

Simple "Cross" Weaving

BY MARY M. ATWATER

ONE of the delightful things about hand-weaving is that it is so "various." There is always something new and untried, that gives one all the thrill of discovery and the fun of experiment. No one person lives long enough to know all the ways of weaving.

Apparently few hand-weavers in this country are familiar with "cross" weaving, which — like so many of the important kinds of weaving — is a whole world in itself.

The following notes make no pretense of being an exhaustive exposition of the subject, but merely give directions for the simplest form of the weave, in a technique that is practical on our looms.

But first to explain what is meant by "cross" weaving. In old times the weave went by the name of "gauze," but in our day an open tabby weave is sometimes called gauze and the cross-weave goes by the technical name of "leno." The plain leno is the weave known as "marquissette," with which we are more or less familiar in commercial fabrics. The characteristic of the weave is that instead of running straight through the web each pair of warp-ends is twisted together. This twist holds the weft very firmly and permits the making of an extremely open fabric that will still have stability and wearing qualities. A tabby fabric in which the warp is set very far apart and the weft very lightly beaten may be soft and attractive when made, but is apt to become very unsightly with even moderate wear, as the threads pull apart in places and pull together in others so that the texture is ruined. The twist in leno weaving prevents this pulling.

The leno weave is excellent for curtains, but this is not its only use. Light-weight dress fabrics, lacy blouses and scarves are particularly charming when done in this weave. It is also an interesting weave for bags when done on a coarse cotton warp such as carpet warp in a heavy, stiff weft such as "art silk," cellophane, or coarse linen or jute. Runners and table pieces in leno, enriched with tapestry figures in the Peruvian manner are handsome and unusual.

Simple marquissette can be woven on an ordinary four-harness loom, though of course a special set-up is required. There is a patented leno heddle on the market, developed for use in commercial weaving on power looms, but that can be used on any hand-loom equipped with standard heddle frames and 12-inch heddles. The manufacturers are the Steel Heddle Manufacturing Company, 2100 West Allegheny Avenue, Philadelphia, Pa. These heddles are, however, quite expensive. They are quoted at \$60 a thousand or, in small quantities, at 15 cents each. Each of these heddles, to be sure, takes care of two warp-ends, but even so the cost is huge unless one plans to do a great deal of weaving in this style. For most hand-weavers it is more practical, and much less expensive, to go back to the methods of the

old-time weavers, before the day of power machinery.

The method I shall describe is the one that in my experiments appears to be the best suited to our looms. It involves no expense except for a little time, is not at all difficult, and does not require any structural change in the loom.

By this method the cross is produced by a set of string "doupes," or half-heddles. The classic method is to use two sets of these doupes — an upper and a lower set — but as the weave is far more interesting if varied with plain weaving — and this requires two harnesses with ordinary heddles — those who are limited to four harnesses must content themselves with a single set of doupes. As this works in a practical manner it seems to me perfectly satisfactory, though a wider shed can be produced by the double method.

The single set of doupes may be either the upper set or the lower set. It makes no particular difference, though of course the tie-up must be made to suit the system chosen. The tie-ups as given on the diagram are for the lower set of doupes.

As a good deal of extra strain is put on the warp in cross-weaving, it is advisable to choose a strong and elastic warp-material — a good cotton, silk or worsted yarn. Linen behaves badly as warp, though of course is entirely satisfactory as weft.

The setting of the warp can be very open indeed. A good rough rule is to use about two thirds the number of threads to the inch that one would ordinarily set. For instance, carpet warp set at 10 to the inch makes a good mesh and, for finer work, 24/3 Egyptian cotton at 20 ends to the inch. For work in wool Fabri yarn set at 15 or 16 ends to the inch would work well.

The first step in making the leno set-up is, of course, the making of the doupes. These can be of carpet warp, though a hard linen cord wears better. They are simple loops of cord of such a length that when attached to the heddle-bar of a harness they will reach a trifle beyond the eye of the heddle. This length can be determined by the "trial and error" method, and one can then make a gauge by setting two dowels or large nails in a block of wood at the correct distance apart so that the doupes can be tied around them. An entirely practical method is to look for a book of just the right size and tie the doupes over this. I like to attach the doupes to the bar with a double hitch as shown on the diagram, but the hitch takes up some space on the bar, and for fine work — with the doupes set close together — it would be better simply to thread the loops on the bar. Of course the length to make the doupe would be different for these two methods. It is important to get the length exactly right and to tie all the doupes accurately.

In the set-up I am about to describe the two front har-

nesses are used for the cross. The front harness, strung with ordinary heddles, is called the "standard." The second harness, bare of heddles, is used for the doupes. The two back harnesses of a four-harness loom carry the weave. On a loom of more than four harnesses the back harnesses may be threaded to a fancy weave, but on four harnesses only plain tabby and leno are possible.

In threading, first thread the warp through the back harnesses, as indicated on the threading draft. When this part of the drawing-in is complete proceed to threading the doupes. This may be done either from the right or the left side of the loom, and the doupes may be attached to the lower heddle bar of harness No. 2 before beginning, or — if put on with the hitch — may be hung on the bar one by one as required.

Raise harness No. 2 slightly, as indicated on the diagram. This permits the loop of the doupe to extend well through the eye of the heddle on the standard and makes threading the doupes easy. Holding the first pair of warp-threads to the left of the first heddle on the standard, attach a doupe to the right of the heddle, on the bottom heddle-bar of harness No. 2, and insert the loop through the eye of the heddle on harness No. 1 as indicated on the diagram. Thread the left-hand thread of the first pair through the loop of the doupe and carry the other thread over the loop. Thread each pair of warp-threads in the same manner.

In sleying, draw each pair of warp-ends through the same dent of the reed, no matter what the setting or the dentage

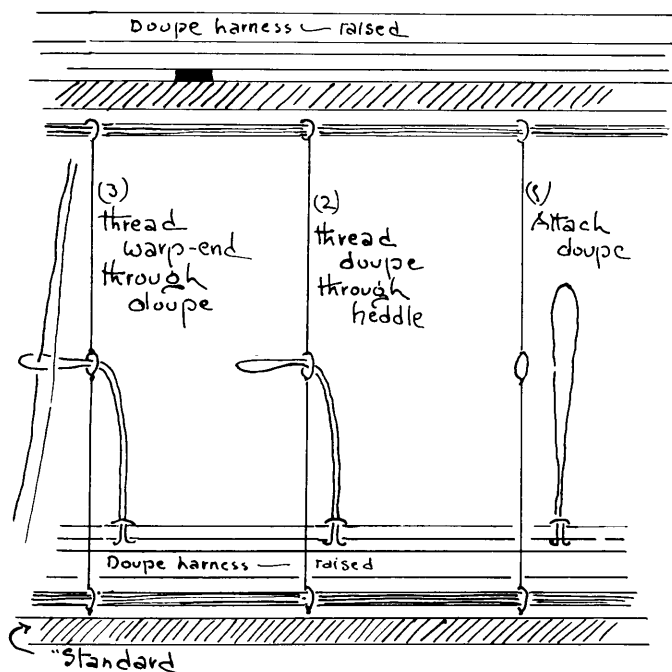
of the reed. If sleyed through different dents the twist will not pass the reed. A coarse reed is best, but the ordinary 15-dent reed, that is standard equipment with us, can be used for various settings. For instance, to sley carpet-warp set at 10 ends to the inch, sley the first pair of warp-threads through the first dent, skip two dents, and sley the second pair through the fourth dent, skip two dents, and so on. For a setting of 15 to the inch, skip one dent between pairs. A coarser reed, however, is better if available.

On the four-harness set-up described, one can weave only tabby and marquisette, but by combining these weaves in various proportions, and by the use of several colors, very amusing effects can be produced.

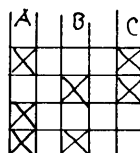
Illustration No. 1 shows an ancient native "huipel" from lower Vera Paz, woven in leno and tabby in alternating bands. The tabby bands are ornamented with figures in coarse material in embroidery weaving. The piece is in dark blue cotton with the figures in red. As this piece is interesting and might well be the inspiration for a summer blouse, I am giving on Diagram II the plan and arrangement of the piece and also a detail of the figures used for ornament. The piece is made of three strips sewed together, as indicated. On a large loom it might, of course, be woven full width, though in that case the stripes would carry all the way and would not be different for the body and sleeve portion of the garment. The thing could be made in fine worsted yarn instead of in cotton if preferred.

In a previous article in THE WEAVER, on the subject of

Diagram I. Method of attaching and threading "doupes."



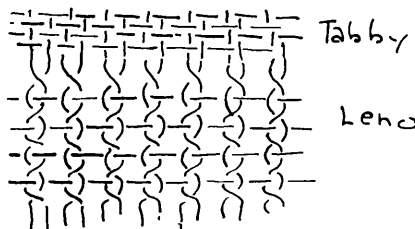
Tie-Up



Threading



Weave tabby on A & B
" Leno on B & C

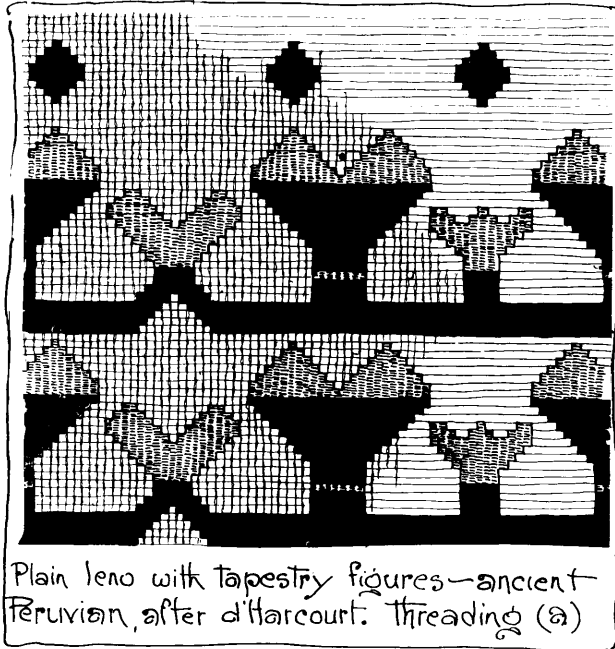
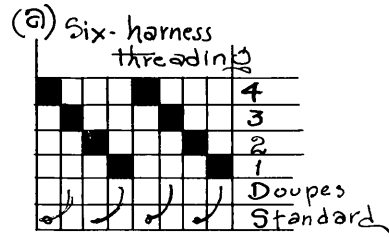
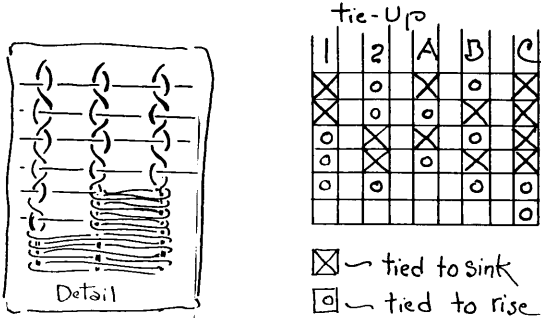


Plain Marquisette

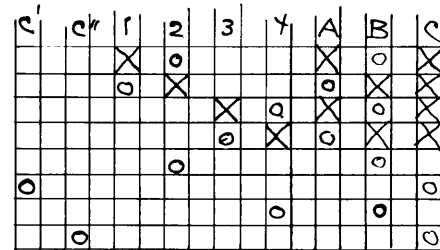
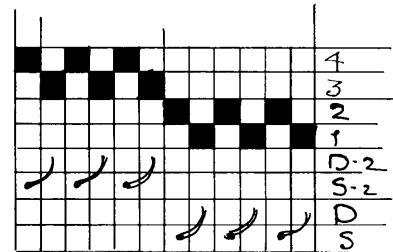
Four-Harness Set-Up

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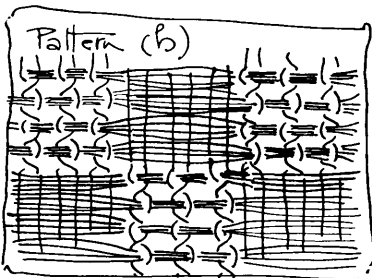
Diagram II. Six-harness and Eight-harness Set-ups



(b) Eight Harness



(A complete tie-up could be made to 11 treadles)



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Weave (b) as follows:

Two treadles used for each shed
 One shot on each shed

{ treadles C'2-3, C'24, C'23, C'24 } Repeat for first block
 " 223, 224, 223, 224 }
 " C"21, C"22, C"21, C"22 } Repeat for second block
 " 421, 422, 421, 422 }

For plain tabby, treadles A and B
 " " leno, " B " C

(the blocks may be threaded and woven as large as desired)

ancient Peruvian textiles, mention was made of the interesting Peruvian pieces in plain leno with tapestry figures introduced. These figures are made over pairs of warp-ends, as indicated in the detail on Diagram III. For this type of weaving a six-harness set-up is required. This is given on Diagram III.

If this set-up is made on an eight-harness loom, use the

two front harnesses for standard and doupes and the four back harnesses for the weave, allowing the two unused harnesses to stand between the doupes and the weave. A space is an advantage as it permits the twist to run further back and gives one a better shed. The pattern on Diagram III is ancient Peruvian. It is a simple but effective figure and, done in coarse materials, would make a handsome cur-

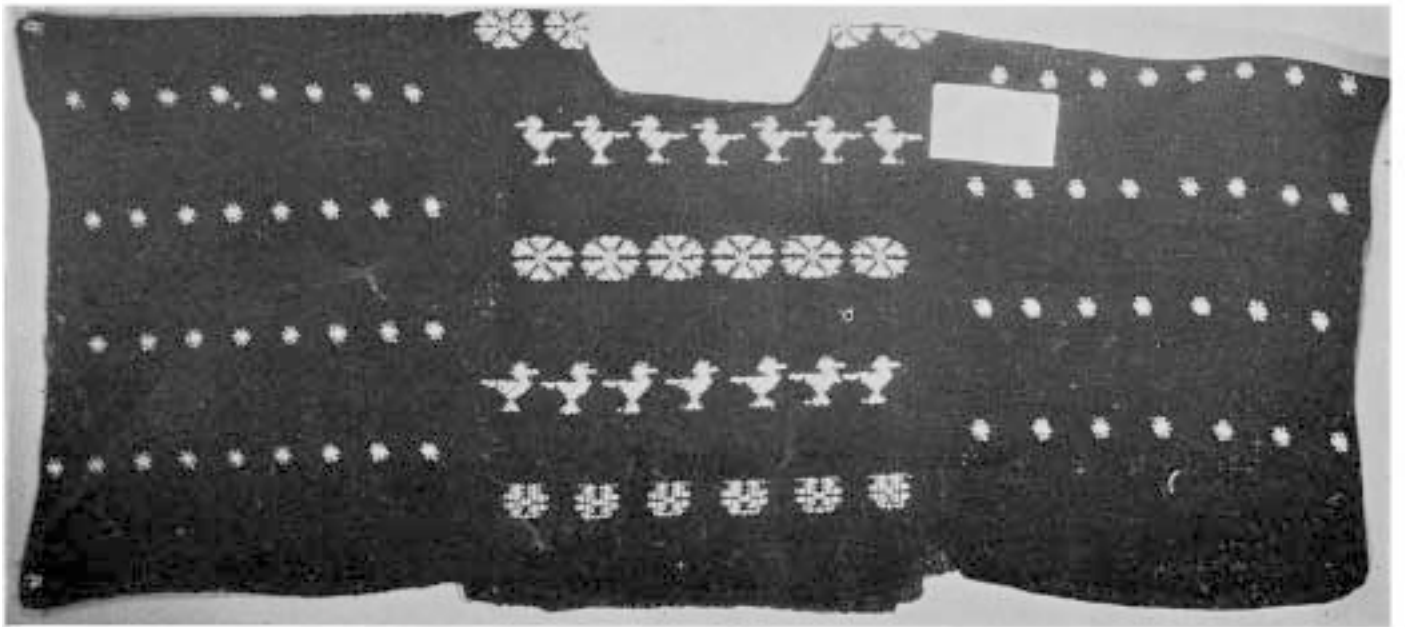


Illustration No. 1 (a)

tain. A more elaborate pattern was given in the previous article in *THE WEAVER*.

The six-harness threading is useful, even if not to be used for tapestry patterns. The two treadles that make a shed between alternate pairs of warp-threads can be used for

many interesting little figures, when done in two colors. The curtain in Illustration No. 2 was woven on this threading. It was done on carpet warp set at 10 threads to the inch, and the weft used was celophane in a variety of bright colors. The effect is extremely lively and attractive. Of course the

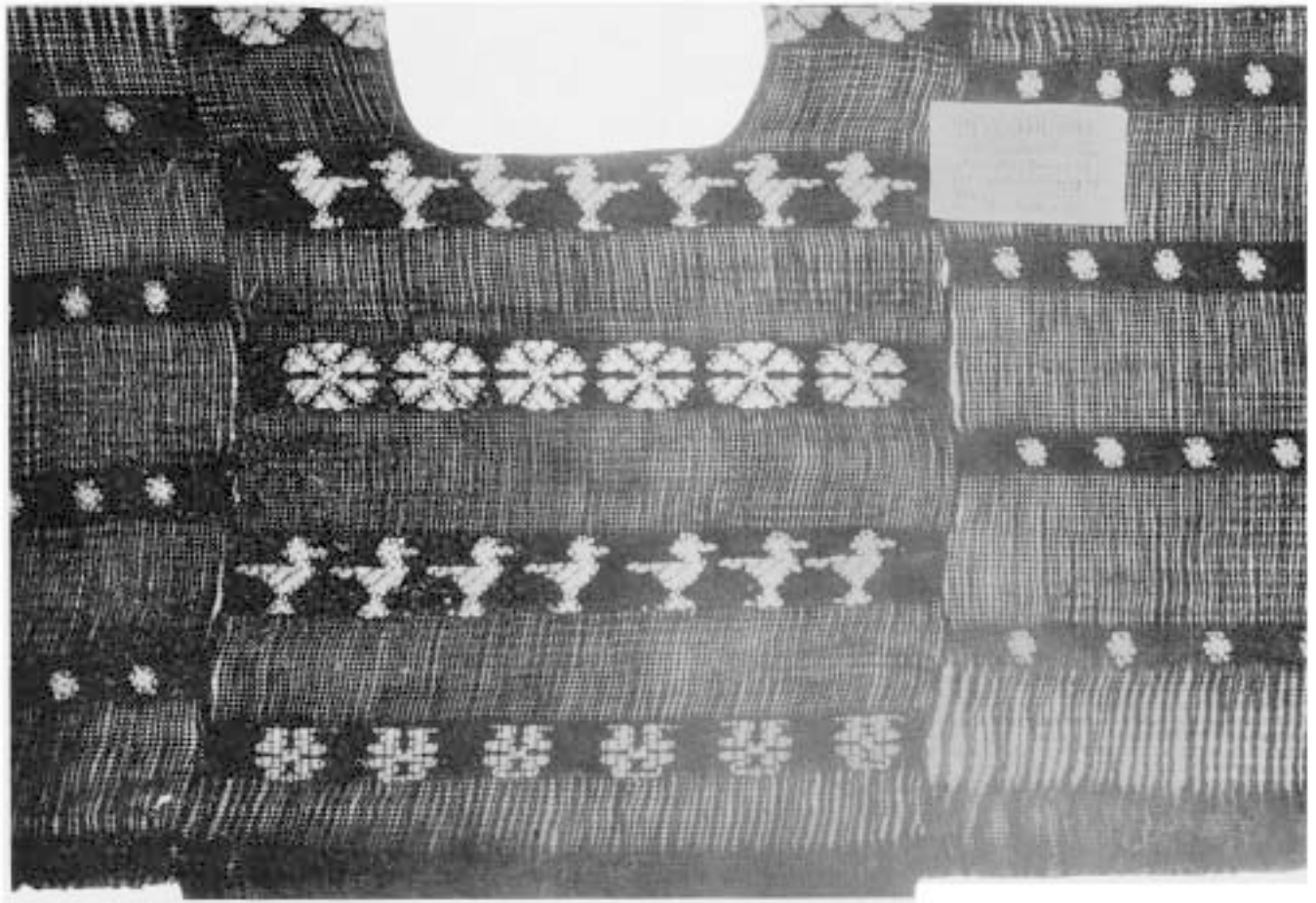


Illustration No. 1 (b) detail

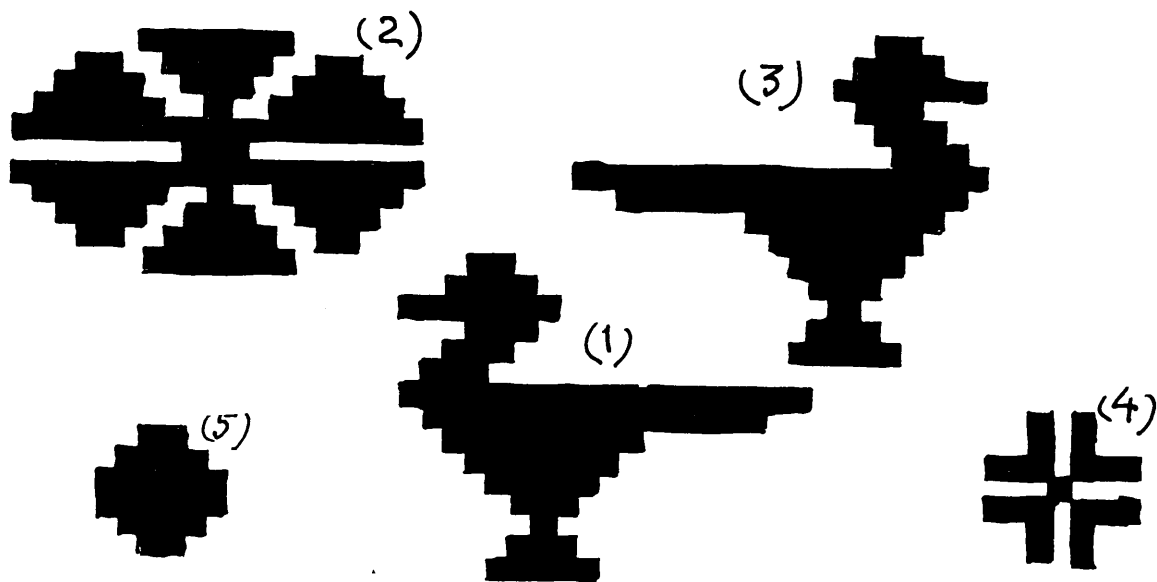
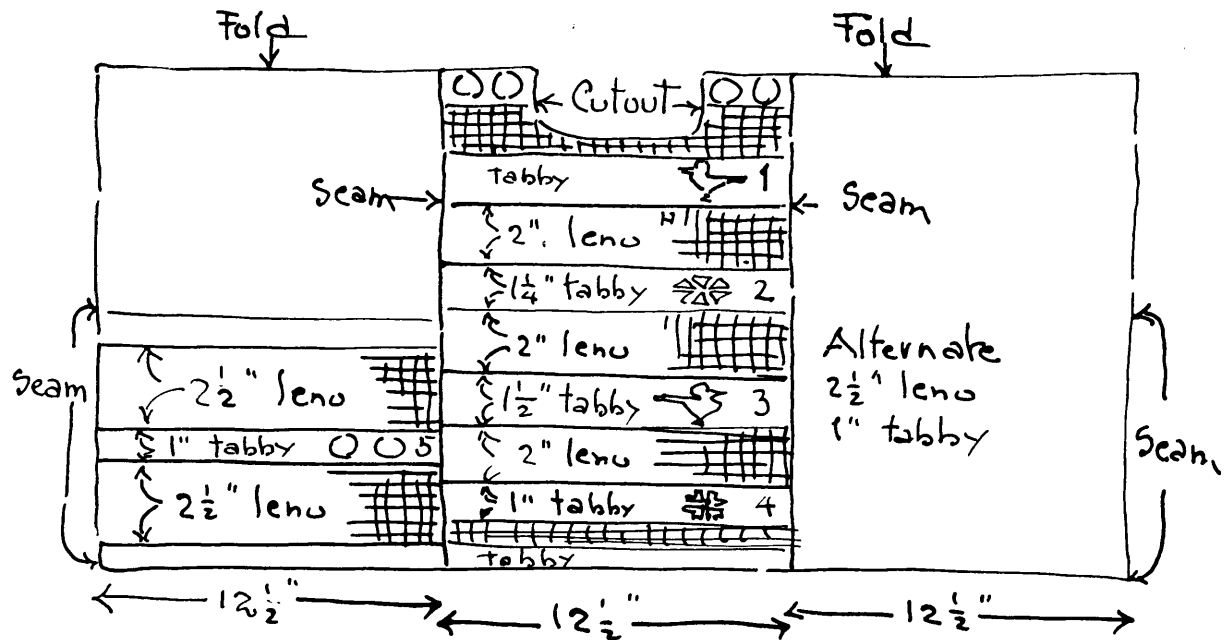


Diagram III. "HUPEL" and Detail of figures

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same method of weaving could be carried out in a different weft material — Perle cotton No. 3 or coarse linen floss, rayon "art silk," strand cottons, heavy silks, and so on.

The bag shown in Illustration No. 3 was also woven on this six-harness set-up. The material is the same as in the curtain. The fabric has a stiffness that makes it excellent for bags, and no lining is required. The open mesh gives an unusual and

attractive appearance. Bags of this type cost very little to make, and take very little time to weave or to mount. They would, I believe, make a very saleable specialty. They could be sold at a moderate price and still return a good profit. For large knitting bags, shopping bags and the like they are ideal.

If, instead of the double tabby, for the tapestry work, one



Illustration No. 2

prefers an ordinary pattern weave, this can be threaded on the back harnesses instead of the twill threading as shown. On an eight-harness loom a six-harness pattern-weave could be used. The doupes do not interfere with the weave if, in making the tie-up, the doupe harness is tied to rise with each shed that raises any of the threads threaded through the doupes; and any combination of pattern weaving and plain leno can be woven on the set-up.

The eight-harness set-up given on Diagram III produces the effect sketched — alternating squares of leno and tabby. The weave is threaded on the four back harnesses, and two sets of standard and doupe are used. This is clear enough from a study of the diagram.

While the more elaborate forms of leno weaving are im-



Illustration No. 3

possible on our ordinary weaving equipment, there are many interesting variations of the weave that are within our limits — three-end leno, seamless leno bags, etc., etc. The Steel Heddle Manufacturing Company, whose address was given at the beginning of this article, issues an interesting pamphlet on leno weaving that, though intended for power loom weaving, still has much information of value to a hand-weaver. An old book, long out of print, “Treatise on the Art of Weaving” by John Murphy, gives much information and many charts. This book may be available in local libraries and might be obtainable through dealers in old books. It may be possible at a later date to give additional notes in *THE WEAVER*. However, the simple set-up described will supply plenty of variety for a great deal of weaving