

Scandinavian Art Weaving

SWEDISH DUKAGÅNG

by ELMER WALLACE HICKMAN

Dukagång, it has been said, is to be found in ancient Egypt.

Although this be true, the Swedish people, especially, have realized the desirability of this weave and have so incorporated this technique in their textiles that Dukagång seems pronouncedly Swedish in character. It is *not*, however; because other Scandinavian countries do not, by any means, ignore the versatility of the Dukagång technique. I suppose that the identification of Dukagång with the Swedish people is the result of their textiles being more widely publicised, both commercially and photographically, than the other peoples of Scandinavia.

Dukagång technique is discussed in the Danish publication, "Vaevebog For Hjemmene"; in Caroline Halvorsen's Norwegian book, "Handbok i Vevning", many varieties of this technique are explained under the name of Sjonbragd.

There are, at least, two ways of doing this technique. One is by the use of sticks in back of the harnesses with long-eyed heddles, and the other is by the method described in this article. Maria Collin, in her Art Weaving book, "Skansk Konstvävnad" (Swedish Art Weaving), describes both methods quite fully.

Dukagång, although not unknown to some American weavers, is an extremely engaging technique—not only for Art Weaving but as a technique with which to decorate the web of any so-called plain weave. It is a "laid-in" technique (perhaps more correctly called "pick-up" by the Swedish, since one does pick up the warp threads under which the design bobbins are placed). The technique combines a plain shuttle weave with an inlaid design. The plain shuttle weave may answer for the background when only the design is "picked-up", or the shuttle weave may act as a tabby binder when the design, as well as the background, is "laid-in." The tabby weave in either process holds securely the weft shots of the design. Illustration No. 2 shows the border stripe done by "picking-up" only the design units, and the background is woven by the tabby weft. (An illustration of the entire weaving appears in Volume 11, No. 1 on page 21.) In the stripe where appears the deer design, the design and the background are "laid-in." In the latter (the background) the tabby is still used between each pattern row to hold, in place, both the background and the design weft.

The word "dukagång" means "cloth paths."

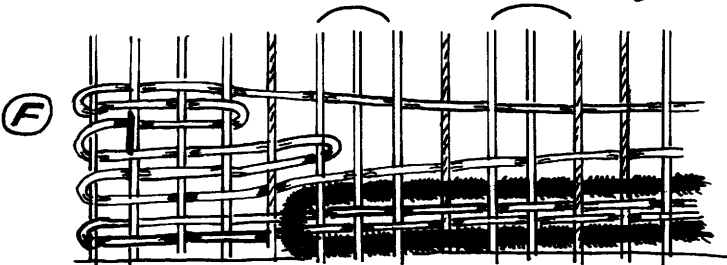
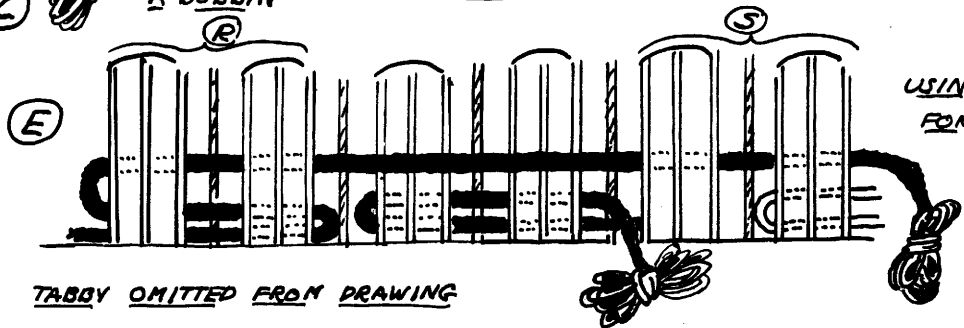
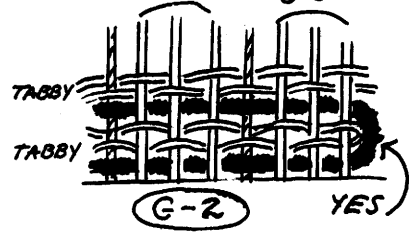
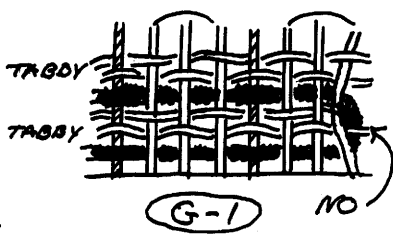
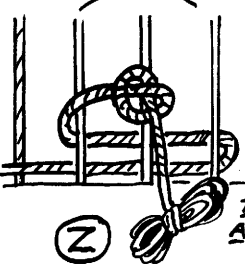
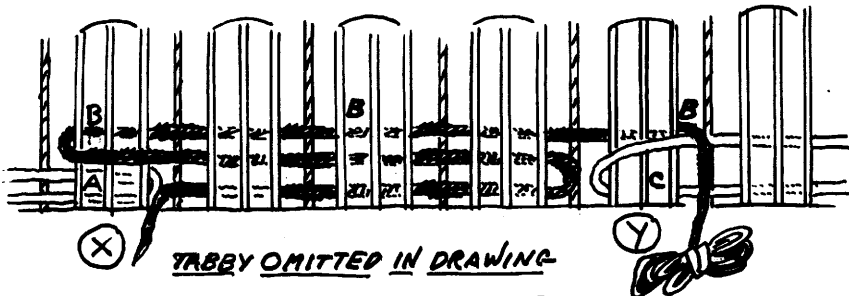
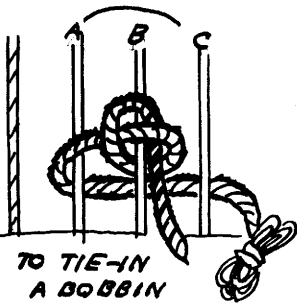
I have seen a few treatises, in English, on the Dukagång technique in varying concepts — some informative and others characterizing its use for simple spot decorative-ness. One confusing explanation, which I read recently, was so confusing that a weaver, unacquainted with the technique, would turn from the information—or lack of it—with a fearful dread that his own mental powers for apprehending were sadly absent. And yet, the working process, as the Swedish do it, is really comparatively simple. The working method requires only very careful observation while one is at the loom. This careful observation is necessary in order to see that all units of design are put into place and put in the right places.

The web in Dukagång—when one has mastered the technique—builds more quickly than either the Åklæ or the Lightning weaves (these two weaves have been explained in previous articles). The work is done from the back or wrong side of the weaving; and a mirror is needed to hold under the right side of the progressive work so that one can see that it is being done correctly. Any sizable mirror that is conveniently handled will do for the purpose.

One *can* make mistakes in the process of working the Dukagång technique; therefore, as I learned from Miss Sara Mattsson, who taught me this weave, a bobby hairpin is a decided advantage to have in one's possession. No other accessory can take its place—not even a large darning needle. "Bobby-pin!" Yes, that brings back to me an unforgettable afternoon while I was learning this unique technique. Naturally, I had none of these precious feminine necessities, so continually had to borrow one from Miss Mattsson. For fear of proving myself a memorable nuisance, I bought a card of this certainly indispensable equipment during noon hour at a five and ten-cent store. Although hesitant, at first, about making the purchase, no embarrassment was caused me. But, when I returned to the studio and proudly displayed my triumphal acquisition to Miss Mattsson and several of the other student weavers, I let myself in for a volley of hilarious epithets and vocal cudgelings, which, though highly amusing, promised to wreck, almost, a much-needed afternoon. Tragedy so often mollifies one's existence. So it was with me; I learned what a hairpin can do to one's determination and one's art!

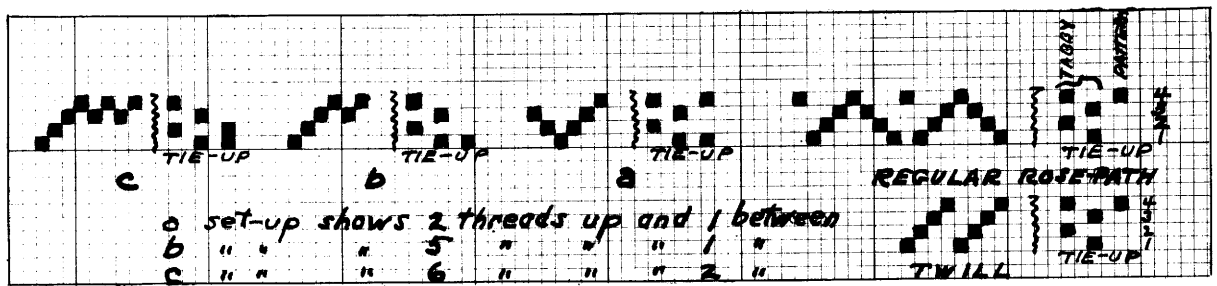
And the very helpful use of this hairpin is this: should one miss "laying-in" a unit of design and it is found only later, after several rows of the weaving have been put in, the bobby-pin is serviceable to insert the omitted unit.

SWEDISH DUKAGÅNG



IN THE ABOVE, DOTTED LINES ARE USED TO SHOW THE WEFT UNDER THE "THREE-THREADS GROUPS" SO THAT THE SKETCHES WILL BE MORE READILY UNDERSTOOD

THESE SKETCHES SHOW THE WORKING SIDE OF THE WEAVING.



DRAFTS AND TREADLING

"ROSE-PATH" AND "TWILL" ARE MOSTLY USED THE OTHER DRAFTS "a", "b", "c" ARE USED FOR FINER "SET-UPS"

PLATE NO. 1



ILLUSTRATION No. 1-A—*Experimental Textile, showing the working side.*

With the weft slipped into the head of the bobby-pin, “lay-in” the design unit between the tabby shots and through the correct sheds—the work having been pushed up the warp so that one can get at the vacant place. This will save taking out the finished work, which is always disagreeable to do. The best way, however, to avoid this process is not to make the mistake in the first place . . .

The colors used in the work can be as lavish as one wishes; but it is better to use more subdued tones when the entire weaving is done in the Dukagång technique. Harsh primary colors should really be shunned. Some excellent effects are to be had by combining various tints and shades of one color—such as brown. This combination will run through the darkest brown to the lightest tan, with, perhaps, a touch of rust to accentuate and give life to certain parts of the design.

The designs to be employed are worked out on cross-section paper. The square should count for the group of three threads that the shed produces and the lines that divide the squares on the paper will correspond to the single warp thread that is on the bottom shed. (Refer to draft and tie-up). Great opportunity is offered to the weaver who wishes to create his own designs, but for the benefit of those who do not care to do so, I have arranged a varied assortment of designs to accompany this article. None of the designs are original; all are either adaptations or “liftings” from old Scandinavian sources.

The finished product done in the Dukagång technique looks like a series of long vertical columns or paths with

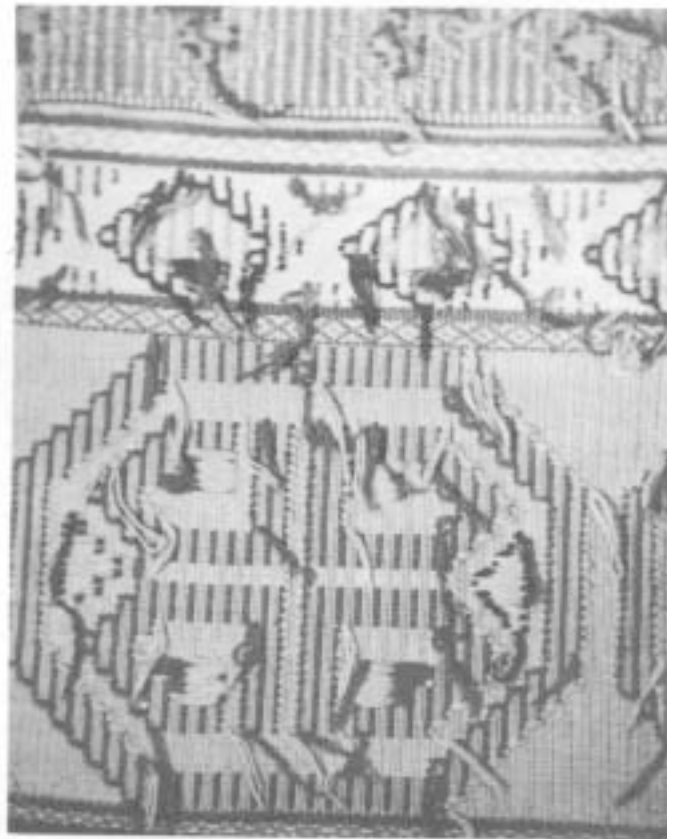


ILLUSTRATION No. 1-B—*Experimental Textile, showing the usable side.*

an interval of one warp thread between each series. This straight path effect happens because the pattern or design bobbins are put-in always on the same treadling combination of three warp threads on top of the shed, and one warp thread on the bottom of the same shed. These three warp threads are completely covered by the weft yarn, while the interval of one warp thread is but partly covered by the tabby weft yarn. Because the warp shows on this interval, the warp threads should be a better grade yarn. The warp is threaded singly through the heddles and the dents of the reed. Warp set too closely in the reed will prove awkward with which to work, yet the warp must be one of strength. A good weft yarn is Bernat’s Homespun wound *doubled* into the bobbins. The tabby when used singly as a binder can be the same as the warp. But when the background is formed by the tabby weft, it is more satisfactory to use a fine wool yarn such as Fabri or Shetland. However, that can be a matter of choice. One strand of Homespun will do quite well, also.

A four harness loom, either table or floor, is used for this work with a tie-up and threading as given in the accompanying draft. The pattern drafts ordinarily used are “Rosepath” and plain twill. When the “Rosepath” threading is used, one can break up the Dukagång technique-areas with stripes of “Rosepath” pattern. The twill will not permit such an interesting pattern stripe.

The “set-up”:

Loom: 4 harnesses, 4 treadles or levers.

Warp: 10/2 mercerized cotton, 16/2 mercerized cotton

or No. 10 Perle cotton.

Weft: Homespun, doubled, for pattern; single for background. Also for background — single Fabri or Shetland.

For tabby: same yarn as for warp.

Reed: No. 15 for 10/2 warp; 1 thread in heddles, 1 thread in dents. No. 12 for 16/2 warp; 2 threads in heddles, 2 threads in dents. No. 15 for No. 10 Perle threaded singly through heddles and reed.

We shall assume that the loom is threaded. On the Structo or Superior looms the pattern design shed will be formed by pressing down Levers 2, 3, and 4. This combination will bring a group of three warp threads on top of the shed, leaving one warp thread (harness No. 1), between each group of three, on the bottom shed. On the floor loom Treadle No. 1 is pressed down causing the shed as the above to be formed. This is the only pattern shed that you use. The tabby sheds are 1 & 3 and 2 & 4. Have your tabby weft on a shuttle of some sort and your design bobbins wound double in the manner described in the article on Aklae weaving. In winding the bobbins with the two strands of Homespun weft wool, it is well to use a swift on which to hold the skeins. Your bobbins can then be wound more easily and quickly. Pull from the skein a length of about twelve feet and then double the thread; but instead of doubling the thread throughout its entire length, begin to wind the doubled strand around the thumb and index finger, and your length that you pulled out will double with that coming from the swift. This accomplishes two steps at once. When you get to the

original end of the yarn, break the second length evenly with the first and tie both ends around the bobbin. This is only a suggestion, however, but it will save time. Wind the bobbin as best it suits you.

Weave about 8 shots of tabby, beginning on the 1 & 3 shed by putting the shuttle in the shed from the right; then, of course, the shuttle will return through the 2 & 4 shed from the left. This procedure is necessary, otherwise, if the tabby weft is put through the shed in the opposite directions, the warp threads at the selvages will not always be caught. Now get the pattern shed—groups of three on top with one warp thread on the bottom. These three warp threads will be hereafter designated as “three-threads group.” The design bobbins are put in from left to right, i.e., the end of the weft yarn will be on the left of the design unit and the bobbin proper on the right of the design unit. This is important.

When inserting the bobbins, the “three-threads group” of warp threads—whatever the number of “three-threads group” may be in the unit of design—are picked up on the middle finger of the right hand when the bobbin is coming from the right-to-left direction, i.e., the warp is passed under the warp threads with the left hand; and as the bobbin passes through the unit of warp threads it is caught with the middle finger—the one that up to this time has been holding up the warp threads—and the thumb of the right hand, and the bobbin is pulled through the shed. Just the reverse happens when the bobbin is coming from the right-to-left directions, i.e., the warp is held up by the middle finger of the left hand; the right hand passes the bobbin through the shed and the bobbin is caught by the middle finger and the thumb of the left



ILLUSTRATION No. 2-A—Right side of weaving—showing detail.



ILLUSTRATION No. 2-B—Working side of weaving—showing detail.

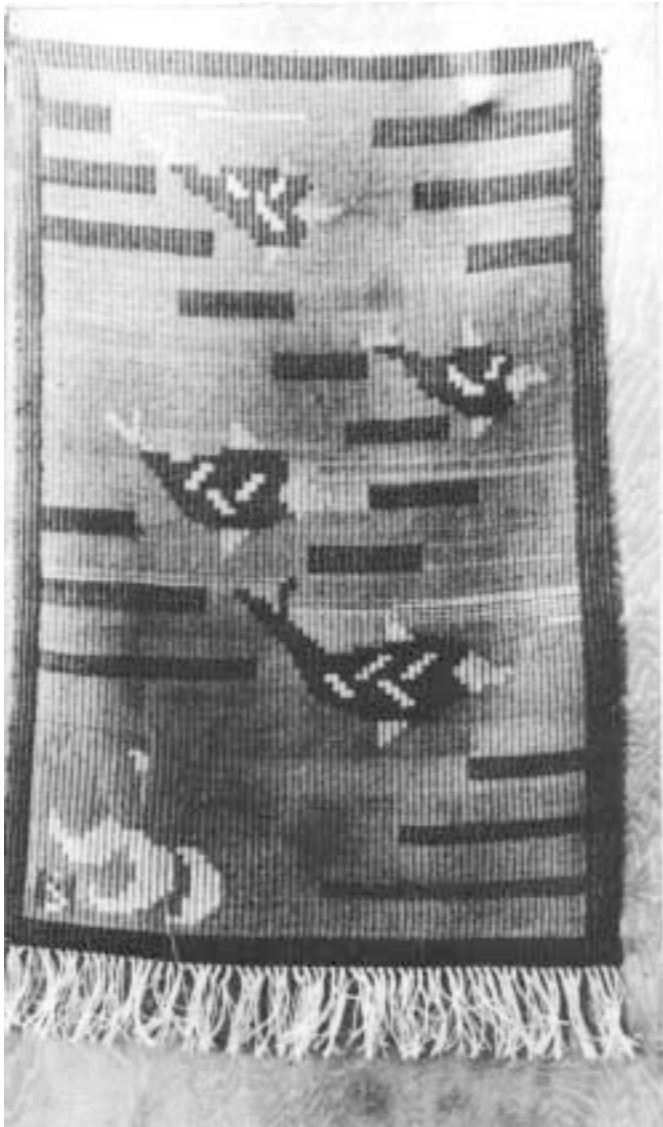
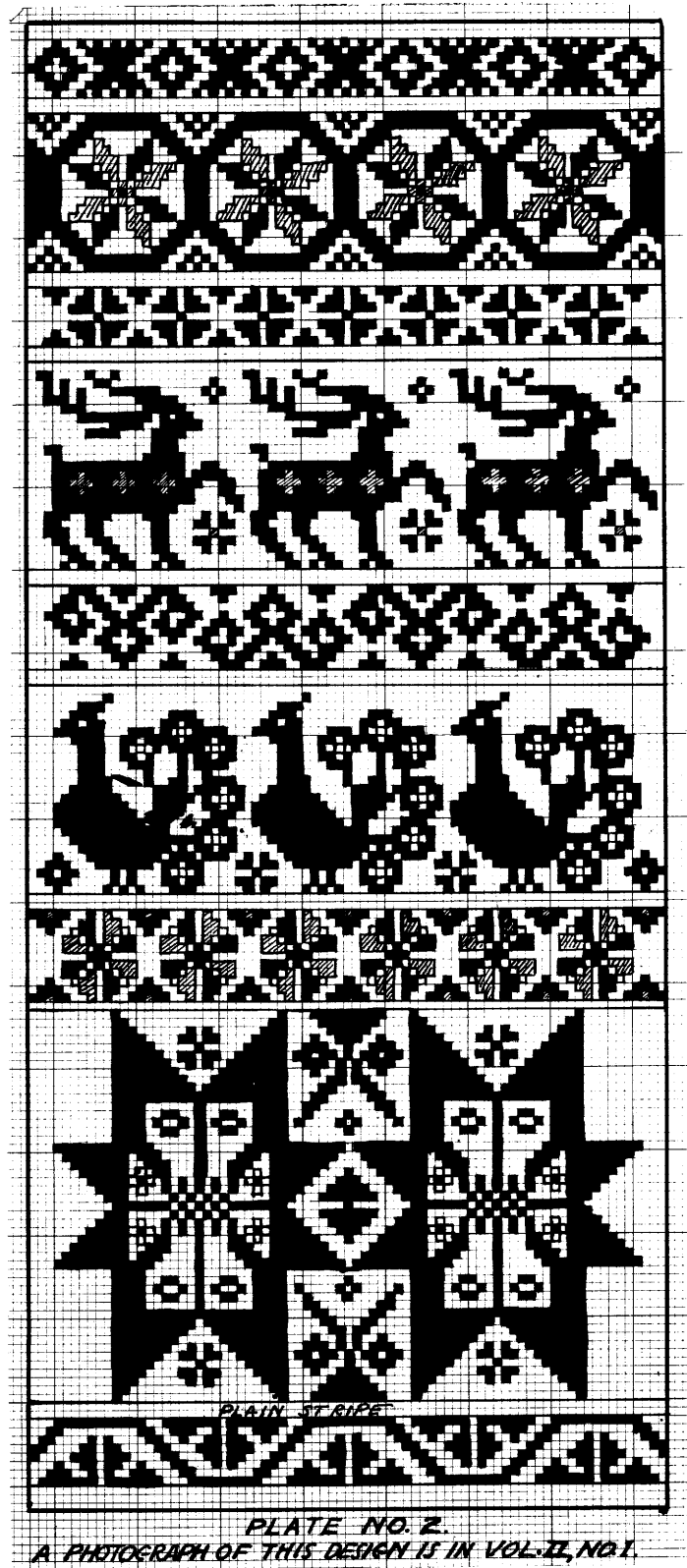


ILLUSTRATION No. 3—Fish design in Dukagong—woven by Miss Sara Mattsson.

hand. All bobbins at all times must be going in the same direction.

Put all the bobbins through the “three-threads groups” shed as far as they go in the units of design; change your shed by the 1 & 3 treadling; beat; and throw a shuttle of tabby; change the shed by the 2 & 4 treadling; beat; and put-in another tabby weft. There must be two shots of tabby after each row of design is put-in. Change the shed back again to the pattern shed (treadles 2, 3 and 4 on the table looms, and treadle 1 on the floor loom) and put-in all the bobbins from the right-to-left direction as far as the unit of design goes. This row will, of course, cover the same space as the first row of design weft. No interlocking takes place in this weave. Again follow the design row with two shots of tabby.

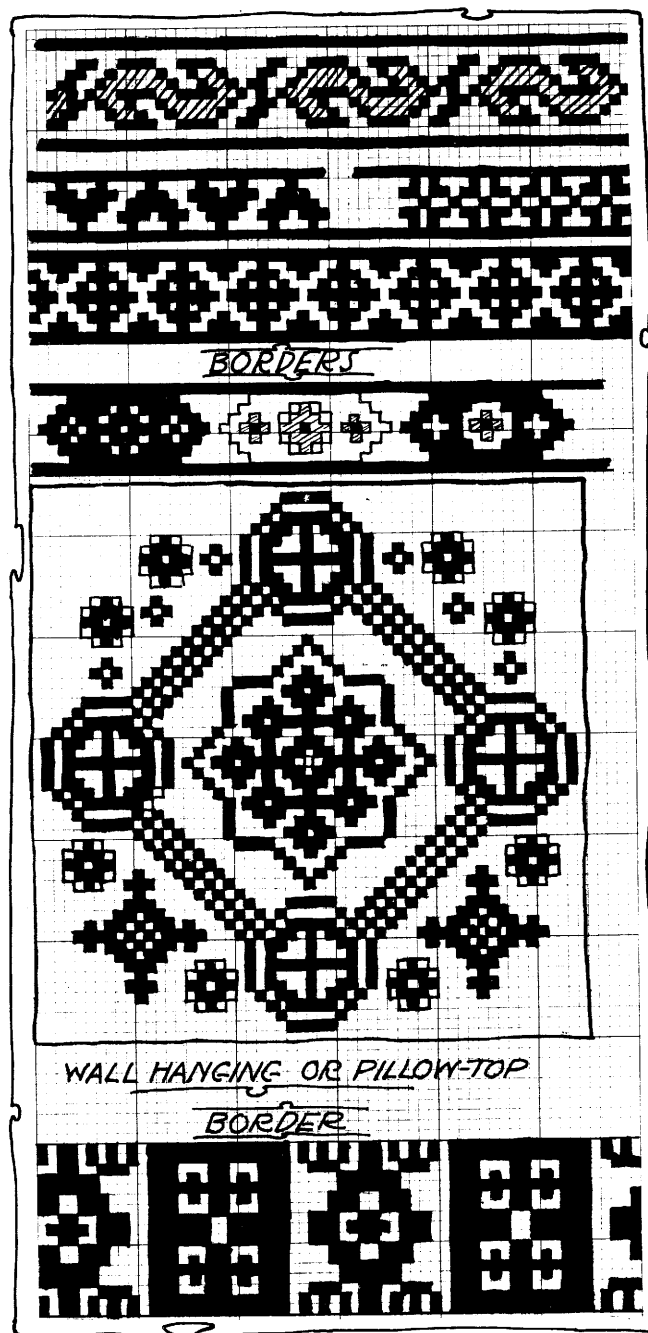
You continue these two processes—a pattern row from the left-to-right direction, followed by two tabby shots; and a pattern row from the right-to-left direction, followed by two tabby shots—until your blocks are high enough



—squared. In other words, it takes three or four shots of pattern weft to square a block of design. It would, at first, be best to use four shots, two to the right and two to the left, so that you can always make your design change on the left-to-right direction shed (the shed that you began with). You may not always be able to do

this as the set in the reed (the warp) may be closer or further apart, according to the number of reed used. Warp set closer than has been advised will require less shots of pattern weft and warp set further apart will require more shots in order to square the blocks. These two processes are all that there is to the Dukagang technique.

In Illustration No. 2 the weaving was done with imported vegetable-dyed wools of a finer grist than Home-spun, consequently it was necessary to use three strands in winding the weft bobbins. Only three shots of weft were woven to square the blocks. The change in design came also on alternating shed directions. This made the following of the design a little more intricate.



In order to help you with difficulties that may arise, the following list of suggestions is offered:

1. When the bobbins are first put-in, whether at the beginning or when a new color bobbin is added, the ends of the yarn are tied as in Figure M. It is necessary to tie the ends in this way so that the end of the yarn points downward. This keeps the end out of the way and from interfering with the progress of the work. When the bobbin is put in the shed, push the main part of the bobbin up the warp threads and tie-in the end on the middle thread of the "three-group." Pull the knot tightly and push it down to the already finished web, remembering to keep the unit of three warp threads evenly separated after you have pulled the knot down.

2. If a unit of design is too long so that the bobbin cannot be put through the shed conveniently, use two bobbins of that color, dividing the unit, say, in half, for each bobbin.

3. When putting the bobbins in the shed on the right-to-left direction start at the left of the loom. When putting the bobbins in on the left-to-right direction, start at the right side of the loom.

4. On advancing in the design: if the weft color advances a unit to the left, take the bobbin and skip *back* over the unit of "three-threads group" to the advancing opening and put weft bobbin through the shed. Figure X, Plate I.

5. If the weft color advances to the right your weft will be carried over the unit or units to the part of the design where it is to be put into the shed. The units that do not change in the design should be put in the shed before those are put-in that do change. Figure Y. For example: it is best to first put-in the A and C bobbins before bobbin B. This will permit bobbin B to come over the C weft caught by any other weft thread. In changing units of catch around the weft thread B. All weft threads must hang free after they are put through the shed and not caught by any other weft thread. -In changing units of design pull the weft tightly enough over the back of the advancing threads so that there is no loose skip; preserve the "arc", nevertheless, when the weft thread is put in the shed.

6. Be sure the tabby does not pull-in the selvage warp threads. Use the horizontal line for the tabby throw as one does in Colonial weaving. Pull the selvage edges out with the thumb and first finger before beating, so that there is sufficient tabby yarn to allow for the take-up of weft in beating. This is particularly necessary in this type of weaving because the pattern shots are so much thicker than generally used in Colonial weaving.

7. If you put-in four shots of pattern weft to square a block of design, your changes will all take place on the same direction shed (left-to-right) with which you originally began your work. But if you need an odd number of shots to square your blocks (this will depend on the thickness of your weft yarn and the "set" of your warp

in the reed) — as three or five shots — your pattern change will take place on the second shed with which you began in alternate changes of design. It would be best, while learning, to square your blocks with an *even* number of weft shots. Less confusion will result. A No. 12 reed with two strands of Homespun would take four shots to square the blocks; a No. 15 reed, with a 10/2 warp would require only three or four shots to square a block with the double strand Homespun wool — according to the beat of the weaver.

8. When pulling or feeding the yarn from the bobbins do not pull too hard because single-ply yarn, such as Homespun, breaks easily. If you have any difficulty in this respect use Shetland or Zephyr. Try some other yarn at first rather than your patience!

9. To tie-off a bobbin, slip the bobbin around the middle thread of the “three-threads group” with a slip knot and cut off the weft thread about one and one-half inches from the work. Figure Z.

10. If you wish your work to be extremely neat on the wrong side, use a bobbin for each unit of design, regardless of colors. But if the skip, say, Yellow to Yellow is not too long, one bobbin will suffice. Figure E. That is, if you have the design as at Figure E with one “three-threads group” to be covered by Yellow weft; next to it—to the right—is a Black weft color of one “three-threads group”, and next to the Black is a Yellow color unit of two “three-threads groups”; put the Black weft in the shed (from left-to-right, in this case) and then, taking the Yellow bobbin, put it through the shed (from left-to-right) for the distance of one “three-threads group.” Bring it up, then, and out to the surface of the weaving. Skip over the Black unit, and then put the Yellow bobbin into the shed for your distance of two “three-threads groups.” The Yellow yarn will be pushed down over the back of the Black when beaten down by the beater. The drawing is exaggerated to show this more clearly. The same applies when the weft is going from the right to the left of the loom. It isn’t well to skip over more than three units of design.

11. Pick up the *three* threads in each group instead of, as might happen, just *two*.

12. Don’t make bobbins too bulky. They are not easy to work with. Eighteen or twenty wrappings around the thumb and finger are sufficient.

13. Make a habit of working only a certain distance between the front cross beam of the loom and the batten. Then wind the work onto the cloth beam. This will help keep not only a more even width throughout the weaving but also allow a larger shed in which to work. This latter is particularly applicable to the smaller looms.

14. While working at the loom keep a good tight tension on the warp at all times.

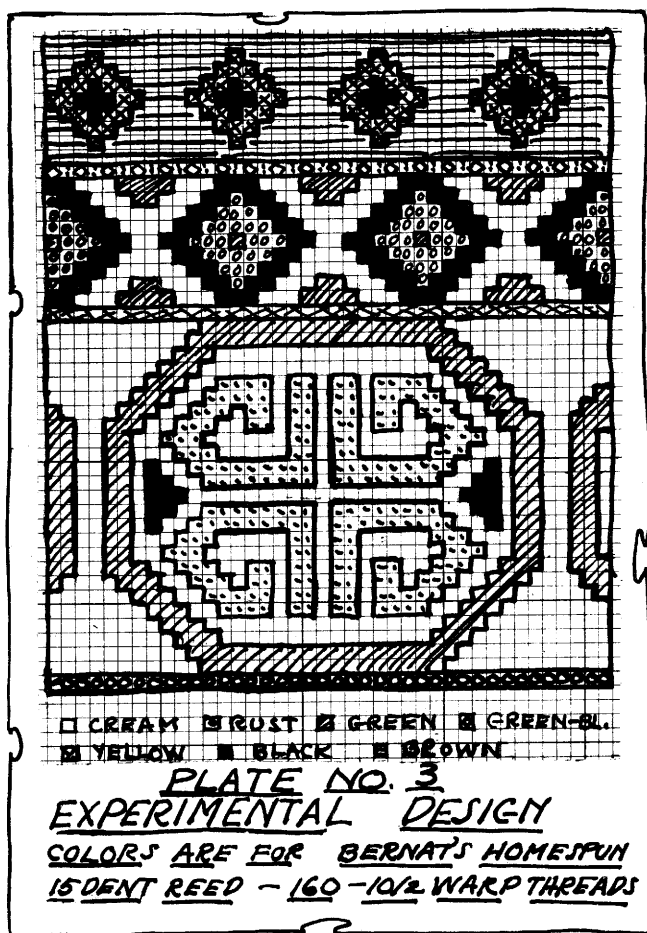
15. Watch the under side of the weaving in your mirror

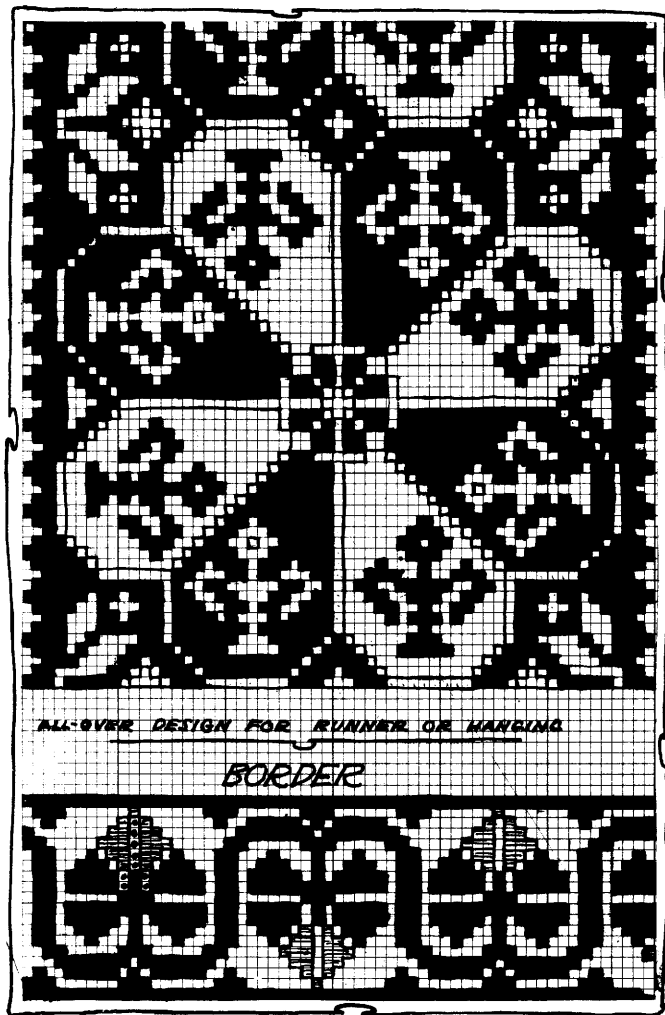
to see if you have picked up all the design units and if you have put the weft under them correctly. (Refer to No. 11 above). If, after you have put-in your tabby, you see that all the bobbins are not hanging in the same direction, you will then know that you have neglected to fill that row as the design has indicated. If, for any reason, you discover that a pattern thread has been omitted several rows back, a bobby-pin is a good thing with which to darn-in that missing shot or shots.

16. In turning your bobbins to put-in the next pattern shed—after the tabby is in—allow enough weft thread at the turning so that the warp threads will not be pulled in. Figure G. The group of three warp threads must remain equally spaced throughout the length of the weaving. You will have great difficulty with this at the selvages. They are bound to “pull-in” somewhat.

17. You should have a convenient place to lay your tabby shuttle when not in use—since it is lying idle a longer time than in Colonial weaving. This will allow free use of the width of the web while working with the bobbins.

18. When the sides at the selvages become lower than the main body of the weaving, fill in the depression by building up with weft yarn as in Figure F. This will often happen when the background is made with the tabby





and only the design is done in the Dukagång technique.

Dukagång can be made on a two harness loom also, but one would have to use long-eyed heddles and sticks. These sticks are placed in the back of the harness to raise the pattern threads—similar to the Upphämpta technique—but this process is an ancient one and troublesome; much too slow for us moderns.

THE EXPERIMENTAL PIECE

In Illustration No. 1 and Pattern No. 1 you will find all the necessary steps to learn the Dukagång technique. At the beginning the large design as well as the background is “laid-in.” Refer to the set-up given in this article for the warp, reed number, etc. In the middle border the design is “laid-in” but the background is made with the tabby. The tabby being one strand of Homespun or Shetland. The narrow stripes are done on the “Rosepath” treadling. The top border has the design “laid-in”; the background is Brown Shetland tabby, while a Gold color thread is put-in on the Lever No. 1 shed of the table or Treadles 2-3-4 of the foot-power loom.

The warp consisted of 160 warp threads. Weave a plain

heading for about three-quarters of an inch; the first narrow stripe is made by a “Rosepath” design in the center with plain tabby on either side.

The Dukagång technique then begins with Levers 2-3-4 down on the table loom or Treadle 1 down on the foot-power loom. The light colored (Cream) weft yarn (Homespun H 702) — two strands — is put-in from the left side of the loom for eleven blocks (refer to draft) or through eleven groups of “three-threads”; a darker color (Green No. H 616) is put through seventeen groups of “three-threads”; the light color (Cream) is put from there on out to the right side of the warp threads. After these bobbins are put-in and tied, two tabby shots are thrown — the first on the 1-3 shed from the right; and the other, of course, on the 2-4 shed from the left. This is repeated for four shots of pattern design. This will square the blocks.

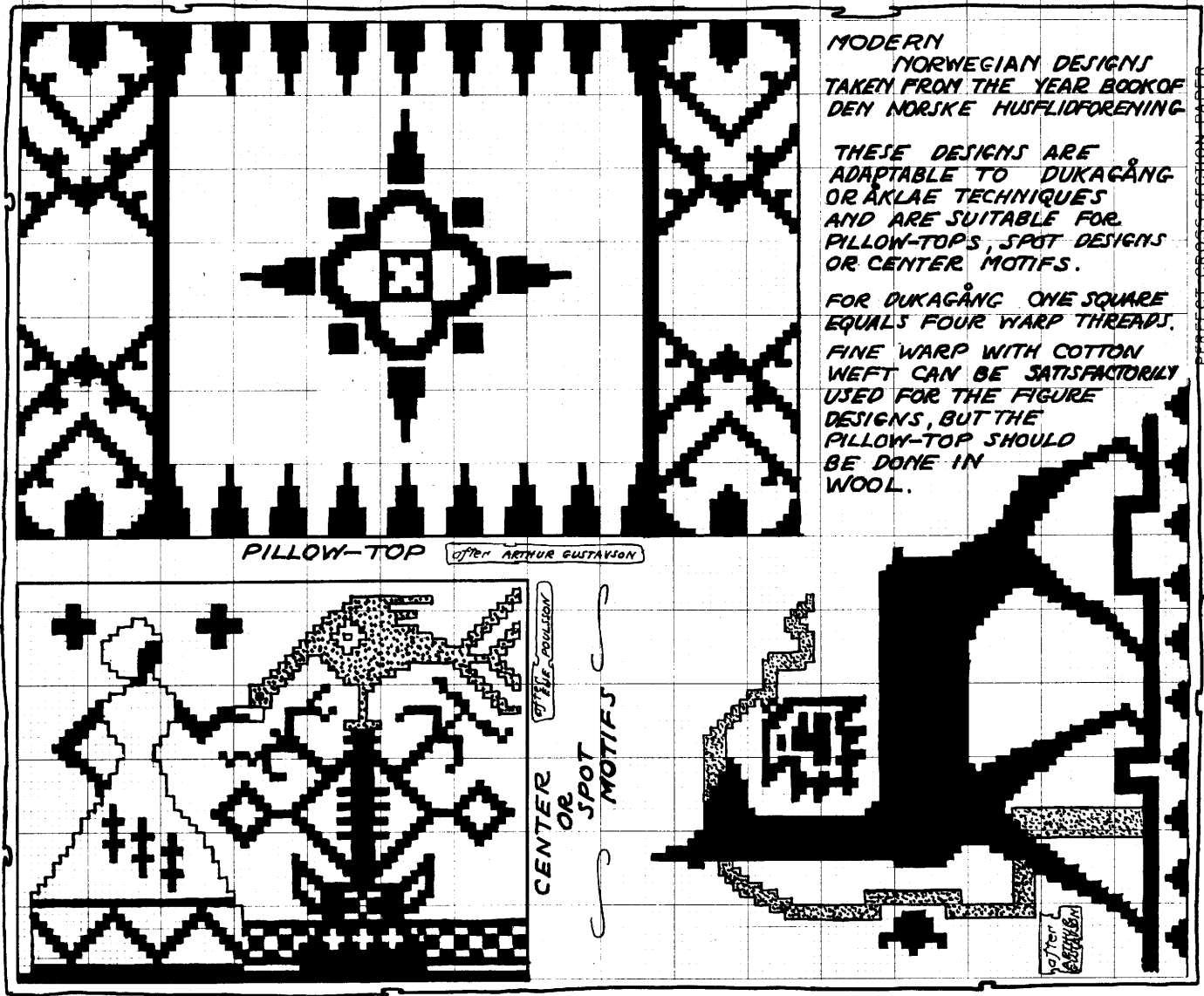
Then the pattern changes. The Green advances one “three-threads group” to the right and one “three-threads group” to the left. Four shots of this are done in the same manner as above, i. e., pattern shot followed by two tabby shots.

In the third row the Green advances again one group to the left and one to the right. A new Light Yellow (H 111) bobbin is added and tied-in from the left to right on the thirteenth group, proceeding through the shed for fifteen “three-threads groups.” The new Yellow bobbin is in the center of the design and the Green bobbin is on either side of it for 3 “three-threads groups.” A new Green bobbin will have to be added to use on one side of the Yellow. You will now have bobbins in this order: H 702, H 616, H 111, H 616, H 702. Proceed with this for four shots, alternating with two tabby shots. Follow the draft for the next row—advancing with the Green on the right and the left of the center; advancing with the center color on the right and on the left. Of course, the Cream color bobbins on the sides are decreasing. Four shots are taken as above.

On the fifth row of the design, new bobbins will be added. Then your bobbins will be under the “three-threads groups” in this order: from left to right, Cream through 7; Green through 3; Yellow through 2; Rust through 4; Yellow through 1; Rust through 2; Center Yellow through 1; Rust through 2; Yellow through 1; Rust through 4; Yellow through 2; Green through 3, and Cream through 8.

The small center side triangles are Black (H 807). When you get this far you should have no trouble going through the entire design, being careful to follow the draft.

A little help with the middle border: a Black bobbin is tied-in under two “three-threads groups”; skip three groups; Green is put-in under four groups; skip three groups; Black bobbin goes under three groups; skip three groups; Green is put-in under four groups; skip three groups; Black is put-in under three groups; skip three



**MODERN
NORWEGIAN DESIGNS
TAKEN FROM THE YEAR BOOK OF
DEN NORSKE HUSFLIDFORENING.**

THESE DESIGNS ARE
ADAPTABLE TO DUKAGÅNG
OR ÅKLAE TECHNIQUES
AND ARE SUITABLE FOR
PILLOW-TOPS, SPOT DESIGNS
OR CENTER MOTIFS.

FOR DUKAGÅNG ONE SQUARE
EQUALS FOUR WARP THREADS.
FINE WARP WITH COTTON
WEFT CAN BE SATISFACTORILY
USED FOR THE FIGURE
DESIGNS, BUT THE
PILLOW-TOP SHOULD
BE DONE IN
WOOL.

groups; Black is put-in under two groups. Change to the 1-3 shed and beat hard. Then throw your tabby Cream wool; change shed (2-4); beat, and throw your tabby Cream wool. This is continued for four pattern shots, followed each time by two tabby shots.

In the next row a Blue-Green (H 820) bobbin is added to the center of the figures; your Black edging of the figures advances to the right and to the left and your Green figure, between the diamond shaped figures, decreases to two groups. Follow the draft from now on and you should have no trouble.

The top border, as has been said, has a Gold color thread on the one shed. The procedure is this: pattern shot put-in; Gold color thread follows this on the Lever 1 or Treadles 2-3-4 shed, then two shots of tabby (Brown Homespun or Shetland) follow this tinsel thread. The figures are Yellow (H 111) and Black center.

The Gold color or tinsel thread can be rather effectively used, if desired, with tones of Brown and Black for bags,

runners and hangings. If the colors are not carefully chosen when the tinsel thread is used the effect may prove to be cheapening. The use of this tinsel thread is nothing more than a novelty; I, myself, would rather discourage the use of it. It detracts from the intentional look of the textile and that look should be a peasant-craft one.

Dukagång technique can be used for finer textiles. The warp can be linen or cotton or fine wool, set closer in the reed. With these finer warps, towels, pillow-tops, runners, etc. may be woven. The process is the same, however. Several designs are given that are more modern than the old Scandinavian designs; these have been adapted from sources that have been woven in Norway within recent years. For these finer textiles Caroline Halvorsen gives in her book, "Handbok i Vevning", a number of threading drafts and tie-up for each. These are designated on Plate I as "a", "b", and "c".

Try Dukagång! It is worth while, and you'll enjoy doing it.