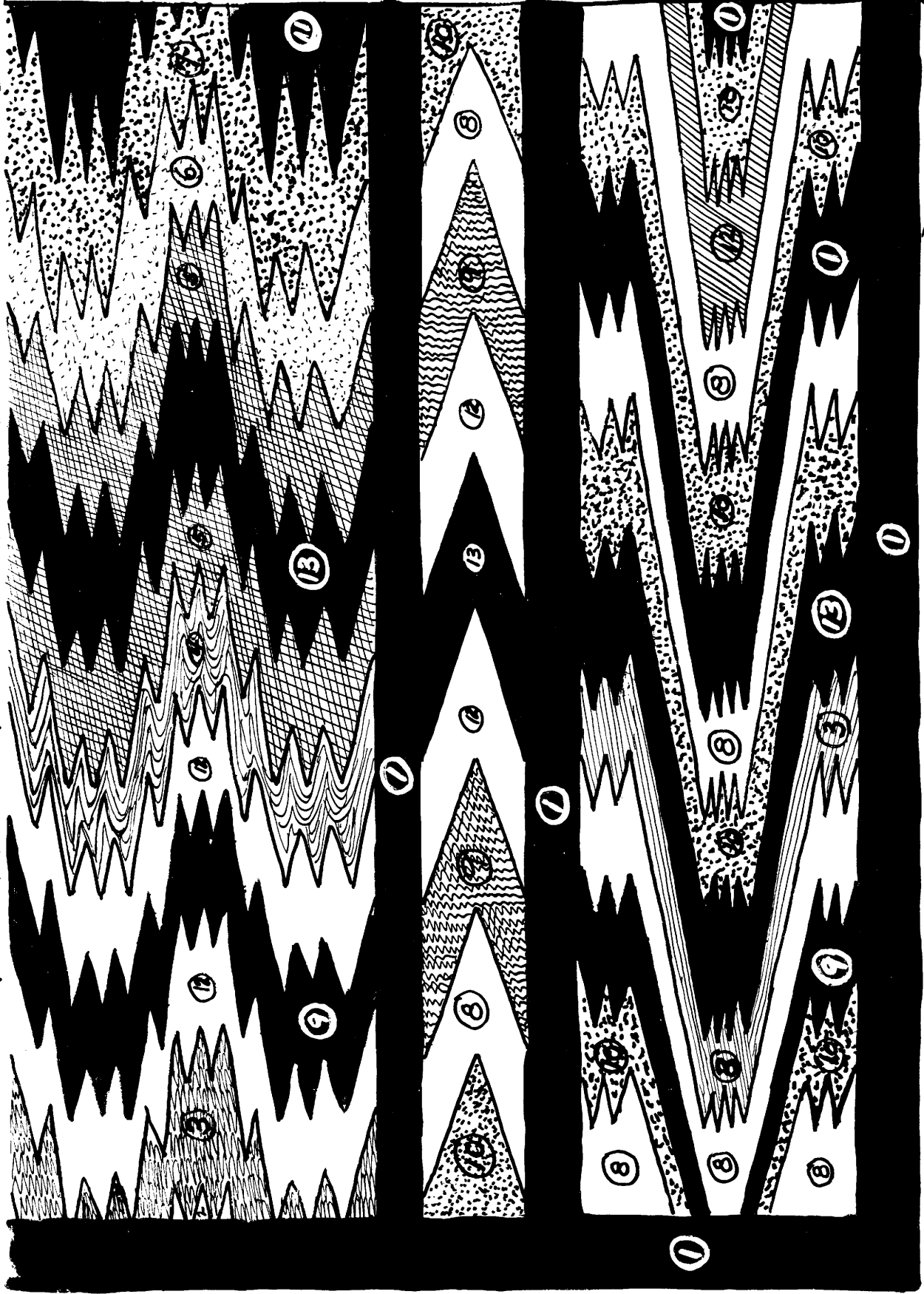
COLOR KEY IN BERNAT'S PEASANT WOOL EWY

ONLY TWO UNITS OF THE DESIGN ARE SHOWN. THE TEXTILE  
MAY CONSIST OF AS MANY UNITS AS DESIRED. NINE UNITS ARE USED  
IN THE ILLUSTRATION WITH COLORS IN ORDER AS FOLLOWS:

NATURAL-NO.197 BRICK RED-NO.186 NATURAL-NO.197 LEAF GREEN-NO.184  
OLD ORANGE-NO.177 WOOD BROWN-NO.190 LEAF GREEN NO.182 RED-NO.186 NATURAL

PATTERN NO. 3 — LIGHTNING WEAVE

[EWI]



COLOR KEY  
 1-BLACK 2-BROWN 3-TAN 4-MED. BLUE 5 GREEN BLUE 6-ROSE 7 MAROON 8-WHITE CENTER  
 9-GREY-GREEN 10-RUST 11-MAHOGANY 12-GOLD 13-PK. BLUE

beaten down and also keep the selvage from “pulling-in.” This arc answers the same purpose. Interlocking of the borders on this beginning shot is not necessary. Change the shed and beat well (Figure No. 1).

You now have the Pattern shed as we had in Åklæe. Starting at the right of the loom, bring your black bobbin through the shed toward the left. Your bobbin will fall between the fourth and fifth front warp threads — from the right side of the loom. But on this Pattern shed your *zigzag* bobbins will be put in the shed for the distance of only *seven* front warp threads instead of eight, as you did on the Interlocking shed. This vacant front thread is left so that on the next shed (Interlocking) you advance one step forward, or over that vacant warp thread. This makes the progression in your zigzag and forms your lightning design. Put all your zigzag bobbins in for seven threads toward the left of the loom. When you come to the left black border bobbin, you put it through the four front warp threads out to the left side of the weaving. Your zigzag, then, will be going diagonally toward the right, while your border bobbins will be making a straight line up the sides of the weaving (Figure No. 2). Change your shed and beat well.

You now have the Interlocking shed. The next step is as follows: Starting at the left black border bobbin, bring it through the four front warp threads, or to where your first zigzag bobbin is hanging. Take the zigzag bobbin and put it under the black border bobbin — you are interlocking now — and bring it up over the black bobbin and through the shed for eight front warp threads. This means that this zigzag bobbin will overlap the previous zigzag bobbin from the preceding Interlocking shed; the vacant warp thread will now be covered. No interlocking takes place while you put the rest of the zigzag bobbins through the shed for the eight front warp threads. But when you come to the right black border bobbin you bring the black bobbin under the last zigzag bobbin, up around it and into the shed for the distance of the last four front warp threads, and out to the edge of the weaving (Figures Nos. 3 and 4). Change the shed and beat well.

You again have the Pattern shed. Repeat as you did for the other Pattern shed above. Keep the border always the distance of four front warp threads and insert the zigzag bobbins for a distance of seven front threads. This process continues until the points of the zigzag are as long as one desires. I would suggest at first that, for the length of your point, you go in the right direction on your diagonal for the distance of eight warp threads. Also, when you make the reverse direction of your diagonal, toward the left, that you go for a distance of eight front warp threads. Refer to Pattern No. 1 for this.

The first half of the zigzag is now complete, if you have gone as far toward the right as you wish the point to go. There remains, then, the technique for making what might be called the second half of the zigzag, or the reversal of what you have just done. It is done in this manner: after the last weft shot is put in on the right-to-left direction — having made your zigzag point as long as you wish — you begin the reversal, or making the diagonal go in the right-to-left direction. (The first half of the diagonal went in the left-to-right direction.) End the last row of the first half of your zigzag on the Interlocking shed. You now interlock the border bobbins and the zigzag bobbin next to it as before, but on the first inserting of the zigzag bobbins from the right-to-left you go through the Pattern shed for a distance of *eight*

front warp threads (instead of the seven you used on the same shed in the first half of the zigzag). This will appear to be a double row or shot on the same eight warp threads (Figure No. 6). This prepares you so that you can reverse the direction of the zigzag by taking the weft yarn through only seven warp threads on the *next following* shed — the Interlocking shed. (On this part or half of the zigzag you will go a distance, then, of seven front warp threads on the Interlocking shed, whereas on the first half of the zigzag you went for a distance of eight front warp threads. You are now reversing your zigzag, therefore the technical process is reversed.) This will cause your diagonal to advance in the opposite direction of the diagonal in the first half of your zigzag. Incidentally, you are still on the same first shed of the second half of your zigzag. Put in all the zigzag bobbins for the distance of eight front warp threads from right to left. Change your shed and beat. On the returning shed, which will be the Interlocking shed, you interlock your borders as usual, but you put the zigzag bobbins through the Interlocking shed for a distance of *seven* threads only (Figure No. 6). Therefore, a résumé of the procedure may be stated thus: on the first half of the zigzag, the zigzag bobbins go through eight front warp threads on the Interlocking shed and through seven front warp threads on the Pattern shed. On the second half of the zigzag, the zigzag bobbins go through the front warp threads for a distance of eight threads on the Pattern shed and seven on the Interlocking shed.

When your diagonal point is long enough in going in the right-to-left direction, you begin your reversal by taking eight front warp threads on your Interlocking shed and seven on your Pattern shed, as you did in the very beginning.

That is the technique of Lightning weave. It is really simple when one gets the swing of it. The telling of it seems complicated, but focus mentally on the description of the technique above and visually follow the process. One can learn it quickly.

A brief description of weaving Pattern No. 2 is as follows: the heading is put in as usual. The number of bobbins used can be found on the Pattern sketch. The first part of the design is the same as the design of the experimental pattern. The zigzag points extend for a distance of sixteen warp threads (eight front and eight back). As many of these zigzags can be woven as desired. After these have been woven you will advance in the same way until the point of the long diagonals is reached. These points extend for a distance of thirty-two warp threads (sixteen front and sixteen back). Reverse the direction of the diagonal and weave as many of these as necessary. The next zigzag (medium size one) is the same as the first zigzag. Weave your required number, then reverse in the right-to-left direction to get your small zigzags. They cover a distance of eight warp threads (four front and four back).

The small zigzag may answer for the main part of your weaving with a border at each end made of the middle size and the large size zigzags. The measurement is about 18 inches up to the small zigzags; the portion of zigzags measures about 9 inches, and the other end of the weaving about 18 inches. This makes, with the headings, a hanging of about 18 by 46 inches. There are 160 warp threads in the design.

Pattern No. 3 is somewhat more difficult to do. A beginner might weave the main body design with some patience. It is a progression of four front warp threads, making the advancing shed the distance of three front warp threads. The chevron stripe is easy, of course. But the bottom border is

# LIGHTNING WEAVE TECHNIQUE — (LYNILD BORDVEVNING)

FIGURE-1  
STARTING THE  
BOBBINS  
THE EIGHT THREAD  
DIRECTION

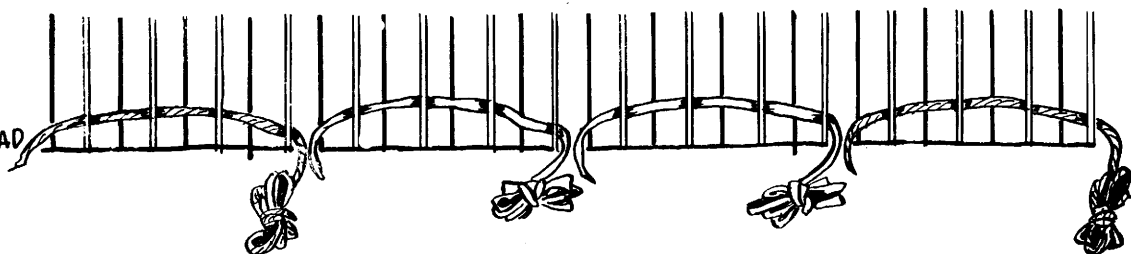


FIGURE-2  
THE SEVEN THREAD  
DIRECTION

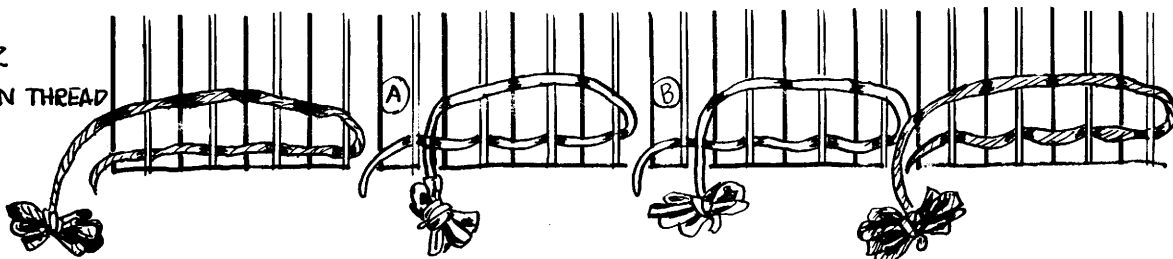


FIGURE-3  
ADDING A NEW  
BOBBIN (A)

(B) FILLING OR  
ADVANCING THE  
DIAGONAL OF  
THE ZIGZAG

(C) INTERLOCKING THE  
BORDER AND ZIGZAG BOBBINS

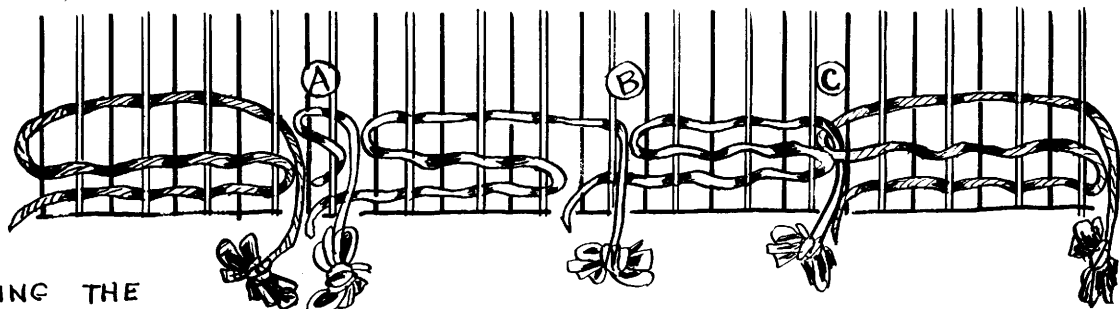


FIGURE-4  
SHOWING VACANT  
WARP THREADS  
FILLED (A)

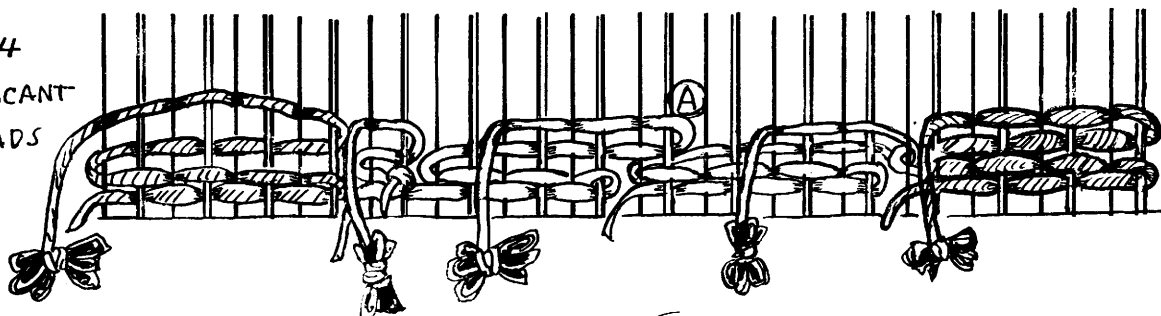
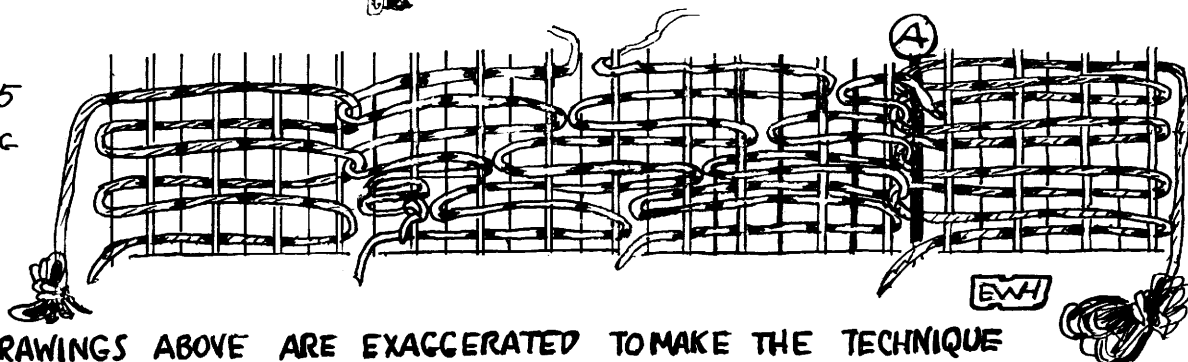


FIGURE-5  
(A) DROPPING  
A BOBBIN



THE DRAWINGS ABOVE ARE EXAGGERATED TO MAKE THE TECHNIQUE MORE CLEAR. FOR LACK OF SPACE **FOUR** FRONT WARP THREADS ARE USED IN THE DRAWINGS INSTEAD OF EIGHT ON THE INTERLOCKING SHED AND THE WEFT IS PUT THROUGH **THREE** WARP THREADS ON THE PATTERN SHED INSTEAD OF SEVEN.

not easy. One, while working on the left half of the design, is always one step ahead on the right half of the design. The right half is just the reverse of the left half; therefore, the reverse process of one goes on at the same time while weaving the other. It would take too long a description here to give the exact working order, so that must be left unsaid.

Suggestions from my experience in weaving this technique:

1. If, after you have planned your design, you find that the remaining warp threads that may be left for a border are uneven in number — as four front and three back — you will find that the weft will have to be wrapped around the last selvage thread of the uneven number — when that shed is uppermost — in order that the weft yarn will be held out at the edge of the weaving. We find that this same annoyance happens in some drafts in Colonial pattern weaving also.

2. When one wishes to add a new bobbin: Add a new bobbin on the same direction shed (Interlocking or left-to-right direction) as you added the original bobbins when beginning the piece of weaving. You will find that in going back from right-to-left direction you will need a new bobbin when your last bobbin at the left of the loom passes under the seven warp threads, and one front and one back warp threads are left vacant further to the left of this shot. If there is a border these two warp threads will be next to it; if there is no border these two warp threads will be on the selvage of the web. These two threads (one front and one back) are left uncovered until the shed is changed, and the bobbin is *then* added. This shed is the one that goes in the left-to-right direction (Interlocking shed). There need not be any interlocking at this point until the next Interlocking shed, as the end is not easy to interlock, and this will not be noticed when work is beaten down (Figure No. 3, A).

Practically the same method applies at the right side of the loom. When you have two warp threads (one front and one back) remaining with the furthestmost right zigzag bobbin, you leave these two warp threads vacant; the second zigzag bobbin is put in the left-to-right direction; the second right zigzag bobbin covers the two vacant warp threads and becomes the first right zigzag bobbin. This right zigzag bobbin will now be beside the black border, or out at the selvage if there is no border.

3. To drop a bobbin: in order to know when to drop a bobbin at the selvage or at the black border, suppose that

you are going in the right-to-left direction. Also, say, the black border — which is over and under four warp threads — and next to the black border you have a tan zigzag bobbin, and next to the tan bobbin is a green zigzag bobbin. To drop the tan bobbin you will find that when you put the green bobbin through the shed from right to left — through the eight warp threads — there will be two warp threads (one front and one back) that must be taken care of with your tan weft yarn. Put the tan weft yarn through the shed of one and one warp threads. Tie it off then with a slip knot. When the next row is started, you leave vacant these two warp threads, because the space must be left so that the green bobbin can advance on the second next shed. This applies in either direction of the weft yarns (Figure No. 5, A).

4. It is somewhat confusing to plan Lightning designs on cross-section paper unless the squares are as small as what two shots of weft would be in the woven fabric. A twenty squares to the inch can be had, however, and can be successfully used.

5. Start working at the right side of the loom when bobbins are pointing toward the right; start working at the left of the loom when the bobbins are pointing toward the left. It is well, also, to interlock the border bobbins with the zigzag bobbins at both sides of the weaving before weaving at all with the zigzag pattern bobbins. This keeps bobbins from getting tangled.

6. Be careful not to wrap a weft bobbin around a warp thread when putting it into the shed — refer to the drawing in the Åklæ article illustrating this (Figures 12 a, b, c and d).

Explanations of drawings: In Figure No. 6, the reversal places (A, B and C) appear to be *not* on the same row. In the real weaving of the web they will be. It was difficult to show this on the drawing — or perhaps I had rather blame it on my crude drawing technique.

Pattern No. 2 shows but three units of the design. Illustration No. 1 shows the full width of the design. The color key is at the bottom of the drawing.

Pattern No. 3 has but half of the design, but the entire design is shown in the photograph, Illustration No. 2.

There is a possibility that the Lightning technique might be easier for some to weave than the Åklæ technique. Why not try it? I am sure that your troubles will result in hours of enjoyment.

