

# DAMASK

*on 4 harnesses.*

*Hertz.*

# DAMASK.

by

ROBERT FREDRIC HEARTZ.

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19 58

R.F. Hertz  
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ROBERT FREDRIC HEARTZ.

DAMASK when used to denote a fabric, alludes to several types of patterned material. Quoting from Louis Harmsuth--Dictionary of Textiles-- it is and we quote;--(1) originally a rich silk fabric ornamented with colored figures often in gold or silver. (2) an all-worsted twilled fabric woven in England in the XVIII Century. (3) the true or double or reversible damask is woven both the ground and the large floral Jacquard patterns in eight-leaf satin and single damask in five-leaf satin. Single damask is also woven with figures, not in a satin but plain or twill weaving. Usually made in cotton or linen and for table use.

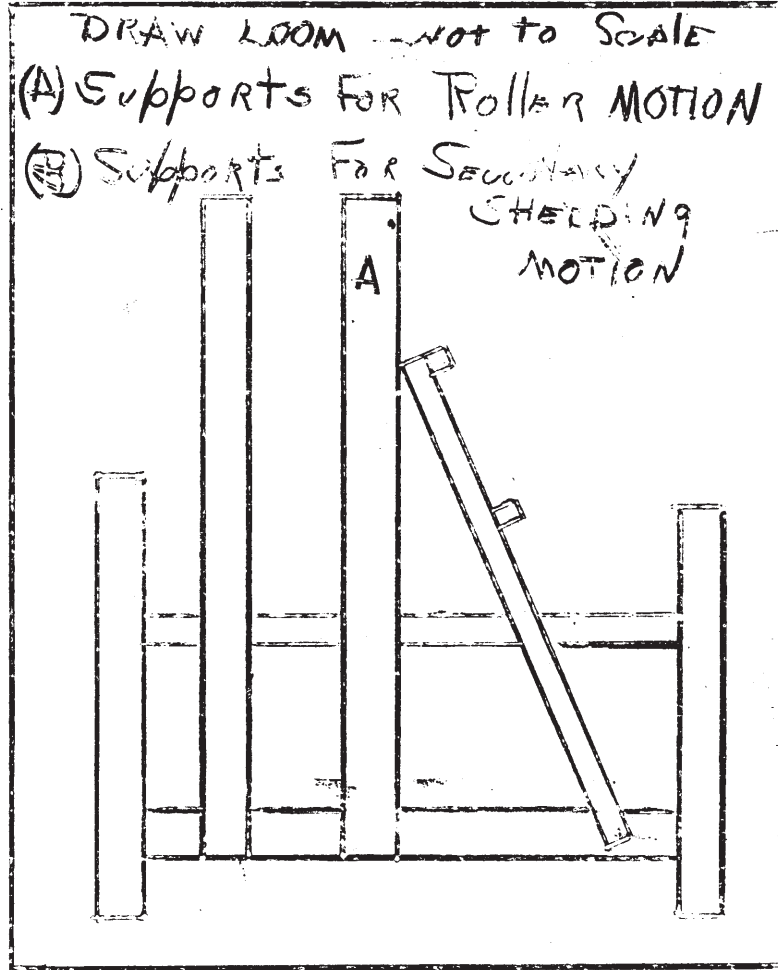
There are several other definitions of damask, brocade, brocatelle and embroidered fabrics. Some of the methods and definitions overlap in the essentials and in descriptions so that it not always possible to draw a definite exclusive definition. Originally damask was a figured silk weave, as it was imported thru Damascus, hence its name. Later definitions use the words--embroidered, brocaded and brocatell to describe the elaborately raised and

figured patterns in silk and damask came to designate the flat and reversible figured weaves that were woven with linen or with linen and cotton and which were mostly confined to table use. Sometimes silk and or wool may be used for fancy dress uses.

In earlier days fancy weaves were always of the richest of materials, gold, silver and silk together with precious stones were used by the Ancients. The question now arises as to whether these early fabrics were woven in these rich patterns or as to whether plain cloth of gold or silver was woven as a foundation cloth for the application of the jeweled designs in needlework. Silk was first listed about 2700 B.C. when Hoang-Ti, the Third Emperor, of China assigned the problems of the silk industry to his Queen, Ling-Chi. Silk quickly became a valuable article of trade and the Chinese managed to keep its processes a secret for about 2000 years. The early Greeks imported silk from Persia and the East and silk spinning and weaving was a familiar process for all of the countries bordering on the Mediterranean.

When the first figured weaves were made and how elaborate they may have been is not known the it is presumed that the draw-loom for weaving the elaborate fabrics was developed in China at an early time. The first draw-loom that came to the west made their appearance in Damascus at an early date and from about the eleventh century on their use spread thru Italy, France and Spain and for the

# PLATE I



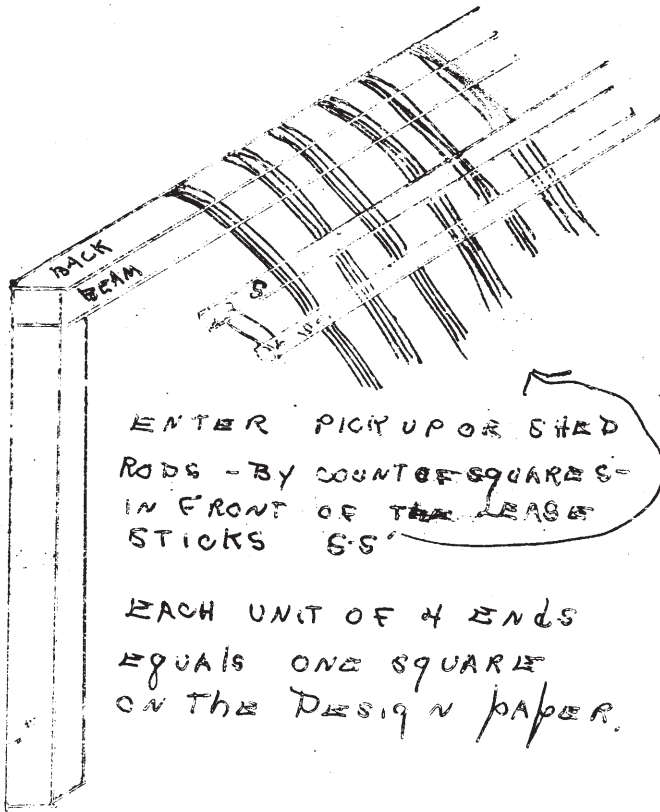
500 to 600 years there after many beautiful woven fabrics were made in these countries. In England and in northern France also many beautiful velvets and brocades were woven. Ireland used their native linen rather than imported materials, and they too made many fine damask linens.

Draw-loom or Draw-boy looms were known even in use in China in the early 1900's but with the invention of the Jacquard about 1801, the draw-loom was gradually superseded by this newer invention. The acme of the draw-loom and of draw-loom weaving was attained in Paisley, Scotland; in the weaving of the Paisley Shawls; some 50 to 60 years after the introduction of the Jacquard Loom. At the time when the Paisley Shawls were being made they were looked upon as a machine made copy of the Tapestry and needle woven India Shawls; today they are appraised at their true worth; the highest type that has ever been made upon a loom.

When Joseph Marie Jacquard, 1752-1834; invented his mechanical loom, he was neither the first nor the inventor of a new method of weaving. There had been others for more than 100 years before him who had experimented with the same idea; but his was a more practical and successful invention. It was not an invention of a new loom nor of a way of weaving what he did was to make a mechanical device which did away with the need for the draw-boy. The principle of weaving and the techniques used in weav-

PLATE II

WARPENDS ARE GROUPED  
4 OVER AND 4 UNDER  
SPECIAL LEASE RODS S.S.



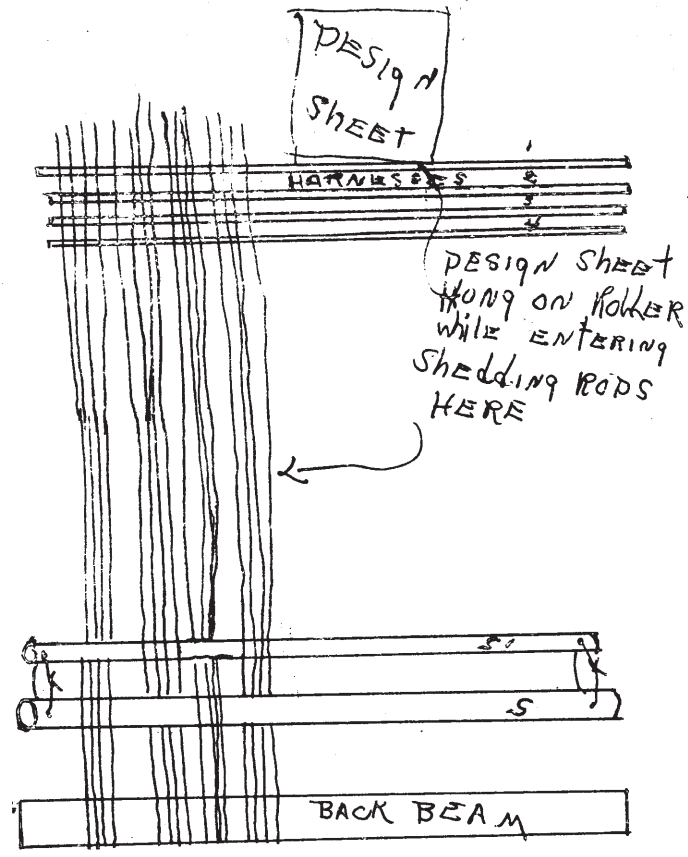
ving was well understood but the loom required a draw-boy to open the sheds and to time his movements to the weavers throwing of the shuttle. The draw-boy might sit up high upon the loom to the right, left or behind the weaver so long as he could see the weavers hands and according to the placing of the shedding mechanism. Whether the loom was a draw-loom or a Jacquard, the task of setting it up and the lashing up of the design were in the hands of other professional craftsmen or groups of craftsmen depending upon the type of the loom, also upon the type of pattern and the material that was to be woven.

The beauty and quality of the material that is produced upon a loom is not dependent upon the intricacies of the loom but upon the knowledge, interest and skill of the weaver and upon his appreciation of the loom. The earlier weaver had the aid of skilled artisans employed by the factor who was the patron of the home weaver. The more intricate loom might produce a wider material and at a faster rate of speed but it was the weavers appreciation of his loom as a tool of his trade that really spurred his finer attainments. The weaver of today does not have type of support for his work and so he has to rely wholly upon his own initiative.

As noted earlier it is not known how early the draw-loom may have been invented. When the ancient references were made to the elaborate textures, embroidered and painted cloths and plain gold cloth were the fabrics in mind. Sometimes they used the 'inlay' and 'finger' techniques. The weaver then



PLATE III



and the weaver today can do a wide range of weaves upon a simple loom. As a demand for more and more cloth created a need for faster production until the loom became geared for production. Today's handweaver can reverse the process and use his loom in a planned program for less but more detailed types of designs. It may seem like poor planning to design a set of elaborate weaves for home use requiring involved processes and time but the result to-be of a program of handweaving is for more select patterns and quality of product.

In these next few pages will be described, in detail, ways and means of reducing the damask weave for use upon a four harness loom. The steps are analysed so that the weaver may apply this method to other fancier weaves and textures that may also be adapted to this pick-up method of weaving.

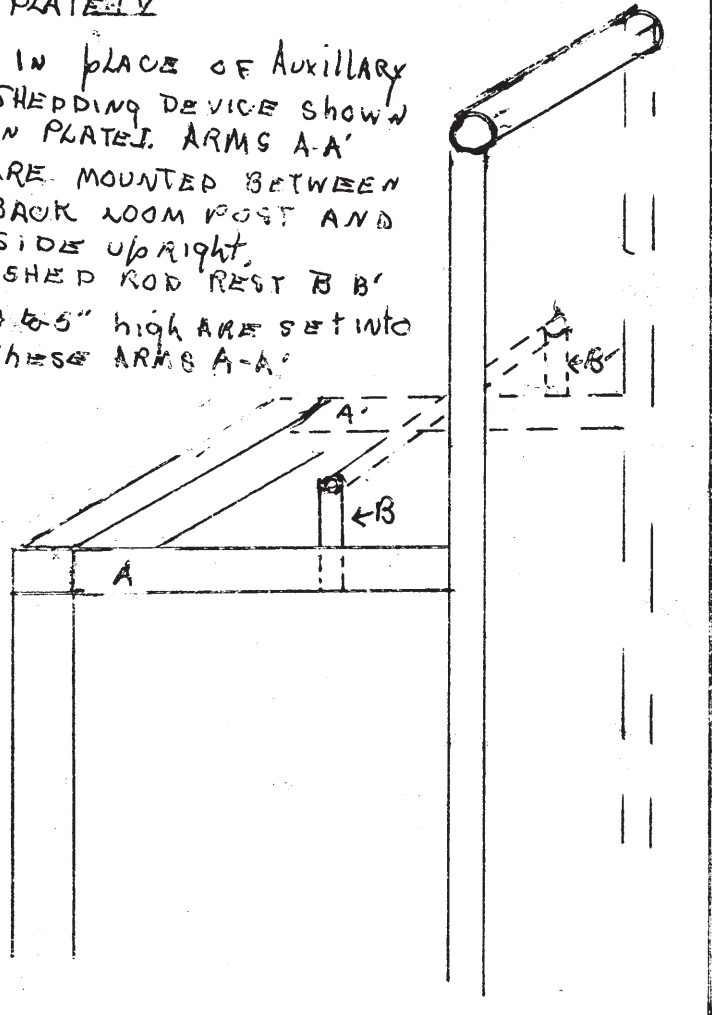
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#### PRINCIPLES OF DAMASK WEAVING.

Figured fabrics are made up by combining weave effects and material effects and also by combining the different weaves themselves. When there are a series of long floats or many fine details a weave is classed as an 'embroidered weave'. If the figures are highly shadowed or are raised it is then classed as a brocade or as a damask weave, or when

PLATE V

IN PLACE OF AUXILIARY  
SHEDDING DEVICE SHOWN  
IN PLATE I. ARMS A-A'  
ARE MOUNTED BETWEEN  
BACK LOOM POST AND  
SIDE UPRIGHT.  
SHED ROD REST B B'  
4 TO 5" HIGH ARE SET INTO  
THESE ARMS A-A'



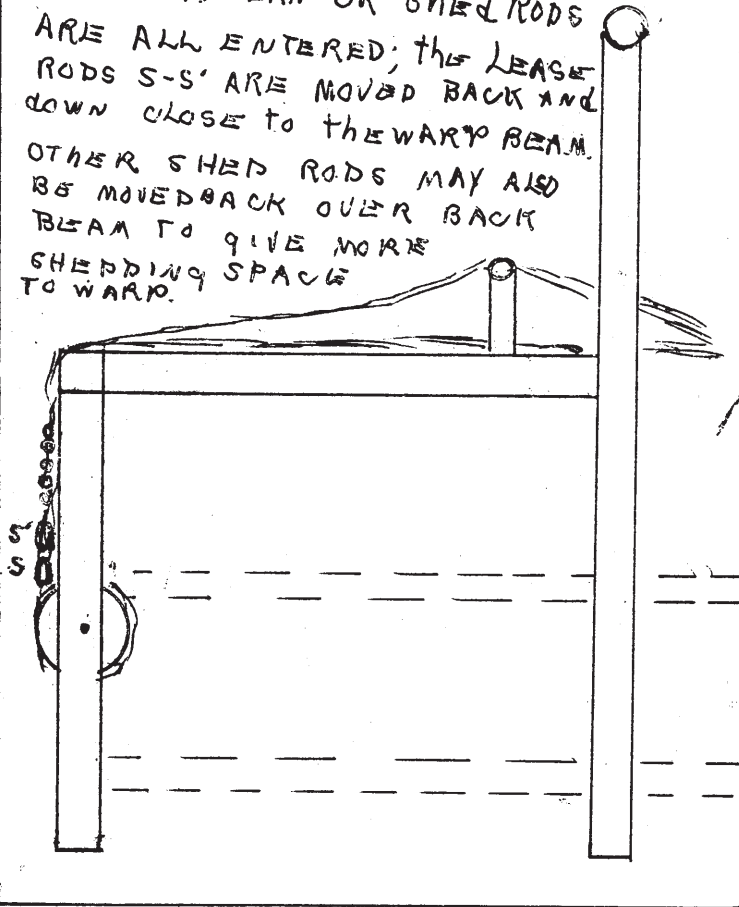
coarse materials are used for a brocade it may be classed as a brocatelle. When the texture of the cloth and the pattern is 'flat' and usually in a reverse twill or satin weave it is classed as a damask weave. In the following directions the detailed instructions are for developing the damask class of fabrics but the weaver may analyse the makeup of any other type of weave and apply these instructions and suggestions to the development of any other type of weave.

The principle of damask weaving is to balance two types of textures against each other to bring out the pattern detail. This is done by using a warp flush area in contrast to a weft flush area. Commercial designers often prefer the eight frames for what is called a double damask which is a rich heavy fabric. A five frame or 'leaf' satin produces rich but lighter cloth. In an eight leaf satin damask the warp end would float over 7 and under 1 in a staggered not a twill order. In its opposite or reversed area the weft end would float over 7-1 ends of the warp. In the five leaf satin the float would be 4-1 in either order. As this is a discussion of a four harness possibility the standard 4h twill will be taken for the basic weave. A broken twill or crow weave is comparably similar to a regular satin weave in that the ends staggered for the purpose of breaking the twill line effect.

If a weave is being planned for a draw-loom or a Jacquard weave with a large number of needles or lifts, the ratios of the ends and squares for the paper are chosen; then the pattern is outlined on the squared paper; reduced to an angular layout so

PLATE V

WHEN PATTERN OR SHED RODS  
ARE ALL ENTERED; THE LEASE  
RODS S-S' ARE MOVED BACK AND  
DOWN CLOSE TO THE WARP BEAM.  
OTHER SHED RODS MAY ALSO  
BE MOVED BACK OVER BACK  
BEAM TO GIVE MORE  
SHEDDING SPACE  
TO WARP.



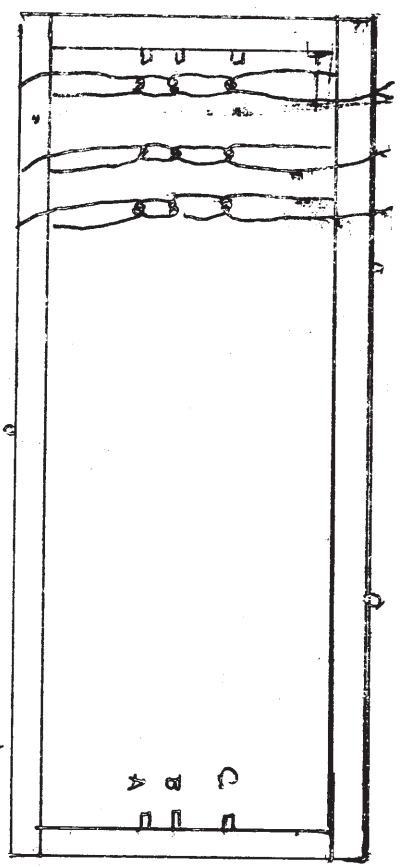
that the ground and pattern floats or weaves maybe noted on the same paper. When there are limits to the mechanical and harness details of the loom it is necessary to establish a code pattern that will come within the limitations of the looms range. Long ago a doubling up or short cut process was discovered that has enabled the weaver to greatly increase the design range of his loom. This is the use of the long eye or split heddle. The drawing-in of the warp was divided into two systems and the warp end was drawn into a heddle eye in these two separate shedding systems.

The more elaborate set of pattern harnesses are drawn on a set of regular heddles set to the back of the loom and the same group of warp ends also are drawn into the long heddle eyes of these front harnesses. In operation-- one set of sheds tends to balance the other set and so bring out the pattern that is drawn-in upon the pattern frames, and in a reversed ground weave. Also, if the patterned detail is small and in closely set in the reed it may be possible to use the pattern set alone, thus three weaves may be possible on this one set-up in the loom; i.e., damask, twill or a textured weave.

Applying the principle of pick-up or inlay weaving to this idea of the double sets of harnesses then the weaver may use his four harness loom for the production of some fancy weaves. In the very

PLATE III

~~PETROGRAPHY~~ ~~MINERALOGY~~



MAKE STANDARD ALL WOOD FRAMES TO FIT ROOM.  
INSERT PEGS - A-B TO USE IN TYPING STANDARD  
STRING NEEDLES - AND B' A BOWE' INSERT PEG-C  
TO MAKE LONG HEDDLES. PEGS A-B-C MAY BE  
PERMANENT OR REMOVABLE. HEDDLES MAY BE  
MADE IN EITHER END OF FRAME AND PEGS  
INSERTED FOR TYPING ON HEDDLES WHEN AND  
AS NEEDED.

elaborate draw-ooms the pattern was picked by a set of special lifts or a 'Simple' and transferred to the side of the loom to be operated by the draw boy, or overhead where they may be operated by the weaver. In place of making an elaborate tie-up the pattern sheds are picked up in back of the frames on the shed rods. One shed rod may be used and any of the pattern sheds are picked up as needed or a number of shed sticks may be used and as inserted, may be moved back toward the warp beam. Thus in a deep loom an entire pattern repeat may be picked up at one setting.

To adapt this system into the loom it is only necessary to change the heddles on the loom to the long eye or split heddles and to alter the tie-up of the loom. If the weaver has eight or more harnesses and so desires he may use an eight-leaf or a five-leaf satin weave by using all eight frames or by using only the five frames necessary for weaving either of these ground textures. With the four harness loom the standard four harness twill will be drawn into the longer eyes of these heddles.

#### LOOM PREPARATION.

If it is possible to purchase a set of the long eye heddles to fit the loom it is an easy matter to prepare the loom for damask weaving. If they cannot be found it is possible to make them out of string, in fact, the home made heddles are preferred as they may be made with a 3 inch heddle eye.



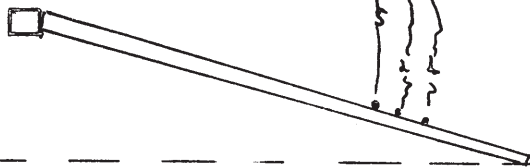
PLATE VII

HARNES TIE-UP.

THREE LAMS ARE  
TIED UP TO EACH  
TREADLE - ONE (S)  
SHORT CORD AND TWO  
LONG CORDS - 2-2  
to each.

THE SHORT CORD IS  
ABOUT 2' SHORTER  
THAN TWO L CORDS.

SEE TEXT.

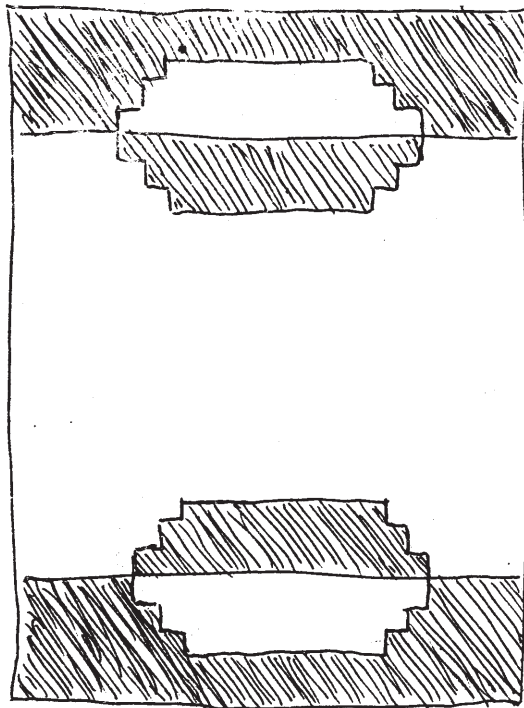


See plate detail for making heddle frames and the heddles. When the new heddles and frames are ready they may be hung permanently in the loom, as with the long and standard eyes, they are suited to all types of weaving. The loom may also be warped up as usual. The only other changes in the loom will be in the tie-up and in the placing of the arm for the support of the shed stick. See diagram.

If there is a short warp upon the loom it may be drawn on the regular twill for a smaller trial piece otherwise a special pattern may be made and the loom warped for that one particular project. A loom is warped in the usual way and the warp ends are drawn into the long eyes of the heddles. Arms for the shed stick and the special tie-up may both be attended to in the final loom check up.

If there is a warp already in the loom, redraw it to the standard 1-2-3-4 twill; using the longer eye of the split heddles. Check the total of warp ends and divide by four, this resultant number is used for the basis of future design layout. Extra ends may be added into the selvages. Thus if there were 291 ends in the warp, when divided by 4 = 72, the two surplus ends may be added to the one edge and the odd one to the opposite edge of the cloth. Select a sheet of squared paper and rule a section 72 squares wide and of any length. Any design that can be squared into this 72 square width may be eventually woven by using this pick-up technique. A study of the detail plates will help in the understanding of this method.

PLATE VIII DESIGN  
FOR A PLACE MAT.



When the new harnesses have been made and hung in place, the pattern drawn-in and the lamm-to treadle cords may be tied up. This is a three-one tie up, i.e. one frame up and three down, as three of the lamms must be tied in a positive shed. With a roller type of loom a three and one shed will usually result in an irregular shedding unless this type of tie-up is used. Two short and one long end of cord will be needed. The most satisfactory way of tying up the treadles is to first use a length of cord and tie the harnesses in place after they have first been moved by hand so as to make a very wide shed. With the tie cord holding this opened shed the weaver will make the lamm-treadle tie-up for this one shed so that the treadles are just about clear of the floor. When shed #1 or 1-2-3 lamm tie-up is complete, tie shed #2 or 2-3-4 frames in place. Then move frames 3-4-1 for the shed #3 tie, and last of all frames 4-1-2 for the #4 shed. Treading this tie-up in the 1,2,3,4 order will produce a three and one twill the basic weave for the damask weave. Other twill variations may be tried for some of the later effects but the straight weave is best for trial purposes.

#### PATTERN PICK UP. METHOD.

If this damask weave were being set up on a draw-loom these preliminary directions and preparations would be the same except that the warp

PLATE IX SHED RODS IN PLACE  
FOR WEAVING PATTERN  
SHOWN IN PLATE VIII



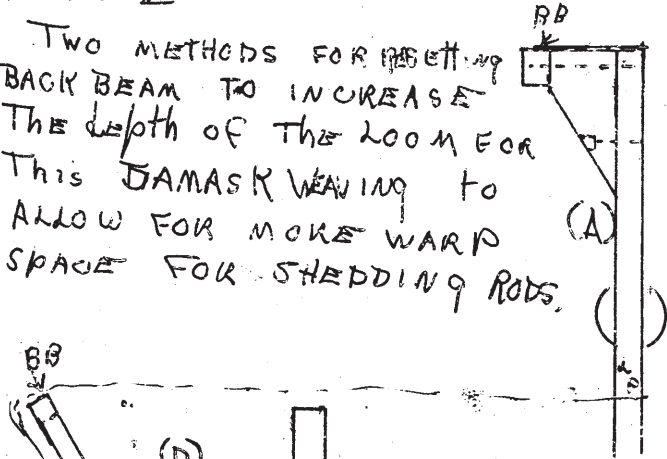
ends would also have been set in the pattern holder and so the pattern frame would now be operated against the ground cards to produce the pattern openings for the shuttle. Since in this simple set-up there are no pattern heddle frames each of the pattern sheds must be picked upon a longer pattern shed stick. Since the weave unit here is a four harness loom with a twill set-up, then each square of the design a unit of four warp-four weft ends. Thus to read the pattern and count off four to each unit is confusing and many expect so it will simplify matters if a pick-up technique is established. A pick-up method can be any system to aid the weaver to pick up or drop 4-end units and with the least amount of bother and concentration.

One method may be the use of a lease cord or a pair of lease sticks that have four ends over and four ends under as the unit in the cross. A coarser reed may be used and the four ends may be reeded to the dent. (the reed must be in proportionate count to the reed in use for weaving). This new reed is attached to the back beam. Another method of count would be to set a number of brads in the back beam and use as one would use a raddle. These raddle pegs should be capped to hold yarn from being lifted out of place.

In weaving, the pattern units are selected upon the pattern rod, dark units over and the blank squares under shed rod. When the shed has been pick-

PLATE X

TWO METHODS FOR SETTING  
BACK BEAM TO INCREASE  
THE LENGTH OF THE LOOM FOR  
THIS DAMASK WEAVING TO  
ALLOW FOR MORE WARP  
SPACE FOR SHEDDING RODS.



L.P. IS BACK  
LOOM POST AT(A)  
2x6" BLOCK IS  
INSERTED  
AT(B) A SWINGING  
ARM(C) AND BRACE(D)

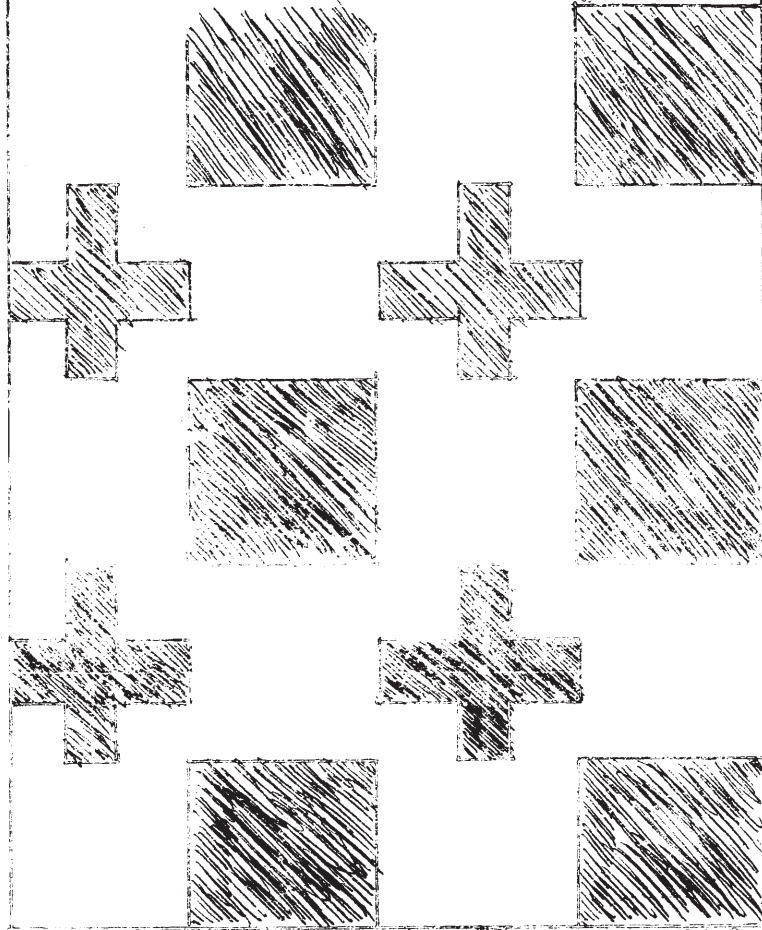
IS USED TO SUPPORT  
THE BACK BEAM BB.

up on the shed stick (see plate No. 2) for types of shed sticks and rods used in this type of pick-up weaving. Insert the wide shed stick and place in the holding bracket which holds the pattern sheds open for the weaving of this pattern unit of the design. If the pattern calls for only one repeat of this pattern unit then only one unit of the soft treadling is inserted and the shed stick is withdrawn and the next pattern sequence is picked up. Sometimes the pattern stick must be changed for almost every twill unit and again several twill units will be repeated before changing the shed stick.

This pattern shed stick may be inserted for each change of the pattern, or, if there is loom depth, a whole section of the pattern may be picked up on a series of fine rods or wires. Then as one pattern unit is woven the pattern or shed stick is withdrawn from that pattern shed and it is inserted in the place of the next pattern rod or wire. Both the pattern rod and the shed stick must be drawn. A new rod or section of the pattern will have to be picked up, rod by rod, when a whole section of pick ups has been woven. In picking up a section or repeat, the weaver sits at the back of the loom. The pattern design may be hung of the top loom roller. The first may be either the top or the bottom line of squares of the design. The pattern will develop in front of the weaver, as he weaves, in the reverse order of which it was picked up. If it is a larger picture or pattern repeat, then the weaver must be



PLATE XI ALLOVER DESIGN FOR  
A LINEN TABLE COVER



FROM "FINISH WEAVES"

careful to pick up a whole repeat or he must first carefully study the design and mark his pick-up or he will discover that the several orders of pick-up will not match in his weaving.

If the pick-up of the pattern sheds seems to be tedious and a waste of time, it is a standard task of procedure for the draw-loom weaver also. In his loom he may have a 'lasher' draw-up his entire repeats and also have a draw-boy to raise the sheds for him but the order and the task still has to be done. If the depth of the loom be such that these pattern pick-ups can all be done in advance of the weaving, then it might be that the pick-ups may be also 'lashed' or tied up into a 'simple' and the order is permanent and the loom has become truly a draw-loom. See Part 2 of The BOOK of the Handloom by this author.

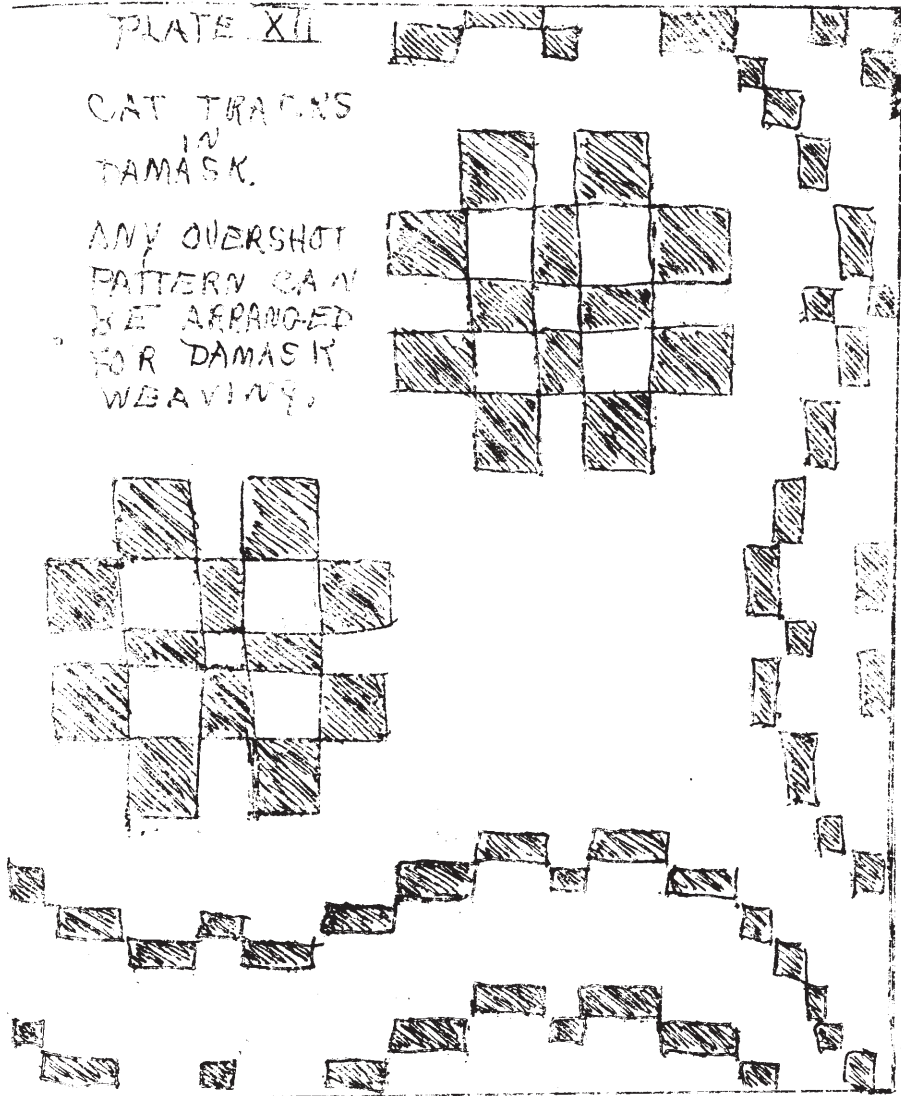
#### DESIGNING.

In the example for setting up the loom for a trial piece of weaving we have used a design unit or width of 72 squares. Once the loom has been set up and this trial piece has been woven a series of other designs all balanced upon the unit of the 72 squares may be woven. This has been established as the design repeat of the loom, it is also the same system that is followed for the draw-loom and also for the jacquard. Each succeeding design can be a completely original design with no resemblance to any of the preceding designs except that all are

PLATE XII

CAT TRACKS  
IN  
DAMASK.

ANY OVERSHOT  
PATTERN CAN  
BE ARRANGED  
FOR DAMASK  
WEAVING.



72 squares wide. One design may be built up on a series of small blocks or repeats, as the overshot patterns, summer & winter weaves, block damask designs, etc., or a design may be a completely free hand pictorial type of composition.

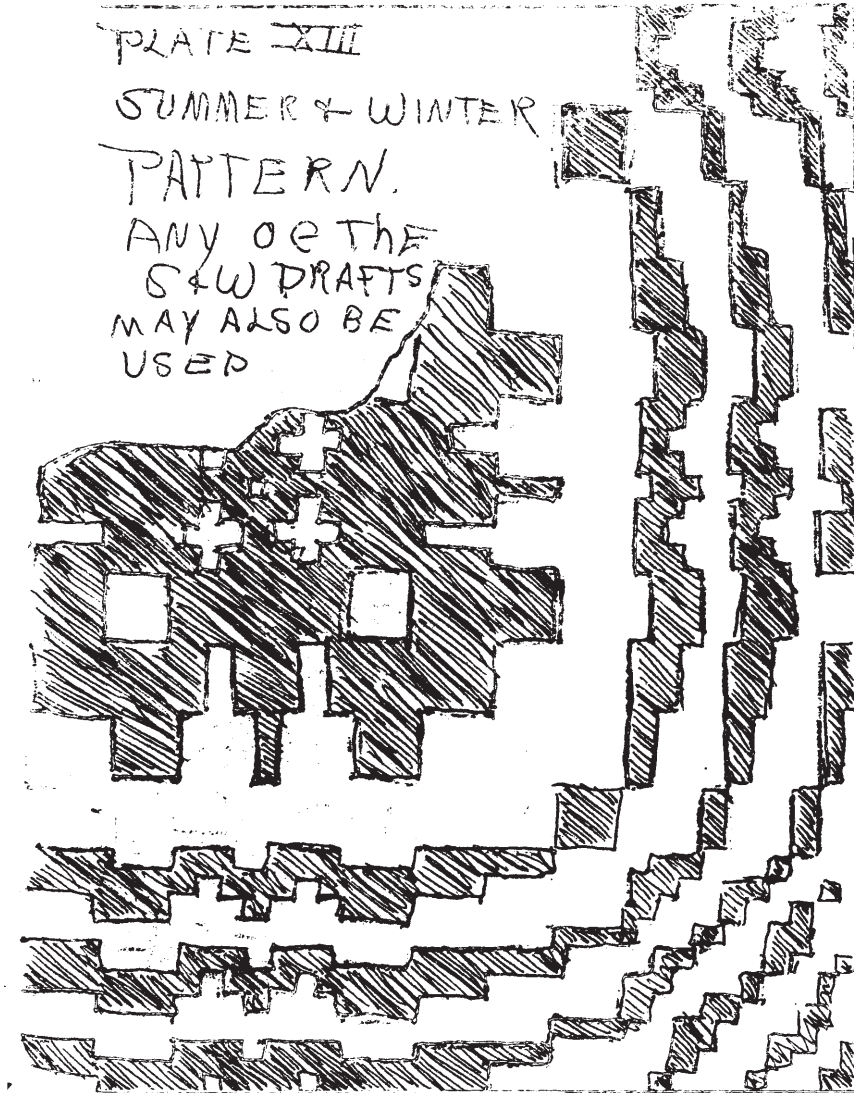
The foregoing paragraph outlines the principle idea for draw-loom designing and weaving. The loom may be set up to a specified number of ends, repeats or units of squares. Knowing the code of the system upon which the unit of design of this particular warp set-up, the designer may rule a series of pattern sheets to this code and design any number of patterns, all of which may then be produced upon this warp by simply hanging any of these designs in place for the insertion of the pattern or shed wires. Color may be introduced into the fabric by using colored shed rods to indicate changes in design so that the same changes of color can also be made in the weft. Split shed color changes are an objective for the advanced weaver but require a greater amount of concentration and time. Each row of squares or pick must be completely selected before proceeding to another row of squares, also it is necessary to handle colored rods, sheds and the shuttles too in a standard order of repetition or the fabric will be unevenly woven. Using color may make a distinct right and wrong side to the cloth. One shuttle may be used for each pick or several smaller shuttles of each color may be used to avoid longer floats of weft upon the under side of the material.

PLATE XIII

SUMMER & WINTER

PATTERN.

ANY OF THE  
S & W DRAFTS  
MAY ALSO BE  
USED



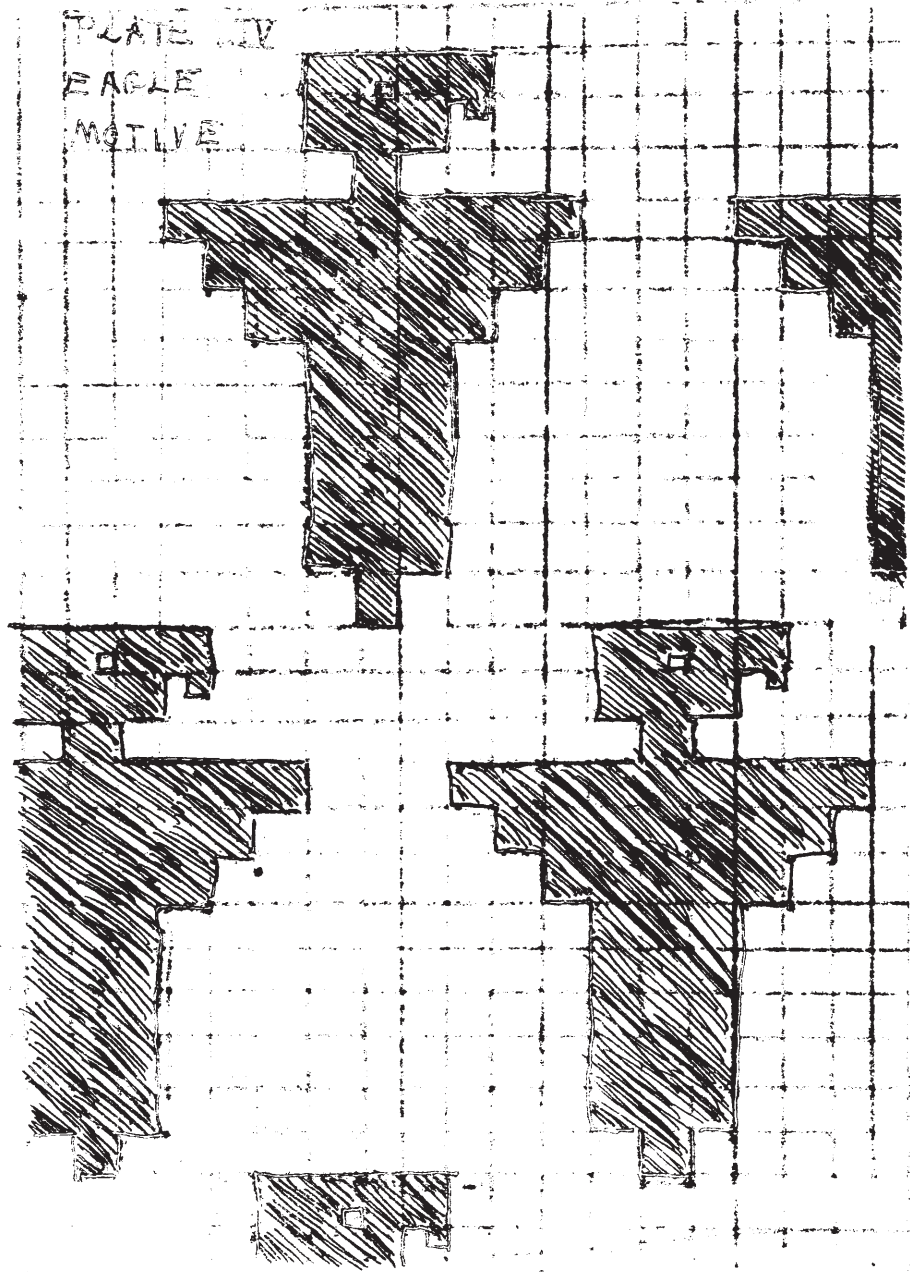
## YARNS.

The linen damask for table use required the use of similar yarns for warp and weft, depending upon the three over one float in the reversing areas of warp and weft to develop the pattern. Often unbleached warp and a bleached weft were used in the making of the fabric. The use of contrast in color or in materials or the use of novelty yarns may be used also in damask weaving, especially when the cloth is to be used for drapery or for upholstery purposes. In selecting yarn combinations also compare the adaptability of the yarns to be combined as some yarns have such varying wearing or laundering qualities as to make them impractical for some purposes.

An interesting combination for a drapery or for an upholstery would be the use of a soft boucle in yellow or green upon a fine, closely reeded rayon, on light or dark green cotton warp. Linen or linen and cotton is most suitable for table use, this combination launders well. Coarser cottons in damask are suitable for barbeque and patio uses. Some times a drapery material may be woven with a twill or satin weave upon a tabby ground but since that effect would require a different type of weaving in draft than can be used for the four harness damask an effective imitation may be produced by the use of a finer warp with a coarser cotton pattern yarn. These are only a few suggestions offered to show the weaver the possibilities that may be pro-



PLATE IV  
EAGLE  
MOTIVE



caused by a little experimental work with materials once the loom has been set up and the basic weave technique is mastered.

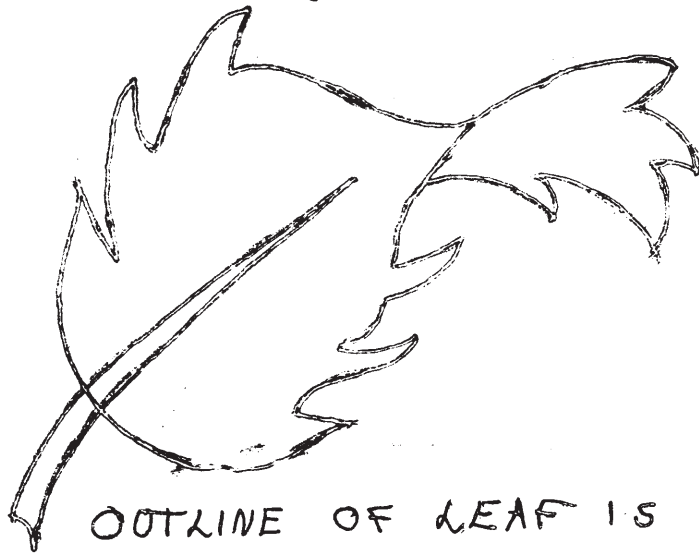
#### DESIGNING.

Perhaps the simplest illustration to use to demonstrate this weave technique will be to use the so very familiar Whig Rose Pattern. Referring to the pattern, first is the overshot draft showing a rose figure at (A). Below this draft is shown the short draft for the same pattern in the S & W variation, also a unit of this same figure extended to the 6 harnesses of the long draft, (B) and (C). In the next draft section (D) is the layout for this same figure extended for damask weaving. Note that sixteen harness frames will be required for actual weaving of this regular method of damask handling. If this draft were condensed for use in the combination draft using a double set of frames with split heddles upon the forward frames and the pattern drawn in upon a set of standard frames in the rear of the ground frames, then the draft would appear as at (E). However, once the drawing-in technique is understood, then the short draft used for the summer and winter layout may also be used here. Since the split heddles are in use upon the front set of frames in this pick-up technique, the shed or pick-up rods will take the place of the rear harnesses and so only the short draft need be prepared for the weaving of any of the overshot, summer and winter and for other block type drafts, to



PLATE XV

LEAF MOTIVE.



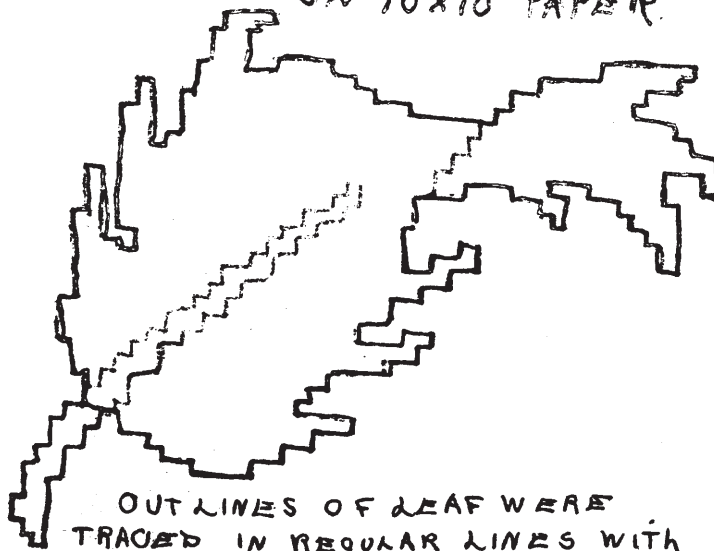
OUTLINE OF LEAF IS  
TRACED ON 10X10 SQUARE  
OR GRAPH PAPER; THIS IS  
USED HERE TO DEMONSTRATE  
THE METHOD OF ADAPTING  
FREE HAND DESIGNS FOR  
THIS TYPE OF WEAVING.

be found in any of the standard handweaving books. When the standard and the split Heddlee are used in combinations to weave a pattern, it will be interesting to note the harness equivalents in this short system as against the number of frames other required for the long drafts and for the straight drawing-in techniques. To find the number of harness frames that would be required on a straight or long draft, multiply the number of units in a damask pattern by four, the number of frames used for the twill or basis weave; if the five or eight satin weave is used then multiply by the leaf used. Example:- six pattern block, 4x6 or 24 frames will be needed to produce the same effect in a straight harness draft. In this 72 square draft method then the 72x4 or 288 frames would be needed.

While 288 ends have been used as the warp width with 72 squares or repeats the consequent unit for the design layout, this number was only taken for an easy example to use for the explanation of the system. Any number of warp ends may be used as the width of the warp and to find the number of units or squares that may be used for the laying out of the pattern the total is divided by 4, for a twill or a larger number for the leaf satins. As is noted, odd ends and left over ends may be divided and used in the selvages, or in the two outer units as pulling in at the sides will narrow somewhat these

PLATE XVI

LEAF MOTIVE SQUARED  
ON 10x10 PAPER.



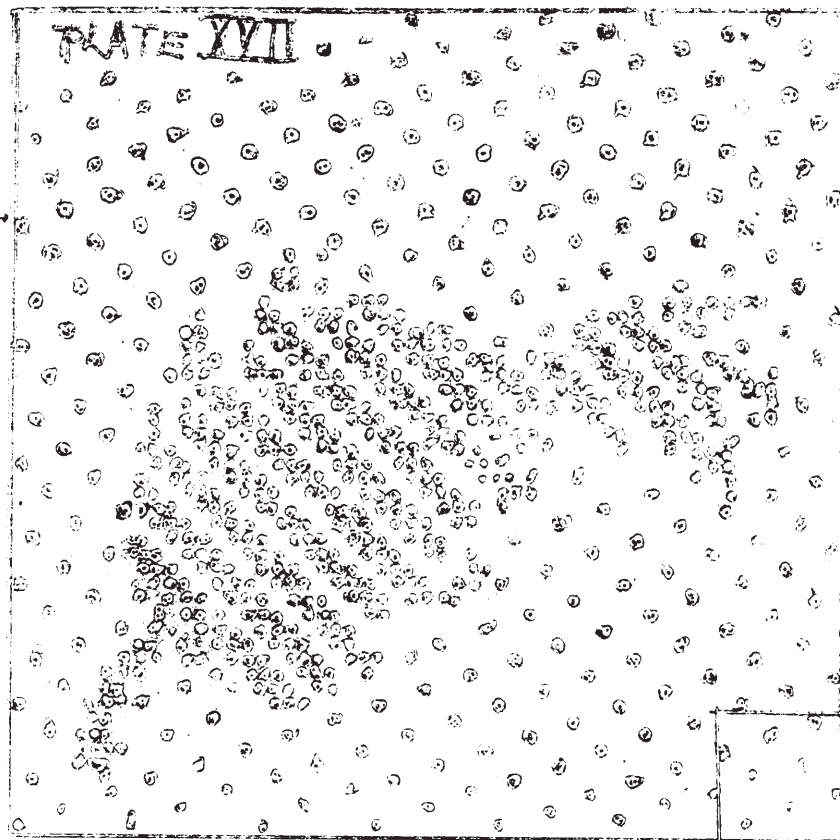
OUTLINES OF LEAF WERE  
TRACED IN REGULAR LINES WITH  
A LIGHT CARBON. THEN USING A COLORED  
PENCIL FOLLOW LINES OF LEAF, OR OF  
ANY FIGURE, REDUCING ARCS AND  
LINES TO FIT SQUARES. WHEN A LINE  
COVERS OVER ONE HALF OF A  
SQUARE INCLUDE IT IN THE DESIGN  
BUT WHEN IT IS LESS THAN ONE HALF  
DROP THAT SQUARE.

outside units, actually two blocks or repeats may be allotted to the outer figures to allow for this shrinkage.

#### FREE HAND DESIGNING.

Once the weaver has learned this technique of pick-up for pattern weaving, he may apply it to any of several other weaving techniques and he may adapt some of his other designs to this damask type of weaving. To adapt any design for this type of weaving it will first be necessary to set the pattern to the draft paper, after adapting or setting it to scale for the weave. This done by first preparing the squared paper according to the number of ends in the warp; dividing the warp total by 4 and lining out the unit width upon the design paper. The design will also have to be reduced, both to squared or angular lines and to scale. When the proportion has been set the free hand picture will then be traced onto the scaled paper. Then all the lines and curves will be altered to fit into lines of the squared paper. When the design has been wholly adapted to the squared and scaled paper it is to be inked over. See the plates and diagrams.

Once this black and white squared design has been made, the counts for the pick-ups ~~are~~ taken



USING METHODS OF PLATES LXV AND LXI  
 ANY FREE HAND FIGURE MAY BE ADAPTED FOR  
 DAMASK WEAVING; AS OBTAINED IN THESE NOTES  
 FOR FOUR HARNESS WEAVING.

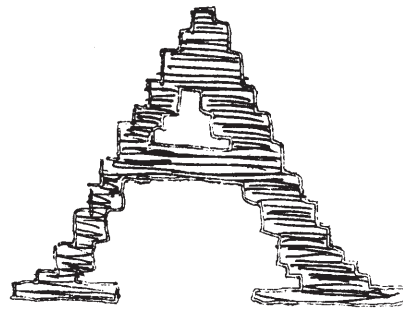
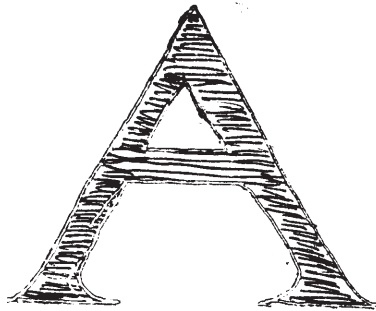
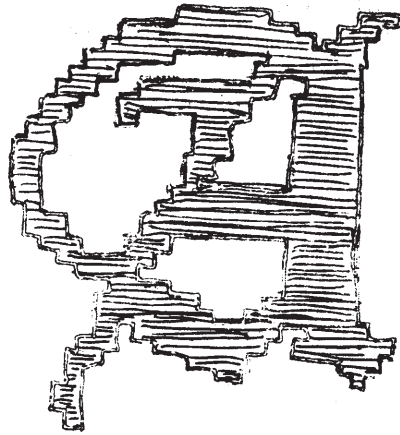
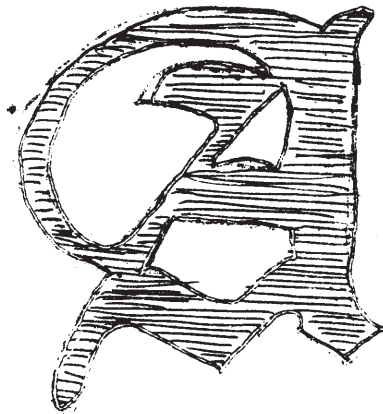
IF THIS SAME FIGURE WERE TO BE USED  
 AS A DAMASK WITH PEARL SATIN ON A 4 H TWILL  
 THEN IT WOULD HAVE TO BE WORKED OUT IN  
 DETAIL AS ABOVE FOR A STRAIGHT DRAW-LOOM  
 SET-UP.

from this prepared design or a 'treading draft' may be made by reducing the squares to numbered lists. See plate.

The two extremes of pattern layout have been illustrated in the details for the overshot pattern and in the freehand pattern sketching. There is also a wide range of pattern arrangements for other types of patterns that also may be used. If a balanced or bi-symmetrical design, one that radiates from a center line; then the total number of squares (width) is divided by drawing a heavy center line thru the layout; often a double row of the squares is used for this center of pattern but the single row for the center may also be used. A design is then balanced to this center line and is 'squared' by tracing and adapting as is described in an earlier paragraph. Once this half of a pattern has been lined out the other half is blocked in by count. Actually only the half section is all that need be worked up, as one can get a sense of a full pattern by use of a mirror. A quartered or corner unit may be seen with the use of two mirrors. The count is picked to the center and a reverse count is made.

When making table cloths or square cloths only the corner section need be laid out, or if a larger pattern has been laid out a corner pattern may be selected and arranged by use of the mirrors as is noted above. When a square cloth is being planned it is not always necessary to carry a centered to border design. A good border and corner will be better than a lot of useless detail.

PLATE XVIII



ALPHABETS MAY BE OUTLINED  
ON GRAF PAPER AND ADAPTED  
TO THIS TYPE OF WEAVE.

Allround borders are made by allotting some of the total width to a border design and by marking out a section of the layout paper for this purpose. A good proportion for a border layout may be about a sixth of the total width for each side border. The center section may then be laid out in a balancing type of unit or the whole central area may have a free hand or picture type of decoration.

Still another type of pattern layout that may be used is the small striped repeat. In this case the square total is divided by a base number and the layout paper is also divided by this repeating number. A pattern is then fitted into this repeat unit and is then transposed into the other units in a straight row across the width of the pattern sheet or in other planned arrangement. See plate.

Dates and monograms and even names or titles of the panel may be woven into the fabric by sketching them first into the layout squares. This type of detail usually requires a large number of units and a fine textured weave to incorporate the figure details and the lettering so that the whole effect will be in good proportion.

Color details may also be included into the design once the weaver has had some experience with the production of the simpler pattern effects that will give him an understanding of these more intricate problems. Heretofore only one color for both the warp and weft or one warp color was used and





PLATE XII

BI-SYMMETRICAL  
DESIGNS ARE  
ADAPTABLE TO  
THIS TYPE OF  
WEAVING.

TO MAKE A BI-  
SYMMETRICAL  
DESIGN IT IS  
ONLY NECESSARY  
TO DO HALF OF  
THE PATTERN

A MIRROR  
PLACED ON  
THE CENTER  
LINE WILL  
SHOW WHOLE  
REPEAT. PICK  
UP BY COUNT  
TO CENTER  
& REVERSE THE  
COUNT TO  
opposite side.

DESIGN AT  
LEFT CAN  
BE USED AS  
A BI-SYMMETRICAL  
DESIGN OR AS A  
REPEAT FOR  
A TOWEL  
BORDER.

the second color has been used for the weft. The design for a colored pattern is laid out in the same way as for a regular pattern but instead of inking in the details in black, they are filled in with the colors that are to be used in the weaving of the pattern. Pick-up rods are painted in match-colors to aid in the color weaving. In the weaving and in the pick up the colors are always used in the same rotation or order, i. e., with three color plan as blue, green and yellow, the blue rod would be used to pick up the blue shed of a given pick, then the green and yellow rods would be inserted. In the weaving when the blue shed stick is in its place a blue weft would be in order, etc. In using the colored wefts there will be long floats of the unused weft, in a firmly textured fabric these may be clipped away or a series of smaller shuttles or bobbins may be used to weave over the smaller color units. As in tapestry weaving, the colored damask is woven face down in the loom. If any larger amounts of color patches or areas are to be used a ground weft must be used to unite and to give the needed strength to the cloth.

#### The PAISLEY SHAWL.

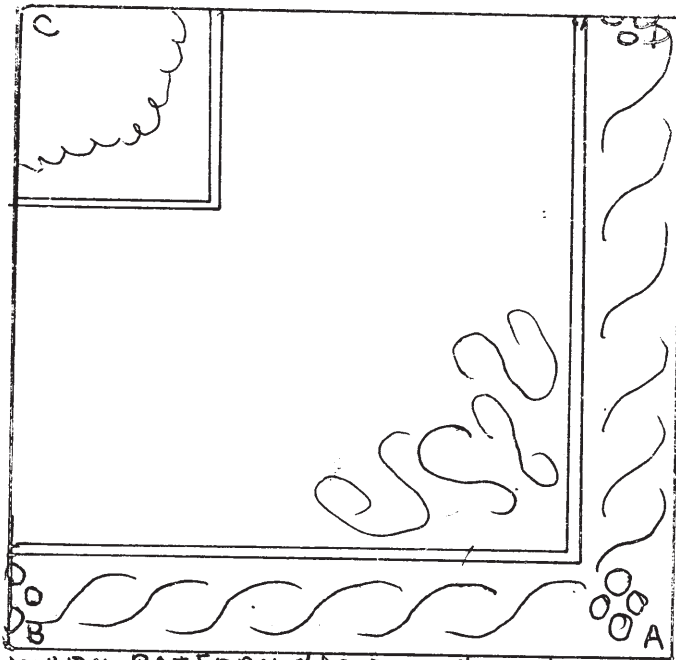
A fuller description of the Paisley Shawl is to be found in the **DESIGNING FOR THE HANDWEAVER**. Also color notes are included in The **WARP PAINTING** Book which is devoted entirely to the art of the painted or printed warp. Painting or printing the warp before weaving is an old art and is usually applied mostly to plain textures but it can be used for high lighting woven patterns as well.

DAMASK OF A HATFIELD: Egypt.

PLATE XX

SKETCH BELOW SHOWS LAYO<sup>UT</sup> OF A  
QUARTERED PATTERN FOR CLOTH OR DRAPERY.  
LAY OUT QUARTER SECTION OF PATTERN AS  
SHOWN. EFFECT OF FULL REPEAT MAY BE  
SEEN BY USING 2 MIRRORS.

PICK UP ON SHED STICKS, BY COUNT,  
FROM EDGE TO CENTER AND REPEAT  
COUNT, IN REVERSE, TO OPPOSITE S. IDE  
OF WARP.



WHEN PATTERN HAS BEEN WOVEN FROM  
AB & DC. PICK UP PATTERN ON SHED  
STICKS IN REVERSE ORDER FROM DC TO AB.

Since the warp painting techniques and also the damask weaves were a part of the Paisley Shawl types of weaving these detailed notes would not be complete without some mention of the Paisley Shawl processes.

The factor, who was the promoter of a home industry; today he would be considered as a manufacturer; went out into the design market and selected a suitable design for a shawl. With this design at hand he then laid out the making directions, costs and materials, size, type of shawl, etc. Then the yarns were ordered for the warp and for the weft. The spun yarns were given to the warpers and also to the dyers. The weft yarns were skinned and were so dyed. A different procedure was necessary followed with the warp yarns. A full scale chart had to be made and elongated to allow for shrinkage in weaving. The warp was then made and laid out in an absolutely correct position upon this chart. Then a special warp dyer or painter was called to stain the warp in the exact color design. Then the warpers had to take this warp and set it into the loom for the weaver. With the warp in place, the lasher went to work and referring to the original design he tied up the simple or cords for the shedding of the pattern, he had to plan them in the proper order both for color and for the pattern effects. It was all then in order so that the draw-boy needed only to pull or lift these ties in a straight down the line order and to time his shedding to the movements of the weaver. He had to match the weaving

speed of the shuttles and have the proper shed always opened for the throwing of the shuttle. As he opened the shed for the weaver he called out any change to be made in the color of the last tie. As the shawl was finished it was inspected and sheared it was also watched for pattern detail. The weaving and the painting had to exactly cover or the shawl was imperfect, a variance of more than two picks of weft was a serious defect. Each color area and each throw of every shuttle was planned to the last bit of the warp and weft for the making of a shawl.

\* \* \* \* \*

The resume of the above processes with all the details has been included here so that the present day weaver may have an idea of how involved is the making of a fine piece of fabric should he want to apply his talents and energy to the making of some very fine exhibition pieces. While the processes as listed are the work of several expert craftsmen, it is possible for one weaver to attend to all of them should he wish to do so.

In this instance the weaver would have to assign a loom to the project that he can spare for the duration of the project. Then he must plan for a suitable design. After all of the preparatory details have been covered and the loom is ready for the beginning of the actual weaving then he will have to open the proper shed for the shuttle, then he will have to throw the shuttle, go to side of loom etc.

There is much that may seem tedious and difficult in such a project but the weaver should make a smaller study panel or possibly plan for a simpler pattern and as each one has been completed then a more ambitious one started upon paper for sometime in the future. In that way it will not seem so involved and the weaver will have time to review and correct details so that if and when the project is finally set up in the loom it will not seem to be a difficult project but a worth while task that is worthy of our best talents.

CORRESPONDENCE COURSE  
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An especially ambitious program may require both a double enrolment and a double fee. The titles of the several Weaving Notebooks and the titles of the newer series indicate the general possibilities for the advanced work. Any one of these books that may be the basis for the project will also be included as part of the working material.

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