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NEW TECHNIQUE SERIES  
**ATWATER-BRONSON  
LACE**

**TECHNIQUES  
+ 14 Projects**

This lace technique book is sooooo much more than a project book! In it, you'll learn about block profile drafts and how to design your own lace patterns, whether you are using simple pick-up or many shafts. You'll discover special warping, weaving, and finishing techniques to use with linen, lace's most elegant partner. You'll find out how to design and weave "turned" lace and discover the difference between Swedish lace and Atwater-Bronson lace. You can start with a sampler and then move through the projects; each one will add a new tool to your lace-weave design kit.

*Madelyn*

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## HANDWOVEN

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# A GLOSSARY OF LACES FOR WEAVERS

BARBARA LIEBLER

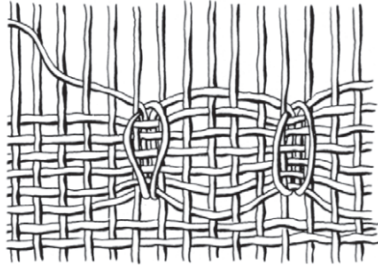
*There are many ways to weave holes in your cloth, some with the word “lace” in their titles and some without. Some laces are woven on two shafts with finger manipulation, while others are four-or-more-shaft, loom-controlled structures. While this glossary is not exhaustive, it will provide an introduction to several very useful lace techniques.*

## FINGER-MANIPULATED LACES

### DANISH MEDALLION

The beauty of this technique is that you can cluster the yarns freely in any pattern you wish, changing the sizes of the medallions at will. It is also one of the few easy ways to weave circles or ovals. In the photo of the sample by Sylvia Pocock, all the yarns are the same, but Danish medallion is often done with a thicker yarn outlining the medallions.

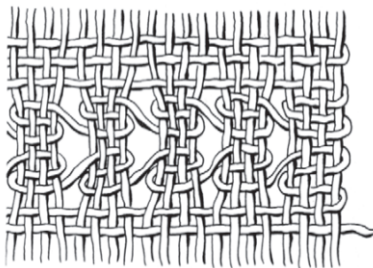
Danish medallion



### SPANISH LACE

Also called Spanish eyelet or openwork, Spanish lace is another way to make open lacy holes with your shuttle, as in this sample by Sylvia Pocock. It can be worked freely, making the blocks as high or as wide as you wish. You don't need to weave a full row of Spanish lace—just fill in other areas with plain weave to the same height. A diamond-shaped pattern of holes on a plain-weave runner was a typical use of Spanish lace in its heyday.

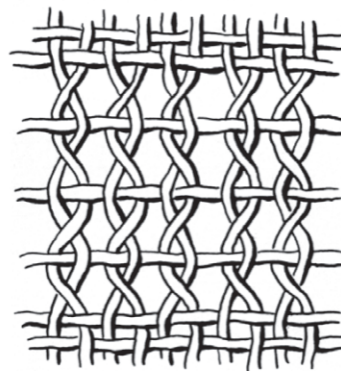
Spanish lace



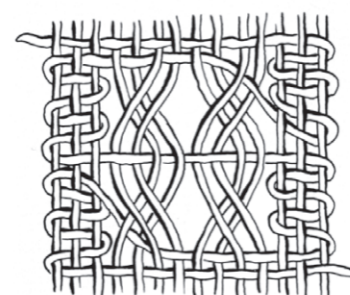
Spaced warp



Single leno



Double leno (gauze)



Note that this Spanish lace was woven on a textured fabric, not plain weave as it is more commonly seen.

### SPACED WARP

Threading areas of densely packed warp threads and areas of widely spaced warp threads will give the effect of a lace stripe. Thick threads in one stripe and thin threads in another stripe, all at the same ends per inch, will give a similar effect, as shown in this sample. If you use a slick weft so the warp tends to slide out of its designated area, a line of leno twists at the edge of the tightly packed area will keep it in place.

### LENO

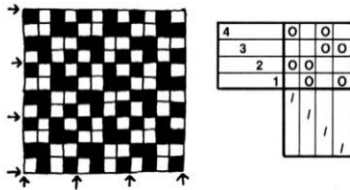
Single leno (single threads crossing) and double leno (two threads crossing; this is also called gauze weave) can be worked on an open shed or a closed shed. Other numbers of threads can be involved in the crossings; only single and



## BREAKS and RECESSES

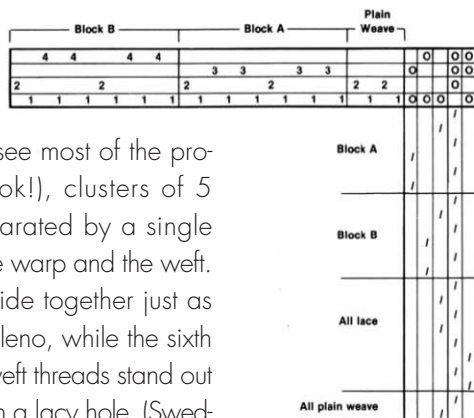
G.H. Oelsner, in his book *A Handbook of Weaves*, has a short chapter on "Breaks and Recesses in the Cloth."

These fabrics make wonderful draperies, as they have a nice surface texture and a lovely open look when the light shines through them. The photo here is of an 8-shaft fabric, while the draft gives a 4-shaft version. The interlacement forces the threads into groups with valleys at warp/weft changes.

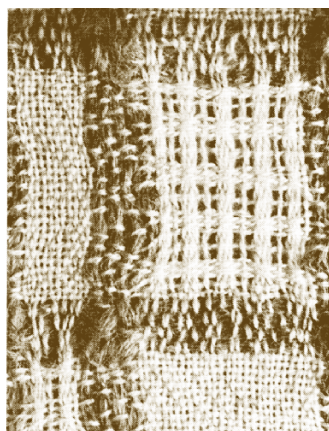


Breaks (that can be open) occur where warp floats change to weft floats and vice versa.

## ATWATER-BRONSON LACE

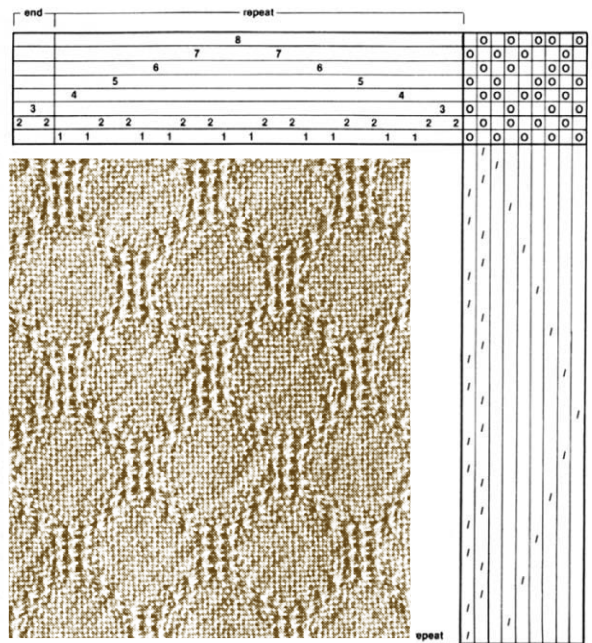


In this structure (see most of the projects in this book!), clusters of 5 threads are separated by a single thread in both the warp and the weft. The 5 threads slide together just as they do in mock leno, while the sixth warp and sixth weft threads stand out to form a "plus" in a lacy hole. (Swedish lace is structurally the same except at block changes.) Four shafts provide two blocks plus areas that can always weave plain weave—that's a lot of design freedom! You can weave one block in lace and the other in plain weave, or lace in both blocks, or plain weave throughout. In this sample, the lace blocks are separated by a thicker contrasting yarn that weaves only plain weave.



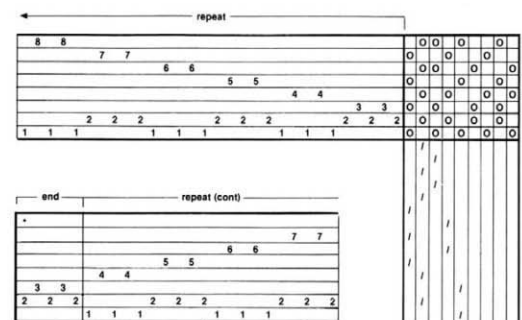
Atwater-Bronson lace windows can be surrounded by frames of plain weave in the same or different yarns.

## HUCK LACE



Three-thread huck blocks in point order

In huck lace, groups of an odd number of threads cluster to leave holes between them. Each group weaves lace or plain weave. (Samples by Gail Seay, above; Gail Redfield, below.)



Five-thread huck blocks in point order

Sometimes called "double huck," 5-thread huck also allows six blocks on eight shafts when they are threaded in point or straight order.

# AN INTRODUCTION TO ATWATER-BRONSON LACE

JEAN SCORGIE

As handweavers return to finer yarns and closer setts, spot and lace weaves are regaining their popularity. Although they've never gone out of favor, spot Bronson and Atwater-Bronson lace are being used more and more for table linens, curtains, and clothing fabrics. They use a single shuttle, they're easy to design and weave, and they adapt well to pick-up and rigid-heddle variations. Excellent on four shafts, they also extend easily to multi-shaft threadings.

Unfortunately for those trying to learn about these weaves, they have several different names. Early in this century, Mary Meigs Atwater came across drafts of a spot weave in J. & R. Bronson's book (republished by Dover as *Early American Weaving and Dyeing*), which she referred to as "Bronson." When she developed a variation that could be repeated in units, she called it Bronson also, not wanting to give herself undue credit. Later, to differentiate the two weaves, she called them spot Bronson and Bronson lace, although some argue that the latter should be called Atwater lace or, at least, Atwater-Bronson lace as we are doing in this book.

Spot Bronson, the original Bronson spot weave, must be threaded and treadled without repeating threading and treadling groups in the same block because the groups lack a "tie-down" end to control the length of the floats. Its many names include spot weave, speck weave, diaper (an American Colonial term meaning small overall pattern), *droppdräll* in Swedish, *Gerstenkombindung* in German, and barleycorn by Marguerite Davison.

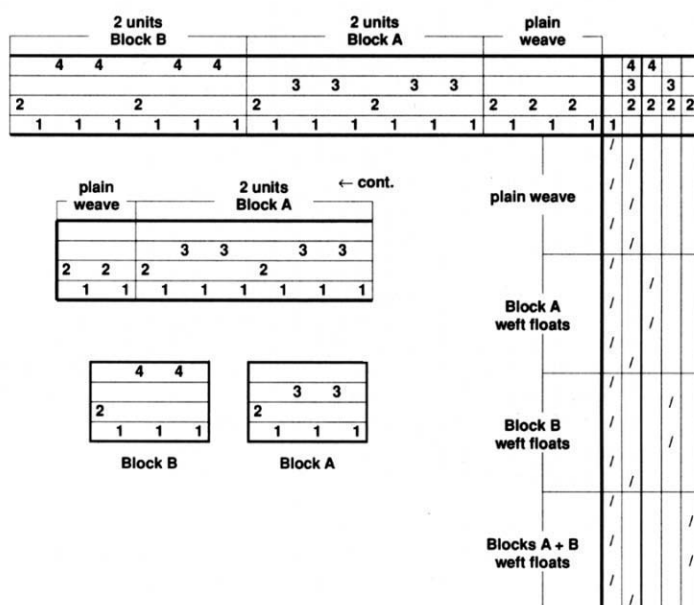
## THE DRAFT

Atwater-Bronson lace is a unit weave that allows repeating units of the same block in threading and treadling. The threading units (usually) contain 6 ends; every other end is threaded on shaft 1. Shaft 2 is used at the end of each unit to secure weft floats. The remaining threads in the unit are "pattern" shafts, shaft 3 for Block A, shaft 4 for Block B, etc.

As in the threading, the treadling unit contains 6 threads. Plain weave is woven by raising shaft 1 versus 2-3-4 (shaft 2 plus pattern shafts on four shafts). For Block A to show weft floats and Block B plain weave, the treadling is 1, 2-4, 1, 2-4, 1, 2-3-4. Note that the last 2 picks of every 6-thread unit are plain weave. The last pick secures warp floats on the back of the fabric. Block B forms weft floats (and Block A plain weave) by raising 1, 2-3, 1, 2-3, 1, 2-3-4. For weft floats in both blocks, raise shafts 1, 2, 1, 2, 1, 2-3-4.

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## ATWATER-BRONSON LACE UNITS



## DESIGN CONSIDERATIONS

To design Bronson lace on graph paper, use one square for each 6-end unit. Though plain weave can be threaded in any number of pairs (alternating on shafts 1 and 2), threading plain weave in 6-end "units" makes graphing easier.

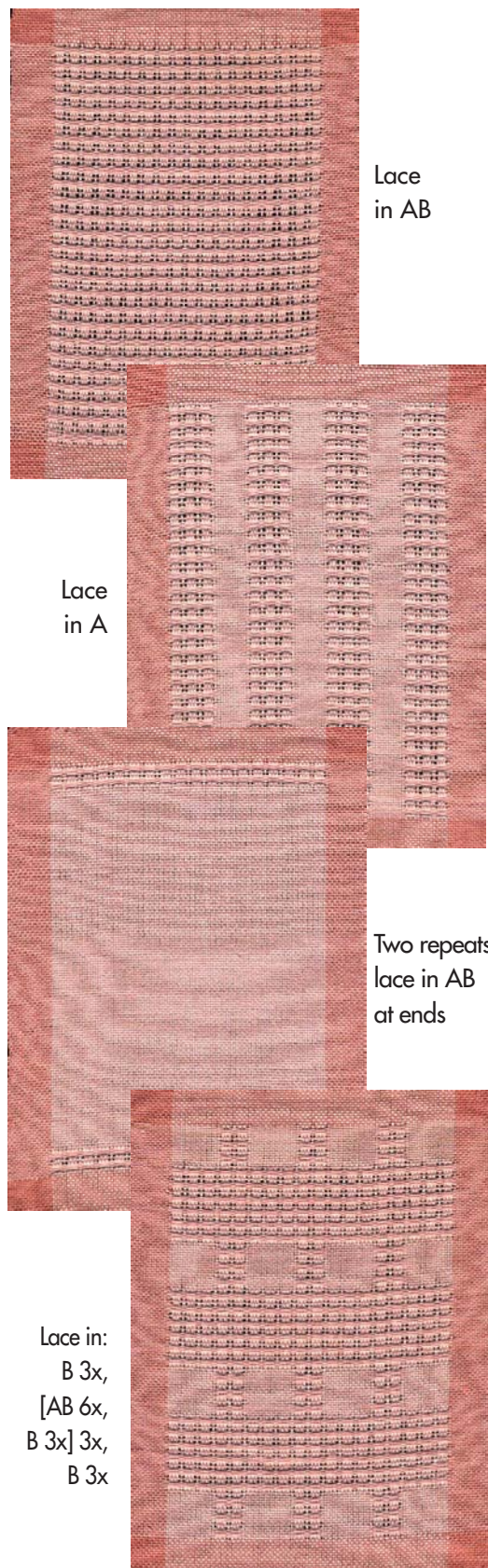
Like most other laces, Atwater-Bronson lace is at its best in solid color, and usually one that is light in value. What you want to see is the textural contrast and the shadows created by the lacy holes, not the warp/weft interplay. Color changes are often reserved for the plain-weave ground outside the block areas. Set closely, Bronson lace forms a raised texture; with a loose sett, it opens to a lacy texture. Blocks containing several units enhance the openness of the lace. Bronson lace is usually woven as a balanced weave (epi = ppi).

## RESOURCES

- Black, Mary E. *The Key to Weaving*. New York: Macmillan, 1980.
- Burton, Dorothy S. *Versatile Bronson*. Boston: Boston Weavers Guild, 1984.
- Davison, Marguerite P. *A Handweaver's Pattern Book*. Swarthmore, Pennsylvania: Marguerite P. Davison, 1944.
- Muller, Donna. *Handwoven Laces*. Loveland, Colorado: Interweave, 1991.

# AN ATWATER-BRONSON-LACE SAMPLER

VIRGINIA WEST



Lace  
in AB

Lace  
in A

Two repeats  
lace in AB  
at ends

Lace in:  
B 3x,  
[AB 6x,  
B 3x] 3x,  
B 3x

## DESIGNING AND WEAVING ATWATER-BRONSON LACE

Using a profile draft (see Profile Drafting Notes, page 6) is an efficient way to design a block weave. Not only can you readily see the design, but you can also experiment with varying the block order in the treadling using the same threading order of the blocks. The eight samples shown here are woven from the same profile threading draft. What a boon to production weavers—thread once, weave new designs forever! When more shafts are added (and therefore more blocks), options increase geometrically.

Atwater-Bronson lace lends itself especially well to profile drafting. In addition to the threaded blocks, which can weave either pattern as lace or background as plain weave or vice versa, areas that always weave plain weave can be threaded without sacrificing additional shafts. This makes Atwater-Bronson lace an ideal choice for a design with a plain-weave border on all four sides. The sampler shown here (requiring only four shafts to weave) uses a two-block profile draft with a border of plain weave around the center field. The profile threading draft is shown in Figure 1. For the sampler, each square represents one 6-thread unit of Atwater-Bronson lace; see Figure 2. Because the plain-weave border acts like a background block it is given its own (bottom) row on this profile threading draft. Each square on the A row represents the threading unit for Block A: 1, 3, 1, 3, 1, 2. Each square on the B row represents the threading unit for Block B: 1, 4, 1, 4, 1, 2. Each square on the bottom row marked “Border” is threaded 1, 2, 1, 2, 1, 2 for 6 threads of plain weave.

This profile threading draft is 24 squares wide. To determine the total number of warp threads needed to weave it, multiply the 6-thread units by 24 = 144 ends. If you want to expand the profile threading draft and keep the same proportions, you can double the blocks (where there are now three units of the same block in a row, thread six; where there are four, thread eight, etc.).

The treadling is also based on 6-thread units. The 6 weft picks are: plain weave (shaft 1 raised), pattern, plain weave (shaft 1 raised), pattern, plain weave (shaft 1 raised); opposite plain-weave shed (all shafts raised but 1). What do you treadle for the pattern picks? You have several choices, so now the fun begins. If you want lace in the areas where Block A is threaded, raise 2-4 for both pattern picks in the 6-pick sequence (shaft 3 is down for a weft float in Block A). If you want lace in the areas where Block B is threaded, lift 2-3 for both pattern picks (shaft 4 is down for a weft float in Block B). You also have two other options: for lace in both Blocks A and B, lift only shaft 2 for both pattern picks. For plain weave in both blocks, lift 2 with both 3 and 4 for both pattern picks. Note that a shaft left down for the pattern pick causes a weft float to occur. A pattern shaft that is raised in a block for the pattern pick weaves plain weave there. This principle is the same if you add shafts to the mix. Simply work with profile drafts for the number of blocks equal to the number of shafts you have, minus two.

Designing is now just a matter of choosing among the possible treadlings. This sampler shows several variations to get you started designing beautiful Atwater-Bronson lace.

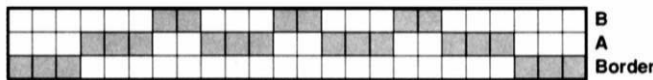
## PROFILE DRAFTING NOTES

A profile draft is a graphic shorthand that not only saves the time of writing a lengthy thread-by-thread draft but is also easier to use for designing. A profile draft makes it easy to see the relationship between blocks and what the overall design will look like. You can make changes in proportion and placement with ease.

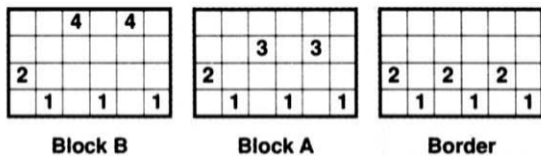
A profile threading draft can be considered a template into which the threading for any specific unit weave can be plugged. (A unit weave is a structure in which groups of threads work together to form a unit of pattern or background, such as summer and winter, block twill, or Atwater-Bronson lace; see more about how this works on pages 7–10.)

Each row on a profile threading draft represents a different block; each square represents one unit of threading. For example, for a 2-block profile draft, one row represents Block A; another row represents Block B. To interpret the profile draft for a fabric, simply choose a weave structure and note what the threading and treadling are for each unit in each block. See threading and treadling units for Atwater-Bronson lace below (and for twill and summer and winter on pages 7–10).

### 1. SAMPLER PROFILE THREADING

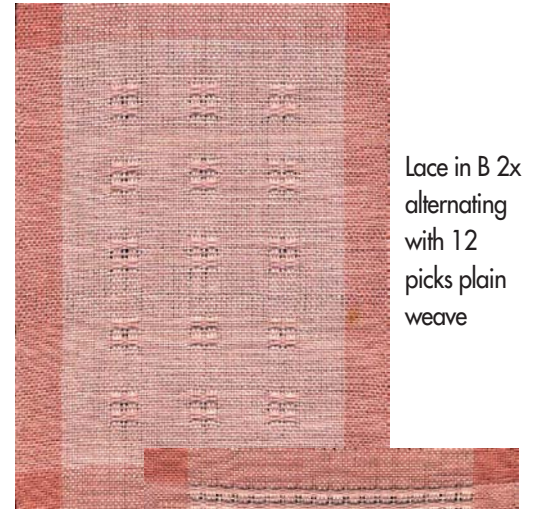
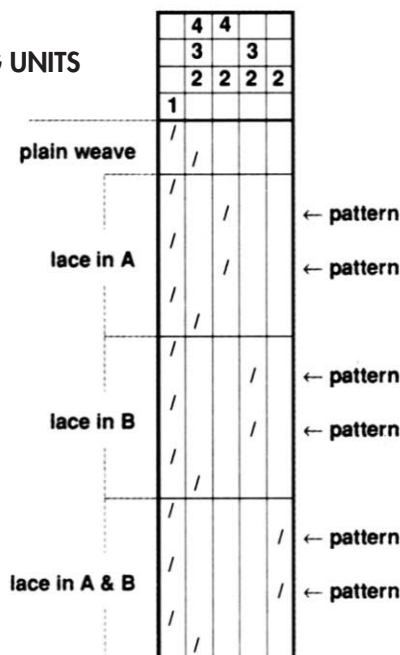


### 2. THREADING UNITS (AND PLAIN WEAVE)

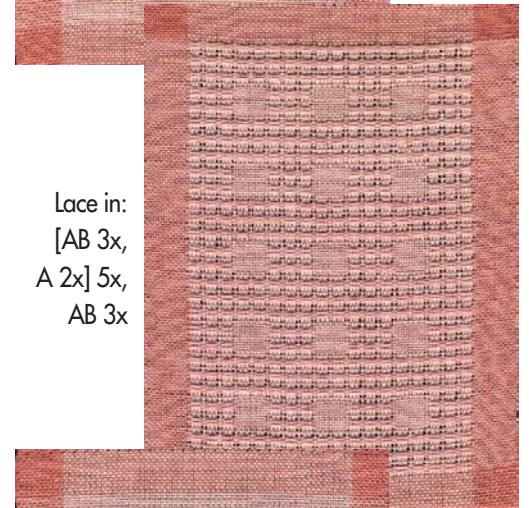


### 3. TIE-UP AND TREADLING UNITS (AND PLAIN WEAVE)

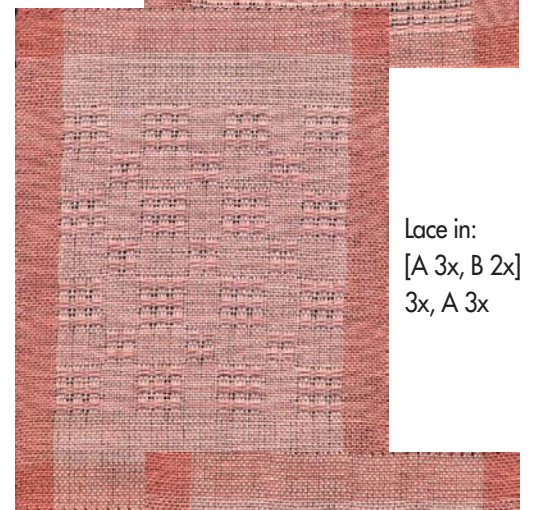
All of the samples begin and end with hemstitching and 14 picks of plain weave in a darker pink. They show only some of the many possible arrangements of two blocks in the treadling.



Lace in B 2x alternating with 12 picks plain weave



Lace in:  
[AB 3x,  
A 2x] 5x,  
AB 3x



Lace in:  
[A 3x, B 2x]  
3x, A 3x



Lace in B  
6x; 12 picks  
plain weave

# PROFILE DRAFTING: GETTING THE BIG PICTURE

SHARON ALDERMAN

These three sets of towels will brighten your kitchen and make your chores more pleasant. The use of a different weave structure for each set makes them look different from each other, yet because they use the same colors and threading blocks, they complement each other beautifully. The top towel in the photo on page 8 is woven in summer and winter, the middle towel in twill blocks, and the bottom towel in Atwater-Bronson lace. The simple two-block threading used for all three allows patterning that looks much more complex than it actually is.

## THREAD-BY-THREAD VS BLOCK (PROFILE) DRAFTS

There are many types of drafts for weaving. Some drafts show what every thread is doing, some show only the pattern weft threads, and some show color effects on the fabric surface instead of the interlacement. Profile drafts are yet another type, showing the arrangement of pattern blocks in the cloth instead of the weave structure that produces them.

“Blocks” usually refer to areas of the cloth that, while using the same weave structure, can appear distinct from each other. For twill blocks, for example, one block might weave warp-dominant (3/1) twill while another weaves weft-dominant (1/3) twill. For summer and winter, one block can show pattern floats on the surface while the other block shows them on the back. For lace weaves, one block can weave a lacy effect while the other weaves plain weave. We usually think of one of the two possible appearances as pattern and the other as background and create designs by choosing which blocks weave which.

The profile draft is just that: a design plan for which blocks weave pattern and which weave background with no reference to structure. The profile draft can be used with any weave structure that is made up of threading and treadling units (that can be repeated) to produce pattern vs background. Complex patterns and some structures require more shafts than others. For example, a 4-block profile draft requires six shafts for summer and winter or Atwater-Bronson lace, sixteen shafts for doubleweave, and twenty shafts for damask.

## DESIGNING WITH PROFILE DRAFTS

Any profile threading draft (the arrangement of the blocks in the warp) can produce many different designs depending on the treadling order of the blocks. The towels shown here use the same profile threading draft but different treadling orders. Once the profile threading is determined, the design is developed following these guidelines: 1) when a particular block

weaves pattern in one area, it weaves pattern wherever it is threaded (just as when one shaft is lifted, all the ends on that shaft rise); 2) different blocks can produce pattern or background together; and 3) all blocks can weave background.

Any “unit weave” can be used with any profile draft (provided you have enough shafts). For the threading of the blocks, for example, simply substitute for Block A 1-3-2-3 and B 1-4-2-4, and the draft has become specific for summer and winter. There is a threading formula for each block in every unit weave; only three unit weaves are shown here.

## THE TOWEL PROFILE THREADING DRAFT

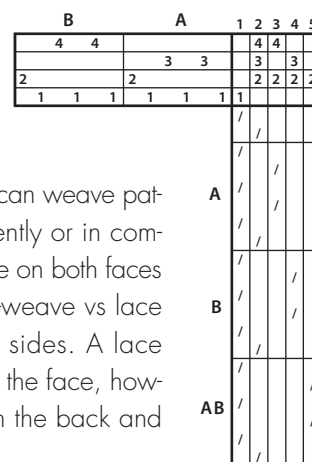


The usual convention for using a profile threading draft is to let each square represent one repeat of the unit for that block. For the towels, however, the squares are translated into varying numbers of repeats to make the block proportions in all three sets of towels roughly the same size even though the number of threads per unit and the number of ends per inch for each set of towels differ.

The most important thing to observe is the relationship between the profile threading draft and the cloth. They correspond very directly: the profile diagram is a clear picture of the cloth, uncluttered with structure. This graphic quality is what makes the profile draft a very powerful designing tool; when you use one, you are able to see the overall look of the cloth—the big picture.

## ATWATER-BRONSON LACE

Atwater-Bronson lace is a block weave with threading and treadling units of (usually 6) threads. The units can be repeated as many times as desired (it takes at least two units of the same block threaded and woven in succession to make lace “windows”). Blocks can weave pattern or background independently or in combination. The design is the same on both faces of the fabric; that is, the plain-weave vs lace blocks are the same on both sides. A lace block that shows weft floats on the face, however, shows warp-float lace on the back and vice versa.





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## TWILL BLOCKS

When twill is used as a block weave, each block requires four shafts (two blocks therefore require eight shafts, three blocks require twelve, etc.). Any block can weave either 3/1 warp-dominant or 1/3 weft-dominant twill. Units in the same block can be repeated as desired, and blocks can be woven independently or combined. Warp-dominant blocks on the face are weft-dominant on the back, and vice versa.

B	A	1	2	3	4	5	6	7	8	9	10
4	4			4	4	4				4	4
	3	3		3			3	3		3	3
2		2		2		2		2		2	2
	1		1		1		1		1		1
	A	.	.	.	.	.	.	.	.	.	.
	B	.	.	.	.	.	.	.	.	.	.
	AB	.	.	.	.	.	.	.	.	.	.
	all back-ground	.	.	.	.	.	.	.	.	.	.

## SUMMER AND WINTER

Two threads in each summer and winter threading unit are reserved for tie-down threads and tie the pattern weft to the cloth; the tie-down threads are threaded on shafts 1 and 2. Each new block requires only one additional shaft, called the "pattern" shaft, which determines whether the pattern weft shows on the face or on the back. Tie-down shafts and pattern shafts are raised alternately to weave the plain-weave ground cloth. Four shafts therefore produce two blocks; eight shafts allow six!

B	A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
8					8	8	8	8	8	8	8	8	8	8	8	8	8
7				7	7	7	7	7	7	7	7	7	7	7	7	7	7
6			6		6	6	6	6	6	6	6	6	6	6	6	6	6
5		5		5	5	5	5	5	5	5	5	5	5	5	5	5	5
4		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
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
	A	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/
	B				/	/	/	/	/	/	/	/	/	/	/	/	/
	AB						/	/	/	/	/	/	/	/	/	/	/
	all back-ground								/	/	/	/	/	/	/	/	/

In this draft, warp-dominant twill is considered the pattern interlacement, weft-dominant twill the background interlacement. This is an arbitrary choice; either interlacement can be either pattern or background.

## THE PROJECT TOWELS

### PROJECT NOTES: ATWATER-BRONSON-LACE TOWELS

The warp and weft for the Atwater-Bronson and twill-block towels and the warp and tabby weft for the summer and winter towels are all 16/2 unmercerized cotton. For the Atwater-Bronson lace towels, one hue of yellow is used in the warp and a lighter yellow in the weft, emphasizing the lace floats. The blocks alternate frequently in the treadling to produce a somewhat dainty pattern in keeping with the structure itself. A plain-weave selvage is added to each side.

**FABRIC DESCRIPTION** Atwater-Bronson lace.

### FINISHED DIMENSIONS

Two towels 16½" by 30½" each with ⅜" hems.

### WARP and WEFT

16/2 unmercerized cotton at 6,720 yd/lb: 1,704 yd bright yellow for warp, 1,000 yd light yellow for weft.

**TOTAL WARP ENDS** 568.

### WARP LENGTH

3 yd (allows take-up, shrinkage, and 27" loom waste).

**E.P.I.** 30. **WIDTH IN REED** 18¼". **P.P.I.** 26.

**TAKE-UP and SHRINKAGE** 13% in width, 10% in length.

### WEAVING

Before threading, make sure you have 284 heddles on shaft 1. Follow the treadling draft for each towel, beginning and ending with 1½" plain weave for hems and hemstitching, including 2 rows and 6 ends in each stitch.

### PROJECT NOTES: TWILL BLOCKS TOWELS

For this towel, the edge blocks are widened to make the twill-block towels closer to the size of the others. The weft-dominant blocks at the beginning and end of the towels are used for hems. I used the side that was face down during weaving as the right side when I turned the hems.

**FABRIC DESCRIPTION** Twill blocks (also called "turned twill" or "twill diaper").

### FINISHED DIMENSIONS

Two towels 16¼" by 23" long each with ⅜" hems.

### WARP and WEFT

16/2 unmercerized cotton: 1,670 yd blue-gray for warp, 1,120 yd bright yellow for weft.

**TOTAL WARP ENDS** 668.

### WARP LENGTH

2½ yd (allows take-up, shrinkage, and 27" loom waste).

**E.P.I.** 36. **WIDTH IN REED** 18¾". **P.P.I.** 32.

**TAKE-UP and SHRINKAGE** 12% in width, 13% in length.

### WEAVING

For each towel, follow the treadling in the draft. With one shuttle and a straight treadling order, these towels go very quickly!

### FINISHING FOR ALL THREE SETS OF TOWELS

Machine wash, hot wash and cold rinse cycles, tumble dry until damp, then press. Cut towels apart; turn under hems twice and sew by hand or machine.

## ATWATER-BRONSON-LACE TOWEL DRAFT

4x	8x	8x	20x	4x	4x	2x	4x	20x	8x	8x	4x	1	2	3	4	5
	3	3	4	4	3	3	4	4	3	3	4	4	3	3	4	4
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

## TWILL BLOCKS TOWEL DRAFT

17x	14x	35x	7x	7x	7x	35x	14x	17x	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	8		8		8		8		8	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
	7		7		7		7		7	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
	6		6		6		6		6	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
4		5		5		5		5		4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
3		4		4		4		4		3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
2		3		3		3		3		2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
1		2		2		2		2		1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

## SUMMER AND WINTER TOWEL DRAFT

12x	12x	30x	6x	6x	6x	30x	12x	12x	1	2	3	4	5	6	7	8
3	3	4	4	3	3	4	4	3	3	4	4	3	3	4	4	3
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

## PROJECT NOTES: SUMMER AND WINTER TOWELS

The treadling order of the blocks for these towels is "blockier" than for the others in keeping with the bolder, coarser look of the weave. Note that it is usually a good idea to choose a pattern-weft yarn that is about twice the size of the warp and tabby weft. The use of different shades of gray for warp and tabby weft in the towels makes the background livelier than it would be if both were the same gray. Another option is to choose a different color pattern weft for the second towel.

**FABRIC DESCRIPTION** Summer and winter.

### FINISHED DIMENSIONS

Two towels 16¼" by 26¼" each with ¾" hems.

### WARP and WEFT

16/2 unmercerized cotton at 6,350 yd/lb: 1,380 yd pale gray for warp, 700 yd blue-gray for tabby weft. Pattern weft: 8/2 unmercerized cotton at 3,600 yd/lb, 640 yd light yellow.

### YARN SOURCES FOR ALL THREE SETS OF TOWELS

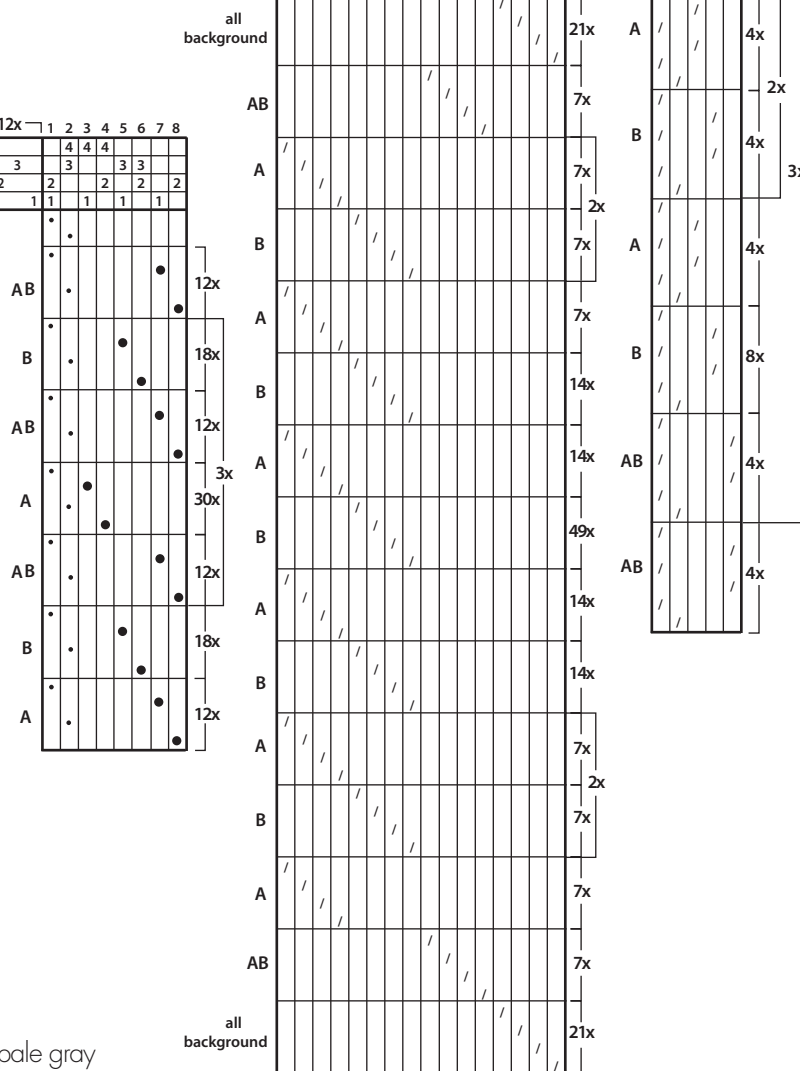
16/2 unmercerized cotton is available from the Lone Star Loom Room and The Mannings. 8/2 cotton is available from most weaving retailers.

**TOTAL WARP ENDS** 552.

### WARP LENGTH

2½ yd (allows take-up, shrinkage, and 27" loom waste).

all background



**E.P.I.** 30. **WIDTH IN REED** 18⅝".

**P.P.I.** 40 (20 tabby, 20 pattern).

**TAKE-UP and SHRINKAGE** 12% in width, 10% in length.

### WEAVING

Weave each towel following the treadling draft using both pattern and tabby wefts as indicated. Begin and end with 1½" plain weave for hems.

# LINEN AND LACE — PERFECT PARTNERS

LINDA HEINRICH

Although fragments of linen cloth have been discovered in Stone Age lake dwellings, it was the ancient Egyptians who used linen extensively in their daily lives. Linen was used for cool clothing and bedding, for sturdy ropes and sails; most significantly, linen cloth was used to wrap the dead, animal as well as human. When the practice of mummification ceased with the advent of Christianity in Egypt in the third century A.D., linen found a place as altar cloths and priestly vestments. Linen continues to be used in some churches today and has established itself as the fiber of preference for the finest damask tablecloths and napkins for the most special occasions.

Deceptively fragile in appearance, the flax plant yields a fiber second in strength only to silk. Its primary by-product, linen (for that is the name flax takes after it's spun), is enjoying a resurgence not only for table use but for other household furnishings as well. Linen's strength and capacity to resist dust make it an ideal choice for upholstery and wall coverings.

Linen's resistance to light and lack of elasticity make it suitable also for draperies. Stimulated by superb Italian design, the fashion industry features classic linen garments. For the last twenty years, weavers, too, have had a renewed interest in this sometimes recalcitrant fiber.

## SELECTING A LINEN YARN

The best quality linen, line linen, is smooth and shiny and is obtained from the longest, strongest, lustrous flax fibers. Tow linens are obtained from shorter, less shiny and weaker fibers. Linen yarns can be single or plied, wet spun or dry spun. Finer counts are obtained by the wet-spinning process, as the fibers which have been treated with very warm water are softened and able to slip by one another. The moisture also smooths the hairy tendrils. Dry-spun "hairy" linen fibers are better suited for weft, as they are unable to withstand the abrasive action of the reed.

Rarely is there a difficulty weaving with a plied linen yarn. Difficulties most often occur with a poor quality singles linen warp. If the fiber appears "hairy" or breaks easily, use it for weft. Linens woven with a tightly twisted fiber will not be as soft as those woven with yarn of a looser twist.

A plied linen yarn used for warp and weft produces a more substantial fabric than one woven entirely with a singles of the same grist (thickness). The latter will be softer and silkier. A plied warp with a singles weft will produce a softer and more textured fabric than one of all-plied yarn, but will not be as soft as a fabric of all singles. I've found that yarns with more than two plies produce a stiff cloth, but they can be used to good effect with the proper fabric design.

## SOME SUGGESTED SETTS FOR COMMONLY USED LINEN YARNS

### For a predominantly plain-weave fabric:

Warp ..... Weft  
16/2 at 20 epi ..... 16/2 or 8/1  
20/2 at 22–24 epi ..... 20/2 or 10/1  
No. 4 wet-spun tow ..... 12–15 epi

### For the more experienced weaver:

40/2 at 30–32 epi ..... 40/2 or 20/1  
20/1 at 30–32 epi ..... 20/1  
16/1 at 28–30 epi ..... 16/1

Linen is measured in leas. A No. 1 lea contains 300 yards to the pound: No. 10 singles yarn (10/1) contains 3,000 yards, and a 10/2 contains 1,500 yards (10 x 300 divided by the number of plies, 2).

There are advantages to using a singles weft over a plied weft. Singles yarns are less expensive, and less draw-in occurs. As well, singles linens, particularly line linens, are more lustrous, the ply interfering with light reflection.

## WEAVE STRUCTURE AND THE IMPORTANCE OF SETT

Using a weave structure that enhances the fiber is important when planning linen projects. For example, the longer floats in twills and lace weaves reflect more light and show off linen's luster. Keep in mind that the weave structure you choose will have an effect on the hand of the finished cloth as well as its appearance. Hand-manipulated techniques, such as Brooks bouquet, Spanish lace, inlay, or drawn work do much to enhance an otherwise plain fabric. I've found that linen is best understated—a little embellishment goes a long way.

The proper sett is more critical for linen than for other natural fibers because linen does not expand as much upon washing nor can it be full like wool or shrunk like cotton. Note that singles linen yarn will spread more during the finishing process than a plied yarn because it can be pressed flatter.

When setting linen yarns, I've found that balanced linen weaves usually look better when the warp and weft are identical or are at least of the same grist; however, differing weights and setts can be used to achieve striking effects. Unless deliberately designed to be spaced or crowded, a plain-weave cloth should appear quite solid when held up to the light (no little air spaces). An increase of just 2 ends per inch,



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for example, can make a considerable difference in the hand of the cloth or the appearance of the design. Before altering the sett, count the number of warp ends and weft picks for a full inch to make sure that they are equal.

Weave structure affects sett. A given size of linen will be sett more closely for twills and lace weaves than for plain weave. Satins must be sett closer still. On the other hand, weave structures requiring a tabby and pattern weft usually need a slightly more open sett than that required for plain weave.

You will find that there will be less abrasion on your warp yarns if you sley the reed with 2 or more ends per dent, rather than with just 1 end per dent. If you use irregular denting (for example, a sley of 2, 3, 2, 3), sample first to determine whether or not the ends per inch will equalize with washing and pressing. Vertical reed marks detract from the beauty of the finished cloth. I wash samples at least three or four times, agitating well, to determine the final finished result.

If you're a first-time linen weaver, I suggest that you begin with a narrow warp (12–15" wide). You'll find a plied linen (16/2 or 20/2), perhaps in a lace weave or twill, the easiest to work with for your first piece.

## COLOR

Color is subjective, but I believe linen color decisions should be made with the utmost care. First, choose colors in accordance with what they will be placed near. You'll need to consider color arrangement and proportion. Keep in mind that color reflects mood. For example, pure white, creamy eggshell, or soft pastel linens together with silver, fine china, and sparkling crystal impart an ambience much different from that of natural linens in combinations with handcrafted woods and earthenware. By contrast, the brilliant Scandinavian hues lend a contemporary flavor to a setting.

An array of dyed linen yarns is available to the handweaver. Most are colorfast, but others are not. Especially if you will be using a bright color such as red or blue with white or a very light color, I recommend that you test your yarns for colorfastness before you begin your project. (I check for fastness by dampening a piece of yarn and placing it in a white towel. If it "runs" I know it's not fast.) Also, when you are using more than one skein of a color, be sure that the dyelots match. They may appear to be exactly the same color when viewed in the skein side-by-side, but even the slightest color variation will show up when they are woven.

In their undyed state, linen yarns may be a fourth, half, or totally bleached and will consequently be different shades (the yarn label should tell you what bleaching has been done). Natural (undyed or unbleached) linens may be gray or golden tan, reflecting the type of retting process they have undergone. Gray linens have been dew retted, whereas

## PROPERTIES OF LINEN

- Linen has a smooth surface. It tends to repel dirt and bacteria. Stains are removed easily. These properties make it ideal for handkerchiefs and table linens.
- Linen is the least elastic of the natural fibers; therefore, it is excellent for artist and embroidery canvas, draperies, wall hangings, and rug warps.
- Linen is absorbent and dries quickly. It is excellent for towels and handkerchiefs.
- Linen is vulnerable to mildew; therefore, it should never be stored damp.
- Linen is more resistant to light than cotton, which makes it ideal for draperies.
- Linen is second in strength to silk.
- Linen shrinks very little, usually less than 10% (mostly due to take-up).
- Linen conducts heat away from the body and is thus comfortable for clothing and bedding, especially in hot climates.
- Linen is not damaged by moths unless it is starched (moths love starch).
- Linen's most undesirable property is that it wrinkles easily. Consequently, it is more suitable for household furnishings than for clothing. However, when it is combined with other natural fibers or treated with wrinkle-resistant chemicals (as in industry), the tendency to crease is somewhat reduced.

golden-tan linens have been water retted. Linen yarns are strongest in their natural (undyed or unbleached), state.

## WARPING AND WEAVING CONSIDERATIONS

Your loom should be in good working order and all parts smooth and solid. The reed, for example, should be well secured in its holder. Counterbalance and countermarch looms, because the threads are pulled apart with equal tension when the shed is opened, are thought by some weavers to be the best for weaving linen. On the other hand, I have used a jack loom (where one set of threads is raised while the lower threads remain stationary), with no tension problems.

I can't stress enough that establishing firm and perfectly even tension of all warp threads is the single most important factor when you are winding a linen warp and applying it to the loom. To ensure that your warp yarns are the same length, place threads side by side on the warping board or mill, not bunched up on top of one another. A coarse reed used to spread the warp rather than a raddle provides a more orderly and evenly tensioned warp during beaming.

Make sure the warp is beamed under even tension (I prefer back-to-front warping), with paper or sticks between the layers. For even tension when I am tying on, I use a lashing method: Tie overhand knots in the warp threads close to the ends. Use a smooth, strong cord and lace the groups to the apron rod, leaving a space between the knots and the rod. Adjust the tension in the cord until it is absolutely even.

Even with my experience, I find that fine singles linen must be warped and woven with patience and care. You may find that the first 12–15" of a fine singles warp is fuzzy due to handling during threading, slewing, and knotting. Use this section for experimentation, as this fuzziness will not be eliminated during the finishing process.

### TROUBLESHOOTING FOR LINEN WEAVERS

Weaving difficulties most commonly occur at the selvages. Here are some problems you might encounter, along with possible solutions.

**PROBLEM** Fuzzy, fraying, and breaking singles warp ends, most often occurring with plain weave and excessive draw-in.

#### SOLUTIONS

1. Substitute edge threads with a plied thread of the same grit (for example, if your warp is a 20/1 singles, use a 40/2 plied linen for selvages).
2. Use a temple to keep your warp stretched out to the proper width.
3. Change the shed with the beater against the web.
4. Reduce stress on the selvages by decreasing the draw-in during weaving. Extend your arm well out when catching the shuttle. Relax the weft before re-entering the shuttle into the next shed.
5. Brush the warp with tallow or flax-seed solution. (Recipe for flax-seed solution: 1 teaspoon of flax seeds per cup of water. Simmer 10–15 minutes, strain. Keep refrigerated. Lasts about 2 weeks.)

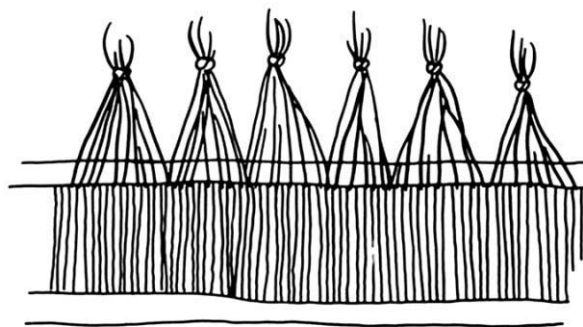
**PROBLEM** Loops at the selvages.

#### SOLUTIONS

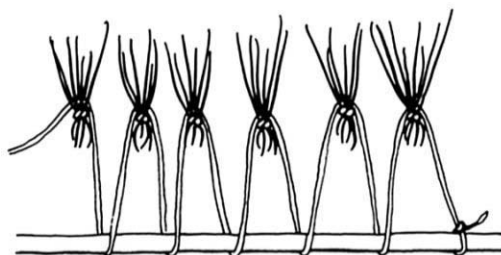
1. Decrease the angle of the weft so that there's less weft take-up.
2. To make your yarn less springy, dampen the weft by soaking the wound bobbin for about an hour in water and squeezing moisture into a thick towel. (If this is done, it should be done with all bobbins for the entire piece.)
3. Slow down the speed of the bobbin by wrapping the spindle of the shuttle with masking tape.

**PROBLEM** Notched or uneven selvages.

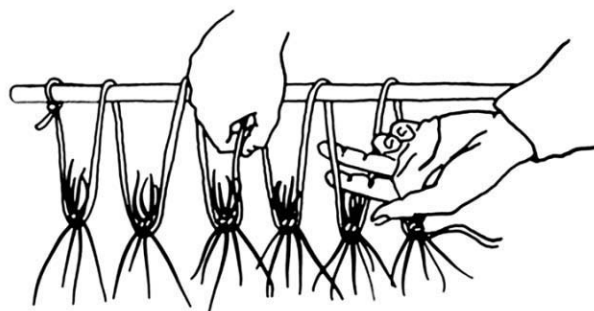
### TYING ON USING THE LASHING METHOD



Tie small groups of warp in overhand knots near the ends of the warps



Tie onto the front apron rod using a smooth, strong cord. Lace the knotted groups to the rod, leaving a few inches between the knots and the rod.



Adjust tension until it is absolutely even.

#### SOLUTION

Your bobbin may be unwinding unevenly. Rewind the bobbin, holding the yarn firmly and applying some tension during the winding process.

**PROBLEM** Loose thread in the middle of the warp.

#### SOLUTION

Tighten a loose thread by either weighting it at the back of the loom or drawing the slack forward and winding it around a pin. When the cloth is removed from the loom and prior to

washing, remove the pin and ease the slack out to the edge of the cloth.

**PROBLEM** Difficulty in achieving a balanced weave when it is required for handwork or for a square-patterned cloth.

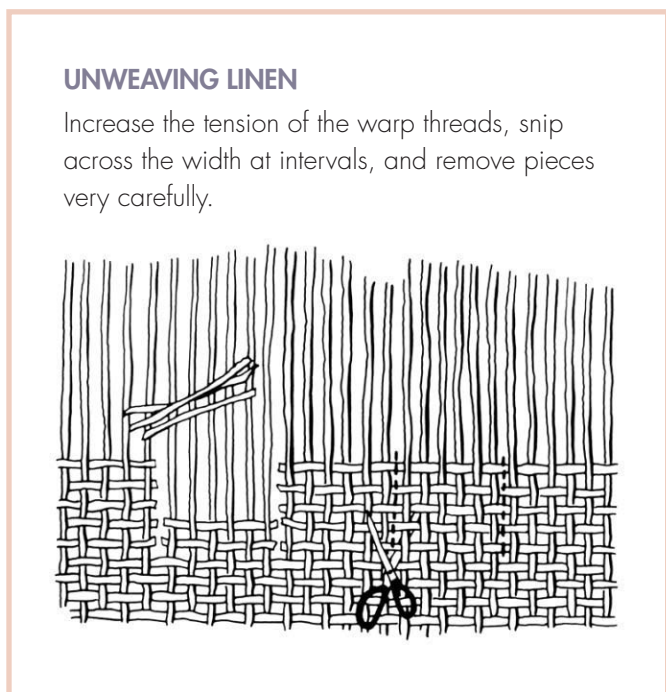
**SOLUTION**

Use a linen tester (measure or counter) to count the number of warp ends and weft picks per square inch. Count for a full inch, as weft take-up slightly increases the number of warp ends per inch from that originally set. Adjust the beat accordingly.

Advance the weaving frequently and consistently (I advance my warp every 2–3"). When possible, complete small articles at one sitting. If your atmosphere is dry, a humidifier or tub of water under the loom will help, for linen is stronger when damp. If air is excessively dry, relax the tension on the loom when leaving it for an extended period of time; otherwise, your warp ends may snap.

**UNWEAVING LINEN**

Unweaving a plied linen warp does not usually present problems. However, unweaving a fine singles linen warp might be horrific. Difficulties occur mostly with the edge threads, which may dissolve before your eyes (all the more reason to put those plied threads of the same grist at the edges). Increase the tension of the warp threads, do not attempt to unweave, but rather snip the weft at intervals across the width and remove the pieces very carefully. Do not use the beater, as a line of fuzz may become apparent on the web. If warp ends stick, separate the shed by hand or with a smooth stick.



**UNWEAVING LINEN**

Increase the tension of the warp threads, snip across the width at intervals, and remove pieces very carefully.

# PEACH AND WHITE CLOTH

**PROJECT NOTES**

In this bread cloth, the two blocks of lace alternate; they are separated and framed by stripes and bands of plain weave.

**FABRIC DESCRIPTION** Atwater-Bronson lace and plain weave.

**FINISHED DIMENSIONS**

Four bread cloths, 14¼" square each with ¼" hems on all four edges.

**WARP and WEFT**

1 6/2 linen at 2,400 yd/lb: 1,360 yd white (or off-white) and 340 yd peach.

**YARN SOURCES**

1 6/2 linen is available from most weaving retailers.

**NOTIONS** White sewing thread.

**TOTAL WARP ENDS** 314.

**WARP LENGTH**

3 yd (allows take-up, shrinkage, and 36" loom waste).

**E.P.I.** 20. **WIDTH IN REED** 15 7/10". **P.P.I.** 20.

**TAKE-UP and SHRINKAGE** 10% in width and length.

**WEAVING**

Begin and end with a heading of colorfast washable contrasting weft and separate cloths with 1–2 picks of the same yarn. Follow the treading for each square or change block orders for different designs. (For finishing, see page 16.)

**DRAFT FOR PEACH AND WHITE CLOTH**

	14x	5x	4x	5x	4x	5x	14x	1	2	3	4	5
		3		4		3			4		4	
	2	2		2		2		2		2		2
	1	1	1	1	1	1	1	1	1	1	1	1

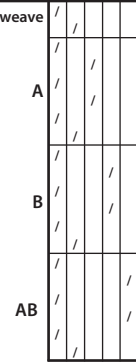
**WARP COLOR ORDER**

	7x	
64	8	8
250	20	20
314		

peach  
white

**TREADING**

Weave:  
(pw = plain weave)  
white pw 1 3/4"  
peach pw 8 picks  
white A 5x (30 picks)  
peach pw 8 picks  
white B 5x (30 picks)  
peach pw 8 picks  
white A 5x (30 picks)  
peach pw 8 picks  
white pw 1 3/4"



# PASTEL PLAID CLOTH

## PROJECT NOTES

In the pastel plaid cloth the two blocks are used together to create each square of lace at the intersections of the peach and lavender stripes; blue plain weave separates and frames the lace squares. When drafted this way the squares can be either solid lace or a lace frame with plain-weave center.

## FINISHED DIMENSIONS

Four bread cloths, 14¼" square each with ¼" hems on all four edges.

## WARP and WEFT

16/1 linen at 4,800 yd/lb: 1,050 yd light blue, 480 yd light peach, and 450 yd light lavender.

## YARN SOURCES

16/1 linen is available from The Lone Star Loom Room, Glimakra USA, and Vävstuga.

**NOTIONS** Matching light blue sewing thread.

**TOTAL WARP ENDS** 450.

## WARP LENGTH

2½ yd (allows take-up, shrinkage, and 27" loom waste).

**E.P.I.** 30. **WIDTH IN THE REED:** 15".

**P.P.I.** 30.

**TAKE-UP and SHRINKAGE** 10% in width and length.

## WEAVING

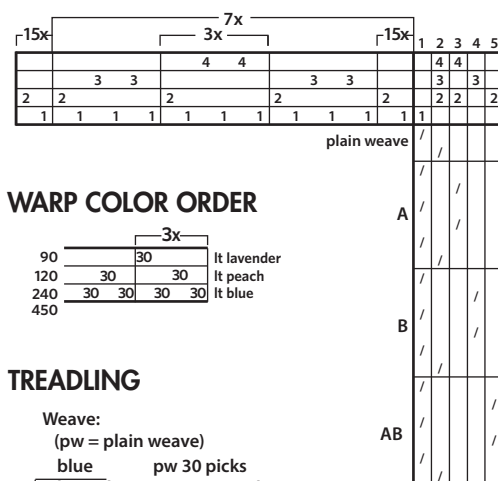
As for the Peach and White Square, begin and end each cloth with a colorfast washable heading or separator. In the cloth shown here, the lace blocks are woven combined, so that the lace fills the squares where the non-blue stripes and bands intersect. You could design your own treadling. (Keep in mind that in Atwater-Bronson lace, units of 6 ends will form open lace only if pattern is woven in the same block for two treadling units in succession. Units of Block A will make spots only and not lace if woven (or threaded) alone, and the same is true for Block B. You can weave a "hollow square" of plain weave outlined by spots, or the squares can be lace centers surrounded by plain weave.

## FINISHING

For both the Peach and White and the Pastel Plaid Cloths: Do not remove the headings, but machine stitch along the raw edges securely. Trim all warp ends and tails.

Soak the entire length of fabric in hot soapy water for an hour or longer, then wash, agitating by hand. Rinse well. (If

## DRAFT FOR PASTEL PLAID CLOTH



you do machine wash and rinse the fabric, remove it from the machine for the spin cycles to avoid setting in any creases.) Roll the fabric in a thick terry towel without wringing it. (To preserve the luster of linen and keep it from getting dry and fuzzy, never dry it in a dryer.) Block the blotted linen by hand to re-establish the shape of each square, place it face down on another towel, and iron firmly on a medium-hot setting. Move the iron lengthwise and crosswise on the fabric, but not diagonally. (Ironing it face down helps avoid flattening the floats of the lace.)

Machine staystitch each end of each cloth adjacent to the separating threads or headers. Cut the cloths apart, remove separators and headings, and trim all ends close to stitching. Turn and handstitch a narrow rolled hem on all four edges of each cloth.

## SOME THOUGHTS

Linen is perhaps most rewarding when it is used with lace weaves. There is something about the hand of a finished linen cloth that accentuates and maintains the open lacy holes. Weaving these bread cloth projects is a perfect way to learn about both linen and lace. Start with the Peach and White cloth to gain experience with a plied linen. Then move to the singles linen in the Pastel Plaid cloth. You'll soon understand why the linen cloth of the ancients is still so lovingly regarded today. For more about linen, look for my revised and expanded book (formerly titled *The Magic of Linen*) under a new title, *Linen: From Flax Seed to Woven Cloth*, to be published in 2010.

# TOPAZ LIGHTS LAP ROBE

BARBARA ELKINS

Wrap this brick-colored wool lap robe around your knees on cool winter nights. The Atwater-Bronson lace squares outlined with plain weave may look complicated, but this is an easy project and a good one for beginning weavers ready to tackle a wide warp.

Atwater-Bronson lace is threaded in units of 6 threads each. Usually, it is woven so that lace is formed by weft floats in each unit that allow 5 of the threads to slide together leaving lacy holes between units. The back of the fabric shows warp floats. A final float-stopping thread in both the warp and weft direction shows in each lacy hole. In turned Atwater-Bronson lace, both warp and weft floats show on both faces of the cloth (see "Turned Atwater-Bronson Lace," by Kathryn Wertenberger, pages 23–25).

The yarns used in this blanket are no longer available. Suggested instead are Harrisville Shetland for the 12/3 worsted wool used in the throw and Harrisville Highland for the bouclé. If you look for a bouclé yarn instead of the Highland, be sure to find one that is predominately wool or the two yarns will finish differently. For contrasting-color floats, try Harrisville Highland Rust as weft. Since Harrisville yarns come in a very wide range of colors, you can choose others to suit your own color preferences.

Because this is a relatively wide warp, draw-in can cause the selvedge yarns to fray and break. Bubble each pick generously to add extra length to the weft in each row and beat on an open shed to distribute the yarn across the width of the warp. ("Press" is a better word to use than "beat" for this throw.)

**FABRIC DESCRIPTION** Atwater-Bronson lace.

## FINISHED DIMENSIONS

31" by 56" plus 6" fringe on each end.

## WARP and WEFT

2-ply Harrisville Shetland wool at 1,800 yd/lb, 1,755 yd Garnet. 2-ply Harrisville Highland wool, 900 yd/lb, 100 yd Blackberry.

## YARN SOURCES

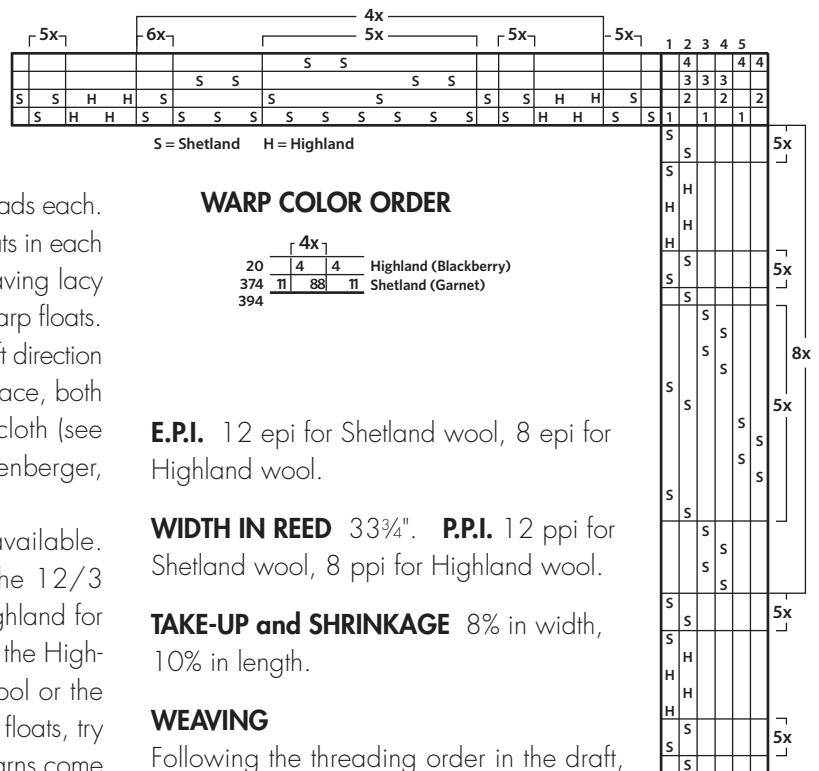
Shetland and Highland wools by Harrisville Designs are available from most weaving retailers.

**TOTAL WARP ENDS** 394.

## WARP LENGTH

2¾ yd (allows take-up, shrinkage, and 34" loom waste; loom waste includes fringe).

## DRAFT



**E.P.I.** 12 epi for Shetland wool, 8 epi for Highland wool.

**WIDTH IN REED** 33¾". **P.P.I.** 12 ppi for Shetland wool, 8 ppi for Highland wool.

**TAKE-UP and SHRINKAGE** 8% in width, 10% in length.

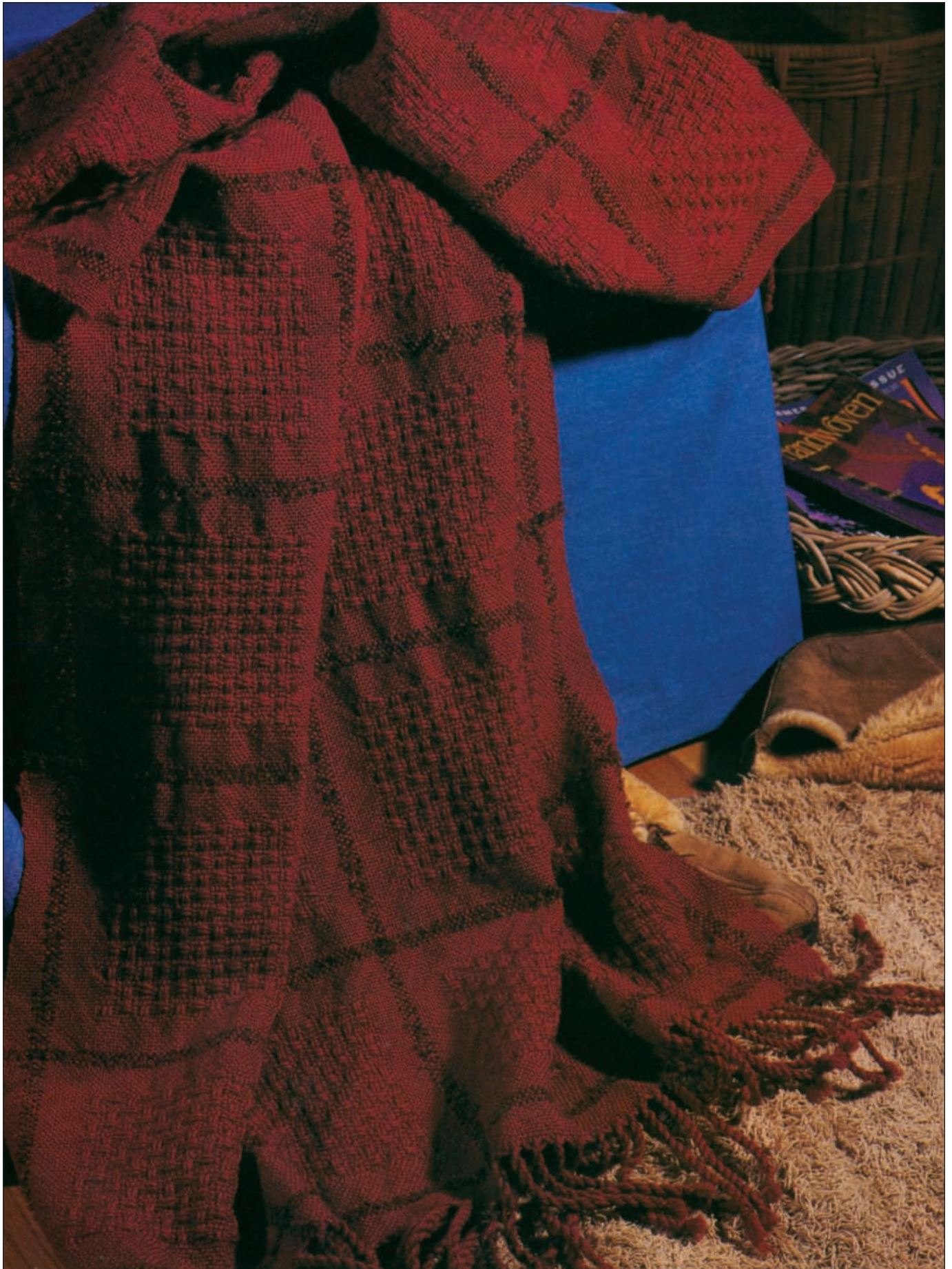
## WEAVING

Following the threading order in the draft, and using an 8-dent reed, sley the 394 ends at 1 end per dent for the Highland yarn and 1-2 for the Shetland yarn (1 end in the first dent, 2 ends in the second dent, and repeat, for a 33¾" width).

Weave a heading with scrap yarn to space the warp ends evenly and allow 8" for fringe before beginning the lap robe. Follow the treading sequence, maintaining a beat of 12 picks per inch to balance the weave. This is a relatively loose beat for these yarns, but the open sett allows the yarns to full during finishing. Measure your picks per inch carefully so you don't overbeat (lace sections will tend to pack in much more than plain weave sections). Bubble the weft and beat on an open shed to minimize draw-in. As is usually the case, the lace looks flat on the loom, but explodes into a lace texture as soon as the piece is removed from the loom and the yarns have a chance to relax. When you have finished the treading, allow 8" for fringe when you remove the fabric from the loom.

## FINISHING

At each end of the lap robe, make a twisted fringe of 6 ends per fringe and secure with an overhand knot. Handwash in cool water and mild soap. (Do not agitate excessively or the lace will disappear in the fulling.) Blot excess water in towels and air-dry. Steam press lightly. Trim fringe to 6".



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# RUNNER IN ATWATER-BRONSON-LACE PICK-UP

BOB OWEN

## PROJECT NOTES

Each square on this graph represents one unit of eight warp threads and eight weft threads (these are larger units than usual; you can use the same graph for 6-thread units.) Picking threads up produces plain weave in a unit; threads not picked up weave lace. Warp stripes that always weave plain weave (on the selvedge in this runner) are threaded on shafts 1 and 2.

For each row in the graph: Raise shaft 3. Each group of 3 raised threads represents one design square. Working from the outside of the open shed, pick up a group of 3 for each x in the row. Lower shaft 3, raise shaft 2, push the pickup stick toward the reed, and weave. Remove the pickup stick, beat, raise shaft 1, weave, and beat. Repeat this sequence two times. Raise shafts 2 and 3 together, weave, and beat; raise shaft 1, weave, and beat. There are 3 pick-ups for every 8 picks (see treading draft).

Hints: Because the shed under the pick-up stick is narrow, use a slim shuttle or a stick shuttle. Lifting the pick-up stick with your free hand also helps clear the shed.

**FABRIC DESCRIPTION** Atwater-Bronson lace with pick-up.

## FINISHED DIMENSIONS

15" by 51" with 3/4" hems.

## WARP and WEFT

10/2 pearl cotton at 4200 yd/lb: 1,750 yd natural.

## YARN SOURCES

10/2 pearl cotton is available from most weaving retailers.

**TOTAL WARP ENDS** 408.

## WARP LENGTH

2 1/2 yd (allows take-up, shrinkage, and 27" loom waste).

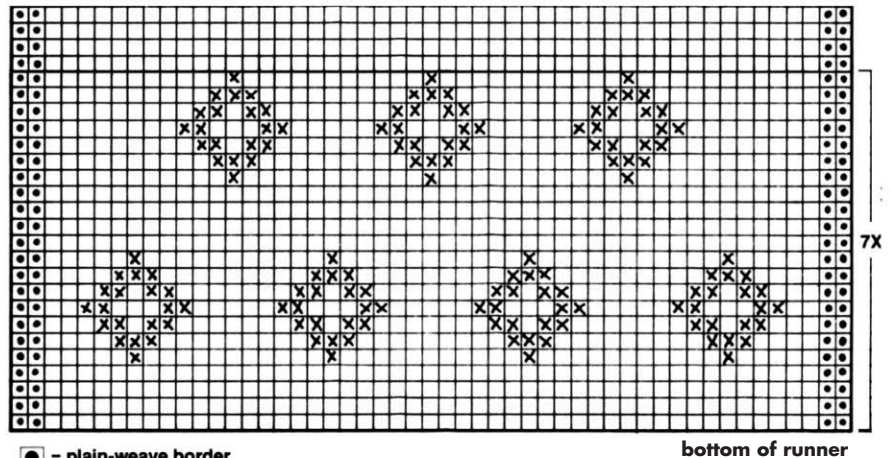
**E.P.I.** 24.      **WIDTH IN REED** 17".      **P.P.I.** 24.

**TAKE-UP AND SHRINKAGE** 12% in width, 10% in length.

## WEAVING

Note that shaft 1 requires 204 heddles (you can shift half of these threads to shaft 4 and raise 1 and 4 together. Weave 2" plain weave. Then weave 2 picks of 5/2 cotton or its equivalent

## DESIGN GRAPH

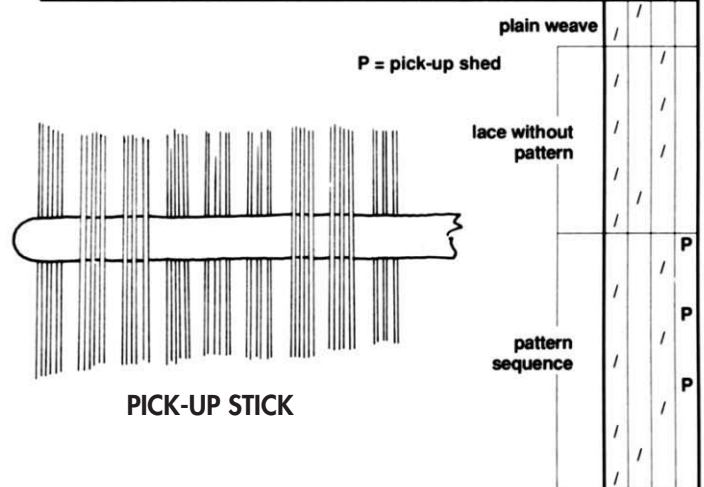


- = plain-weave border
- X = pick-up (plain weave)
- = lace pattern

bottom of runner

## DRAFT

border 2X				47X			border 2X					
				3	3	3					3	3
2	2	2	2	2			2	2	2	2	2	2
1	1	1	1	1	1	1	1	1	1	1	1	1



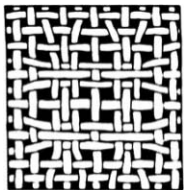
PICK-UP STICK

lent (to be removed later). Weave 2 picks of plain weave and then follow the graph for the runner. (I measured 23 picks per inch under tension for 24 picks per inch off the loom.) End with 2 picks plain weave, 2 picks 5/2 cotton, and 2" plain weave.

## FINISHING

Machine stitch raw ends and trim. Pull out the 5/2 temporary weft. Turn ends under 1/4" and bring fold to the space where the wefts were withdrawn. With a length of 10/2 cotton four times the width of the runner, hemstitch around every 4 warp ends in the space, stitching into hem fold to secure.

Machine wash in warm water. Tumble dry on low heat. Remove from dryer while still damp and lay flat to dry completely. Steam-press.



The plain-weave design in this Atwater-Bronson lace runner is worked using a very simple pick-up technique. Though it appears much more complicated, this attractive runner requires just three shafts to weave. A hemstitched edge adds elegance to the piece. Practice with this runner and then use pick-up techniques for more elaborate designs. You can choose Atwater-Bronson units of 4 ends, 6 ends, or 8 ends. Not only will you have lovely results, but you'll really understand how lace weaves work.

Originally published in *Handwoven*®, March/April 1992, pp. 56–57, 85–86.

# DAISY CHAIN RUNNER

ALISON IRWIN

## PROJECT NOTES

To weave this design on four shafts, I threaded both pairs of flowers on the same two lace Bronson blocks. While one pair of flowers is treadled, a shed stick holds down the unused pattern ends of the second pair. If six shafts are available, the pattern can be woven loom-controlled.

**FABRIC DESCRIPTION** Atwater-Bronson lace.

## FINISHED DIMENSIONS

13" by 28" with 1" hems on all four sides.

**WARP and WEFT** 20/2 wet-spun tow linen at 3,000 yd/lb: 910 yd bleached white.

## YARN SOURCES

20/2 wet-spun tow linen is from Henry's Attic.

## NOTIONS AND OTHER EQUIPMENT

A pick-up stick at least 22" long and as wide as your shuttle height; matching sewing thread.

**TOTAL WARP ENDS** 336.

## WARP LENGTH

1¾ yd (allows take-up, shrinkage, and 30" loom waste).

**E.P.I.** 20.      **WIDTH IN REED** 16¼".      **P.P.I.** 20.

**TAKE-UP and SHRINKAGE** 11% in width and length.

## WEAVING

Hemstitch each end. Weave 3" plain weave, ending with treadle 2. For the pattern area, weave the center daisies, 12 picks plain weave, the edge daisies, 24 picks plain weave, the edge daisies, and 12 picks plain weave. Repeat this sequence twice. End with the center daisies and 3" plain weave.

**On four shafts:** Note that there are four daisies across the width of the runner, each threaded ABA. The pick-up stick will take the path of the weft, holding pattern threads down in a block for a weft float, up in a block for plain weave.

**Weave the Block B petals of center daisies as follows:**

Row 1: Lift shaft 1 and throw the shuttle.

Row 2: Lift shafts 2, 3, 4. Slide the pick-up stick through the shed and at the edge of the second daisy, drop shaft 4. Move the stick through this new shed to the outside edge of the third daisy. Lift shaft 4 again and carry the stick through the rest of the shed. Turn the stick on edge and throw the shuttle. This creates a float in Block B in the center pair of daisies. Repeat Rows 1, 2, 1. Weave with treadle 2. Repeat the above (for a total of 12 picks).

**Weave the Block A petals of the center daisies** in the same way, except drop shaft 4 for daisies 2 and 3.

**Weave the Block B petals of the edge daisies as follows:**

Row 1: Lift shaft 1 and throw the shuttle.

Row 2: Lift shafts 2 and 3. Slide the stick through the shed, to the edge of the second daisy, lift shaft 4. Move the stick through this new shed until you get to the fourth daisy; drop shaft 4. Continue to the selvedge, turn the stick on edge, and throw the shuttle. Repeat Rows 1, 2, 1. Weave with treadle 2. Repeat the above (for a total of 12 picks).

**Weave the Block A petals of the edge daisies** in the same way except start by lifting shafts 2 and 4 and adding shaft 3 when you are weaving daisies 2 and 3.

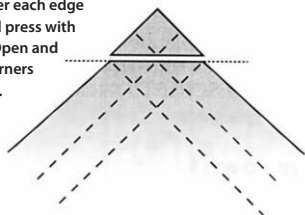
**On six shafts:** Weave as above following the 6-shaft draft.

## FINISHING

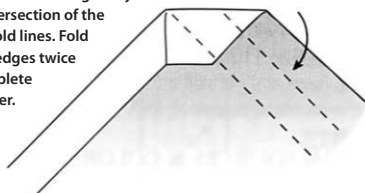
Cut the fabric from the loom. Wash by hand in hot water with mild dishwashing liquid. Do not crease or wring. Rinse well in clear water of the same temperature. Gently pat the wet fabric between two flat towels to remove excess moisture. Cover the ironing board with a clean smooth cloth and iron the damp fabric dry with a hot iron, protecting the surface with a press cloth. When the fabric is dry, repeat the washing and ironing. Hem the runner by turning under all four edges twice (trim off the hemstitching to reduce bulk in the hem). Miter the corners as shown and sew hems by hand.

## MITERING CORNERS

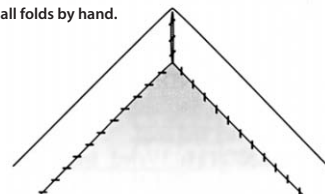
Fold under each edge twice and press with an iron. Open and cut off corners as shown.



Fold the corner diagonally at the intersection of the inner fold lines. Fold under edges twice to complete the miter.



Sew all folds by hand.





# TURNUED ATWATER-BRONSON LACE

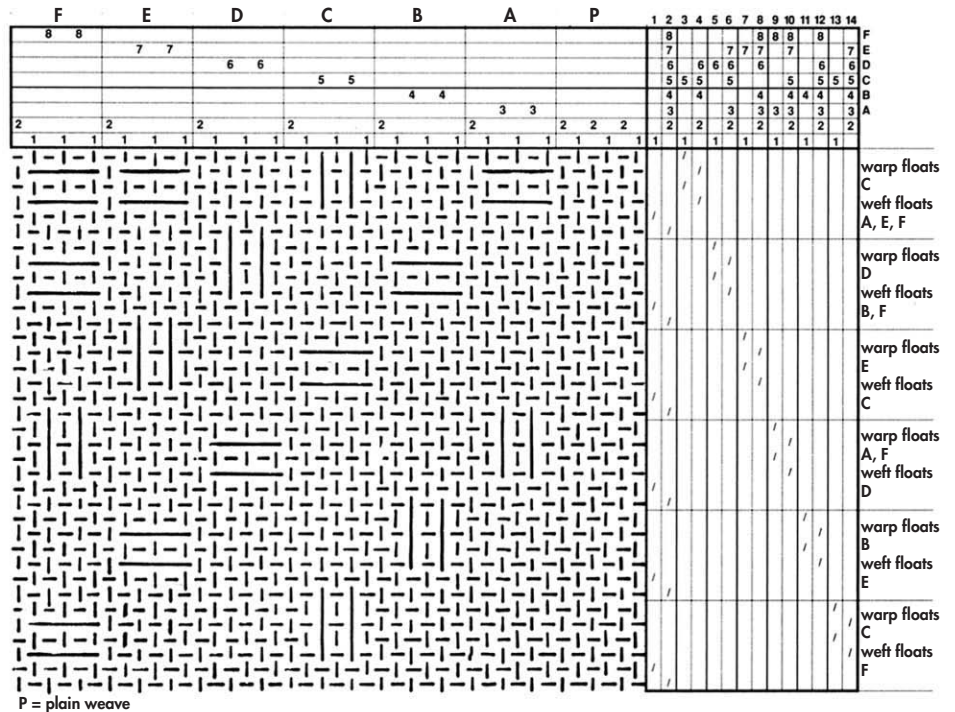
BY KATHRYN WERTENBERGER

Atwater-Bronson lace is characterized by areas of plain weave contrasting with lacy areas formed by weft floats on one side of the cloth and warp floats on the other side. These lacy areas are made more distinctive if a smooth yarn in a color(s) that is light to medium in value is used. Normally, the warp and weft are the same or very close in value.

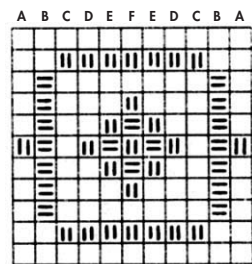
Atwater-Bronson lace is a true unit weave. The only difference in the threading for each block is the shaft (3 through 8, etc.) on which the pattern ends are threaded. The 6 ends in each unit are threaded in the following order: shaft 1, a pattern shaft, shaft 1, the same pattern shaft, shaft 1, shaft 2. Units in the same block can be repeated (Block A can follow another Block A) in both the threading and treadling without long floats. In fact, for lacy holes to result, two consecutive blocks in the threading and treadling must be woven as lace, but they need not be in the same block when they do. Isolated units woven as lace will appear as spots. (Spot Bronson, a similar weave, is missing that last end on shaft 2 that secures weft floats, and thus blocks cannot be repeated.)

Turned Atwater-Bronson lace differs from the traditional form in that both warp and weft floats appear on the same cloth surface. We can accent the different floats by using yarns with different values in the warp and weft. The degree of difference in value that is effective depends on the amount of plain weave in the design, as the plain-weave areas form a middle value between the warp and weft colors.

## 8-SHAFT DRAFT FOR TURNED LACE

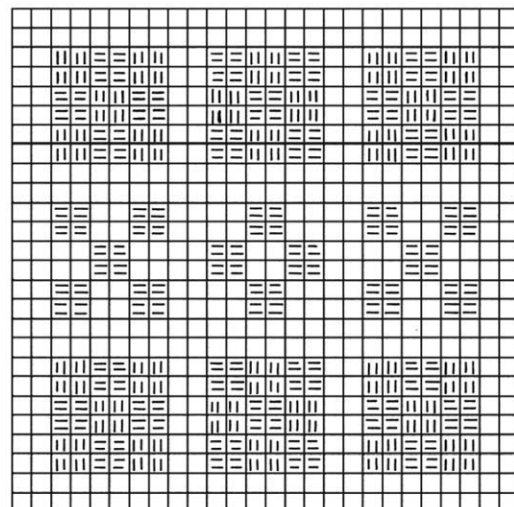


### DESIGN #1

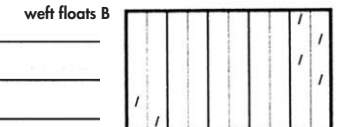
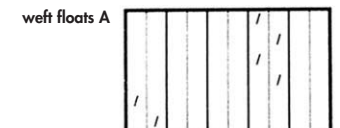
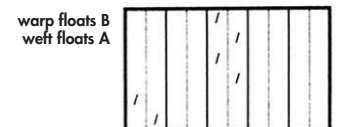
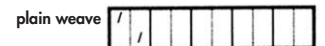
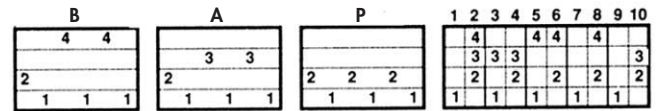


warp floats A, D, F weft floats B, E  
warp floats E, weft floats B, F  
warp floats F, weft floats B  
weft floats B  
warp floats CDEF

### profile threading



### 4-SHAFT THREADING AND TREADLING UNITS



Treadles 1, 7, 9 are the same; so are 4 and 10, 5 and 8.

One graphed row equals one treadling unit (6 picks). In this design, each pattern effect is woven two times (12 picks).



Originally published in *Handwoven*®, March/April 1992, pp. 58–59, 86.

### DESIGNING TURNED ATWATER-BRONSON LACE

Creating both warp and weft floats is done by manipulating the tie-up. Note that in the drawdown in the 8-shaft draft for turned lace, the warp floats are shown as vertical lines, weft floats as horizontal lines. To produce a warp float, the pattern shaft of the desired block is added to treadle 1 (and becomes a new treadle used for the first and third picks). For example, shaft 5 is raised with shaft 1 to produce a warp float in Block C; see the first and third picks in the first treadling sequence.

To produce a weft float, the pattern shaft of the desired block is subtracted from treadle 2; this new treadle is used for the second and fourth picks. For example, treadle 4 shows the pattern shafts from blocks A, E, and F (3, 7, and 8) deleted, resulting in shafts 2, 4, 5, and 6 being raised to form the second and fourth picks of the weaving. Blocks A, E, and F will therefore produce weft floats.

A unit of treadling is a 6-pick sequence in which shafts for warp floats are added for first and third picks and shafts for weft floats subtracted for second and fourth picks followed by a pick with treadle 1 (shaft 1 only) and then a pick with treadle 2 (shaft 2 plus all other pattern shafts). In the first treadling unit in the 8-shaft draft, warp floats appear in Block C and weft floats in Blocks A, E, and F. Compare the other treadling units with the drawdown to see how these additions and subtractions occur for each pair of pattern treadles.

To design turned lace, use large square-grid paper and let each square represent a lace unit of 6 threads. Pencil in vertical lines to indicate a unit with warp lace and horizontal lines to indicate weft lace (see Designs #1 and #2). Squares left blank will be plain weave. Experiment with a threading profile draft, make a design, and see if you can create a tie-up. Even on four shafts, complex-looking designs are possible (as in Design #2).

## 8-SHAFT THREADING UNITS

F			E			D			C			B			A		
8	8		7	7		6	6		5	5		4	4		3	3	
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

## TURNED-LACE PLACEMATS

Dark warp floats and light weft floats interplay with a plain-weave blend of the two colors in the turned Atwater-Bronson lace project placemats; see the photo on page 24. Note that turned Atwater-Bronson lace can also be woven on four shafts, although it lacks the pattern versatility of the multishaft form since it is limited to two-block patterns. By playing with graph paper and block arrangements such as the one in Design #2, however, you can create lovely effects. If you have a 4-shaft loom, try making an original design to use with these warp and weft yarns for similar placemats. On eight shafts, use the threading profile given here, play with other designs on graph paper, and then create your own tie-up and treadling orders. Blocks can also be threaded to weave plain-weave background throughout, adding to design options.

### PROJECT NOTES

The turned-float effect is more apparent in a fabric when the warp and the weft are slightly different colors or values. Weft floats in one color contrast with warp floats of the other color while the two colors blend in the plain-weave areas. Since only one shuttle is used, these placemats weave very rapidly. I found it helpful to wax the selvedge threads to prevent the linen from fraying (you could consider using a temple, or stretcher, too, to prevent draw-in).

**FABRIC DESCRIPTION** Turned Atwater-Bronson lace (warp and weft floats on both faces of the cloth).

### FINISHED DIMENSIONS

Eight placemats, 12" wide by 21" each with ½" hems on each end.

### WARP and WEFT

16/2 linen at 2,580 yd/lb: 1,833 yd rose pink for warp and 1,593 yd bright pink for weft. 40/2 linen, 50/3 cotton or 40/3 cotton sewing thread for hems: 210 yd of a harmonizing pink (I used this for the part of the hems that are turned under to reduce hem bulk).

### YARN SOURCES

16/2 linen is available from many weaving retailers. I used Borgs in #0468 rose pink and #0283 bright pink.

## DRAFT

2x			3x						2x			
F	F	F	8				8	8	8	8	8	8
E	E	E	7				7	7	7	7	7	7
D	D	D	6	6	6	6	6	6	6	6	6	6
C	C	C	5	5	5	5	5	5	5	5	5	5
B	B	B	4	4	4	4	4	4	4	4	4	4
A	A	A	3	3	3	3	3	3	3	3	3	3
			2	2	2	2	2	2	2	2	2	2
			1	1	1	1	1	1	1	1	1	1
plain weave												
warp floats C weft floats A, E, F			a	/	/	/	/	/	/	/	/	/
warp floats D weft floats B, F			b	/	/	/	/	/	/	/	/	/
warp floats E weft floats C			c	/	/	/	/	/	/	/	/	/
warp floats A, F weft floats D			d	/	/	/	/	/	/	/	/	/
warp floats B weft floats E			e	/	/	/	/	/	/	/	/	/
warp floats C weft floats F			f	/	/	/	/	/	/	/	/	/

**NOTIONS** Matching sewing thread.

**TOTAL WARP ENDS** 282.

### WARP LENGTH

6½ yd, (allows take-up, shrinkage, and 32" loom waste).

**E.P.I.** 20. **WIDTH IN REED** 14¼". **P.P.I.** 20.

**TAKE-UP and SHRINKAGE** 15% in width, 12% in length.

### WARPING AND WEAVING

Begin and end each mat with 1" plain weave using the fine yarn (for hems). Weave each placemat with bright pink linen, as follows: f, e, d, c and repeat. Then weave f, e, d, c, b, a, b, c, d, e six times and end with f. Finally, weave c, d, e, f twice. Beat firmly, making sure you are achieving a consistent 20 picks per inch.

### FINISHING

Secure raw edges with machine stitching. Machine wash in hot water, partially air-dry. Press on both sides with a hot iron.

### ASSEMBLY

Cut placemats apart and, for each mat, turn the ends with finethread weft under twice, and sew hems by hand.

# LEARNING FROM *HANDWOVEN* MAGAZINE

MARGARET GAYNES

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It has been years since I learned how to weave on a floor loom (though long before that I had an illustrious career weaving looper potholders). I've never stuck with another craft this long. My knitting phase lasted through college, I toyed with crewel embroidery until I had a very nice flower picture for my wall, and I gave up on appliqué even before finishing a pillow top. When I found weaving, I realized that its variety appealed to me. I can make things to wear or to use in my home, and I never seem to run out of ideas.

As a brand-new weaver, I learned a lot just from studying the projects in *Handwoven*. Though it's possible to duplicate a project in *Handwoven* for your own use, it's more fun and educational to go a step further and add your own ideas. I don't hesitate to change the color, size, yarn, pattern, or even the use for which the project was intended.

## COLOR

Change the colors in a project to match your decor, skin tone, or preference. Don't reject a project idea because you don't like the colors; make it yours by changing them. The best way to learn about color is to work with it.

## SIZE

The dimensions of the placemats, scarves, garments, and other projects are what worked for the designer; they may not be right for you. For example, measure to make sure that the placemats are a good size for your dishes. Whenever you change the size, though, remember that you'll have to change the number of pattern repeats as you change the number of threads. From the take-up and shrinkage information, calculate how many warp ends you'll need for the new size and then how many repeats are needed, adding or subtracting a few ends to make the number of repeats come out even.

## YARN

The yarn specified for a project may not be easy to find—or no longer available—or you may have something on your shelf that would be suitable. If you change to a different yarn, choose an appropriate sett for it, taking into consideration its potential for fulling and shrinking. My not-too-successful linen placemats taught me a valuable lesson. When my local yarn store didn't have exactly the linen yarn called for in the instructions, I substituted a weft yarn that "looked about the same" and a warp yarn that "looked pretty close." However, because both yarns were finer than the ones specified in the

original project, I should have adjusted the sett accordingly. I didn't, and the result was a set of placemats that were limp and not quite rectangular, the result of a too-open sett and linen's unforgiving nature. I placed them proudly on my dining room table when my parents were visiting but decided to stop using them when I noticed that my mother spent the entire meal trying to wiggle her placemat into a rectangle.

## PATTERN

To change drafts to suit your own purposes, you'll need to know how to make a drawdown. I did my first really big drawdown modifying a draft from Marguerite P. Davison's classic *A Handweaver's Pattern Book* to the proportions I wanted. A computer weaving program is helpful, but it is not a substitute for knowing what you are doing.

## FABRIC USE

If you're inspired by the colors in a rug but don't weave rugs, consider using the colors in another project. If you like the weave structure in a towel, perhaps you can use it for a table runner. Think about appropriate fibers for your fabric purpose and change them accordingly. If you like the way a silk scarf looks but you want it to be a table runner, choose cotton or cottolin instead of silk. Look at other table-runner projects to make yarn and sett selections.

As you've probably guessed, I save all my issues of *Handwoven*. An article that doesn't jump out at me when I first read it may be just what I need later. I'm always surprised when I look through old magazines—I see articles I never noticed before! I also use the indexes (find them online at [weavingtoday.com](http://weavingtoday.com) under Magazines). When I'm planning to weave a jacket, I look at jackets in back issues for ideas for fibers and patterns. If I'm planning to try an unfamiliar weave structure, I check back issues for pointers on appropriate yarns and setts. Many guild libraries have complete sets, and back issues are usually available from Interweave. Ebooks like this one are also great ways to acquire projects from back issues organized according to types of fabrics.

I hope that these tips give you some ideas for how you can learn from and be inspired by the articles in *Handwoven*. If you like an idea used in a project, think about how you can adapt it to your needs. The scarf project on pages 27–28 was inspired by a blouse featured in a 1984 issue of the magazine (see a photo of the blouse on page 27). I like to imagine that you will turn it into a table runner or towel!

The Atwater-Bronson lace draft (see below) used for the scarf on page 28 is the same draft that Betty Davenport uses for the Country Silk Top (at right) appearing in the May/June 1984 issue of *Handwoven* (pages 59 and 102). Two units of Block B alternate with one unit of Block A throughout the threading. For the lace section in the top (and for the length of the scarf), Block A weaves lace and Block B weaves plain weave. The result is vertical stripes of contrasting textures (you can see stripes of single lacy holes if you hold the piece up to the light; a more open sett increases this effect).

Both the warp and weft in the top are tussah silk at 1,800 yd/lb with a sett of 12 ends and picks per inch. Yarn texture and relative density of threads emphasize the float aspects of this weave rather than its potential lacy effects, which are more evident in the scarf. This draft could be used for placemats, towels, runners, and more. Consider 10/2 pearl cotton at 24 ends per inch for towels, for example. Warp stripes of plain weave threaded on shafts 1 and 2 can separate the vertical lace ribs for another design option.



## SILK LACE SCARF (page 28)

### PROJECT NOTES

The warp in this scarf is a silk bouclé. It is not a smooth yarn, and its texture helps maintain the spaces between warp yarns, emphasizing the lacy holes. The weft floats, in the shinier silk cord, stand out in contrast to the more matte bouclé. The vertical stripes of lace make the hand of the scarf especially supple in the warp direction, perfect for gathering together around the neck.

**FABRIC DESCRIPTION** Atwater-Bronson lace.

### FINISHED DIMENSIONS

7" by 57" plus 3" fringe at each end.

### WARP and WEFT

Warp: silk bouclé at 4,500 yd/lb, Fine Bouclé #98, 398 yd blue-violet (color #34). Weft: 2-ply silk at 6,680 yd/lb, 2-ply Silk Cord #73, 272 yd blue-violet (color #34).

### YARN SOURCES

Fine Bouclé and Silk Cord are from The Silk Tree.

**TOTAL WARP ENDS** 159.

### WARP LENGTH

2½ yd (allows takeup, shrinkage, and 27" loom waste; loom waste includes fringe).

### DRAFT

8x												1	2	3	4				
4	4	4	4					4	4	4	4					4	4	4	4
								3	3							3			
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
												plain weave							
												lace							

**E.P.I.** 18 (2-1 in a 12-dent reed; sley the first 2 ends on shafts 1 and 2 in a single dent and the last end on shaft 1 in a single dent, and then sley the rest 2-1 throughout).

**WIDTH IN REED** 8⅞". **P.P.I.** 18.

**TAKE-UP and SHRINKAGE** 12% in width, 10% in length.

### WARPING AND WEAVING

At each end of the scarf, allow at least 4" unwoven for fringe. Spread the warp with scrap yarn in plain weave. Weave 6 picks of plain weave with silk cord and then hemstitch over the first 2 picks including the 6 ends from each unit in each stitch. Weave the lace pattern for 62". Finish with 6 picks of plain weave and hemstitching as at the beginning.

### FINISHING

Cut the scarf from the loom allowing about 4" for fringe and wash by hand gently in lukewarm water with mild soap. Lay flat to dry. Press with a cool iron if needed. Trim fringe to 3".



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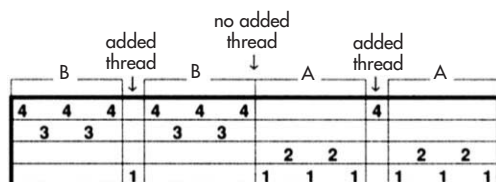
# THE SWEDISH-LACE STORY

DONNA MULLER

I think of Swedish lace as a structure midway between huck lace and Atwater-Bronson lace. Historically, it was limited to drafts on four shafts. As we shall see, Swedish lace is not a true unit weave, although in ways it behaves like one.

## THREADING

In Swedish lace, a group of threads in Block A is threaded 1, 2, 1, 2, 1, and a group in Block B is threaded 4, 3, 4, 3, 4. When groups of the same block are threaded in succession, a thread that secures the floats must be added (it behaves similarly to the thread on shaft 2 in Atwater-Bronson lace). In Swedish lace, however, the shaft for the added thread changes, depending on which groups the thread is separating. For A groups, a thread is inserted on shaft 4: 1, 2, 1, 2, 1, **4**, 1, 2, 1, 2, 1, **4**, 1, 2, 1, 2, 1, and so forth. For B groups, a thread is added on shaft 1: 3, 4, 3, 4, 3, **1**, 3, 4, 3, 4, 3, **1**, 3, 4, 3, 4, 3, and so forth. A thread need not be added when a Block A group is followed by a Block B group or vice versa. (This transition thread is the reason that Swedish lace is not a true unit weave; the threading units for any given block in a unit weave do not vary.)



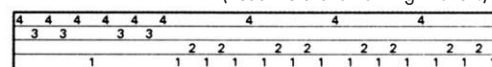
Areas of solid plain weave can be inserted into the threading between any two groups; that is, between two A's, between two B's, where A changes to B, or vice versa. Plain weave is threaded by repeating 1 and 4. Be careful to avoid threading 2 ends next to each other on shaft 1 by watching where the plain-weave areas occur. When threaded between an A group and a B group, plain weave starts on 4 and ends on 1. Between B and A, it works the other way around. Whatever the design scheme, it's usually a good idea to add at least a few threads of plain weave for stability at each selvage of a Swedish-lace fabric.

Swedish lace is almost always based on groups of 5 threads, though there is no logical reason why the basic group can't consist of 3 or 7 threads. For a 3-thread version, A is threaded 1, 2, 1 and B is threaded 4, 3, 4. For a 7-thread version, A is 1, 2, 1, 2, 1, 2, 1 and B is 4, 3, 4, 3, 4, 3, 4. The added thread between groups of the same block and the areas threaded for plain weave are the same for threading groups of any length.

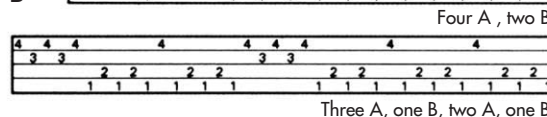
## THREADING

(Read the drafts from right to left.)

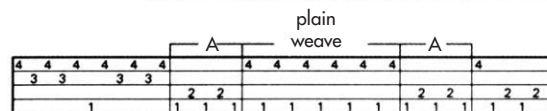
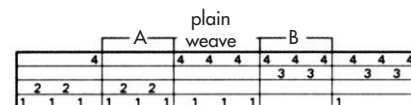
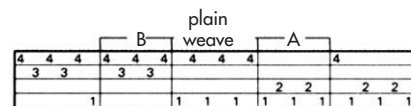
### BLOCKS



### A AND B



## ADDING PLAIN WEAVE



## TREADLING

Swedish lace can be treadled as either warp-float lace, weft-float lace, or plain weave, but there are limitations on how these options can work together. The possibilities are summarized as follows (see a draft for each option on page 31):

OPTION	BLOCK A	BLOCK B
I	weft lace	plain weave
II	plain weave	weft lace
III	warp lace	plain weave
IV	plain weave	warp lace
V	warp lace	weft lace
VI	weft lace	warp lace
VII	plain weave	plain weave

Note that it's impossible for Blocks A and B to weave as the same type of lace (warp or weft) at the same time. When both blocks weave as lace, they are "turned"; that is, one weaves warp-float lace while the other weaves weft-float lace. This is another reason that Swedish lace is not a unit weave. In unit weaves, each block can weave the same pattern or background interlacement independently and without restrictions.

Traditional treadlings usually arrange designs in which one block weaves lace, the other plain weave; the reverse of that; and where both blocks weave plain weave. The general treadling order is like that for Atwater-Bronson lace: tabby (plain weave), pattern (lace float), tabby, pattern, tabby, opposing tabby. The two tabby sheds switch roles depending on the warp or weft orientations of the lace blocks.



In this elegant Swedish-lace pillowcase, blocks of weft-float Swedish lace alternate in the border. At the edge of the border, both blocks weave lace (one block is weft-float and the other is warp-float lace) to make a solid lace band. After you read about the way Swedish lace works, you will be able to design pillowcase borders, table linens of all types, and fabrics for garments that combine lace blocks and the directions of their floats (see page 32 for pillowcase instructions).

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When a treadling sequence is repeated, all 6 picks are repeated in order. When you switch to a treadling sequence in which the roles of the tabby sheds reverse, *you must leave out 1 pick*. In the first example under Treadling Considerations, the weft-float lace pattern moves from the A block to the B block in subsequent treadling sequences. If the second treadling sequence directly follows the first one, a pick is repeated. One pick of the identical pair must be omitted. At the point when the blocks shift, the last pick of the old treadling sequence becomes the first pick of the new one.

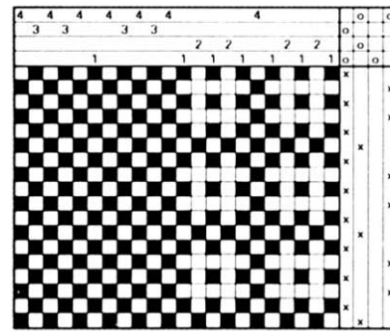
Shifts in treadling sequences that do not cause doubled picks require no adjustment (see the last example under Treadling Considerations).

### DESIGNING SWEDISH LACE

The design possibilities for 4-shaft Swedish lace include the seven ways in which the two blocks can combine. The only options not allowed are for both blocks to weave warp-float lace or both blocks to weave weft-float lace.

Classic examples of Swedish lace are usually in one color, often white linen, and simply alternate rectangles of plain

### REPEATED IDENTICAL TREADLINGS

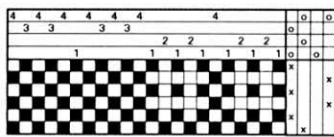


weave and lace (perhaps of varying sizes)—all warp lace or all weft lace on a given side, without combining blocks.

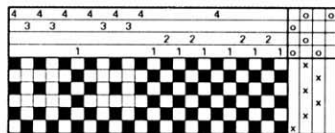
Just a little time spent graphing profile designs will provide you with many more ideas; see just six possibilities for a small asymmetrical block arrangement on page 32.

Note: This article is excerpted from the chapter “Swedish Lace” in *Handwoven Laces* by Donna Muller (Loveland, Colorado: Interweave, 1991).

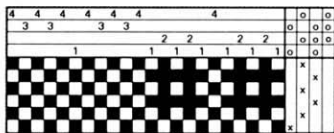
### SWEDISH LACE TREADLINGS



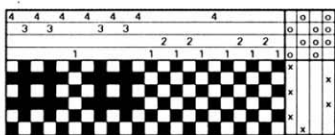
Option I  
A = weft-float lace  
B = plain weave



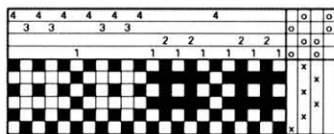
Option II  
A = plain weave  
B = weft-float lace



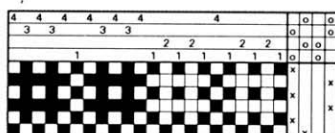
Option III  
A = warp-float lace  
B = plain weave



Option IV  
A = plain weave  
B = warp-float lace

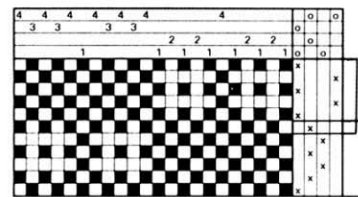


Option V  
A = warp-float lace  
B = weft-float lace

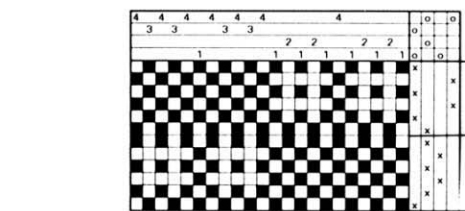


Option VI  
A = weft-float lace  
B = warp-float lace

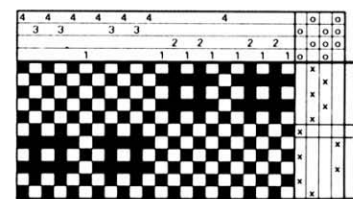
### TREADLING CONSIDERATIONS: MOVING FROM ONE OPTION TO ANOTHER



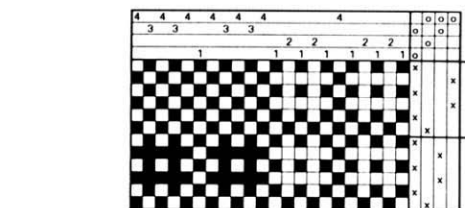
Option I to II  
A = weft-float lace  
B = plain weave



Incorrect  
Option I to II  
A = weft-float lace  
B = plain weave



Option III to IV  
A = warp-float lace  
B = plain weave



Option I to VI  
A = weft-float lace  
B = plain weave  
A = weft-float lace  
B = warp-float lace

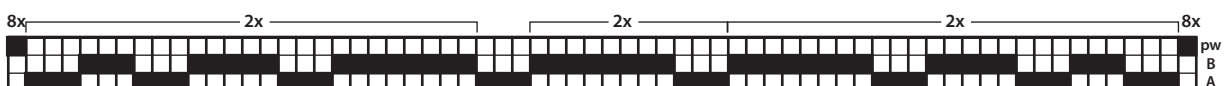
## DESIGN VARIATIONS USING AN ASYMMETRICAL PROFILE DRAFT

### THREADING KEYS

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

Repeat right threading for plain weave (8x) at beginning, left (8x) at end. Omit last thread in lace threading groups at block changes.

### PROFILE THREADING DRAFT



## PROJECT NOTES FOR SWEDISH-LACE PILLOWCASES

Because most of the weaving in these pillowcases is plain weave, with a border on only the front half of the pillowcase, this project is a relatively easy way to try a fine-thread lace weave with elegant effect.

**FABRIC DESCRIPTION** Swedish lace and plain weave.

### FINISHED DIMENSIONS

Fabric 19¼" by 70" for two pillowcases 18¾" by 31" each with 2" hems on the open end.

### WARP and WEFT

20/2 pearl cotton at 8,400 yd/lb, 6,840 yd white.

### YARN SOURCES

20/2 cotton is available from most weaving retailers.

**NOTIONS** White cotton sewing thread.

**TOTAL WARP ENDS** 753.

### WARP LENGTH

5¾ yd (allows take-up, shrinkage, and 27" loom waste).

**E.P.I.** 36. **WIDTH IN REED** 21½". **P.P.I.** 36.

**TAKE-UP and SHRINKAGE** 8% in width, 11% in length.

### WEAVING

For both pillowcases, weave 7½" plain weave for hem, the lace border (about 5"), and then plain weave until entire piece measures 75". Repeat for second case, separating cases with 1–2 picks in a colorfast contrasting color.

### FINISHING

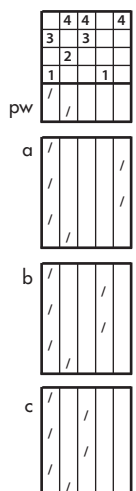
Machine staystitch both ends of each case. Wash by hand, liquid detergent. Roll in towels to blot out excess moisture. Iron with hot iron until dry.

### ASSEMBLY

Cut cases apart, and for each one: Fold fabric in half end to end, wrong sides together. Stitch side seams with ¼" seam allowance. On open end of case, fold up 2" twice and sew hems by hand. Press. Turn pillowcase right side out and press again.

Treading for lace border design (omit last pick at block changes):

- a 3x (17 picks)
- b 3x (17 picks)
- a 3x (17 picks)
- b 5x (29 picks)
- a 3x (17 picks)
- b 8x (47 picks)
- c 5x (29 picks)







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# KIRSCHBAUM TABLECLOTH

JULIE LAWSON

**DRAFT**

3x												4x												1 2 3 4 5																							
4 4				3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1			
3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1							
2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1											
1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1															

3x												4x												4x cont'd																							
4 4				3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1			
3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1							
2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1											
1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1				4 4				3 3				2 2				1 1 1 1 1 1															

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

**WARP LENGTH:** 4⅓ yd (allows take-up, shrinkage, and 27" loom waste).

**E.P.I. 30. WIDTH IN REED:** 30⅝".

**P.P.I. 30.**

**TAKE-UP and SHRINKAGE** 4% in width and 10% in length.

**WARPING** Before threading, make sure you have 454 heddles on shaft 1. Take special care when you are winding and beaming the warp to maintain even tension on these fine threads.

**WEAVING** Weave an inch or so in plain weave with scrap yarn to spread the warp. Then follow the treadling sequence for 125" (at 30 ppi, this is just under 7" per repeat; 18 repeats were woven for this tablecloth). Hemstitch at beginning and end, if desired.

**FINISHING** Machine stitch raw edges if they were not hemstitched on the loom. Machine wash using detergent, in hot water, delicate cycle, agitating for four minutes. Roll in a towel and lay flat to partially dry. Before completely dry, press with a hot iron and pressing cloth. Let fabric hang to dry completely.

**ASSEMBLY:** Cut the fabric into two panels. Place the two panels side by side and align the repeats. Sew together using a French seam. Press. Trim to even the raw edges and sew a narrow hem around all four sides of the tablecloth. Press again.

cont'd



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# TIPS FOR PLANNING, HEMSTITCHING, AND FRINGING

## TAKE-UP AND SHRINKAGE

**Weft take-up and shrinkage.** As you weave, extra weft length (beyond the width of the warp in the reed) must be placed in the shed to allow for weft take-up (in *Handwoven* projects, this amount is included in required weft yardage). The fabric then draws in as the weft bends over and under the warp threads, so that the width of the woven cloth is narrower than the width of the warp in the reed. The cloth narrows further after it is removed from the loom, and shrinkage narrows it even more if it is washed. To calculate the percentage of weft take-up and shrinkage, divide the finished width by the width of the warp in the reed.

### **Warp take-up and shrinkage.**

As you weave, the warp bends over and under the weft threads. Fabric length is therefore less than the length of the warp threads that produce it (*Handwoven* projects give the number of inches allowed for this take-up under Warp Order and Length). When you release tension and remove the fabric from the loom, the fabric takes up in the warp direction. If you wash the fabric, shrinkage further decreases its length. To calculate the percentage of warp take-up and shrinkage, divide the finished fabric length by the woven length (measured under tension on the loom) plus the inches given for warp take-up.

To calculate how long to weave a fabric for a specific finished length, use the percentage derived by dividing the finished length listed in the project by the woven length measured under tension on the loom (for this percentage, do not include the inches allowed for take-up in the warp yarn).

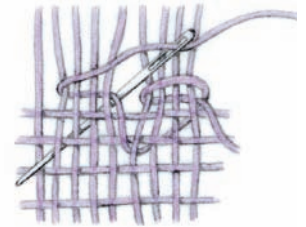
## TWISTING (OR PLYING) THE FRINGE

Divide the number of threads for each fringe into two groups. Twist each group clockwise until it kinks. Bring both groups together and allow them to twist around each other counter-clockwise (or twist them together in that direction). Secure the ends with an overhand knot. (Use the same method to make a plied cord by attaching one end to a stationary object.)



## SIMPLE HEMSTITCHING

Weave several picks of plain weave, ending with the shuttle on the right side if you are right-handed, left side if you are left-handed. Measure a length of weft three times the warp width and cut, leaving the measured length as a tail. Thread the tail into a blunt tapestry needle.



Take the needle under a selected group of ends above the fell and bring it up and back to the starting point, encircling the group. Pass the needle under the same group of ends, bringing it out through the weaving two (or more) weft threads below the fell. Repeat for each group of ends across the fell. Needleweave the tail into the selvedge and trim. (See \* below.)

## DOUBLE (ITALIAN) HEMSTITCHING

Weave several picks plain weave, ending with the shuttle on the right side if right-handed, left side if left-handed. Measure a length of weft four times the warp width and cut, leaving the measured length as a tail. Thread the tail into a blunt tapestry needle.

Take the needle under a selected group of warp ends above the fell and bring the needle back to encircle the ends. Next, pass the needle under the same ends but come up two or more weft rows down from the fell. Then bring the needle back around the same group of ends below the fell. Then begin again, encircling the next group of ends. (See \* below.)

*\*For both methods: To hemstitch the first end of a piece, weave a header, weave four or five picks of plain weave (or of the basic weave structure used in the piece), and hemstitch over the top two or three weft rows. Weave the piece and then hemstitch the other end over the last two or three weft rows. Remove the fabric from the loom and discard the header and weft threads below the first hemstitching.*

