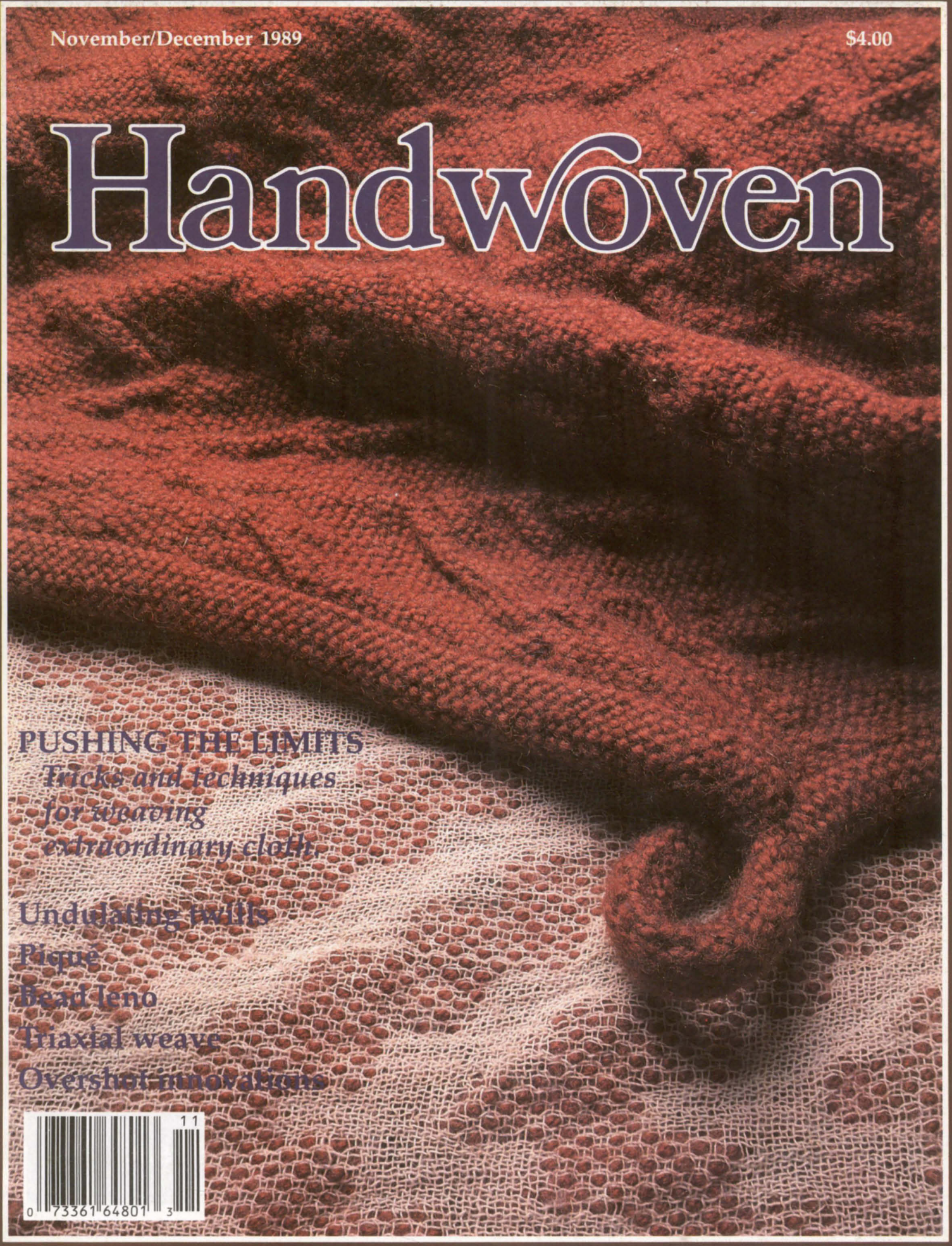
November/December 1989

$4.00

Handwoven



PUSHING THE LIMITS

Tricks and techniques for weaving extraordinary cloth

Undulating twills

Piqué

Bead leno

Triaxial weave

Overshot innovations

11

0 73361 64801 3

November/December 1989
Volume X, Number 5

Handwoven

FROM INTERWEAVE PRESS

On the Cover: *Backed fabric coat by Ann McKay. Due to shrinkage differentials, the face fabric collapses along the lines where it is stitched to the backing fabric. A draft for this weave is in the Instruction Supplement. Learn more about this fabric on page 40.*

The Instruction Supplement begins on page 74.

COLUMNS

DEPARTMENTS

HANDWOVEN is published five times a year in January, March, May, September, and November. Subscription price is $18/year in the U.S. and $22 (U.S. funds)/year in other countries. HANDWOVEN subscriptions are available in Australia and New Zealand from the following agents: **Australia**—Kirsten Yarns Pty. Ltd., P.O. Box 197, Canterbury, Victoria 3126; Mill Hill Books, P.O. Montville 4560, Queensland; Magnolia Books, 16 King Street, Balmain, New South Wales 2041. **New Zealand**—Books Unlimited, P.O. Box 9540, New Market, Auckland 1; Fibre Flair, Main Rd., P.O. Box 39, Waikanae.

spring louët

New Management Special

Buy a 4-harness Hollandia – Spring – David loom and receive a free 8-harness extension. Ask your dealer or write us! Good until December 31, 1989.

Spring has arrived! Now the nice features available on our bigger Hollandia loom are available on a smaller scale — this 4 harness loom has a parallel countermarch harness system and a patented spring mounted moving breastbeam (ask for our leaflet on these systems as featured on the Hollandia). Weaving width is 90cm (36 inches) and Spring is expandable to 12 harness with 14 treadles.

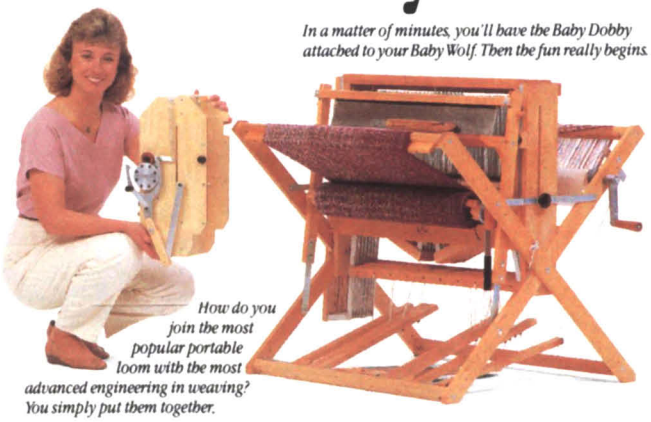
The Louët Spring is made of lacquered beech and comes ready-to-assemble.

Standard: 4 harness, 6 treadles, 600 Texsolv heddles, 40/10 steel reed 12 cm high (10 e.p.i., 4¾ inches high) 16 warp sticks, built-in shelf and raddle.
Optional: Matching bench, sectional warpbeam, second warpbeam.
Dimension: 115cm (45") high, 118cm (48") wide, 94cm (34") deep, 71cm (28") folded.

Louët Sales, R.R. 4, Prescott, Ontario, Canada K0E 1T0 (613) 925-4502

Send $1.00 for our full colour catalog.

Baby Dobby™ meet Baby Wolf™



In a matter of minutes, you'll have the Baby Dobby attached to your Baby Wolf. Then the fun really begins.

How do you join the most popular portable loom with the most advanced engineering in weaving? You simply put them together.

Combine the Babies and dramatically increase your ability to weave complex patterns quickly and accurately.

Presenting AVL's new Baby Dobby. The littlest member of the AVL family that turns your Baby Wolf into something even more special than it already is – a dobby loom.

Now, you can equip your existing Baby Wolf with a finely tuned piece of world-class engineering from the makers of the finest hand-looms in the world – AVL Looms.

The Baby Dobby works in much the same manner as a player piano, only it substitutes a chained series of wooden bars for the punched paper. Each bar has 8 holes which correspond to the 8 harnesses on your Baby Wolf. In operation, each bar represents one pick, and when a peg is placed in a hole, it causes that harness to rise. It's that simple.

The Baby Dobby fits on any 8-harness Baby Wolf including the 4 Now – 4 Later.

It's wonderful to weave with a dobby. No tie-ups, no getting under the loom, just peg the chain and go.

Weave complex patterns without a mistake.

The Baby Dobby will make it easier than ever to weave complex 8-harness weaves, because no matter how challenging the design, with a dobby the weaving is never more difficult than simple tabby. That's right! Because in case you didn't already know, dobby looms only use two treadles.

Two treadles also mean no more crawling under the loom to tie treadle to harness, because with a dobby there are no tie-ups. And that's not all – the Baby Dobby will also completely eliminate those time-consuming and frustrating treadling errors we all make with our feet. But don't just take our word for it.

Hurry down to your local Baby Wolf dealer and ask to see one in action. The new Baby Dobby is sold only through authorized Baby Wolf dealers, who will help you see what thousands of happy AVL owners have known for a long time. A dobby loom is something special.

Write or call for the name of your local dealer.

800 626-9615

In California and Canada, call 916 893-4915

AVL LOOMS
601 Orange Street, Dept. H
Chico, California 95928

AVL. Now the possibilities are endless.

OVER 450 BRILLIANTLY COLORED YARNS

For Just $9

Satisfaction Guaranteed or Your Money Back.

Caress, touch, yank over 450 samples of the world's finest, most beautiful yarns right in the comfort of your own home. If you aren't convinced you love them, send them back and we'll refund your money.

If you love them you'll still get your money back because we credit the $9 to your first order for $50 or more.

Over 10,000 satisfied Cotton Clouds customers can attest to the beauty and workability of these yarns—many available only from Cotton Clouds. As you page through our sixteen page, "work-of-art" catalog you'll find yarns, looms, needles, books, patterns, videos—all pre-tested to guarantee you the ultimate fabric experience. And of course you'll find, in a convenient pouch at the back, the actual samples of all the yarns we supply on cones and skeins. Over 450.

Hurry, order your samples and catalog today. Don't wait to get your hands on these fabulous yarns; use the order form below.

ORDER FORM

YES. Please send me my 16-page catalog and more than 450 yarn samples immediately for $9 plus postage and handling of $1.50.

☐ check enclosed. ☐ bill my credit card

Card # Exp.

Name

Address

City State Zip

I ☐ knit ☐ weave ☐ crochet

☐

R1189

Mail to: Cotton Clouds
Rt. 2, Desert Hills, #16
Safford, AZ 85546

Or call **1-800-322-7888**
In Arizona call 1-428-7000.

VISA MasterCard

COTTON CLOUDS

Editor's Page

People often ask us how we come up with material for the magazine—aren't we afraid of running out of ideas? I used to worry about that, too. But no more. There are always more than enough ideas to go around. It's choosing between alternatives that is difficult. Explaining exactly how we come up with material for HANDWOVEN isn't easy. Inspiration comes from conversations with other weavers, through exhibits or lectures, through your cards and letters. Sometimes ideas simmer on the back burner for a long time before they take some identifiable form.

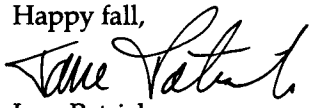
The seed of inspiration for this issue started to grow about a year and a half ago in a conversation with California weaver Lynne Giles about the Southern California Guild membership show. Her fascination with many of the fabrics, particularly those with deflected warps and wefts, and her perspective on them appealed to me and suggested a possible focus for an issue.

As I began working, I noticed that other weavers were emphasizing fabric construction. I saw an increased interest in multiple shafts, computer-aided design, and dye work, but at the same time, new and fresh approaches to plain weave and twill. In the larger world, I was struck by the recent utilization of weave structure in interior and fashion fabrics. Two recent competitions, the American Handweavers Competition and the International Textile Competition '89 Kyoto exhibit this trend with outstanding success.

This sudden interest in fabric is not surprising; in weaving, as in history, art, and science, ideas are often cyclical. Very often I'll receive letters within days of each other, from totally unrelated sources, asking similar questions or pursuing the same subject. As far as this issue of HANDWOVEN is concerned, it seemed that "fabric" was an idea whose time had come.

What I mean by fabric is cloth that is absolutely beautiful and feels wonderful, cloth that tricks the eye or appears to be something it is not. It's fabric that leaves you wondering. With this issue I hope I've provided you with some tricks and techniques to use in answering the question, How can I make my fabric something special? "Pushing the Limits", the title of this issue, is about more than just weaving. It's about designing imaginative cloth that functions as it should and is as wonderful as it possibly can be.

Happy fall,



Jane Patrick

* *Coming up in* HANDWOVEN. In the January/February 1990 issue we'll be featuring fuzzy fabrics and special dye techniques. We'll have a collection of cotton projects of easy spring and summer weaving and a special feature on sewing with handwovens (send me your best tips, tricks, and hints). Our May/June issue (originally slated for March/April) will be a special theme issue on our weaving heritage from 1920 to 1970. We've already interviewed many weavers. It's been fascinating, and I look forward to sharing their stories with you.

* *8-Shaft Pattern Book.* A reminder that the due date for swatches is February 1, 1990. Look for a sneak preview of some of the early entries in the January/February HANDWOVEN.

* *Design Collection #14: Weaving for Baby.* I've received some pretty sweet things so far, and I'm looking for more projects to fill out this collection, to be released this spring.

HANDWOVEN
November/December 1989
Volume X, Number 5

Publisher ..... Linda C. Ligon
Editor ..... Jane Patrick
Technical Editor ..... Carol Strickler
Contributing Editors ..Sharon Alderman, Anne Bliss, Ronnine Bohannan, Louise Bradley, Constance LaLena, Barbara Liebler, Kathryn Wertenberger
Production .....Marc McCoy Owens
Administrative Assistant .. Karen Evanson
Photography ..... Joe Coca
Photo Styling ..... Ann Sabin, Jane Patrick
Illustrations ..... Ann Sabin
Advertising ..... Sharon Altergott, Joy Mathews
Subscription Services ..... Donna Melton
Distribution ..... Lois Biederstadt

Interim Technical Editor, Jean Scorgie; Asst. Technical Editor, Selena Billington; Editorial Assistants, Bobbie Irwin, Katy Bright, Betsy Strauch, Barbara Liebler; Operations Manager, Stephen Tracy; Public Relations, Karen Hirmer; Distribution, Chris Hausman, Sally Ornelas, Sylvia Straight; Shipping, Rod Baum, Mike Loewen; Bookkeeping, Mary Nell Schwindt; Staff, Bonnie Hoover.

HANDWOVEN is published five times a year (January/February, March/April, May/June, September/October, and November/December) by Interweave Press, Inc., 306 North Washington Avenue, Loveland, Colorado 80537. (303/669-7672). ISSN 0198-8212 (USPS #129-210)

Your customer number, found on your address label, is your key to the best service possible. Please include it with all correspondence to avoid delays or errors.

Subscription rate is $18/year in the U.S., $22.00 in Canada and other foreign countries (surface delivery). Second class postage paid at Loveland, Colorado 80538 and additional offices. U.S.A. Newsstand Distribution by Eastern News Distributors, Inc., 1130 Cleveland Road, Sandusky, Ohio 44870. POSTMASTER: Send address change to Handwoven, 306 N. Washington Ave., Loveland, CO 80537. Subscribers, please allow 6 weeks for processing address changes.

36M:11209:HP/CL

Your *Yarn Store in a Box*® has arrived! The fun has just begun!

It starts by picking up the phone and dialing 1-800-341-0282. We'll give you friendly, helpful advice, answer all your questions and make sure you get what you want.

You can plan your projects with over 95 styles of yarn...choose from over 400 books...and order all the equipment you need—everything from bamboo knitting needles to enormous rug looms. (What's more, you can place your order without having to mail color snips or somehow try to describe the "pale, not-quite-fuschia" color you like.)

At least twice a year, you'll receive new and updated sample cards for your Yarn Store in a Box® along with *The Halcyon News,* a newsletter full of fun, facts, helpful tips and new product information.

To get the fun started, get your own Yarn Store in a Box®. Just send a check or money order for $23, payable to Halcyon Yarn (you'll receive a $10 credit once you've spent $50).

Or, for more information and a free sample card, call 1-800-341-0282.

Halcyon Yarn

12 SCHOOL ST. BATH, ME 04530

Letters

Award-winning weaver

If you have an award for a new weaver with the most initiative, I'd like to nominate my neighbor, Orpha Cahours.

When we became neighbors about eighteen months ago, my loom sparked her interest in weaving. Over the summer she borrowed and devoured all my weaving books and back issues of your magazine, and in October, she bought a four-shaft loom. With only occasional help from me, she quickly wove off numerous table runners in a twill variation, some of which she sold at Christmas, then went on to weave a lovely runner in Swedish lace. In between projects, she worked out drawdowns (without even the aid of graph paper!) for another runner in Swedish lace with each lace block different from the others. She also wove a project in log cabin because, she said, "I didn't know weaving with two shuttles would be tricky, so I just went ahead and did it." Now she's thinking about adding four more shafts to her loom.

Her excitement and charge-ahead attitude sparked my creative and competitive spirit enough that I dusted the cobwebs off my loom and started weaving. I'm getting out of my 2/2 twill rut and trying more complex weave structures, I'm designing projects for my home I hadn't considered before, and I'm even eager to try weaving a rag rug. Now the cobwebs are gathering all over the rest of my house.

So, a great big thank you to Orpha from me. It's fun to have a new friend to share interests and challenges with. And to you weavers out there who have been idle: teach a friend to weave—you'll both benefit.

Charlie Andrus, Byron, Michigan

To fly or not to fly

The idea to ban the fly shuttle from weaving competition came up at our Central and Northern California Handweavers business meeting. It may be that a division needs to be made, but I think that division should be between two-, four-, and six-shaft weaving and complex weaving (anything with eight or more shafts, including computerized looms). Isn't the purpose of the fly shuttle to increase weaving speed, not excellence?

I'd like to get some feedback from

some of the jurors who have to deal with this issue. I'd also like to see some well-thought-out juror guidelines for judging shows.

Jane Edgett, Fresno, California

Readers, what have your experiences been on this subject? Does anyone have juror guidelines that deal with the use of a fly shuttle in weaving competitions? Should use of a fly shuttle even be an issue of concern? —ed.

Re: Colors

I have been working with the instructions for Sharon Alderman's fabric in "Out of a Flower Garden" in the November/December 1988 issue. I finally realized that the lavender color was omitted. Please check into this and issue a correction.

Nan Getzia, Fort Wayne, Indiana

The lavender color you saw is an optical effect magnified by color photography. The three blues (Royal, Aegean, and Jade) listed in the instructions were really the colors used. Both technical editors checked the fabric against the manufacturer's yarn samples when we had it in hand, because we could hardly believe our eyes. As Sharon mentioned in the article, the closeness in hue and value visually "pushed" the Royal toward a violet appearance and the Jade toward green. But that visual effect was drastically exaggerated by the processes involved in putting a picture in the magazine.

If you would like to weave a fabric that appears more like the photograph, try substituting Cobalt (a more lavender blue) for the Royal, keeping the Aegean as blue, and either using the Jade or substituting Turquoise (bright turquoise) or Seafoam (pale blue-green) for the green. Keep in mind that if you do make these substitutions, even these hues will visually push apart because they are analogous colors. —ed.

Re: Ecclesiastical weaving

Thank you for coming to my rescue. After offering to weave a wedding stole for the minister who would perform my daughter's wedding ceremony (and become her father-in-law), I realized that I knew nothing about ecclesiastical weaving. I was becoming really worried when the January/February issue arrived with all the information I needed in plenty of time for a June wedding.

I decided that a colonial church in Connecticut called for something between the elegant silk and the more casual cotton versions that you showed. I used a rayon warp, wool weft, shiny viscose embroidery floss for the inlay, and lined it with the silk shantung of the wedding dress. I also wove a ring pillow.

Many thanks for a wonderful magazine, issue after issue.

Virginia L. Coolidge, Cincinnati, Ohio

The January/February issue, with articles about church vestments and a clear explanation of the Theo Moorman technique, was especially welcome. How did you know that I was weaving samples for a stole for a minister friend? And how did you know that I have a file of *thirty-eight* (no kidding) small tapestry designs based on Tolkien that I simply don't have time to tackle using traditional methods? The Theo Moorman technique makes that particular dream a little more likely to happen. Thanks.

Gretchen Brinckerhoff, New Milford, Connecticut

Re: Weaving with children

Thanks so much for the May/June issue on weaving with the children. I am a weaver as well as an occupational therapist who works with disabled children. I have been able to use many of the activities you described with my children. They love every minute spent with their weaving projects, and best of all—they get to keep their work.

Lisa Rumpey-Kietzman, Charlotte, North Carolina

Your May/June issue couldn't have arrived at a more perfect time. I am opening a craft boutique and studio, and all the info on weaving with kids just fueled the fire. We are planning lots of lessons for children as well as adults, and all of your projects sound fun and exciting for children.

Sharon Kerpan, Shelburne, Ontario

Readers ask

Many years ago my mother bought a Studio loom, model X2010. When she died my father disassembled it. Now five other weavers and I can't figure out the pulley system. Does anyone have an old instruction manual? Even a picture would help.

Carla Greby, Canton, Illinois

I wish to obtain a copy of the article, "Yellowing of Textiles During Storage—Investigation of the Yellowing Tendency of Textile Goods, Textile Finishing Chemicals and Packing Materials", which appeared in the *International Textile Bulletin —Dyeing/Printing/Finishing*, 33, pages 83, 86, 88, 90, and 93 (2nd quarter, 1987). I came across this reference in the 1988 *AATA*, Volume 25, No. 2. Can anyone help me locate this article?

Rosario C. Agustines, San Miguel, Manila, Philippines

In response

To Kathleen MacDonald: If you don't find a Structo loom, contact Mountain Loom Co., PO Box 182, Curlew, WA 99118. (604) 446-2509. Larry Sutherland makes a nice wooden sample loom, 12" wide, with four or eight shafts and an optional double back beam. I have one which I like very much.

Judy Siple, Colorado Springs, Colorado

In Memoriam

Michael Scott, 1924–1989. Michael Scott, editor, writer, publisher, and lecturer, died in Seattle on September 21 of a heart attack. Michael Scott was the editor of *The Crafts Report*, which he established in 1975 as a business information newsletter for professional craftspeople. His book *The Crafts Business Encyclopedia*, published in 1977, is now in its fourth printing and is acknowledged as a standard text among craftspeople. He lectured widely and frequently on crafts marketing and the place of crafts in our rapidly changing world. He is survived by his wife Sheila, son Tim, and daughter Janie. Michael Scott's voice and enthusiasm for crafts will be greatly missed.

Your editors are eager to hear what's on your mind: about the magazine, about the state of weaving as a craft, about how weaving fits into your life, etc. Write "Letters", HANDWOVEN, Interweave Press, 306 N. Washington Ave., Loveland, CO 80537.

THE HARRISVILLE RUG LOOM

designed with
PETER COLLINGWOOD

With a tradition of spinning woolen yarns for over 200 years and making handlooms for almost 20, we decided it was time to turn our attention to a heavyweight loom for rugs and fabrics. To make it the best loom possible, we asked Peter Collingwood to collaborate with us on the design. The remarkable ideas he has developed are incorporated into the loom and we are sure you will be amazed by the results. A very solid loom beautifully constructed of New England Rock Maple and Honduran Mahogany. A countermarched action with an easy tie-up mechanism. A unique Warp Extender that eliminates tension control problems even with a linen warp. And of course, the Collingwood Shaft Switching Device that for the first time makes this exciting technique easily accessible. It's our first loom that is not a kit, and, though knocked down for shipping, it is easy and quick to assemble.

Our handweaving yarns and equipment are sold through these and other fine handweaving stores. We are proud to work with them and we urge you to give them your support while asking for Harrisville Designs products.

ALABAMA

Huntsville 35801
Warps End
1504 Mountain Springs Circle
205-534-3210

CALIFORNIA

Sonoma County 95442
Spinner's Web
14301 Arnold Dr., Glen Ellen
707-938-1301

COLORADO

Boulder 80302
Weaving & Knitting Shop
1702 Walnut St.
800-262-5545

CONNECTICUT

New Haven 06511
Thera Yarns
605 East St.
203-773-1287

FLORIDA

Delray Beach 33483
Penelope's Breads & Threads
520 E. Atlantic
407-272-1000

Melbourne 32936
Weaver's Emporium
660 Eau Gallie Blvd.
407-259-2215

Winter Haven 33881
Country Feeling
642 Ave. B N.W.
813-299-9276

GEORGIA

Stone Mountain 30083
Fiber Design Studio
927 John Alden Rd.
404-297-4019

IOWA

Corwith 50430
The Sheep Shoppe
RR1, Box 189
515-583-2147

MAINE

Bath 04530
Halcyon Yarn
12 School St.
800-341-0282

Portland 04101
Silver Yarn Co.
33 Silver St.
207-879-0771

MASSACHUSETTS

Arlington 02174
Batik & Weaving Supplier
393 Massachusetts Ave.
617-646-4453

Plymouth 02360
Threaden
46 Summer St.
508-746-7330

MICHIGAN

Eaton Rapids 48827
Davidson's Old Mill Yarn
109 Elizabeth St.
517-663-2711

Grand Rapids 49509
Threadbender Yarn Shop
2767 44th, SW
616-531-6641

Richmond 48062
Joy's Crafts
70259 Karen St.
313-727-7095

Rockford 49341
Weavers Shop & Yarn Co.
39 Courtland, Box 457
616-866-9529

MINNESOTA

Avon 56310
The Weaver's Cabin
20578 317th St.
612-845-7115

Minneapolis 55419
Creative Fibers
5416 Penn Ave. So.
612-927-8307

Minneapolis 55454
Depth of Field
405 Cedar Ave.
612-339-6061

MISSOURI

Columbia 65201
The Weaver's Store
11 South Ninth St.
314-442-5413

MONTANA

Missoula 59802
Joseph's Coat
131 W. Main
406-549-1419

NEW HAMPSHIRE

Harrisville 03450
The Weaving Center
Main St.
603-827-3996

NEW JERSEY

Clinton 08809
Fibre Crafts
38 Center St.
201-735-4469

NEW YORK

Bainbridge 13733
Spinner's Hill Shop
RD #1, Box 118
Brackett Lake Rd.
607-843-6267

Charlton 12019
Woodside Weavers
4091 Jockey St.
518-399-7991

Henrietta 14467
The Fiber Shop, Inc.
3182 East Henrietta Rd.
716-334-1440

Ithaca 14850
The Tabby Shop
49 German Crossroad
607-273-3308

Yorktown Heights 10598
Designed Fibers
2605 Colonial St.
914-962-4800

NORTH CAROLINA

Asheville 28801
The Weaver's Web
92 Charlotte St.
704-252-3221

Davidson 28036
The Weaver's Studio
106-B South Main St.
704-892-LOOM

OHIO

Sunbury 43074
Village Crafts
62 E. Cherry St.
614-965-3476

Willoughby 44094
The Weaving Place
4114 Erie St.
216-975-9002

PENNSYLVANIA

Dalton 18414
Woolsworth, Ltd.
R.D. 1, Box 199, Manning's Rd.
717-563-1042

East Berlin 17316
The Mannings Handweaving Studio
1132 Green Ridge Rd.
800-233-7166

Conestoga 17516
Dotty Lewis-Dapple Crafts
#9 Indian Hill Rd.
717-872-2756

Rochester Mills 15771
Autumn House Farm
RD #1, Box 105
412-286-9596

TENNESSEE

Gallatin 37066
Miriam Hall-Fibers
On The Square
615-452-2410

TEXAS

Conroe 77304
Suzanne Roddy, Handweaver
1519 Memorial Dr.
409-756-1719

Dallas 75225
Spindletop Yarn Shop
4008 Villanova
214-691-2489

Ingram 78025
Acorn Handcrafts
305 Indian Creek Rd.
512-367-2567

WASHINGTON

Grandview 98930
Lazy Squaw Yarns
R 2, Box 2731
N. Griffin Rd.
509-882-2302

Issaquah 98027
Cottage Weaving
Gilman Village
206-392-3492

Seattle 98105
The Weaving Works
4717 Brooklyn N.E.
206-524-1221

WISCONSIN

Eagle River 54521
Cabin Fever Weaving
115 S. Main
Box 1282
715-479-2344

Milwaukee 53202
The Wool Works, Inc.
1812 N. Farwell Ave.
414-278-8838

CANADA

NOVA SCOTIA

Halifax B3J 2V9
Fleece Artist
Box 881
1865 Water St.
902-423-9311

ONTARIO

Mount Albert L0G 1M0
Gemini Fibres
R.R. #1
416-473-1033

Harrisville Designs Harrisville, N.H. 03450 603-827-3333

Schacht Spindle Company products are available through a network of dealers. The knowledge they have to share with you and the services they have to offer make them a great place to purchase our looms and accessory tools. Stop by and visit them and pick up your copy of our beautiful full color catalog. Here is a list of some of our dealers. Write to us for the names of other dealers near you.

ALASKA

Fairbanks
Log Cabin Fibers
1074 Mc Grath Rd.
(907) 457-2786
(907) 457-8915

ARIZONA

Mesa
The Fiber Factory
150 W. Main St.
(602) 969-4346

Phoenix
Fibercrafts
2619 W. Bethany Home Rd.
Suite #1
(602) 242-7428

Safford
Cotton Clouds
Rt 2 Desert Hills #16-HW
(800) 322-7888
(602) 428-7000

ARKANSAS

Eureka Springs
The Spinning Wheel
22 S. Main St.
(501) 253-7064

CALIFORNIA

Claremont
Three Bags Full
201 W. Bonita Ave.
(714) 624-7764

Lancaster - Valencia Area
Green Valley Weavers Supply
24442 Unit C, Hampton Drive
Valencia, CA 91355
(805) 259-7388

Los Gatos
Los Gatos Yarn Company
109 W. Main St.
(408) 354-8720

Mt. Shasta
ShastaSong Country Crafts
214 N. Mt. Shasta Blvd.
(916) 926-6760

Sacramento
Rumpelstiltskin
1021 "R" St.
(916) 442-9225

San Francisco
San Francisco Fiber
3435 Army St.
(415) 821-2568

San Juan Capistrano
(Capistrano Beach)
Connie's Hareloom
26971 Las Palmas
(714) 728-0140

South Pasadena
Mission West Weavers
1032 Mission Street
(818) 441-0023

Three Rivers
Mountain Arts
42268 Sierra Dr.
(209) 561-4716

Torrance
Weave 'N Knit Depot
1313 Sartori Ave.
(213) 618-9171

COLORADO

Boulder
The Weaving And Knitting Shop
1702 Walnut St.
(800) 262-5545
(303) 443-1133

Colorado Springs
Just Dyelightful Handwovens
2629 W. Colorado Ave.
(719) 636-0059

DELAWARE

Newark
Morning Star
7 Elkton Rd.
(302) 453-0774

FLORIDA

Apopka
Knitting Machines of Florida
380 Semoran Commerce Pl.
Suite 107 A
(407) 886-7300

Delray Beach
Penelope's Breads & Threads
520 E. Atlantic Ave.
(407) 272-1000

Melbourne
Weavers Emporium
600 Eau Gallie Blvd.
(407) 259-2215

Sarasota
Warped Yarns
2870 Ringling Blvd.
(813) 366-8167

Winterhaven
Country Feeling
642 Ave. B, NW
(813) 299-YARN (9276)

GEORGIA

Atlanta
Dream Weaver
650 Miami Circle
(404) 237-4588

HAWAII

Kaneohe
In Stitches
511 Hahaione St. #18C
(808) 395-5677

ILLINOIS

Peoria
Skeins & Shuttles
910 N. Rebecca Pl.
(309) 674-5080

INDIANA

Bloomington
Yarns Unlimited
412 E. Fourth St.
(812) 334-2464

New Albany
Weaver's Corner
1406 E. Spring St.
(812) 948-0350

Terre Haute
Indian Acres Spinner/Weaver
1801 S. 31st St.
(812) 235-2129

IOWA

Ames
The Rose Tree Fiber Shop
417 Main
(515) 232-5336

Iowa City
The Weaving Studio
812 S. Summit St.
(319) 338-1789

KANSAS

Lawrence
The Yarn Barn
918 Massachusetts
(913) 842-4333

KENTUCKY

Lexington
Yarn & Fiber Studio
380 S. Mill / Dudley Sq.
(606) 255-5151

LOUISIANA

Chalmette
Rose Line Inc.
Weaving Studio
2906 Fenelon St.
(504) 279-4066

MAINE

Bath
Halcyon Yarn
12 School St.
(800) 341-0282
(207) 442-7909

Kennebunk
For Sheep's Sake
Route 99
(207) 985-6861

MARYLAND

Baltimore
The Weaver's Place, Inc.
4900 Wetheredsville Rd.
(301) 448-2428

Frederick
Forestheart Studio
21 S. Carroll St.
(301) 695-4815

MASSACHUSETTS

Arlington
Batik & Weaving Supplier
393 Massachusetts Ave.
(617) 646-4453

MICHIGAN

Eaton Rapids
Davidson's Old Mill Yarn
109 E. Elizabeth St.
(517) 663-2711

Northville
Traditional Handcrafts
571 Randolph St.
(313) 349-7509

Rockford
The Weaver's Shop And Yarn Co.
39 Courtland St.
(616) 866-9529

MINNESOTA

Avon
The Weaver's Cabin
20578 317th St.
(612) 845-7115

Dalbo
The Spinners Of Northfield Meadow
Rte 1, Box 110
(612) 389-5053

Minneapolis
Creative Fibers
5416 Penn Ave., S.
(612) 927-8307

MISSOURI

Arrow Rock
Keelor Handweaving
#6 Public Square
(816) 837-3328

Columbia
The Weaver's Store
11 S. 9th St.
(314) 442-5413

NEBRASKA

Omaha
Flexible Fibres
17205 N. 47th St.
(402) 455-9314

NEW HAMPSHIRE

Henniker
The Fiber Studio
9 Foster Hill Rd.
(603) 428-7830

NEW JERSEY

Clinton
Fibre Crafts
38 Center St.
(201) 735-4469

NEW MEXICO

Albuquerque
Village Wools
3801 San Mateo, N.E.
(505) 883-2919

Las Cruces
Bluegrass Weaver
3041 Missouri Avenue
(505) 522-5200

NEW YORK

Ballston Lake (Charlton)
Woodside Weavers
4091 Jockey St.
(518) 399-7991

Henrietta
Helen Brown's Fiber Shop
3182 E. Henrietta Rd.
(716) 334-1440

Mt. Kisco
The Wool Room
36 Chestnut Ridge Rd.
(914) 241-1910

Troy
The Spinnery
1 Carolina Avenue
(518) 283-8889

NORTH CAROLINA

Asheville
Earth Guild
One Tingle Alley
(800) 327-8448
(704) 255-7818

Burlington
Studio Of Handweaving/ Helen Gant
713 E. Willowbrook Dr.
(919) 226-3330

Cary
Shuttles, Needles & Hooks
214 E. Chatham St.
(919) 469-9328

Charlotte
A & N Designs
4317 Park Rd.
(704) 529-6102

Columbus
Weavers Way
P. O. Box 70
302 E. Mills St.
(704) 894-8568

OHIO

Canton
The Merrie Lamb
3811 E. Lincoln St.
(216) 488-2544

Centerville
Three Bags Full
6150 Ironside Dr.
(513) 435-3561

Chardon
Hart's Haven Handwovens
369 Park Ave.
(216) 286-2181

Clyde
The Little House
1927 N. Main St.
(419) 547-9210

Pepper Pike
Cellar Weaves Studio
27976 Belgrave Rd.
(216) 831-1963

OREGON

Ashland
The Web*Sters: Handspinners Weavers & Knitters
10 Guanajuato Way
(503) 482-9801

PENNSYLVANIA

Allentown
Maple Tree Cottage
3214 Cambridge Cr.
(215) 398-0142

Dalton
Woolsworth, Ltd.
Rd #1, Box 199
Mannings Rd.
(717) 563-1042

Delmont
Knots & Treadles
101 E. Pittsburgh St.
(412) 468-4265

East Berlin
The Mannings Handweaving Studio
1132 Green Ridge Rd.
(717) 624-2223

New Hope
Lock House # 11
48 W. Ferry St.
(215) 862-5807

Philadelphia (Manayunk)
Uncommon Threads
3705 Main St.
(215) 483-3018

Smicksburg
The Weaver
Next to the Post Office
(814) 257-8891

SOUTH CAROLINA

Greenville
The Weaver's Knot
121 Cleveland St.
(803) 235-7747

TENNESSEE

Decatur
Cross Creek Fibers
Highway 30 E
(615) 334-5963

TEXAS

Austin
Hill Country Weavers
918 W. 12 St.
(512) 474-6773

Dallas
Spindletop Yarn Shop
8405 Pickwick Lane
(214) 691-2489

Houston
Craft Industries
#78 Woodlake Sq.
(713) 789-8170

Lubbock
Beck's Warp 'N Weave
2815 34th St.
(806) 799-0151

San Antonio
Village Weavers
418 Villita
(512) 222-0776

UTAH

Salt Lake City
Salt Lake Weaver's Store
1227 E. 3300 So.
(801) 486-1610

VIRGINIA

Alexandria
Sylvia Designs, Ltd.
104 S. Columbus St.
(703) 549-7006

Charlottesville
Stony Mountain Fibers
316 E. Main St.
Lower Level
(804) 295-2008

Poquoson
The J & L Studio
790 Poquoson Ave.
(804) 868-6364

Timberville
The River Farm
Route 1, Box 401
(800) USA-WOOL
(703) 896-9931

WASHINGTON

Marysville
The Wool Station
4218 - 136th St., N.E.
(206) 653-2604
Mail Order Avail.

Seattle
The Weaving Works Inc.
4717 Brooklyn Ave., N.E.
(206) 524-1221

WISCONSIN

Milwaukee
The Wool Works, Inc
1812 N. Farwell Ave.
(414) 278-8838

Sturgeon Bay
Donna's Gifts & Needleworks
503 So. Hudson Ave.
(414) 743-7258

CANADA

BRITISH COLUMBIA

Nanaimo
Dandelions
#44-650 S. Terminal Ave.
Harbour Park Mall
(604) 754-7161

Prince George
Talisman Clay
1370 7th Avenue #201
(604) 564-5244

Richmond
Community Craft Cottage
7577 Elmbridge Way
(604) 278-0313

Victoria
Wool Works
2686 Sooke Rd.
(604) 474-4221

ONTARIO

Ashton
Dini Cameron
RR #3
(416) 838-5000

Belleville
What's Weft
RR # 4
(613) 962-9430

Chatsworth
Wood & Fibre Studio
RR # 3, Lot 1, Cone 3
(519) 794-3593

Mt. Albert
Gemini Fibres
RR #1
(416) 473-1033

Ottawa
Maggie Glossop
677 Edison Ave.
(613) 729-8854

YUKON

Whithorse
Annie Lake Angoras
Site 12, Comp. 30, RR #1
(403) 667-8378

Lestra Hazel knows that it takes more than a good loom to make a placemat that takes the cake.

Not every piece that Lestra Hazel weaves is allowed to grace her table. In her weaving, as in everything she does, Lestra sets high standards.

Her Days

Unlike many other people, once her children were grown, Lestra moved into a larger house and set about remodeling it herself. She is also filling it up with handwovens; curtains, throw rugs, upholstery, pillowcases, dishtowels, placemats and table linens. Her race-walking, weaving and early morning aerobics are all activities that she enjoys, and they help release the tension of her work. A school administrator for Special Education in Kalamazoo County, Lestra spends long days supervising a preschool evaluation program and programs for severely impaired children. She unwinds in the evenings by warping on any one of her numerous weaving projects.

Her Weaving

Lestra is an active member of both her local and state guilds. She enjoys making original and recipe designs alike. She believes that the originality of any piece can be in the design, color, production or any combination of these. She uses the "belly-up" bar in the basement of her rustic home to line up as many as six projects at a time.

Lestra was first introduced to weaving in 1963. Working full time and being a single mom kept her from her weaving until eight years ago. Once technically proficient, she concentrated on the aesthetic quality of her work. For her, every piece must be both beautiful and functional. "I want my handwovens to become part of someone's life." She appreciates the simple joy of using a handwoven piece again and again. Lestra strives to replace manufactured material with handwoven wherever possible; her loom must not be empty! To do this she needs dependable equipment.

Schacht is her Loom

Schacht Spindle Company knows that the quality of a handweaver's work is enhanced by the quality and function of the tools she uses. Our looms and accessory tools are thoughtfully developed for both performance and appearance. We are deeply committed to doing excellent work and keeping weavers like Lestra Hazel satisfied.

SCHACHT SPINDLE CO. INC.

A full color catalog of our looms and accessory tools is yours for $2.00.
Write to Schacht Spindle Company, Inc. 6101 Ben Place, Boulder, Colorado 80301 USA. Tel. (303) 442-3212.

Dear Tabby

Dear Tabby,

I'm interested in weaving some horse blankets that are sturdy enough to use. Can you help me get started?

Horsing Around

Dear Horsing Around,

Weaving a horse blanket is like making a lightweight rug. You'll need strong (but not heavy) yarns and a close structure (such as plain weave, twill, or summer & winter). Penelope Drooker designed three Navajo-inspired rugs for the March/April 1985 issue of HANDWOVEN; any one of them would be a good starting point. —T.

Dear Tabby,

I have just completed a honeycomb tote bag. This is the first honeycomb project I've done, and while the project turned out quite well, I am dissatisfied with the selvedges because they lack the floats on the back which would give the material more body. Since I turned the selvedges inside to use as seams, they don't show on this project, but I might want my selvedges to show some other time. What can I do?

Waiting to Weave More

Dear Waiting,

If you want all of the wefts to go to the selvedge, you need to use a floating selvedge at each edge (because only one of the two cells is at the edge). An alternative is to thread a two-end unit of each cell at the selvedge (i.e., if one cell is on 1,2 and the other is on 3,4, thread a twill selvedge on each side). —T.

Dear Tabby,

Can you give me a definition of deflected warps and wefts?

Wanting to Learn More

Dear Wanting,

You'll find lots of examples of deflected threads in this issue. Deflected threads, warps or wefts, are those that are pushed away from straight paths with right-angle intersections by some aspect of the interlacement. An example would be honeycomb, in which cells of plain weave alternate with sections that are unwoven, so that a selvedge-to-selvedge outline thread curves out around the cell and down into the unwoven area. The M's & O's tablecloth on page 56 is another example. You'll find Lynne Giles's article on page 37 helpful, too. —T.

Dear Tabby,

I've noticed a phrase in weaving instructions that is a mystery to me. What is meant by "correct any weaving mistakes?". If the fabric was woven wrong, how can it be corrected once the fabric is off the loom? It seems that it would be much too tedious to try to reconstruct a treadling error by hand!

Bewildered

Dear Bewildered,

It certainly *is* tedious to correct a treadling error by hand, which is a good reason to weave carefully to avoid this kind of error. More often, what is meant by "correcting mistakes" is the little errors where a shuttle has skipped over or under a thread or a few threads that it shouldn't have. This kind of flaw can be corrected by needling in a length of weft in the proper path, overlapping both ends into the correct areas. However, I *have* corrected a treadling error across an entire fabric width. It was tedious, but it made the cloth something I could be proud of. —T.

Are you baffled, frustrated, don't know what to do? I'm here to help you with your weaving problems. Write Aunt Tabby, Interweave Press, 306 N. Washington Ave., Loveland, Colorado 80537.

Books, Etc.

Navajo Textiles: The William Randolph Hearst Collection

Nancy J. Blomberg

University of Arizona Press, 1230 N. Park, #102, Tucson, AZ, 85719, 1988. 257 pages. 187 plates, including 175 in color and 12 black-and-white photos of textiles missing from the collection; appendix; bibliography; and index. $35.00

Navajo Textiles: The William Randolph Hearst Collection differs from many other books published in conjunction with museum exhibits on Navajo weaving. It has high-quality color plates and technical analysis of wonderful textiles, most of them woven before 1900, and a brief history of the Navajo. None of these makes the book unusual. Rather it is the portrayal of the trading network and one man's ravenous hunger to collect finer and more unusual textiles which distinguish this volume.

> The Hearst collection presents an excellent opportunity to examine closely the role of one consumer in the development and marketing of the textiles. Four levels of interaction in the process from loom to buyer are represented. . . .
>
> (1) consumer (Hearst)
>
> (2) merchant (Fred Harvey Company)
>
> (3) reservation trader (Lorenzo Hubbell and others)
>
> (4) weaver. (p. 10)

All participants in the network can be identified but the Indian weaver!

Accompanying each plate is information about that textile's size, museum accession number, date woven, warp and weft yarns listed by color (including fiber and spin, and count per inch), selvedge treatment, as well as information from the Harvey Company ledger and coded price tag. There are occasional author's notes. The appendix, entitled "Economic History of the Hearst Collection", lists all of the Hearst textiles by accession number, source, and associated documentation. One gains a much greater sense of the times in which Hearst collected by reading these and appreciating the price codes used. They satisfied a curious hunger I did not know I had when I began the book.

In both text and appendix, plates are referred to by accession number; yet they are not arranged according to these or any other numbering scheme. The book would have been more easily used had the plates been numbered sequentially, or references made to plates by page number. It would also have been useful to cite page or plate numbers in the appendix for textiles listed there. These seem oversights in an otherwise worthwhile book.

—Martha Stanley

Looms and Textiles of the Copts: First Millenium Egyptian Textiles in the Carl Austin Rietz Collection of the California Academy of Sciences

Diane Lee Carroll

California Academy of Sciences Memoir Number 11. Distributed by University of Washington Press, P.O. Box 50096, Seattle, WA 98145-5096, 1989. Paperback, 201 pages. Black-and-white and color photographs. $24.95

Carroll focuses on a specific collection of textiles woven by the Copts (people who lived in Egypt during the early centuries of the Christian Era but who were not necessarily Christian), yet the book is expanded, not limited, by such a focus. Through well-cited source material and careful conjecture, Carroll reveals the traditions which Coptic weavers inherited as well as the world in which they worked and lived, a harsh world with many rules and regulations governing textile technology—and ever-changing waves of religious persecution. One is impressed by her attention to both archaeological record and weaving technology. That the textile examples do not obviously reflect these difficulties in the delicate mazes of geometrical designs and the bold vitality of the figures is indeed interesting.

The illustrations and descriptive details of the 72 textile fragments in the Rietz Collection constitute the majority (101 pages) of the book, going back to the late third or early fourth century and continuing up to the eleventh or twelfth century. All 72 textiles in the collection are fragmentary, though one does contain portions of three selvedges. Forty-six are of linen with wool ornamentation, 25 are all wool, and 1 is silk. The information on materials and construction is particularly interesting to weavers. This is not explicit, how-to information, but gives surprising insights to the working and thinking of Coptic weavers. Although most fragments contain some hint of the ground cloth, whether a tiny area or a large expanse, all of the examples were collected for their wool tapestry-woven sections with figurative or geometrical designs. Background cloth is generally a plain warp-dominant rep weave of linen. Many early examples exhibit delicate "weft float patterning" (weft wrapping, also called soumak) to give mazelike geometrical designs. Lively figurative motifs in tapestry technique predominate in the later pieces.

For those of us eager to become more "textile literate", this book is very worthwhile. The reader comes to appreciate textiles of the Coptic period both for their own distinctive beauty and vitality and for the mirror they provide of textile development in the entire Mediterranean basin during the first millenium of the Christian Era. It presents in rich detail a type of textile which has endearing structural complexity, both delicacy and boldness in its imagery, and is well placed in its cultural and historical context.

—Martha Stanley

Costume as Communication: Ethnographic Costumes and Textiles from Middle America and the Central Andes of South America

Margot Blum Schevill

Haffenreffer Museum of Anthropology, Brown University, Mount Hope Grant, Bristol, RI 02809 and The University of Washington Press, P.O. Box C 50096, Seattle, WA 98145. 138 pages, paperbound. Many black-and-white photographs and 14 color pages. $20.00

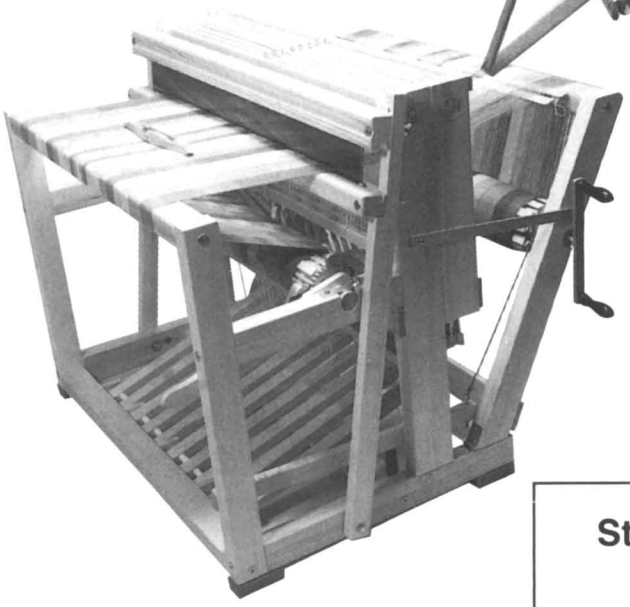
The messages encoded in and projected by clothing is a topic that has been receiving long overdue attention in recent years. There is increasing acknowledgment that textiles and clothing convey

—continued on page 16

Spin it, Wind it, Weave it. You need it-we have it!

"Viking" Swedish Floor Loom

Glimakra's newest — a jack loom available in 36" and 48" weaving widths (4 harnesses, 6 treadles). Solidly constructed; smooth, quiet operation. Clean, even shed. An addition to the line of world-renowned Glimakra® countermarch looms.



Umbrella Swift Skeinholder

From Sweden — the traditional, large (25" high) wooden swift.

Ball Winder

A clever device to quickly wind balls of wools, synthetics, cottons, etc.

Stainless Steel Reeds

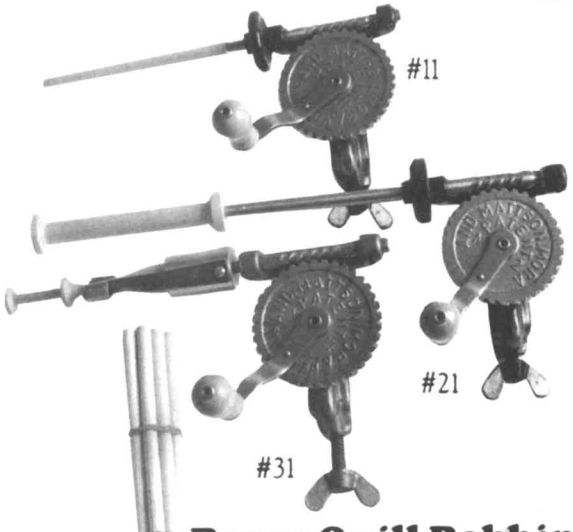
Has the cost of stainless steel reeds kept you from using them? Check our prices on the new VIKING reeds — you'll be pleasantly surprised!

For a full-color catalog of our extensive line of looms and weaving accessories, send $2.50. For a yarn sample book, containing over 1000 color samples of wools, cottons, linens and cottolins (50/50), send $15 (Canada: U.S. $20).

COMPARE PRICES AND ORDER OUR WEAVING EQUIPMENT FROM YOUR WEAVING STORE. IF THERE IS NO LOCAL GLIMAKRA DEALER, YOU CAN ORDER DIRECT FROM US – Call TOLL FREE 1-800-BUY YARN or (707) 762-3362.

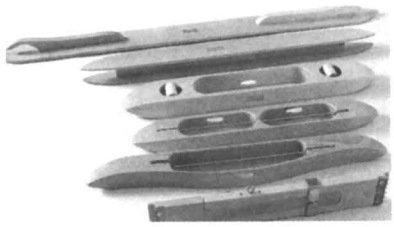
Bobbin Winders from Sweden

Well-balanced, smooth-running metal bobbin winders. Small (#11), Large (#21), Lace (#31).



Paper Quill Bobbins

Use with #11 winder.



Wooden Temples and Shuttles

Over a dozen sizes available.

TEXSOLV Heddles / Tie-Up Kits

World famous; from Sweden. Over a dozen heddle sizes available.

Glimåkra Looms 'n Yarns, Inc.

A subsidiary of Viking Trading Company
1304 Scott Street — HW14
Petaluma, CA 94952

Dealer Inquiries Invited

BOOKS, ETC. *(continued from page 14)*

significant information in societies without writing.

Costume as Communication is the result of an ambitious project by Margot Blum Schevill to expose and utilize fully the collection of textiles from the central Andes and Middle America housed in the Haffenreffer Museum. The exhibit and symposium she organized are now over but the hefty catalog, thankfully, remains. It contains essays, documentation and many illustrations.

A short chapter introduces the anthropological theory behind the important topic of communication through dress. Additional essays on Middle American textiles and Andean textiles present a summation of the traditions, from ancient times to the present. Ed Franquemont's essay is a particularly graceful and astute rendering of the central role of cloth in Andean culture.

Documentation on 241 Middle American and 181 Andean textiles is presented and about one quarter are illustrated. The documentation includes identification, description, dates, collector, references and brief notes on the context and use. I especially appreciate the fact that the notes are attributed to the person who gave the information. Also, the history of the collections and the background of the collectors are given. While this information may not be required by every reader, it is unobtrusively present and makes the book much more valuable to a specialist.

The book is amply illustrated with many black-and-white photos, drawings and fourteen pages of color illustrations. While I am grateful for so many images, some pages have an overdesigned appearance arising from the compression of many visuals and the varied design approaches. Fortunately, some textiles are given a full page or double page layout which conveys their vibrancy.

This book will please readers with a love of ethnic textiles or an interest in the message-bearing capacity of cloth. Weavers of wearables will be fascinated with the macro and micro levels of meaning in indigenous clothing and scholars will welcome the armchair access to a museum collection.

—Mary Frame

BOOK NEWS

Dr. William G. Bateman's extensive study of weave systems included three collections of woven samples. Those used to illustrate his manuscript are circulated by the Handweaver's Guild of America. The other two are identical collections, one owned by Montana State University and the other recently mounted and placed in about sixty 3" notebooks by Louise Ziegler and Virginia Harvey. Some of these notebooks of Dr. Bateman's weaves are now ready to circulate. Fees will be charged for transportation and maintenance of the notebooks, as well as a deposit which will be refunded when the notebooks are returned undamaged. For more information, contact Bateman Sample Collection, PO Box 52, Freeland, WA 98249. (206) 321-4258.

Teaching for Learning, the quarterly newsletter for fiber arts teachers, has a new address. All correspondence to the newsletter or its editor/publisher, Charlene Anderson-Shea, should be addressed to 511 Hahaione Street, No. 18-C, Honolulu, HI 96825. The new phone number is (808) 395-5677. ❖

MATCHLESS

The new Schacht Spinning Wheel is the most responsive spinning wheel available today. Whether you're an experienced handspinner or an eager novice, you'll appreciate this wheel's matchless capabilities.

ONE TO GROW ON.

Here's a tool as versatile as you demand. The Schacht Spinning Wheel comes with two flyer whorls; one with drive ratios of 9:1 and 11:1 for spinning medium weight yarns; the other with ratios of 13:1 and 16:1 for spinning fine wool yarns, silk and cotton. Two other flyer whorls are available as options; a slow speed whorl with ratios of 6:1 and 7 1/2:1 and a high speed whorl with ratios of 17 1/2:1 and 19 1/2:1. Want even greater spinning possibilities? Simply attach the Scotch Tension that comes with the wheel.

The 19 1/2" drive wheel and the flyer shaft are supported by self-aligning bronze bearings for precise action. Each flyer is balanced and bobbins and flyer whorls are trued on center for long and superior service.

And the quick-attach flyer whorls make bobbin changing a breeze. The tension controls for the drive band and the Scotch Tension are conveniently positioned for easy use. The treadling of the wheel is light and comfortable and the generously sized treadle allows you to use either foot or both if you choose.

The Schacht Spinning Wheel is highly portable. Its compact shape along with its own carrying strap makes it handy to take anywhere. Or you can get our optional Cart which is the neatest way ever to travel with your wheel.

PERFORMANCE BY DESIGN.

You will find the Schacht Spinning Wheel's simple contemporary styling a skillful blend of design and function. Made of laminated maple and walnut, the wheel uses hardware specifically chosen to enhance aesthetics and performance. It's built with great respect for the requirements you as a spinner have. The wheel comes assembled. Just pop the treadle in place, put the flyer on and you're ready to spin.

OUR KATE'S NOT LAZY!

The wheel comes with a Kate and four bobbins. The industrious Kate has a special tensioning feature for the smooth, even release of your yarn during plying.

See the Schacht Spinning Wheel at your local spinning supply shop. Our new 28 page full-color catalog of weaving and spinning equipment which includes a free color print of our sheep logo is available for $2.00.

Schacht Spindle Co., Inc. 6101 Ben Place, Boulder, Co. 80301 USA

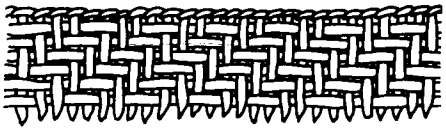
SCHACHT SPINDLE CO.

Tricks of the Trade

Finish with a flourish

For a classy edge finish that works even on curves, first stabilize the raw edges of your fabric with two rows of straight machine stitching. Bind the edge by hand with yarn, using a deep buttonhole stitch. Then needle weave through the shanks of the buttonhole stitches in a twill pattern (over two, under two), following the direction of the fabric edge.

Anita Sanford, Puyallup, WA



Bobbin bonanza

I use the long empty spools from Gutermann brand sewing thread for extra bobbins in my shuttles. They are the same diameter as my regular bobbins, and they hold an amazing amount of fine yarn. I remove the thread holder end from the spools before filling them, so the yarn will unwind smoothly as I weave. To keep a spool centered in the shuttle, I place other spools on both sides of it. If there is any yarn left on the spool when I'm through weaving, I replace the thread holder end to keep the yarn from unwinding.

Joanne Caldwell, Pueblo, CO

Magnetic hook

While threading the heddles for my latest project, I noticed that my threading hook seemed to be magnetized, and each steel heddle was drawn to it as I threaded. As this was quite helpful, I investigated and found that my hook had been placed next to a strong magnet in my equipment box. It certainly made the threading go faster and solved the problem of steel heddles sticking together.

Fran Jenkins, Naugatuck, CT

Transferring heddles

I just finished a project for which I needed 197 heddles on shaft 1 and found an easy way to transfer heddles from one shaft to another. Slide pipe cleaners through the loops of the heddles, one at the top and one at the bottom. Slide the heddles off the rods and bend the pipe cleaners at the ends to hold them. When you are ready to use them, insert the rods in the loops beside the pipe cleaners, pulling the pipe cleaners out when the heddles are in place.

Phyllis S. Sollner, Flemington, NJ

Counting heddles

One of my least favorite things about weaving is counting heddles, but I have found a way to simplify this task. I recently spent a long afternoon counting every heddle and marking every tenth one with bright red nail polish. Now all I have to do is slide the heddles along rather than painstakingly count each one.

Lynn Rubinstein, Shutesbury, MA

—continued on page 20

Put those samples to use

While planning upholstery for window seat cushions, I forced myself to make a sample. I used 5/2 pearl cotton for a 6-shaft shadow weave. At 20 e.p.i., my 101 ends yielded a piece 5" wide. I settled on the colors and treadling for the upholstery and still had a good length of warp left. I used the remaining warp to weave a bellpull. Leaving 3" for fringe, I wove using the upholstery treadling for the first motif. As the weaving progressed I dropped two picks from the center of each pattern. The result was an interesting diminishing shadows effect. After weaving 36" I finished the top with a narrow casing, inserted a 3/16" dowel, covered the dowel ends with pony beads, and added some brass chain for hanging it on the wall. Not only is the piece attractive, but it is a good study of 6-shaft shadow weave. I plan to do this again with my sample warps.

Irene B. Kintner, Bella Vista, AR

Bits and pieces

I tie a small basket onto the front breast beam of my loom and use it for holding pieces when laying in. It is also convenient for bits of thread which otherwise never seem to hit the wastebasket.

Barbara Cash, New Hudson, MI

Washing the warp

Here's a way to rinse your dyed, measured warp without its getting tangled. As you remove yarn from the warping board place it in an 18" diameter circle on the floor. Cut seven pieces of yarn about 4" long. Tie four of these equidistantly around the circle of yarn. Fold the yarn in half, and use the remaining yarn pieces to tie the middle and 1½" from each end. Stuff the yarn into a knee-high stocking, knot the top of the stocking, and place it in the washing machine.

Julie Autaubo, Moore, OK

Quick sectional warp

I use this shortcut on my sectional loom when I'm putting on a fairly short warp. Rather than winding on several spools with a few yards each, I use a low flat box that has a snug-fitting cover (the kind you bring oranges home from Florida in works well). In the cover I punch the same number of holes as I am threading ends per section. Then I put that number of balls of yarn inside the box and thread their ends through the holes. I usually thread the ends through my tension box before winding on, but if the warp is very short, I skip the tension box and use a wide-tooth comb. If you find that your yarn snags on the cardboard as it comes out of the holes, just cover the edges of the holes with masking tape.

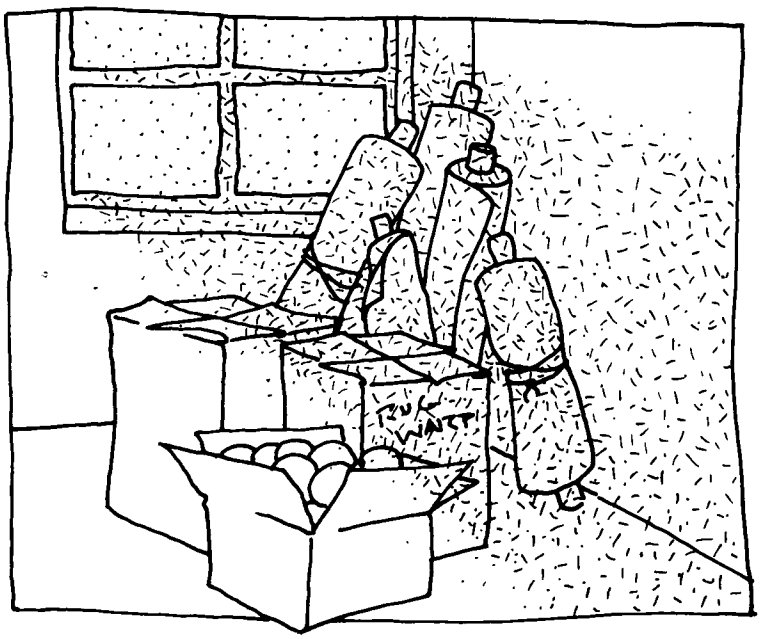
Nance Van Winckel, Lake Forest, IL

If you've discovered a nifty idea, hint, or trick that you think your fellow weavers would find helpful, we'd love to pass your good ideas along through "Tricks of the Trade". If we use your trick, we'll send you a handy little weaving tool. Send to "Tricks of the Trade", Interweave Press, 306 N. Washington Ave., Loveland, CO 80537.

Keeping Inventory

by Constance LaLena

WHEN A PERSON produces handmade articles for sale, both raw materials which will be consumed in their production and the finished products are accumulated until the goods are sold and their ownership by the craftsperson is terminated. These raw materials and finished articles are called "inventory"; for purposes of taxation and financial reporting, records of inventory value must be kept accurately. Inventory includes items for sale in a store or by mail order. It includes articles which are on loan (to businesses, museums, exhibitions, or friends) and articles consigned to galleries, gift shops, or craft stores. Inventory also includes the studio's raw materials which are awaiting transformation into finished articles: yarns, dyes, warps which are wound but are not yet on the loom, works in progress, and any other materials which will be incorporated into finished works.



Recent changes in tax laws, designed to close loopholes, have created record-keeping hardships for artists who were accustomed under the old laws to write off as an expense the cost of canvas, paints, paper, pencils, etc., at the time of purchase. Strict interpretation of the new tax law requires that the artist deduct the cost of materials of each product only after the work is sold—perhaps years after it was made. Because of the difficulty of calculating exact values for raw materials of each work of art and maintaining these records for the length of time required to sell the work, amendments to the tax laws have been proposed which will ease this burden for artists. As of this writing, the outcome is unclear, but it appears that the amendments will benefit only "fine" artists. Craftspersons will still be expected to account for inventory as at present. If you make articles for sale that could be legally defined as "fine art" although they are executed in a craft medium, I suggest that you consult both an accountant and a lawyer who are well versed in arts issues to determine how the current legal definitions and tax laws apply to your situation.

In accounting terms, inventory is an asset (not an expense). To the craftsperson this means that the value of all raw materials and unsold goods is carried as an asset on his or her balance sheet. The cost of an article (or the cost of raw materials in a handcrafted article) becomes an expense deducted from income only after the article is sold. Keeping track of inventory value as it moves from raw material to finished article to sold merchandise is a specialized branch of accounting which can turn into a nightmare of guesswork unless accurate records are kept.

Your first task in record keeping is to value your present inventory. Consider the current status of your inventory and the status of your business. If you are just starting your business and are making initial purchases of raw materials, the task will be straightforward because you can simply note the nature and value of each purchase. On the other hand, you may have a stockpile of yarn dating back several years, and you are only now planning to use this yarn for salable goods. In this case, you have accumulated yarn with no thought of tax deductions, so you must value your old stockpile to enable appropriate deductions to be made when the finished articles are sold. If, however, you deducted the cost of the yarn as an expense when you bought it, you need to talk to your accountant about what to do next!

Of several physical inventory methods, the most common are the "periodic inventory method" and the "perpetual inventory method".

In the former, inventory is counted and appraised once a year (or some other specified period). The cost of goods sold is calculated as follows:

> Beginning inventory value (same as last year's ending inventory) + purchases of materials during the year – ending inventory value (same as next year's beginning inventory) = cost of goods sold.

A drawback to this method is that it works better for a merchandise inventory, as in a retail store, than for a manufacturing inventory, in which goods exist in different stages of production.

In the perpetual inventory method, every change to inventory is tracked as it happens, and though it may seem tedious at first glance, a card system and the will to keep it current can make the perpetual system both the most effective and the simplest for a craftsperson. In a manufacturing situation—a craftsperson is a small manufacturer—certain raw materials are purchased and used over and over as the ingredients of the finished products. In the perpetual inventory method, you can keep an index card (the 5" × 7" size works well) for each type of yarn you use in your work. There is no need to keep track of different colors on different cards. Write the name of the yarn at the top. Below it there should be six columns: Date, Unit Price, Quantity Received, Quantity Used, Balance on Hand, and Value. If your inventory is large and varied, you may want to have these headings printed or photocopied onto card stock. Your initial entry would show the Date the yarn was put into inventory, the Unit Price, the number of units (balls, skeins, pounds, cones) in the Quantity Received column, the total number of units on hand in the Balance on Hand column, and the value of that yarn in your inventory (multiply the units in the Balance on Hand column by the Unit Price) in the Value column. When you withdraw yarn from the yarn inventory, you make a similar listing, placing the number of units withdrawn in the Quantity Used column. Adding together the last figure in the Value column of all the yarn inventory cards will give you an accurate value of your total yarn inventory whenever you need it. This will probably be once a month when you prepare your figures for monthly financial statements. Although an exhaustive discussion of methods of inventory pricing is beyond the scope of this article, I must caution you that over time the unit price of a yarn will change, and this price change must be accounted for in your inventory valuation. There are several ways of doing this (LIFO, FIFO, Average); your accountant will be able to advise you on the method most suitable for your situation. Each raw material you use should be given its own inventory card and tracked the same as the yarn. It is easy to see from this example that the fewer different yarns and other raw materials you use in your production, the easier it will be to keep track of everything!

Of course, yarn or another raw material withdrawn from your inventory is not immediately sold, but is transformed into a finished article which (you hope) will be sold. Thus, inventory cards also must be prepared for each type of article that you make. If you make runs of production items, you can use a card like the raw materials inventory card for each type of item, valuing the item unit cost as the average of that particular production run. For example, if you were making a routine production run of ten stoles on one warp for which you withdrew ten units of yarn A at $5 per unit (value $50), four units of yarn B at $4.50 per unit (value $18), five units of yarn X at $3 per unit (value $15), and one unit of yarn Z at $19 per unit (value $19), you would first enter the withdrawals on the yarn inventory cards for yarns A, B, X, and Z. Then you would total the value of these withdrawals and and divide by 10 to obtain the unit cost of each of the ten stoles you made.

> $50 + $18 + $15 + $19 = $102/10 = $10.20 unit materials cost of each stole

The $10.20 cost would be entered as the unit cost on an inventory card for stoles, showing that you placed ten of them into inventory. Any changes to the stoles in inventory (such as sales, additional stoles made, etc.) will be noted on subsequent lines of the inventory card, as was done in the yarn inventory card example above. If you make one-of-a-kind things, you will have a separate card for each item; the design of this card can be somewhat different from that of a production item. For example, you may want to allow space for a "history" of the piece so that if you lend the item to a gallery or museum, you can also track its whereabouts until it is sold. By adding together the last figures in the Value column of all the item inventory cards, you can get a precise inventory value of your unsold finished goods whenever you need it.

To calculate your monthly expenses, you need only total your inventory cards to obtain your current inventory value, and use the Cost of Goods Sold formula to calculate your deductible material expense:

> Beginning inventory (from end of previous month) + materials purchased during the current month – ending inventory = deductible cost of goods sold.

Maintaining inventory records is a necessary part of doing business. With forethought and planning, this need not be a time-consuming or difficult aspect of your life. As a bonus, if you watch the flow of materials and products through your inventory cards, you will notice many ways to make your business operate more profitably. ❖

Constance LaLena is a contributing editor of HANDWOVEN. *She can be found most days tending her store, Yarnworks, in Grand Junction, Colorado.*

News & Events

Craft designers seeking assistance for tuition and fees to attend a college, university, or art or design school are encouraged to enter the sixth annual scholarship competition sponsored by The Society of Craft Designers. The top award is a $1000 scholarship and one-year membership in the society. Five other finalists will receive one-year memberships. The scholarship money, paid directly to the school the winner will attend, must be used within one year of the award.

According to scholarship chairman Cindy Groom-Harry, designs must be original or show a new use of an existing product. Each entrant must submit a color photograph of his or her design, which will be juried by six professional craft designers. Final judging, from the actual designs, will take place at the 1990 Educational Seminar in San Antonio in June 1990. Slide entries must be postmarked by April 1, 1990.

For information, contact The Society of Craft Designers, Inc., 6175 Barfield Rd., Suite 220, Atlanta, GA 30328. (404) 252-2454).

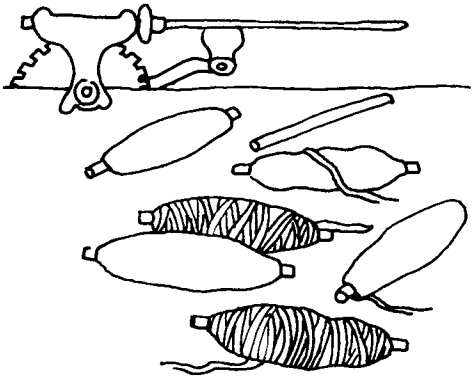
Bradford, England (once known as the Wool Capital of the World and still a major textile manufacturing center), is the site for the Textile Arts Festival scheduled for April 1–12, 1990. This international event will feature a symposium, a conference with speakers and workshops, and exhibitions of textiles from around the world. Planned activities include tours, demonstrations, sales, and children's events. The Textile Theatre will present a community play about textile history, and a re-creation of the nineteenth-century Bishop Blaize Wool Parade will wind from Bradford's historic textile mills through the main streets of the city.

Speakers and teachers will include Ann Sutton, Peter Collingwood, Kaffe Fassett, and Diane Sheehan. The 1989 Lausanne International Biennial of Tapestry and the Pierre Pauli Collection are among the featured exhibits.

Participation in the Bradford Textile Symposium, an in-depth study of the past, present, and future of textiles, is limited to one hundred people. Four hundred participants may attend the concurrent conference, Threads '90. Conference themes are "The Encouragement of Professionalism" and "Crossing the Boundaries", an emphasis on the interrelationship of the textile arts.

Information is available from Textile Arts Festival—Bradford '90, Salts Mill Victoria Rd., Saltaire Bradford, West Yorkshire BD18 3LB, England, or 56A Ayres St., London SE1 1EU.

The Museum of American Textile History in North Andover, Massachusetts, celebrated its twenty-fifth anniversary in September with the opening of "NEWS '89: Contemporary Handweaving", an exhibition featuring prizewinning wearable and decorative textiles from the New England Weavers' Seminar. The show will run through January 28, 1990.



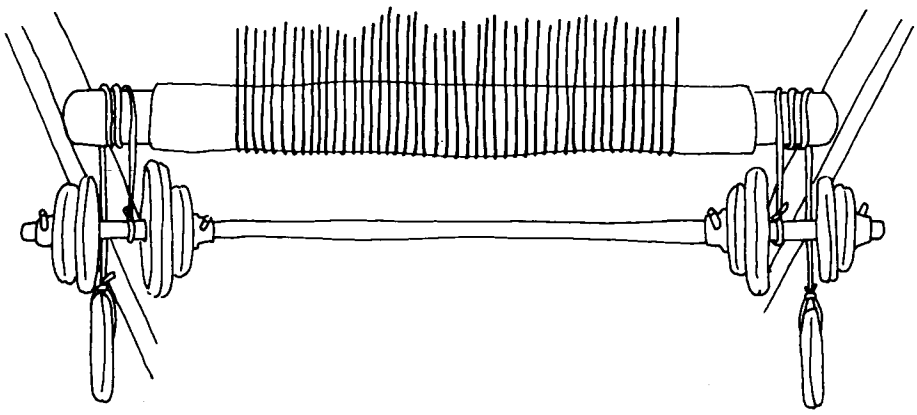
For professional craftspeople who have suffered career-threatening disasters, emergency loans up to $450 are available from the Craft Emergency Relief Fund/CERF). During fiscal year 1988–1989, loans went to seventeen applicants who had suffered devastating fire, serious illness, or theft. The National Endowment for the Arts has supported this program with matching grants. The interest-free loans have no stated payback date.

CERF is supported by voluntary contributions and fundraisers at craft shows. Donations are welcome; send them to CERF, Suite 9, 1000 Connecticut Ave., Washington, DC 20036. (413) 625-9672.

Some cultures display family wealth and position in the form of ornamentation worn on the body—primarily on the head, neck, and shoulders. "Neck Charmers", a national competition sponsored by Sylvia Designs Gallery in Alexandria, Virginia, was a contemporary way of interpreting the display of wealth. Ninety artists from twenty-five states, working in varied media, participated in this recent show. Oregon designer Genie Stewart took Best in Show with a collar handwoven of cotton, rayon, and silk yarns and embellished with coquille feathers and carved jasper. ❖

My Warps Lift Weights

by M. Kati Meek



IF YOU ARE discovering the joys of weaving with fine threads and especially if the fine-linen virus has infected you, you may be wishing you had a little robot for each arm so that the beater would strike the fell with precisely the same force for every beat, yard after yard. Good, fine fabric takes a special discipline that is difficult to maintain even with the best of intentions.

Our newest, most innovative and sophisticated looms are boasting weight- and spring-tensioned systems that improve the consistency of beat, but not all of us can, or want to, replace our looms.

I wanted the benefits of weighted warp tension and did some reading, brain-picking, and thinking. An article in LeClerc's Master Weaver series[1] suggests a constant tension brake hung on the cloth beam. Trying this technique gave me a taste of the liveliness of a weight-tensioned warp, but the sledgehammer heads I had strung together were hard to lift and reset after each 18 inches of weaving, and I knew it wouldn't do for a wide warp.

I read of a preindustrial method that used a great wooden trough hung on the warp beam into which rocks were piled.[2] That appealed to my simple mechanical mind, but first I had difficulty designing a trough strong enough to hold the hundreds of pounds of rocks I imagined necessary; then I thought of piles of rocks added to the lint mounds already around my loom. There had to be a better solution.

Later, while perusing a museum bulletin on paisley shawls,[3] I saw a loom with two great, smooth weights hanging off the warp beam. That put clean, accessible, compact athletic weights into my mind.

I found a simple set of barbells at a garage sale. The heaviest piece weighed only ten pounds, but all together there were a hundred pounds *and* a bar to string them on. Now I could play.

And in playing I found the simplest, most effective aid imaginable for fine, even weaving. All my weaving is done with weight tension now. This is how you can use it, too.

Obtain a bar the width of your loom and an assortment of weights of 2.5, 5, and 10 pounds; from the hardware store, get a hank of ¼" or ⅜" braided cotton sash cord (figure 1).

Dress the loom with the brake on; then deactivate the brake by tying its release lever to the loom (or unhook the spring, or tape the pawl up so that it doesn't engage the ratchet).

—continued on page 28

MY WARPS LIFT WEIGHTS

(continued from page 26)

Place the bar on the floor under the warp beam. Put a five-pound weight on each end of the bar. Using the sash cord, tie one end to the bar with a square knot in line with the end of the warp beam. Lead the cord up the back side (outside) of the warp beam, over the top, around the beam twice more, spiraling toward the end of the beam, and down to the floor on the front side (inside) of the warp beam. Cut it to this length. Tie the cut end through the center of a 2.5-pound weight so that it hangs about halfway between the floor and warp beam. Make a matching length of cord for the other end of the bar, wrap it around the other end of the warp beam in the same direction as the first, and tie a second 2.5-pound weight on that. The 2.5-pounders are counterweights to keep the cord snug around the warp beam. Beeswax or automotive belt dressing on the cords will increase friction between the cord and warp beam ends. Position both cords so that they run straight up to the space between the warp and the ends of the warp beam. This space needs to be only about $^1/_2$" wide, or enough for three wraps of the cord. The cord wraps should be directly on the beam ends, not on any warp rods, sticks, or paper (figure 2).

Lift one end of the bar 2"–3" so that the weights just clear the floor. The counterweights will pull the slack out of the cord and leave the bar hanging. Lift the second end of the bar level with the first. Voilà! The pull of the bar with weights becomes tension on the warp.

Add weights equally to each end (or center) of the bar until the warp feels firm. Use enough weight to obtain a clean shed and sufficient resistance to the proper beat.

I have woven warps with as little weight as the bar alone and as much as 70 pounds for a wide linen warp. The weight needed will vary according to the type and number of ends in the warp, the diameter of the warp beam, and the diameter of the warp roll. If the warp roll is large, you may need to reduce the amount of weight as weaving progresses.

Serendipitous benefits of this weighted system of warp tensioning:

- When the shedding action pulls on the warps, the warp beam rocks forward without undue stress while maintaining an even tension on the warp. This is an especially nice way to treat linen and other fine yarns.
- Advancing the cloth means only one movement. Just pull the cloth advance lever! The cloth pulls the weights and automatically the tension is precisely the same as it was before! This encourages frequent cloth advancement. It is so quick that it barely interrupts the weaving rhythm.
- After about a yard of automatically tensioned weaving, check your weight bar. You will find it about halfway between the floor and the warp beam. The 2.5-pound counterweights will be just touching the floor because when this happens, their friction effect is diminished and then the cord slips on the warp beam automatically. You don't have to *do* anything but weave as long as the cords run straight!
- You never have to think about the warp beam again, even if you have to unweave! Just release the cloth beam and the weights pull back the warp for you.
- When the warp is woven off and you want to release the tension, lift the 2.5-pound counterweights, and the reduced friction between the cords and the warp beam will allow the bar with weights to slip back down to the floor.

I enjoy the speed, ease, and accuracy of this system of weighted warp tension on a table loom, counterbalance, and 12-shaft jack loom. The system won't weave perfect cloth for me, but it goes a long way in evening out my weaving from inch to hour, from yard to week, through changes in mood and weather. Maybe it will add to the pleasure and speed of your weaving, too. ❖

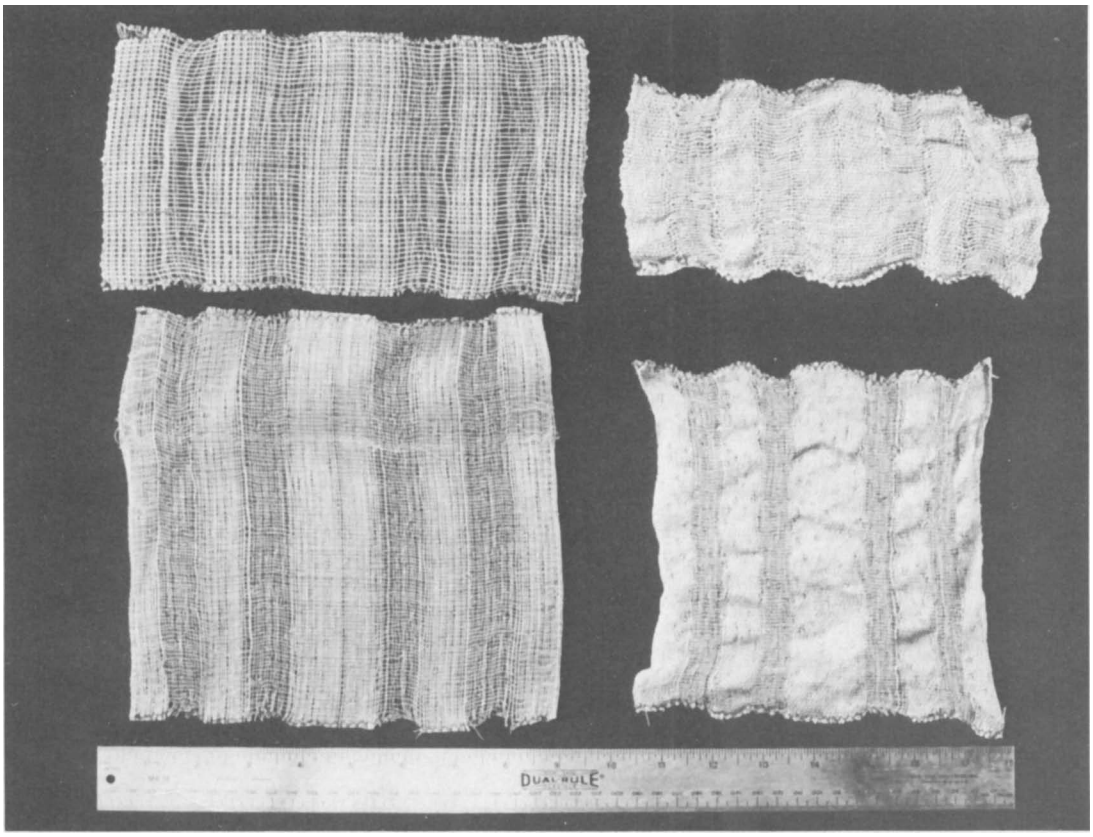
M. Kati Meek explores weaving with passion. She loves challenges such as weaving very fine linen for summer slips or yards of perfectly squared tartans, and most recently, doubling the number of ends per inch she usually weaves. How many over a hundred is that, Kati?

References

1. S. A. Zielinski, *All about Looms*, Master Weaver Library, Vol. 2 (Quebec City: Nilus LeClerc, Inc., 1979), pp. 33–39.
2. Luther Hooper, *Hand-Loom Weaving Plain & Ornamental* (London: Pitman & Sons, Ltd., 1926), pp. 88–92.
3. C. H. Rock, *Paisley Shawls: A Chapter of the Industrial Revolution* (Paisley, Scotland: Paisley Museum & Art Galleries, 1966), p. 4.

SHRINKYDINKS

A class explores collapse.



1. Plain-weave seersucker. Warp—groupings of linen and overspun synthetic yarns. Weft—top: linen; bottom: overspun synthetic. Samples on the left are before finishing. (Schira)

by David Brackett and Bethanne Knudson

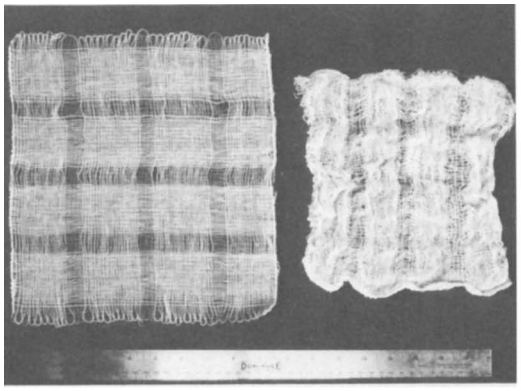
THE JAPANESE TEXTILE designer Junichi Arai teams computer software with extraordinarily fine overspun yarn to create airy, elastic, and complex fabrics for the body. A quadruple weave structure, loose sett, and a hot-water or chemical finishing process combine to make the fabric collapse or twist onto itself, shrinking it dramatically but retaining its elasticity and the ability to be stretched to nearly its original size.

In 1988, Cynthia Schira, professor of design, and the authors of this article, graduate students in textiles at the University of Kansas, inspired by a lecture given by Arai, organized a seminar to explore the production of collapse fabrics on hand looms without computer software or jacquard technology.

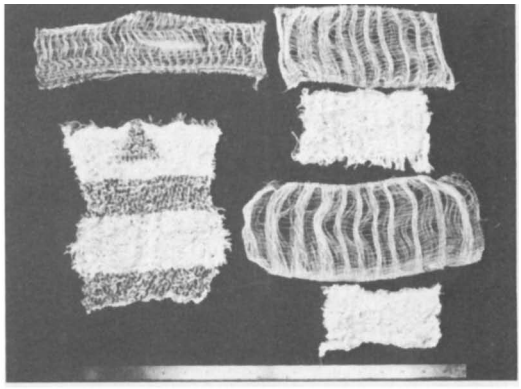
We planned to explore the structures, sett, fibers, and finishing processes which would be most effective in producing these fabrics. When we began, we didn't know what to call them, so we nicknamed them shrinkydinks. We later discovered the term *cloque*—a compound or double fabric with a figured blister effect produced by the use of yarns of different character or twist which respond differently to finishing—and Lillian Elliot's term *collapse*. Nevertheless, the name shrinkydink stuck.

We discovered that overspun yarns are necessary to maintain elasticity. A fabric made with wool *looks* like a collapse fabric, but because wool tends to shrink and felt, the elasticity of the fiber is partly or wholly lost. We found the following principles to hold true for all of our woven samples:

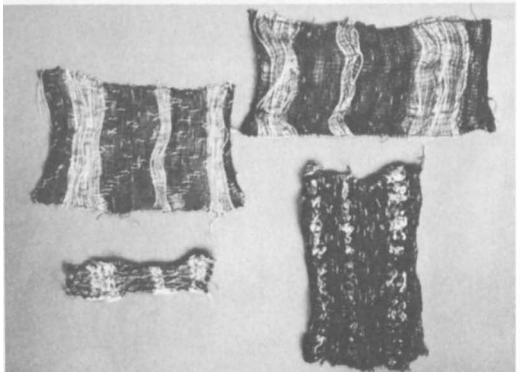
1. Loosely woven is better than tightly packed. Space is needed between fibers to allow for movement and collapse.
2. Simplified weave structures work better than complicated ones.
3. The relationships among fiber content, weight of yarn, and sett are important.
4. Proportions are important. Homogeneous blending of different fibers is less effective than grouping the different fibers.
5. Structure of yarn and the density of weave affect the finished fabric. It is possible to control the amount of shrinkage by the proportion of overspun to regular yarns. Fine yarns produce more interesting effects. The relationship between warp and weft must be directed. Simply combining two fibers will not work.
6. You must overstate: contrast density,



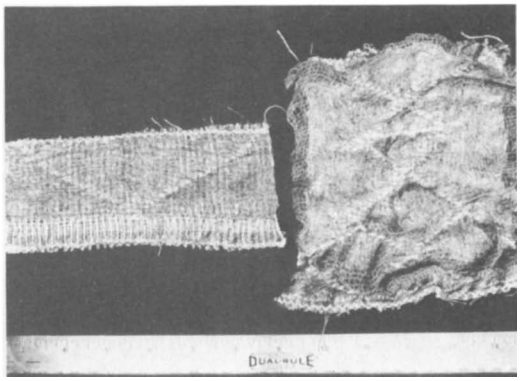
Left: 2. Plain weave. Warp and weft—wool and overspun synthetic in plaid. Left: before; right: after finishing. (Schira)



Right: 3. Eight-shaft twill. Left: warp—overspun synthetic; weft—banding of overspun synthetic, overspun cotton, linen. Inlaid triangle of overspun cotton. Right: blending of linen and overspun synthetic. (Knudson)



Left: 4. Combination weave, plain weave and grecian weave. Warp—groupings of linen and blended overspun synthetic and overspun cotton. Weft—left: overspun synthetic; right: overspun cotton. Top: before; bottom: after finishing. (Brackett)



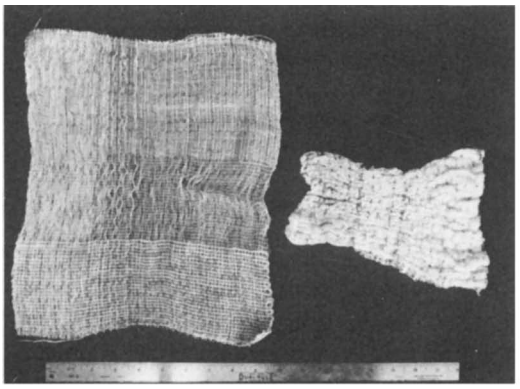
Right: 5. Pick-up matelassé. Layer 1: linen warp and weft. Layer 2: overspun synthetic warp and weft. Left: before; right: after finishing. (Schira)

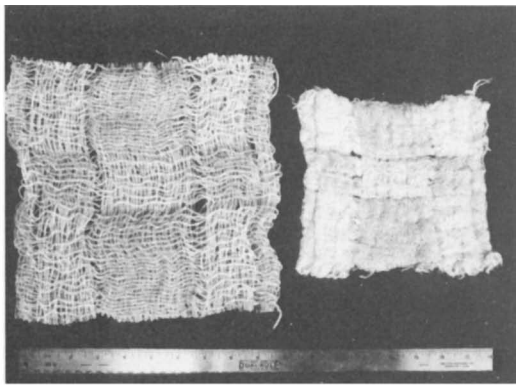
grouping, and fiber type. Fabrics which exhibit markedly different faces produce pronounced effects.

Cynthia and Bethanne finished their wool samples by boiling them, then placing them in cold water. They finished their other samples in hot (not boiling) water followed by cold water, as boiling water tends to relax the twist of overspun synthetic yarns. They dried their wool samples in a dryer. David finished his samples by putting them through a washing machine (hot cycle) and dryer.

We obtained interesting effects with the simple plain-weave structure by sleying the warp alternately densely and loosely and by alternately packing and spacing the weft (photos 1, 2, 4). Combining fibers in the warp which collapse or shrink at different rates produce seersucker effects (photo 1). The effects are most pronounced when the weft is a loosely overspun yarn. Combining bands of plain weave with bands of other structures produced figured stripes interspersed with plain stripes (photo 4).

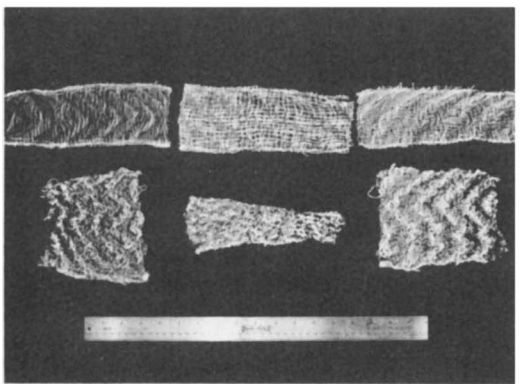
The twill structure produced the most marked changes. Because twills produce longer floats than plain weaves, an interesting relief texture can result by combining twills with the shrinkydink principles (photos 3, 8, 9). Simple twills can be manipulated by altering the spacing of weft threads and by leaving areas unwoven. Better results are achieved with unbalanced twills, and the faces of the cloth appear quite different. More complicated threadings produced exaggerated motifs

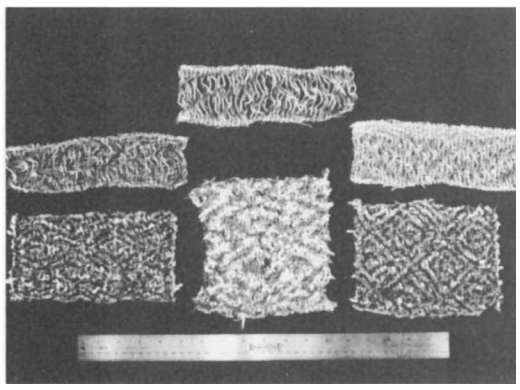




Left: 6. Piqué. Warp and weft—banding in thirds of wool, overspun synthetic, and linen. Supplemental warp—overspun cotton. Left: before; right: after finishing. (Brackett)

Right: 7. Block double weave (18 shaft). Layer 1: linen warp and weft. Satin weave. Layer 2: wool warp and weft. Crepe weave. Left: before; right: after finishing. (Brackett)





Left: 8. Corkscrew twill (16 shaft). Warp—1/3 blended overspun wool and linen, 1/3 blended overspun wool and overspun synthetic, 1/3 blended overspun synthetic and overspun cotton. Weft—left: overspun cotton; center: overspun synthetic; right: overspun wool. Top: before; bottom: after finishing. (Brackett)

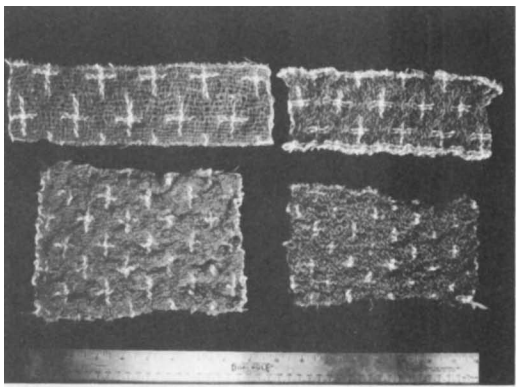
Right: 9. Interlocking twills (16 shaft). Warp—blending of overspun wool and overspun cotton. Weft—left: overspun synthetic; center: overspun cotton; right: overspun wool. Top: before; bottom after finishing. (Brackett)

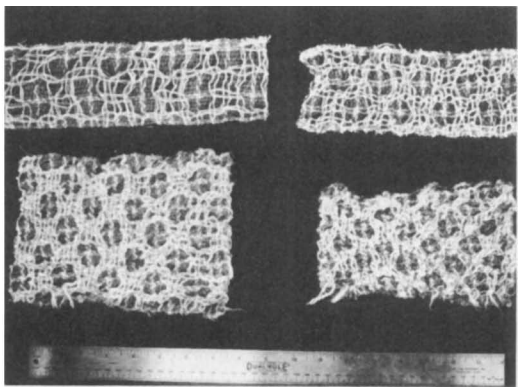
and twill lines. The fabric shown in photo 8 was produced by using a sixteen-shaft corkscrew threading (1, 9, 2, 10, 3, 11 . . .). Each third of the warp was blended with two types of fibers threaded end and end. This segregates the fibers into alternate twill lines. The fabric shown in photo 9 combined a nine-shaft corkscrew twill on shafts one through nine integrated with a seven-shaft twill threaded on shafts ten through sixteen. The corkscrew twill alternated ends of white and green overspun wool. The seven-shaft twill was threaded with overspun cotton. The use of overspun wool allows these fabrics to retain some elasticity, even though some shrinkage does occur.

We obtained figured effects with pick-up matelassé and piqué weave structures (photos 5, 6). Both utilize a supplementary warp containing collapsible fibers together with a main cloth of more stable fibers. Effects normally obtained with differing tensions on two beams (piqué) may be achieved on a single beam by using collapsible fibers for the warp, which is normally under greater tension. Double weave and block double weave can also take advantage of different fiber properties by dividing collapsible and noncollapsible yarns into separate layers and/or separate structures (photo 7).

Dramatically different cloth surfaces resulted from weaves that deflect threads (photos 10, 11). The threads to be deflected were an overspun synthetic yarn plied with loosely spun wool. The ground cloth was overspun wool. The filling was also overspun and loosely packed. When collapsed, the deflected threads produce a raised, figured effect over a plain ground cloth. ❖

David Brackett and Bethanne Knudson are both M.F.A. candidates in textiles at the University of Kansas at Lawrence. Both have exhibited their work nationally, are recipients of several scholarships, and have taught textiles at the university level.





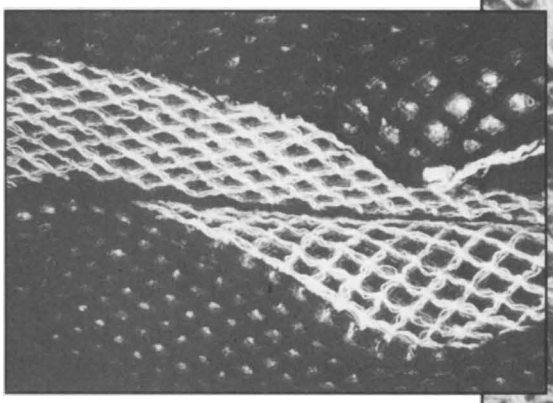
Left: 10. Weaves with deflected threads. Warp—blue overspun wool and white overspun wool double stranded with overspun synthetic. Weft—left: overspun wool; right: overspun cotton. Top: before; bottom: after finishing. (Brackett)

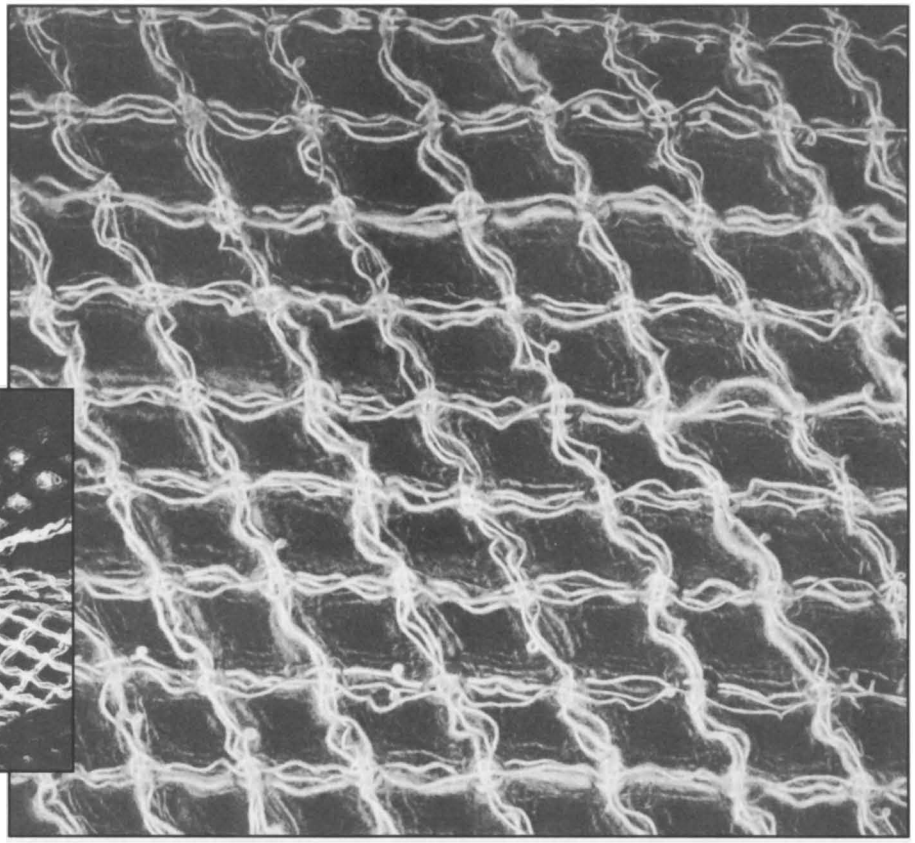
Right: 11. Reverse face of #10.

ALL PHOTOS BY DAVID BRACKETT

ESCAPING THE GRID

by Lynne Giles





A graduated-float scheme of waffle weave and a lively, high-twist yarn are combined in this striking blanket fabric by Anne Blinks. The double-faced structure (see inset), with the base of a cell on one side forming the apex of the cell on the reverse, makes a fabric that billows.
PHOTO: NORA ROGERS

AS EVERY BEGINNING weaver quickly learns, yarns have a will of their own. When allowed to associate freely, they form tangles and knots that defy our patience. We respond by making skeins, balls, butterflies, bobbins, cones. As spinners, we have "disciplined" our yarn by wetting and weighting it; as weavers, we continue the process by aligning our threads and stretching them on the loom. The loom, a tool devised to interlace two elements at right angles, is a grid maker. We accept this fabric grid as natural, yet in a sense it is imposed on the materials. Yarns, by virtue of fiber and spin, will escape the grid if they can.

Fabrics that allow this to happen seem to have a special energy. This may manifest itself in the hand—fabric that billows, that expands and retracts—or in the surface design—deflected wefts or warps. Perhaps because I have spent much time with rugs, which are, as a rule, severely rectilinear, I find myself especially drawn to work by other weavers that gives yarn the freedom to curve and meander, to be irregular.

In thinking of deflected wefts, most of us probably think first of honeycomb. Blocks of plain weave alternate with blocks of floating warp and weft. One or more tabby shots, often of thicker yarn, outline these blocks. The tabby shots sink down into the open space and rise up around the woven block, effectively filling in the warp floats and hiding the weft floats. Honeycomb can be treadled on several drafts: rep weave, overshot, monk's belt, summer & winter, barleycorn. Warpwise honeycomb also exhibits deflection, though less dramatically, as the warps, unlike thick tabby wefts, cannot be beaten into the vacant space that is created by the floats. Harriet Tidball's monograph *Undulating Weft Effects* describes many charming variations of honeycomb.

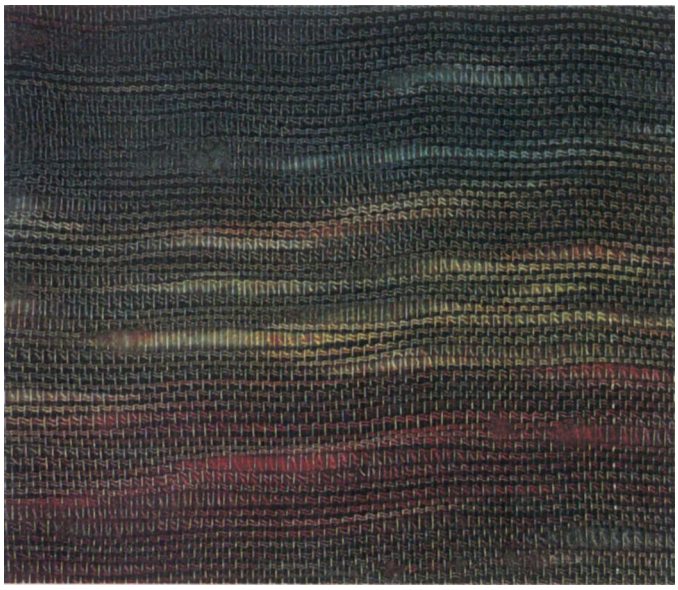
Floats are not unique to honeycomb, of course; they may play a similar role in other structures. I have noticed pleasing undulations in fabrics based on monk's belt, a 3/1 twill variant, M's & O's, cell weave, waffle weave, and barleycorn. These deflections are often the result of a complicated interplay of weave, sett, and yarn characteristics. The weave and sett must provide some free space, and the yarn must have the energy (in the form of loft or spin) to move out of the grid. While experimenting with barleycorn, I came up with a "cellular" fabric that is a reverse honeycomb. A single thick shot is used for the cell, and it is outlined by six shots of fine tabby. The cell rises above the receding outline. As with honeycomb, a firm beat was necessary to encourage the wefts to "invade" the vacant spaces, but the result was nevertheless a springy, flexible cloth.

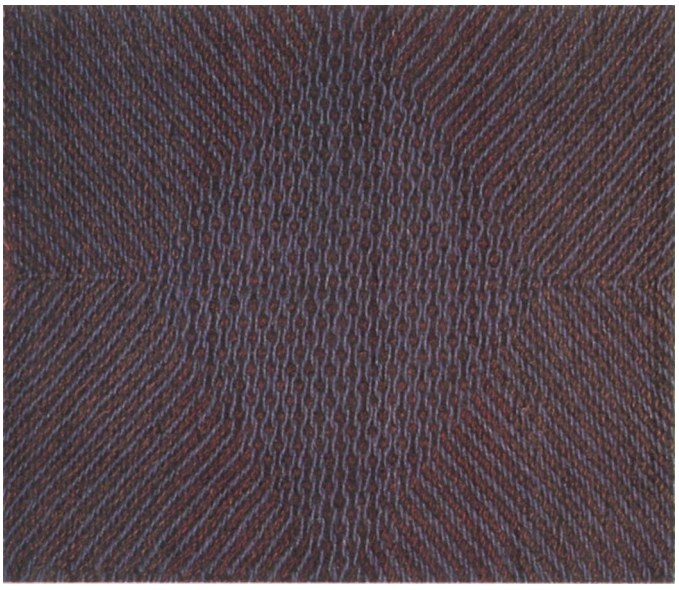
Slubbed yarn may produce a similar, though less pronounced, effect. Clumps of low-twist fiber are like floats in reverse. They take, rather than create, space. Knotlike slubs push aside adjacent warps and wefts, distorting the grid in their vicinity, or, proceeding more gradually from thick to thin, they make gentle waves of thick-and-thin fabric. If you have a fabric sample that is limp and lifeless, try adding a slubbed weft.

Opposite, top: Three methods of achieving deflection. The blue and white fabric at top, woven by Ann McKay, is a double-weave fabric sometimes called "pocket weave". The interlocking of two different fabrics produces the soft ripples we associate with quilting. The wavy lines of the delicately striped fabric are created with a special reed (known as an ondulé reed) that has variable dents placed at angles to form fan shapes. The reed is moved up and down so that sometimes some of the threads are spaced close together, and other times they are wider apart. At the bottom left is a barleycorn jacket fabric woven by the author. The soft, fluid lines are the result of short floats on the back of the fabric. Usually in barleycorn, the floats are used as pattern on the face of the fabric; here they serve a structural purpose, much as they do on the back of the fabric in honeycomb.

Bottom, left: Watery movement is achieved in this fabric by Joan Schilling by combining slubby yarns with airbrushing.
PHOTO: NORA ROGERS

Bottom, right: In contrast to the allover patterning effect typical of float structures, Nora Rogers sets a diamond-shaped-float-dominated area against a background of warp twining. The result is an embossed surface and a perimeter that gently contracts and expands to reflect the gradual interchange of structures.
PHOTO: NORA ROGERS





Floats and slubs act in what might be considered local space. We should also examine global spaces, always a key issue in fabric construction. Solving the mystery of sett lies, I feel sure, in finding the balance between the demands of the weave and the need of the yarn to express itself. Experiments with collapse weaves wonderfully illustrate the inherent energy of highly twisted yarns. When such yarns are woven with wide spacing and then encouraged to shrink (implode is a more descriptive term) during washing, the result is a highly deflected fabric so elastic that it resembles a looped rather than a woven structure. (I have a collapse ruana that bounces as I walk.)

Wide spacing both in the reed and by means of the beat will, in the absence of high twist, yield deflection without collapse. Many of us are familiar with curtain yardage that contrasts normally set plain-weave areas with nearly transparent open areas. The same principle is illustrated in double-weave fabrics that unite two very different interlacements, one being a solid foundation for blocks of open, undulating web.

The reed itself may be designed to create a vertically fluctuating sett. The Erdmann reed, with its dents angled into a series of chevrons, is raised and lowered to change spacing, causing warps at the margins of the chevrons to deflect. A horizontal equivalent can be achieved by adding a curved extension to the beater or, following Peter Collingwood's lead, by gradually altering the tension of groups of warps. Seersucker is a well-known example of fabric that owes its rippling surface to bands of unequal warp tension. Differing take-up of neighboring weave structures may cause ripples, not necessarily by design. However, ingenuity may translate what is first seen as a flaw into a special effect.

According to the poet Robert Bly, "All through Taoist and 'curving lines' thought, there is the idea that our disasters come from letting nothing live for itself. . . ." Weaving presents us with a recurring riddle: How can we impose a formal pattern on our material and at the same time let it live for itself? Fabrics that escape the grid provide us with one set of answers. ❖

Lynne Giles explores weave structures and weaves rugs in Santa Cruz, California. She'll be lecturing on rag rugs at Convergence 90 in San Jose.

Opposite, top: Slubs are a familiar yarn feature that distort the web. In this commercial drapery fabric, probably dating from the 1940s, closely set warp yarns almost entirely conceal a silky thick-and-thin weft yarn. The result is a richly textured surface. The author's collection.

Bottom, left: Detail of a tapestry by Ann Thimann. Here eccentric warps and wefts are a natural consequence of building up individual shapes. The underlying structures are soumak, basket weave, 2/2 and 1/3 twill, weft-faced plain weave, and weft-dominant plain weave. These textures contrast sharply with the flat, smooth, uniform surfaces that we are accustomed to seeing in tapestry, surfaces that have more to do with painting than weaving. PHOTO: NORA ROGERS

Bottom, right: Like the coat fabric on the cover of this issue, Ann McKay created this dress fabric, which is a wonderfully successful blend of weave structure and yarn. There are two warps: the backing fabric is a tightly spun wool in S and Z twist; the face fabric is a heavy wool two-ply. When washed, the face fabric collapses along its "stitching" to the backing fabric with quite remarkable results (see Draft for Brown Coat in the Instruction Supplement).

PIQUE "Quilted" Fabrics on the Loom

by Donna Sullivan

PIQUE IS A woven structure with a quilted appearance that results from stitching a taut bottom warp periodically into an upper face cloth (the upper cloth consists of a face warp interweaving with its own weft). The two warps are beamed separately so that the face warp can have a moderate tension. Where the taut stitchers from the bottom warp rise to the surface of the face cloth, they form indentations that contrast with raised or puffy areas in which the stitcher warp does not pull down the face cloth (see figure 1).

The raised areas can be further accentuated by an optional extra padding weft (called a wadding weft) which floats between the face cloth and the stitcher warp. An optional backing weft interwoven with the stitchers on the underside will produce a more stable fabric which can withstand friction and repeated laundering. Piqué woven without the backing weft is called "loose-back piqué"; the addition of a backing weft creates a type of double cloth called "backed piqué".

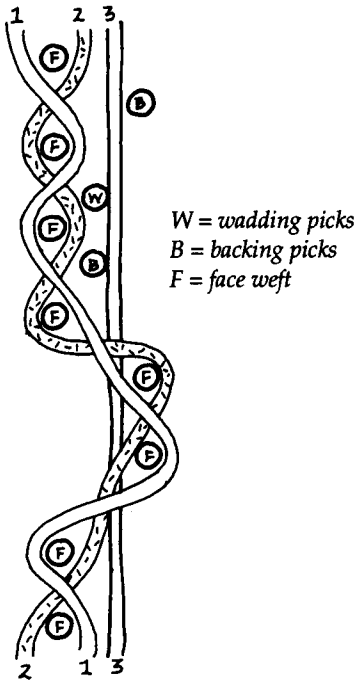
Piqué qualities

Piqué provides insulation in clothing and coverlets, increases the durability of upholstery (when backed), and adds rigidity to fabrics. It provides a means of achieving a thick fabric with fine threads. The ridges and furrows of piqué add a third dimension to weaving, a characteristic that distinguishes piqué from other quilted fabrics.

Ribbed piqué

There are three types of piqué: ribbed, waved, and figured. The simplest type, ribbed, requires a minimum of three shafts: two for the moderately tensioned face warp which forms plain weave with the face weft, and a third for the taut stitcher warp. The stitchers in many cases are drafted on two shafts to decrease friction. After four rows of the face weft (F), the stitchers rise to the surface to pull down the face cloth. Horizontal raised ribs of face cloth alternate with horizontal furrows in which the stitcher warp rises above, or cuts, the surface. Optional wadding picks (W) accentuate the depth of ribbed piqué. When the stitchers are drafted on two or more shafts, backing picks (B) can be added to increase durability (see Ribbed Piqué Draft).

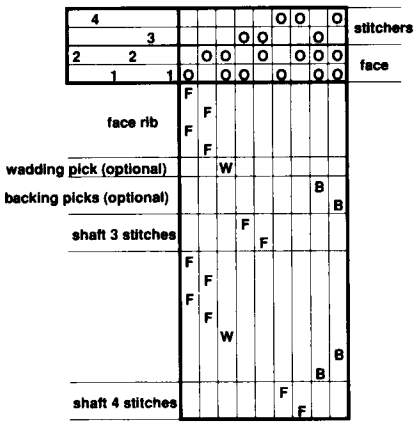
Figure 1. Piqué weft cross section



Waved piqué

Besides forming ribs, piqué can create patterns. The two types of patterned piqué, waved and figured, require a minimum of five shafts for loom control. While ribbed piqué alternates straight horizontal ribs with straight furrows, waved piqué is characterized by wavy horizontal ridges alternating with indented pattern motifs. The indented designs, formed where the pattern stitchers cut the surface of the face cloth, may consist of selvedge-to-selvedge motifs, as in treadling A (see Patterned Piqué, A) or small isolated motifs, such as the

Ribbed Piqué



diamonds in the green pillow, as in treadling B (see Patterned Piqué, B). Wavy ridges of plain weave which run horizontally the entire width of the fabric separate the indented stitcher pattern areas. The indented motifs are often considered the positive design areas while the wavy ridges form background. Note the B and W picks; a wadding weft can be added at the end of the treadling sequence to puff the plain-weave ridge, and an optional backing weft can add stability.

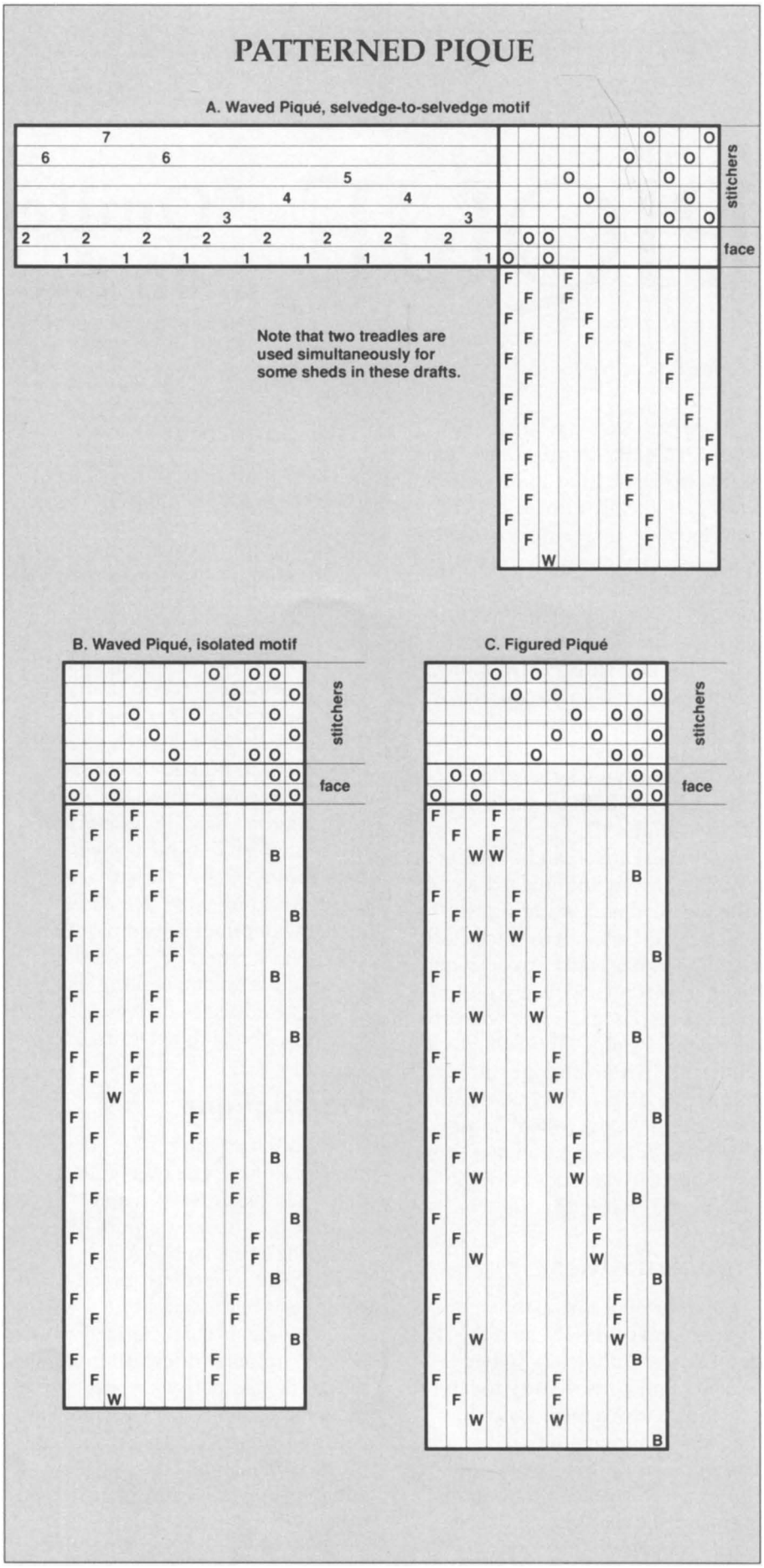
Figured piqué

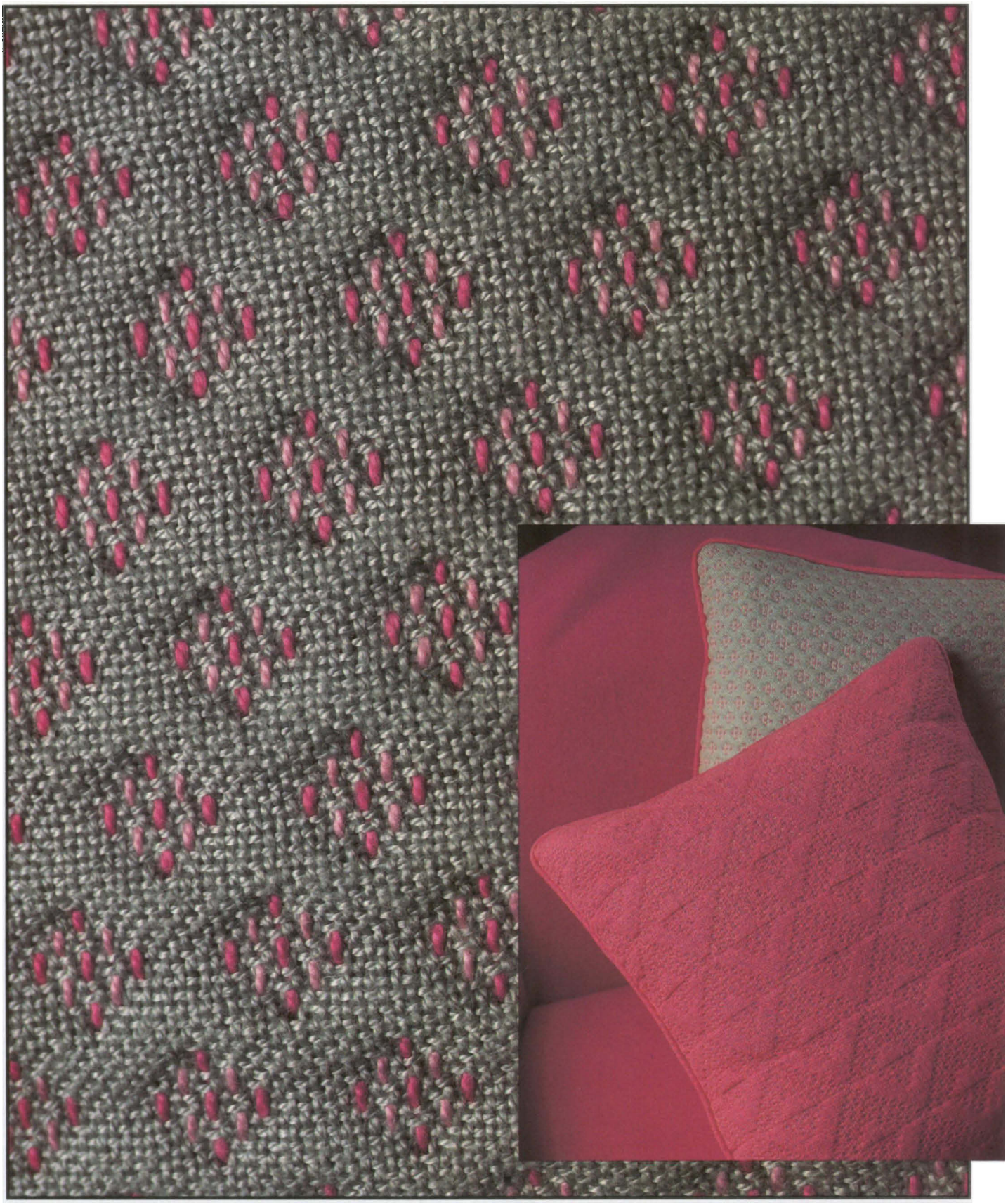
At first glance, it is difficult to distinguish waved from figured piqué. Compare the stitched and puffed areas in the pink figured piqué pillow and the green waved piqué pillow. In the pink pillow, there is no sharp horizontal break in the stitcher design, and the puffed area does not travel uninterrupted from one selvedge to the other. In contrast to waved piqué, the embossed stitcher areas overlap, and the puffy areas are discontinuous in figured piqué. Also in contrast to waved piqué, the puffed areas of figured piqué are usually considered the positive design areas while the stitched areas are background. Compare the waved piqué treadlings A and B with the figured piqué treadling C (see Pattern Piqué). The wadding weft (W) is used throughout a figured piqué treadling rather than only at the end of a sequence.

Adaptations

The use of pick-up techniques will permit waved and figured piqué to be woven on four-shaft looms. Although two beams are helpful, the stitcher warp can be suspended in one-inch to three-inch bouts over the back beam and weighted with plastic liter bottles partly filled with water to achieve the desired tautness. ❖

Donna Sullivan is the author of Piqué: Plain and Patterned.





Green Waved Piqué Pillow and Pink Figured Piqué Pillow, both by the author. The green pillow features complementary colors in a selvedge-to-selvedge motif. It requires seven shafts to weave. The diamond motif of the pink pillow requires twelve shafts, though an alternate eight-shaft version could be woven following treadling C of the Pattern Draft. Complete instructions for both pillows are in the Instruction Supplement.

Ragtime Vests

Sometimes the challenge to try something new comes from unexpected places. Louise Bradley, well known for her rag-accented garments, wove her first as an assignment for HANDWOVEN's *Design Collection 8*. Louise has developed her initial prototype into all sorts of imaginative uses and designs. Her recent exploration of rags was inspired by someone's jesting remark that Louise, having already done seemingly everything possible with rags, would probably next be tying knots in them. And so she has. This set of four vests, all woven on the same black warp, not only illustrates an imaginative use of rags, but shows the variety of variations which can be achieved on a single warp where stripes and rag accents are woven in the weft. Louise prepared her rags for weaving by knotting them around a pencil every few inches. For one of the black-and-white vests, Louise carried the rag wefts across the entire fabric width for one; for the other one she inlaid them in random lengths. For the vest with red rag accents, she carried rags diagonally on the face of the fabric—with dramatic results. Bright, clear, primary-colored accent rags give a fourth vest a Mardi Gras look. In addition, each vest is given a slightly different assembly treatment.

Ragtime Vests by Louise Bradley. Details for the two black-and-white vests are in the Instruction Supplement.

A Coat with Pulled-Warp Technique

by Kerry Evans

In my early years of weaving clothing, I used rectangles and squares with an emphasis on making garments with more sophisticated shaping than the "Bog Age" style of loom-shaped garments being woven at that time. I incorporated tucks, pleats, casings, slits, and detailed fashioning. The fruit of that labor was my first publication, *Treadled Togs: A Pattern Book of Loom-Fashioned Clothing*, published in 1981.

About eight years ago, while giving a workshop in Pittsburgh, I met Connie Kerr, who introduced me to the pulled-warp technique and suggested that I apply this technique to clothing. To date, this technique continues to challenge my designs. My second publication, *Applying the Pulled Warp Technique to Loom-Shaped Clothing*, was published in 1984.

Applying the pulled-warp technique to clothing enables the designer to weave garments which can be fitted to the body simply by leaving designated areas open in the weft and then, after completing the weaving, pulling the warp threads to close the open area. These areas are referred to as wedges or darts. Some of the uses for these wedges are for shaping at shoulders and bust darts, for tapering sleeves, flaring skirts, curving collars and necklines, or for making pockets or belt loops.

When designing clothing it is extremely important to carefully plan the garment for correct placement and size of the wedges. I usually make a sample garment out of muslin to ensure the proper fit. Wedges can be pinned or basted and adjusted on the muslin before beginning the project on the loom.

The coat shown was woven using pulled warps along the entire length. It is made in four pieces; the main coat section measures about three yards at the lower edge, tapering to about 40" at the top edge where it is attached to the bodice section. Each sleeve has one large wedge to taper the piece from the shoulder to the wrist edge. The sleeve seam is along the shoulder line. The main coat section required nine wedges to achieve the desired flare and fullness.

The 46"-wide warp is 5/2 cotton set at ten ends per inch. The weft included six colors of Tahki Windsor Tweed alternated with Harrisville singles in matching colors, creating a rep-weave pattern.

Cuts were made into the main coat section at the sides for sleeve insertions. Cuts were also made for the pockets, and extra fabric was woven for the pocket welts. Only the bodice section is lined, to conceal the large shoulder pads. Two buttons on the front bodice are the only closures on the coat. A single chain crochet stitch finished off the sleeve edges and the bottom edge of the coat. ❖

Kerry Evans lives in Milwaukee, Wisconsin. Her efforts are currently devoted to the Silk for Life Project, which imports and markets handspun Colombian silk yarn as a crop substitution program for Columbian coca farmers.

Weaver Kerry Evans shaped this coat by using the pulled-warp technique, leaving spaces in the weft during weaving and closing them up by pulling on the warps after the piece was removed from the loom. The chevron points along the coat's length are the product of combining technique (pulled warps) and design (stripes) for intriguing results. No instructions given.

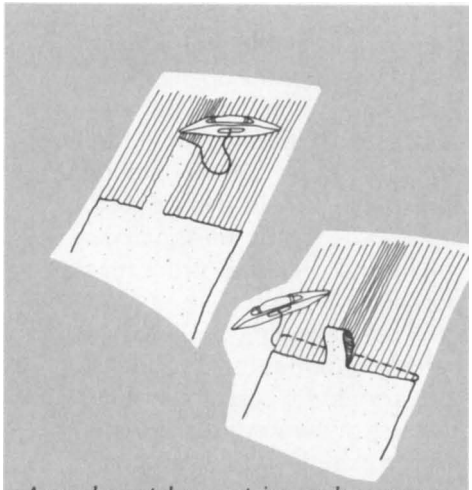
Memoirs of a Trickster

by Barbara Liebler

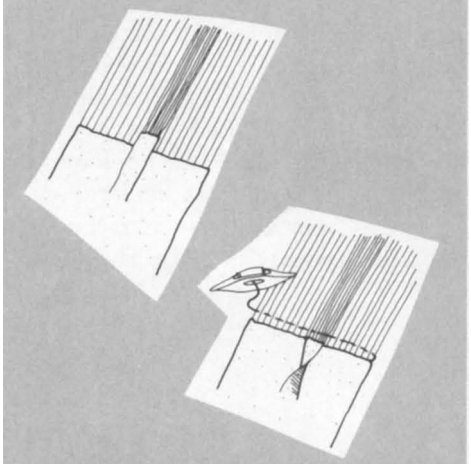
TIME WAS, I used every trick in the book. Technical tricks with the loom or the cloth held great fascination for me, and hearing someone marvel, "How did she do that?" was my greatest reward.

It wasn't long, though, till I realized that these "tricks" were better used as a means to an end than as an end in themselves. After I had done enough of the clever things I'd read about other people doing and had made up a few of my own, I gained the confidence to use or invent whatever technique would get me the end result I wanted in my woven work. Through seventeen years of weaving, I've tried a lot of unusual techniques, a few of which I simply made up on the spot. Let me share some of them with you.

There were tricks with the loom. I'd thread a basic fabric, then add supplemental warp threads with individual weights rather than a second warp beam. Sometimes I'd cut those supplemental warp ends one at a time, turning them into weft, so that the stripe of fancy yarn would do a 90-degree turn on the fabric. Sometimes I'd weave one of those supplemental stripes extra long and then pull it up into a loop, weaving all across to secure it in place. Once I even wove the supplemental warp stripe extra long as a separate fabric from the backing, then pulled it out of the heddles, twisted it, rethreaded it through the heddles, and wove it back into the cloth. I didn't try Peter Collingwood's mac-



A supplemental warp stripe can be woven as a separate layer, then pulled up into a loop and held in place by weaving it back into the ground cloth.



The same supplemental warp stripe can be woven as a separate strip while the ground cloth is woven slightly shorter; then the strip is unthreaded, twisted, and rethreaded to weave back into the cloth.

rogauze technique, but it looked like a slick trick to me at the time.

Another loom trick I liked was to weave one continuous cloth with several layers that, when taken off the loom, would unfold into a three-dimensional shape. These were layered weaves on eight or more shafts, or they were weaves in which the weft criss-crossed between various vertical bands.

Some of my favorite tricks were with yarn—or yarn substitutes. I found that if I wove a cloth with long floats—say, waffle or Brighton weave or corded weaves—using unwashed white cotton weft, and I purposely shrank the finished fabric, the three-dimensional character of the weave was exaggerated. I found that this worked well with piqué or undulating twills, too. I made the ground fabric or the warp of preshrunk fiber, and used a weft with floats of nonpreshrunk fiber, then shrank the finished fabric either in the dyebath or the washer and dryer.

Yarn substitutes have been a lot of fun. Anything that looks fibrous will work as weft. I used a solid-color warp and three colors of wire for weft in one wall hanging. Where the galvanized steel wire crossed the blue warp, the fabric looked steely blue. Where the copper wire crossed the blue warp, it looked deep rich bronze. And where the brass wire crossed the blue warp, it looked green. Then I bent the squares of colored woven wire over

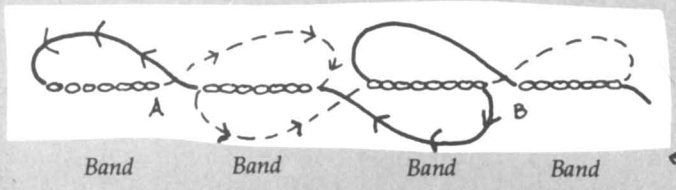
the edge of a ruler for a three-dimensional fabric that reflected light beautifully.

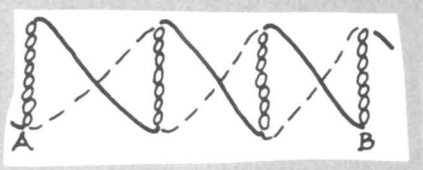
Another fun piece was a room divider made of 1"-wide bands of black elastic thread for the warp and ¼" dowels for the weft. I wove the bands straight and long; after the weaving was off the loom, I replaced some of the 9" dowels with 36" dowels that held twists in some of the bands. Gravity did a wonderful thing with the elastic warp, stretching the elastic more at the top than at the bottom so that the dowels were not evenly spaced.

I've woven a lot with nylon monofilament. Because it's clear, dye either shows through it or prints on it. Inkodye will dye nylon as well as plant fibers, so I've played with cotton warp, clear nylon fishing-line weft, and Inkodye print on the finished fabric. Another material with similar possibilities is some ghastly orange nylon tape that will discharge to clear with Rit Color Remover and then accept dye. Some day I'll weave a clear-on-clear panel and then paint fish or coral on it.

Discharging is a great trick. Don't like something you wove? Paint on it with diluted bleach or with discharge paste. Bleach changes many colors to yellow, and its watery consistency makes for watery edges, while discharge paste takes them to white, and its pasty consistency produces sharp edges. I've found that bleach makes the fabric translucent, too (probably shortening its lifespan considerably at the same time), so I have used bleached fabric for free-hanging space dividers, where the contrast of opaque and translucent is appealing.

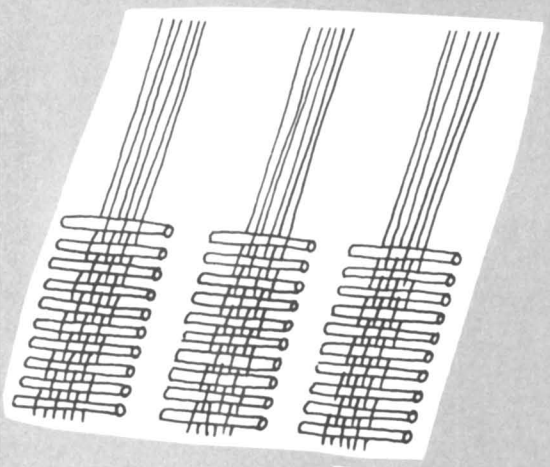
Playing with discharging is similar to playing with dye, and I *love* to play with dye. I've especially liked to weave something with a specific after-dye trick in mind. Differential dyeing is a favorite, something I still do: I weave with animal fiber warp and plant fiber weft, then dye the finished fabric first with fiber-reactive dye and soda (which dyes the

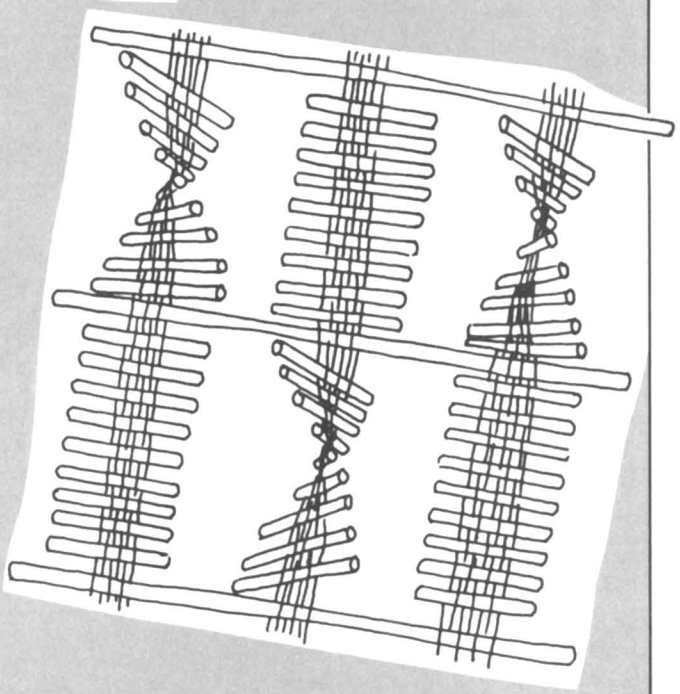




Off the loom

This four-shaft weave of bands with weft floats will unfold into a three-dimensional structure with X's of weft holding the bands together.

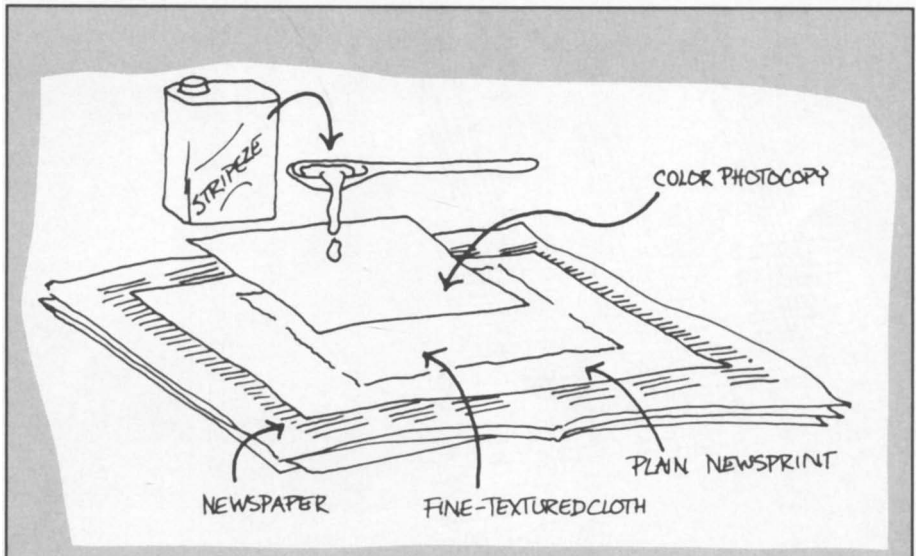




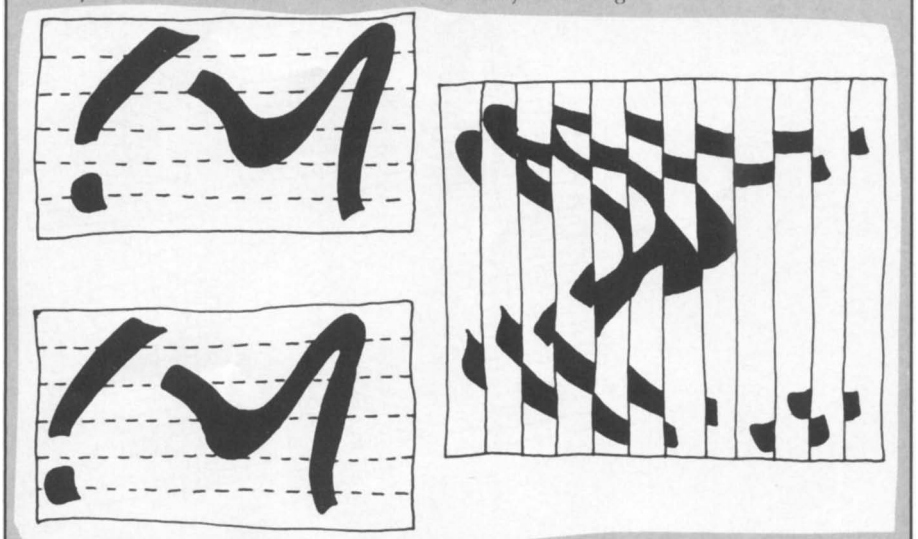
With elastic thread for warp and dowels for weft, the piece can be woven flat and then twisted after it is off the loom.

plant fiber but not the animal fiber), then with acid dye (which dyes the animal fiber but not the plant fiber). I've done this with overall twills, or with a two-sided twill woven so that there is a frame of warp-predominant twill and a center section of weft-predominant twill. Then one dip-dyed pattern dominates the center while another color scheme dominates the frame.

When I did a whole series of framed works like that, I often put photo collages on the surface. Inkodye, blueprint, brownprint, or Quick Print are all simple, no-darkroom ways of printing images on cloth using sunlight. Another easy trick for photo-imagery is to transfer a color photocopy onto cloth. Take a color slide of the image you want to transfer, and get a color photocopy made at a copy center. Have it printed backward with all three color knobs turned up as high as possible to make a very dense print. Then cover your table with a layer of newspapers ¼" thick, and put down a piece of plain newsprint, your fine-textured fabric right side up, and your color photocopy wrong side up. Tape everything in place with masking tape. Coat the back of the color photocopy with Stripeze paint stripper. Spread the gelatinous paint stripper with the back of a stainless steel spoon, being careful not to let it touch your bare skin (wear rubber gloves—the stuff is nasty). Wait ten minutes for the chemical to penetrate the paper, and then rub hard with the back of the spoon to force the softened ink of the color photocopy into the fabric. Work it over well with the spoon, then peel off the totally disgusting paper and see the print on the cloth.



Layer newspaper, plain newsprint, smooth cloth, and a color photocopy. Then apply Stripeze to dissolve the color ink and rub to transfer the image.



Baste, print, and reassemble individual strips for an interesting pieced-quilt look.

Speaking of printing, I was very pleased recently with a project I wove with a specific dye printing trick in mind. I wove many yards of 5"-wide fabric, warp-predominant dark brown rayon on one side and weft-predominant white verel on the other side. I then cut and basted lengths of these strips edge to edge to get two pieces 40" long by 5 strips wide. I made a design with disperse dye crayons (see "Child's Play" in the May-June 1989 issue of HANDWOVEN) on a piece of paper, then transferred that design to each of the two pieces, offsetting it by a couple inches so that I had two almost identical pieces of printed fabric. I then took out the basting and rearranged the strips, alternating strips from the first piece with those from the second, in the order in which they'd been basted together. The staccato rhythm of the finished piece was just what I wanted.

Feeling free to invent whatever technique I needed has been the most exciting element in my career as a weaver. This problem-solving approach is really fun. I encourage you to try it. Never say "I'd like to do ____, but I don't know how." Instead, say, "I'd like to do ____. Now what technique can I think up to accomplish it?" ❖

Two years ago Barbara Liebler came to work at our Interweave Press offices as an assistant book and magazine editor. Before that time she'd been a full-time studio artist, as well as a regular contributor to HANDWOVEN. *Her "In the Beginning" column appeared in the first issue of* Interweave.

Seersucker

Seersucker is the result of take-up differential. It can be achieved by using different yarns and fibers as seen in the collapse fabrics on pages 31–34, or by using differently tensioned warps, as was done for the cosmetic bag and slippers shown here.

While two warp beams are handy to have for this technique, one to provide the usual amount of tension and the other to hold the slack threads, weaver Barbara Eychaner used just one beam, separately weighting the seersucker warps off the back beam. Warping back to front, she beamed and threaded the ground warp, leaving heddles in place for the seersucker warp. She then measured the seersucker warp, looped it through a lease stick, and draped it over the back of the loom, and threaded it through the reserved heddles. She weighted the warp chains with empty yarn cones. The difference in take-up between the two warps is substantial: 12 percent for the ground warp and 35 percent for the seersucker.

Seersucker Cosmetic Bag and Slippers by Barbara Smith Eychaner. Instructions are in the Instruction Supplement.

A Question of Size

by Stephenie Gaustad

WHY WOULD ANYONE want to put glue on their warp? When I first heard of this notion a few years ago, it seemed like a cheap trick: warps should be made up of sound yarns, and it shouldn't take glue or paste to hold them together while you weave. Since then, I've learned more about weaving and yarns, and I'd like to tell you my best weaving tip: warp sizing.

Warp sizing is a temporary coating applied to warp yarn. It lets you handle a tricky yarn like a normal yarn: sley it, beam it, and weave it off. The key words are *tricky yarn.*

What constitutes a tricky yarn? Weavers and knitters alike realize that a high-twist yarn can give bounce and twist to the fabric—but a headache to the handworker. Loops and kinks appear whenever the tension is slackened. Fuzzy, knobbled, or slubby yarns can produce texture in the cloth but dire consequences on the loom, as fuzzies tendril around the heddles and reed. Thick-and-thin yarns dwindle to thin and thinner, sometimes gone!

Singles yarns on the loom are a mixed blessing. From the spinner's point of view, they are efficient, as it takes time and effort to ply the yarn. The weaver finds them less expensive than plied yarn for producing thin, lightweight fabrics. Singles often have plenty of twist, creating a cobbled surface as the yarn relaxes in the fabric. But should a warp yarn break during weaving, there is little to prevent the yarn from losing twist and strength. A familiar scenario is that the selvedge yarn is abraded with each stroke of the beater. The yarn gets a little thinner with each pick. Twist runs away from the thick places to the thin places, weakening that span of yarn until something lets go and the full unsupported length of yarn unwinds. You must now replace the yard or so of punky yarn.

Tricky yarns such as these can be avoided or taken on as a challenge. Certainly the high-twist yarns are a worthy challenge as they can produce a more durable cloth, but they must be tamed. Sizing can calm the savage silk, and off the loom, the size washes out. Putting this protective coating on the warp is not particularly difficult, but it takes time.

Sizings that I have used are either paste (starch) or glue (protein). Traditionally, starch sizes have been recommended for cellulosic fibers and glue for protein fibers, but I find that they can be used interchangeably. The muck is applied to wet yarn and allowed to dry. The sized yarn is now ready for the warping board and the loom. Sizing is too messy to apply on a dressed loom and too risky to apply to a fully extended warp. It is all too possible to glue warp neighbors together or for the runnier sizes to flow to the lowest point and gather there. Tradition has the weaver brushing sizing on the spread-out warp just prior to beaming and combing through the drying warp to prevent the ends from adhering to one another. That sounds like more excitement than I wish to engage in.

Instead, I immerse wet and wrung-out skeins in the size, lightly wring them out, and place them in a plastic bag. This allows me to treat all the warp skeins, then unwind them onto drying reels. The plastic bag keeps the waiting skeins from drying out too quickly. It is a good idea to unwind the skeins on a swift outside, as the activity is wet. I use a yarn-blocking reel that's used for setting yarns, but you could use a warping mill, or a sectional or X-framed back beam. Just be sure that your yarn is strong enough to pull the chosen reel around. Put fine yarns on lightweight reels. The tool should likewise be able to withstand wet yarn without coloring the yarn and should allow air to penetrate the yarn to dry it.

Cover metal and woods with high tannin content, such as walnut, cherry, or oak, with wax or another waterproof substance. A coating of paste wax on edges that contact wet yarn will permit the dry yarn to be removed easily. You may let the skein dry intact, but be sure to manipulate and open it as it dries. You do not want the yarns to glue to one another or the size to flow down the skein and collect in one spot. When it is dry, unwind the yarn onto a storage bobbin, ready to be made up into a warp.

The yarn at this point is stiff and wiry, just right for sleying the reed and shafts freehand, without a hook. Just poke the yarn through the openings.

You weavers who exclaim, "I don't have time to do all that preparation for weaving. I want to get it on the loom so that I can get on with weaving," are missing a world of remarkable yarns. It's another road, perhaps less traveled, but for me, it has made the difference. ❖

Stephenie Gaustad spins, weaves, teaches, and makes spinning tools in Volcano, California.

Some size recipes

Boiled flour

This is a thick, multipurpose size. It works as well on wool as it does on cotton. It is slow to dry, with little tendency to drip.

½ cup all-purpose flour
2 cups water

Make a paste of the flour with a small portion of the water. When smooth, add 1 cup water and heat slowly. Stir until it boils. Continue stirring until mixture becomes pearly and translucent. Be careful: it scorches easily. Add remaining water, remove from heat, and stir until smooth. It is ready to use.

Gelatin

This size is runny, so watch for pooling. It dries quickly.

2 tablespoons or 2 packets unflavored gelatin
¼ cup cold water
1 cup boiling water
¾ cup cold water

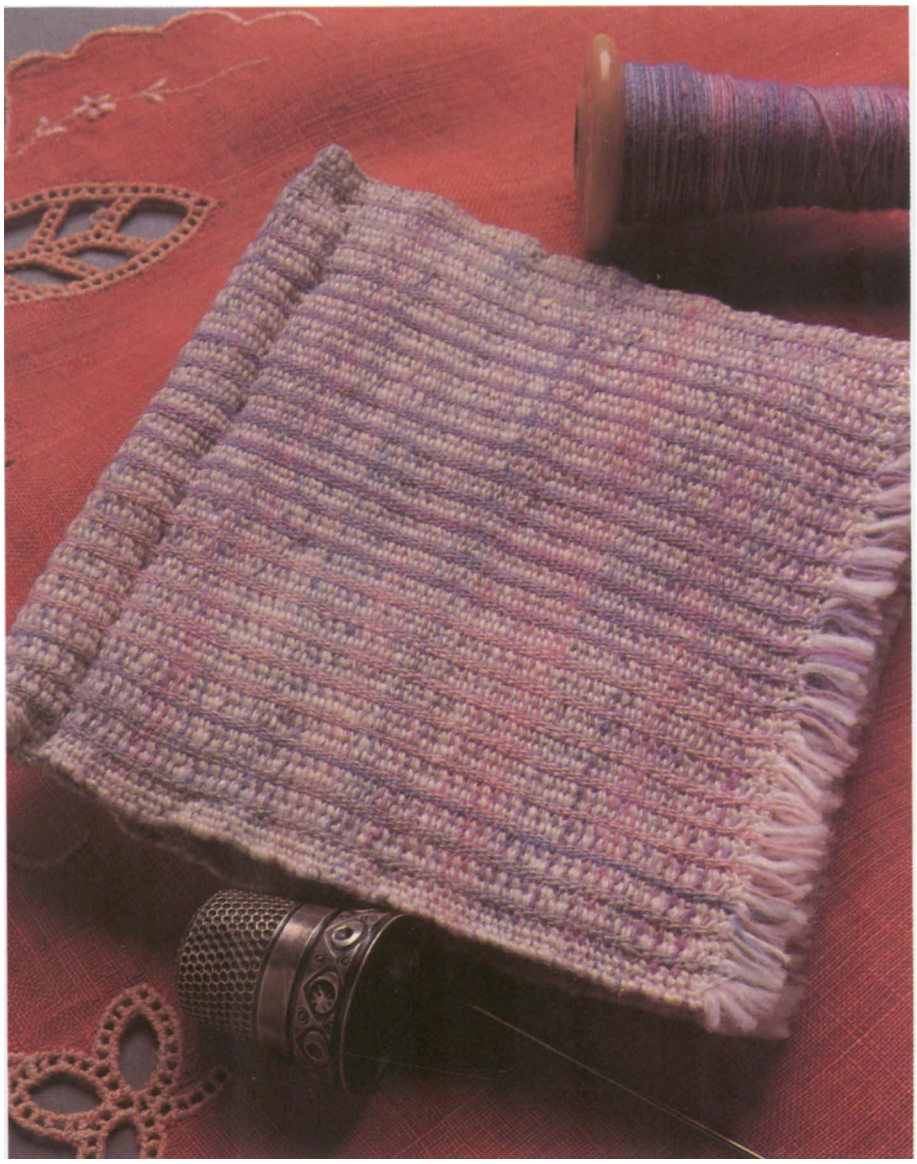
Soak gelatin in cold water until it swells. Stir in boiling water until gelatin dissolves. Add cold water and stir. Size is ready to use.

Milk

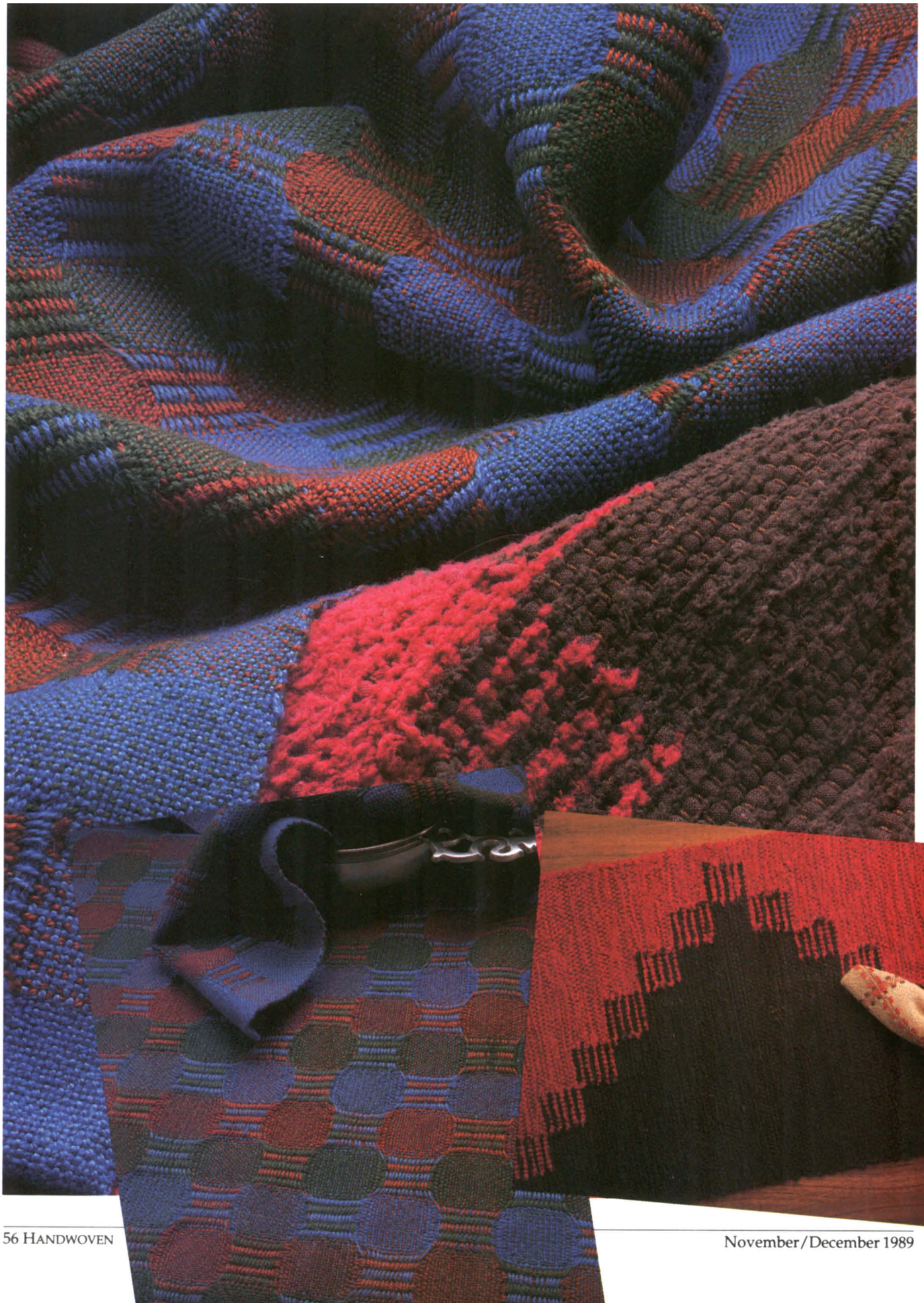
This is another runny size, so beware of pooling and drips.

1 packet (for 1 quart) instant nonfat milk
2 cups cool water

Stir powdered milk into water until mixed. Size is ready to use. ❖



The handspun cotton yarns for this needle case woven by the author had to be sized before they could be woven. The heavier (5040 yd/lb) warp yarns were high twist and lively. The finer (14,000 yd/lb) warp yarns were spun from a carded sliver and were fuzzy and somewhat slubby. "I sized them both with boiled flour," explains Stephenie. "I don't believe that I could have managed these fine, spunky yarns, set at 36 ends per inch, without some help. Warp sizing did the trick." A draft for Stephenie's needle case is in the Instruction Supplement.

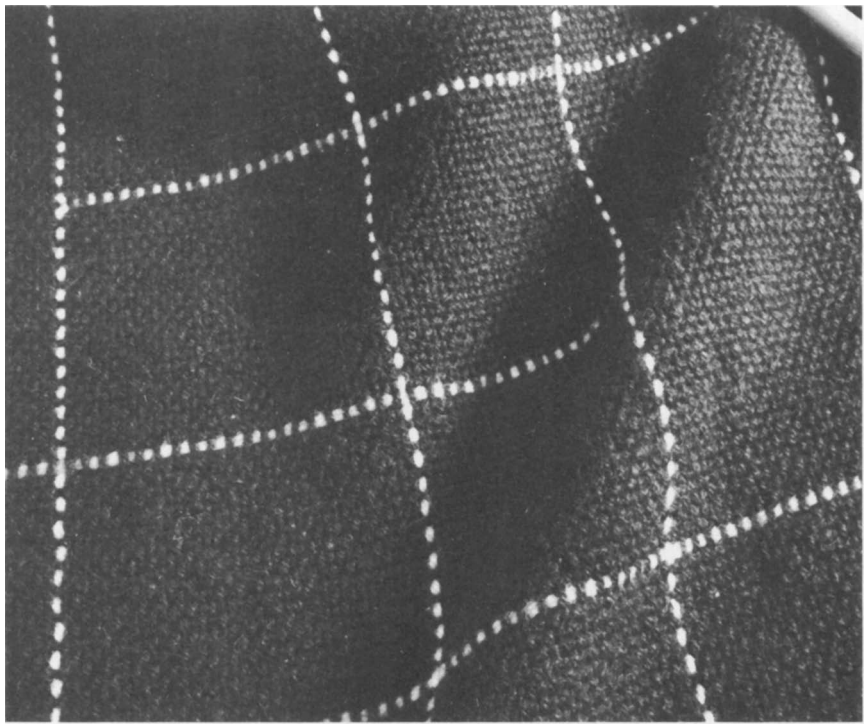


Fabric Ideas

Interesting approaches to weaves aren't always flashy, as these two projects illustrate. The tablecloth fabric, designed by Margaret Gaynes, makes the most of the thread deflection inherent in M's & O's. No heavy weft is used to outline the blocks; rather, the design takes on the look of a checked fabric with a twist. The blocks have an odd number of cords rather than an even number, enchancing the color effect by changing the position of the colors between rows of blocks (the color that is on the outside cords in one block will be on the inside cords on the next row of blocks). Alternating two shuttles produces color stripes in the corded areas.

Clasped-weft technique, used for the placemat designed by Kathy Bright, offers countless possibilities for not only design, but color and texture as well. Here Kathy uses clasped weft to good advantage. The triangle motif of the mat, woven lengthwise on the loom, appears more complex, and thus more interesting, when turned horizontally for use on the table. The stepped design with overlapping colors further embellishes this mat.

M's & O's Tablecloth by Margaret Gaynes and Clasped-Weft Mats by Kathy Bright. Instructions for both projects are in the Instruction Supplement. Yarns for the Clasped-Weft Mats are courtesy of Eaton Yarns.



Linked Warp and Weft

Jochen Ditterich of the Weaver's Shop in Rockford, Michigan, developed this linked-warp-and-weft technique, a close cousin of clasped-weft technique, for this intriguing blanket design. Here's how it works:

Wind your warp onto the back beam as usual, leaving spaces in the reed and heddles for your contrasting warp ends. Measure the linked warp ends about five to six times longer than your regular warp, thread them through the spaces left in the reed and heddles, and weight them separately with fishing weights off the back.

To make a horizontal line with your linked warp, open the shed, weave across to a linked warp, pull the linked warp toward you and go around it with your shuttle. Weave back to the edge you started from with your shuttle; pull the linked warp thread into the shed as far as desired. You'll have a doubled thread in this shed (any area not woven with the linked warp and weft will essentially have a missing a pick, though it will also have a doubled thread, because the pick following the linked pick will fall in the same shed as the pick preceding the linked pick). Weave a few picks and then adjust the linked warp so that it does not leave a hole or a loop where it links with the weft.

Triaxial Weaving

Breath on a Mirror *by David R. Mooney. 56" × 57". 1986.* PHOTO: THE ARTIST

We've all learned that weaving is crossing two sets of threads, warps and wefts, each other at right angles. Triaxial weaves, with three axes or sets of yarns which interlace at sixty-degree angles, challenge this notion. This type of interlacement isn't new; it's existed for centuries in basketry, cane weaving, and braiding, for example. What is new is the accessibility of triaxial weaves to the handweaver, primarily through the efforts of David Mooney, a Philadelphia-based fiber artist who has explored this technique in depth and developed it into a fine art. His challenge of traditional biaxial weaving has resulted in impressive fabrics created with inventive and persistent experimentation. In a May/June 1986 *Fiberarts* interview, David noted, "To make any progress, I had to deliberately put out of my mind everything I knew about weaving, because working with three elements instead of two is so different. Structurally, it's different—the way it wants to distort is totally different and what happens with color is completely different."

Though sophisticated commercial production machines to make triaxial weave structures exist, David Mooney has adapted the technique to work on any hand loom. He ties an extra rod to the front apron so that there is one rod for the warp and another for the weft, as shown in the drawing. The warp is threaded for plain weave—Mooney prefers to use wool at five ends per inch—and tied to the rod closest to the beater.

He winds his weft yarns on spools and puts them on a spool rack nearby. Referring to his drawings for the weft color choices, he then pulls a length of yarn off the spool, folds it in half, and ties it to the weft rod with a lark's head knot (see drawing). He then winds each end of this weft pair into a separate butterfly before choosing the next weft yarn. He spaces the weft pairs between each pair of warp ends, starting and ending to the outside of the warp, so that there is one more pair of weft yarns than of warp. The weft pairs are numbered: odd-numbered pairs will move to the right as they are woven, and even-numbered pairs will move to the left. Each of these weft butterflies will be manipulated by hand for each row of weaving.

For the first row of weft, Mooney begins at the left. He treadles to raise the even warp ends, and crosses the left member of each even-numbered weft pair under the raised warp end to its left. With the same shed still opened, he puts the right member of each odd-numbered weft pair over the weft he just placed but under the raised warp end to the right of this odd-numbered warp pair. (Note that weft pairs 1 and 2 interact with the first pair of warp ends, while the next pair of warp ends sits idle for this row of weaving, and so on across the row.) This completes the first row of weft. Mooney tugs on the weft ends if needed to adjust their tension, and presses them in place with the beater.

For the second row of weft, he treadles to raise the odd warp ends and places the left member of each odd-numbered weft pair under this raised warp.

The third and fourth rows are worked similarly, using the warp pairs that were not used in the first two rows (see drawing for frame setup. The four rows are repeated for the length of the fabric. As each weft reaches the selvedge, it is turned and moved back across the warp in the opposite direction, as shown.

As each weft runs out, a new one is started as in conventional weaving, by overlapping the new weft strand with the old one for a couple of inches.

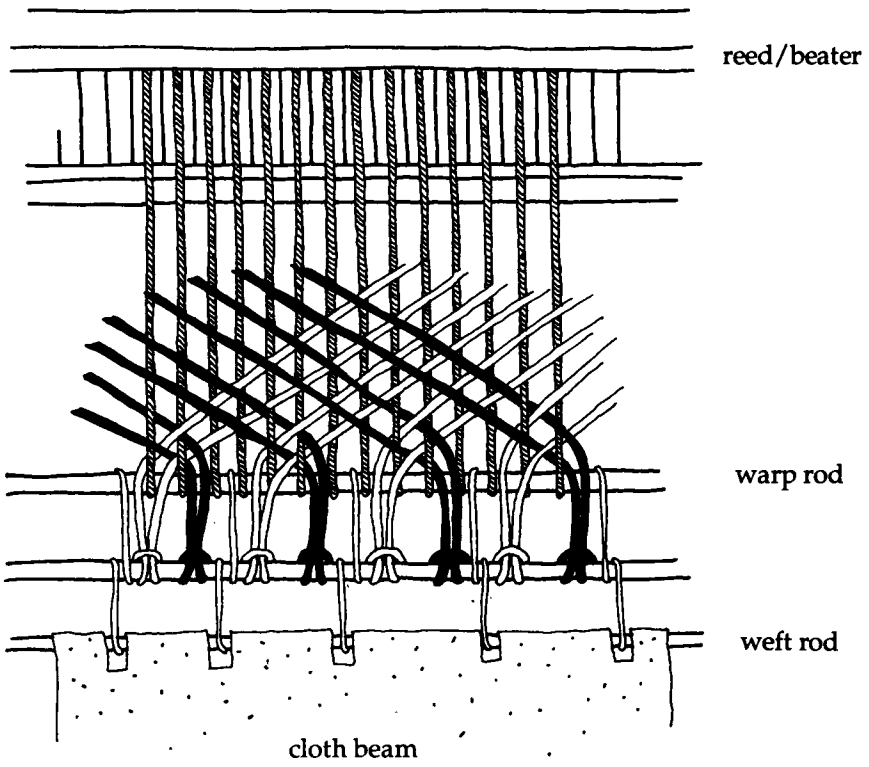
Further Reading

Goodman, Deborah Lerme. "The Triaxial Weaving of David Mooney", *Fiberarts*, May/June 1986, pp. 34–37.

Mooney, David. "Triaxial Weaves and Weaving: An Exploration of and Weavers", *Ars Textrina*, Volume 2, 1984, pp. 9–68.

_____. "Handweaving Triaxial Weaves with Braiding Techniques: Triaxial Braiding", *Ars Textrina*, Volume 3, 1985, pp. 99–124.

_____. "Braiding Triaxial Weaves: Enhancements and Design for Artworks", *Ars Textrina*, Volume 5, 1986, pp. 9–31.

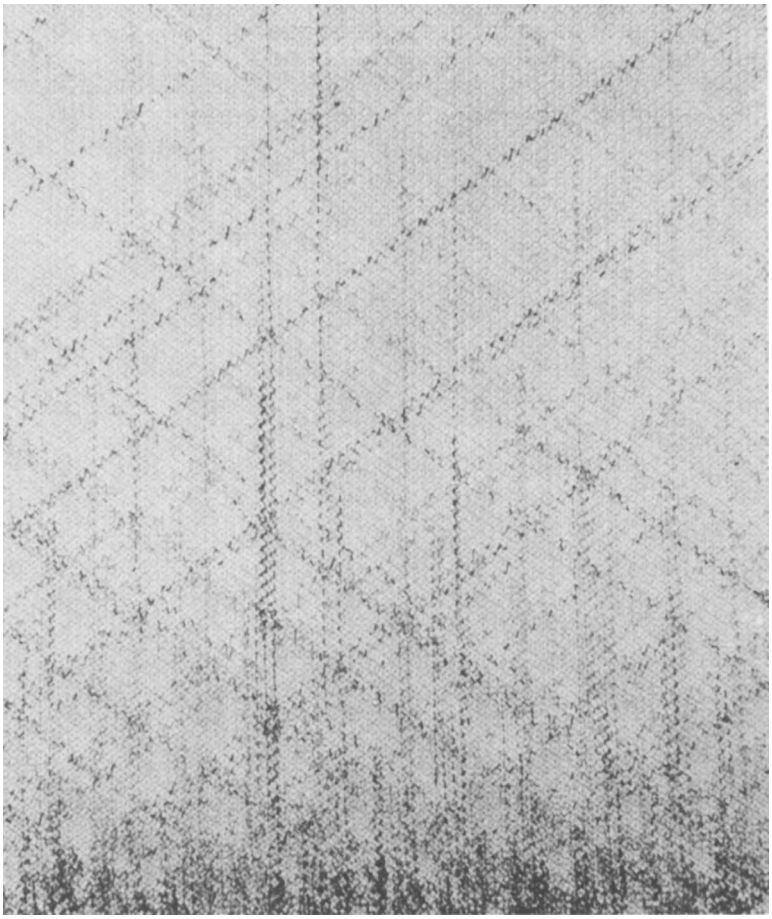


Notes from the artist

by David R. Mooney

In the beginning, weaving was fun. All those colors! Wool felt good in my hands. And so easy to do. I got a big loom and wove big tapestries without thinking much about why or what. They looked good on the wall. I played with spontaneous compositions, grabbing the next strand of yarn from a big bag with my eyes closed. As my skills increased and I learned more about historical tapestries, I began to weave portraits, individualized and recognizable. Works got into juried exhibits. People paid money for some of them. One day somebody asked me, "If you're going to do photorealistic portraits, why not paint?" Photorealism. Suddenly, there I was, in the middle of an Art Movement.

I experimented with combinations of weaves in an attempt to make their structure part of the image. I combined tapestry with tabby in the manner of Coptic weaving. I used overshot with tapestry and depicted the overshot pattern in the tapestry. From a distance you couldn't tell them apart. This path led to triaxial weaving, where indeed the structure and the image merge. The three directions of yarn in triaxial (tri-axial, three axes) weaves interact equally. The terms warp and weft lose meaning. Every strand in all three directions contributes both to the image and the structure of the weave.



Elements of Chance *by David R. Mooney. 36" × 30". 1984.*

PUSHING THE LIMITS

Elastic Experiments

by Jane Patrick

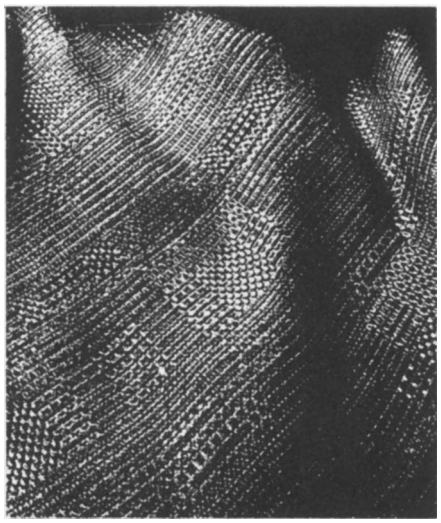
Ever since I saw Betty Hewson's loom-shaped Buttercup Top (HANDWOVEN's *Design Collection 1*), which utilized elastic weft to shape the waistline, I've wanted to explore elastic's possibilities as a weaving material. These swatches represent my experiments to create a fabric for an evening bag. I wanted the fabric to have a rich jewel quality and chose bright shades of 20/2 pearl cotton which I crossed with black 20/2 worsted or 20/2 pearl cotton. The threading is a point twill set at 36 ends per inch. The goal was to weave a crinkly-patterned fabric appropriate for a small, square-shaped bag accented with a antique gold clasp at the top.

At the sewing store, I bought ⅛" polyester elastic braid, ⅜" clear polyurethane elastic, round elastic cord, and cotton elastic thread. I tried them all. The cotton elastic thread, the closest in size to my weft yarn, best suited the intended purpose of my fabric. As I worked, I could readily envision the practical uses of elastic for gathering of anything that needs shaping—sleeves, necklines, pant legs (the elastic weft can be adjusted for fit after weaving); for design details at the ends of scarves and shawls; or for mock smocking for blouses, skirts, and dresses. For fabric design, there's great potential for creating little puckers and gathers at will, something possible with chemical treatments used for commercial fabrics but not readily available to the handweaver.

Elastic experiments for an evening bag, woven by Jane Patrick.

OVERSHOT INNOVATIONS

One-Shuttle Overshot



Fabric detail.

Using the same weight of yarn for both tabby and pattern wefts is the secret to this richly patterned overshot technique.

Sandy Lommen of Troy, New York, developed this one-shuttle overshot technique for her finely woven garments and yardages. Her idea seems so obvious, we're wondering why we never thought of it: simply thread and weave overshot as usual, but instead of using a fine tabby thread and a heavy pattern thread, weave both tabby and pattern with the same fine weft thread. With 60 ends ends per inch, Sandy is able to create a richly patterned fabric that would be impossible with heavier yarns and a wider sett.

For the pieces shown here, Sandy made a 25-yard warp 39 inches wide, with 25 different colors of blue and purple sewing thread, and threaded the four-shaft overshot pattern "Berea Sunflower" from Marguerite Davison's *A Handweaver's Pattern Book*, reducing it by about a third. She treadled all the pieces shown here following the overshot treadling in the book; for a dress fabric (not shown), Sandy tried a Bronson lace treadling for an equally appealing fabric.

Close up, the fabric dances with end-on-end color mixing; at a distance, the fabric is a medley of tones, as each shade blends into the next. Silk weft yarns provide a shimmery surface for this exquisite, drapable cloth.

Silk and cotton one-shuttle overshot fabrics by Sandy Lommen. Inset: Because of the fine sett (60 e.p.i.), the fabrics drape well and are thus suitable for blouses, as this piece by Sandy illustrates.

OVERSHOT INNOVATIONS

Double-Faced Overshot

by Charles A. Lermond

Double-faced twills make it possible to put a different design or color on each side of a fabric.

This Double-Faced Overshot Placemat and Napkin set was designed by Charles Lermond and woven by Ardis Dobrovolny. Complete instructions are in the Instruction Supplement.

MANY WEAVERS HAVE made placemats and other articles using overshot patterns in either a border or an overshot design. How many have wished they could put a different design or color on the other side of the fabric? This can be done easily with many overshot patterns, using only a four-shaft loom, by weaving double-faced twills.

To develop this technique for weaving double-faced overshot, I have used a simple version of the pattern called "honeysuckle". The front and reverse of a border woven with this threading using traditional 2/2 twill treadling are exact negative images of one another (figure 1). There are no pattern yarns showing on the reverse of the fabric in those areas where they show on the face.

The design can be woven as a 3/1 twill (figure 2—see page 66). The face of the fabric shows spots of color where the weft yarns cross the warps corresponding to that shaft. The reverse side, a 1/3 twill, shows color everywhere except for these tie-down spots and resembles very closely the upper (back) border of figure 1. It is this side of the fabric which we will explore as a means of weaving our double-faced placemats or other overshot fabric.

Overshot patterns are normally woven as 2/2 twills. The shafts are lifted in pairs: 1-2, 2-3, 3-4, 4-1. If we substitute shafts 1, 2, 3, 4 for the pairs of shafts and then follow the

normal treadling sequence dictated by the threading for a given pattern, we get a fabric that has a series of tie-downs on one side of the fabric and a weft-dominant pattern similar to the original overshot pattern on the reverse side. This pattern has a more pronounced embossed texture than the normal 2/2 twill. A second substitution for the 2/2 twill—3, 4, 1, 2—gives a fabric which matches the other side of the overshot pattern as shown in figure 3.

Making use of these stitchings or tie-downs is what makes the double-faced fabric possible. One side is woven as a 3/1 twill and the other as a 1/3 twill. The following table shows what is done to weave a double-faced fabric (see treadling example on page 66 for further explanation).

Using the above 3/1 and 1/3 twills with a tabby shot after each pair will result in a fabric of the same general appearance as the original overshot design shown in figure 1, but both faces of the fabric will be the weft-dominant version.

The only difficulty I have had with the technique is that some overshot patterns have overly long floats when woven 3/1 or 1/3. Even these can be minimized by slight modifications in the threading, however.

The pieces shown were threaded as shown in figure 1. The placemat is woven in a rose version of the pattern on 3/1 twill complements similar to that shown for the star fashion. The pattern is woven with a tabby pick after each pair of pattern shots. The napkin is woven star fashion on 3/1 twill complements as shown in the table above without any tabby yarn between the pattern shots. ❖

Substitute		
For the original:	*Alternate:*	*With its complement:*
Normal Treadling (2/2 Twill)	**1/3 Twill (face)**	**3/1 Twill (back)**
4-1	4	1-3-4
3-4	3	2-3-4
2-3	2	1-2-3
1-2	1	1-2-4

Charles A. Lermond lives in Oberlin, Ohio, where he teaches and weaves in his studio. He recently released a volume of complete drafts for Mary Meigs Atwater's The Shuttle-Craft Book of Handweaving.

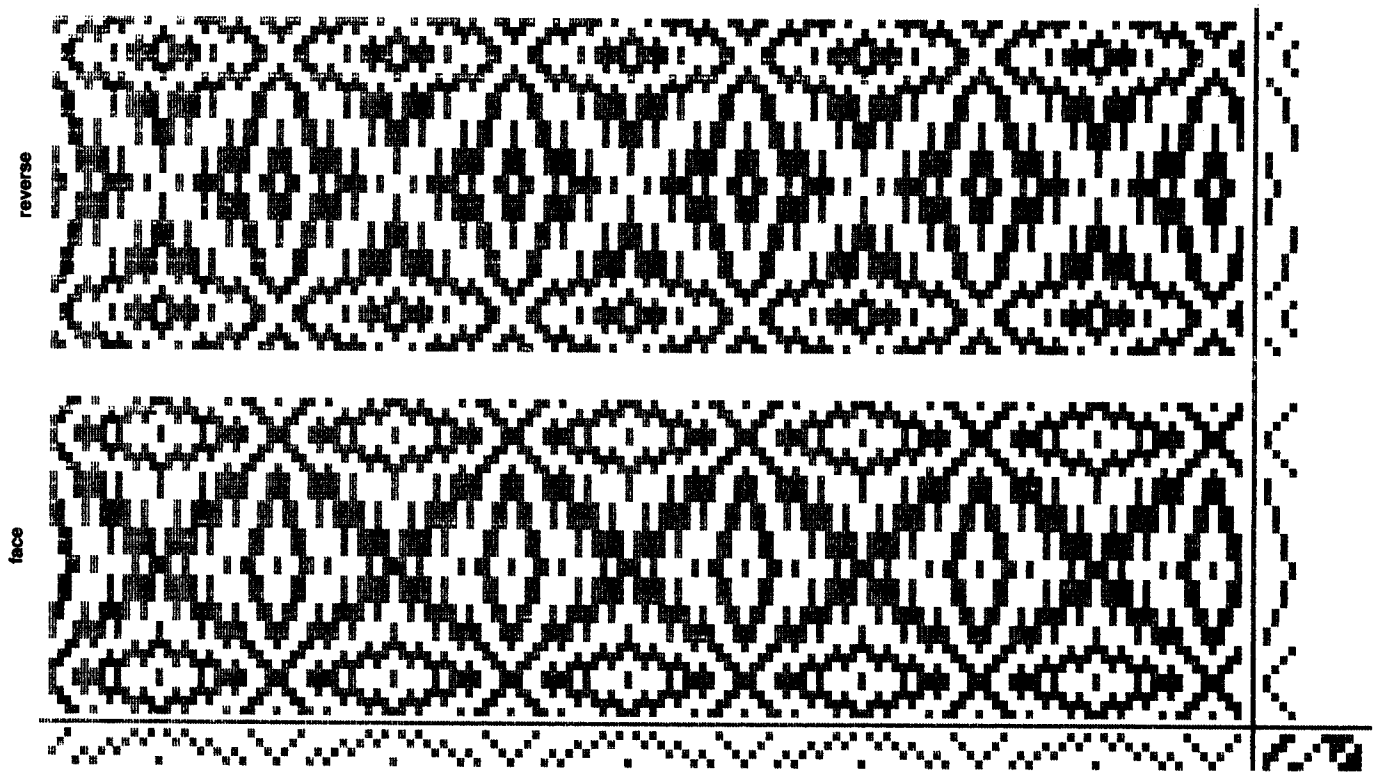
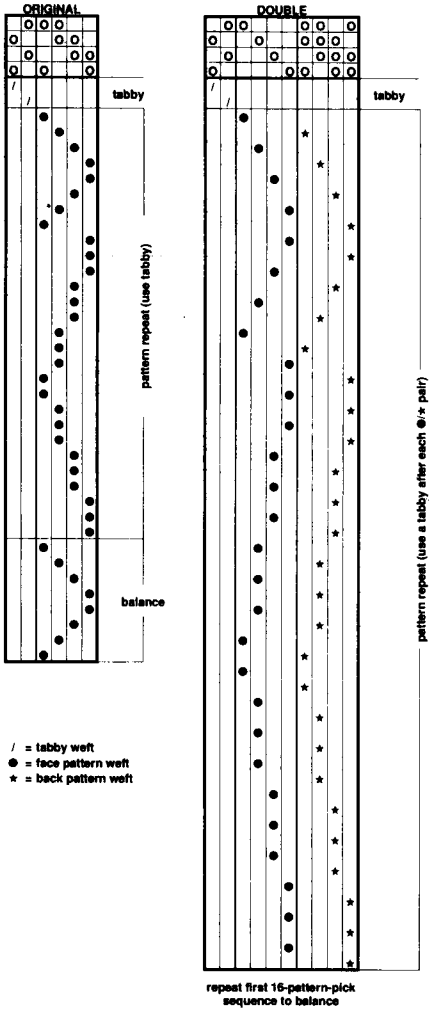


Figure 1. *The draft of a simple honeysuckle pattern showing the face and back of the design when woven as drawn in. Tie-up = 2/2, 3/1, 1/3. Treadling = 2/2 star tr. Sinking shed tie-up.*

Treadling Comparisons:



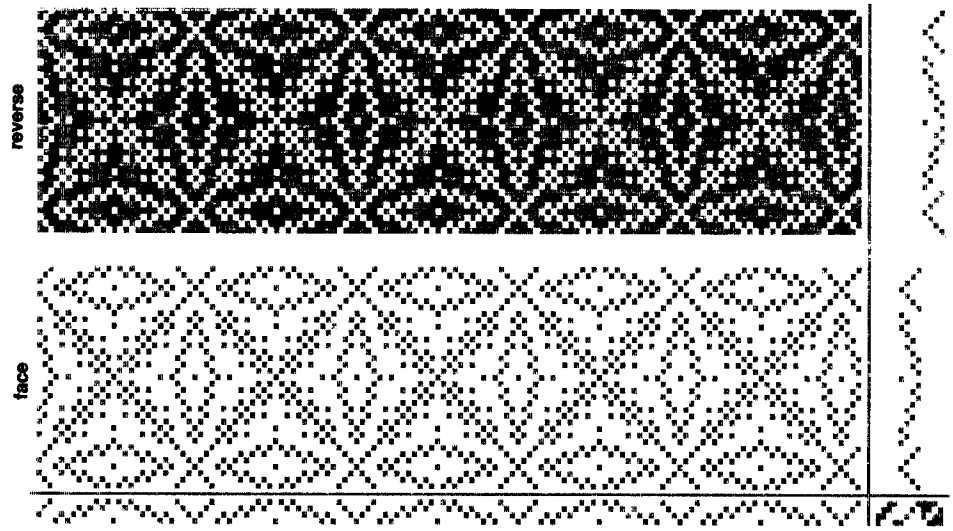


Figure 2. *The drawdown of the face and back of a 3/1 twill using the honeysuckle threading as the twill treadling. Tie-up = 2/2, 3/1, 1/3. Treadling = 1/3 and 3/1 star. Sinking shed tie-up.*

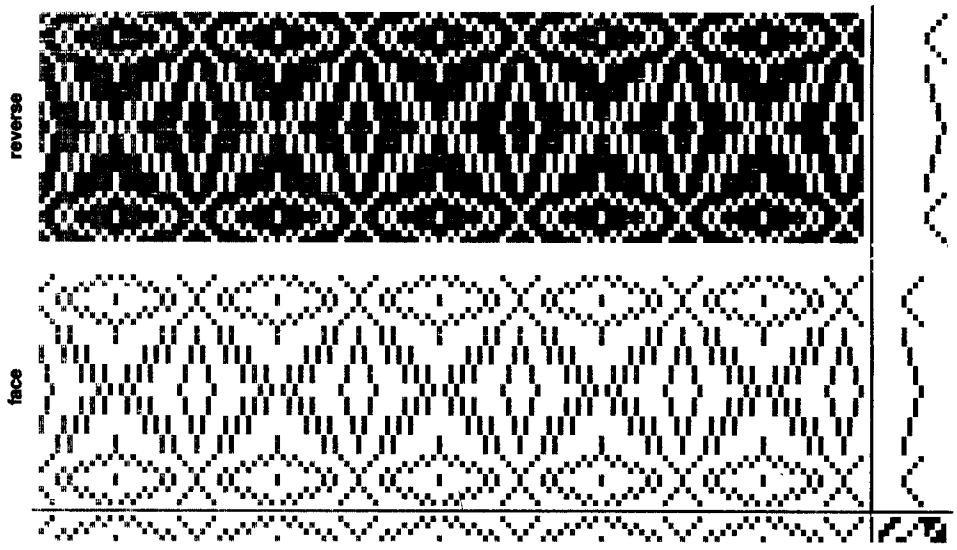


Figure 3. *This draft is analogous to that of figure 2 but, instead of the threading, the substituted treadling has been used for the new treadling sequence. Tie-up = 2/2, 3/1, 1/3. Treadling = 1/3–3/1 star tr. Sinking shed tie-up.*

Warp-patterned Overshot

by Donna Sullivan

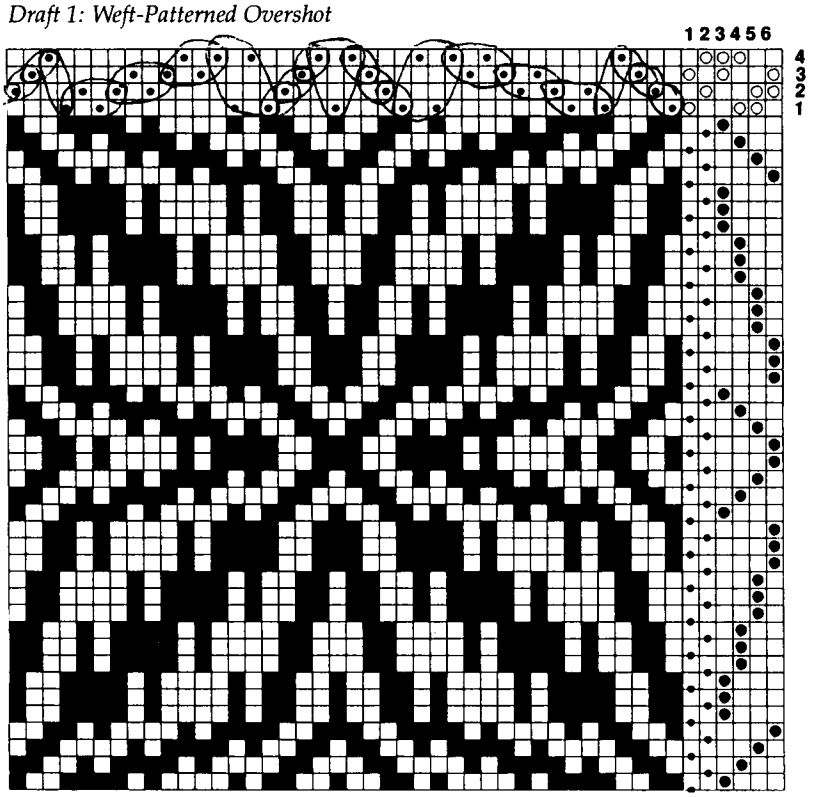
Instead of weaving overshot with weft patterning as in traditional overshot, you can thread the pattern threads warp-wise for easy one-shuttle weaving.

IN TRADITIONAL OVERSHOT, one weft weaves a balanced plain-weave ground with the warp, and a thicker weft weaves the pattern motif. The two shuttles alternate. Draft 1 shows the requisite four shafts and six treadles (i.e., two for tabby and four for pattern) for this weft patterning.

In weft-patterned overshot, four pattern blocks can be drafted on four shafts. A threading block consists of a series of warp ends threaded consecutively on any two adjacent shafts or on the first and last shafts; in other words, blocks are composed of warp ends threaded on shafts 1 and 2, 2 and 3, 3 and 4, or 1 and 4. The blocks, whose size is limited only by what will produce a structurally sound cloth, are circled in the draft.

For the pattern weft to show over a threading block, the two shafts

Draft 1: Weft-Patterned Overshot



• = fine warp and weft
● = thick pattern warp
■ = pattern weft on fabric face

Josephine Estes' "Star of Bethlehem" in Miniature Patterns for Handweavers, Part I.

threaded for that pattern block must remain lowered while the treadle raises the other two shafts. Note that the blocks overlap one shared thread with each adjacent block. Because of this characteristic, the correct treadling to square each threading block is one less pattern weft than the number of circled threads in a threading block. For example, the first block in the draft contains two threads: one warp end on shaft 1 and an adjacent warp end on shaft 2. The correct treadling for this block becomes one pick of tabby with shafts 1 and 3 raised, followed by one pick of pattern with shafts 3 and 4 raised.

In the drawdown, a filled square indicates weft pattern on the fabric face. The pattern weft floats over the entire pattern block and under the background block. In the two blocks on either side of the pattern block, the pattern weft floats over alternate warps to tie the pattern weft to the ground cloth. These halftone areas dilute the impact of the design.

Warp patterning

Weft patterning can be converted to warp patterning in three easy steps.

Step one: Rotate the entire draft ninety degrees so that the original threading becomes the new treadling and the original treadling becomes the new threading. This rotated, or turned, draft requires six shafts and four treadles. In the new threading, a fine warp on shaft 1 or 2 alternates with a thicker warp on any of the pattern shafts: 3 through 6. A fine weft weaves simultaneously with both warps.

Step two: In contrast to weft patterning, pattern shafts must be raised for warp patterning to show on the surface. To reflect this difference, adjust the rotated tie-up so that all lifts are the opposite of the original designation. Make all previously empty squares contain a notation to lift and all previously marked squares blank. Compare the tie-ups in the two drafts.

Step three: Because the pattern is in the warp direction, a filled square in the drawdown indicates warp pattern on the fabric face.

Advantages

When the one-warp-two-weft structure becomes a two-warp-one-weft structure, only one shuttle is necessary, and the fabric weaves twice as quickly! Color shifts in the pattern element can be achieved with warp painting rather than with tedious manipulation of multiple pattern shuttles. As each pattern block requires a single shaft (3, 4, 5, or 6), the weaver can control where the pattern will be tied to the ground by manipulating the tie-up. This permits a stronger design, as the two adjacent blocks can become background and the pattern warp can be tied to the ground fabric in the one remaining block.

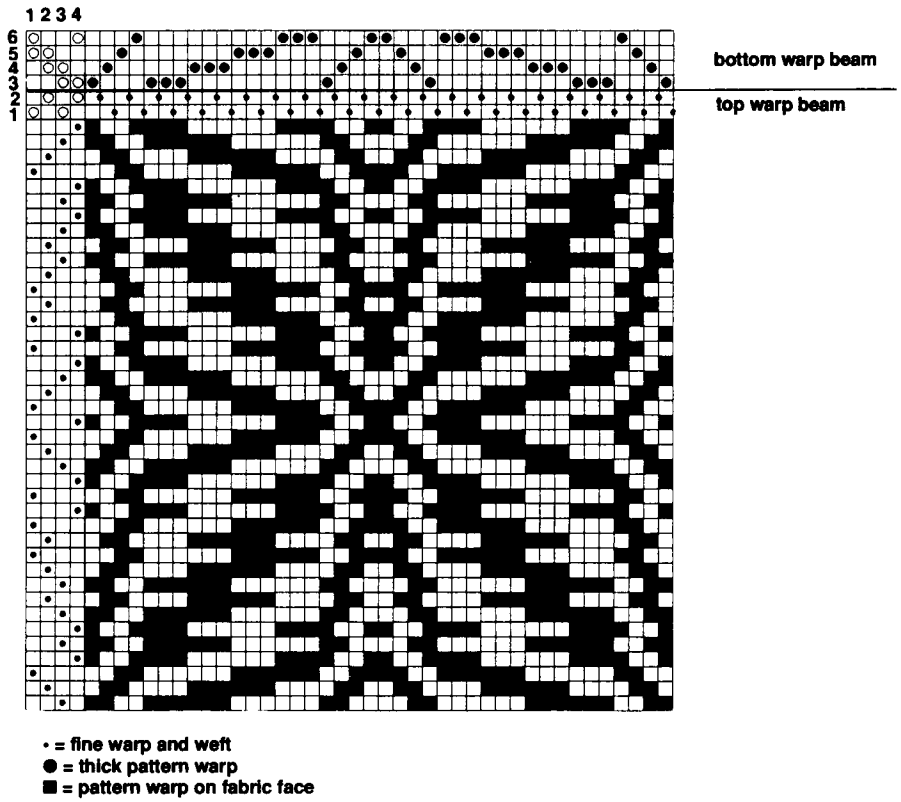
Weaving suggestions

To determine the density of the fabric, set the fine warp for tabby, and then crowd the pattern warps between. The pattern warps (on shafts 3 through 6) are usually twice as thick as the ground warps. The weft is the same as the fine warp yarn. To square the design, beat so there are as many picks per inch as fine warp ends.

Because the fine warp intersects the weft more often than the pattern warp, tension differentials may develop between the two warps, especially in a long project. When two warp beams are available, wind the fine warp for shafts 1 and 2 on the upper beam, and wind the pattern warp for shafts 3 through 6 on the lower beam. If two beams are not available, beam the two warps together; when the tension on the pattern warp becomes slack, insert a flat steel bar under the pattern warp at the back of the loom and weight the bar equally at each end with three-inch C-clamps. ❖

Donna Sullivan will be teaching a seminar on overshot at Convergence 90. She has recently completed a book on summer & winter, to be published by Interweave Press.

Draft 2: Warp-Patterned Overshot



This stole for an Episcopalian priest was woven by Donna Sullivan using warp-patterned overshot. The shifting colors of the borders are the result of overdyeing commercially dyed pearl cotton. Complete instructions are in the Instruction Supplement.

SELVEDGES

An excerpt from *Ideas in Weaving*

by Ann Sutton and Diane Sheehan

Trimming ribbon with space-dyed weft and extended selvedges. Contemporary.

Silk: passementerie with cut and uncut extended selvedges. Nineteenth century.

Scaffolded cloth, subsequently tie-dyed. Extended warp edge loops are formed by groups of six warp yarns which twist together to make a loop around a first or last weft. Pre-Columbian Peru. (Larry Edman Collection)
PHOTOS: DAVID CRIPPS

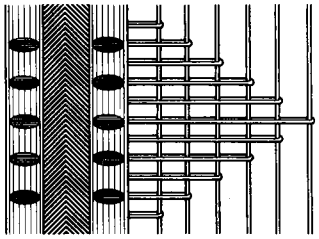
THE SELVEDGE (literally "self-edge") is probably the most talked-about element in the handweaver's cloth. It is especially problematic for beginners and is the traditional inspection point for good craftsmanship. Indeed, properly woven selvedges are essential to good cloth and their attainment has been written about extensively. For an area of the cloth which is paid so much technical attention, very little consideration has been given to the *possibilities* of the selvedge (except in industrial weaving, where fancy effects or brand names are sometimes incorporated).

It is well-known that the *tension* of selvedges can be controlled, often to the extent of providing separate bobbins for their warps. Taken to extremes, this could produce tight edges with a slack central cloth area, or slack edges that look like frills.

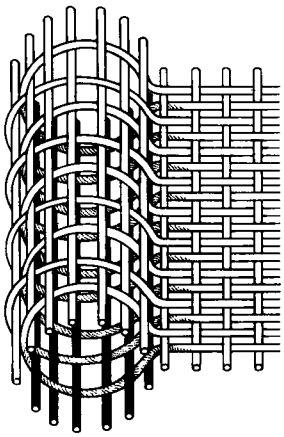
The *position* of the selvedge can be considered: it may be the leading edge in viewing the fabric, or extra selvedges can be woven as features (extensions) in the body of the cloth.

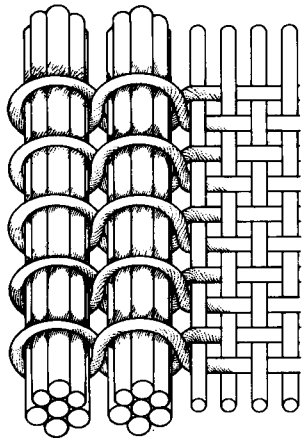
The selvedge can be accentuated by color and/or yarn or woven as a tube (which could itself be another design element). Pieces of cloth can be woven with selvedges on all four sides: this is nearly impossible on a conventional loom, but is a comparatively simple operation on a backstrap loom. (The process is described well in *Backstrap Weaving* by Barbara Taber and Marilyn Anderson.)

Extended selvedges. The "rule" of straight selvedges can be broken to good effect by deliberately extending the edge of a cloth in areas, so that the weft provides a profile.

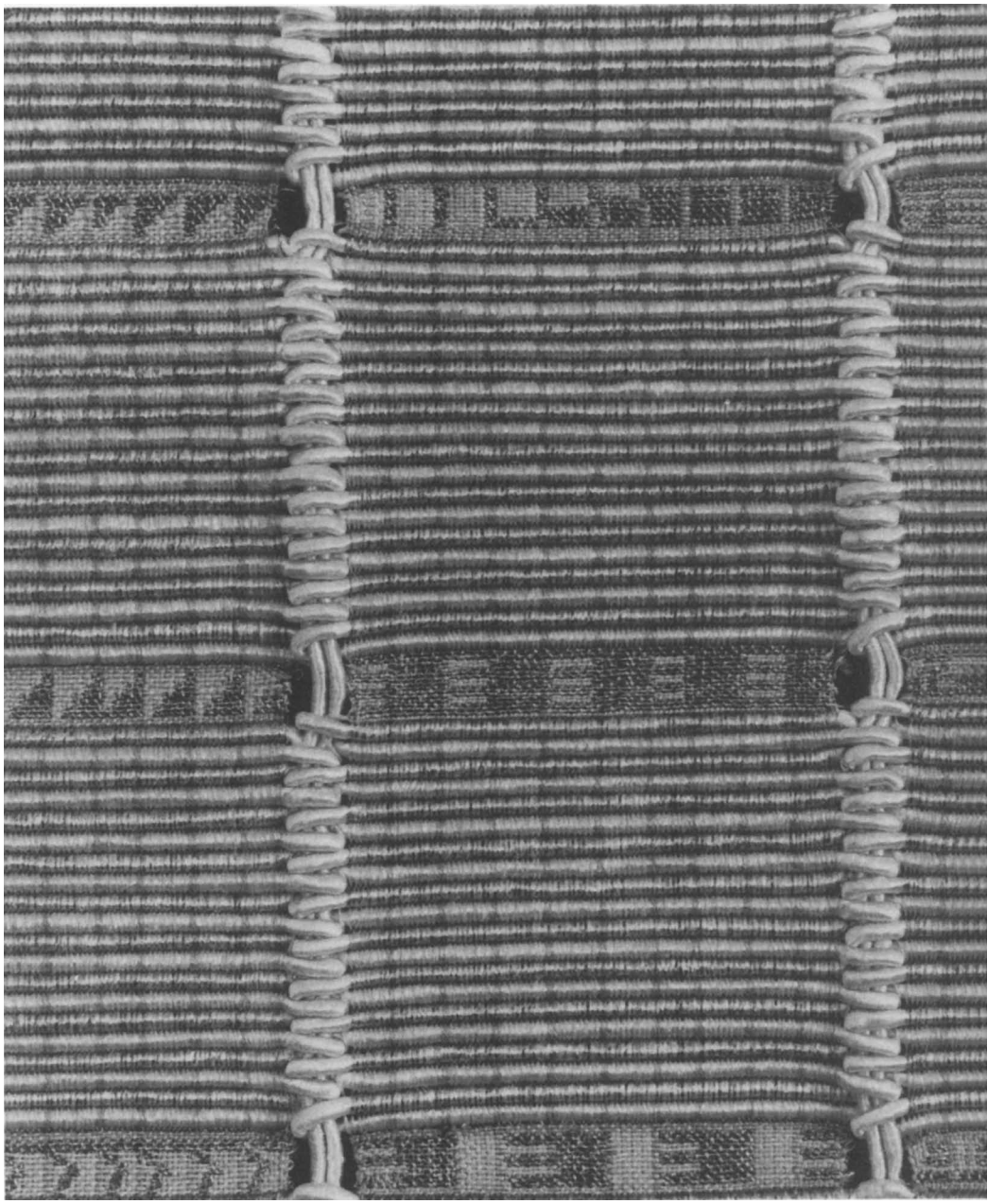


Extended selvedges by use of "false warps".





Two possible selvedge modifications which might enhance the structural or aesthetic qualities of the cloth. On the left, a selvedge woven as a tube and on the right, multiple yarns used as selvedge



Detail of neckpiece by Diane Sheehan, 1977. Weft extends to form a hinge which joins narrow strips of double-cloth and warp-rep silk and lurex fabric. (Photo by Diane Sheehan. Diane Itter Collection)

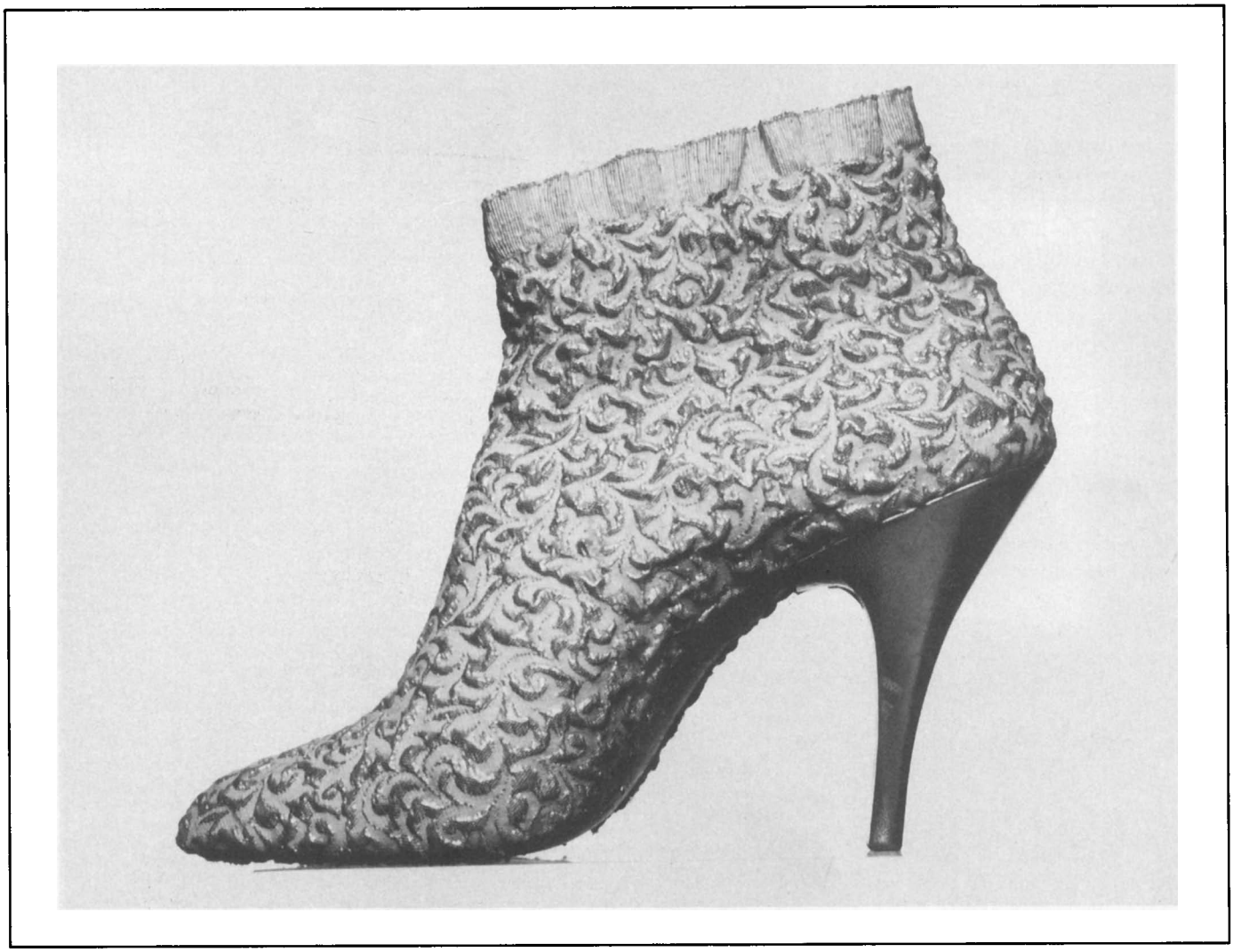
Obviously, this is most effective when there is a minimum width of fabric between the selvedges, so the technique is used traditionally in ribbon-making. The selvedges on ribbons and braids are prominent, and can be an important element in the design. They must still provide firm straight edges for durability; different weaves, contrasting colors, and extended edge loops or picots have all been used by the ribbon industry to decorate their fabrics. Of these, the extended edge is one of the most dramatic effects, and one which has many untapped possibilities. The effect can be achieved by including "false warps" as selvedges, called catch cords, which are used to control the extension of the weft beyond the edge of the ground fabric, and withdrawing them when the weaving is complete. These can be made of heavy thread or wire.

The specialized area of weaving called *passementerie* (decorative braids, fringes, and tassels) has involved many ingenious methods of extending both edges of narrow trimmings with false warps, templates, and weft yarns which are deliberately overspun so that they can twist together into bunches when they are released into fringes.

Working selvedges. Considering where the selvedge might occur and how it can be made to work in the finished object can result in economical as well as beautiful solutions. Contrary to the usual practice of removing selvedges before making up cloth, leaving them on can provide the solution to many problems. They can carry the identity of the weaver; they can convolute the cloth after weaving; and they can eliminate the need for a stitched hem or other anti-fray device. ❖

Ann Sutton is a leading textile artist living in England. Her work is exhibited in private and public collections. She is the author of The Structure of Weaving.

Diane Sheehan is a respected textile artist known for her warp-painted double-cloth woven containers. She has an MFA in textiles from Indiana University and until recently was a professor of weaving at Purdue University, Indiana.



Model for a short boot by Salvador Ferragamo, 1955–1956. The fabric is elasticized brocade of silk and lurex, used so that the selvedge produces a sturdy but beautiful frill around the top of the shoe. (Photo: Victoria and Albert Museum, London) PHOTOS: DAVID CRIPPS.

INSTRUCTION SUPPLEMENT

GENERAL INSTRUCTIONS

Volume X, Number 5
November/December 1989

Index to Instructions

Please read the instructions thoroughly before beginning a project. Refer to the General Instructions, basic weaving books and other projects in this issue for further information. The instructions assume that you have basic weaving knowledge, can warp a loom, and can understand drafts. Symbols are used in each project heading showing loom requirements and techniques needed for each project.

RH=Rigid heddle loom.

❷ The number in the symbol denotes the number of shafts (harnesses) needed.

WARP & WEFT: The size, fiber, and type of each yarn is listed along with the yardage per pound. If a specific brand has been used, it is listed with color names and numbers. Amounts needed are calculated in yards, making yarn substitutions easier.

If you know the yardage you need and want to figure how many ounces or pounds to buy, divide the number of yarns needed by the yardage per pound:

yd needed ÷ yd per lb =
lb needed × 16 oz per lb =
oz needed.

Example: If you need 1500 yd and the yarn has 2000 yd/lb, buy ¾ lb or 12 oz.

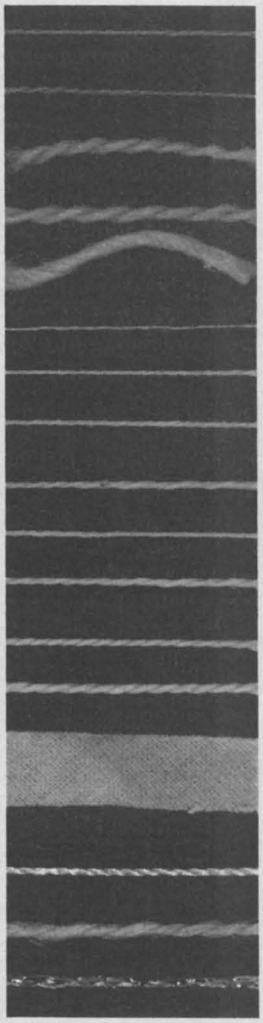
REED SUBSTITUTIONS: Maintaining the number of ends per inch is very important to obtain the same weight and hand of the project shown. Most fabrics are sleyed one or two ends per dent, but sometimes a particular dent reed is used for a certain effect or to accommodate large or textured yarns.

WARP LENGTH: The length of the warp needed for a project is figured by adding the finished length of the project, an allowance for take-up and shrinkage, and loom waste. Take-up is the amount lost due to the interlacement of the yarns in the weave structure. Shrinkage is the amount lost due to the finishing process. Loom waste is the amount needed to tie the warp on and allow the reed and heddles of a particular loom to function to the end of the weaving.

Our warp length measurements include finished length, percentage of take-up and shrinkage, and a standardized loom waste of 27". Your own loom waste may be different, according to the requirements of your loom and warping technique. To figure loom waste, measure unwoven warp at the beginning and end of several of your projects. Be sure to allow for knot tying and trimming of ends.

MEASUREMENTS: All measurements shown in the Weave Plans and discussed in the directions are taken *under tension on the loom* unless otherwise noted. Each measurement includes take-up and shrinkage so that when the piece is finished, the final size will be correct. Normal warp tension is tight enough to get a clear shed. Exceptions, such as weft-faced rugs and tapestries which require more

Yarn Chart. To help identify yarns and make creative substitutions in your weaving, use this yarn chart along with *Yarn, a Resource Guide for Handweavers* by Celia Quinn, available from Interweave Press.



24/2 wool worsted at 6400 yd/lb (12,880 m/kg)

20/2 wool worsted at 5600 yd/lb (11,280 m/kg)

7/2 wool at 1600 yd/lb (3220 m/kg)

2-ply wool at 1000 yd/lb (2015 m/kg)

Singles wool at 600 yd/lb (1210 m/kg)

20/2 mercerized cotton at 8400 yd/lb (16,920 m/kg)

10/2 mercerized cotton at 4200 yd/lb (8460 m/kg)

10/2 unmercerized cotton at 4200 yd/lb (8460 m/kg)

8/2 unmercerized cotton at 3600 yd/lb (7250 m/kg)

6-ply cotton seine cord at 2670 yd/lb (5380 m/kg)

6/2 unmercerized cotton at 2520 yd/lb (5070 m/kg)

5/2 mercerized cotton at 2100 yd/lb (4230 m/kg)

3/2 mercerized cotton at 1260 yd/lb (2530 m/kg)

"poppana" 3/8" bias-cut fabric strips at 320 yd/lb (640 m/kg)

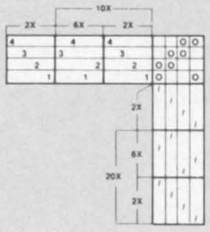
3-ply viscose at 1600 yd/lb (3220 m/kg)

2-ply linen/rayon at 1200 yd/lb (2420 m/kg)

Acetate/Lamé metallic at 1180 yd/lb (2370 m/kg)

tension, will be noted.

DRAFTS: Threading drafts read from right to left and treadling drafts read from top to bottom. *Threading repeats* are shown by brackets. Sometimes double brackets are used to show a small repeat within a larger one. *Tie-ups* are shown for rising-shed or jack looms. The small circle in the tie-up indicates that the shaft referred to *rises* when the treadle is pressed. To convert the tie-up for sinking-shed or counterbalanced looms, tie the treadles according to the *blank* squares. Countermarch looms use all the squares; the upper lamms are tied to the blank squares and the lower lamms are tied to the squares with circles.



MAKING CHANGES; We encourage you to create, adapt, and change the projects in HANDWOVEN. Although following the directions with no deviations will produce a copy of the piece shown, we try to give enough information to encourage you to use the directions as a starting point for your own design. Just remember, as designers do, to allow yourself plenty of leeway for any changes you make. Extra yarn and a longer warp are a wise investment when you anticipate *any* changes from the printed directions. Our publication *Yarn* will help when making substitutions, and weaving a sample of your intended design will provide you with needed information.

WEAVING WITH TABBY: Sometimes weavers use the terms tabby and plain weave interchangeably. In the directions we differentiate plain weave as the weave structure and tabby as the binder or background weft in pattern weaves such as overshot. In weave structures which use tabby, the plain-weave treadles are noted separately, and only pattern rows are written in the treadling with a note saying "Use Tabby". "Use Tabby" means to alternate a row of pattern with a row of plain weave. The plain-weave treadles alternate also. Two shuttles are needed, one for the pattern yarn and the other for the tabby yarn. The shuttles alternate row by row for the length of the pattern.

> Remembering which tabby treadle to use can be frustrating until you know this trick: when the tabby yarn is on the left side of the fabric, use the left tabby treadle. When it is on the right side, use the right tabby treadle.

FLOATING SELVEDGES: Some weave structures don't make good selvedges; the weft doesn't catch the edge warps as often or as consistently as you would like for a good-looking and structurally sound selvedge. When this problem occurs, floating selvedges are often recommended. Floating selvedges are the first and last warp yarns sleyed in the reed but omitted from the heddles. Instead of rising and falling with the treadling, they float slightly above the bottom of the shed and are woven by hand. As the shuttle enters the shed it goes on top of the floating selvedge. As the shuttle exits the shed it goes under the floating selvedge The thumb of the hand that receives the shuttle can assist by holding the floating selvedge up. In every row, the sequence is the same: over, then under. It's alphabetical. By the way, if you're treadling plain weave you don't need floating selvedges because the weave structure will give you over, then under.

FINISHING: Many weavers weave a few rows of scrap yarn at the beginning and end of their projects to keep the rows from loosening when the fabric is removed from the loom. After the fabric is cut from the loom, the scrap yarn is removed, and if the edge has not already been finished on the loom, it is machine stitched, hemstitched, or knotted.

YARN YARDAGE NOTES: Yarns sometimes differ from standard yardages. Such factors as humidity, dyes and bleaches, and even the age of the spinning equipment, can affect the weight and length of a yarn. You'll notice in the instructions that sometimes the standard yardage and the supplier's stated yardage differ. For example, the standard yardage for 5/2 mercerized cotton is 2100 yd/lb, but the supplier may list the yarn at 2000 yd/lb, taking into consideration some of the factors above. This yardage difference is especially important to keep in mind when ordering yarn, so that adequate amounts can be ordered.

Product Information

Your local yarn shop will carry many of the yarns featured in this issue. If they don't have a particular yarn in stock check with them about substituting similar yarns or ordering yarns for you.

If you don't have a local yarn shop, you can write to these suppliers about locating the dealers nearest you. Wholesale suppliers have been noted with an *.

***Crystal Palace Yarns,** 3006 San Pablo Ave., Berkeley, California 94702.

Eaton Yarns, P.O. Box 665, Tarrytown, New York 10591.

Glimåkra Looms 'n Yarns, 1304 Scott Street, Petaluma, California 94952.

***Harrisville Designs,** Harrisville, New Hampshire 03450.

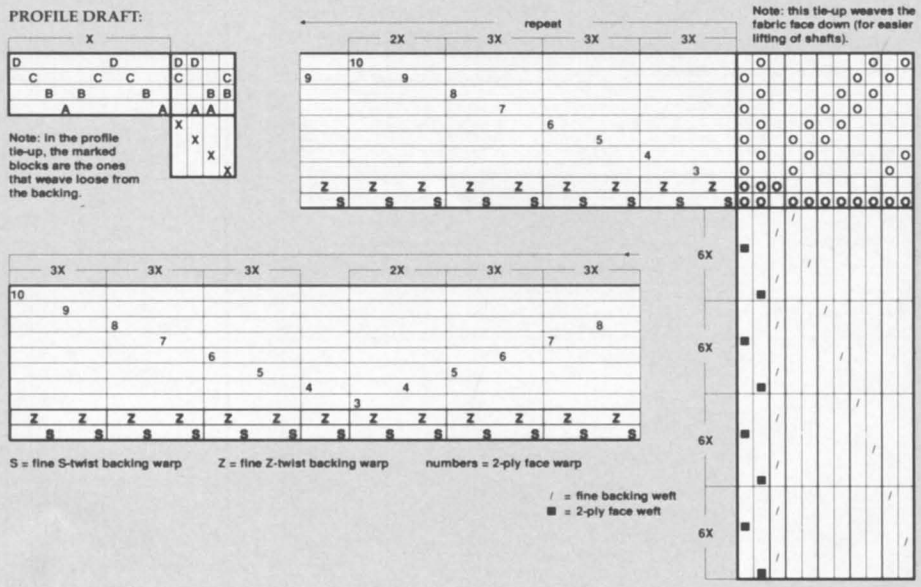
Schoolhouse Yarns, 25495 E. Hoffmeister Rd., Boring, Oregon 97009.

***Scott's Woolen Mill,** 528 Jefferson Ave., Bristol, Pennsylvania 19007.

***Silk City Fibers,** 155 Oxford Street, Paterson, New Jersy 07522.

Weaver's Way, P.O. Box 70, Columbus, North Carolina 28722.

DRAFT FOR ANN MCKAY'S "BROWN COAT" PICTURED ON THE COVER:

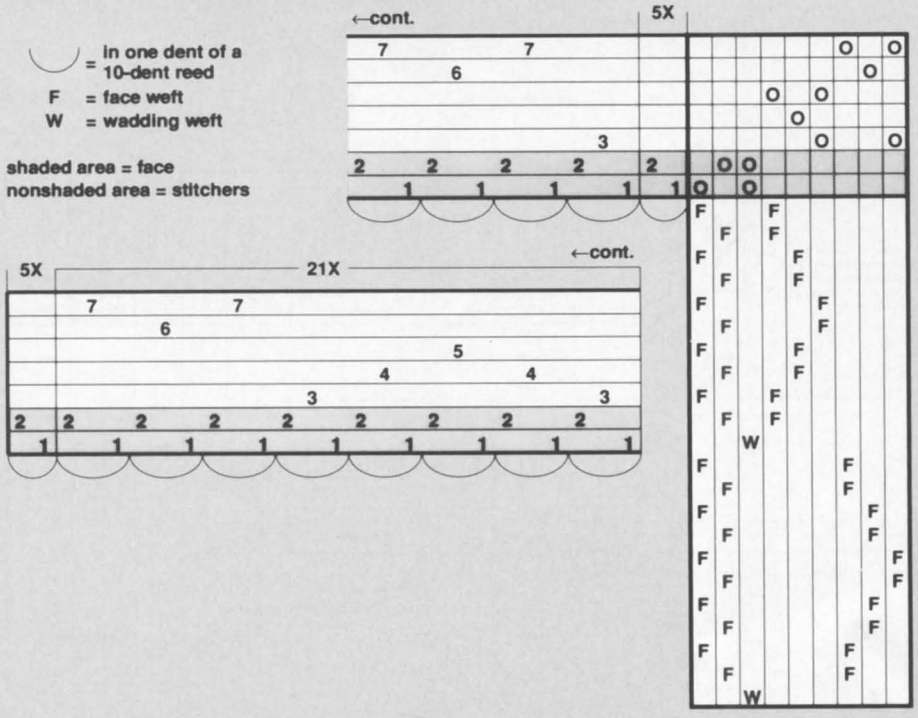


Green Waved Piqué Pillow

designed by Donna Sullivan
Jacksonville, Florida
page 45 ❼

PROJECT NOTES: This pillow features tones of complementary colors in a selvedge-to-selvedge motif. To heighten the ridge, loosen the stitcher warp tension a couple of notches after each ridge is formed.
FABRIC DESCRIPTION: Waved piqué.
FINISHED DIMENSIONS: 15¾" wide by 17" long.
FACE WARP & WEFT: Size 10/2 mercerized cotton at 4200 yd/lb: 1350 yd light green.
STITCHER WARP: Size 5/2 mercerized cotton at 2100 yd/lb: 210 yd each bright pink and light pink.
WADDING WEFT: Singles wool at 600 yd/lb: 50 yd light green.
YARN SOURCES & COLORS: 10/2 cotton at 4200 yd/lb: UKI color #57, Willow Green; 5/2 cotton 2100 yd/lb: UKI color #56, Dark Fuchsia and #82, Electric. The wool is Glimåkra's Matt-yarn, color #5094 light green.
NOTIONS: Matching green sewing thread, optional 2½ yds cording and bias binding.
E.P.I.: 20 for face warps and 10 for stitcher warps.
WIDTH IN REED: 18¼".
TOTAL WARP ENDS: Face warp: 364 ends. Stitcher warp: alternate single ends of bright pink and light pink for a total of 172 ends (86 each color).
WARP LENGTHS: Both warps are 2¼ yd, which includes take-up, shrinkage, and 27" loom waste.
BEAM: Beam separately with a taut tension for the stitcher warp on the lower beam and a moderate tension for the face warp on the upper beam. If two beams are not available, suspend bouts of the stitcher warp over the back beam and weight with plastic liter bottles partially filled with water.
P.P.I.: 20 face weft picks plus 2 wadding weft picks.
TAKE-UP & SHRINKAGE: 15% in width and 19% in length.
WEAVING: Begin and end with 1" plain weave. Following the draft, weave two sections of piqué 18½" long each, separated with 2" plain weave.
FINISHING: Machine staystitch ends. Wash in lukewarm water with mild detergent; rinse well. Lay flat to dry. To form the pillow, hand baste before sewing three edges, right sides together with a light pressure on the zipper foot ½" from the edge. Turn, stuff, and close with a blind stitch. If desired, a cord covered with handwoven or commercial bias binding may be inserted prior to sewing the two sides together. Spray with Fabric Guard or other stain protector. ❖

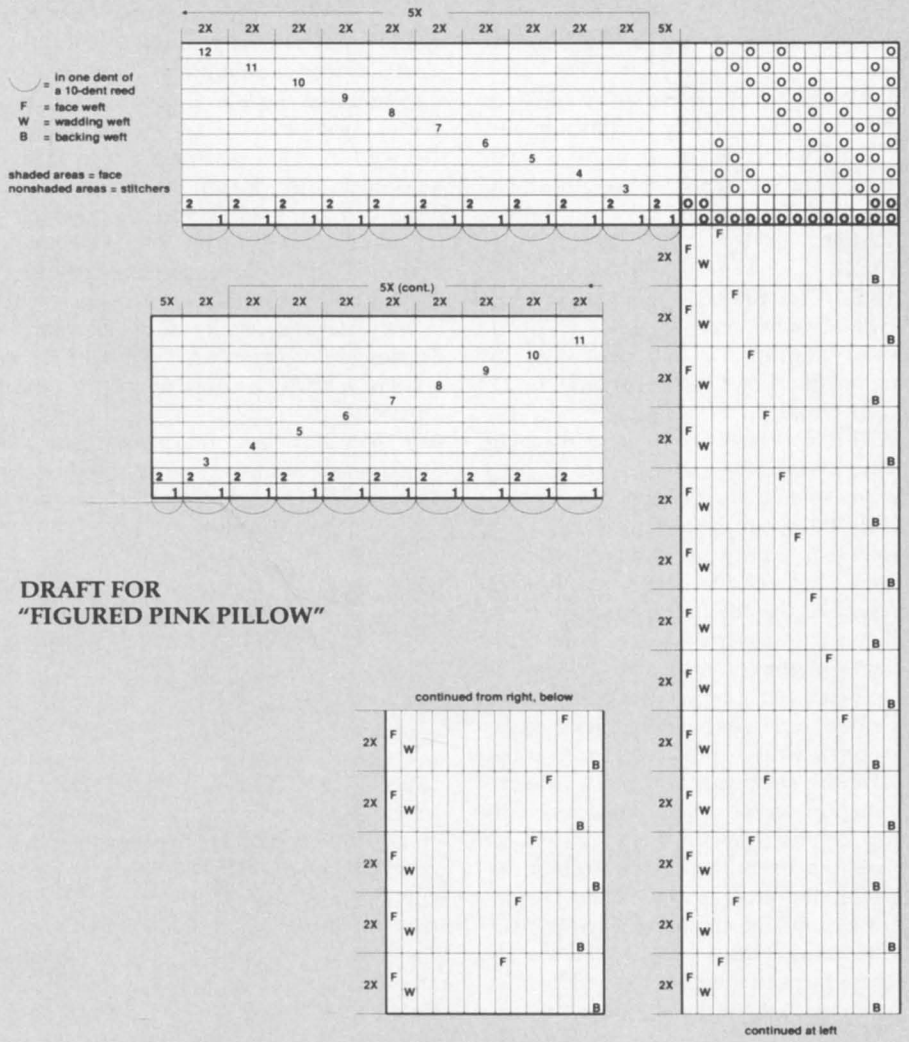
DRAFT FOR "WAVED GREEN PIQUE PILLOW"



Pink Figured Piqué Pillow

designed by Donna Sullivan
Jacksonville, Florida
page 45 12

PROJECT NOTES: The yellow and blue stitchers transform an otherwise monochrome pillow into a subtle contrast of the primary triad. Where twelve shafts are not available, treadling C in the pattern draft of the piqué article includes an 8-shaft mini-version of the 12-shaft counterchanged diamond motif.
FABRIC DESCRIPTION: Figured piqué.
FINISHED DIMENSIONS: 16" wide by 18" long.
FACE WARP & WEFT: Size 10/2 mercerized cotton at 4200 yd/lb: 1430 yd pink.
STITCHER WARP: Size 5/2 mercerized cotton at 2100 yd/lb: 220 yd each yellow and blue.
WADDING & BACKING WEFT: 7/2 wool at 1600 yd/lb: 550 yd pink.
YARN SOURCES & COLORS: 10/2 cotton at 2100 yd/lb, UKI color #56, Dark Fuchsia. 5/2 cotton at 2100 yd/lb: UKI colors #46, Champagne and #105, Paradise. The 7/2 wool is Glimåkra's Tuna, color #3723 pink.
NOTIONS: Matching pink sewing thread, optional 2½ yds cording and bias binding.
E.P.I.: 20 for face warps and 10 for stitcher warps.
WIDTH IN REED: 19¼".
TOTAL WARP ENDS: Face warp: 384. Stitcher warp: alternate 2 blue ends with 2 yellow ends, for a total of 92 blue and 90 yellow ends.
WARP LENGTH: Both warps are 2¼ yd, which includes take-up, shrinkage, and 27" loom waste.
BEAM: Beam separately with a taut tension for the stitcher warp on the lower beam and a moderate tension for the face warp on the upper beam. If two beams are not available, suspend bouts of the stitcher warp over the back beam and weight with plastic liter bottles partially filled with water.
P.P.I.: 20 face picks plus 10 wadding picks and 10 backing picks.
TAKE-UP & SHRINKAGE: 15% in width and 19% in length.
WEAVING: Begin and end with 1" plain weave. Following the draft, weave two



DRAFT FOR "FIGURED PINK PILLOW"

sections of piqué 20" long each, separated with 2" plain weave.

FINISHING: Machine staystitch ends. Wash in lukewarm water with mild detergent, rinse well. Tumble dry at low. To form the pillow, hand baste before sewing three edges, right sides together with a light pressure on the zipper foot ½" from the edge. Turn, stuff, and close with a blind stitch. If desired, a cord covered with bias binding may be inserted prior to sewing the two sides together. Spray with Fabric Guard or other stain protector. ❖

Ragtime Vests

designed by Louise Bradley, Boulder, Colorado; page 46

PROJECT NOTES: Woven on a black warp, these cotton vests have fronts patterned with knotted cloth strips in weft stripes. The backs of the vests are black with elasticized half-belts in striped fabric. The vests have patterned cotton linings. One version vest has lengthwise stripes and no buttons. Another has a bias yoke and buttons and buttonholes.

FABRIC DESCRIPTION: 1/2 twill with inlaid knotted cloth strips.

SIZE: Unisex size small. (Yardages are for two vests on the same warp.)

WARP & WEFT: 8/2 cotton at 3600 yd/lb: 6140 yd black for warp and weft, 720 yd white for weft. Cotton fabric to cut ½"-wide, bias cloth strips: ½ yd each white and black or desired color.

NOTIONS: McCall's Pattern #4437, black sewing thread, five ⅝" buttons, and for each vest: ¾ yd interfacing, 7" length of ¾" elastic, 10" length of twill tape, and 1 yd lining fabric.

E.P.I.: 20.

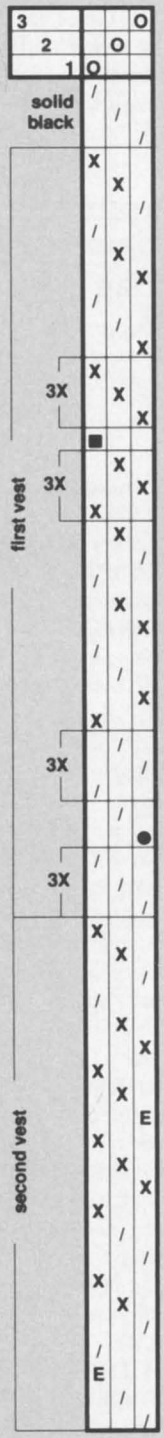
WIDTH IN REED: 30".

TOTAL WARP ENDS: 600.

WARP LENGTH: 6 yd, which includes take-up, shrinkage, and 27" loom waste.

DRAFT:

/ = black yarn
X = white yarn
■ = black cloth strip
● = white cloth strip
E = either black or white cloth strip in random lengths



P.P.I.: 18.

TAKE-UP & SHRINKAGE: 13% in width and 17% in length.

WEAVING: Before weaving, the rags were knotted around a pencil every 2" to 3" to create a textured bump. In the first vest, they were woven the full length of a row. In the second vest, they were inlaid in random lengths. The vests are cut crosswise on the fabric.

Following the treadling drafts, weave in pattern 36" for the front of the first vest and 45" for the front of the second vest. Weave the remaining warp in solid black for the backs, welts, and facings. (The back elasticized half-belt will be cut from scraps of the front.)

FINISHING: Staystitch ends of fabric. Machine wash, line dry, and press with a steam iron.

ASSEMBLY: For the first vest, cut the fronts from the striped fabric, making sure they match across the center front. For the second vest, cut the pattern diagonally from the middle of the armhole to the center front above the first button. Add seam allowances and cut from the striped fabric as shown in the photo. Also, cut 8" long half-belts for the backs from the striped fabric.

Cut the backs, front facings, and pocket welts from the black fabric. I omitted the pockets beneath the welts and substituted patch pockets in the lining.

INSTRUCTION SUPPLEMENT

Serge the raw edges of the handwoven fabric and staystitch all diagonal and curved edges. Construct the vests following the instructions in the pattern. For the half-belts, face the striped fabric with lining fabric, insert a 7" length of elastic and sew each end of the half-belt into the back darts. Reinforce the shoulder seams with twill tape to keep them from stretching. ❖

Seersucker Cosmetic Bag and Slippers

designed by Barbara Smith Eychaner
Tucson, Arizona
page 53 ❹

PROJECT NOTES: Seersucker is easy to weave once the loom is set up. The crinkled effect is worth the extra time. After washing, the texture of the seersucker becomes more pronounced.

FABRIC DESCRIPTION: Plain weave with variation in warp tension.

FINISHED DIMENSIONS: Cosmetic bag measures 10½" wide by 9" high. Fabric before cutting measured 13" wide by 45" long for the cosmetic bag, plus an additional 27" for slipper bands, or 39" for slipper soles and bands. The yardages given here are for the bag and slipper soles and bands.

WARP & WEFT: *Ground warp*—10/2 unmercerized cotton at 4200 yd/lb: 690 yd natural off-white. *Seersucker warp*—20/2 mercerized cotton at 8400 yd/lb: 720 yd peach, used double, 220 yd each light gray-green and light blue-green. used double. *Weft*—10/2 mercerized cotton: 940 yd natural.

YARN SOURCES & COLORS: UKI colors: Peach #115, Scarab #53, and Tyrol #94.

NOTIONS: Simplicity Pattern #8973; matching natural sewing thread, matching natural wide double-fold bias tape; lining fabric, and fusible interfacing. For the slippers, polyester fleece; lining fabric; and non-skid fabric for the soles.

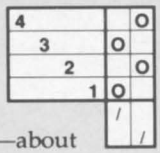
E.P.I.: 20.

WIDTH IN REED: 15¼".

TOTAL WARP ENDS: *Ground warp*—184, which includes 4 warps on each side to be sleyed and threaded double for a selvedge. *Seersucker warp*—126 doubled ends.

WARP LENGTH: *Ground warp*—3½ yd, which includes take-up, shrinkage, and 27" loom waste. *Seersucker warp*—4¼ yd, which includes plenty for the additional take-up, shrinkage, and 27" loom waste.

DRAFT:



P.P.I.: 22.

TAKE-UP & SHRINKAGE: *Ground warp*—15% in width and 12% in length. *Seersucker warp*—about 35% in length.

WARPING: Use back to front warping method. Make the ground warp of 10/2 cotton as usual and beam it. If you use a raddle, be sure to spread the warp to 15"; it may look skimpy because it is only half of the warp. Thread this warp, leaving empty heddles for the seersucker warp. Follow the pattern carefully to leave heddles on the correct shafts.

When the ground warp is beamed and threaded, remove the lease sticks. Make the seersucker warp with the cross at the end of the warp that will be cut. Before leaving the warping board, make several warp chains. I made 7 chains with 3 stripes per chain. Insert the lease sticks through the crosses on all the chains. Gently drape the chains over the back of the loom and thread the doubled seersucker warps in the reserved heddles. As you thread, secure the seersucker warps to the ground warps to prevent them from falling backward out of the heddles. Finally, sley the reed at 20 e.p.i. Tie on at the front keeping the ends of the seersucker warp even with the ends of the ground warp. Check the tension of the ground warp. The seersucker warp is not beamed (see "Weaving").

WEAVING: The seersucker warp must have only enough tension to make a shed. I used empty yarn cones to weight the warp chains. The chain was threaded through the open top of a small cone and then a regular size cone was nested into it to provide just enough tension to give a shed. The cones need to be repositioned frequently, every two or three advances of the warp beam.

I discovered a good check on seersucker tension while weaving. As the shuttle passes through the shed the seersucker warps should sway gently in the direction that the weft is moving. If they do not sag enough to be pulled slightly by the weft as it passes, there is too much tension on the warp. It is easy to make little weft skips when you are weaving this fabric, so keep an eye on the fabric.

FINISHING: Machine stitch or hemstitch the raw edges of the fabric. Machine wash in hot water and dry the fabric. The fabric did not need ironing (which I would have avoided anyway because of crushing the texture).

ASSEMBLY: Follow the instructions in the pattern. I applied the fusible interfacing to the lining instead of the seersucker to avoid flattening the texture. ❖

WARP COLOR ORDER:

		4X							
10/2 natural	4	8	8	8	8	8	8	12	= 184
peach, doubled		6		6	6		6		= 78
light gray-green, doubled			6						= 24
light blue-green, doubled						6			= 24

M's & O's Tablecloth

designed by Margaret Gaynes
Cupertino, California
page 56 ❻ ❹

PROJECT NOTES: This tablecloth was designed for a small table just large enough for afternoon tea or breakfast for two. The body of the cloth was woven with two shuttles to produce the color stripes in the corded areas. Notice that the blocks have an odd number of cords rather than the even number which is usual with M's & O's. This enhances the color effect by changing the position of the colors between rows of blocks. The color that is on the outside cords in one block will be on the inside cords on the next row of blocks.

The size of the cloth can be changed easily to adapt to your table size. It may also be woven in strips and joined to cover a table larger than your loom width. If you prefer to work with one shuttle and change the color with each block change, the effect will be weft stripes rather than checks.

FABRIC DESCRIPTION: M's & O's.

FINISHED DIMENSIONS: The 6-shaft version is 36" wide by 41" long including a ¼" hem at each end. The 4-shaft version is 34" wide by 40" long including a ¼" hem at each end.

WARP & WEFT: 10/2 mercerized cotton at 4200 yd/lb: 1370 yd gray blue, 1100 yd each dark green and warm brown.

YARN SOURCES & COLORS: 10/2 Pearl Cotton at 4200 yd/lb: UKI colors #103 Peacock, #26 Dark Green, and #99 Dark Sierra.

NOTIONS: Matching blue sewing thread.
E.P.I.: 24.
WIDTH IN REED: 40½" for 6-shaft, 38½" for 4-shaft.
WARP COLOR ORDER:

6-shaft version:

		12X	
gray blue	50	25	25 = 375
dark green		25	= 300
warm brown		25	= 300

4-shaft version:

		12X	
gray blue	26	25	1 = 327
dark green		25	= 300
warm brown		25	= 300

TOTAL WARP ENDS: 975 (including floating selvedges) for 6-shaft version, 927 (including floating selvedges) for 4-shaft version.
WARP LENGTH: 2¼ yd which includes take-up, shrinkage, and 27" loom waste.
DRAFT: (see below). The minimum number of shafts for M's & O's is four, but with six shafts you can thread a plain weave border on each side. If 4 shafts are used, omit the border. When weaving with two shuttles I find that a floating selvedge helps produce neater edges. For 4-shaft version, omit shafts 5 and 6. After the floating selvedge, begin threading the 4-shaft pattern.
P.P.I.: 24.
TAKE-UP & SHRINKAGE: 11% in width and 8% in length.
WEFT COLOR ORDER: The hem is woven in blue to match the sides of the cloth. The blocks are woven with two shuttles, with one shuttle changing at the start of each new block. The new color begins and ends the block. This color rotation produces three combinations:

1. Blue and brown, first and last shot are blue.
2. Green and blue, first and last shot are green.
3. Brown and green, first and last shot are brown.

Since two blocks are treadled, there is a six block sequence before the color and block orders repeat.
WEAVING: Begin and end the tablecloth with a 1½" border of blue (¾" for 4-shaft version). Since a true plain weave is not possible with this threading, the border area will be textured with doubled threads in the warp.

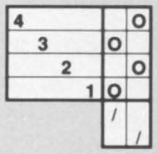
Start the treadling with Block A and color combination 1. Beat firmly and strive for 24 picks per inch. Weave 37 blocks. I kept count of the blocks by pinning a T-pin to the cloth in the first block on the right. As I completed a block I moved the pin one block to the left in the just-woven section. When my pin was at the leftmost block, I was done. If you change the size of the cloth, be sure to end with Block A for symmetry.
FINISHING: Machine stitch the ends of the tablecloth. Machine wash in warm water on regular cycle with detergent. Machine dry, removing when slightly damp for pressing. For hems, turn under ¼" twice and handstitch. ❖

Clasped-Weft Mats

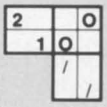
designed by Kathy Bright, Iowa City, Iowa
page 56 ❹ ❷

PROJECT NOTES: Clasped weft technique offers countless possibilities with not only design, but color and texture as well. Besides weaving these mats with poppana stripes as shown, another idea is to use four to six strands of 10/2 weight cottons in related colors for each of the two wefts.

For easier weaving I attached a metal shower curtain hook to the top left side of the beater with the smaller hook facing toward me. I placed the brown poppana in a coffee can on the floor to the left of the treadles and looped it through the smaller hook where it was easy to catch with the shuttle carrying the red poppana from the right side.
FABRIC DESCRIPTION: Plain weave.
FINISHED DIMENSIONS: Four mats, each 12" wide by 19½" long, including a ½" hem at each end.
WARP: 30 tex X 6 cotton seine cord: 760 yd dark brown.
WEFT: ½"-wide, bias-cut, cotton cloth strips at 320 yd/lb: 220 yd dark red and 250 yd dark brown.
YARN SOURCES & COLORS: The warp is Finla Kalalanka, available from Eaton Yarns and Schoolhouse Yarns. The weft is Poppana, from Eaton Yarns and Schoolhouse Yarns.
NOTIONS: Matching brown sewing thread.
E.P.I.: 10.
WIDTH IN REED: 14½".
TOTAL WARP ENDS: 145.
WARP LENGTH: 3¾ yd, which includes take-up, shrinkage, and 27" loom waste.
DRAFT:

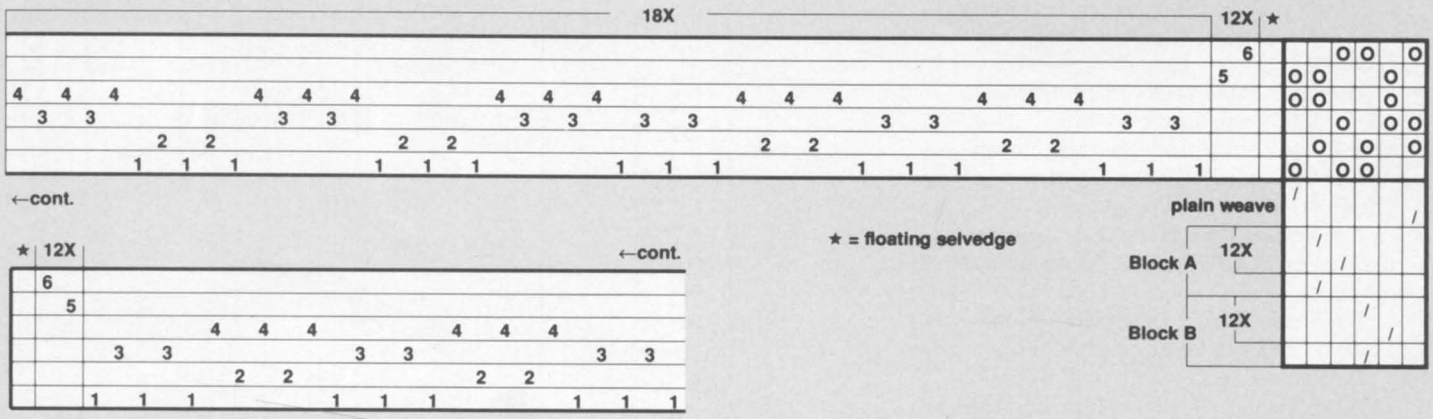


P.P.I.: 6½.
TAKE-UP & SHRINKAGE: 17% in width and 12% in length.
WEAVING: Begin and end each placemat with 1½" plain weave using a double strand of brown seine cord. To weave clapsed weft, place the brown poppana in a coffee can to the left of the treadles. Loop the poppana through the shower curtain hook to the left of the weaving and temporarily pin the end of the poppana strip to the heading.



Wind the red poppana on a shuttle and enter it from the right side through the

DRAFT FOR "M's & O's TABLECLOTH":



shed to exit at the left selvedge. Loop the shuttle around the brown poppana and return the red shuttle to the right selvedge. The two wefts have entered and exited the same shed, and are clasped at some point in the shed. Position the clasp in the shed by pulling on the brown poppana at the left and the red poppana at the right until it rests beneath the eight raised warp from the left edge.

Change sheds, weave a second row, positioning the clasp under the sixteenth warp from the left edge. Repeat these two rows five times and move the clasp eight raised warps to the right. Continue in this manner until there is one red block at the right selvedge. Reverse the design back to the left.

FINISHING: Machine stitch across each end to secure the weft. At each end of the mats, fold under ½" twice and bring the fold to the first row of poppana. Machine stitch close to the edge of the fold. Machine wash on gentle cycle with cool water; line dry. ❖

Double-Faced Overshot Placemats and Napkins

designed by Charles A. Lermond, Oberlin, Ohio; woven by Ardis Dobrovolny, Boulder, Colorado

page 64 ❹

PROJECT NOTES: This design uses only four shafts, but if you can use a loom with ten treadles, you'll find the treadling sequence very easy. If your loom has only six treadles, you'll need to use a direct tie-up and press two or three treadles at a time. Both tie-ups and treadlings are given here.

FABRIC DESCRIPTION: 1/3 and 3/1 overshot and plain weave.

FINISHED DIMENSIONS: Four placemats, each 12½" wide by 19" long including hem on each end. Four napkins, each 12½" wide by 12" long including hem on each end.

WARP: 6/2 unmercerized cotton at 2520 yd/lb: 1300 yd natural off-white.

WEFT: Hem turn-under—20/2 mercerized cotton at 8400 yd/lb: 70 yd natural off-white.

Napkins and mat hems—10/2 mercerized cotton at 4200 yd/lb: 530 yd natural off-white.

Placemats—3/2 mercerized cotton at 1260 yd/lb: 530 yd natural off-white.

Pattern weft—2-ply linen/rayon at 1200 yd/lb: 140 yd each of blue and turquoise (or two colors of your choice).

YARN SOURCES & COLORS: For the warp you can use 6/2 cotton from Scott's or 6/2 Carolina Cotton from Weaver's Way. The pattern weft is Scott's Linnay (50% linen/50% rayon); Royal and Avacado (the turquoise used here is a discontinued color).

NOTIONS: Matching off-white sewing thread.

E.P.I.: 15.

WIDTH IN REED: 14".

TOTAL WARP ENDS: 213 (209 threaded ends plus 4 ends as doubled floating selvedges, sleyed double).

WARP LENGTH: 6 yd, including take-up, shrinkage, and 27" loom waste.

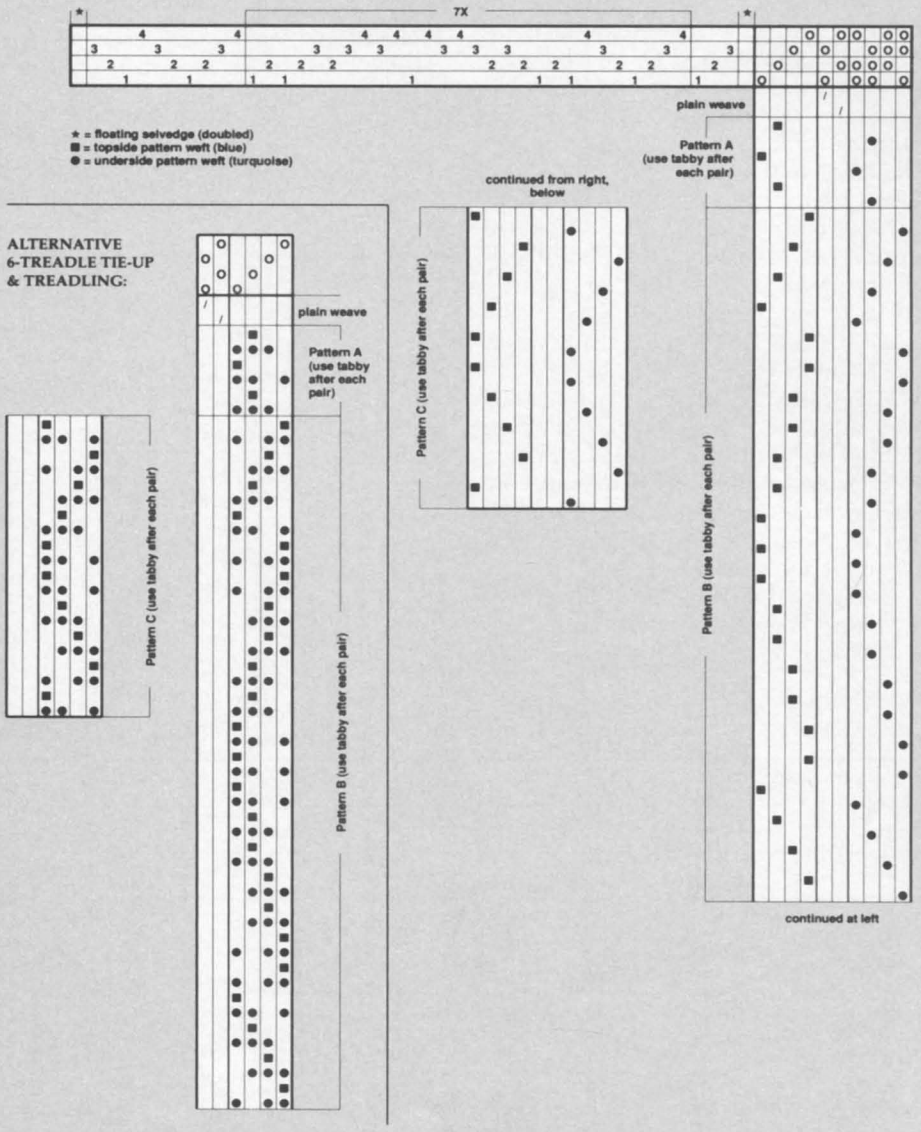
DRAFT: (below). This treadling involves lifting three shafts at a time for the underside pattern shots. This can be done either by pressing the three treadles OR by pressing the relevant tabby treadle plus the relevant single lift. For example, 1-2-4 can be lifted by treadling 1 and 2 with one foot and 4 with the other OR the 2-4 tabby with one foot and 1 with the other.

P.P.I.: For 3/2 weft—12. For 10/2 weft—18. For 20/2 weft—20.

TAKE-UP & SHRINKAGE: 10% in width and length.

WEAVING: To decrease the bulk in the hems, begin and end each piece with ⅜" of plain weave using the 20/2 weft. Weave ½" filler between pieces.

For the placemats, weave ½" plain weave with 10/2 weft. Then switch to 3/2 weft for plain weave and for tabby in the pattern bands. Weave ½" more plain weave, pattern A, ¼" plain weave, pattern B, ½" plain weave, pattern A, 14¼" plain weave, pattern A, ½" plain weave, pattern B, ¼" plain weave, pattern A, and ½" plain



weave. End with ½" plain weave of 10/2 weft (and the ⅜" turn-under). Each mat is about 25" of weaving.

For the napkins, weave with the 10/2 weft for plain weave and for tabby in the pattern bands. Weave 1" plain weave, pattern C, 11¼" plain weave, pattern A, and 1" plain weave (and the ⅜" turn-under). Each napkin is about 15" of weaving.

FINISHING: Machine staystitch both ends of each piece before cutting the pieces apart. For each hem, turn under the fine-weft ⅜", then turn under again so that the first fold just meets the edge of the first pattern border; hand stitch hems.

Machine wash on gentle cycle in warm water and mild detergent. Machine dry, removing while still slightly damp; press until smooth (using Rayon or Cotton setting on iron). ❖

I-Am-the-Light Stole

designed by Donna Sullivan; page 69 ❻

PROJECT NOTES: This liturgical stole combines symbols of light from the Old Testament (yellow and rainbow hues) and the New Testament (Josephine Estes' Star of Bethlehem pattern motif).

FABRIC DESCRIPTION: Warp-patterned overshot.

FINISHED DIMENSIONS: 4¼" wide by 114" long.

GROUND WARP: 20/2 mercerized cotton at 8400 yd/lb: 450 yd each of light yellow and bright yellow.

PATTERN WARP: 10/2 mercerized cotton at 4200 yd/lb: 900 yd light yellow.

WEFT: Same as ground warp: 730 yd light yellow.

YARN SOURCES & COLORS: The 20/2s are UKI colors #46 Champagne (light yellow) and #113 Yellow (bright yellow). The 10/2 is also UKI #46 Champagne.

NOTIONS: 2 yd pale yellow silk lining fabric; matching yellow sewing thread; Cushing's All-Purpose Dye in Canary, Blue, Green, Orange, and Cherry Red; table salt.

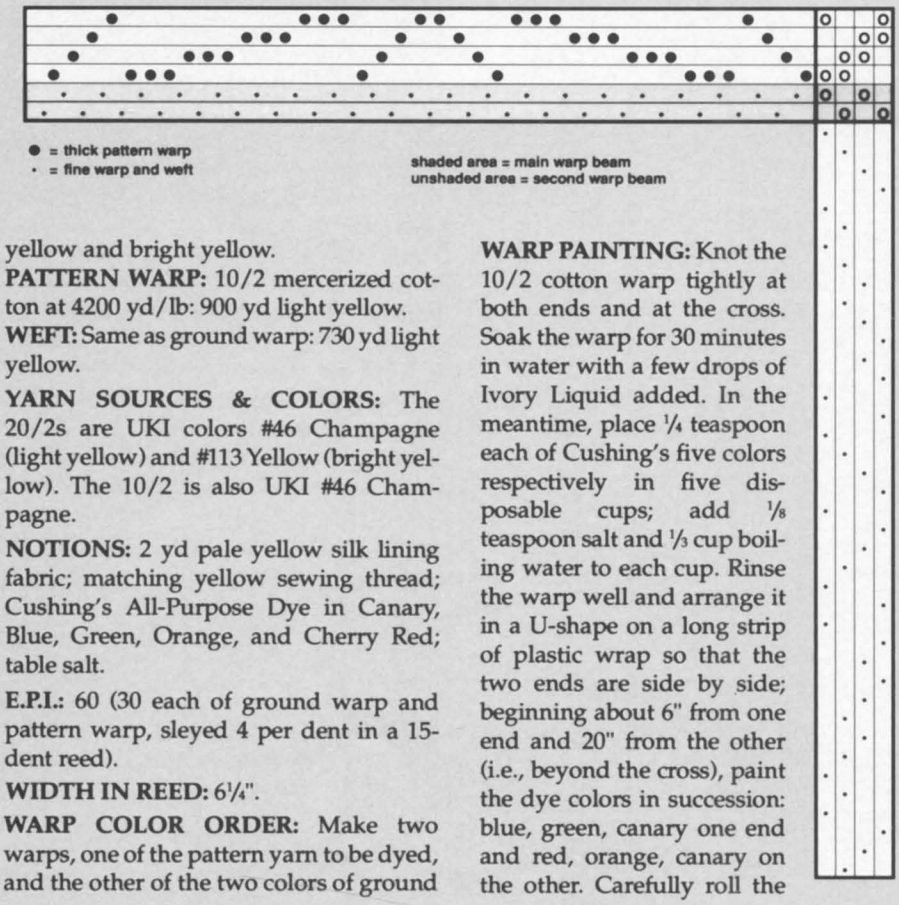
E.P.I.: 60 (30 each of ground warp and pattern warp, sleyed 4 per dent in a 15-dent reed).

WIDTH IN REED: 6¼".

WARP COLOR ORDER: Make two warps, one of the pattern yarn to be dyed, and the other of the two colors of ground warp wound together to be used in random order when threading. Thread floating selvedge of ground warp, then alternate one dyed pattern end and one ground end, ending with another floating selvedge.

TOTAL WARP ENDS: 370 (184 of each warp, plus 2 floating selvedges of ground warp).

WARP LENGTH: 4½ yd, which includes take-up, shrinkage, and 27" loom waste.



WARP PAINTING: Knot the 10/2 cotton warp tightly at both ends and at the cross. Soak the warp for 30 minutes in water with a few drops of Ivory Liquid added. In the meantime, place ¼ teaspoon each of Cushing's five colors respectively in five disposable cups; add ⅛ teaspoon salt and ⅓ cup boiling water to each cup. Rinse the warp well and arrange it in a U-shape on a long strip of plastic wrap so that the two ends are side by side; beginning about 6" from one end and 20" from the other (i.e., beyond the cross), paint the dye colors in succession: blue, green, canary one end and red, orange, canary on the other. Carefully roll the warp in the plastic wrap so that the color areas do not touch and microwave the warp on high for 10 minutes. Rinse in cool water until the water runs clear and hang the warp to dry.

DRAFT: Thread three repeats of the draft; for two side borders of 64 ends each, repeat the first 8 threads and last 8 threads an extra 8 times.

P.P.I.: 30.

TAKE-UP & SHRINKAGE: 15% lengthwise, 8% widthwise.

WEAVING: Weave 120" according to the draft, beating to square the tabby.

FINISHING: To make the stole lie flat at the back of the neck, fold it in half lengthwise. Measure from the dyed ends 58" along one side and 57" along the other side. Sew an angled seam across the stole. Cut two strips of silk 60" long and 5½" wide. Lay the silk strips on the right side of the stole. Beginning 2" from the bottom, sew the long side seams; stop 2" before the neck seam. Turn the stole right side out. Hand sew the lining to the stole in the neck area. Turn the border hems under 1"; hand sew the lining in position ½" from the turn. Press. Spray with fabric guard. Care for the stole by dry cleaning. ❖

Undulating Twill Samples and Projects

designed by Sharon Alderman
Salt Lake City, Utah
page 89 ❽

Undulating Twill Samples, Sine-Curve Design

PROJECT NOTES: The undulating twill curves smoothly, changing direction at the flattest part of the curves. The first sample has a herringbone effect; the second sample has ovals. See article for more information.

FABRIC DESCRIPTION: Eight-shaft undulating twill.

WARP & WEFT: Two-ply woolen spun yarn at 1000 yd/lb: the warp is light camel and the weft is gray-brown.

YARN SOURCES & COLORS: These are Harrisville Two-ply, the warp is Sand and the weft is Hickory.

E.P.I.: 16.

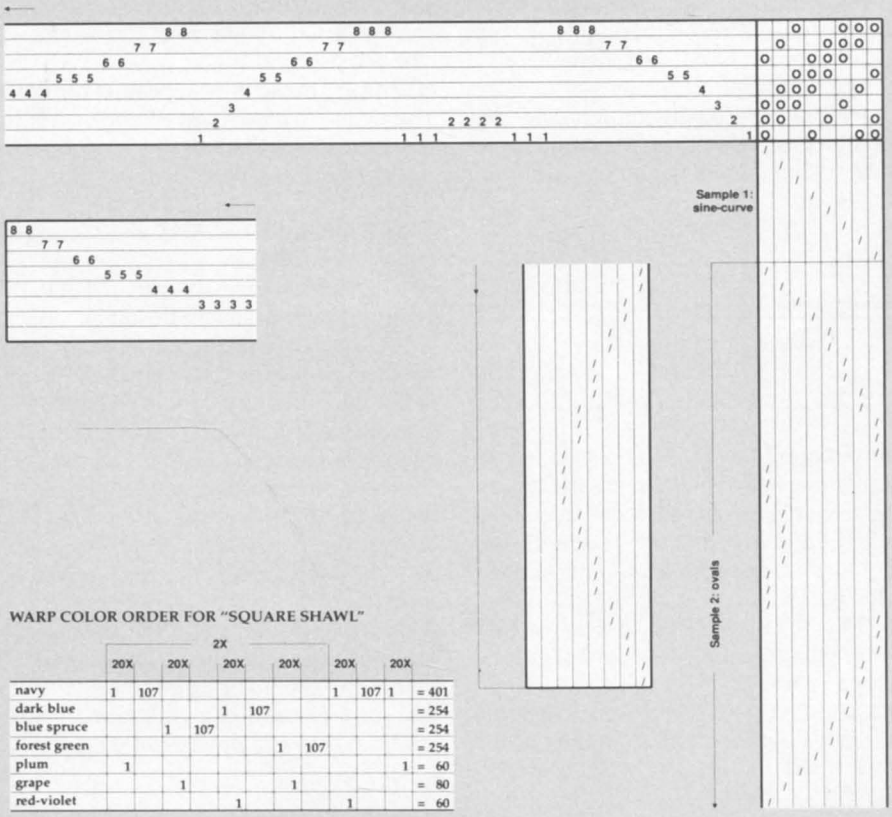
DRAFT: (on next page).

P.P.I.: 16.

TAKE-UP & SHRINKAGE: 12% in width and length.

WEAVING: Weave to square. The second

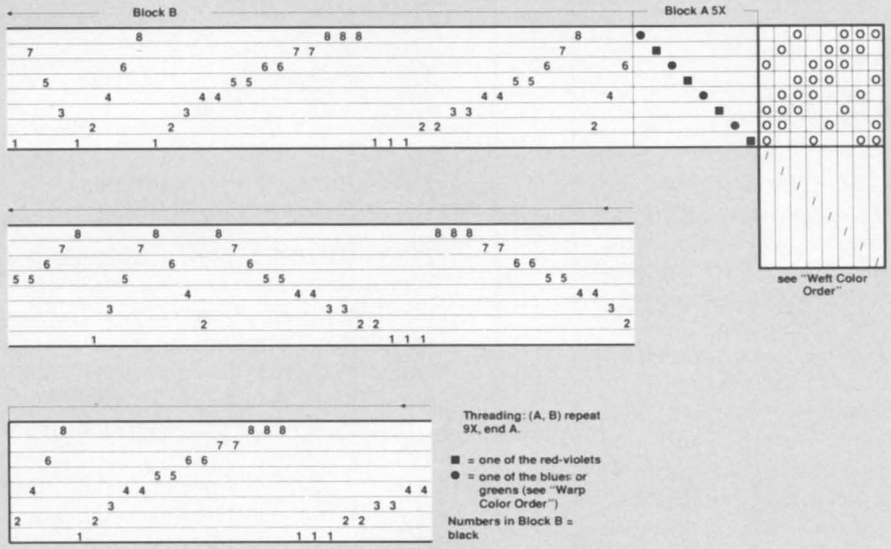
DRAFT FOR "UNDULATING TWILL SAMPLES, SINE-CURVE DESIGN"



WARP COLOR ORDER FOR "SQUARE SHAWL"

	2X											
	20X		20X		20X		20X		20X		20X	
navy	1	107						1	107	1		= 401
dark blue					1	107						= 254
blue spruce			1	107								= 254
forest green							1	107				= 254
plum	1										1	= 60
grape			1				1					= 80
red-violet					1				1			= 60

DRAFT FOR "SQUARE SHAWL"



sample requires a floating selvedge. See article.

FINISHING: Hemstitch each end and hand wash in very warm water and mild detergent. Rinse well and press while damp.

Undulating Twill Shawl

designed by Sharon Alderman
Salt Lake City, Utah
page 89

PROJECT NOTES: I wanted to design and weave a piece which shows how an undulating twill might be used. I wanted to contrast with the samples by weaving a piece with good drape, finer, more refined yarns. A shawl is used draped, with soft folds that suggest the appearance of the undulating twill.

FABRIC DESCRIPTION: Eight-shaft undulating and straight twill warp stripes.

FINISHED DIMENSIONS: 41" square plus a 5" fringe at each end.

WARP & WEFT: 20/2 worsted wool at 5600 yd/lb: 950 yd navy, and 610 yd each, dark blue, forest green, and blue spruce for warp; 1520 yd black for weft. 24/2 worsted wool at 6400 yd/lb: 150 yd plum and 200 yd grape for warp; 620 yd red-violet for warp and weft.

E.P.I.: 30.

WIDTH IN REED: 45½".

WARP COLOR ORDER: (at left).

TOTAL WARP ENDS: 1363.

WARP LENGTH: 2¼ yd, which includes take-up, shrinkage, and 27" loom waste/fringe allowance.

WEFT COLOR ORDER: Weave 4" with black and 1⅜" red-violet alternating with black.

DRAFT: (at left).

P.P.I.: 30.

TAKE-UP & SHRINKAGE: 10% in width and 13% in length.

WEAVING: Allow at least 5" unwoven at each end for fringe (partly loom waste). Since the threading begins and ends with straight twill stripes and is treadled in a straight treadling, there is no problem with selvedges. I marked a strip of cardboard with the color change repeats and used it to measure as I went to ensure uniformity.

FINISHING: The shawl was hemstitched while on the loom—a hemstitched edge is graceful on a shawl and makes no lumps, unlike knots, to lean against as the shawl is worn. Handwash in very warm water and mild detergent. Rinse well and use fabric softener in the final rinse. Press while damp. As the fabric is pressed, brush the fringes to straighten them.

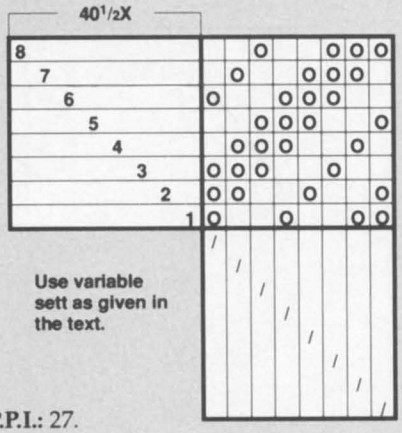
Scarf With Undulating Twill and Spaced Warp

designed by Sharon Alderman
Salt Lake City, Utah
page 89

PROJECT NOTES: This scarf was woven in an undulating twill formed by varying the sett to force the twill diagonal into a curved shape.

FABRIC DESCRIPTION: Eight-shaft undulating twill with variable warp sett.

FINISHED DIMENSIONS: 10⅝" wide by 55" long, plus a 3" fringe at each end.
WARP & WEFT: 20/2 worsted wool at 5600 yd/lb: 860 yd dusty brick for the warp and 610 yd gray for the weft.
E.P.I.: Variable. In a 12-dent reed, sley 3 per dent 5 times. Then sley 2, 1, 1, 2, 3, 3, 3, 3 for a total of 16 repeats. End 2, 1, 1, 2, 3, 3, 3, 3, 3. (142 dents)
WIDTH IN REED: 11⅝".
TOTAL WARP ENDS: 324.
WARP LENGTH: 2½ yd, which includes take-up, shrinkage, and 27" loom waste.
DRAFT:



P.P.I.: 27.
TAKE-UP & SHRINKAGE: 10% in width and length.
WEAVING: Allow at least 3" unwoven at the beginning and end for fringes (part of loom waste). Use an even beat. Weave body of scarf for 61".
FINISHING: Hemstitch both ends. Wash like the shawl. ❖

Bead Leno Bags on 4 or 8 Shafts

designed by Kathryn Wertenberger
Golden, Colorado
page 92

❹ ❽

PROJECT NOTES: Though these bags used a neutral warp and gold and silver wefts, the yarns used come in an interesting variety of subtle colors. If #5 and #3 pearl cottons were substituted, a casual summer bag would result. The color of the underlining must be carefully selected to show the texture of the weave. While white was not a good choice for either bag, medium gray worked well for the silver bag and medium tan for the gold. Both bags have contrasting linings.
FABRIC DESCRIPTION: Bead leno using four shafts for an overall texture or eight shafts for an undulating block structure (see article). Both bags can be woven on the eight-shaft threading.
FINISHED DIMMENSIONS: Two bags, each 10" wide by 6" high.
WARP: Three-ply 100% viscose rayon at 1600 yd/lb: 460 yd natural.
WEFT: Chainette, 80% acetate/20% lamé metallic at 1180 yd/lb: 50 yd each silver and gold.
YARN SOURCES & COLORS: The warp is Silk City's Slinky, color #01. The weft is Firefly from Crystal Palace, #108 medium silver and #101 light gold.
NOTIONS: 10" Fa-Cile Spring Action Handbag Frame, available from Clotilde, Inc., 1909 S.W. First Avenue, Ft. Lauderdale, FL 33315; ⅜ yd polyester lining fabric or two 11" × 15" scraps (see Project Notes); matching sewing thread; optional 7" zippers for pockets in the linings.
E.P.I.: 20. Thread 4 ends in a dent and skip one dent in a 10-dent reed.
WIDTH IN REED: 12½".
TOTAL WARP ENDS: 248.
WARP LENGTH: 1¾ yd, which includes take-up, shrinkage, and 27" loom waste.
DRAFT:
P.P.I.: 20 for the hems, 8 for the leno.
TAKE-UP & SHRINKAGE: 10% in width and length.
WEAVING: Begin and end each bag with a ½" hem in half-basket treadling, beating firmly. Weave the body of the bag in lace treadling for 13".
FINISHING: Machine stitch across each end of the bags. Steam press while pulling the fabric crosswise to set the leno twists.
ASSEMBLY: For each bag, cut lining fabric and underlining the length of the bag and 11" wide. If zippered pockets are desired, cut and sew them to the lining.

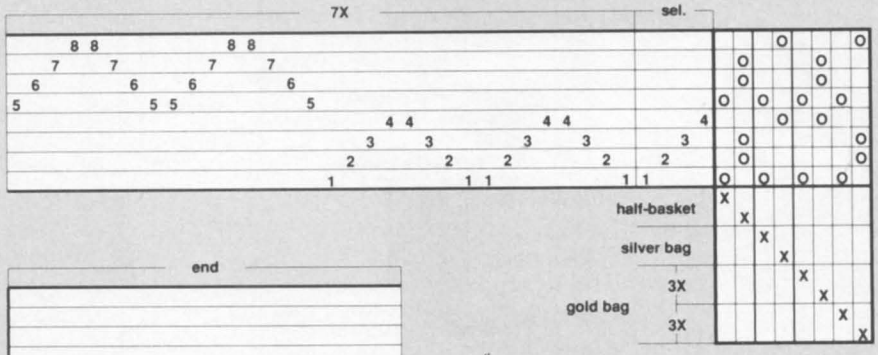
Reinforce each corner of both the lining and underlining pieces by stitching ½" from the edge and 1½" long (see diagram). Clip to the corner of the stitching. Fold under the long edge of the reinforced area and stitch or secure with a scrap of fusible web.

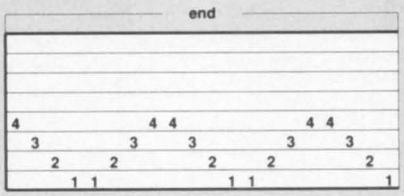
Center the underlining on the end of the bag fabric. The underlining will be narrower than the bag fabric. Machine baste across the ends following the grain of the fabric. Lay the lining on the bag fabric, right sides together. Stitch across the ends using the machine basting as a stitching guide.

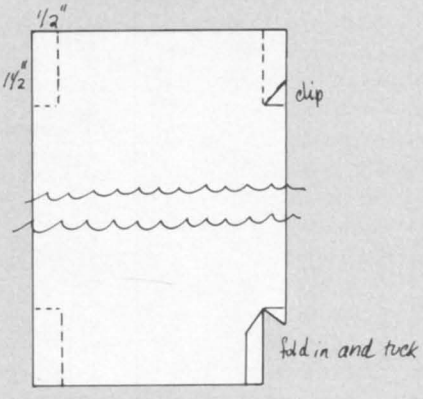
Push the bag fabric out of the way and stitch the sides of the underlining and lining together. Be sure to leave a few inches unsewn on one side for turning. Turn right side out. You will have a sort of tube with the leno fabric forming one side and the underlining and lining on the other. Press the end seams toward the lining/underlining and edgestitch on the lining to secure. Stitch again ¾" down to form a casing for the bag frame.

From the outside, zigzag or whip the sides of the lining/underlining together below the casing. By hand, whip the edges

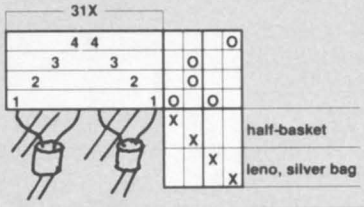
DRAFT FOR "BEAD LENO BAGS" (8-shaft threading):







4-shaft threading:

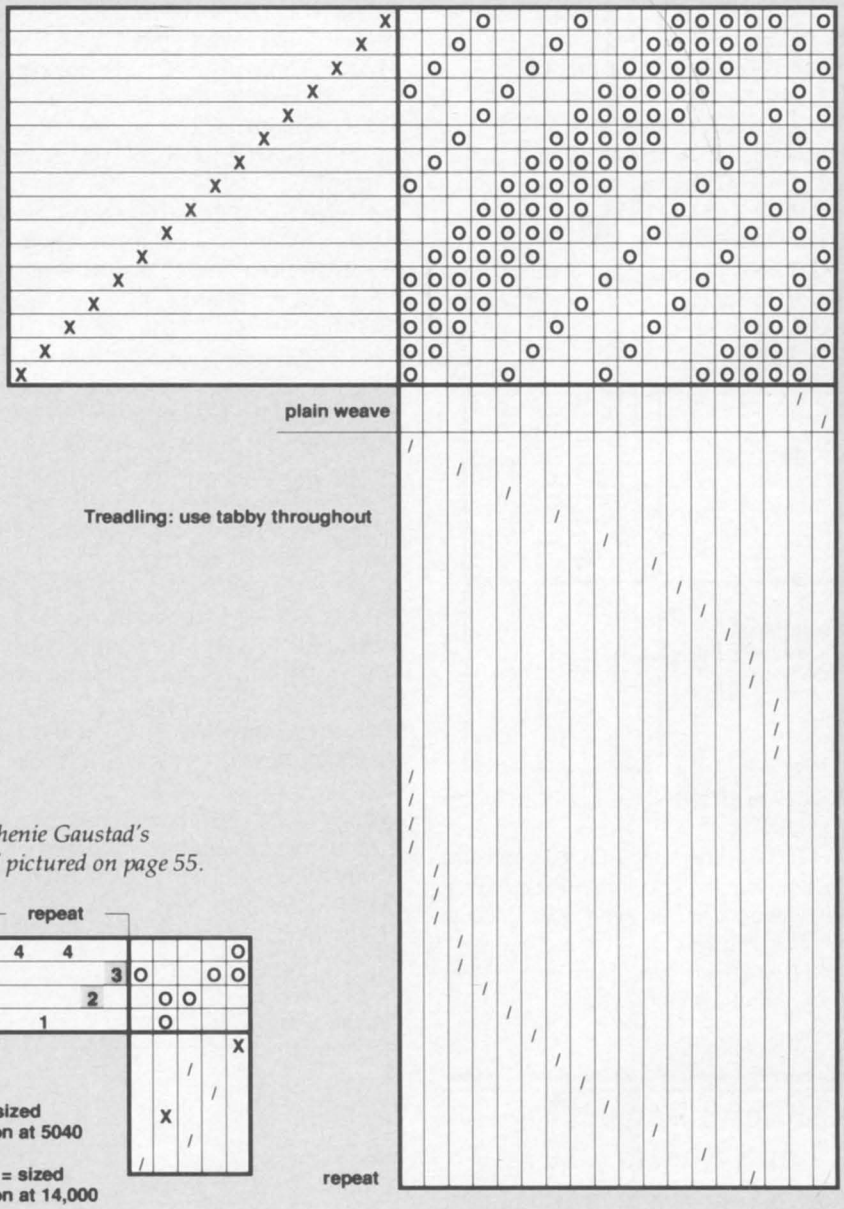


INSTRUCTION SUPPLEMENT

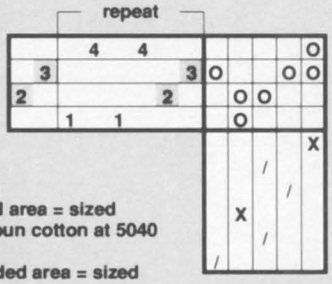
of the bag together, beginning at the turned-in edge and going up to the top, then down the sides of the bag.

Examine the bag frame carefully to be sure that you know how to assemble the hinge. Slip the frame into the casings and put in the pivot pins. (I found a pair of slip-joint pliers very useful.) ❖

Draft for "Caribbean Coat" by Anita Pazeian featured on page 90.



Draft for Stephenie Gaustad's "Needle Case" pictured on page 55.



WARP:
Shaded area = sized handspun cotton at 5040 yd/lb
Unshaded area = sized handspun cotton at 14,000 yd/lb.

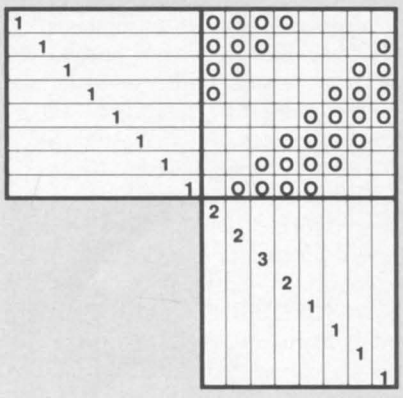
WEFT:
X = handspun cotton (unsized) at 14,000 yd/lb.
/ = handspun cotton (unsized) at 9000 yd/lb.

SLEY: 4/2/4/2 in a 12-dent reed.

E.P.I.: 36.

P.P.I.: about 60.

Draft for "Oriental Red Jacket" by Paula Stewart featured on page 91



Undulating Twill: A Curvaceous Structure

by Sharon Alderman

A PART OF ME has always chafed against restraints. When I first began to weave, I was delighted to discover that I could form curved lines within the rectilinear grid of the warp and weft. First I wove honeycomb with its curving outlining wefts enclosing plain-weave cells, and then I discovered undulating twills. Undulating twills work differently: the warp and weft cross at right angles, the threads do not curve, but the *effect* is curves, lots of them.

As I wove a few of these wonderful twills, I began to notice how they were constructed. They are all based on changing the slope of the twill line. In balanced, regular twills, the characteristic line of warp or weft floats makes a forty-five-degree angle with the weft. (A regular twill is one in which the treadling does not change direction, skip, or add sheds.)

When I realized that constantly changing the slope of the twill line created the undulations, I made a list of every factor I could think of that made the slope steeper or flatter:

Flatter	Steeper
open up the sett	tighten the sett
beat harder	beat more gently
use a smaller weft	use a larger weft
use larger warp ends	use smaller warp ends
use more ends per shaft	skip shafts in threading
skip sheds	use more picks per shed

Changing the relationship between the size of the weft and that of the warp has an immediate effect on the slope of the line. A heavy weft "fills" the cloth faster, with fewer picks, and brings the angle up, making the line steeper. A finer weft takes more picks to weave the same number of inches, which flattens out the angle (illustration 1).

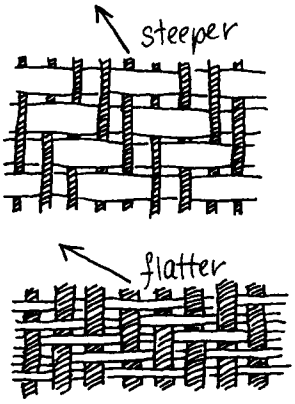
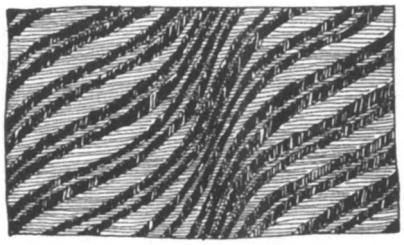


Illustration 1.

Likewise, smaller warp ends for a given weft make the angle steeper, whereas larger warp ends for the same weft do the opposite. A spinner could construct yarns that change in size in a controlled way to make each line of the cloth undulate independently. But even smooth commercial yarns could be used to make an undulating twill by using progressively thicker, then



An artist's rendering of the twill swatch from Swatch Collection #20, featured in the September/October 1989 HANDWOVEN. *The undulations are created in the threading; the threading is complex, but the weaving progresses quickly.*

thinner yarns in the threading of a straight draw.

Changing the sett of the warp changes the angle of the diagonal (illustration 2); if the sett is made too open, a sleazy cloth results. Above all, the cloth must be structurally sound to be useful! If you are careful, changing the sett across the cloth will produce a useful twill. The changes may be regular in their repeat, as in the scarf fabric shown opposite, or not, as you please. Warp ends crammed in the dents for a distance make the angle of the twill rise; skipped dents or sparsely sleyed ends flatten out that angle. This scarf is sleyed variably. The first samples were sleyed 3 ends per dent in a 12-dent reed for 6 dents and then 2 dents were skipped: 3/3/3/3/3/3/0/0/, and so on. After being washed, the finished cloth looked choppy, so I moved one thread from either side into the empty dents for this denting: 3/3/3/3/2/1/1/2/3/3/3/3/, etc. The undulations smoothed out satisfactorily.

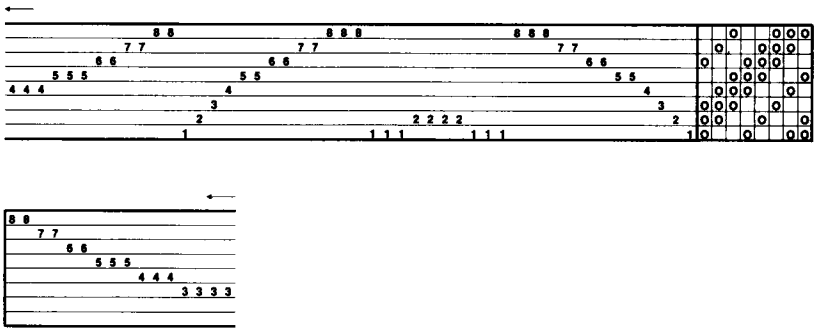
This simple method of making undulating twills has much to recommend it. It is simple to thread (a straight draw) and simple to treadle (a regular treadling), but it also has drawbacks: if a slippery yarn is used, the finished cloth averages out in the wash, obliterating the undulations, and the cloth has thick and thin stripes in the warp direction. Sampling is essential!

Variable beating can produce undulations but usually appears to be an error in weaving and is difficult to control well enough to produce a creditable cloth. As far as I am concerned, if it *looks* like an error in the cloth, it is.

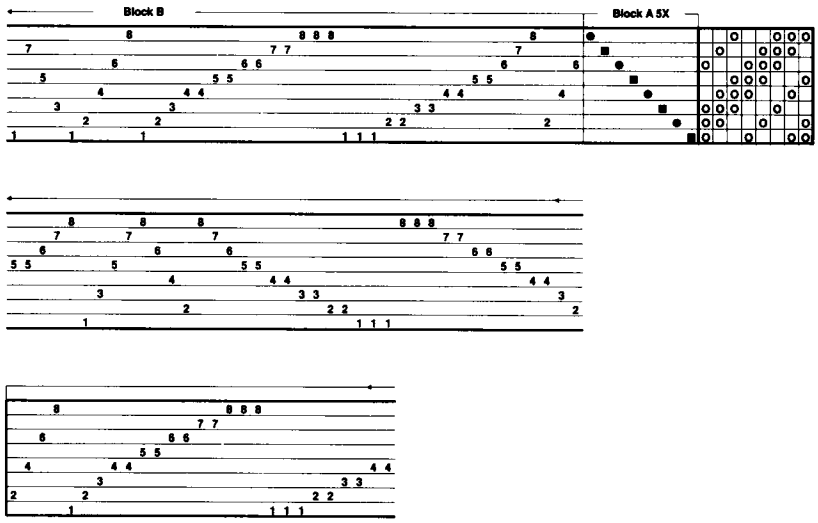
The usual way of producing undulations is in the threading, by repeating a shaft two or more times for a flattened line, then steepening the line by skipping shafts. This method has disadvantages: the threading produces *only* an undulating twill, and it is not as easy to thread as a straight draw. It does produce good, clear undulations

UNDULATING TWILL THREADING AND TIE-UPS

"Undulating Twill Samples, Sine-Curve Design"



"Square Shawl"



Fabric #2 from Swatch Collection #20

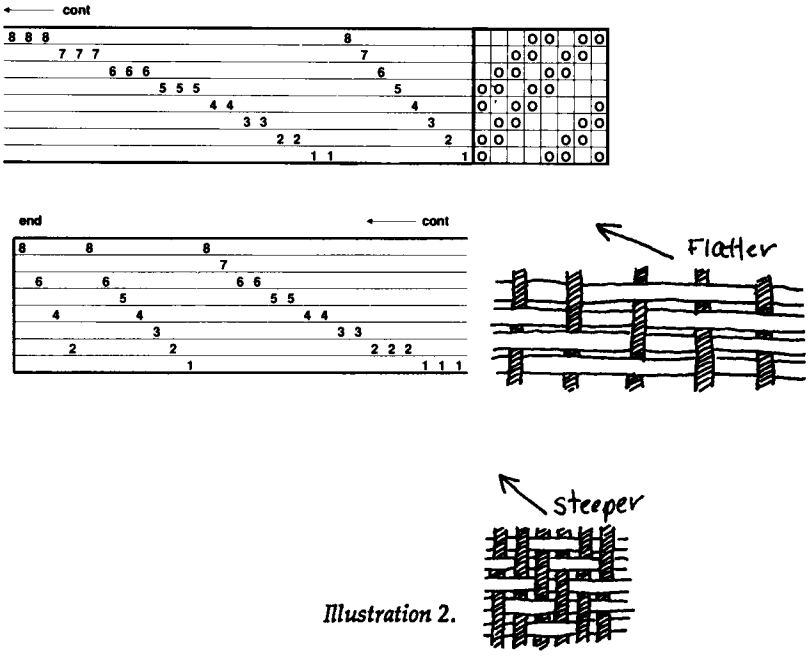


Illustration 2.

This eight-shaft Undulating Twill Shawl illustrates well the subtle elegance which this weave can create. The straight, angular lines of a plaid in dark, rich hues are a pleasing contrast to the curvaceous twill lines. Inset photographs, left to right: Scarf with Undulating Twill and Spaced Warp. The undulations are formed by varying the sett. Sample 1. Sample 2. Instructions for Undulating Twill Shawl, Scarf with Undulating Twill and Spaced Warp, and Undulating Twill Samples are in the Instruction Supplement.

and is simple to weave because the treadling is straightforward. Specially threaded selvedges or floating selvedges are unnecessary, because each shed has only one pick in it.

The undulating twill in Swatch Collection #20 (shown in the September/October 1989 HANDWOVEN, page 38 and on the opening page of this article), these samples, and the square shawl were created by threading the undulations in the warp. Close examination of the threading drafts (page 88) for these structures (squint a bit) reveals the undulations. The shape of the curves can be seen right in the threading. In the places where several threads are on the same shaft, the line flattens out, and where some shafts are skipped the line becomes steep.

I designed the undulating twill for Swatch Collection #20 with a diagonal line which grew steeper and flatter, steeper and flatter, but always moved in the same direction. I thought about an undulating twill that changed direction and wondered if I could write one that curved like a sine wave. Sure enough, it is possible. Sample 1 (pictured on page 89) woven for this article does this. The twill line begins steep, flattens out, and then changes direction at its flattest point and reverses, doing the same reversal after it flattens out going the other way.

As I looked at the sine-curve undulations, I decided that performing the same operations in both the warp and weft directions ought to result in circular shapes (see Sample 2, page 89). The number of times the shuttle passed through the same shed was increased to round the line and then reversed. If you look at the draft, you will see that the number of times a shed is repeated is the same as the number of ends threaded on a given shaft. The floats in this sample are somewhat stabilized by fulling the cloth, but they are, at this scale, rather long and not well suited to most uses. If the yarns were smaller, the floats would be more practical.

The changes in direction in these two samples were smooth (a sine curve is smooth). Having explored smooth changes, I wanted to design an undulating twill that pointed abruptly. The large square shawl (page 89) is the result. The drape of the shawl echoes the undulations in the twill itself. The bands of straight twill provide visual relief from the undulations.

Undulating twills which undulate because of their threadings require extra thought about sett. Areas of the cloth with one end per shaft are firm. Where the ends are doubled, trebled, or quadrupled on a shaft, the cloth tends to be thicker, spongier, and may be sleazy. Varying the sett to firm up the spongy sections would obliterate the effects you are trying to produce, so that is not an option. I figure out the sett for the twill structure I am using (see *Handwoven, Tailormade*, pages 31–33) and increase it by at least ten percent. Then I make a sample and wash it to check my calculations. Some areas will always be firmer and others softer; that is the nature of undulating twills.

Undulating twills can be constructed on a straight threading, using complex treadlings to cause the undulations. Such twills are easy to thread but require more care

Caribbean Coat

The Caribbean Sea inspired this long, flowing wrap by Anita Pazeian of Fresno, California. Gold and silver metallic yarns are reminders of brilliant sparkling waters; the undulating twill structure, chosen to represent the gently lapping waves, "sits" on top of the fabric; a multicolored warp of blues and greens captures the ocean's depths.

The richly textured warp includes space-dyed silk noil, variegated rayon/cotton bouclé, ribbon, and a sprinkling of silver and metallic threads. In contrast, the weft is a smooth 2-ply silk cord used double. Anita threaded this piece straight draw on sixteen shafts of a dobby loom (see the Instruction Supplement for the draft). For stability, tabby was used throughout. This fabric is structurally sound, yet has the flowing drape so characteristic of undulating twills.

in the weaving. There are no difficulties concerning sett because the beat more or less takes care of itself as you weave. The twill line maintains a forty-five-degree angle when it is woven straight. If every other shed is used, the line becomes flatter. To make the twill line steeper, insert two picks per shed, then three picks per shed. (When four picks are used together, the wefts tend to become "ropy" and collapse into one another, so sample first.)

When a second pick is inserted into the same shed, the first pick "unweaves" unless the weft is secured somehow at the selvedge. There are two good ways to secure the weft at the selvedges (taking the shuttle around the edge thread ultimately breaks it and substantially slows down the weaving process by breaking the rhythm): either thread a special selvedge using extra shafts (2/2 basket weave works best because its rate of take-up is nearer that of twill) or use a floating selvedge, an end on either side which does not pass through a heddle.

Many more variations are possible than I have shown here. Undulating twills may be written with both smooth and abrupt direction changes. I have found that the most interesting twills are written on more than four shafts. The contrast between longer and shorter floats dramatizes the undulations. I have written dramatic weft-controlled undulations and inserted a plain-weave shot between each twill shot (sometimes using a finer thread, sometimes not) to stabilize the structure. The result is a twill with floats in the weft direction but not in the warp direction (on the reverse side). There are many possibilities. Now that you see how you can write undulating twills to suit your own needs, taste, and whims, I hope you will have a good time creating your own delightfully curved lines. ❖

Sharon Alderman designs interior fabrics, weaves one-of-a-kind art pieces, and teaches workshops around the country. She lives in Salt Lake City.

Silk Shawl

Sometimes a weave structure says it all. Here, the meandering lines of an eight-shaft undulating twill, used for a silk shawl, speak of regal opulence, like the rich jewel tones in which it was woven. As might be imagined, this cloth has a fluid drape and feels wonderful.

On an undulating-twill threading, Jennifer Moore of Santa Barbara, California, used a straight-twill treadling for speedy weaving, an important consideration to this production weaver.

Red Oriental Jacket

This example proves that a weave can be as flamboyant or subtle as you please. The undulations in this fabric are small in scale; they don't shout "undulating twill" but take on a quiet, wavy line all their own.

Paula Stewart was inspired to create this jacket by a workshop she took from Karen Selk. A 2/14 silk is threaded straight draw on eight shafts and sleyed 24 e.p.i.; The undulations are created in the treadling. The regular twill threading makes for a versatile warp, as numerous patterns, including plain weave, can be woven on it. Paula used this to good advantage by weaving a lighter weight plain weave fabric for piping trim and hems. Paula's draft can be found in the Instruction Supplement.

A *new* twist on Bead Leno

by Kathryn Wertenberger

***Bead Leno Bags** woven by the author. A contrasting backing fabric shows off the twisted patterns of the leno. Overall pattern can be woven on four shafts; blocks of leno are possible on eight shafts. See the Instruction Supplement for complete weaving details. Yarns courtesy of Silk City Fibers and Crystal Palace Yarns.*

IT'S BEEN TWO years since Weaver's Challenge last presented bead leno (see review on page 94). In that issue, March/April 1987, I introduced basic four-shaft and eight-shaft threadings, along with some other threading variations and a variety of sett and yarn texture possibilities. In the back of my mind since then a series of "what ifs" has grown.

For this project, I explored "what if" I used two blocks threaded on eight shafts and I also changed the direction of the twist by reversing the order of threading (see illustration). The treadling proceeds as usual, resulting in either the first thread crossing over to the fourth position or the fourth thread crossing to weave with the first.

I set up a four-part sampler. The first part alternated a basic unit of Block A (shafts one through four) with a unit of Block B (shafts five through eight). The second section was threaded Block A, Block B, Block A reversed (shafts four through one), then Block B reversed (shafts eight through five).

The third section of the sampler used the sequence of Block A, Block A reversed, repeated twice, then Block B and Block B reversed, repeated twice. Section four was threaded A, B, A, then B reversed, A reversed, B reversed.

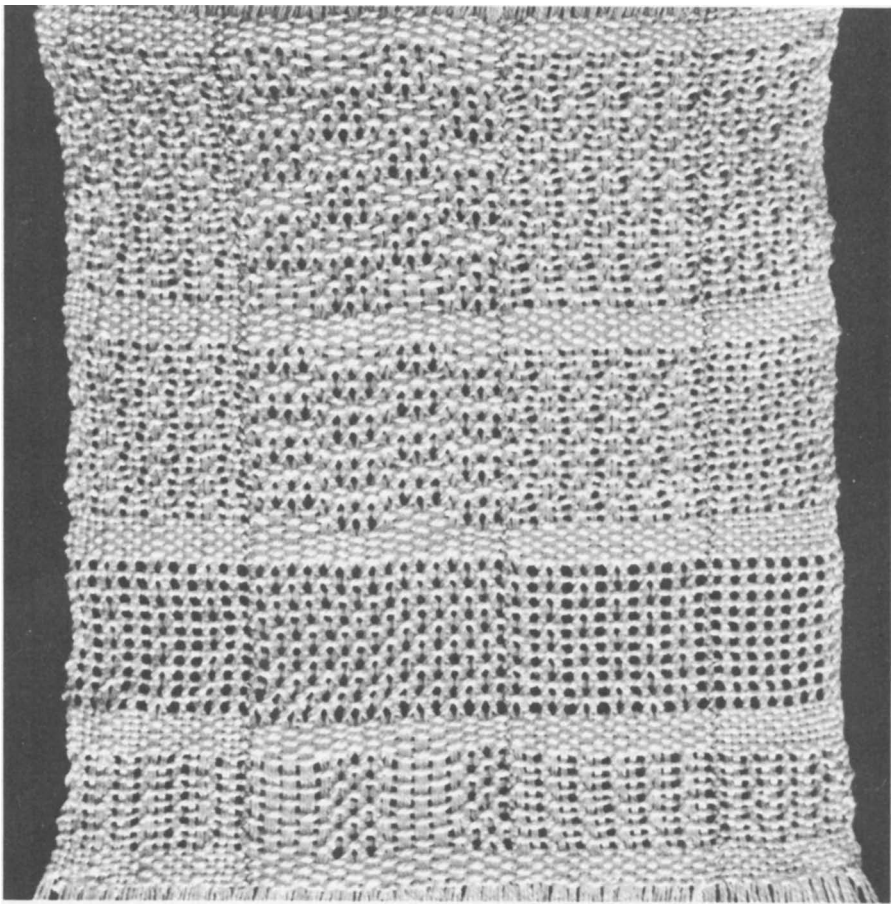
The possible treadling variations allow Block A to weave leno while Block B weaves half-basket. Block B can weave leno while Block A weaves half-basket. Both blocks can weave half-basket at the same time or both blocks can weave leno.

I found that several interesting textures resulted. I particularly liked the undulating blocks that formed when alternating the blocks of leno on the section that reversed the direction of the twist within the block. This threading resulted in a very open twist with strong diagonal surface lines when both blocks

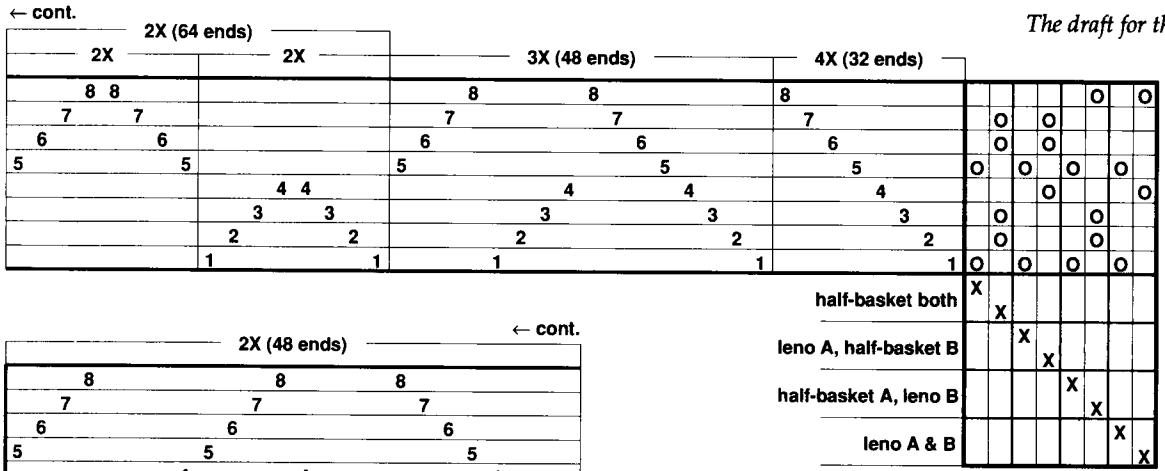
were treadled lace. These were the structures that I used for the bags featured here.

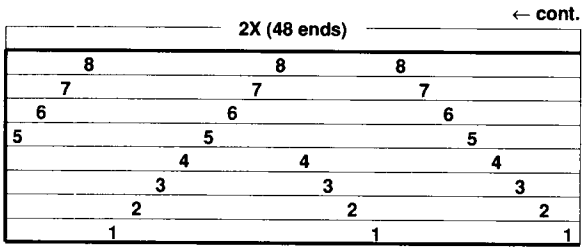
Now "what if" the warp ends were of different sizes, or of slightly different colors or textures? Because the center two threads of a block always work together, only one is really needed. Eliminating the extra thread would allow two blocks to be woven on six shafts, or three blocks on nine shafts.

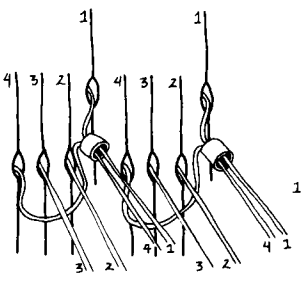
Adapting the effects of doup leno and hand-picked leno to this easy-to-weave bead leno is yet another area to explore "what if". ❖

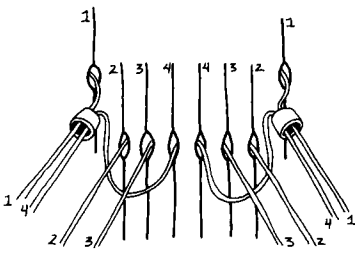


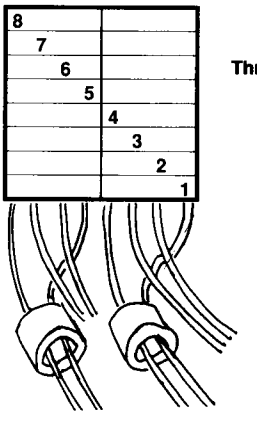
The draft for the sampler is below.











Threads from
1 & 4, 5 & 8 under
2 & 3, 6 & 7.

Above left: *When bead leno is threaded straight twill, the leno twists will all go in the same direction.* Above right: *A point twill threading makes it possible to have twists going in both directions at the same time.*

Kathryn Wertenberger gives lectures on a variety of weaving topics. She is a contributing editor of HANDWOVEN *and the author of* 8, 12 . . . 20 *published by Interweave Press.*

Further Reading

Alderman, Sharon D. "Loom-Controlled Leno", HANDWOVEN, May 1981.

Prairie Wool Companion, Issue 6, 1983.

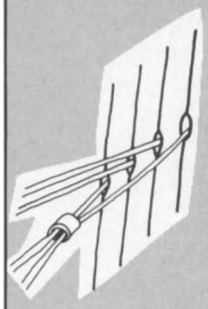
Wertenberger, Kathryn. "Bead Leno", HANDWOVEN, March/April 1987.

Bead Leno Review

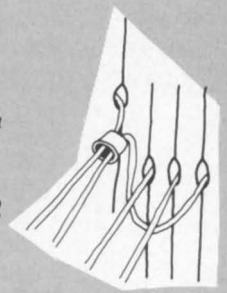
Beam the warp first and thread the loom as for twill, shafts one through four. Between the heddles and the reed, thread each warp thread from shafts one and four through a small ceramic bead or 3/16" length of small soda straw. I've found that a dental floss bridge threader (located in the store near the toothbrushes) is the ideal tool for threading the beads. Threads one and four must lie below threads two and three, or the twist cannot be treadled (see illustrations).

All four of these threads *must* be threaded through the same dent in the reed. Set your warp as you normally would, and skip dents to equal the required sett. As the warp ends always weave in pairs either for the leno or a half-basket structure, the weft needs to be twice the size of the warp for a balanced weave.

To treadle, lift shaft one, and the thread from shaft four will rise with it on one side of threads two and three. Lift shaft four, and both threads will shift to the other side of two and three. Two and three are treadled only when a half-basket structure is desired; then lift shaft one and weave, then two and three and weave. The shed will be shallow due to the twisting of the threads. A slim shuttle and perhaps a weaving sword will make weaving easier.



The beads are installed between the heddles and the reed; the warps from shafts 1 and 4 are joined in a bead below the warps from shafts 2 and 3.



When shaft 1 is raised, the bead pulls the warp on shaft 4 to the left of the stationary warps on shafts 2 and 3.

Calendar

NOTICES

❑ Weaving Guilds of Oregon (WeGO) is hosting the 1991 Conference of Northwest Handweaver's Guilds in Eugene, OR. Conference '91 Committee is asking all persons interested in lecturing or teaching workshops to submit proposals and resumes by Dec. 1, 1989, to Patricia Spark, 1032 SW Washington St., Albany, OR 97321. (503) 926-1095.

EXHIBITS, SHOWS & SALES

❑ **California**. Through Nov. 30. 7th annual Invitational Wearable Art Show at Brandon Gallery, 119 N. Main St., Fallbrook, CA 92028. (619) 723-1330.

❑ **District of Columbia**. Through Jan. 21, 1990: Molas of the Kuna Indians. Through Feb. 25, 1990: Textile arts of the Caucasus. Feb. 17–Aug. 5, 1990: Selected textiles from the museum collection. Mar. 29–July 8, 1990: Ed Rossbach retrospective. All exhibits at The Textile Museum, 2320 S St., N.W., Washington, DC 20008. (202) 667-0441.

❑ **District of Columbia**. Apr. 19–22, 1990. 8th annual Washington Craft Show in Departmental Auditorium, 1301 Constitution Ave. N.W. For information, contact Smithsonian Associates Women's Committee, Arts and Industries Bldg., Room 1465, Smithsonian Institution, Washington, DC 20560. (202) 357-4000.

❑ **Illinois**. Nov. 5–Dec. 15. Fiberfest '89, invitational exhibit of 38 major artists. Send for color brochure: Western Illinois University Art Gallery, Macomb, IL 61455.

❑ **Maine.** Through Nov. 24. Challenge, juried show of handwoven and handspun items presented by Maine Guild of Spinners and Weavers at Thomas Moser, Cabinetmakers, 415 Cumberland Ave., Portland.

❑ **Massachusetts.** Through Jan. 28, 1990. NEWS '89: Contemporary Handweaving, exhibition of prize winners from New England Weavers' Seminar at Museum of American Textile History, 800 Massachusetts Ave., North Andover, MA 01845. (508) 686-0191.

❑ **Michigan.** Through Jan. 14, 1990. Silk and Clay: Chinese Textiles and Ceramics, exhibit at The MSU Museum, Michigan State University, East Lansing. For information, contact Martha Brownscombe, MSU Museum, Michigan State University, East Lansing, MI 48824-1045. (517) 353-1889.

❑ **Michigan.** Nov. 9–12. Michigan Weaver's Guild 7th annual exhibit and sale of work from more than 100 weavers in Michigan and Ontario, Orchard Mall, Orchard Lake Rd. and Maple, West Bloomfield. Weaving and spinning demonstrations.

❑ **Michigan.** Nov. 17–18. Kalamazoo Weaver's Guild Annual Sale, Kalamazoo Valley Community College, 6767 W. O Ave. Christmas Corner, Children's Corner, wearable fashions, demonstrations. Contact Roberta L. Edmondson, (616) 349-2304.

❑ **Michigan.** Dec. 1–2. Black Sheep Weavers Fibre Guild's 7th annual Christmas Sale at the Cromaine Library, Hartland. For information, SASE to Lorraine Pelky, 3425 Faussett, Howell, MI 48843. (517) 564-0526.

❑ **Missouri.** Nov. 17–19. 7th Holiday Sale by members of the Fiber Guild and the Weavers Guild, Alexander Majors Barn, 8201 State Line Rd., Kansas City. Contact Betty Kernaghan, (816) 942-3615.

❑ **New York.** Nov. 3–30. Exhibition and sale by The Woodstock Weavers at Pine Bush Area Arts Council, Village Centre, Main St., Pine Bush, NY 12566. Contact Mrs. Tecla C. Smith, 7 Holly Hill Dr., Woodstock, NY 12498. (914) 679-6046.

❑ **Ohio.** Nov. 25. Sale and exhibit by the Central Ohio Weavers Guild at the Hilton Inn North, 7007 N. High St., Columbus. Contact Hope Johnson, 5343 Tussic Rd., Westerville, OH 43081. (614) 882-6851.

❑ **Oklahoma.** Apr. 24–29, 1990. 24th annual Festival of the Arts at Festival Plaza and Myriad Gardens, Oklahoma City. Contact Arts Council of Oklahoma City, 400 W. California, Oklahoma City, OK 73102. (405) 236-1426.

❑ **Oregon.** Through Nov. 26. Hands for Home: Textiles for Interiors by members of Headles & Treadles Weavers Guild and Humbug Mountain Weavers Guild and heirlooms from their collections. Demonstrations, lectures, workshops. Coos Art Museum, 235 Anderson Ave., Coos Bay, OR 97420. (503) 267-3901.

❑ **Oregon.** Nov. 9–Dec. 31. Holiday Show of fine crafts at the Hoffman Sales Gallery of the Oregon School of Arts and Crafts, 8245 SW Barnes Rd., Portland. (503) 297-5544.

❑ **Pennsylvania.** Through Dec. 31. Amish Quilts from the Collection of the Museum of American Folk Art, Allentown Art Museum, 5th and Court Sts., Allentown. (215) 432-4333.

❑ **Pennsylvania.** Nov. 17–19. Fiber Expressions 89, Handweavers of Bucks County 13th annual show and sale in the Memorial Building at Washington Crossing State Park, Route 32, Washington Crossing. Contact Kate Turner, (609) 395-8816.

❑ **Tennessee.** Through Dec. 9. The Personal Icon: Giving Form to the Spirit; and Body Adornment: Garments and Accessories. Juried exhibitions in conjunction with the Surface Design Association Conference at Arrowmont School, Gatlinburg. (615) 436-5860.

❑ **Virginia.** Through Nov. 19: The Inside Story, home accessories including rugs, pillows, baskets, linens, blankets. Nov. 21–Jan. 2, 1990: Any Color, Just So It's Red, a large assortment of natural-fiber gifts featuring the color red. Both exhibits at The Potomac Craftsmen Fiber Gallery, Torpedo Factory Art Center, 105 N. Union St., Alexandria, VA 22314. (703) 548-0935.

❑ **Wisconsin.** Nov. 4–26. Warp, Weft and Webs, 1989 Wisconsin Handweavers Show & Sale (sale dates: Nov. 4, 5, 26), at the Charles Allis Art Museum, 1630 E. Royall Place, Milwaukee 53211. Free admission. Contact Nancy Meiling, (414) 543-6050.

❑ **Canada, British Columbia.** Nov. 17–18. Annual sale and exhibition of the Greater Vancouver Weavers' and Spinners' Guild at Aberthau, West Point Grey Community Centre, 4397 W. 2nd Ave., Vancouver. Contact Ruth Griffiths, (604) 879-9868.

❑ **Canada, Ontario.** Nov. 24–26. Pottawatomi Spinners and Weavers Guild presents its 8th annual Heirlooms for Tomorrow Show and Sale, Owen Sound Public Library, Owen Sound. Exhibits, sales, demonstrations. Contact Elinor Bartlett, (519) 371-9397.

❑ **The Netherlands.** Through Dec. 10. Textilebiennial, an exhibit of tapestries from the 14th International Tapestry Biennial of Lausanne, at The Dutch Textile Museum, Tilburg. Includes 14 works by U.S. artists. Contact Caroline Boot, (013) 367475.

CONFERENCES

❑ **Nov. 10–12.** Southeastern Regional Paper Symposium hosted by Sawtooth Center for Visual Design, Winston-Salem, NC. Workshops, lectures, demonstrations, talks, exhibition. Karen Stahlecker, leader. Registration limited, preregistration required: Sawtooth Center for Visual Design, 226 N. Marshall St., Winston-Salem, NC 27101. (919) 723-7395.

❑ **March 31, 1990.** Spinaround, workshops, demonstrations, fashion show, exhibits sponsored by Michigan Handspinner's Guild, at Mercy Conference Center, Farmington Hills, MI. Priscilla Gibson-Roberts, speaker. To register: Mary Lou Reichard, 21983 Crosswick Ct., Woodhaven, MI 48183. (313) 676-1120.

❑ **Apr. 1–12, 1990.** Textile Arts Festival–Bradford 90, Bradford, England. Textile symposium, conference, exhibits, demonstrations, special events. Speakers and teachers include Kaffe Fassett, Peter Collingwood, Ann Sutton, Diane Sheehan. Contact Textile Arts Festival, Salts Mill Victoria Rd., Saltaire Bradford, West Yorkshire, BD18 3LB, England, 0274-531211; or 56A Ayres St., London SE1 1EU, England 01-407 6703.

❑ **Apr. 5–8, 1990.** Tapestry Forum 1990 in Portland, OR. Discussions, exhibitions, lectures, studio tours for tapestry artists. For information, SASE to Tapestry Forum 1990, PO Box 2073, Portland, OR 97208.

❑ **June 15–20, 1990.** Fiberscapes, Midwest Weavers' Conference at the Pittsburgh Hilton and Towers, Gateway Center, Pittsburgh, PA. Speakers, mini/maxi sessions, exhibits, fashion show, post-conference workshops. Contact Cyl Maljan, 219 Carron Way #1, Pittsburgh, PA 15206.

❑ **July 13–15, 1990.** Connecting Threads, Convergence 90, biennial conference of Handweavers Guild of America in San Jose, CA. Registration information available from P.O. Box 1808, Aptos, CA 95001-1808.

—continued

TO ENTER

❑ **American Tapestry Today,** national juried exhibition in conjunction with the Handweaver's Guild of America's Convergence 90, June 22–August 16, 1990, San Jose, CA. Entry deadline Dec. 1, 1989. For prospectus, SASE to American Tapestry Alliance, HC 63, Box 570-D ATT, Chiloquin, OR 97624.

❑ **ArtFest—The Santa Fe International Art Festival,** June 4–10, 1990, in Santa Fe, NM. Interpretations of the theme "Nature—the Environment We Share—The Interdependence of All Species". Prizes total $700,000, including $130,000 grand prize. Up to 5 works per entry. Contact ArtFest, 535 Cordova Rd., Suite 208, Santa Fe, NM 87501. (505) 982-1132.

❑ **Beyond Tradition 1990,** exhibition and sale of woven items juried by Donna Sullivan, Mar. 19–Apr. 8, 1990. Presented by Contemporary Handweavers of Houston in conjunction with the Houston International Festival. Cash awards; entry deadline Jan. 26. LSASE to Mary Welch, 3131 Cummins Lane #77, Houston, TX 77027.

❑ **Fiberscapes '90,** juried fashion show in conjunction with the Midwest Weavers Conference June 15–17, 1990, in Pittsburgh, PA. Handwoven, handspun, or felted garments. Slide deadline Mar. 16, 1990. Open to Midwest Weavers Association members; lifetime membership $2 from Marjorie O'Shaughnessy, 2126 Skyline Pl., Bartlesville, OK 74006. For contest information, contact Debra Meteney, RD 2, Box 31A, Venetia, PA 15367.

❑ **A Fine Line,** open exhibition of tapestry featuring line as a design element. Apr. 5–26, 1990, in conjunction with Tapestry Forum 1990. For prospectus, SASE to Tapestry Forum 1990, PO Box 2073, Portland, OR 97208.

❑ **Fish Tales,** national juried exhibition combining fish imagery with the artist's own fish story, at Galeria Mesa, Mesa, AZ. All media; $1000 in awards; slide deadline Nov. 10. For prospectus, contact Fish Tales, Galeria Mesa, PO Box 1466, Mesa, AZ 85211-1466. (602) 644-2242.

❑ **From Here to There: Vehicles for New Forms/New Functions,** national open media competition Feb. 24–May 19, 1990, sponsored by Arrowmont School of Arts and Crafts. Cash awards. Open to U.S. artists. Entry deadline Dec. 30. Request prospectus from Arrowmont School of Arts and Crafts, PO Box 567, Gatlinburg, TN 37738. (615) 436-5860.

❑ **In the Park,** noncompetitive, nonjuried exhibit at Convergence 90, July 13–15, 1990, San Jose, California. Entrants are challenged to use Georges Seurat's oil painting "A Sunday Afternoon on the Island of La Grande Jatte" as inspiration for a fiber project. Participants must be registered at Convergence 90. Application forms will be mailed to all members of The Handweavers Guild of America in Dec., or send SASE to In the Park, 5814 River Oak Way, Carmichael, CA 95608.

❑ **Paper/Fiber XIII,** April 1990. Open to all artists in the U.S. Work must use paper and/or fiber as the primary medium. Juror: Norma Minkowitz. Cash awards; slide deadline Jan. 17, 1990. For information, send SASE: Paper/Fiber XIII, The Arts Center, 129 E. Washington, Iowa City, IA 52240.

❑ **Small Expressions '90,** international juried fiber exhibit in conjunction with Convergence 90 in San Jose, CA, July 12–15, 1990. Woven media not exceeding 15" x 15" including hanging or mounting devices. Cash awards; slide deadline Apr. 1, 1990. For prospectus, write HGA/Small

Expressions, 120 Mountain Ave., B 101, Bloomfield, CT 06002.

❑ **6th Annual Scholarship Competition** of the Society of Craft Designers. Top award, $1000 scholarship to study art or design, plus one-year SCD membership; 5 other membership awards. Designs must be original or show a new use of an existing product. Juried from color photos due Apr. 1, 1990. Final judging from actual designs in June 1990. For application, contact Society of Craft Designers, 6175 Barfield Rd., Suite 220, Atlanta, GA 30328. (404) 252-2454.

INSTRUCTION

❑ **Through November.** The Weavers' School in Missouri offers 5-day classes in complex weaves, coverlets, drawloom weaving, special pattern weaves, and piqué, taught by Madelyn van der Hoogt. Living quarters are available. Request brochure from The Weavers' School, Rt. 1, Box 187, Fayette, MO 65248. (816) 248-3462.

❑ **Nov. 3–4.** Marbling: Fabrics and Paper, workshops by Mariana Santiago and Beck Whitehead. Nov. 11–12, Basic Baskets, Plus . . ., workshop by Cat Brysch. Contact Southwest Craft Center, 300 Augusta, San Antonio, TX 78205. (512) 224-1848.

❑ **November.** Fiber workshops at the Brookfield Craft Center include Bobbin Lace, Nov. 4–5, by Desiree Koslin, and Summer & Winter Weave, Nov. 18–19, by Nancy Lyon. Contact Brookfield Craft Center, 286 Whisconier Rd., Brookfield, CT 06804. (203) 775-4526.

❑ **Through December.** Classes at the John C. Campbell Folk School in North Carolina cover a variety of weaving skills and other fiber subjects. Most classes run one week. For a brochure and schedule, contact John C. Campbell Folk School, Brasstown, NC 28902. (800) 562-2440.

❑ **Jan. 2–12, 1990.** Weaving with Rags, 6 days of instruction by Lucienne Coifman at Guilford Handcrafts Center, PO Box 589, 411 Church St., Guilford, CT 06437. (203) 453-5947.

❑ **Jan. 8–Mar. 17, 1990.** Winter quarter at Oregon School of Arts and Crafts includes instruction in weaving and other fiber arts. For brochure, contact the school at 8245 S.W. Barnes Rd., Portland, OR 97225. (503) 297-5544.

❑ **July 9–11, 1990.** Complex Weavers' Seminar '90 to be held prior to Convergence 90 in San Jose, CA. For information, send SASE to Registrar C.W. Seminar '90, 704 N. Alpine Rd., Stockton, CA 95205.

TRAVEL

❑ **Kenya,** Jan. 26–Feb. 12, 1990. Textile safari guided by Linda Hendrickson, textile artist. Full payment due Nov. 27. Contact Dorothy Cope, Textile Network Marketing, PO Box 1072, Woodlinville, WA 98072.

❑ **New Zealand and the Woolcrafts Festival,** Mar. 23–Apr. 9, 1990. Tour blends holiday travel with visits to textile artisans; led by Louise Bradley, Colorado spinner/weaver/designer. Contact Mary Fletcher, PO Box 61228, Denver, CO 80206. (303) 692-9634.

❑ **Scotland,** Spring and Autumn 1990. Wool and Wonders of Scotland, 14-day tours with an emphasis on Scottish knitting and weaving. Contact The Westminster Trading Corp., 5 Northern Blvd., Amherst, NH 03031. (603) 886-5041.

❑ **Thailand,** Dec. 27–Jan. 10. Fiberarts and hilltribes tour for university credit. Barbara Lewis, Art Department, James Madison University, Harrisonburg, VA 22807. (702) 568-6216.

❑ **Peru,** June 1990. Three-week tour features a 7-day Weavers' Hike through remote villages, visiting weavers and spinners. Contact Betty Davenport, 1922 Mahan, Richland, WA 99352. (509) 946-4409.

Calendar events of special interest to weavers are printed free of charge as a service to our readers. Please send your event information at least 10 weeks prior to the month of publication to "HANDWOVEN Calendar", 306 N. Washington Ave., Loveland, CO 80537.

Classifieds

NOTICES

TO PLACE A CLASSIFIED AD for the next issue, send your ad along with payment eight weeks prior to the month of publication. **Only $1.25 per word ($25 minimum) or $50/col. inch (camera-ready). Payment must accompany ad.** Send to **Interweave Press, Handwoven Classified Ads,** 306 N. Washington, Loveland, CO 80537.

JOIN CONTEMPORARY HANDWEAVERS of Texas, a regional educational organization. Five newsletters (with samples) annually, $10. 1991 conference in Houston. Mail check to **CHT,** Marion Sullivan, 3302 Suffolk, Houston, TX 77027.

PERU WEAVER'S HIKE—3 weeks June '90. Customized tour for weavers features 7-day trek to remote weaving villages near Cuzco. Write for details: **Betty Davenport,** 1922 Mahan, Richland, WA 99352. (509) 946-4409.

TOURS: NEW ZEALAND and Woolcrafts Festival, March 23–April 9; China/Tibet, Sept–Oct. Request brochures: **Mary Fletcher,** PO Box 61228, Denver, CO 80206. (303) 692-9634.

WANTED: LOOM. 96" or wider. Prefer countermarche or counterbalance. Prefer upper Midwest area. **Mary Burns,** Hwy 47, Mercer, WI 54547. (715) 476-2828.

WANTED: (1) Genuine antique spinning wheel. Must have all attachments and be operable. **(2)** Genuine antique hand loom. Approximately 36" to 45" width cloth capability. Must be operable. Prefer 6-harness. **(3)** Individual with expertise in operation of both items 1 & 2 above. Answer ad with descriptions and/or resumé to: **Mrs. Meade,** Box 526, Jefferson, GA 30549. (404) 367-5241, Tues., Wed., Thur. only.

EQUIPMENT

END DELIVERY SHUTTLES and quills $25 each, with 5 quills. Limited supply. **Rabbit Goody Textiles,** PO Box 455, Cooperstown, NY 13326. (607) 264-8400.

FOR SALE 8-harness 40" wide Swedish contramarche loom. Good condition. $600. 12-harness 48" wide Leclerc-Nilus jack loom. Excellent condition. $1000. Negotiable. (718) 728-0027 or (518) 597-3910.

FREE FREIGHT ON SCHACHT, HARRISVILLE, Leclerc, looms in Continental USA! Also dealers for the AVL Baby Dobby, Kyra, Glimåkra looms. Loom brochures upon request with SASE. **The Fiber Studio,** P.O. Box 637, Henniker, NH 03242. (603) 428-7830.

HAND-BUILT COUNTERBALANCE LOOM, 1949, C. Albert Myers, 36" width, 4 harnesses, 6 treadles, beautiful hardwood. $700. Includes bench, 6 shuttles, more. (502) 425-1589.

IKAT SHIFTING BOXES by Pauline Sargent Deppen. Warp clamps and *new* stretch film ikat wrapping tape. Send SASE for brochure: **The Deppen Studio,** 1565 Vendola Dr., San Rafael, CA 94903. (415) 472-2921.

INKLE LOOMS. Floor model. Permanent heddles. Tool tray. Doubles as warping board. SASE. **Cascade,** 1826 Mahan Dr. #8, Tallahassee, FL 32308-5203.

JUMPING SLEY HOOKS $13.50. End-feed shuttles $49.95; includes six bobbins. Ends selvedge problems. Also tour to Ireland, Scotland, and England, April 1990. Contact **The Looms,** Box 61, Mineral Point, WI 53565. (608) 987-2277.

MACINTOSH 512E COMPUTER with 800K internal floppy drive, SCSI port and weaving software capable of operating AVL loom (interface not included) $600. (201) 761-0552.

MISSION WEST WEAVING CENTER. Professional weaving curriculum. Equipment, supplies, monthly loom rental in studio. **Mission West Weaving Center,** 1032 Mission, So. Pasadena, CA 91030. (818) 441-0023.

97" CRANBROOK, like new! 8-harness, double warp beams, 5 SS reeds, attached tool shelf, & spool rack, $4000; and 60" Cranbrook, excellent condition, 8-harness, 6 SS reeds, bench, $2000. Bev Simonson (316) 792-1832.

OMAHA LOOMS (formerly Newcomb Loom) now manufacturing automatic fly shuttle (W.D.) and Studio. Also parts. Write: **Omaha Looms,** 8517 N. 46th Ave., Omaha, NE 68152. (402) 453-3519.

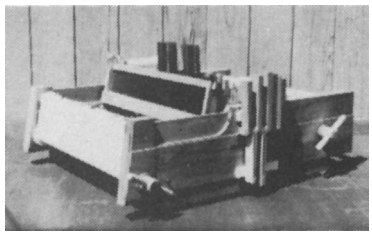
PROCESS WOOL AND EXOTICS with our specialized equipment. Exciting Deluxe drum-carder now with carding rolls for all fibers. **Motorizing Unit** available for Patrick Green Carders. **New Triple-Picker** for fantastic opening and blending of kid mohair, specialty fibers and all wools. We pay duty and freight. Write or phone for details. **Patrick Green Carders Ltd.,** 48793 Chilliwack Lake Rd., Sardis, B.C., Canada V2R 2P1. (604) 858-6020.

RUSSIAN TYPE PADDLE WOOL combs. Now available. For more information send SASE to **J.A. Meck,** P.O. Box 756, Cornelius, OR 97113. Phone (503) 628-2696.

60" CRANBROOK, 8H, 10T with tool shelf, sectional beam, & bench. 40" Thought Products Barbara V, 12H, 14T, double warp beams. Spool rack, tension box, other extras. Must sell together. $3200. (609) 794-8509.

NORTHWEST LOOMS

The **PIONEER** takes the time out of warping



Open Reed & patented Open-Top Heddles

- Warping is quick and easy
- Warp right on loom
- Warp up to 9 yards
- Jack-type table looms
- Up to 16 harnesses
- Crafted of Eastern hardwoods

NORTHWEST LOOMS
P.O. Box 78583
Seattle, WA 98178-9998

THE WOOL ROOM

Schacht, Louët & Ashford looms and wheels
Bond knitting frame—$200 + shipping
Knitting and weaving yarns & accessories
Exotic fibers & fleece • Basketry supplies
LSASE for catalogue (65¢ postage)

by appointment
(914) 241-1910
Susan & Nancy

Mail order
Dept. H, Laurelton Road
Mt. Kisco, NY 10549

Save Money on Rug Weaving Supplies

We are the Rug Weaving specialists. Our large volume means lower, discount prices. We carry a large selection of beautiful cotton rags on coils, 8/4 cotton warp, rug filler, loopers, braiding equipment and more. We pay shipping! For catalog and samples send $1.00 handling to: **GREAT NORTHERN WEAVING,** P.O. Box 361B Augusta, MI 49012.

shannock tapestry looms

High tension, heavy duty, professional tapestry looms with roller beams and other weaving accessories.

Call (206) 573-7264
or write to
10402 N.W. 11th Ave., Vancouver, WA USA 98685

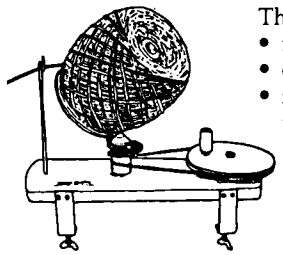
GLORIOUS SHUTTLES™

STICK SHUTTLES, SKI SHUTTLES, RAG SHUTTLES, BOAT SHUTTLES

Made from domestic and exotic hardwoods including oak, cherry, yew, Honduran mahogany, koa, walnut, and East Indian rosewood

BLUSTER BAY WOODWORKS

Send 2.00 for catalog to:
P.O. Box 1970
Sitka, Alaska 99835



The amazing
- mostly wood
- 6" ball
- for many years hard use

BALL WINDER
US $47.90
P.P.D.

Many other spinners' and weavers' tools. Texsolv tie-up system Canadian distributor. Catalog $1.00.
WOOLHOUSE, Box 315, Armstrong, B.C., Canada, V0E 1B0.
Tel. (604) 546-6940

STURDY 22" x 32" FRAME LOOMS with molded teeth, accessories, instructions. No complicated warping—excellent loom for classes. Solid cherry $29.95; maple $19.95. Add 15% for freight. Large SASE for brochure. Also ribbons, yarns. **Creative Designs,** 4370 Tuolumne Pl., Carlsbad, CA 92008.

USED LOOMS & FIBER ARTS EQUIPMENT: Northwest States Only. Send $1 and SASE (for current issue), or $3.50 (no envelopes) for one year/5 issues to: **Loom Exchange,** 1171 Fairview Ave. N., Seattle, WA 98109. (206) 467-9610.

WEAVING AND SPINNING EQUIPMENT at discount prices!! Looms—Harrisville, Kyra, Louët. Spinning wheels—Ashford, Clemes & Clemes, Haldane, Lendrum, Louët, Peacock, Tennessee great wheel. All accessories, yarns, fibers also available. SRH sample catalog free with your loom or wheel purchase. Call or write for information today! Business hours M-F, 8-1, or whenever. Price list free. Sample catalog $8.50. **Suzanne Roddy—Handweaver,** 1519 Memorial Drive, Conroe, TX 77304. (409) 756-1719.

WOOL PICKERS©, WOOL COMBS©, BLOCKERS©, Skein Winders©. Flax processing equipment, and accessories for each made from hardwood, finished with Danish oils and/or plasticized; each designed and crafted for handspinners by Meck. For more information send SASE **Meck's,** P.O. Box 756, Cornelius, OR 97113. Phone (503) 628-2696.

COTTON WARP COTTON W ARP COTTON WARP COTTON WARP

For tapestries and rugs—highest quality, long-staple Egyptian cotton warp (seine twine). Comes in sizes 12/6, 12/9, 12/12, 12/15, 12/18, 12/21, 12/24. Available from **Glimakra Looms 'n Yarns,** 1304 Scott St., Petaluma, CA 94952. Call (800) 289-9276 or (707) 762-3362 (Canadian customers).
MC & VISA Welcome.

COTTON WARP COTTON W ARP COTTON WARP

Mill Valley Yarn & Weaving

138 Throckmorton
Mill Valley, CA 94941

When visiting the San Francisco Bay area, stop in and see us just 15 minutes north of the Golden Gate!

Fine Knitting & Weaving Yarns, Spinning Supplies, Looms & Accessories • phone - 415-383-1650

WILD SILK NOIL YARN $11.00/LB.

A very special purchase allows us to offer this yarn, also known as "Bourette Silk", in a stunning range of over 25 colors. Put-up on approximately 2-3 lb. cones; runs 4600 yds/lb. For color cards, send $2.00 for P&H.

Silk City Fibers
Dept. HW8901, 155 Oxford St.
Paterson, NJ 07522

FIBERS

CANADIAN YARNS RETAIL. Fine wools, tweeds, mohair, cottons, fancies, linen 35/2 to 10/6. Price & sample lists. Mailing to U.S. $1. **Talisman Clay & Fibre,** 1370 7th Ave., Prince George, B.C., Canada V2L 3P1.

CLEAN AMERICAN FLEECE. Fleece protected by sheep covers year round. Whole fleeces. Write for prices and catalog. **River Farm,** Rt. 1, Box 401, Timberville, VA 22853 or call 1-800-USA-WOOL or 703-896-9931.

DESIGNER RIBBONS IN 48 COLORS to weave, knit. Samples, patterns, $3.00. Also looms, yarns. **Creative Designs,** 4370 Tuolumne Pl., Carlsbad, CA 92008.

DISCOUNT SPECIAL: ROVING $6/lb—white, naturals—Romney; Lincoln; and blends. Lincoln silver fleece $3/lb Custom dyeing available. **Pintler Sheepcamp,** 530 Faucher, Moxee, WA 98936. (509) 453-0183.

8/2 COTTON on approx. 18 oz. cones. Natural $6.50 a cone, colors $10 a cone. For color card call **The Mannings** at 1-800-233-7166.

EXOTIC FIBERS. Cashmere, camel, mohair & alpaca yarns. Now in spinning fibers too! Yarn samples $1 plus #10 (large) SASE ($.65). **Custom Handweaving,** Box 477, Dept. H, Redondo Beach, CA 90277-0477.

EXQUISITE 6-PLY MERCERIZED cotton (1400 yd/lb) for warp, garments, wallhangings. Send $2 for samples of cottons, wools, etc. **Bonnie Triola,** 5694 Garwood, Fairview, PA 16415. (814) 474-3554. Wholesale to stores and production weavers.

FREE CATALOG WAITING for you! Exciting selection of hard-to-find spinning fibers. Popular domestic and imported yarns. Mail order samples: Fiber $3, yarn $3. **Curtis Fibers,** Rt. 1, Box 15H, Ritzville, WA 99169.

LINEN RUG WARP 8/5. Highest quality from Ireland. Professional weaver's put-up on 2-lb. tubes. Please send SASE for quantity prices & samples. **Glimåkra Looms 'n Yarns,** 1304-A Scott St., Petaluma, CA 94952. Call (800) 289-9276 or (707) 762-3362. M/C & VISA welcome.

LOOPS! LOOPS! LOOPS! Hand-dyed silk fiber, metallic, feathered, beaded, hand-painted mohair loops add rich texture to weaving, sewing, knitting in minutes. Send $7 for IDEAPACK with 35+ beautiful samples. **Fantasy Park,** 12305 Firthe of Tae Drive, Ft. Washington, MD 20744.

QUALITY HANDCRAFT FLEECES
DIRECT FROM NEW ZEALAND

Superb fleece wool especially bred for handcrafts. Clean fleeces, 6 lbs., well-skirted, wide selection of colors, all $2.95/lb. P&P extra, reductions for large orders. Carded wool, greasy and washed also available. Orders posted worldwide with moneyback guarantee. *You can rely on me for prompt, personal service. Send today for free brochure and samples.*

JANETTE MCKENZIE, "Gorrie Downs," Greta Valley R.D., North Canterbury, New Zealand

LONGHORN WEAVERS

- Discount yarns for knitting, weaving & crocheting
- Fibers for spinning
- Looms, spinning wheels, carders & accessories
- Samples $2

1203 W. 11th • Coffeyville, KS 67337
(316) 251-8775

Texas Fibers

Fine fibers... from Texas and other nice places.

ASHFORD SPINNING WHEELS

KID MOHAIR
FINE WOOL
SILK•ALPACA
CAMEL DOWN

fiber samples $2.00

919 Lake Dr.
Weatherford, TX 76089

LINEN WARP LINEN WARP LINEN WARP LINEN WARP

For all rugs – highest quality **wet-spun Irish linen warp.** Comes in sizes 8/2, 8/3, 8/4, 8/5, 8/6. Available from **Glimakra Looms 'n Yarns,** 1304 Scott St., Petaluma, CA 94952. Call (800) 289-9276 or (707) 762-3362.

MC & VISA welcome.

Last minute gift idea!

Beautiful Wool Scarves you weave from kits complete with all yarns including pre-wound warp chains.

Send long self-addressed stamped envelope for information and price lists to: **Heirlooms**
Dept. HW2
P.O. Box 315
Helix, OR 97835

HEIRLOOM LINENS
and other strands

Create tomorrow's heirlooms with timeless Irish linens. Your weaving will be treasured for generations to come.

Irish Linen

Samples $3.00 – call or write:
HeirLoom Linens . . . and other strands
37 Victoria Ave. N., Lindsay, Ont. K9V 4E8
Frances Timbers . . . (705) 328-3727

LUXURIOUS MOHAIR, 15 vibrant colors; silky cotton, 25 colors; handspun and hand-dyed. Samples $5 to **Fiber Company Specialty Yarns-H,** 600 N. Trade St., Winston–Salem, NC 27101.

MEDIUM TO SUPER-FINE FLEECE protected year round by Australian sheepcovers. **Warm Fuzzy Farm,** PO Box 800, Aaronsburg, PA 16820. (814) 349-WOOL.

MILL END YARNS, threads, etc. Natural, synthetic and blends, varied sizes and types. New items added constantly. Low mill end prices on yarns. Sample catalog and mailing list for 1 year $3. **The Gleaners Yarn Barn,** P.O. Box 1191, Canton, GA 30114.

NATURAL DYED MOHAIR, silk, wool—vibrant colors. Coopworth fleece and rovings. Fine and superfine Merino fleece. Set of sample cards $10. **Hilltop Wools,** R.R. 4, Prescott, Ont. Canada K0E 1T0. (613) 925-4502.

NATURAL HANDSPUN ALPACA YARN. Samples $1. **Fiesta,** 1390 S. 11th E., Salt Lake City, UT 84105.

NORSK KUNSTVEVGARN. 100% Spelsau yarns for tapestry, weaving and knitting—samples $5. Scandinavian fleece/rovings—samples $3. Catalog $1. **Norsk Fjord Fiber,** P.O. Box 271, Lexington, GA 30648.

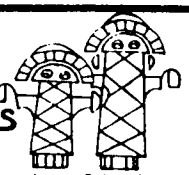
SILK, SILK, SILK. 60 exciting colors—Douppioni; 2/14 spun; cultivated & tussah plied; silk & camel; tussah & acrylic. Quantities limited. Samples $5. **Custom Handweaving,** Box 477, Dept. H, Redondo Beach, CA 90277-0477.

SILK YARN: HANDSPUN IN COLOMBIA from drawn out cocoons. A strong, lustrous, semi-continuous fiber. Two-ply, 1200 yds/lb. (approx. average). Cheryl Kolander says: *Tops in Quality!* $40/lb. (5 lb. minimum), $50/lb. ($3.13/oz. no minimum). Quantities limited. Send $2 for sample to: **Silk For Life Project,** 1300 South Layton Blvd., Milwaukee, WI 53215. Tele: (414) 384-2444; FAX (414) 384-3036.

TEXAS MOHAIR. Finest quality, raised and processed in U.S.A., in 12 rich, luscious colors. Sample card $1. **Two Cottonwoods,** PO Box 686, Clint, TX 79836.

WOOL MILL ENDS, 2 & 3 ply. Send SASE for current samples. $4.50/lb+shipping. Louët products also available. **Eileen VanSickle,** 12918 Wolf Rd., Grass Valley, CA 95949. (916) 268-1271.

DAFT DAMES HANDCRAFTS



See our sample sets in your home. Select from a large variety that is certain to please you.
Order those sets of specific interest, only $.50 each.

1. 5/2 PERLE COTTON
2. 16/2 MERCERIZED COTTON
3. COTTON FLAKE
4. SILK
5. SHETLAND WOOL/POLYESTER
6. RAYON CHENILLE
7. NATURAL COTTON WARPS

Quantities large or small, we rapidly fill them all.
P. O. BOX 148A, AKRON, NY 14001

INSTRUCTION

COMING TO ENGLAND? Residential spinning and weaving tuition offered in well-equipped country studio. For brochure write **Malcolm and Elizabeth Palmer,** Crown Cottage, Gretton, Northamptonshire, NN17 3DE, England. Tele: 0536-770-303.

DIANE VARNEY AVAILABLE TO TEACH "Spinning Designer Yarns" workshops. **Diane Varney,** 836 Santa Fe, Albany, CA 94706. (415) 526-7685.

KATHRYN WERTENBERGER, author of *8, 12 . . . 20: An Introduction to Multishaft Weaving* and co-author of *Handwoven, Tailormade*, is available for workshops and lectures. Write to: 10982 Twin Spruce Rd., Golden, CO 80403. (303) 642-7724.

LEARN RUG, TAPESTRY WEAVING. Intensive beginner's mountain retreat. Success assured. Brochure: Loewe Weaving School, Box W-3, Divide, CO 80814. (719) 687-3249.

RIVER FARM WEEKENDS & FIBER SATURDAYS. November '89–February '90 on the banks of the Shenandoah in the Valley of Virginia. Beginner, Intermediate and Advanced Handspinning, Priscilla Blosser-Rainey. Overshot Weaving, Polly Scott. Indigo/Cochineal Dyeing, Maretta Crider. Beg. & Adv. Knitting, Agnes Weaver. Beginning Weaving, Maretta Crider. River Farm House bed and breakfast. Free schedule/catalog. **The River Farm,** Rt. 1, Box 401, Timberville, VA 22853. VA (703) 896-9931. Outside VA 1-800-USA-WOOL.

TEACHERS DIRECTORIES. The Textile Detective: a listing service for speakers and workshop leaders. Weaving, Spinning, Basketry, Quilting, and Surface Design teachers can register by region: Send for *Teacher Registration Form.* Program Coordinators seeking speakers and workshop leaders: send for *Teacher Directory Order Form.* Large SASE to **The Textile Detective,** P.O. Box 422, Andover, MA 01810.

THE WEAVERS' SCHOOL: Spend five days in weaver-heaven and learn the basics of pattern weaving. Classes introduce the 4-shaft weaver to the joys of more than four and the drawloom. Also: coverlets on four-and-more; pattern with supplementary warp and weft; and pique, finnweave, and other patterned double weaves. For brochure: **Madelyn van der Hoogt,** The Weavers' School, Rt. 1, Fayette, MO 65248. (816) 248-3462.

WEAVING WORKSHOPS. Instruction on Swedish looms. Apply **Weaver's Loft,** 6860 Jasper St., Powell River, B.C., Canada V8A 1N3. Phone (604) 485-7796.

INDULGE YOURSELF WITH FIVE DAYS of individualized weaving instruction while being pampered in our charming antique-filled country home. Gourmet country meals served daily. Our well-equipped studio provides instruction Monday through Friday. Tour to AVL Looms on Tuesdays. Write or call for confirmation of dates and cost of tuition which includes room and all meals. Airport shuttle provided from Chico, California, to Orland. **Heritage Handweaving,** Rt. 3, Box 3086, Orland, CA 95963. (916) 865-5745.

LITERATURE

LOOM CONTROLLED ALTERNATE Checkerboard Patterns. Certificate of Excellence in-depth study. Pattern descriptions, drafts and photographs. $25 plus $2.50 shipping. **Betty Gaudy,** 998 Rio Verde E., Cottonwood, AZ 86326.

MARY MEIGS ATWATER RECIPE BOOK. Over 130 historical and original weaving "recipes" from the grand lady of American weaving. $21 ppd. **Salt Lake Weaver's Store,** 1227 East 3300 South, Salt Lake City, UT 84106.

MILL END-LESS POSSIBILITIES. A guide to selecting and using mill-end yarns, by Lorraine Jones. Booklet $3. Booklet plus set of current yarn samples and mailings for one year, $6. **The Gleaners-Yarn Barn,** P.O. Box 1191, Canton, GA 30114.

PIQUE: PLAIN AND PATTERNED by Donna Sullivan. Send $12.95 +$2 handling to **Sullivan Publications,** 1134 Montego Road West, Jacksonville, FL 32216.

REPS, technique de creation de tissage traditionnel et moderne, (French). 157 pages, photos, designs, schemes, $8. Postage $2. French-English Weaving Glossary, $1.50. Postage $.50. **Bibiane April Proulx,** 176 rue des Frenes, ouest, Quebec, G1L 1G5 Canada.

WARP PAINTING: A MANUAL FOR WEAVERS, 32 pages, complete instructions, dye chart. $8.50. **Dominie Nash,** 8612 Rayburn, Bethesda, MD 20817.

SOFTWARE

MINDWEAVE1.42X. 65,536 colors, $250. **MINDWEAVE1.42.** 136 colors, $180. Now twice as fast! IBM EGA/VGA compatibles. Most visually true-to-life with 99 thread widths, spacings, texture, and continuously variable magnification. Easy to create simple to very complex fabric designs. Up to 32 harnesses, 64 treadles, dobby. 2000 ends, 2000 picks. Over 100 B&W, color printers. Unlimited customer support. Free information. **Mindsun,** Dept. H, RD2, Box 710, Andover, NJ 07821. (201) 398-9557.

SWIFTWEAVE v3.0 the most powerful design/analysis software for Macintosh computers. 1000 warp/weft ends, 32 treadles/harnesses. 32 grey shades, 256 colors on color Macs. 8 viewing/printing scales. Color printing on ImageWriter II, LQ. Exports MacPaint and PICT files. Imports MacPaint files for analysis. Designs for multiple and direct tie-up looms. All draft componants in one window. Easy to use, full tutorial. Cut and paste. Repeat, Reflect, Flip, Shift, Wrap, and other features. Requires MacPlus & up. $175. Send SASE for info, diskette for demo to **Robert W.H. Sinkler,** PO Box 67, Crystal Bay, MN 55323.

THE WEAVER. Still the standard multi-harness weaving drawdown program for the Apple II series microcomputers. Features color, magnification, rising and sinking sheds, interactive as well as automatic treadling, databasing of designs and beautiful printouts. Send $49.95 for disk plus manual. For complete information contact **Compucrafts,** P.O. Box 326, Lincoln Ctr., MA 01773. Ask about our software for Cross Stitchers!

MILL ENDS BY MAIL ORDER? We sure do. FREE SAMPLES? Just ask. GOOD PRICES? Terrific. AND DISCOUNTS? Nobody does it better! For current samples, write to **WEBS,** P.O. Box 349, 18 Kellogg Ave., Amherst, MA 01004. Or call (413) 253-2580.

PATTERN ANALYSIS PROGRAM—Version 1.2. New release of popular PA Program for IBM computers and compatibles. New easy entry of pattern draft. Program gives: minimum number of harnesses and treadles needed; optimum harness threading and treadling sequences; tie-up chart; and printed output and diskette storage of pattern data. *A powerful tool for weavers.* For more details send SASE to **ECOR Company,** P.O. Box 6666, Rochester, MN 55903.

THE NEW YARN CALCULATOR: a time saving, informative weaving utility program that computes your warp and weft needs. Runs on Apple and IBM compatibles. To order send $45.00 to **BAKER BUSINESS SERVICES,** 15 Fenton Ave., Lynn, MA 01905. For more information send LONG SASE to same (617) 595-0684

AMIGA DESKTOP WEAVING. WEAVE-IT AND WEAVE-IT PLUS for the Amiga 500, 1000, 2000. WEAVE-IT is a full featured weaving program that is compatible with a full range of Amiga graphics and desktop publishing software. Up to 12 harnesses-14 treadles. WEAVE-IT PLUS includes utilities to calculate and print, warp, weft and sett. (US and Metric) WEAVE-IT $69.95 US. WEAVE-IT PLUS $84.95 US. Shipping and handling $5 US. For orders or further information contact: Joyce I. Peck Box 1051 Qualicum Beach, B.C. Canada V0R 2T0 (604) 752-3364

FIBERWORKS PCW
DESIGN PROGRAM FOR IBM PCs. Easy to learn: 2-16 shafts, 2-32 treadles, 640 ends, 960 picks. Drawdown, color & weave, profile and block substitution. Mono or color printing. Specify monitor type (CGA, EGA, VGA, Hercules) and disk size (3½" or 5¼"). US $110, CAN $130 (cheque or Visa). Demo $10. Ontario residents add sales tax. **FIBERWORKS, 27 Suffolk St W, Guelph, Ontario., Canada N1H 2H9.**

SUPPLIES

BASKETRY SUPPLIES, BOOKS, CLASSES. 24 page catalog—$1.00 (refundable). **Caning Shop,** Dept. IWP, 926 Gilman St., Berkeley, CA 94710. (415) 527-5010.

FIBER DESIGN STUDIO. Weaving, spinning, dyeing, looms, yarns, books, etc. Send SASE for price list and yarn samples. P.O. Box 393, Stone Mountain, GA 30083. (404) 297-4019.

LOOM COVERS TO PROTECT all Schacht and LeClerc looms. **The Loompal Company,** 8113 Indian Paint Brush Rd., Bozeman, MT 59715. (406) 587-8260.

LOOMS, WHEELS, ACCESSORIES, YARN. Glimåkra, Schacht, Harrisville equipment and yarn at a discount. Call, write **Barb's Weaving & Spinning,** 582 Bethel Church Rd., North East, MD 21901. (301) 287-5623.

NYLON EDGING, (Chiffon). Send self-addressed stamped envelope for color samples to: **Mar-Var,** 1614 E. Workman Ave., West Covina, CA 91791.

QUALITY BASKETWEAVING & chairseating supplies, books, kits. Catalog $.50. Prompt. Low prices. Retail/wholesale. **Ozark Basketry,** Box 9G, Kingston, AR 72742. (501) 665-2281.

SHIPPING FREE on all looms, wheels and equipment orders over $150. Yarn discount program. Free brochure. Quick, careful service. **Webs,** P.O. Box 349, 18 Kellogg Ave., Amherst, MA 01004. (413) 253-2580.

SILK SCARVES—for dyeing/painting. Hand-rolled hems. Top quality. Introductory 3-scarf assortment $12.95. Limit two per address. SASE for price list. **Qualin International,** PO Box 31145-H, San Francisco, CA 94131. (415) 647-1329.

Fibers, Tools & Textiles for Weaving, Spinning, Knitting Classes & Workshops
The Wooden Shuttle
Moved to: Quinton, New Jersey. (609) 935-4559

THE WEAVING STUDIO

Send SASE for ordering information

Yarn, looms, spinning supplies, books, classes & woven items

5% off sug. retail price of any floor loom purchase Schacht-Norwood-Harrisville

The Weaving Studio
812 S. Summit
Iowa City, Iowa 52240
319/338-1789

WEAVER FRIENDLY
Discover AVL Weaving Software

IBM

GENERATION II—AVL's original software has been updated to 24 harnesses. Fast and powerful, Gen II is available for either EGA or CGA.

WEAVE PLANNER—The easy-to-use software for all weavers. Now available in a sparkling EGA version with over 100 colors.

MAC

DESIGN AND WEAVE—Europe's most popular program comes to America. Features a new manual with an excellent tutorial. Works on all Macs—Plus, SE and II.

APPLE II

GENERATION II—Provides all the tools you need to create weaves up to 16 harnesses.

All AVL programs interface with the AVL Compu-Dobby loom.

Send $2 for a complete catalog
AVL Looms
601 Orange St., Dept. #2
Chico, CA 95928

THE HANDWOVEN COMMUNIQUÉ

November/December 1989 edited by Bobbie Irwin

Yarns about wool

Wool does not have to be uncomfortable or make you look like a woolly mammoth. In fact, wool can be as svelte and glamorous as silk. This wondrous natural fabric has kept right in step with the beat of fashion for at least 12,000 years, starting with primitive man's discovery that wild sheepskins were ideal body coverings.

Today it's possible for men and women to wear wool eight to ten months out of the year. Consider the wide variety of fabrics made from wool yarns: tweed, tattersall, sharkskin, serge, poplin, chenille, challis, broadcloth, crepe, felt, flannel, gabardine, Harris tweed, herringbone, and the softest of all—lamb's wool (the first shearings from a lamb under seven months of age).

Wool is everywhere in fashion. But one of the biggest reasons wool is so highly visible today is because of the popularity of worsted wools. This special system of manufacturing fabrics—named after a town in England—uses long, straight fibers, tightly twisted. The worsted system, developed more than 100 years ago, is unique because it produces a smooth, finely textured, soft thread that's built right into the fabric. Although traditionally associated with menswear, some popular worsted-wool fabrics—gabardine, serge, twill and challis—have eased gracefully into the world of womenswear. They drape well, wear beautifully, feel luxurious against the skin and are lightweight. Worsteds are being recognized as one of the elegant, natural fabrics of the future, especially among the designers of women's clothes. The strength and versatility of this fabric answer the needs of working women because it travels well and can be worn in more than one season.

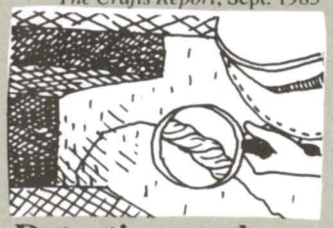
Wool's naturally spongy, moist fiber allows it to stay wrinkle-free, static-free, and shapely even when stuffed, twisted, or thrown into a suitcase. It will stay clean longer than synthetic fibers because it resists soil instead of absorbing it. Wool isn't likely to snag—and you can ease a pucker by sponging and pressing the garment. It is equipped with tiny air pockets which allow it to maintain the temperature of the wearer. In addition, wool "breathes", absorbing moisture from your skin and allowing it to evaporate into the air. Because of its makeup, wool is a great investment.

—Carolyn Krinsley, *McCall's*, February 1985

A Swedish woman's heritage

In Sweden, weaving has never been limited to talented specialists. It is no coincidence that three of the nation's best tapestry artists are female; they trace their roots and inspiration through the centuries when women had to furnish yardage for domestic needs and warm blankets to insulate against the cold Nordic winters. From the days of the Vikings until the height of the Industrial Revolution, the loom was a basic household furnishing. In 18th and 19th century farmhouses, the family "treasures" of fancy weaving were hung from the roof beams of the guest room. For holidays, they provided a major part of the festive decor. For decades architects and designers have been choosing weavings to ornament contemporary structures, recognizing the psychological warmth and texture soft fibers can lend to impersonal constructions of steel, stone, and glass.

—*Sweden Today*, quoted in *The Crafts Report*, Sept. 1985



Detective work

The word *clue* comes from *cliwen*, Anglo-Saxon for a ball of yarn. There are many legends about adventurers finding their way out of dangerous mazes by using a ball of string . . . thus any aid to solving a puzzle became known as a clue!

—Associated Press, "Word for Word"

Junius B. Bird, 1931–1982

Our knowledge of ancient South American textiles was greatly expanded by the work of archaeologist Junius Bird, former curator of South American archaeology at The American Museum of Natural History. In 1946 and 1947, Bird excavated a large mound, Huaca Prieta, on the north coast of Peru, whose remains dated back about 5000 years. Among its artifacts were thousands of textile fragments, some still among the oldest known in the Americas.

In his many years of textile analysis, Bird developed a comprehensive code for the study of prehistoric fabrics. In the 1950s he used an IBM computer to analyze the vast amount of data that he and his assistant, Miliça Dimitrijevic Skinner, had recorded from the Huaca Prieta textiles. At the time it was a revolutionary approach, demonstrating how technological changes had occurred in the textiles.

Bird and Skinner recovered designs embedded in the structure of the ancient Huaca Prieta fabrics, which had lost all their original color. When the warp patterns of nondescript gray fragments were painstakingly charted using a microscope, elaborate geometric designs and complex images of snakes, condors, and felines emerged. Bird demonstrated that early in Andean prehistory, textiles were a major medium of cultural expression and a source of designs that were carried on for thousands of years, influencing other art forms as well.

Bird had the gift of personalizing a prehistoric technical innovation, however

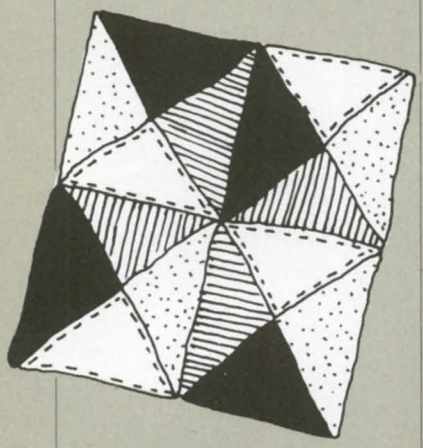
small. A newly detected knot in an old textile would be something that "she did," and "she," the person who made the fabric thousands of years ago, deserved commendation.

—John Hyslop, *Natural History*, February 1989

Indian legend

The Shawnee Indian female creator weaves a basket or net which every night is unraveled; if she finishes it, the world will come to an end.

—Gertrude Jobes, *Dictionary of Mythology, Folklore and Symbols*, 1962



The Quilt Connection

The Museum of American Folk Art has initiated a new quilt membership which has proven to be of great interest to all quilt lovers. In its first four months, the Quilt Connection has attracted 1500 enthusiastic members. This special program is separate from the Museum's regular membership and includes a quarterly newsletter which features articles concerning quilt research, preservation and conservation, and the latest quilting techniques. Each issue will provide current information on quilt programs at museums and galleries across the country as well as updates on state quilt projects. Membership privileges include a discount on certain books and quilt-related items at the Museum's book and gift shops. Members may participate in workshops and tours to private collections and have access to the Museum's library and slide collection, including research material gathered by the New York State Quilt Project.

A portion of the $15 annual membership fee helps support the Museum's Quilt Fund to preserve and enlarge the Museum's quilt collection. For information, contact The Museum of American Folk Art, Quilt Connection, 61 West 62nd Street, New York, NY 10023.

Inca textiles

After Columbus discovered the New World, its inhabitants were surprised by the thirst for gold of the Spaniards and other Europeans. The Spaniards in turn uncomprehendingly watched the fleeing Inca warriors who did not bother to protect their stocks of gold and silver. However, the Incas did their utmost to destroy their warehouses of textiles to keep them from falling into the hands of the invaders.

This fundamental difference in valuating textiles can be discerned today. Europeans find it difficult to perceive the important role textiles played in South American religion. Recent research has proved that Andean textiles were much more significant than we have realized. Textiles were the pre-eminent medium to record and convey mystical and religious conceptions.

—Gemeentemuseum Helmond, Holland

Warp was woven there at midday,
Woof by the early red of dawn.

On the loom of the weaver woven,
From the treadle it was spun.

Golden garment for the moon,
Shimmering veil for the youthful sun.

—Estonian folk song

PRODUCT NEWS

Jan and Trudy Van Stralen of **Hilltop Wools** announce that they have purchased **Louët Sales** and are distributing Louët equipment. The new address is Louët Sales, R.R. 4, Prescott, Ontario K0E 1T0, Canada. (613) 925-4502.

Northwest Looms is also under new ownership. Rick Poel plans to continue producing and improving the Pioneer Loom, a versatile table loom with patented open-top heddles for quick and easy warping. Request a brochure from Northwest Looms, PO Box 78583, Seattle, WA 98178-9998.

Fox Fibre™ natural cotton yarns in brown, green, and blends, and in sizes 4/4, 4/2, and 10/2, are now available from **Natural Cotton Colours, Inc.,** PO Box 791, Wasco, CA 93280. Sally Vreseis Fox, owner of the new company and of **Vreseis, Ltd.,** has spent years selectively breeding naturally colored cottons to produce an interesting range of colors and improve staple length. Send $3 for samples of yarn, thread, and sliver to address above.

Mindweave, software for weaving design from **Mindsun**, has been revised to be compatible with more of the IBM PC clones. In addition, a new version lets you choose from more than 65,000 colors; upgrades from the former 136-color version are available. Request information from Mindsun, RD 2, Box 710, Andover, NJ 07821.

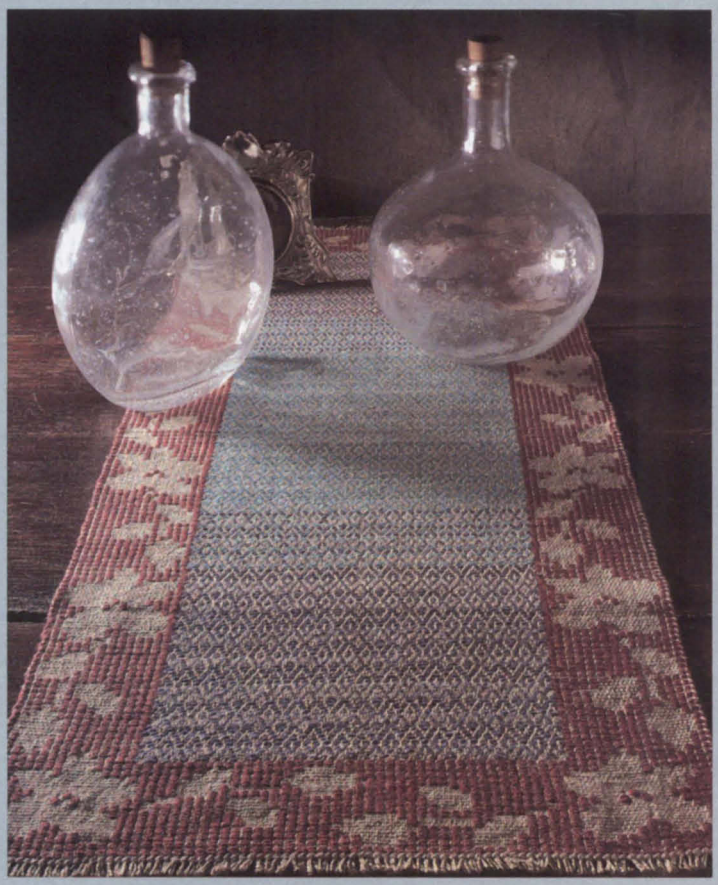
Brown Sheep Company proudly introduces the *Brown Sheep News*, a newsletter featuring information about their yarns, questions and answers about caring for wool, patterns, and other interesting tidbits. The first issue includes complete knitting instructions for a cabled vest. The company seeks input from readers; write them at Rt. 1, Box 137, Mitchell, NE 69357.

Not sure if you want to buy a weaving video? **Victorian Video Productions** lets you rent by mail—a great option for guild programs. Three new videos are now available: *Boundweaving, Garments to Weave and How to Weave Them*, and *Tips, Tricks & Problem Solvers for the Handweaver.* Contact them at 1304 Scott St., Petaluma, CA 94952. 1-800-289-9276.

From **Norsk Fjord Fiber** comes news that the company now carries all 106 colors of Norwegian tapestry yarns from **Norsk Kunstvevgarn,** world leader in the production of 100% Spelsau yarns. Two new warp yarns are also available. An attractive catalog describing a variety of Scandinavian products costs $1; yarn sample cards are $5 from Norsk Fjord Fiber, PO Box 271, Lexington, GA 30648.

New yarns from **Classic Elite** include Paisley and Paisley Light, luxurious wool/rayon yarns in 21 shades. Acadia, a wool/silk blend, will tempt you with 15 colors. For super softness, try Inca Alpaca in 11 colors. Guernsey, a natural 3-ply wool, is great for sweaters. If you like soft fuzzies, you'll love the new color selections in mohair-blend yarns. Seventeen exotic new shades of LaGran brushed mohair and 12 new stenciled colors of LaGran and Sharon looped mohair lead the new palette. You'll applaud the nine new colors of Applause, a multicolored mohair/silk/rayon blend. Mini Mohair, Adelaide, and Boston wool also feature new colors. Visit your local yarn dealer or contact Classic Elite Yarns, 12 Perkins St., Lowell, MA 01854.

Berroco is now the exclusive U.S. distributor for Wendy yarns from England, including Peter Pan baby yarns. Among Wendy's knitting yarns are Merino wool in 30 colors, Aran Tweeds, and Orinoco Chunky tweeds. For samples or information, contact Berroco, PO Box 367, Uxbridge, MA 01569.



For this richly designed Leaves and Vines Table Runner, Dana L. Sebree of Playa del Rey, California, combined a dukagång border with a twill center section; this piece would be appropriate either as a centerpiece on a large dining table or as a runner for a coffee table or hall table. Says Dana, "I think that the key to design for weavers is to receive instruction in areas other than weaving (without ignoring the weaving classes, of course). I have found my college training in painting and other studio arts, and art history, to be a tremendous boon to weaving design." Dana's runner received an Honorable Mention in our Table Toppers Weaving Contest.

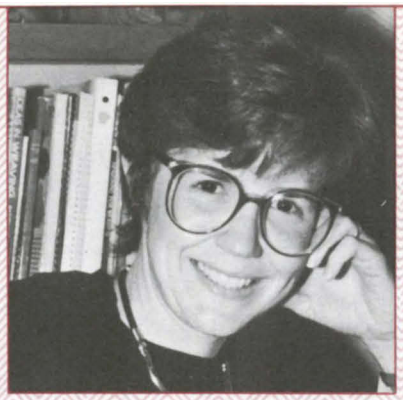
Weaving a Life

I work the soft warm wool
And listen to the hum of my wheel
Doing things a machine can't do.
I watch my dyepot and think.
It has taken me half a lifetime
To figure out what to do
with myself.

Now the intricate pattern of my days
Weaves through my life
Somehow noticed but unremarked.
I work at my loom
With a new contentment,
A determination I've never felt before.
I am made whole
as I work.

—Louise Coulson

Advertiser's Index



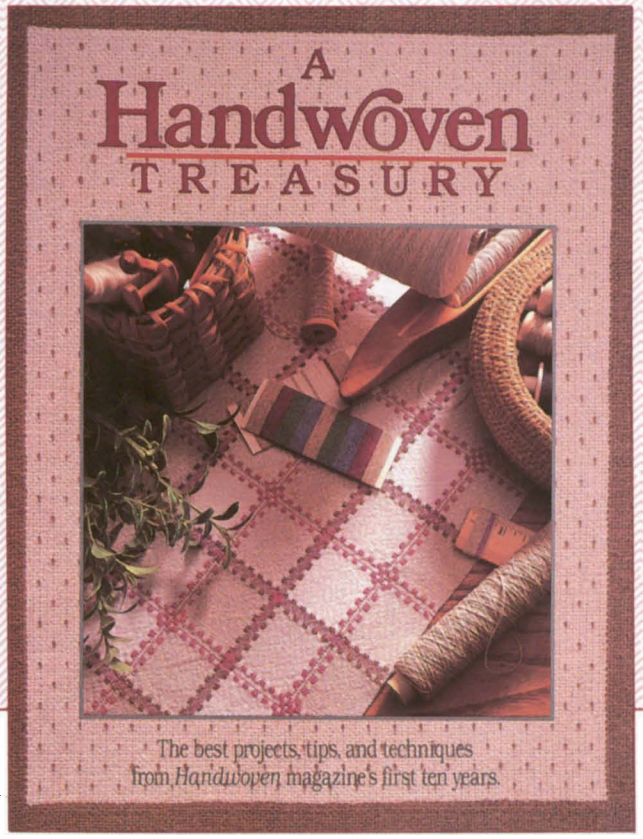
Jane Patrick, editor

Celebrating *Handwoven's* First Ten Years

Dear Reader,

Handwoven celebrates ten years of publication this fall: 47 issues, more than 600 projects. As we at Interweave Press reflect back to 1979 at the first little issue that took root and grew and grew, we feel a special satisfaction. Not only have we had the good fortune to immerse ourselves in the weaving world, but we've had the joy of meeting many of the people who make our jobs so rewarding. For this we thank you, our readers. We hope you'll join us for another ten.

Jane Patrick



A HANDWOVEN TREASURY
Jane Patrick, editor

Here is the best of *Handwoven*'s past ten years. Fifty projects from past issues include revised and updated instructions, supporting articles on special techniques and weave structures, and Joe Coca's inspired photography, supplemented with tips and techniques from our readers.

Even if you've been a subscriber from the start, you'll want your favorite projects reorganized into one handy volume. Available in December from your weaving source or from Interweave Press. To order, see the catalog insert inside this issue of *Handwoven*.

8½ x 11
stitched and paperbound
144 pages
45 color plates, b/w illustrations throughout
$15 plus $2.50 postage

"I Love My AVL. Especially the Fringe Benefits."

Ellen S. Holt, Dallas, Texas

Ellen Holt knows that attention to the smallest detail can lead to the most surprising successes. When the woven trim on her custom fabrics caught the eye of the decorating trade at a major show in November of 1984, she went back to her Dallas studio, put a ten inch wide warp on her AVL 60" Production Dobby Loom, and wove herself a business dedicated to the small niceties of life: trim, tassels, and fringe.

Today the six-person production team of Ellen's company, Fringe Benefits, keeps three AVL Compu-Dobby looms busy filling orders for custom trim and decorating detail from the 24 Fringe Benefit showrooms across the United States and Canada.

"Of course it's taken a lot of hard work and imagination to get where we are today," says Ellen. "But without the AVLs in the first place, it simply wouldn't have been possible to meet the demands of a growing business."

"For instance, while our warps at Fringe Benefits are only ten inches wide, they'll typically be 60 yards long – and we may do more than a dozen different warps in a single week!"

Ellen's gift for design and detail, combined with the creative potential of the AVL Compu-Dobby, have earned Fringe Benefits a small but certain foothold in the world of interior design. "We really haven't even begun," she says. "There are so many new markets to explore. For example, we've recently completed historical reproductions for the Lincoln home in Springfield, the Taft home in Cincinnati, and expect to do many more."

But Ellen knows that even backward-looking projects take forward-looking equipment. "My AVLs are what I think of as true production equipment – beautifully designed and made, supported with outstanding service, and featuring details that are always being considered and reconsidered – details that make a production weaver's life not just easier, but actually one of endless possibility."

Call us at **800 626-9615**
In California and Canada, call 916 893-4915

AVL LOOMS
601 Orange Street, Dept. 305
Chico, California 95928
Send $2 for complete catalog.

AVL EUROPE 3 St. Georges St.
Macclesfield, Cheshire UK SK11 6TG
Call: (44) (625) 618580

AVL. Now the possibilities are endless.