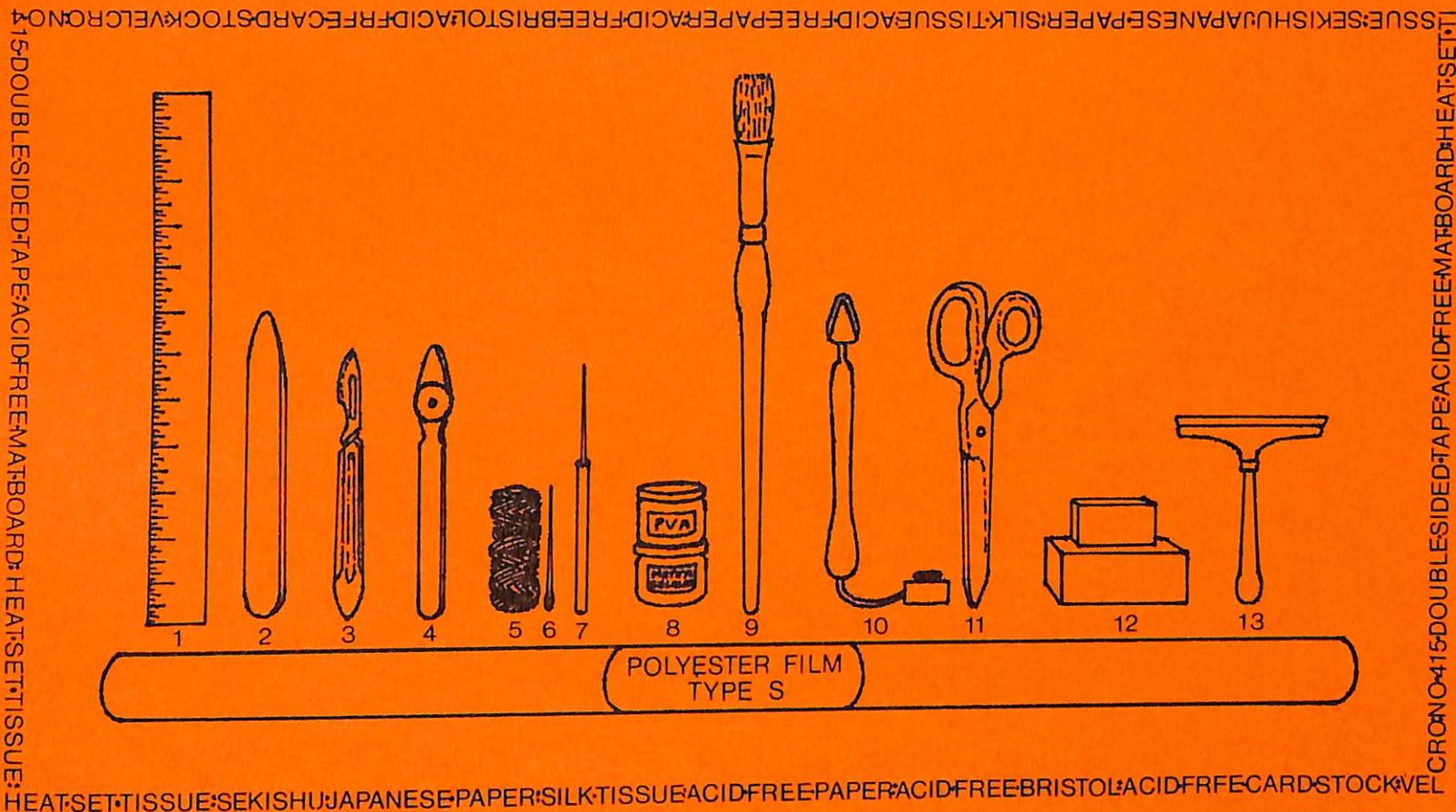


SIMPLE REPAIR AND PRESERVATION TECHNIQUES
FOR
COLLECTION CURATORS, LIBRARIANS AND ARCHIVISTS

Text and illustrations by Jean Gunner



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Third Edition

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INTRODUCTION

More and more curators, librarians and archivists are recognizing the need to take care of their deteriorating collections. Many have little or no budget to send items out for professional care, and in an attempt to do something, often make the situation worse by using incorrect materials and bad techniques. It is always better to do nothing than to attempt a repair you are not really sure about. Everything you do must be reversible. It is also important to use good materials, which are more expensive, but well worth the expense for they will remain trouble-free. Never use substitutes.

On the following pages are some simple and inexpensive things you can do or train someone to do. I would suggest practising the techniques first on items of little value, as the procedures are not as easy as they look. I have included the single- and multiple-section sewing because many collections use Pam Binders. Pam Binders are very acid, and the tape used to stick the item in with often destroys or badly damages the first and last pages. It only takes a few minutes to sew the item onto an acid-free wrapper. This will save hours of restoration time in the future.

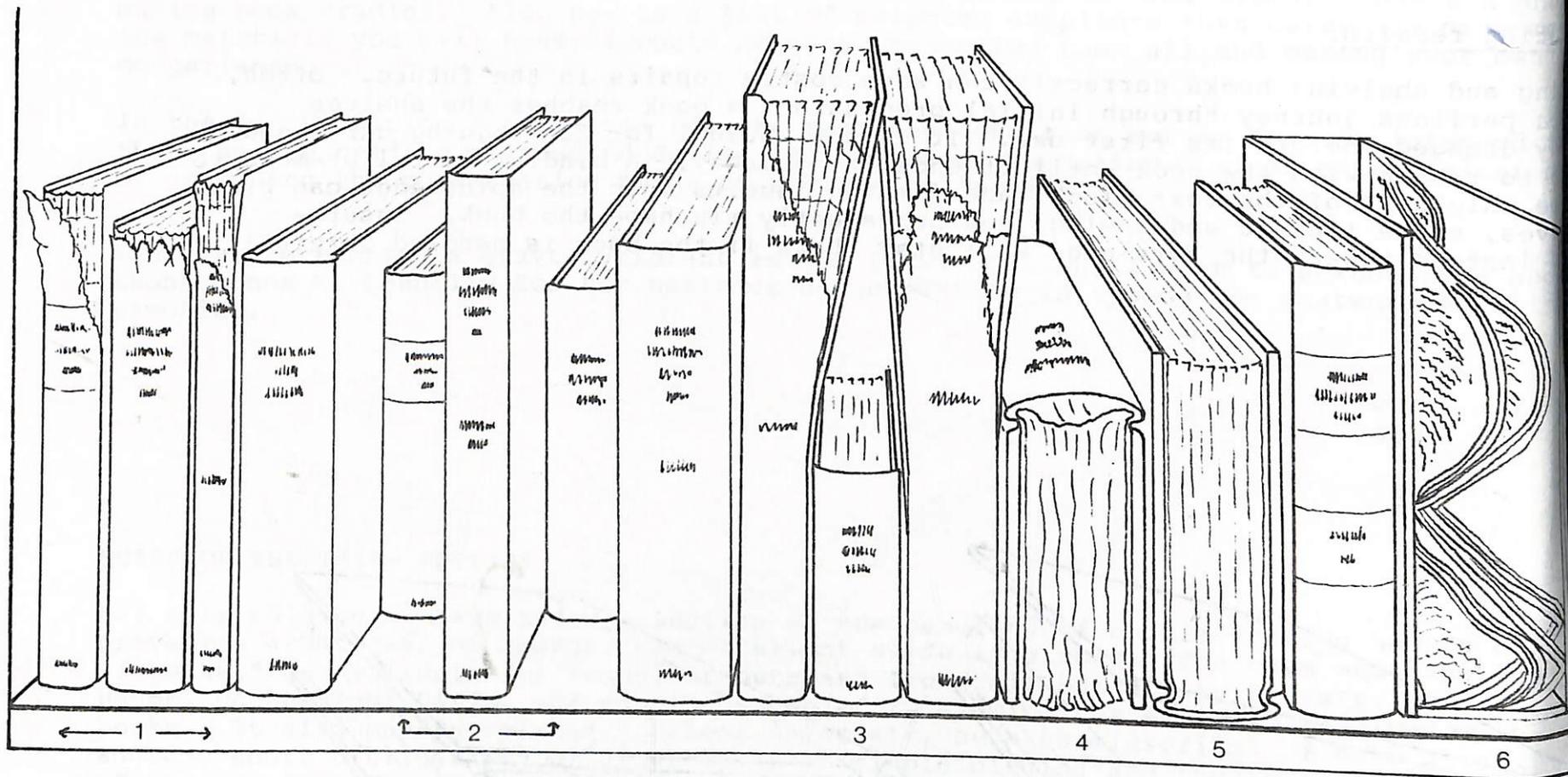
Finally, good housekeeping is essential to help retard further deterioration of collections. Keep shelves and items dust-free, try to shelve books by size, never putting them on their fore-edges, and shelve oversized volumes horizontally. Maintain an oiling program for the leather bindings. Carolyn Horton's Cleaning and preserving bindings and related materials is essential reading for all those involved with collections.

The time has come when bookbinders, restorers, curators and the like must work together to save humankind's heritage.

ACKNOWLEDGEMENTS

I am especially indebted to Bernadette G. Callery for her constructive suggestions and editing and to Dr. Robert W. Kiger for his editing and making this publication possible.

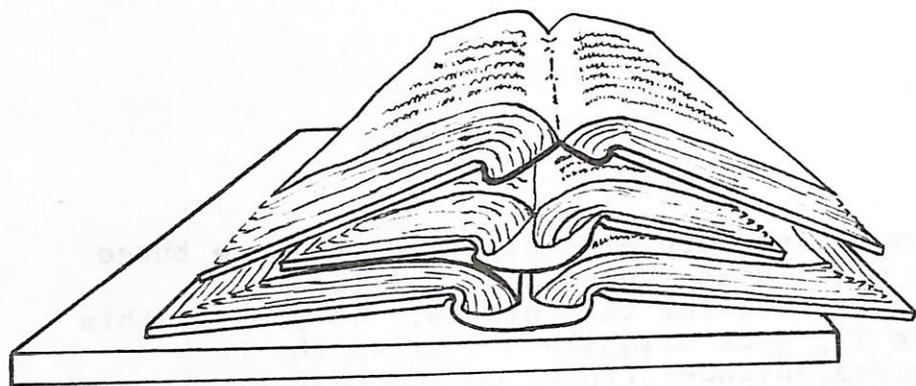
Jean Gunner
Bookbinder/Conservator
1980



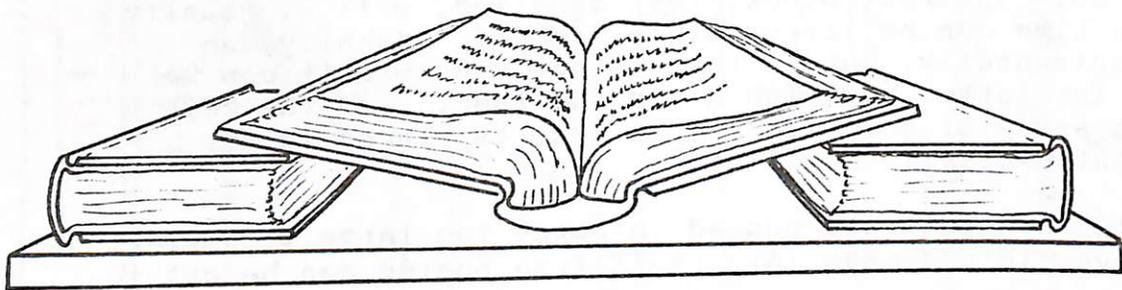
Improper shelving and removal of books from shelves are also hazardous. These three books (1) have been taken off the shelf by pulling at the headcap for leverage; eventually they will have to be rebound to preserve the text blocks. To prevent this mutilation, push the volumes on either side (2) back slightly and grasp the book at mid-spine, or, if the shelving is tight, place an index finger on the head of the text block and tip the book out. A small book sandwiched between tall ones (3) will often cause the latter to expand and pull apart, particularly if temperature and humidity levels are not relatively constant. Books that are close in size will provide perfect support for each other. When a book is too tall for the shelf, putting it on its fore-edge (4) is not the thing to do. The text block, left dangling, will eventually pull itself out of its case and in time can be irreversibly damaged. Ideally, an oversize book should be shelved horizontally, but if this is not possible it can be shelved with the spine down (5). The latter position hides the label, and the call number should then be written on a strip of acid-free paper that is placed in the center of the text block, to prevent excessive handling.

Loose papers and other unbound materials that are housed in boxes too large to support them properly will succumb to irreversible damage (6). Acid-free boards can be cut to pack out the excess space.

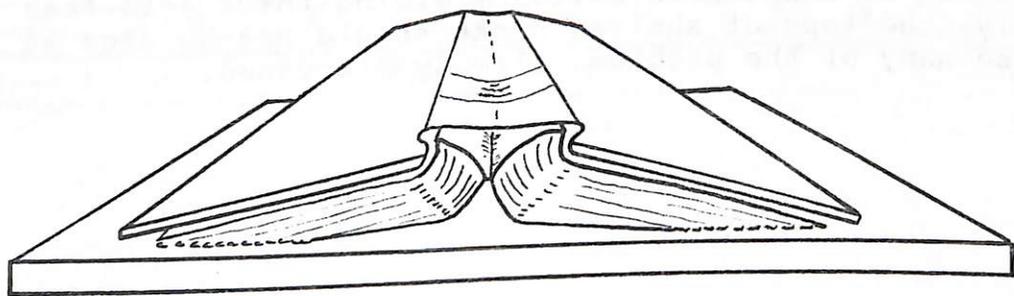
Books should never be shelved too loosely. They will lean and splay and become distorted, compensating for the excess space they have been given. Bookends can be used effectively as long as they are free of sharp edges and extend over half the height and depth of the books. They can be adapted to suit, by gluing thick acid-free board to their inside faces. Finally, the tops of shelved books should not be used as extra shelving, which also will cause many of the problems already discussed.



When and it is necessary to consult more than one book at a time, do not pile them on top of one another in the open position. The binding and text block will be strained beyond endurance and will weaken or break at the point of opening. If you need to keep your place, use a piece of acid-free paper as a marker and keep the book closed when not in use. Also, do not allow a book to hang over the edge of a table or shelf; this can be disastrous, not only for a person walking into it, but for the book too!



If the book you are using is difficult to open, do not force it, but support it on either side with closed books. It should then stay conveniently and safely open.

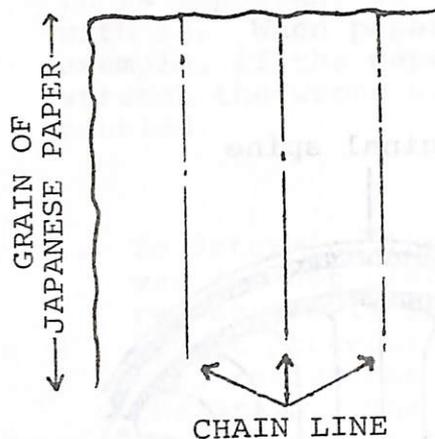


A book placed open on its face can also suffer irreversible damage at the point of opening. Photocopying machines are a particular hazard in this respect, especially when the spine margin is small and pressure is exerted to get a clear copy. It is better to settle for a less-than-perfect copy than to break a book. If you are buying a new photocopying machine, choose one whose glass exposure window is flush with the edge of the machine; pages can then be copied fully when the book is opened only 90°.

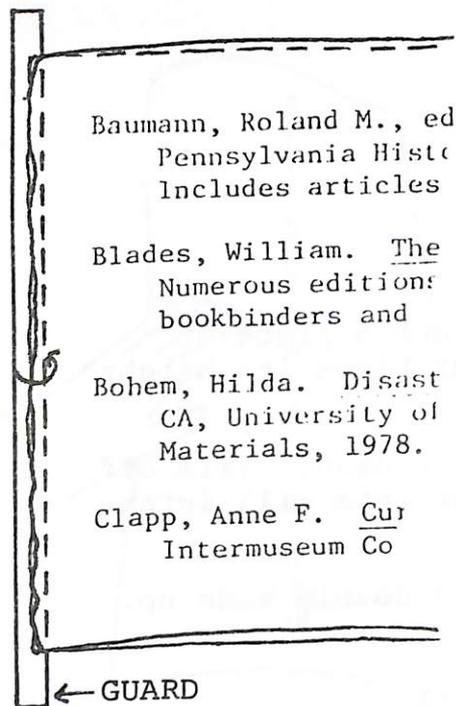
Illustrated on the front cover are the tools and adhesives necessary to accomplish the projects described on the following pages.

1. Steel ruler. Good to have two, including one heavy one to use as a cutting edge.
2. Bone folder. Ideal tool to use for folding paper, bristol and card stock. It is easier to fold paper if you score it with the bone folder, running the bone folder against a straight edge.
3. Scalpel. Used for cutting and trimming. Recommend No. 23 blades.
4. Ruling pen. Ideal for paper repairs, however item no. 7 can be used as a substitute.
5. Linen thread. Used in sewing. Number 18/3 cord is a good thickness to use.
6. Sewing needle. Use a long thin one.
7. Needle awl. This is a substitute for item no. 4. Can be used in paper repairs and for punching holes before sewing.
8. Polyvinal Acetate (P.V.A.) = glue. Used for making hollow tubes and phase boxes.
Methyl Cellulose = paste. Used for paper repairs.
9. Glue and paste brush. Need two; artists' oil paint brushes are excellent.
10. Tacking iron. For heat-set tissue paper repairs. A good investment if you have a lot of paper repairs to do. An ordinary iron will also work fairly well.
11. Scissors.
12. Weights. An assortment of lead weights are best. You can also make weights from half bricks covered in felt, or make felt bags and fill them with sand.
13. Squeegee. For use in polyester film encapsulation.

PAPER REPAIRS

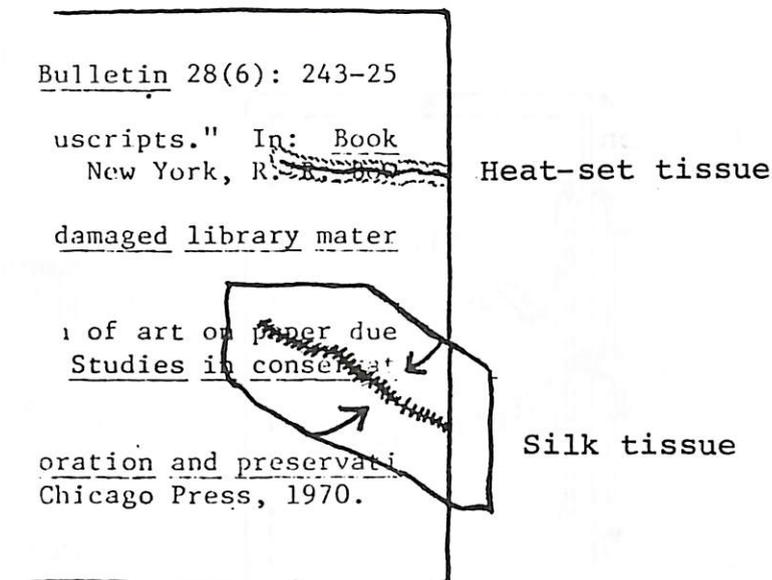
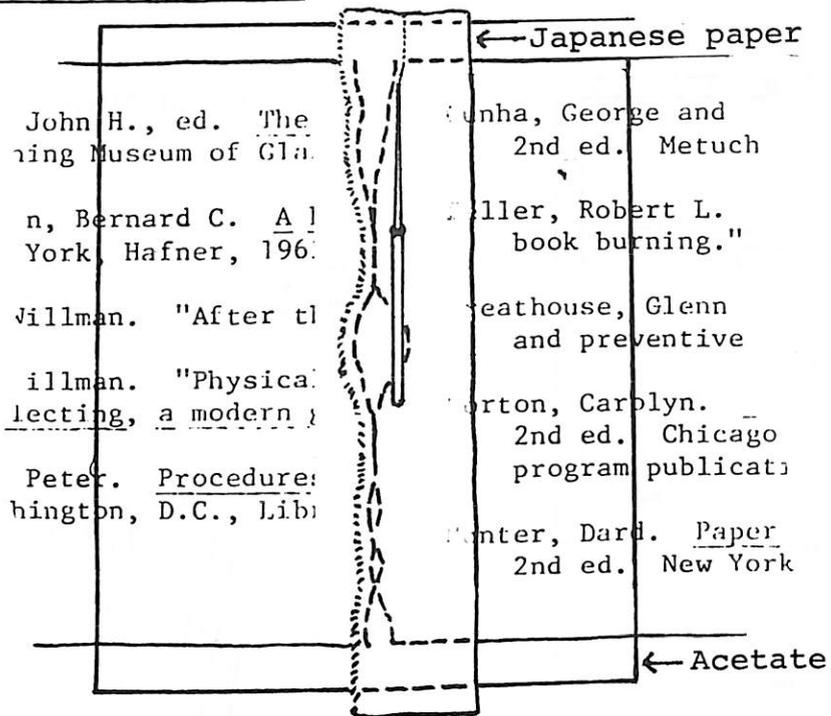


Before any sewing of sections can be done, the spine folds must be in good repair. If there are any tears or large holes, use one of the guarding methods shown below. Sekishu white and natural Japanese papers are good for most items. It is important in guarding that the grain of the paper run parallel with the spine. If you hold the paper up to the light you will see evenly spaced lines, called the chain lines, which run parallel with the spine. Never use straight P.V.A. for paper repairs. A good paste to use is straight methyl cellulose -- mix about one tablespoon of the powder to half a cup of water and leave overnight before using. It should have the consistency of Jello just before it sets. Methyl cellulose has an indefinite shelf life and is water-soluble. If you have difficulty in making it stick to heavier paper, add about a teaspoonful of P.V.A.



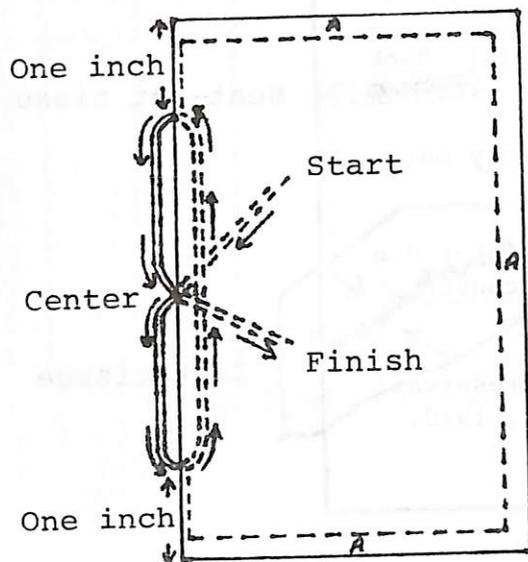
1. Guarding. Cut guards about an inch longer than the item to be repaired and no more than 3/8" wide. Starting with the inside folds (if they need repair), evenly paste out a guard on a piece of clean waste paper or piece of glass, move it carefully to another piece of paper, place spine edge of fold halfway across it, and fold over other half of guard onto other side of fold. Gently bone down guard to make sure it is sticking. Place next to fold around the one just repaired and repeat procedure until all are repaired. Set aside to dry.

PAPER REPAIRS CONT.

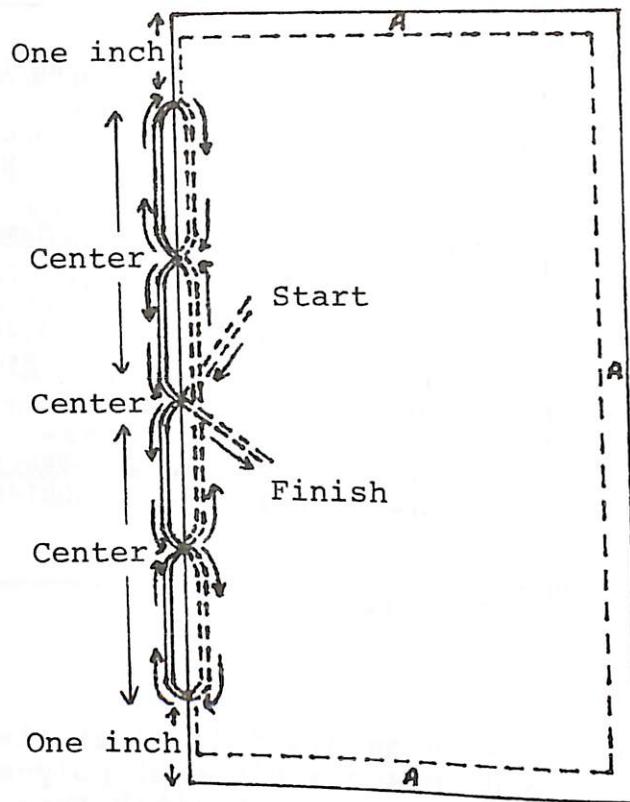


2. Feathered guards. If you have large areas of paper missing at the spine edge, use a feathered guard. Open up fold, place a piece of polyester film or acetate over it for protection, place Japanese paper on top (it's thin enough so you can see through it. If you do have difficulty seeing the missing areas, place a piece of dark paper behind the item to be repaired). If you have a ruling pen, fill it with water and draw around the missing areas with water, overlapping about 1/16". Pull the paper away at the water line. You can do the same thing with the needle awl by scoring the paper. Remove acetate, paste guard and put it in position. Fold when dry. You can also use this method on the other edges where you will not be covering the text.
3. Tear repair. Use where you have tears across the text and must do an "invisible" repair. Heat-set tissue is a tissue coated with an acrylic resin and is a good investment if you have a lot of paper repairs. It's excellent for white shiny papers (coated stock). Cut a piece a little larger than the tear, tack in position with a tacking iron or regular iron, place a piece of silicon release paper on top and iron down well. Use only enough heat to stick the tissue, as you can easily scorch the paper. Silk tissue repair is done by painting a line of paste over the tear and placing a piece of silk tissue (larger than needed) on top and another on the reverse side. Put silicon release and blotting paper on either side and put under a weight for about one half hour. After it's dry, remove excess tissue by pulling it in towards the tear from either side.

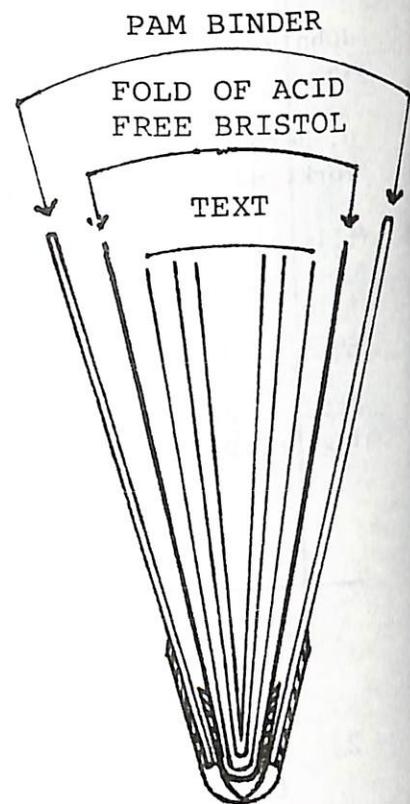
SINGLE-SECTION SEWING



SEWING FOR SMALL AND MEDIUM
SECTIONS (UP TO EIGHT INCHES)

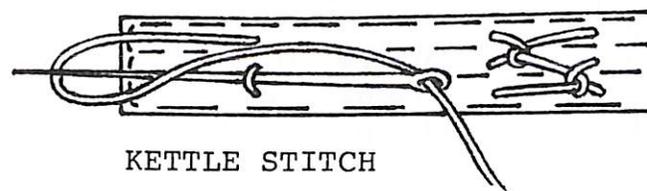
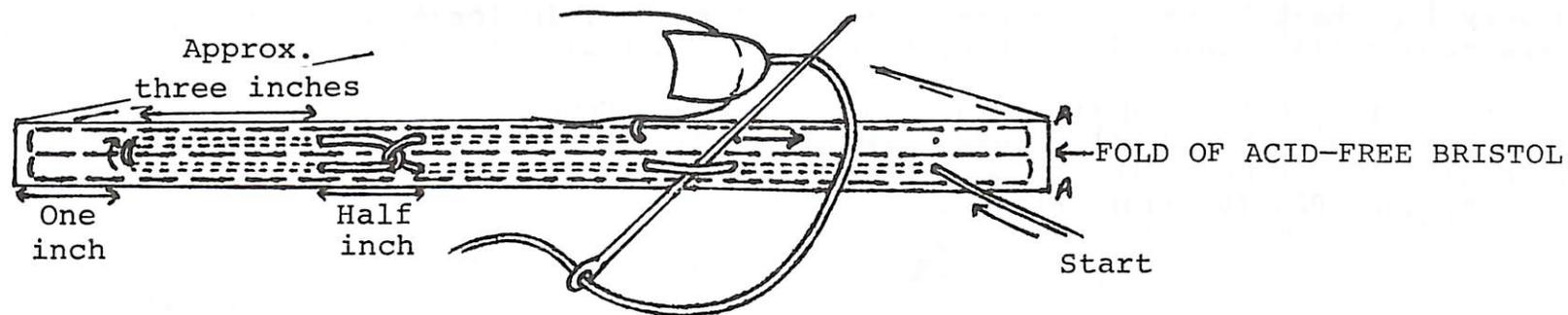


SEWING FOR LARGER SECTIONS



1. Using linen thread, sew the single section onto a fold of acid-free bristol, or an acid-free folder, allowing at least one quarter inch of overlap around each of the three edges (A).
2. To finish, hold both ends of thread and pull so the sewing is snug. Tie a square knot across the inside center thread.
3. Cut ends of thread to $3/16$ ". If desired, section can now be stuck into a Pam Binder.

MULTIPLE SECTION SEWING USING THE "LINK STITCH"

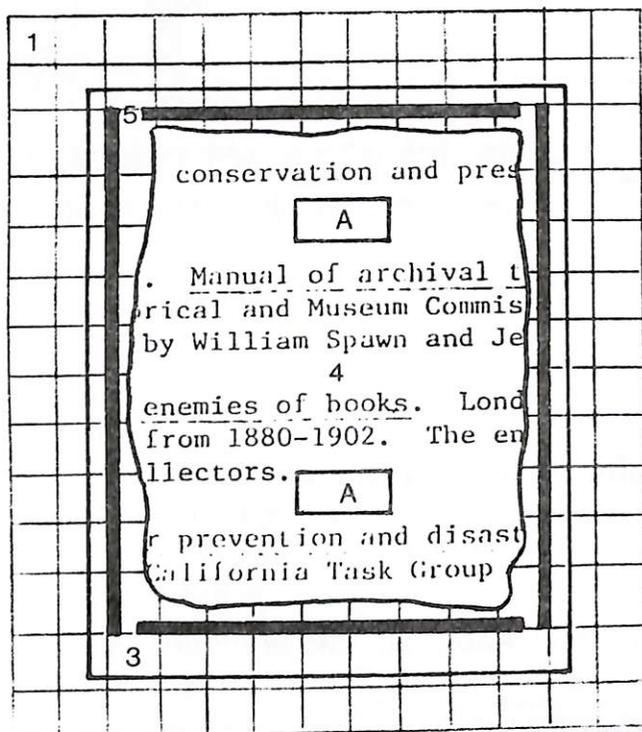


1. Cut a piece of acid-free bristol, allowing for the height of the spine and one quarter inch of overlap around each of the three edges.
2. Crease for the height of the spine (A).
3. Sew sections onto the bristol as shown, ending with a square knot on the second section.
4. For more than two sections use the kettle stitch as illustrated, making a double kettle stitch on the last section.

POLYESTER FILM ENCAPSULATION

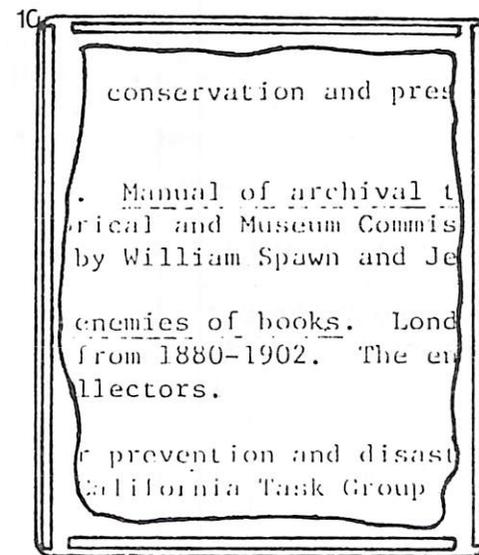
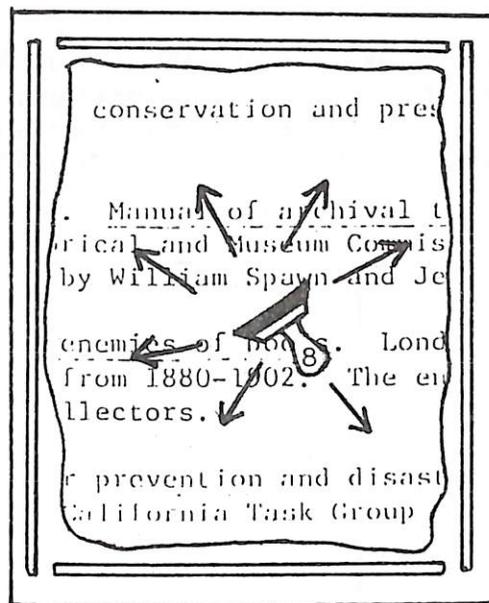
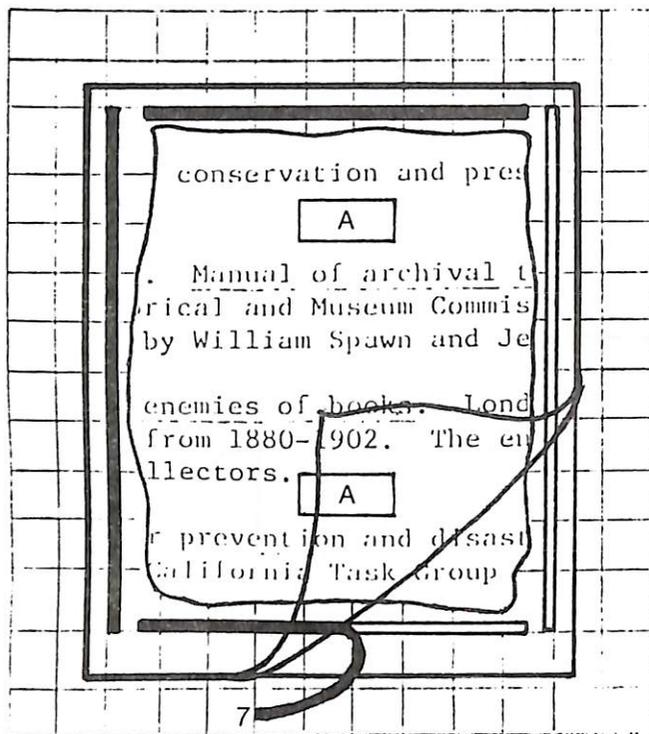
It is very important to use a non-plasticized polyester film for encapsulation, along with the number 415 double-sided tape; both have been tested for stability.

Encapsulation is ideal for brittle and fragile items. However, polyester is an electrostatic material and should not be used with charcoal, pastels, or illuminated manuscripts. A thickness of .003 (3 mils) is ideal for most items; for larger items, such as maps and newspapers, use .005 (5 mils) thickness.



1. Using a heavy board, make a grid, spacing the lines every half inch.
2. Cut two pieces of polyester film at least one inch larger around all four edges than the item to be encapsulated.
3. Place one piece onto the grid.
4. Center item to be encapsulated onto polyester film and weight in place.
5. Leaving a small margin between item and tape, place double-sided tape on the polyester, using the grid as a guide to keep the tape straight. Do not overlap tape and leave about a quarter-inch gap between strips. This allows the item to "breathe," which is very important.

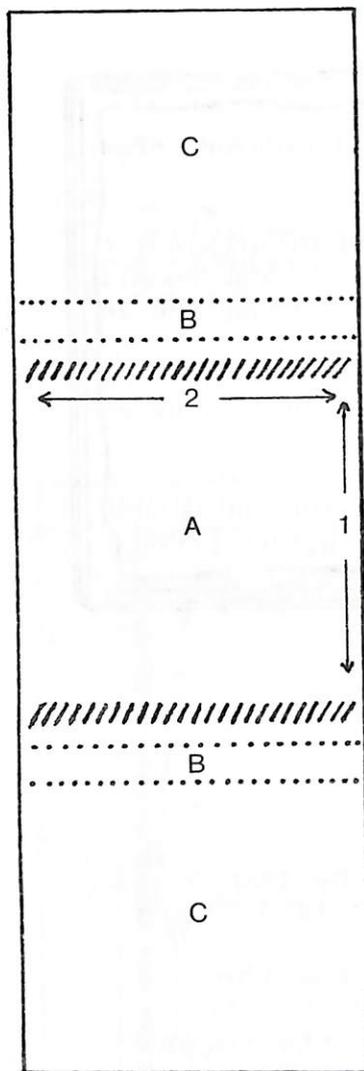
A=Weight



6. Remove top weight and place second sheet of polyester on top, line up the two corners, replace weight. Repeat for bottom half. (Make sure polyester is lying flat.)
7. Gently lifting each corner of the polyester, remove protective strips from the double-sided tape.
8. Remove weights. Using a rubber squeegee and working from the center to the edges, smooth out polyester film.
9. Trim polyester 1/16" away from tape.
10. Using scissors, round off all four corners. (This will prevent injuries -- both archival and human -- as the polyester film is very sharp.)

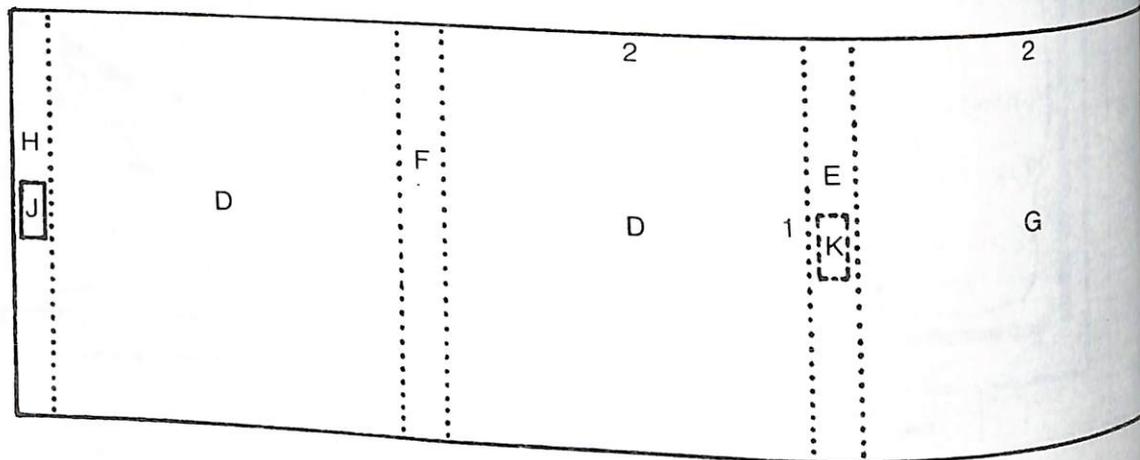
SIMPLE PHASE BOX

This is a very simple phase box to make for rare items in fragile condition. It should be made from acid-free card-weight stock.



VERTICAL PIECE

- A. 1. Length of book. 2. Width of book.
- B. Height of spine. (Check fore-edge; if it is higher, use that measurement.)
- C. Half the length of book, plus one inch.



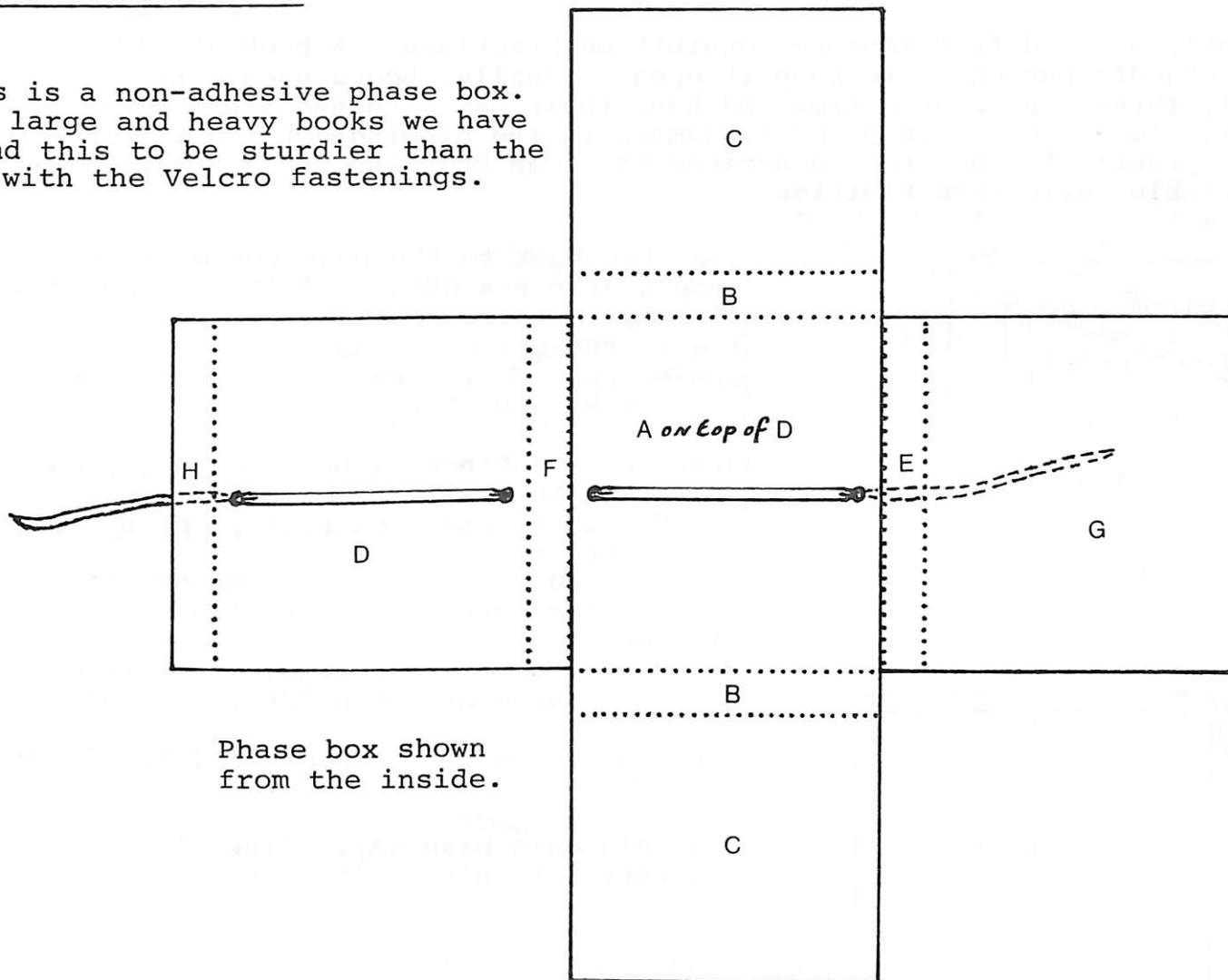
HORIZONTAL PIECE

- D. 1. Length of book. 2. Width of book.
- E. Height of spine or fore-edge, plus 1/16".
- F. Height of spine or fore-edge, plus 1/8".
- G. 1. Length of book. 2. Width of book minus 1/8".
- H. Height of spine or fore-edge minus 1/8".
- J. Velcro.
- K. Velcro on verso.

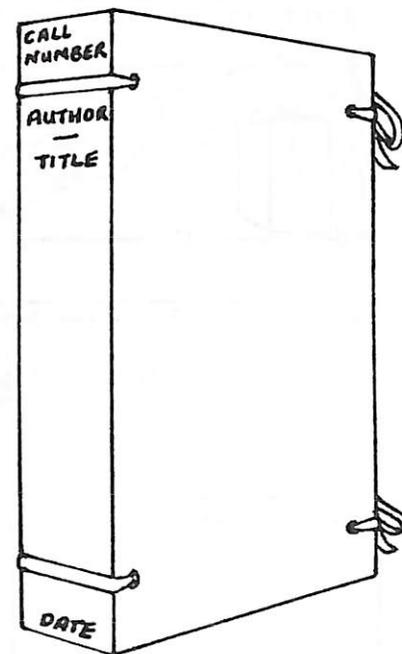
Glue vertical piece (A) as illustrated, and place horizontal piece in position (D 2 gets stuck to A). Put under weights for about 30 minutes. Position book on A, D and fold in C's, G and H in sequence. Center Velcro and glue on (J and K).

SIMPLE PHASE BOX - 2

This is a non-adhesive phase box. For large and heavy books we have found this to be sturdier than the one with the Velcro fastenings.



Phase box shown
from the inside.



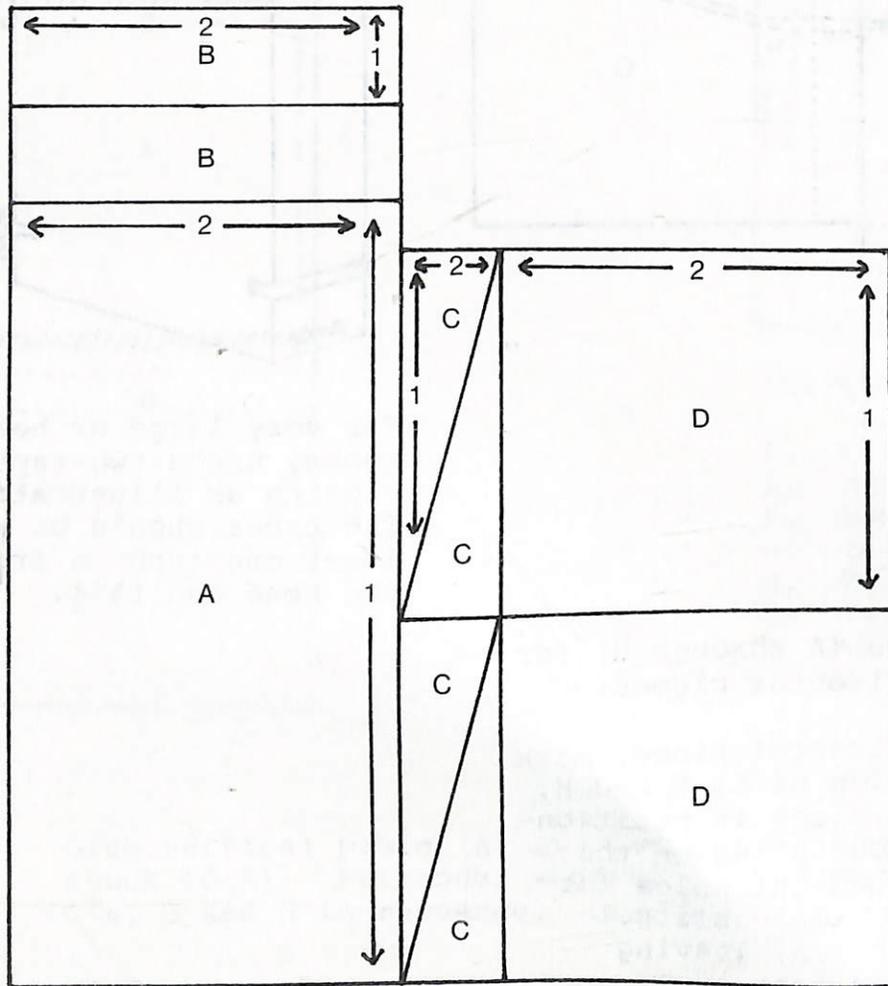
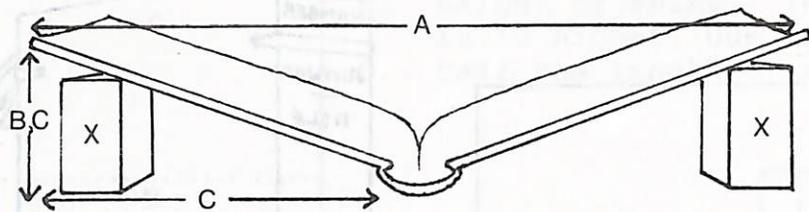
For very large or heavy books, use a two-tape closing as illustrated. The tapes should be at least one inch in from the head and tail.

Follow instructions on the preceding page (A through H) for cutting and folding the vertical and horizontal pieces.

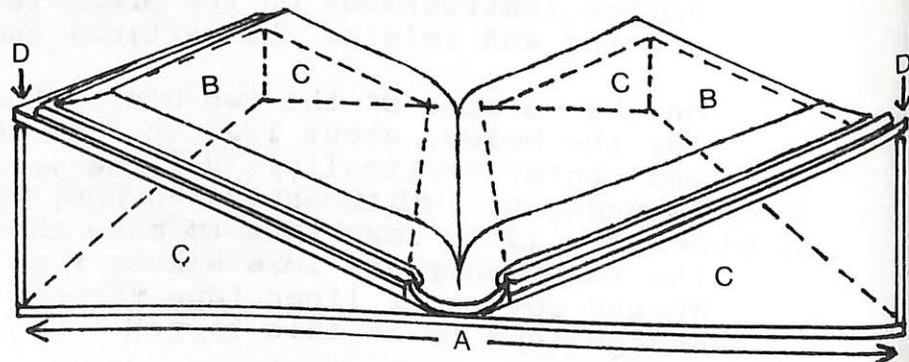
On the outside of the two D's of the horizontal piece, mark for the holes, about 1/2" in from the folds of E, F and H, and center vertically. Put the vertical piece in position (A under D). With an 1/8" punch, punch out holes on the marks. (It's important to make the punched-out holes for the tape; they are less likely to tear than simple slits.) Thread cotton or linen tape through the holes, leaving enough tape to be able to tie a bow at the fore-edge.

BOOK CRADLES

Many books are badly damaged from improper exhibition practises. A book should never have heavy objects put on it to keep it open. Ideally, books should be exhibited for only three months at a time and have their pages turned every week to prevent any discoloration of the paper or damage to the binding. Whether or not the latter is practical, the steps described here can be taken to make the books more comfortable while on exhibition.



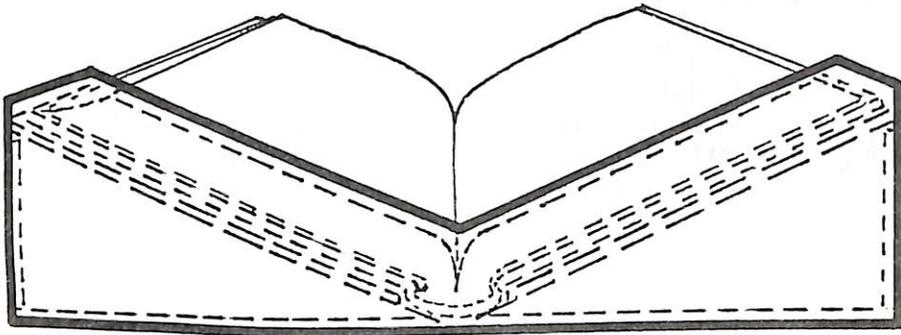
1. Open the book to the page you want to show. Prop up the boards with felt-covered weights (X) or something similar. Move weights toward the spine; as soon as the pages no longer pop up, you have the desired angle for the book cradle.
2. Using either binder's board or 4-ply mat board cut the following:
 A = Base. 1. Width of book in open position.
 2. Length of book.
 B = Fore-edge supports. 1. Height of open book at the fore-edge minus 1/8". 2. Length of book.
 C = Head and tail supports. 1. Fore-edge to spine measurement minus 1/8". 2. Same as B.1.
 D = Book support. 1. Same as C.1. 2. Same as A.2.
3. Glue B's onto base (A). Glue C's onto base and butt into B's. Glue D's on top of B's and C's.
4. Line D's with acid-free paper or polyester film to protect the binding.



BOOK CRADLES CONT.

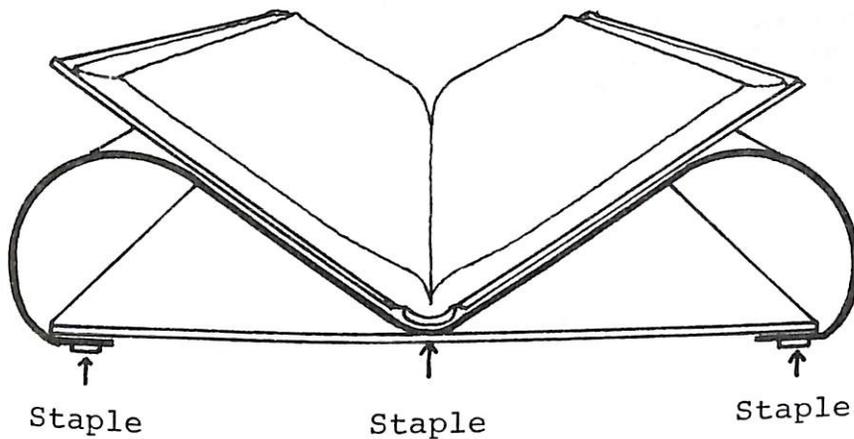
If you need to display the book at an angle, you need to make a front support to prevent the book from sliding off the cradle.

1. Using the same materials as for the cradle, cut a piece the length of A.1. and the height of B.1. plus height of text block.
2. Angle piece as illustrated.
3. Glue onto front C's.
4. Using mat board, pack out the space between the text and front support. This will support the text block.

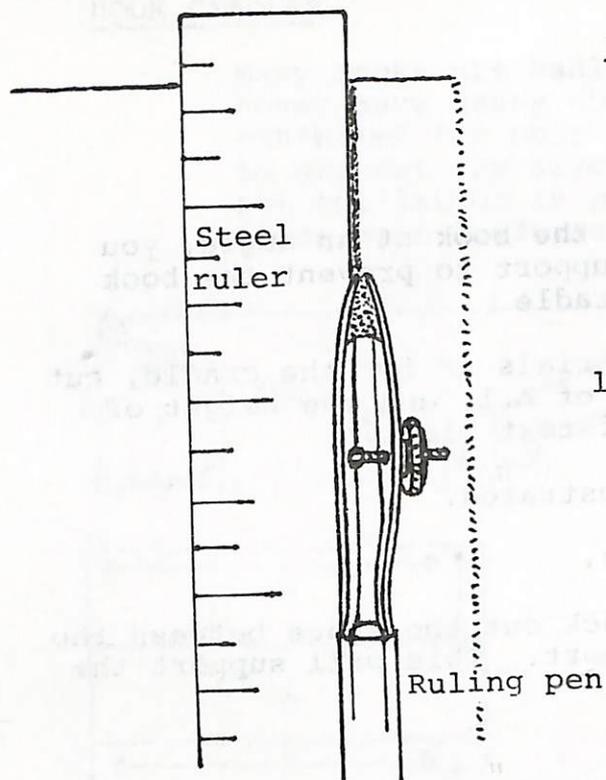


A very simple book cradle can be made for small and lightweight books.

1. Measure and cut base as for the first cradle.
2. Bend 2-ply mat board and staple to base as illustrated.
3. Cover spine staples with pieces of felt, to prevent damage to the spine of the book.

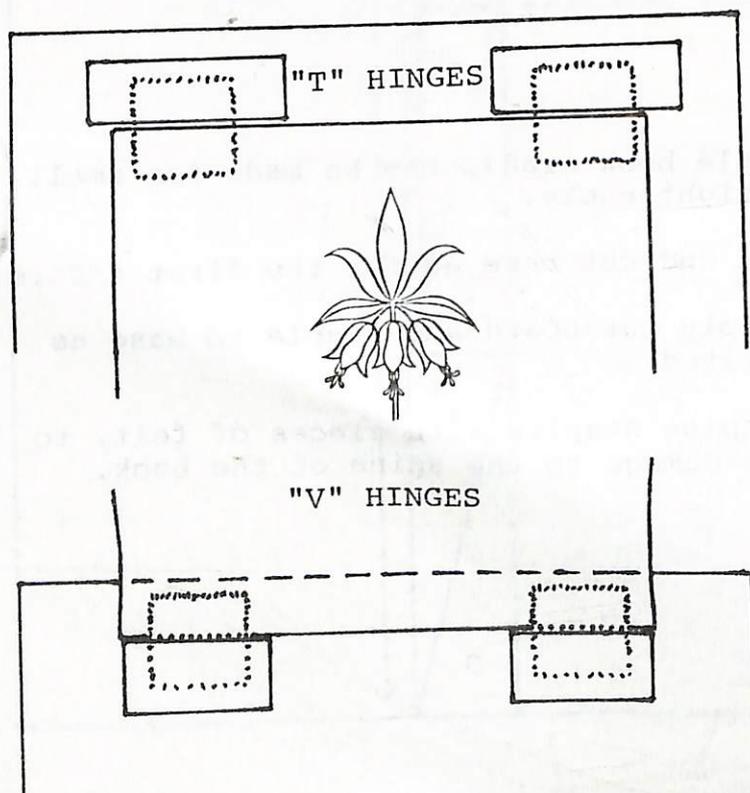


HINGES FOR ITEMS TO BE MATTED



A great deal of damage has been done by improper matting of items. Acid-free mat board must always be used for permanent storage. Never solidly mount anything; never have the item up against the glass in framing; never use a wood or corrugated board as a backing on the frame. Never use anything but paste and Japanese paper for hinging.

1. The part of the hinge that will come in contact with the print should be feathered. Do this with a ruling pen filled with water as illustrated. The hinges should be about one inch wide and long.



2. Where the mat will cover part of the print, use the "T" hinge method. Paste out half the feathered hinge on blotting paper (the blotter will absorb excess moisture so there will be less chance of cockling the print); adhere to recto side of print. Repeat for second hinge. If you have a large print, put a third hinge in the center. Put between blotting paper and under a light weight until dry. Position print on mat and paste out cross strips (these do not have to be feathered) and adhere in position over "T" stem leaving about a 1/32" gap between the print and strip.
3. Where you cannot overlap the mat onto the print, use the "V" hinge method. Follow instructions 1 and 2, but fold the feathered hinge back on itself, making a "V". Position print with recto side facing up and paste on cross strips as in 2.

It is important not to cover any writing, etc. with the hinges. If you have something such as a manuscript that has writing on both sides and no border, you can encapsulate it in polyester film and then adhere it to the

CONDITION SURVEY COLLECTION: CALL NUMBER	COVER MATERIAL	TYPE	BOARDS	SPINE	TEXT BLOCK	RECOMMENDED TREATMENT
	Oasis niger					
	Morrocco					
	Pigskin					
	Calf					
	Vellum					
	Other					
	Cloth					
	Paper					
	Marbled					
	Paste Paper					
	Plain					
	Full					
	Half					
	Quarter					
	Tooled					
	Over boards					
	Wrapper					
	Missing front					
	Missing back					
	Missing both					
	Detached					
	Loosely Attached					
	Damaged					
	Red Rot					
	Damaged					
	Detached					
	Missing					
	Brittle					
	Foxed					
	Stained					
	Acid Migration					
	Sewing broken					
	Scotch/cotton tape					
	Major tears					
	Minor tears					
	Restore					
	Bind as original					
	New binding					
	Deacidify					
	Paper repairs					
	Box					
	Encapsulate					
	Leather treatment					
	Historical binding					
	Binding signed					

EXAMINER:
RECORDER:

DATE SURVEYED:

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Swartzburg, S. G. Preserving library materials, a manual. Metuchen, New Jersey: Scarecrow Press, 1980.

SELECTED LIST OF SUPPLIERS

The Book Binder
5501 Walnut Street
Pittsburgh, Pennsylvania 15232

Bookmakers
2025 Eye Street, N.W.
Washington, D.C. 20006

Conservation Materials
340 Freeport Boulevard
Box 2884
Sparks, Nevada 89431

Conservation Resources International, Inc.
1111 North Royal Street
Alexandria, Virginia 22314

Hollinger Company
3810 South Four Mill Run Drive
Arlington, Virginia 22206

New York Central Supply
62 Third Avenue
New York, New York 10003

Process Materials Corporation
329 Veterans Boulevard
Carlstadt, New Jersey 07070

Talas
213 West 35th Street
New York, New York 10001-1996

University Products, Inc.
P.O. Box 101
South Canal Street
Holyoke, Massachusetts 01040

