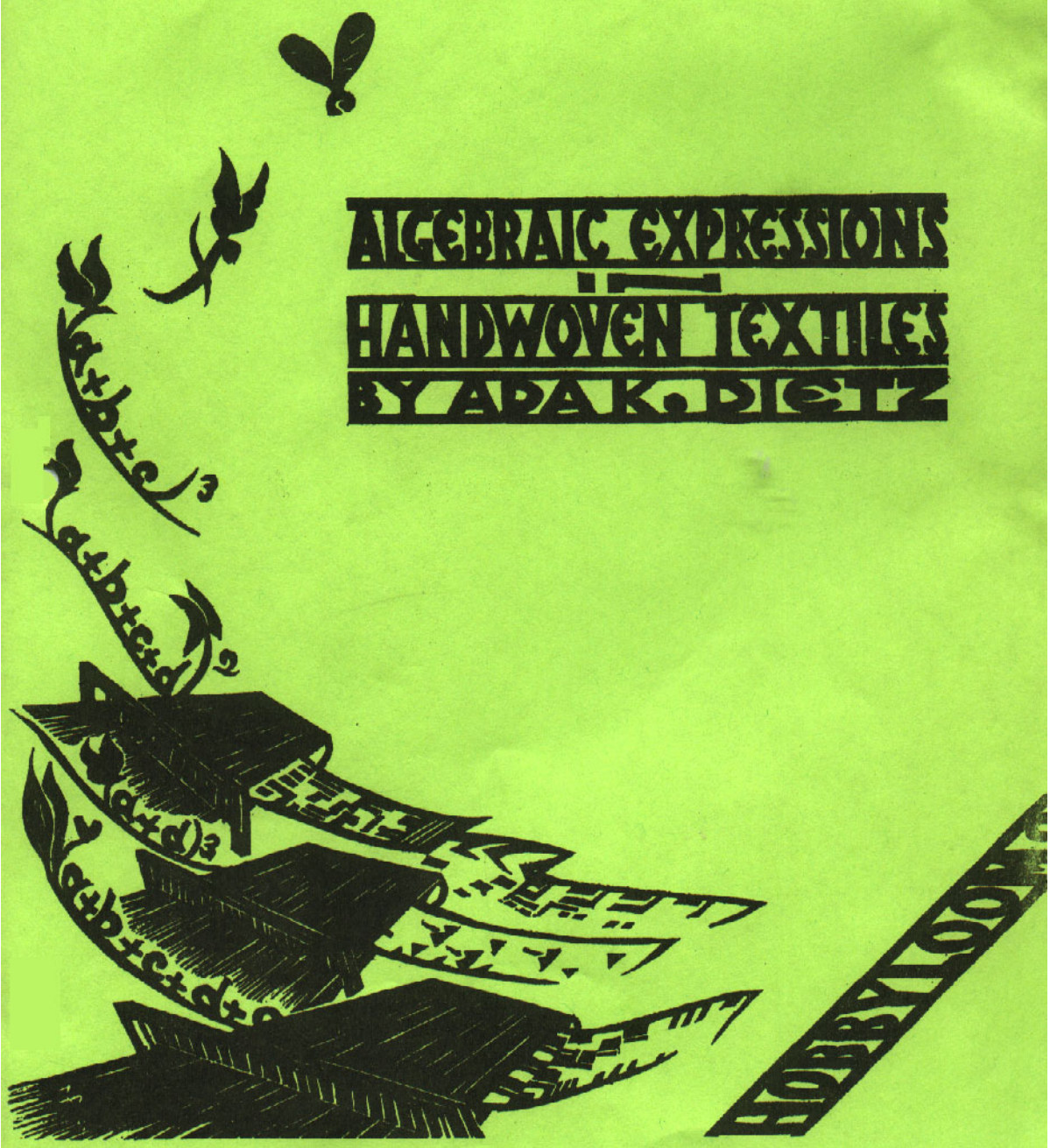
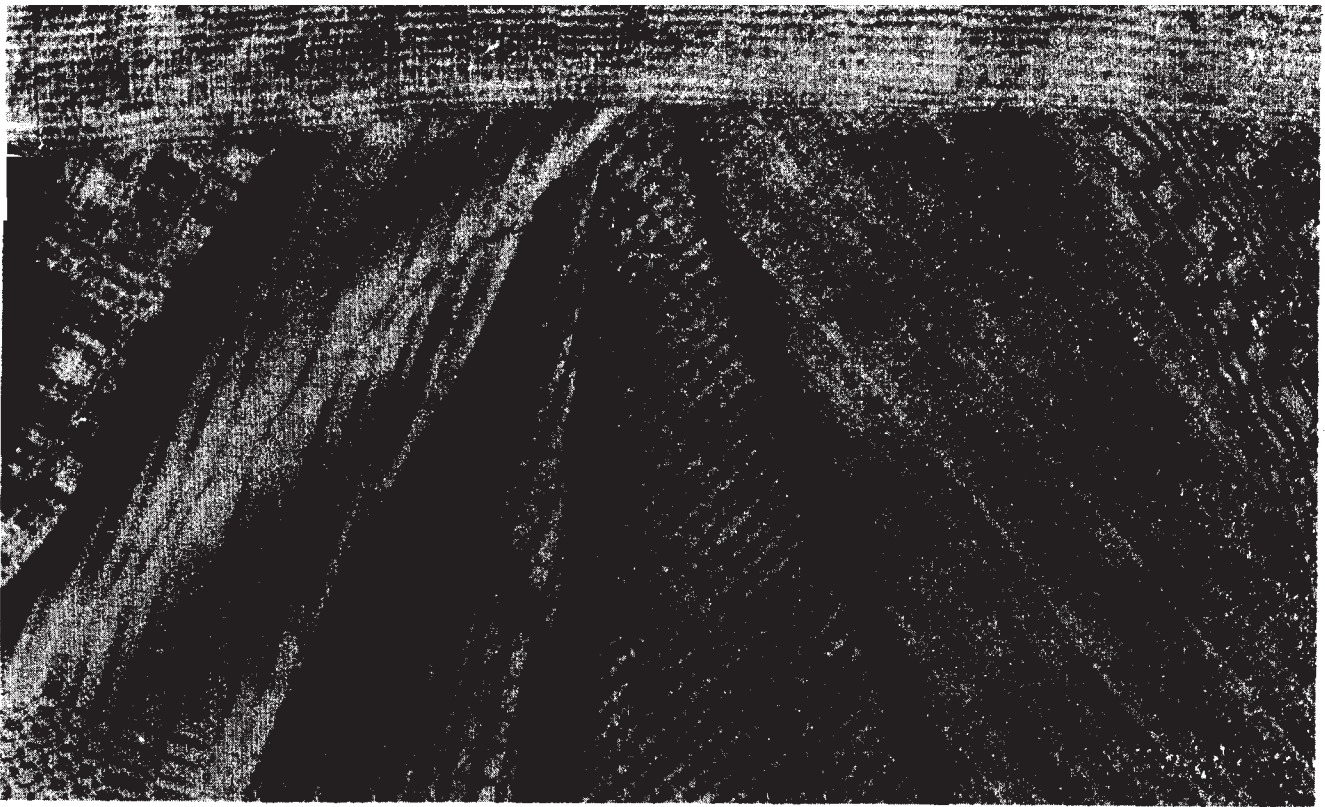


**ALGEBRAIC EXPRESSIONS
HANDWOVEN TEXTILES
BY ADA K. DIETZ**





ALGEBRAIC EXPRESSIONS IN HANDWOVEN TEXTILES

Robert

Kirkpatrick

by
ADA K. DIETZ

Names of patterns in weaving have always intrigued me. In 1946, I decided to start with the name and draft a pattern based on it.

A formula in mathematics occurred to be the most definite basis from which to work. Taking the cube of a binomial, I approached it in the way applied algebraic problems are approached - by letting x equal one unknown and y equal the other unknown.

In this case, x equaled the first and second harnesses, and y equaled the third and fourth harnesses. Then it was simply a matter of expanding the cube of the binomial and substituting the values of x and y to write the threading draft.

I found it possible to write the draft for any formula as long as there were sufficient combinations of harnesses to substitute for the terms of the algebraic expressions.

As patterns grew and the possibilities opened up, I found that mathematics gave the beautiful space divisions, proportions, and individuality of pattern which the artist strives to achieve.

In writing this draft book, it is my hope that not only will others enjoy these patterns but will be stimulated to experiment with further combinations.

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Kenwood Hill, Louisville 8, Kentucky

Ada K. Dietz

Civilization is based on the experimentation with new ideas. Each idea which stimulates thought serves a purpose. Ada K. Dietz' algebraic approach to draftwritin is one of those rare ideas - and is definitely a stimulating one to weavers, to laymen alike.

Miss Dietz, after pondering the idea, first tried out the algebraic equations in Aug. 1946. The Little Loomhouse first heard of Miss Dietz' experimental work in 1947 and asked her to submit entries to the 1948 COUNTRY FAIR - 10th annual exhibition of Contemporary American Handwoven Textiles, assembled annually from handweavers thruout the U.S. Her entry (6-2-SW-1) was shown in the COUNTRY FAIR and drew interest from weaver and layman - a very thought provoking idea is the "algebraic approach".

However, it was after working with Miss Dietz in the summer of 1948 and realizing the import and flexibility of her idea, the Little Loomhouse asked Miss Dietz to assemble the exhibition together with study textiles and draft book. The application of the algebraic equation is flexible and gives the weaver leeway for creative interpretation; it is definite in formula and so helps the new weaver.

Ada K. Dietz' draftbook of ALGEBRAIC EXPRESSIONS IN HANDWOVEN TEXTILES is purposely looseleaf with code numbers instead of numbered pages. Later, Miss Dietz may publish a printed volume with numbered pages. But today, the idea is too new, too exciting, too varied, too unexplored to tie down.

This draft book is for study. Altho it is more valuable when used with the exhibition, it is made complete for those who will not see the exhibition. The book is flexible so pages can be added in proper sequence as weavers contribute additional textiles to those already explored. When a new idea is being explored, it should not be bound down to set form. We are trying to present some of the many facets offered by the algebraic approach. Already we have added photographs of a number of the textiles. Drafts are written by the method used by the weaver doing the experimental work. As mentioned before, this is a study book and it is good for us to be able to follow different methods. Since the idea is so definitely Ada K. Dietz', we are not attempting to mention any of the weavers who are enthusing over and helping explore the idea. However, Ruth E. Foster, art teacher who with Miss Dietz forms HOBBY LOOMS, is an important contributor to the exhibition and to the development of the idea. She planned many of the colorings and textures used in the exhibition, suggested the use of color values for the unknowns, and did the covers for the catalogues and book.

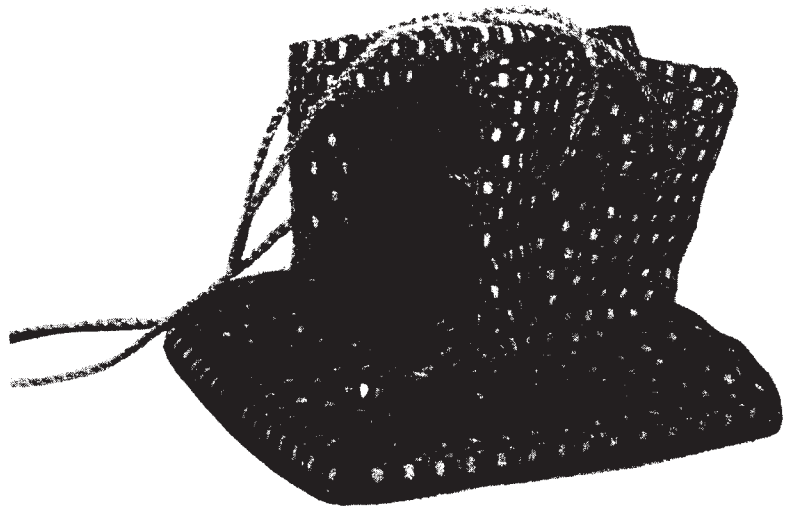
Pages in the book follow the code given below. As other pages are developed, they can be added in logical sequence. E - indicates functional textiles for display;
S - indicates study pieces for use of
weaving groups.

As the idea is so decisively that of Ada K. Dietz, AKD indicates an algebraic page:
- the first number indicates the number of unknowns - 2, a binomial; 3, a trinomial;
- the second number indicates the power of the equation - 2, a square; 3, a cube;
- the letter indicates the weave - C, crackle; L, lace; O, overshot; PW, plain weave;
SW, summer-and-winter; T, twill; etc.;
- details of treadling, etc., are shown on the pages.

In offering this draftbook to you in looseleaf form, we are also extending an invitation to you to join us in exploring. If you have some pioneer blood, I think you will go from the frontier Miss Dietz has shown you in these pages to the tremendously exciting unexplored field of algebraics. If you would like to share any adventure in the algebraics with your fellow weavers interested in the subject, send the data prepared similarly to these pages, together with a photograph if possible. Either Miss Dietz, 12313 Fremont St., Yucaipa, California 92399 or I will be keenly interested in hearing of your adventure in algebraics -

Lou Tate, director
Little Loomhouse
Kenwood Hill
3 Louisville 8, Kentucky

The personalities back of an idea are of import - you feel you know Ada K. Dietz weaving the rug in $(x+y)^3$ on "Brunhilda" with Ruth E. Foster, standing with the yarns. HOBBYLOOMS is the trademark of these weavers. Miss Dietz drafts mathematically - building up the pattern from a definite formula. Miss Foster, as an artist, sees the overall picture and then draws down the draft. The idea, the textiles, and the drafts are from Ada K. Dietz but much of the color is Ruth E. Foster, as are the covers.



Robert Kirkpatrick

Chartreuse chenille pattern weft with gold tabby are used for this evening bag set off with a heavy gold cord.

The equation is the square of a binomial as given on page 2-2-0-1 with the bag pattern on the following page.

Louisville COURIER-JOURNAL

Long Beach PRESS-TELEGRAM



CONTENTS: this is a temporary page giving experimental work already completed. As additional work in the algebraic approach is done, it will be added to the book.

1. COVER - block print by Ruth E. Foster
2. Foreword on ALGEBRAIC EXPRESSIONS IN HANDWOVEN TEXTILES by Ada K. Dietz
3. Code and purpose of looseleaf form
4. Misses Dietz and Foster, EVENING BAG in square of a binomial
5. Contents

6. 2-2-basic THE SQUARE OF A BINOMIAL $(x+y)^2$
7. 2-2-0-1 overshot weave - EVENING BAG (E-1)
8. 2-2-0-2 pattern for bag, pictured on page 4
9. 2-2-0-3 draft and treadling for three study pieces
10. 2-2-L-1 lace weave - PLACE SETTING (E-2) piece
- 2-2-PW plain weave with color values given the unknowns, shown in study
11. 2-2-T-1 twill weave, scarf with twill and color values given to unknowns
12. 2-2-T-2 twill weave applied to suitings
13. 2-2-T-3 broken twill applied for scarfs
14. 2-2-T-4 broken twill applied for suiting

15. 2-3-basic THE CUBE OF A BINOMIAL $(x+y)^3$
16. 2-3-PW-1 plain weave with color value given to unknowns - DRESS (E-3)
17. 2-3-PW-2 plain weave, scarfs and small textiles for school, group weaving
18. 2-3-SW-2 summer-and-winter weave - UPHOLSTERY, chair seat and back (E-4)
19. 2-3-0-3 overshot weave - RUG (E-5)
20. 2-3-0-1 basic draft for overshot weave
21. 2-3-0-3 draft, treadling, yarns used for four study pieces

22. 3-2-basic THE SQUARE OF A TRINOMIAL $(x+y+z)^2$
23. 3-2-0-1A overshot weave - BAG (E-6)
24. 3-2-0-1B draft and treadling for bag
25. 3-2-0-2 pattern for bag
26. 3-2-0-3 basic draft
- 3-2-0-4 approach to draft by continental placing of unknowns

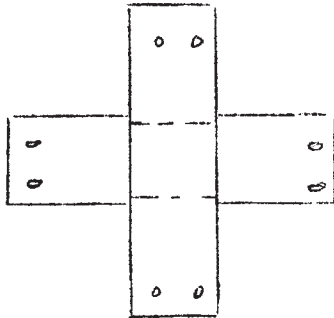
- 3-3-basic THE CUBE OF A TRINOMIAL $(x+y+z)^3$
27. 3-3-PW-1 plain weave with color values to unknowns - SHIRT (E-7)
28. 3-3-PW-2 draft for plain weave

- 4-2-basic THE SQUARE OF A POLYNOMIAL (4 terms) $(a+b+c+d)^2$
29. 4-2-C-1 crackle weave - KNITTING BAG (E-8)
30. 4-2-C-2 crackle weave draft and treadling
31. 4-2-C-3 pattern for bag
- 4-2-C-4 expanded pattern - PLACE MAT (E-9)
- 4-2-C-5 crackle weave by a different method

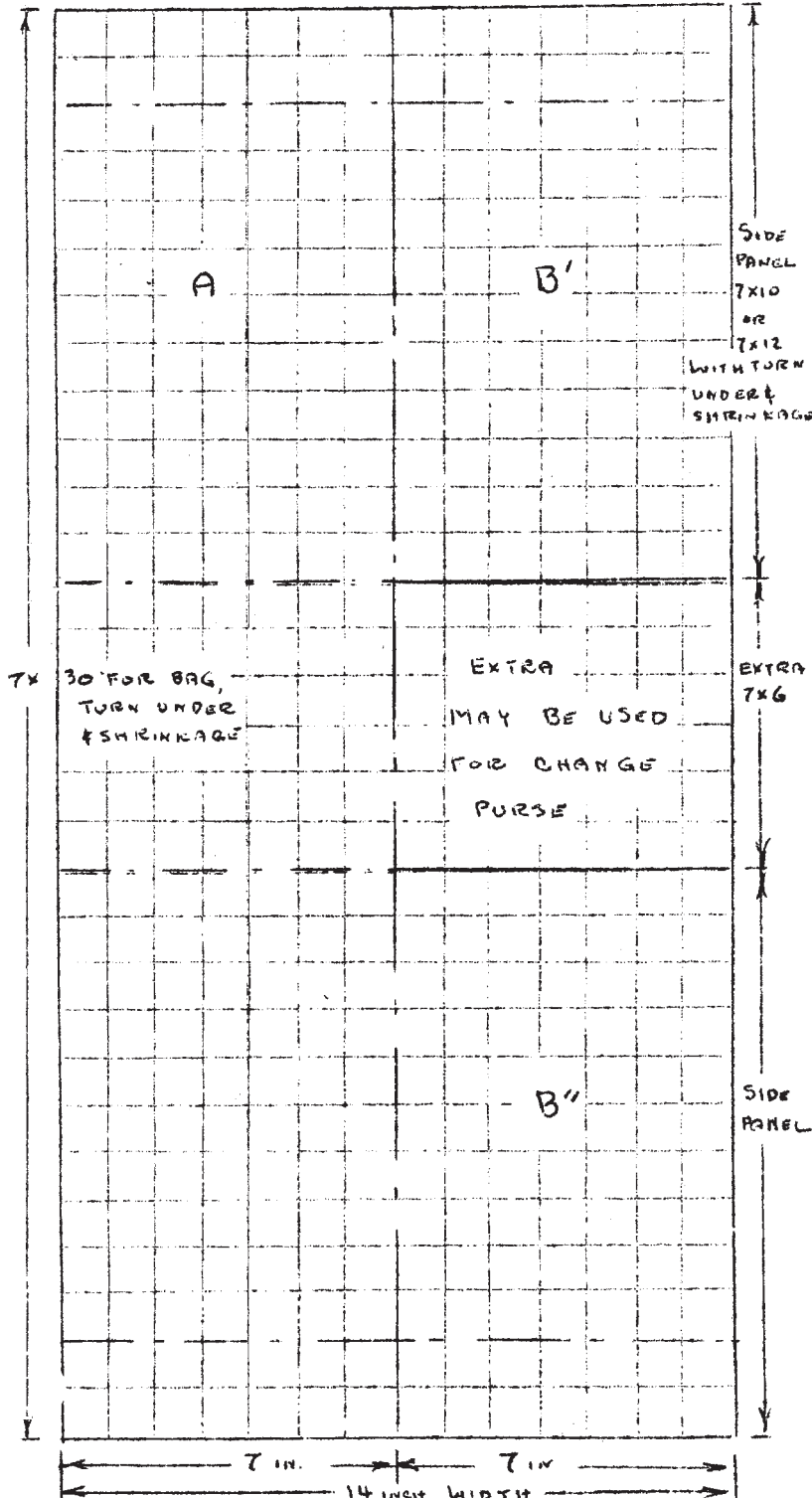
- 6-2-basic THE SQUARE OF A POLYNOMIAL (6 terms) $(a+b+c+d+e+f)^2$
32. 6-2-SW-1 summer-and-winter weave - WALL HANGING (E-10)
33. 6-2-SW-2 draft and treadling for wall hanging
34. 6-2-SW-3 method of writing and treadling summer-and-winter draft
35. 6-2-SW-4 sketch of upholstery material in summer-and-winter weave

- 8-2-basic THE SQUARE OF A POLYNOMIAL (8 terms) $(a+b+c+d+e+f+g+h)^2$
- 8-2-0-1 overshot weave - WALLHANGING (E-11)

When this book of ALGEBRAIC EXPRESSIONS IN HANDWOVEN TEXTILES by Ada K. Dietz was first planned, it was planned for 24 pages. As Misses Dietz and Foster, members of the Little Loomhouse, and others added their experimental work in this idea, we will continue to add pages.



Rivaling the ribbons worn by General Sheetz at the Fort Knox meeting, was a bag carried by Nina Firmery. After several pointed to the bag and said, "Let's have that for the KENTUCKY WEAVER," Mrs. Firmery promised to draw-off the bag pattern. She not only did but has also helped several of the youngsters make their bags and has cut extra patterns for those coming to the August workshop.



Then when Ada K. Dietz was planning certain of her algebraic equations for easy understanding by a new weaver, she and Ruth E. Foster arranged to use this bag for the exhibition "Algebraic Expressions in Handwoven Textiles". Everyone at the Little Loomhouse or at the July Kentucky Weavers Guild meeting has the page on $(x+y)^2$ and saw the chartreuse and gold material.

This pattern may be woven on a 7 inch width or 14 inch width warp.

New weavers may like a 12 inch width for easier weaving - such as 10/4 or 12/4 colored cotton or "string"; or 8/4 rug warp cotton; or 3/2 mercerizes cotton -- all set 15 threads to the inch for 188 threads.

Other suggested warps in plain weave are: navy or other ratine; hungers green or other wool in 18/2, 15/2, or 15/3, set 15 threads to the inch for 232 threads; or royal blue wool or other colors in 18/2 or 15/2, set 20 threads to the inch for 308.

Raw silk and linen in textured material, structural design; black wool in rosepath; blue wool in honeysuckle; brown wool in $(x+y)^2$; or like threaded patterns.

As the warps listed above will shrink differently, cut the lining a fraction smaller than the bag after the material has been shrunk. Buckram is needed for the bottom; crinoline may be used for the long panel. Cord -- 1 yard -- may be made from the weft yarns.

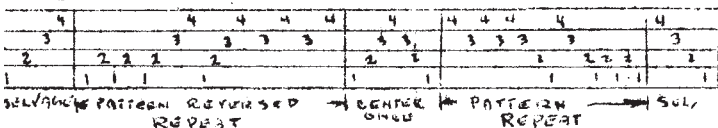
Every weaver likes to experiment with different treadlings. So you may enjoy these treadlings of $(x+y)^2$. In the study pieces:

- 1Sa is in overshoot weave by the draft (or true pattern, or diagonal);
- 1Sb is in opposites with 1-2 in one color alternated with 3-4 in another color;
- 1Sc is treadled as an even surface twill with 1-2, 2-3, 3-4, 1-4.

The square of a binomial is used: $(x+y)^2 = x^2 + 2xy + y^2$ with x being 1-2 harnesses and y being 3-4 harnesses.

$$x^2 = \begin{array}{|c|c|} \hline \hline \\ \hline \end{array} \quad 2xy = \begin{array}{|c|c|} \hline 4 & 4 \\ \hline 3 & 3 \\ \hline \end{array} \quad y^2 = \begin{array}{|c|c|} \hline 4 & 4 \\ \hline 3 & 3 \\ \hline \end{array} \quad \text{all} = \begin{array}{|c|c|c|c|} \hline 4 & 4 & 4 & 4 \\ \hline 3 & 3 & 3 & 3 \\ \hline 2 & 2 & 2 & 2 \\ \hline 1 & 1 & 1 & 1 \\ \hline \end{array}$$

The parts of the equation are written from right to left usually. The draft with the center used in the study pieces is given below.



with the pattern repeated 7 times for 240 threads set 2 per dent in a 15 dent reed in 20/2 natural cotton warp.

For 1E, the pattern is fine chartreuse chenille on a metallic tabby; for 1Sa, the pattern is rust glossilla with 20/2 cotton tabby like the warp (fig. a). The treadling follows the threading draft:

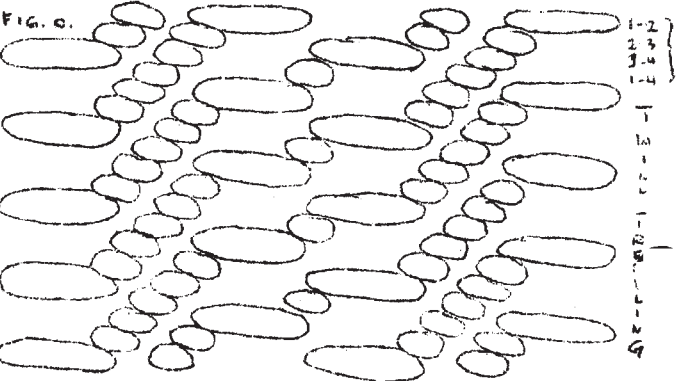
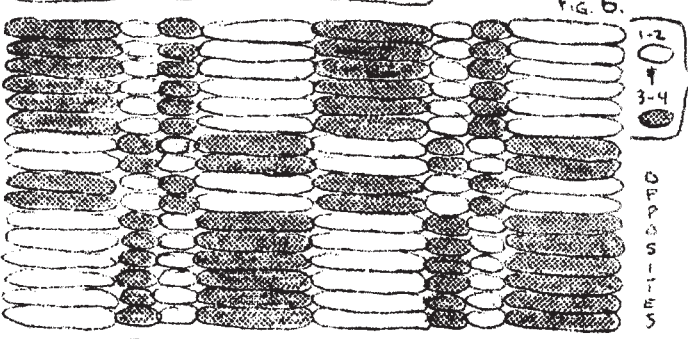
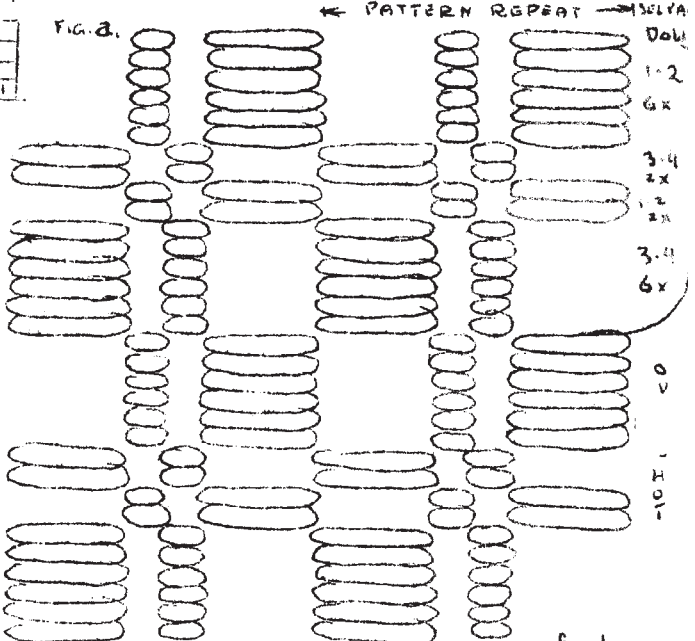
rust pat.	tabby	rust	tabby-20/2 cot.
3x(1-2	1-3	1-2	2-4)
(3-4	1-3	3-4	2-4)
(1-2	1-3	1-2	2-4)
3x(3-4	1-3	3-4	2-4)

For 1Sb, the pattern is 1-2 chartreuse chenille alternated with 3-4 white chenille woven without a tabby, to give a stripe.(fig. b) shows the pattern woven in opposites by the threading draft:

1-2 white alternated with 3-4 green (6x)	
1-2 green	3-4 white (2x)
1-2 white	3-4 green (2x)
1-2 green	3-4 white (6x)

For 1Sc, a twill treadling is used with the weft being Bucilla Floraltone Wondersheen in rust color, one thread each on 1-2, 2-3, 3-4, and 1-4. No tabby is used on most twill treadlings: if you try a twill treadling with a tabby use heavy yarn for twill, fine for tabby.

This page shows three variants of $(x+y)^2$ but there are many more variants and fascinating experimental work in colors for the same equation.

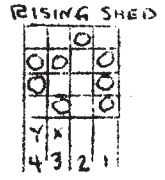
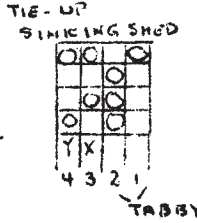
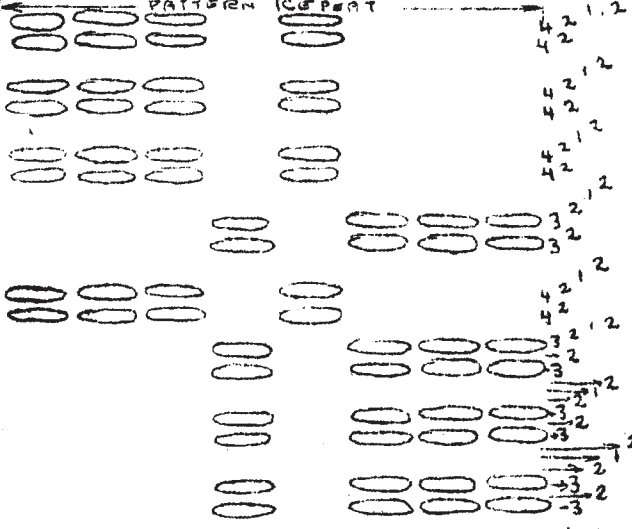
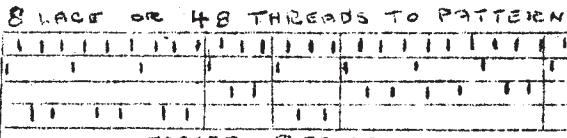
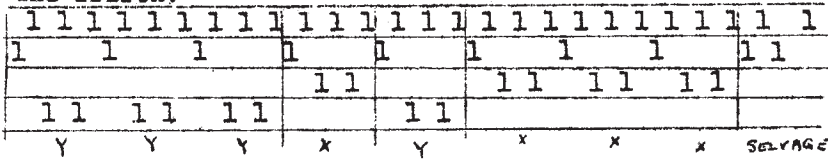


Continuing with the application of the square of a binomial $(x-y)^2$ to a lace weave, members of the Little Loomhouse have used Ada K. Dietz' approach to draftwriting in several lace weaves. The first is this page using a basic lace.

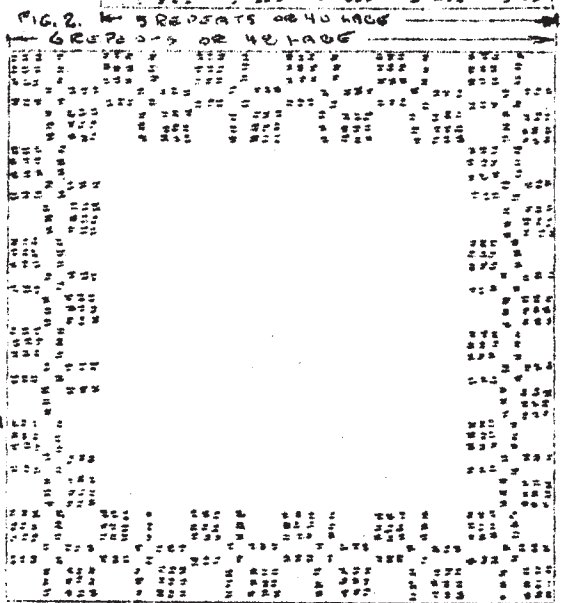
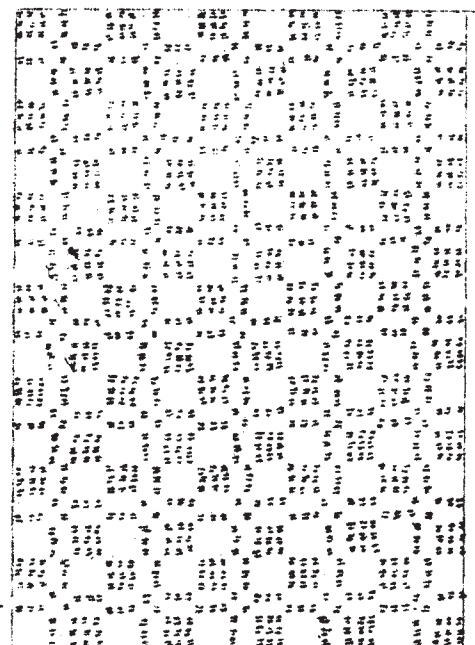
Since this lace has each unit of the pattern showing up separately thru the 6th thread isolating the blocks, it is easier for the new weaver to visualize each part of the equation in relation to the pattern. Those who teach or supervise community weaving, or learn their weaving without a teacher know the value of patterns which can be easily visualized. A person does not truly weave until he gets the creative stimulation of going thru the thought processes.

The equation $(x-y)^2$ develops to $x^2 - 2xy - y^2$
to $xx \ xy \ xy \ yy$
or $xxx \ y \ x \ yyy$

The lace may be used on a two harness loom with a 3rd harness added, or on a four harness loom with 1/2 of the threads the first harness, 1/6 on the second harness, the x 's on the third, and the y 's on the fourth.



1, 2 FOR HEM
BEGIN - TABBY



Alberta Wilson warped two looms in cream 20/2 linen set 20 to the inch. With 48 threads to each pattern repeat, she used 5 repeats plus selvages-4-240-4- for 248 threads for the place mats. For napkins, she used 6 repeats - 4-288-4- for 296 threads. Mats are woven all-over; napkins have a all around border of one pattern repeat.

pattern weft is 12/2 wood brown linen (or deep beige)- on treadles 1,3,4; and tabby weft is 20/2 lime green linen used on treadle 2. For weavers who like a lacier effect, use 20/2 linen in lime.

This page uses Ada K. Dietz' approach to handwoven textiles in a two harness plain weave with color values being given the unknowns. This makes an excellent beginning textile for new weavers and forms a firm basis for taking the same equation into other weaves. The square of a binomial $(x+y)^2$ - was selected by the participants in the KENTUCKY WEAVER as the starting point. After working out the equation, one group started warping a loom while others did the paper work on two following equations - the cube of a binomial $(x+y)^3$ and the square of a trinomial $(x+y+z)^2$.

For $(x+y)^2$ used with x and y being given color value, a 3/2 mercized cotton warp in red and white, set 12 threads to the inch, was selected for use as place mats to be used with pottery, and as being suitable for school, club, and recreational weaving. After the red and white $(x+y)^2$ is set up, another group plan to set up the square of a trinomial in red, white, and blue.

For students studying color, experimental work in strongly contrasting or adjoining colors offers numerous possibilities for bags, scarfs, wool shawls, suiting, etc. - as cerise and magenta, magenta and plum, or lime and aqua.

The square of a binomial $(x+y)^2$ breaks down to $-x^2 + 2xy + y^2$,

and in turn - xx xy xy yy,

or grouped - xxx y x yyy.

The resulting xxx y x yyy is the basis for our use of color in a plain weave and is also used as the basis for $(x+y)^2$ in overshot, lace, or other weave.

The x and y can be given the color values you wish. If x is given a red color value r , and y is given the white color value w , the equation may also be written $rrr w r www$.

<u>y</u>	<u>x</u>	<u>x</u>	<u>x</u>	back harness
<u>y</u>	<u>y</u>	<u>y</u>	<u>x</u>	front harness

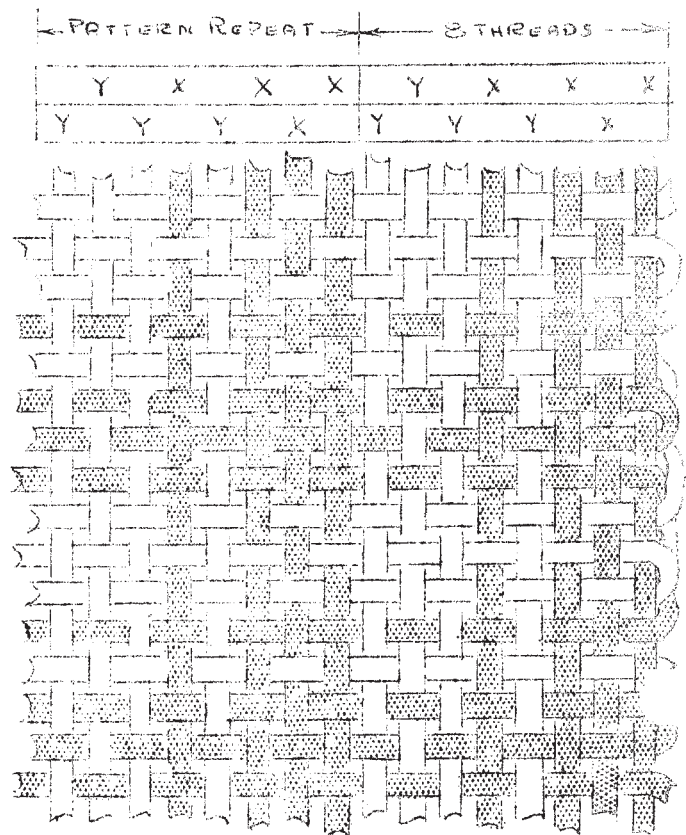
<u>w</u>	<u>r</u>	<u>r</u>	<u>r</u>	back harness
<u>w</u>	<u>w</u>	<u>w</u>	<u>r</u>	front harness

As the pattern is an 8 thread pattern, repeat for desired width. The KENTUCKY WEAVER group decided upon a 12-13 inch warp and used 19 repeats of the pattern for 152 threads, plus an extra x on the left selvage and an extra y on the right selvage. (By having the 4 threads in the edge groups which are slightly drawn-in weaving, the edge groups appear like the 3 thread groups.) The warp thus require 154 threads -- 77 of each color, set 12 to the inch for 12 plus inches. Nearly a pound of each color is needed for a seven yard warp and weft: 7×77 for 539 yards of warp in each color plus as much more for weft.

3/2 cotton has 1260 yards to the pound:

$$\frac{840 \text{ (yds. of size 1 to lb.)} \times 3 \text{ (size of yarn)}}{2 \text{ (ply - used as the divisor)}}$$

For weaving, weave by the equation or the threading draft to get the true pattern. For an effective stripe, alternate the 3/2 red with a finer white interesting texture.



This page gives a brief resume of basic data on the cube of a binomial $(x+y)^3$ with the code for the pages on the cube of a binomial being AKD-2-3 - plus the type of weave.

The cube of a binomial was the first to suggest itself to Miss Dietz when she started working with the idea in 1946. Note- this same cube of a binomial- $(x+y)^3$ seems to be the algebraic approach used by many weavers in applying Miss Dietz' idea to textiles.

Technics and equations can be handled in different ways. This is especially noticeable in the AKD-2-3- series of pages. This page will list the ones used for several of the textiles already woven. The cube of a binomial $(x+y)^3$ breaks down to:

The resulting equation is a 24 unit one. These 24 units form the basis of writing the pattern in any weave.

$$x^3 + 3x^2y + 3xy^2 + y^3$$

and in turn to xxx xxy xxy xxy xyy xyy xyy yyy

or regrouped to xxxxx y xx y xx y x yy x yy x yyyyy

code: AKD-2-3-PW If the equation is applied to a plain weave, x is given one color or texture value and y is given another. Color principles are used in selecting colors. One thread may be substituted for each x or y with the pattern repeat being 24 threads. This application has been very widely used by the new weaver and by the highly skilled weaver.

y y x y y x x y x x x x
y y y y x y y x x y x x

code: AKD-2-3-0 The overshot weave is one used muchly by handweavers. Probably you will give x the value of two harnesses as 1 and 2; and y the value of two harnesses as 3 and 4. Thus each of the 24 units are two threads so the full pattern will be a 48 thread repeat. Note it makes no difference whether you number from back to front or from front to back. The relationship of pattern threads to each other will be the same by either form.

	or	
<u>x</u>	1	<u>y</u>
<u>x</u>	2	<u>y</u>
<u>y</u>	3	<u>x</u>
<u>y</u>	4	<u>x</u>
y	x	y
		x

code: AKD-2-3-T The twill application of the algebraic equation offers many possibilities and is, as yet, a comparatively unexplored field. Two forms show x as 1-2-3-4; y as 3-2-1-4 or 2-1-4-3; a third form uses 1-2-3-4 with a color value given for x, and another color value given for y. Four threads are used for each of the 24 thread units to make a 96 thread pattern. Whether you like handspun wools or vivid colorings, you will find some excellent possibilities in the algebraics.

<u>y</u>	<u>x</u>	1	<u>y</u>	<u>x</u>
<u>y</u>	<u>x</u>	2	<u>y</u>	<u>x</u>
<u>y</u>	<u>x</u>	3	<u>y</u>	<u>x</u>
<u>y</u>	<u>x</u>	4	<u>y</u>	<u>x</u>

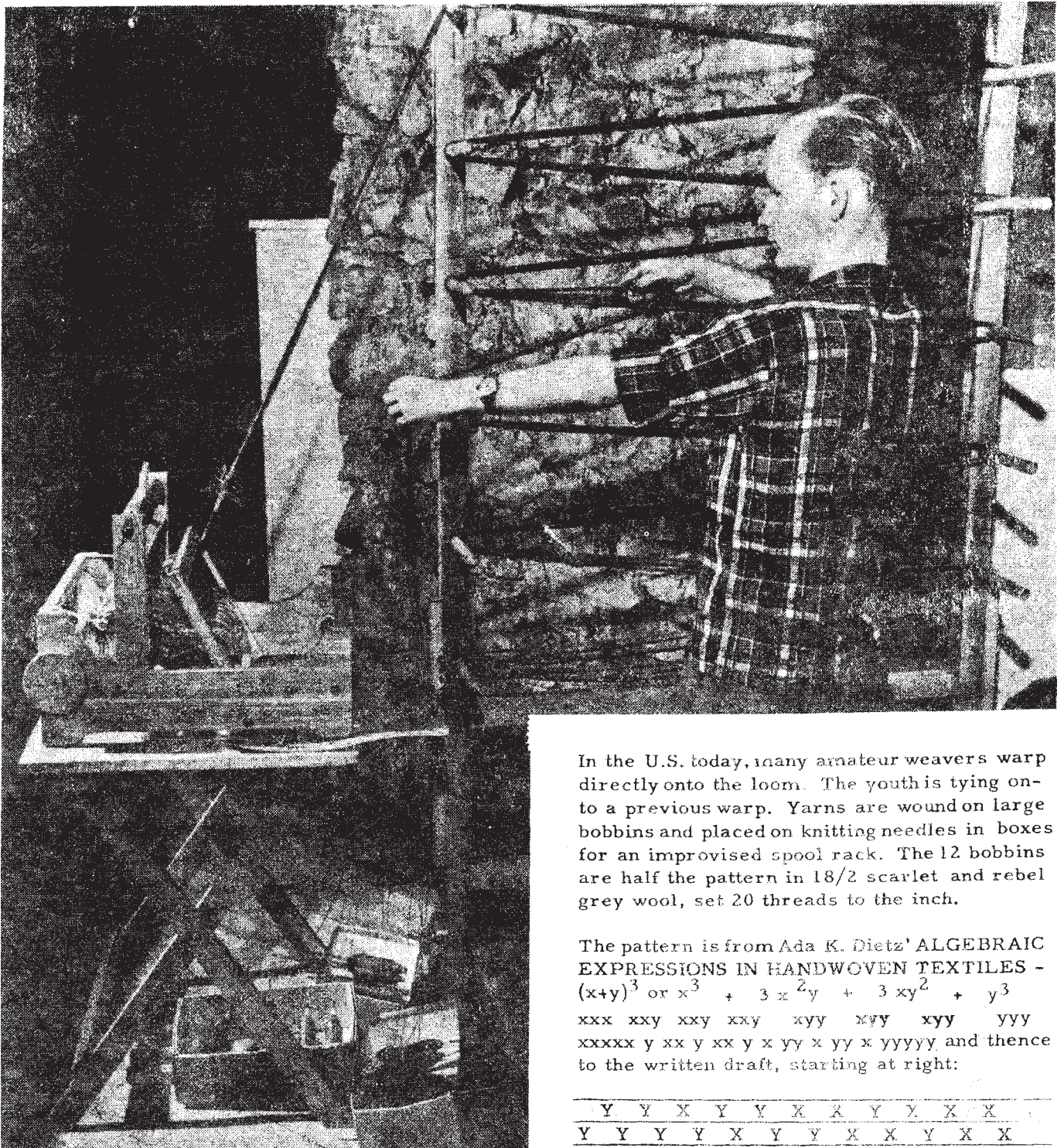
code: AKD-2-3-SW There are several methods of warping and weaving summer-and-winter weaves. Miss Dietz uses 1, 3 for half the threads with the other harnesses (2, 4 on a four harness loom) being each assigned an unknown. She numbers from front to back. Thus x will be 3-2-1-2, and y will be 3-4-1-4. Each page carries full information so the page may be used as written or you may transpose to your favorite form.

<u>4</u>	<u>4</u>	<u>4</u>
<u>3</u>	<u>3</u>	<u>3</u>
<u>2</u>	<u>2</u>	<u>2</u>
<u>1</u>	<u>1</u>	<u>1</u>
y	x	

Last summer Miss Dietz had the two study pieces of $(x+y)^3$ in summer-and-winter. They immediately suggested a stunning upholstery material by expanding or transposing to a wider width. E-5 in the upholstery for a chair is the result. SUMMER-AND-WINTER is the ideal upholstery material - and, as shown in Miss Dietz' material, smart style is combined with a long wearing fabric. If you set up an algebraic equation in summer-and-winter, also try a star, and a diamond treadling - you can get some delightful textures.



The dress is mocha nubby wool, chartreuse ratine wool, set 15 to the inch.
The shirt being woven is also $(x+y)^3$ black, white 18/2 wool, 20 count.



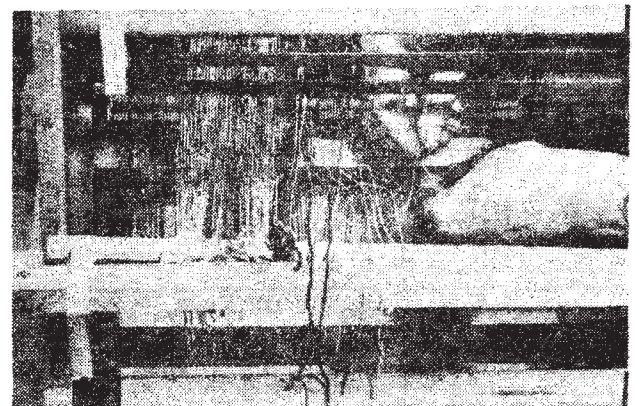
In the U.S. today, many amateur weavers warp directly onto the loom. The youth is tying on to a previous warp. Yarns are wound on large bobbins and placed on knitting needles in boxes for an improvised spool rack. The 12 bobbins are half the pattern in 18/2 scarlet and rebel grey wool, set 20 threads to the inch.

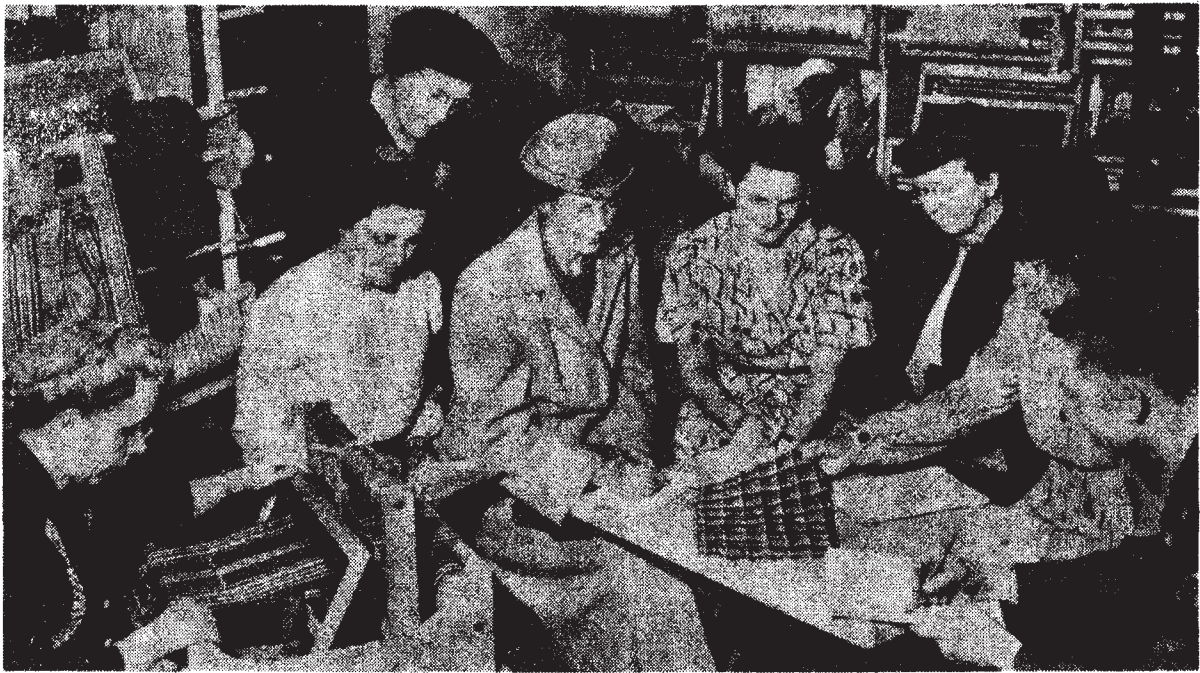
The pattern is from Ada K. Dietz' ALGEBRAIC EXPRESSIONS IN HANDWOVEN TEXTILES - $(x+y)^3$ or $x^3 + 3x^2y + 3xy^2 + y^3$
 xxx xxy xxy xxy xyy xyy xyy yyy
 xxxxx y xx y xx y x yy x yy x yyyyy and thence to the written draft, starting at right:

Y	Y	X	Y	Y	X	X	Y	Y	X	X
Y	Y	Y	Y	X	Y	Y	X	X	Y	X

The separator is used (board with holes in front of loom) as on the previous page. The cross is not needed as the warp goes directly onto the loom. Many weavers, today, measure the length of warp and cut as shown at the lower peg.

Many weavers like to thread directly thru the reed and heddles, and then tie-on to the rod attached to the warp beam. The warp is then ready for winding. At the right such method is being used.





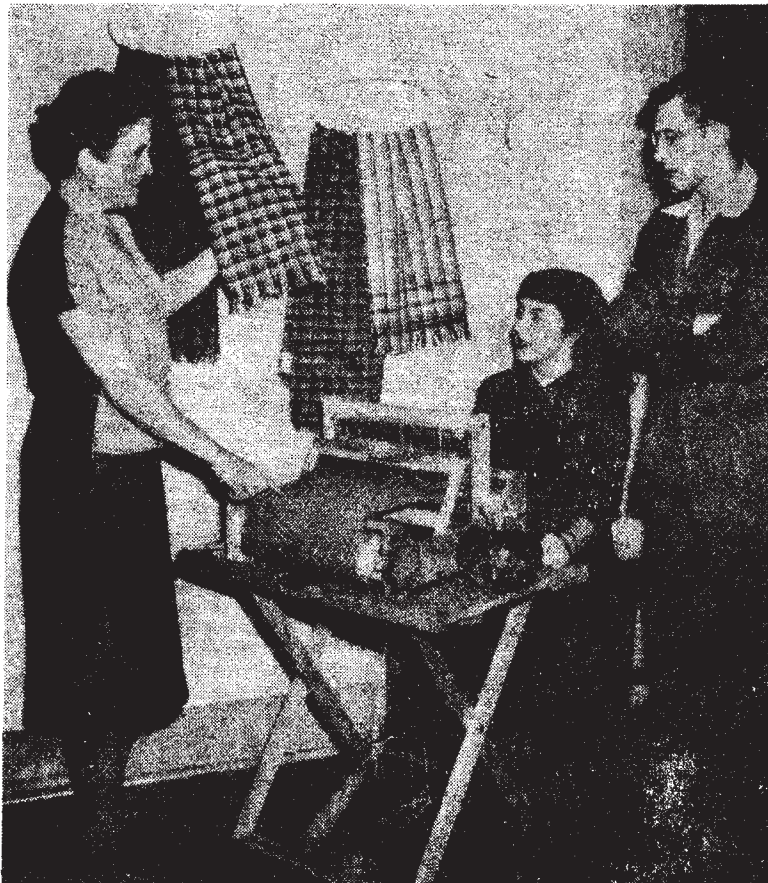
Robert Kirkpatrick

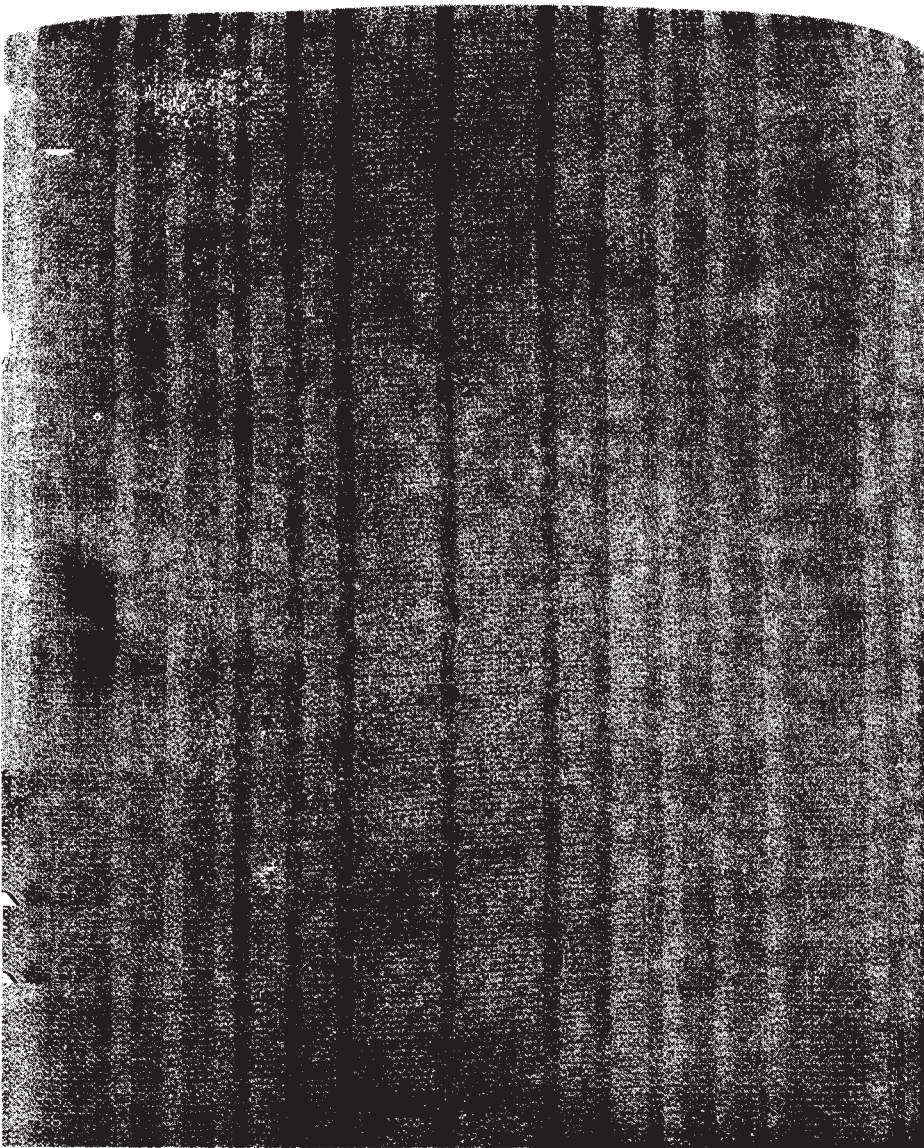
McNeeley-Helzer

Ruth E. Foster suggested a color application of Ada K. Dietz' idea. There was not time to try it out last summer while Misses Dietz and Foster were at the Little Loomhouse. Soon members had tried out color values and got wonderful results. The equation best liked was the cube of a binomial $(x+y)^3$.

KENTUCKY WEAVERS used the idea at several fall meetings. New weavers in the group were surprised to find how easily they could apply the idea in color. Soon letters were coming to tell of colorings tried and liked.

The top picture shows KENTUCKY WEAVERS drafting the equation for the first time. The lower picture shows a few of the variations in scarfs as exhibited by the first weaving class at SOUTHEASTERN ART CENTER. The material on the loom is for the dress in the exhibition. ALGEBRAIC EXPRESSIONS IN HANDWOVEN TEXTILES.





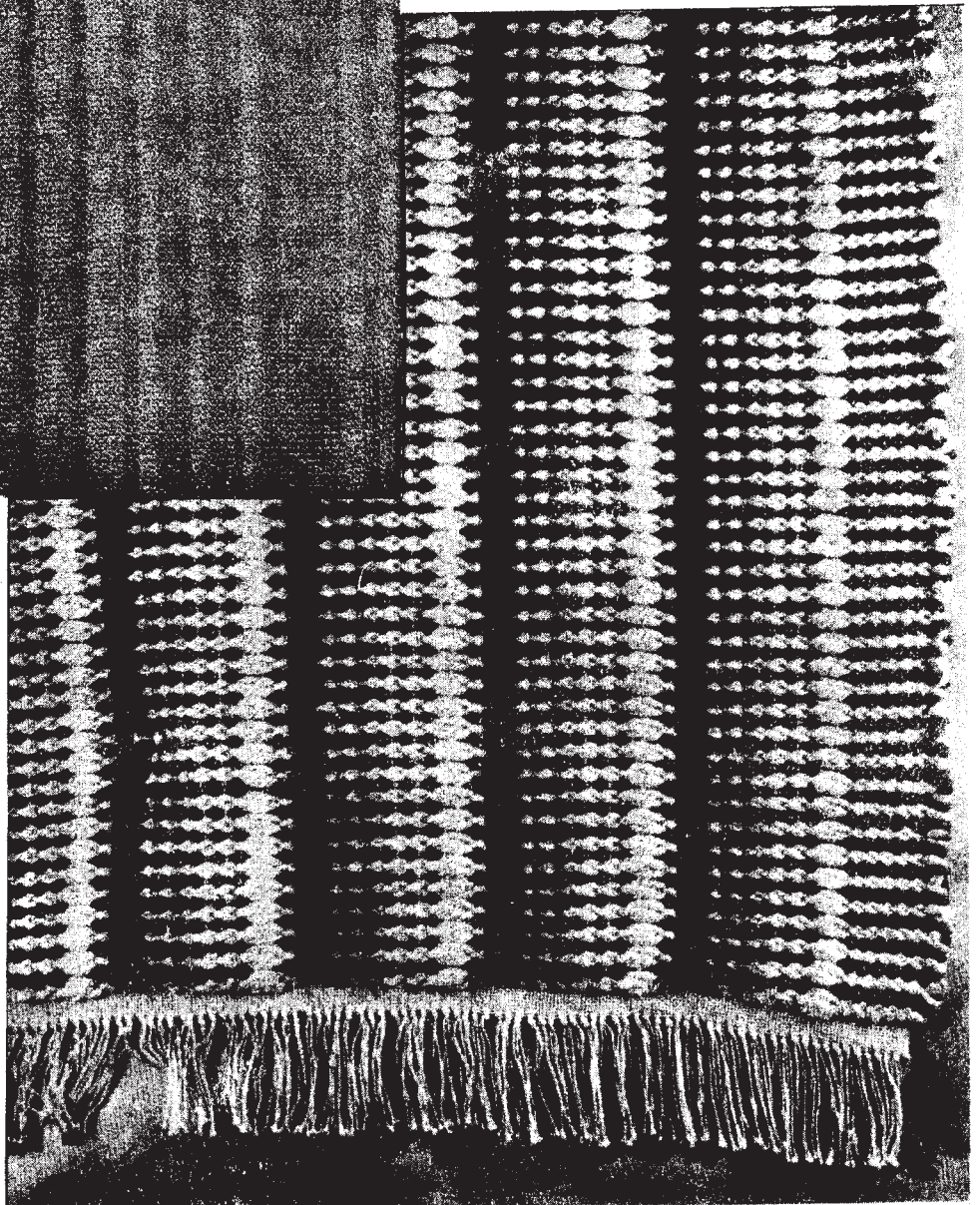
This upholstery is $(x+y)^3$ in summer-and-winter weave. To make an effective chair back equation has been expanded to a 22 inch width. This is just one of the fields for the weaver to explore in using algebraic equations. The subtle gleam of metal tabby enhances the deep rich green of the pattern.

Robert Kirkpatrick

The rug is $(x+y)^3$ in an over-shot weave, with twill treadling. A weftface treadling is used for emphasis.

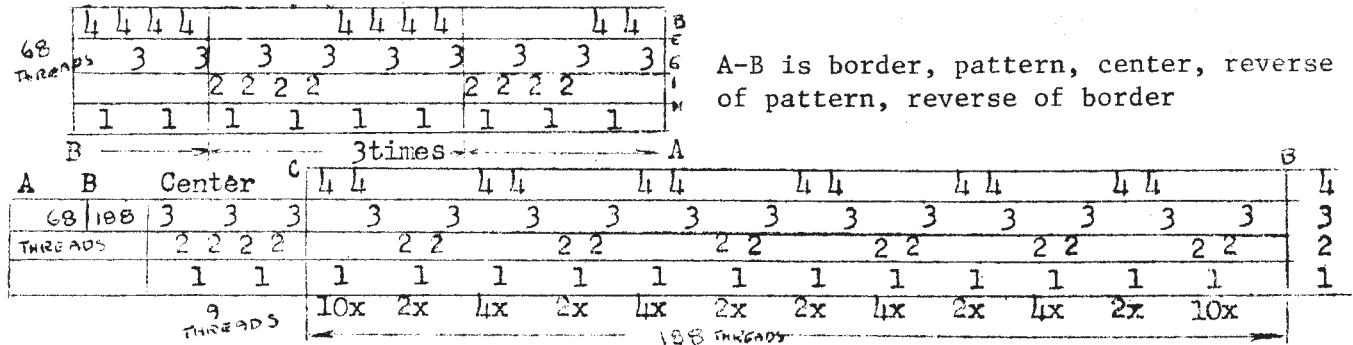
The excellent space divisions, with the texture obtained from the weftfaced twill treadling, makes this a handsome rug.

Colors are grey and green wool on a grey rug warp which is hardly visible.



The chair upholstery shown on the preceding page is a proportionate enlargement of the same $(x+y)^3$ in summer-and-winter weave given on page 2-3-SW-1 and study pieces S5a,b.

The pattern from page 2-3-SW-1 is increased to a 22 inch width:

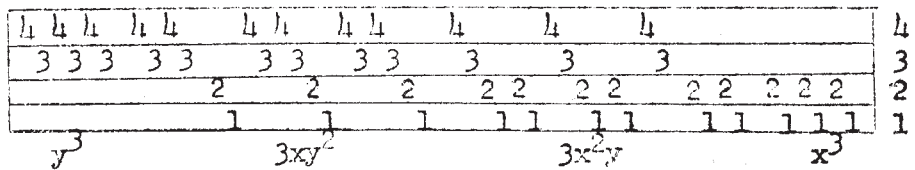


reed - 12 dent, 2 per dent	UPHOLSTERY - seat	continue
warp - 10/2 green mercerized cotton	8 times 3-2, 1-2	8 times 3-4, 1-4
weft - pattern - grey-green rayon	4 x 3-4, 1-4	4 x 3-2, 1-2
twisted with metal	8 x 3-2, 1-2	8 x 3-4, 1-4
tabby - same as warp	4 x 3-4, 1-4	4 x 3-2, 1-2
	4 x 3-2, 1-2	4 x 3-4, 1-4

UPHOLSTERY - back
3-4, 1-4 repeated

AKDietz-2-3-0-3

The rug is an overshot threading of $(x+y)^3$ with a twill treading. The same overshot draft application as given on page AKD-2-3-0-1 is used:



The rug is threaded to 45 inches:	for border, use 6 twill(1-2-3-4) repeats..... 24
	6 patterns with twill(1-2-3-4) between each.. 308
reed - 15 dent, one per dent	center 1-2-3-4-3-2-1..... 7
warp - 8/4 gray cotton	6 reverse patterns, twill reverse between.... 308
weft - heavy rug wool	border of 6 twill reversed..... 24
gray	total threads 671
green	

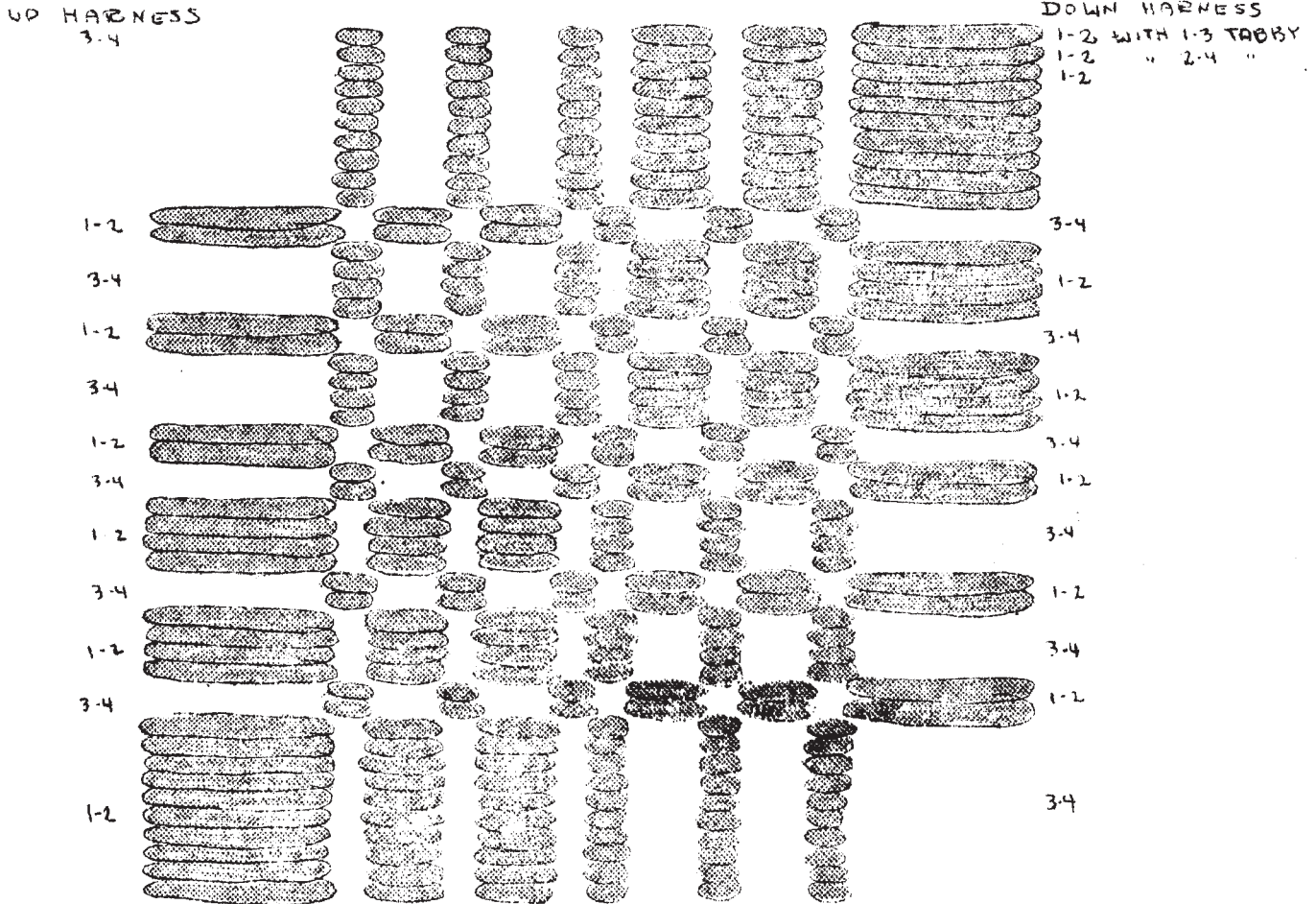
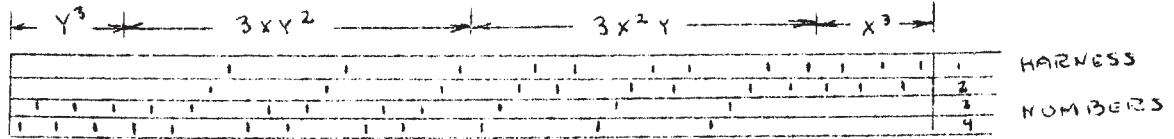
A weft face twill variation is used with three harnesses being down:
 - one color, as grey on 2-3-4, 1-3-4, 2-3-4 down (or 1 up, 2 up, 1 up);
 other color, as green on 1-2-4, 1-2-3, 1-2-3 down (or 3 up, 4 up, 3 up).

Another rug suggestion is the 96 thread pattern repeat without the twill between patterns and without a center. Treading may be the same or may be on opposites for a heavy rug.

The very fine space divisions of $(x+y)^3$ can be well used for curtain material in a lace weave. With 6 threads to each lace block, the 24 units will make a 144 thread pattern repeat for a 5 to 10 inch pattern width, according to materials used.

Either the summer-and-winter or overshot application of $(x+y)^3$ will weave into handsome drapery where a vertical stripe is wanted.

Using the cube of a binomial $(x+y)^3$ in an overshoot weave, you will have a 48 thread pattern when you let x equal 1-2 harness and y equal 3-4 harness. From page 2-3-basic the equation breaks down to xxxxx y xx y xx y x yy x yy x yyyyy. Writing from the right to the left, the pattern is given below. The space proportions of the pattern are especially good. Add 4 or 8 threads selvage for each side, to the necessary number of 48 thread pattern repeats needed for your purpose.



This page gives the pattern woven on the diagonal or by the threading draft. A binomial used in overshoot weave is usually given opposite harnesses as x being 1-2 and y being 3-4.

Several variations of this interpretation are shown in the study pieces of Ada K. Dietz with details given on the following page.

Another tangent to explore is to give x the value of 1-2 and y the value of 2-3.

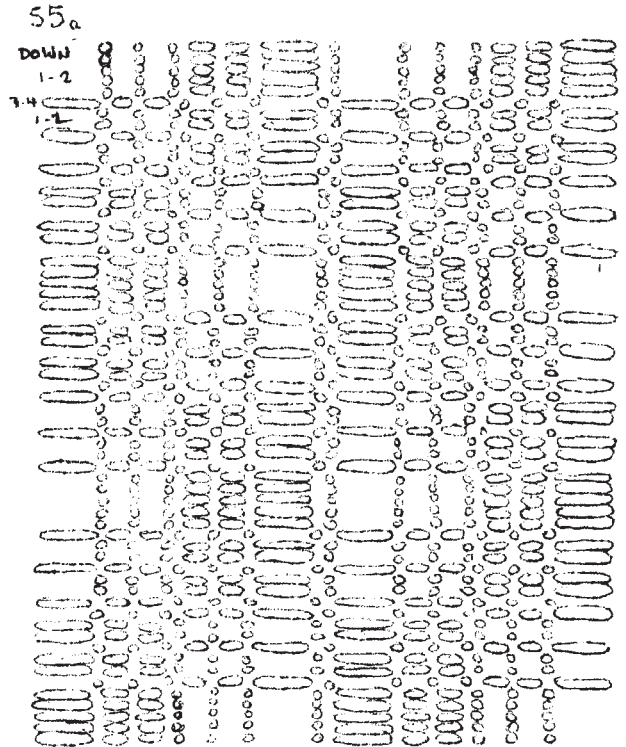
It is intriguing to note how closely traditional weaving has followed both these ideas in two block patterns and to note what different results the weaver who likes to experiment can obtain.

The cube of a binomial $(x+y)^3$ can be expanded and used, or it can be used in combination. On this page, Miss Dietz has used it in combination. As Miss Dietz was formerly a math teacher, don't you imagine she was really gleeful when she wrote the equation tossing in an extra xy , and then - as that man on the radio was spelling something backward about this time - writing the equation backward. Wrong answer? No! Joking aside, Miss Dietz shows four of the possibilities to be found in the cube of a binomial.

	A	B center	$B-y^3$	$2xy^2$	$2x^2y$	x^3-A		
4	reverse	4	4 4 4 4 4 4 4 4 4 4 4 4	4	4	4	4	
3	of	3 3	3 3 3 3 3 3 3 3 3 3 3 3	3	3	3	3	
2	pattern	2 2	2 2 2 2 2 2 2 2 2 2 2 2	2	2	2	2	
1		1 1	1 1 1 1 1 1 1 1 1 1 1 1	1	1	1	1	
			48 THREADS					

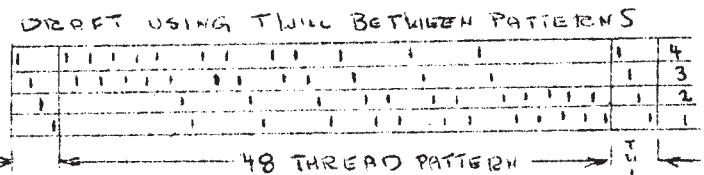
The twill 1-2-3-4 (or extra xy) is thrown between each pattern repeat. It is used for a small border, and for the center. For the study pieces, Miss Dietz has tried a number of treadlings and very diverse yarns.

S5a. The pattern is woven by the threading draft and then reversed. An allover richness is given the fabric by the sheen of the rust rayon pattern yarn used on 1-2, 3-4 and by the glitter of the gold metallic tabby on 1-3, 2-4. The spacings could well be used for drapery or smaller pieces.

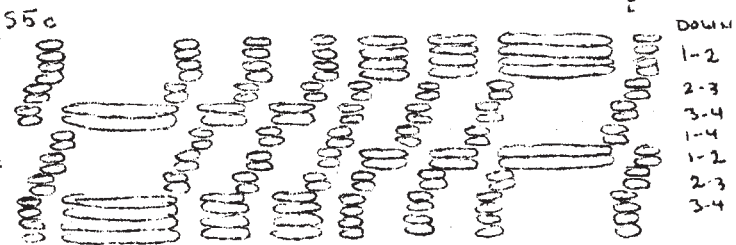


S5b. On this piece, the pattern is woven with 1-2 and 3-4 being given the same values- starting with two pattern threads and gradually increasing the number. The pattern yarn is a blue wool and rayon ratine with a very fine white chenille tabby. The texture obtained by this combination is eye-catching.

S5c. All four pairings of the pattern harness are used with the pattern proportions being maintained on the 1-2 and 3-4 pairings. The yarns used, as well as the treadling used, suggest the idea being applied to drapery. For a flowing line in your drapery, you may want to use repeats of the pattern with the twill for 52 threads to overall pattern. It will make handsome material on a fairly heavy warp set 10 to 20 threads to the inch. Wefts should be of weights in keeping with the warp weight used.



S5d. The twill treadling has been used for several study pieces - with a 1-2-3-4 form used. This piece has a weftface with 3 harnesses down-2-3-4, 1-3-4, 2-3-4 in chartreuse, 1-2-4, 1-2-3, 1-2-4 in warm brown. The yarn is fine chenille. The idea is the basis for the rug. In summer-and-winter weave, one upholstery material is given. The material in this study piece will make good upholstery in a fine warp - either with the pattern being reversed at intervals or being a continuous repeat.



This page gives a resume of the basic data on the square of a trinomial $(x+y+z)^2$ with the code for the pages on the square of a trinomial being AKD-3-2- plus the weave.

The square of a trinomial is broken down like the previous equations: $(x+y+z)^2$ to

The resulting equation is an 18 unit one. These 18 units form the basis of writing the draft for any weave. For most weaves a definite number of threads are assigned to each unit of the pattern as two threads in overshot weave to make a 36 thread pattern; four in summer-and-winter weave to make a 108 thread pattern.

$$x^2 + 2xy + 2xz + y^2 + 2yz + z^2$$

$$xx \quad xyxy \quad xzxx \quad yy \quad yzyz \quad zz$$

code: AKD-3-2-PW If the equation is applied to a plain weave, x is given one color or texture value; y is given a second; and z is given a third. Thus, a single thread can be substituted for each x, y, and z.

<u>z</u>	<u>y</u>	<u>y</u>	<u>y</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>	<u>x</u>
<u>z</u>	<u>z</u>	<u>z</u>	<u>y</u>	<u>z</u>	<u>z</u>	<u>y</u>	<u>y</u>	<u>x</u>

Another interpretation of the plain weave is to give two threads to each x, y, and z to make a 36 thread pattern instead of the usual 18 for plain weave. A continuation of the idea is to use two threads for each x, y, and z for a 36 thread pattern threaded in a basic twill 1-2-3-4. (Note, this varies from a twill application of the equation!) Art teachers will find this threading valuable to their textile students for its wide variation of treadlings.

code: AKD-3-2-0 The overshot weave is probably the weave best known by handweavers.

<u>x</u>	<u>1</u>	<u>z</u>	<u>4</u>
<u>y</u>	<u>x</u>	<u>z</u>	<u>y</u>
<u>z</u>	<u>y</u>	<u>x</u>	<u>z</u>
<u>z</u>	<u>y</u>	<u>x</u>	<u>z</u>
<u>z</u>	<u>y</u>	<u>x</u>	<u>z</u>

For each unknown, a pair of harnesses are used: as,
x equals harnesses 1 and 2
y equals harnesses 2 and 3
z equals harnesses 3 and 4

Thus, two threads are used for each x, y, and z, with the resulting pattern having 36 threads.

code: AKD-3-2-SW The summer-and-winter weave may be written and treadled several

<u>x</u>	<u>x</u>	<u>1</u>
<u>y</u>	<u>y</u>	<u>2</u>
<u>z</u>	<u>z</u>	<u>3</u>
<u>1</u>	<u>1</u>	<u>1</u>
<u>1</u>	<u>1</u>	<u>1</u>

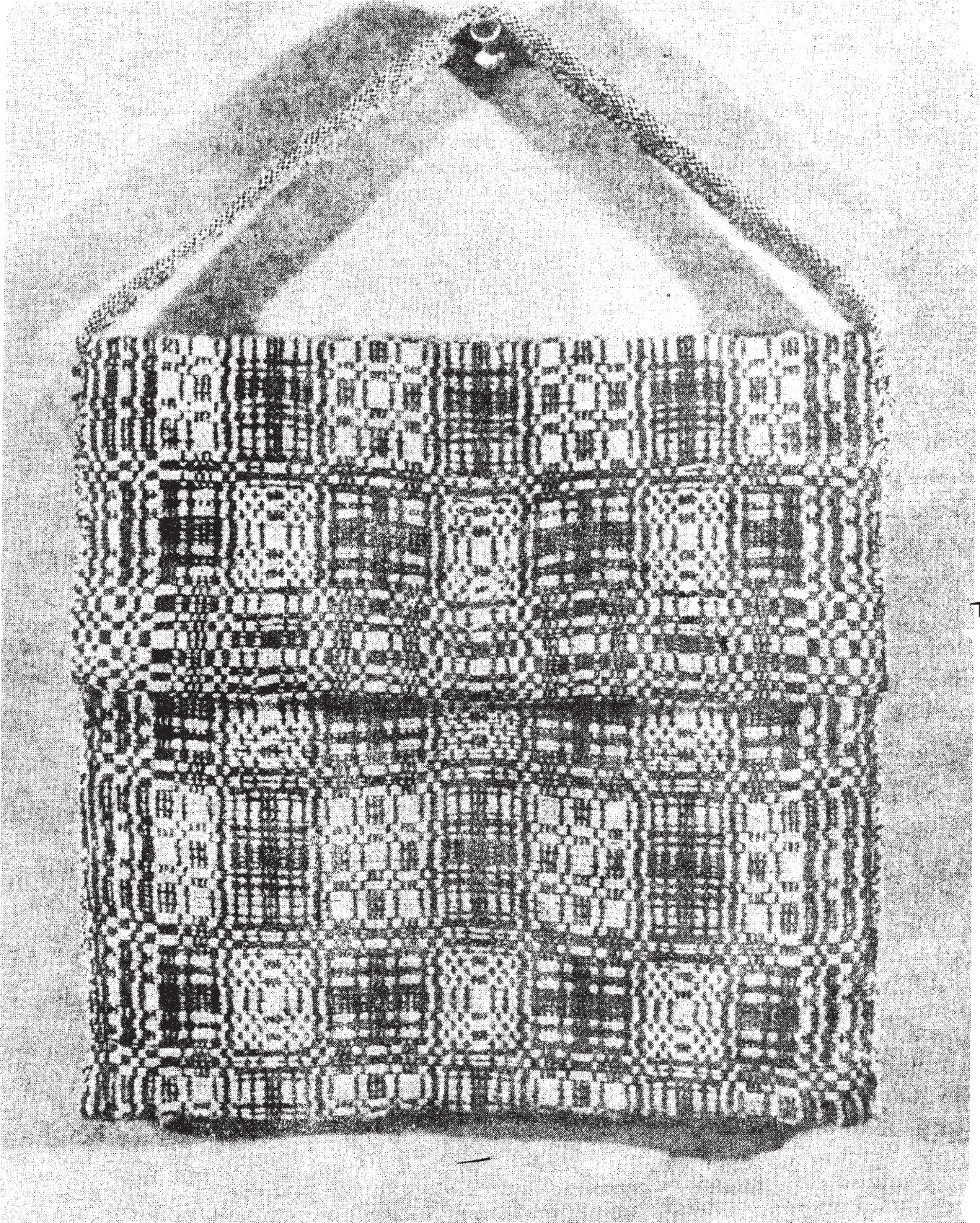
ways. One half the warp threads are threaded alternately on two harnesses and the other half are assigned to the unknowns - or with x,y, and z, to three harnesses for a five harness weave. Each x, y, and z require four threads so the resulting pattern is 108 threads.
x equals 1-4-1-5
y equals 2-4-2-5
z equals 3-4-3-5

code: AKD-3-2-C The crackle weave may also be written and treadled several

<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>4</u>	<u>4</u>	<u>4</u>	<u>4</u>
<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>3</u>	<u>3</u>
<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>3</u>	<u>2</u>	<u>2</u>	<u>3</u>
<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>4</u>	<u>1</u>	<u>1</u>	<u>1</u>
<u>z</u>	<u>y</u>	<u>x</u>	<u>z</u>	<u>y</u>	<u>x</u>	<u>z</u>	<u>y</u>

ways. Use either your favorite method or the one used by the weaver setting up the algebraic. Miss Dietz uses for the four combinations 1-2-3-2; 3-4-3-2; 3-4-1-4; and 1-2-1-4. Most members of the Little Loomhouse use 1-2-3-2-1; 2-3-4-3-2; 3-4-1-4-3; and 4-1-2-1-4.

As often as possible, each page will carry complete information as to the draft, materials used, and functional purpose. This and the other basic pages make a good reference any time space necessitates leaving off the complete formula or other detail given on this page.



This photograph show the square of a trinomial $(x+y+z)^2$ woven in the overshot weave. The warp and tabby weft is rust colored cotton. The pattern weft is gray ratine in a wool and rayon mixture. 23

ALGEBRAIC EXPRESSIONS
AKD-3-2-0-1B

The bag shown in the photograph on the preceding page is the square of a trinomial $(x+y+z)^2$ in overshoot weave. Miss Dietz used the draft below for the bag on a rust warp and for the study pieces on a white warp. Both warps are for 239 threads, set ??? threads to the inch with 2 per dent in a 15 dent reed. Let x equal 1-2 harness
y equal 2-3 harness
z equal 3-4 harness

Using $(x+y+z)^2$ expanded to $x^2+2xy+2xz+y^2+2yz+z^2$

x^2	$2xy$	$2xz$	y^2	$2yz$	z^2
		4	4	4	4 4
	3	3	3	3 3	3 3
2 2	2 2	2 2	2	2 2	2
1 1	1	1	1		
x x	x y	x y	x z	y y	y z

As the draft is usually written from left to right, Miss Dietz so threaded this draft, using reverse of the equation and the equation with the xxx and zzz as the reversing of turning points.

B						24	A					
		4	4	4		4		4				
3		3		3 3		3		3				
2	2	2		2 2		2		2				
1	1		1	1 1		1		1				

begin threading border A to B

				4	4		4	4	4	4	4	4
		3		3		3 3		3		3		
2	2	2		2 2		2 2		2		2		
1	1		1	1		1		1				

begin pattern

border-B												62 THREADS - 3 TIMES											
		4	4	4		4		4															
		3		3		3 3		3		3		3		3		3		3					
		2		2 2		2 2		2		2		2 2		2		2 2		2					
								1		1		1		1		1							

con.

The bag is woven on a rust colored warp with the same yarn used for tabby weft; the pattern weft is ratine in a gray wool and rayon mixture. The study pieces are on white cotton with the treadlings for the study pieces given below.

Coral pattern weft:

Border pattern continued
 2 x 1-2 B- 6 x 1-2 xxx
 2 x 3-4 2 x 2-3 y
 2 x 1-2 2 x 1-2 x
 2 x 3-4 2 x 2-3 y
 4 x 1-2 2 x 1-2 x
 4 x 3-4 2 x 3-4 z
 2 x 1-2 2 x 1-2 x
 2 x 3-4 2 x 3-4 z
 4 x 1-2 6 x 2-3 yyy
 2 x 3-4 2 x 3-4 z
 2 x 2-3 y

Pattern
 A- 2 x 1-2 C- 6 x 3-4 zzz
 2 x 2-3
 2 x 1-2 Repeat B to C to B
 2 x 2-3 for center of textile; finish with B to A and border reversed.

Chenille in fine green and fine brown for pattern

weft; tabby in textured yellow rayon:
 Border
 6 x (green-2 x 1-2; brown-2 x 3-4)

Pattern continued continued for center
 C- 2 x 1-2 B- 2 x 3-4 C- 2 x 1-2
 2 x 2-3 6 x 2-3 2 x 2-3
 1 x 1-2 2 x 3-4 1 x 1-2
 3 x 2-3 2 x 2-3 3 x 2-3
 6 x 1-2 6 x 3-4 6 x 1-2
 3 x 2-3 2 x 2-3
 1 x 1-2 2 x 3-4
 2 x 2-3 6 x 2-3
 2 x 1-2 2 x 3-4
 B- 2 x 3-4 C- 2 x 1-2
 C- 2 x 1-2 B- 2 x 1-4
 C- 2 x 1-2 B- 2 x 3-4

reverse omitting the 6 x 1-2 center group.

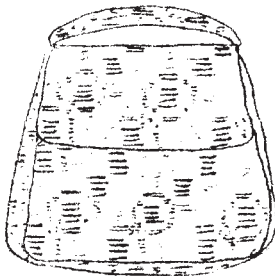


For the August workshop of the Kentucky Weavers Guild, bags which are fairly simple to make are planned for weaving patterns usable in recreational, school, or community weaving. Among the members providing bag patterns is Ruth Mitchell who suggested this bag as a versatile pattern for any weave.



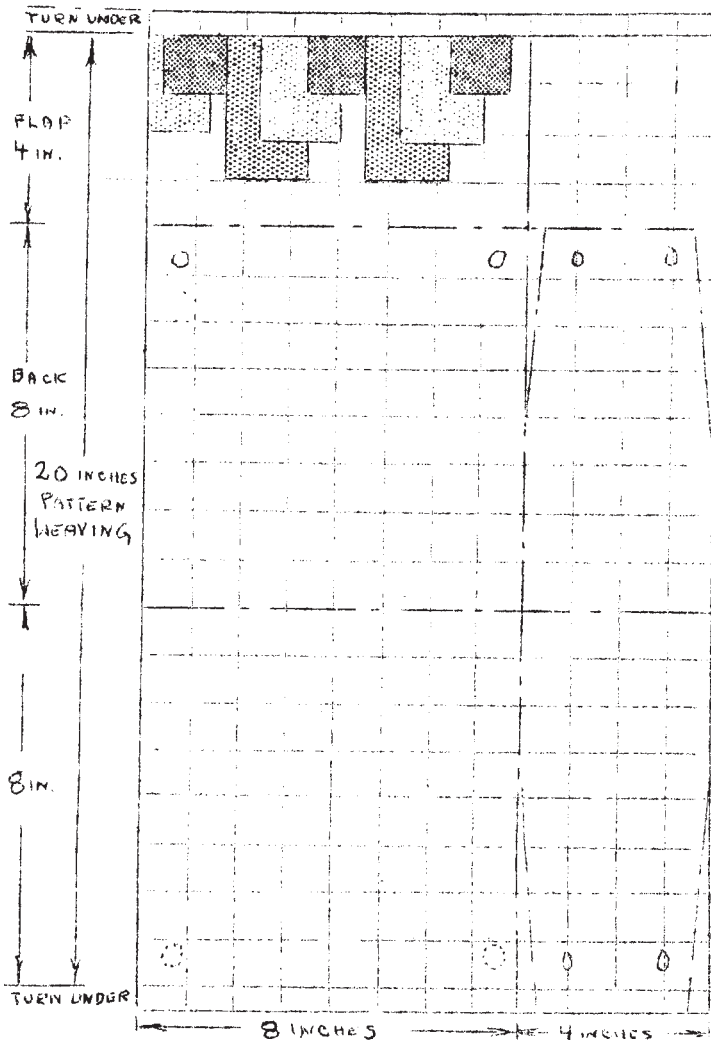
On a 12 or 14 inch warp, one long strip of 20 inches plus the turn-under allowance is sufficient. On a 7 inch loom, 8 additional inches plus the turn-under is needed for the side panels.

The top bag sketch shows the Diamond pattern from page 32 of the KENTUCKY WEAVER. At the Little Loomhouse, Diamond patterns are used in teaching basic draftwriting, and any of these make up well into this type bag.



Since the other part of the August workshop is on simple tapestry technics, the second bag sketch shows a design such as may be woven in the technics given on pages 95, 96-KENTUCKY WEAVER.

The unusual symmetry of the off-balanced design produced from expressing $(x+y+z)^2$ in an overshot weave lead Ruth E. Foster to suggest its being made into a bag, as shown in the third bag sketched, for Ada K. Dietz' exhibition "Algebraic Expressions in Handwoven Textiles."



This bag should have crinoline or buckram for the full bag length to give the bag sufficient body. Lining should be cut a trifle smaller than the bag. The strap may be material like the bag or may be a cord.

The cord is attached inside at the front, taken thru the two buttonholes in the side panel, and thru the buttonhole in the back; thence across the top back to the other buttonhole in the back, thru the two buttonholes in the side panel, and attached to the inside at the front.

The bags made at Tophouse were simply fastened with a clasp or button. However a zipper may be used. Likewise, the bag pattern may be enlarged for those preferring a roomy bag. For a 14 inch bag, increase the depth and weave a 25 inch strip for the long strip; weave 10 inches plus turn-under for the side panels. You will probably want to use a zipper on this larger bag.

The strap thru the buttonholes may be retained. Make just two back buttonholes with 8 inches between. The side panels will gather in at the zipper.

The square of a trinomial can be handled several ways in the overshot weave. One of the delights of handweaving and of the algebraic approach is the freedom of handling. On the preceding pages, the bag and the study pieces were woven by the equation being written and reversed with the turning points (or centers) being the x^2 's and z^2 's.

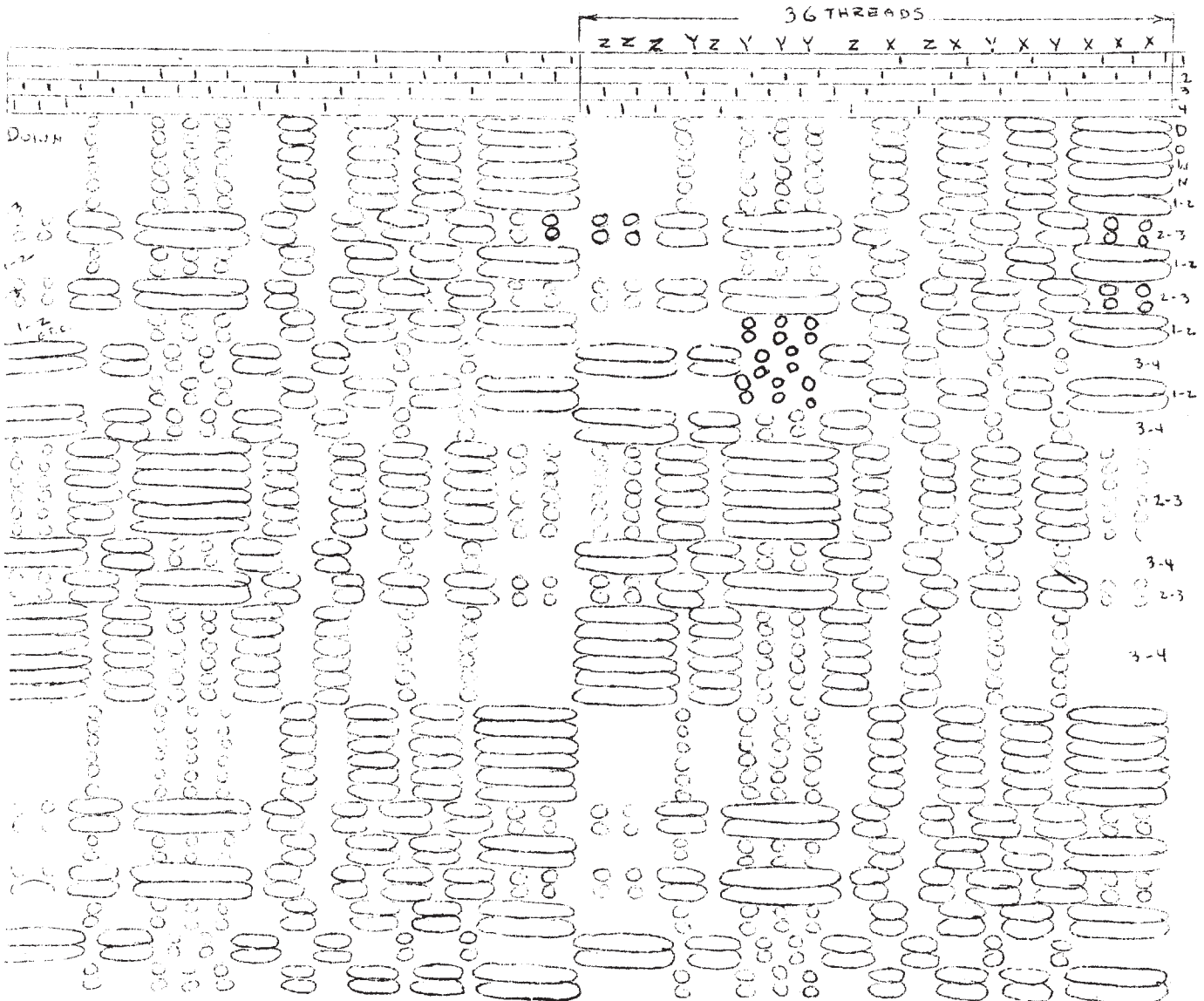
If you like the off-balance symmetry so characteristic of the algebraics, you may want to use this basic draft of the square of a trinomial with the $(x+y+z)^2$ being expanded to $x^2+2xy+2xz+y^2+2yz+z^2$ or to xxx y x y x z x z yyy z y zzz for 18 units. The draft and sketch are given below. The sketch is made so you can experiment with coloring. You may want to use several colors- greys, limegreens, fuchsias, etc. if you use a navy warp as we did at the Little Loomhouse.

Two suggestions for bags to be made by the pattern given are a blue ratine set 15 to the inch for new weavers and a navy 20/2 cotton set 30 to the inch for weavers with more skill and speed. The ratine warps have excellent style for bags as the material drapes well. For blue ratine:

8 threads selvage
216 threads - 6 patterns (6 x 36)
8 threads selvage
232 threads for 15½ inches

For navy cotton

8 selvage
432 threads - 12 patterns (12x36)
8 selvage
448 threads for 15 plus inches

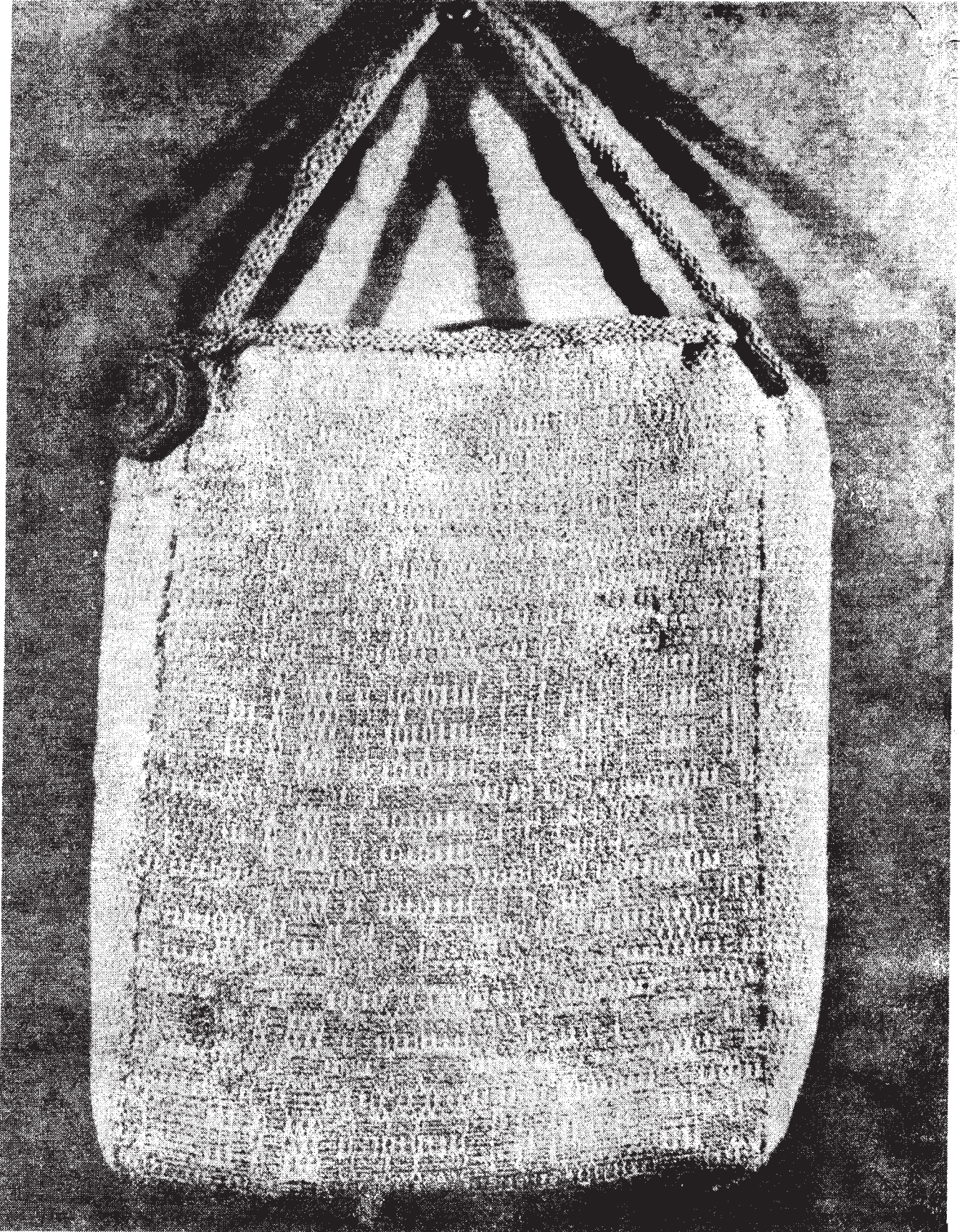




Color values are given each unknown in the formula of the cube of a trinomial $(x+y+z)^3$ for this shirt in scarlet, kelly green, and royal blue wool, Size 18/2 wool set 20 threads to the inch for 308 threads in plain weave gives a comfortable weight shirting material. College students like to weave matching shirt sets for themselves and boy friends. Equally as popular are matching scarfs in 14/3 wool set 15 threads to the inch for two pattern repeats.



Color values are given each unknown in the formula of the cube of a trinomial $(x+y+z)^3$ for this shirt in scarlet, kelly green, and royal blue wool, Size 18/2 wool set 20 threads to the inch for 308 threads in plain weave gives a comfortable weight shirting material. College students like to weave matching shirt sets for themselves and boy friends. Equally as popular are matching scarfs in 14/3 wool set 15 threads to the inch for two pattern repeats.



From London came the pattern for this English style knitting bag, woven in the square of a polynomial of four terms $(a+b+c+d)^2$ in crackle weave. The blue pattern weft is on a green background. 29

The square of a polynomial of four terms $(a+b+c+d)^2$ lends itself to different four harness weaves. On this page, Miss Ada K. Dietz gives her draft and treading for the bag in crackle weave of $(a+b+c+d)^2$.

a equals 1-2-3-2 The crackle weave may be drafted several ways. Every weaver should become familiar with different methods. You may want to warp your loom by this draft or to warp it by your own interpretation of the crackle weave in $(a+b+c+d)^2$.

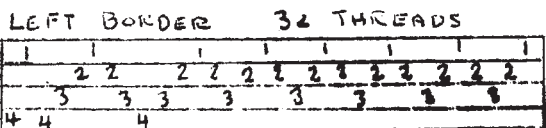
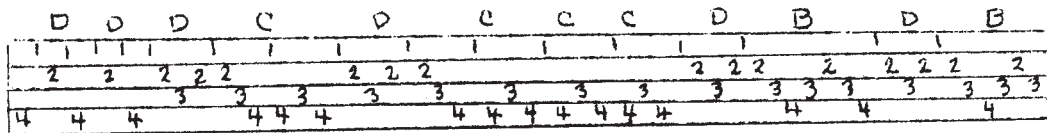
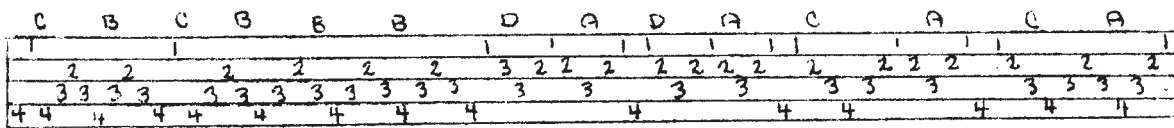
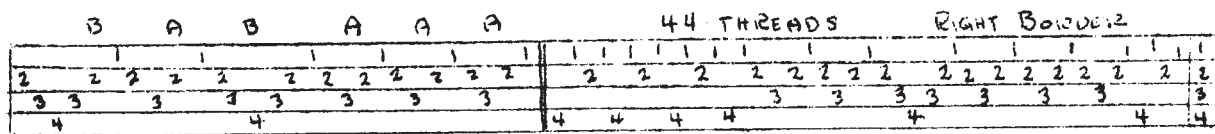
b equals 3-4-3-2
 c equals 3-4-1-4
 d equals 1-2-1-4

$(a+b+c+d)^2$ becomes $a^2+2ab+2ac+2ad+b^2+2bc+2bd+c^2+2cd+d^2$. Or you may want to

regard this as: aa abab acac adad bb bcbc bdbd cc cdcd dd,

or as: aaa babacacdad bbb cbcdbbd ccc dc ddd.

Below is the draft given by Miss Dietz for 240 threads set 30 to the inch (2 per dent in 15 dent reed) in 20/2 natural cotton. Pattern weft was blue wool and rayon of size over twice that of the warp. Weft was 20/2 green.



WARP
 BORDER 44
 PATTERN 164
 BORDER 32
 240 THREADS

USE YOUR REGULAR TIEUP FOR CRACKLE + OVERSHOT WEAVE

BORDER	PATTERN	PAT. con.	PAT. con.	PAT. con.	PAT. con.	BORDER con.
4x 1-4	4x 1-4	4x 3-4	4x 3-4	4x 1-2	2x 2-3	4x 1-2
2x 3-4	4x 1-2	4x 1-4	4x 2-3	4x 2-3	4x 1-2	4x 1-4
2x 2-3	4x 1-4	4x 3-4	2x 3-4	2x 1-2	4x 2-3	2x 1-2
4x 1-2	4x 1-2	2x 1-4	4x 1-4	4x 1-4	4x 1-2	4x 2-3
4x 2-3	4x 1-4	2x 1-2	2x 3-4	2x 1-2	2x 2-3	4x 1-2
4x 1-2	2x 1-2	4x 2-3	4x 2-3	2x 2-3	4x 3-4	4x 2-3
4x 3-4	4x 2-3	4x 1-2	4x 3-4	4x 3-4	2x 2-3	4x 1-2
2x 2-3	4x 1-2	2x 2-3	4x 2-3	2x 2-3	4x 1-2	2x 2-3
4x 1-2	2x 2-3	4x 3-4	4x 3-4	4x 1-2	4x 2-3	4x 3-4
4x 2-3	2x 3-4	4x 2-3	4x 2-3	4x 2-3	4x 1-2	4x 2-3
4x 1-2	4x 1-4	2x 3-4	4x 3-4	2x 1-2	4x 2-3	4x 3-4
4x 2-3	4x 3-4	2x 1-4	4x 2-3	4x 1-4	4x 1-2	2x 2-3
4x 1-2	2x 1-4	2x 1-2	2x 3-4	2x 1-2	4x 2-3	4x 1-2
4x 2-3	2x 1-2	4x 2-3	2x 1-4	2x 2-3	2x 1-2	4x 2-3
4x 1-2	4x 2-3	4x 1-2	4x 2-3	4x 3-4		4x 1-2
4x 2-3	4x 1-2	4x 3-4	4x 1-2	4x 2-3	BORDER	4x 2-3
4x 1-2	2x 2-3	4x 2-3	4x 2-3	4x 3-4	4x 1-4	2x 1-2
4x 2-3	2x 3-4	2x 3-4	2x 1-2	2x 2-3	4x 1-2	
2x 1-2	4x 1-4	4x 1-4	4x 1-4	4x 1-2	4x 1-4	
	4x 3-4	2x 3-4	2x 1-2	2x 2-3	4x 1-2	
	4x 1-4	4x 2-3	4x 2-3	4x 3-4	4x 1-4	

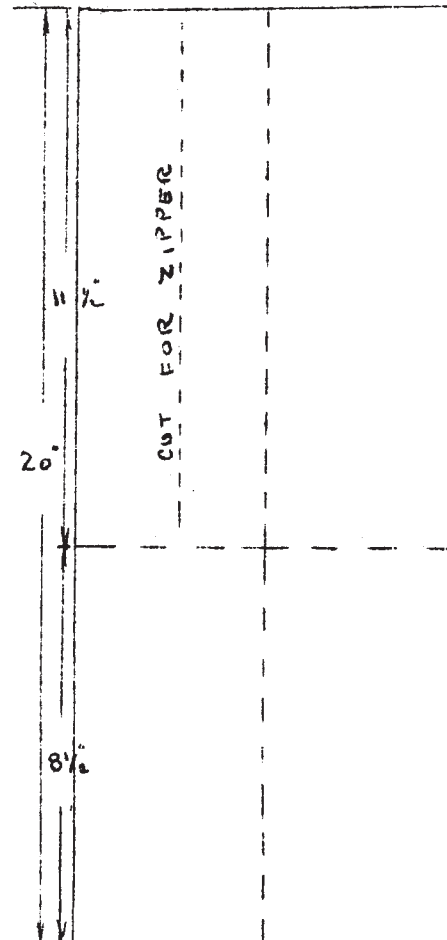
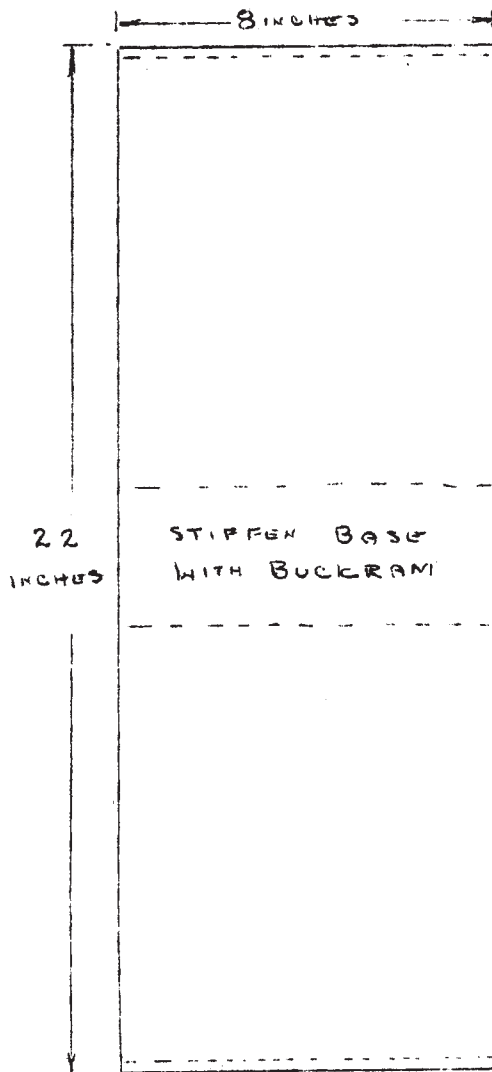
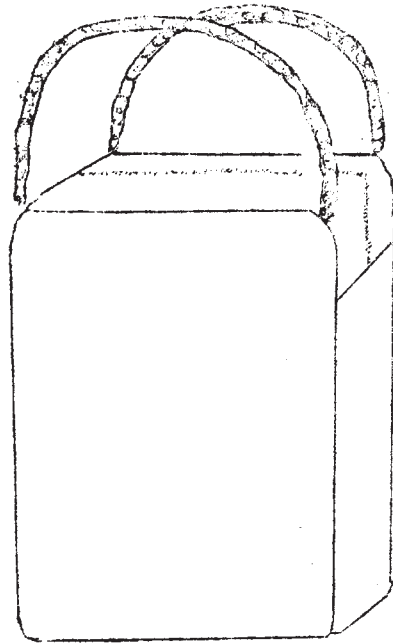
KNITTING BAG

THE PATTERN FOR THIS BAG WAS TAKEN FROM ONE BOUGHT IN LONDON ENGLAND.

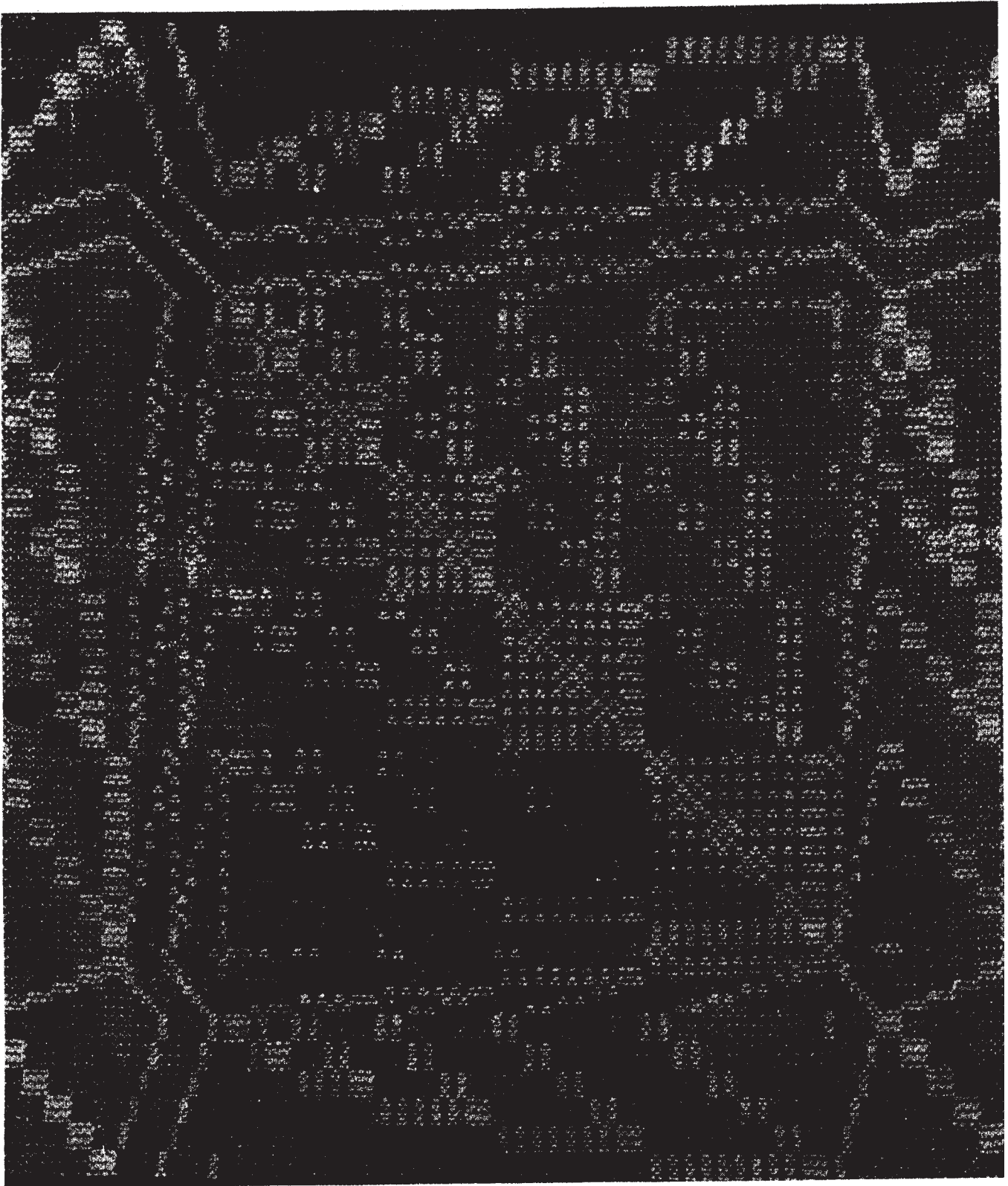
The pattern for this bag is the square of a polynomial of four terms $(a+b+c+d)^2$ in a crackle weave.

The warp was set to 240 threads - 30 to the inch for 8 inches. Woven width is about 7 inches. A single panel may be woven on a $15\frac{1}{2}$ inch width but care must be taken in setting up the design.

The cord is made by spool knitting, twisting the two colors together around a heavy cord.



WEAVES DOWN FROM 8" TO 7" WIDTH



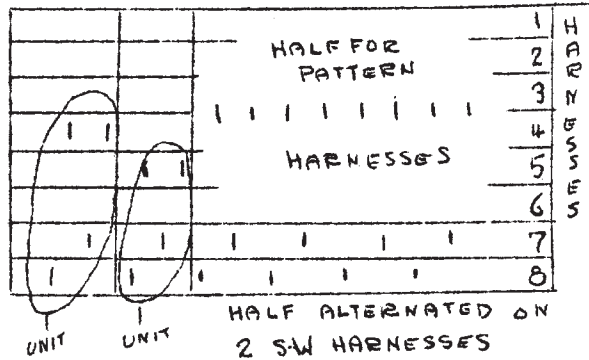
Robert Kirkpatrick

Ada K. Dietz' idea of applying equations to textiles has spread rapidly. This textile was the entry of Miss Dietz in the 1948 COUNTRY FAIR exhibition and has been the means of introducing the algebraic approach to many handweavers thruout the U. S.-many of whom have been immediately inspired to explore in the algebraic unknowns. It is the square of a six term polynomial in summer-and-winter weave, used on a navy blue warp with like tabby and soft yellow cotton pattern weft.

The summer-and-winter weave, in the form given on this page, is a characteristic early American weave. However, the draft is an algebraic formula based on page AKD-6-2-SW-1 from Ada K. Dietz' ALGEBRAIC EXPRESSIONS IN HANDWOVEN TEXTILES. The treadling is a 20th century method developed by Margaret Bergman.

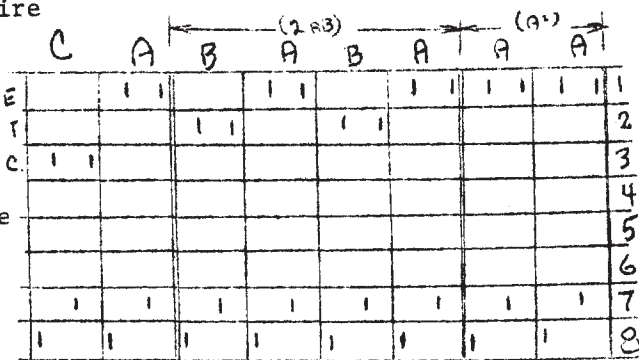
The summer-and-winter weave has nearly a 75% weft face on one side and a like warp face on the other side, with half of the warp alternately threaded on two harnesses so as to limit the "skip" length to a maximum of 3 threads, and with the pattern half being carried on the remaining harnesses. Thus, each unit of the pattern is four threads- one on a pattern harness, one on a summer-and-winter harness, a second on the same pattern harness, and a final on the other summer-and-winter harness.

The draft is the square of a polynomial of six terms- $(a-b-c-d-e-f)^2$. Thus six harnesses carry the pattern, and the other half of the warp alternate on harnesses 7 and 8. Give the:
 first harness the value of a
 second harness the value of b
 third harness the value of c
 fourth harness the value of d
 fifth harness the value of e
 and the sixth harness the value of f



The equation $(a+b+c+d+e+f)^2$ expands to $a^2+2ab+2ac+2ad+2ae+2af+b^2+2bc+2bd+2be+2bf+c^2+2cd+2ce+2cf+d^2+2de+2df+e^2+2ef+f^2$ or
 a-a-a-b-a-b-a-c-a-c-a-d-a-d-a-e-a-e-a-f-a-f-b-b-b-c-b-c-b-d-b-d-b-e-b-e-b-f-b-f-
 c-c-c-d-c-d-c-e-c-e-c-f-c-f-d-d-d-e-d-e-d-f-d-f-e-e-e-f-e-f-f-f- thread from right.

Everyone really weaving learns to use short drafts. The short draft used by Mr.R.E. Landreth for threading 10/4 cotton, set 15 to the inch for this pattern used at the June KENTUCKY WEAVERS meeting at the Little Loomhouse is given on the following page. A long draft would require an entire page and could not be visualized; the short draft can be visualized. However, part of the equation is given at the right in both the long form and in the short form.



Margaret Bergman's style of treadling the summer-and-winter in "diamond" form is given for a rising shed loom. Treadles 2 and 4 are used with whatever pattern treadle shows on the draft.

			A			A	1		
			B			B	2		
		C				C	3		
		D				D	4		
		E				E	5		
		F				F	6		
				S	S		7		
				W	W		8		
F	E	D	C	B	A	W	S	A-F	
10	9	8	7	6	5	4	3	2	1

UP HARNESS TREADLES
 → A-F 1 PLAIN WEAVE
 ← S-W 3
 S 2 SUMMER WINTER
 W 4
 S-W 3 S-PATTERN 2+P
 A-F 1 W+PATTERN 4+P
 S-W 3 W+PATTERN 4+P
 A-F 1 S-PATTERN 2+P

2BD	2BC	B ²	2AF	2AE	2AD	2AC	2AB	A ²
			A A	A A	A A	A A	A A	A A
B B	B B	B B					B B	
	C C					C C		
D D				D D				
				E E				
			F F					

"A California weaver - Ada K. Dietz - has approached drafting from algebraic equations. The more the Little Loomhouse goes into the idea, the more we realize its import on American folk art growth.

It is wonderful to see the enthusiasm for Ada K. Dietz' algebraic approach - not only an enthusiasm for the beautiful textiles but also an exciting mental stimulation of exploring a new idea. It is not at all uncommon to see a man muttering to himself or scribbling on an envelope and then to share his thrill as he ties the equation to the fabric.

Completely original ideas are mostly non-existent, unless we believe the fanciful imaginations of advertising experts. Those of us who are realistic welcome with open arms a new tangent or variant of an idea. Only occasionally is an original idea brought forth. Originality in a weaver often develops.

One idea which is in the rare group of originals is Ada K. Dietz' approach to weaving patterns thru algebraics as shown in her exhibition and book "ALGEBRAIC EXPRESSIONS IN HANDWOVEN TEXTILES". Look up the definition of 'original'.

Next look up the definition of 'originality'. Then consider the weavers you know, and the weaving ideas. How many are 'original'? How many show 'originality'? You will find only an occasional entry to put in the 'original' list with Ada K. Dietz' algebraic approach. Much in weaving ideas and trends are the outgrowth of many weavers who each show originality but cannot be considered an 'original' of any one person.

Miss Dietz and Miss Foster are examples of the terms 'original' and 'originality'. Miss Dietz had an original idea in applying algebraics to handwoven textiles. Her partner in Hobbylooms is Miss Foster. Miss Foster's weaving is most distinctive thru her handling of color, texture and design and shows wonderful originality."

Lou Tate, Kentucky Weaver