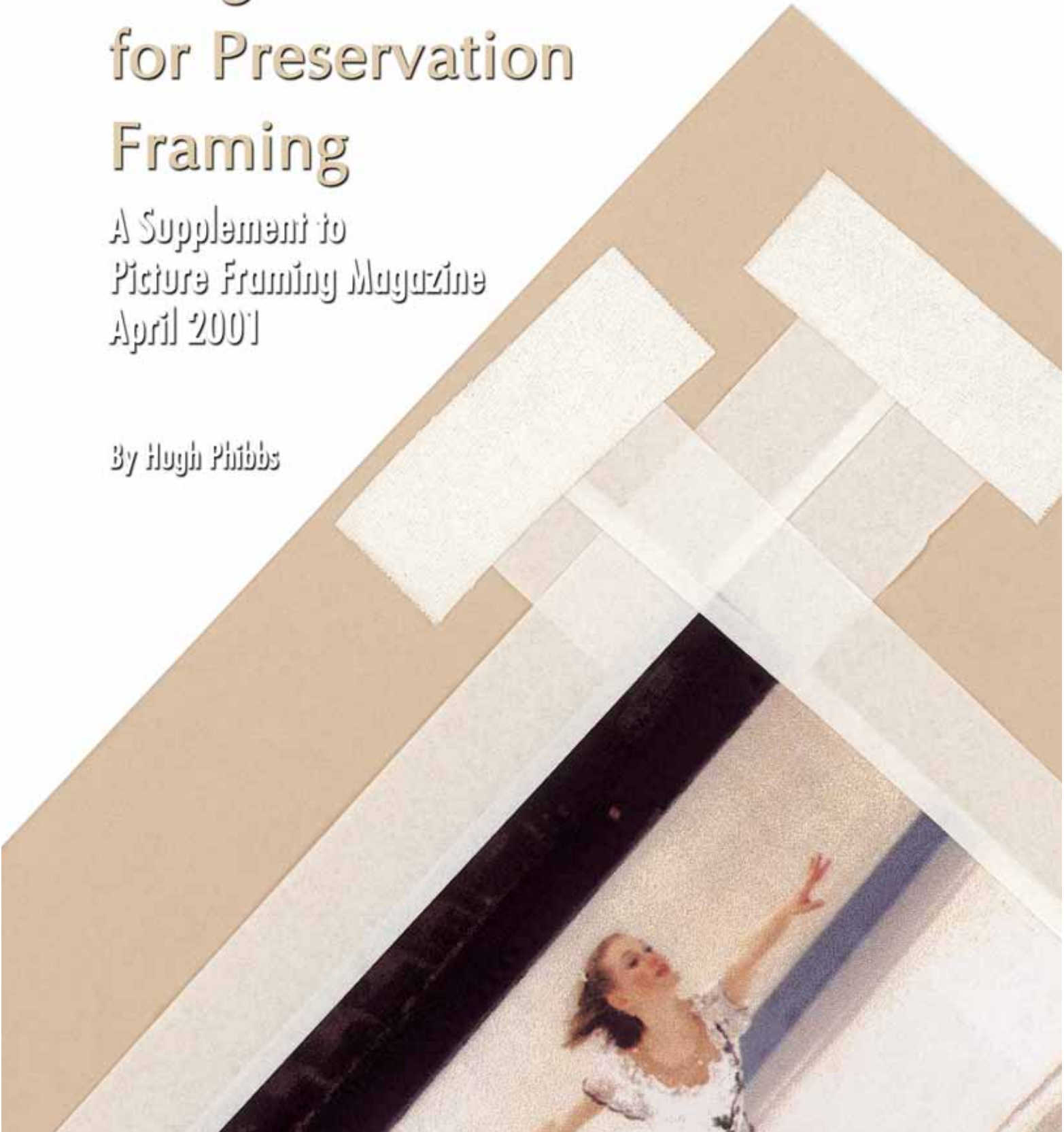


Edge Strips and Other Hinge Alternatives for Preservation Framing

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By Hugh Phibbs



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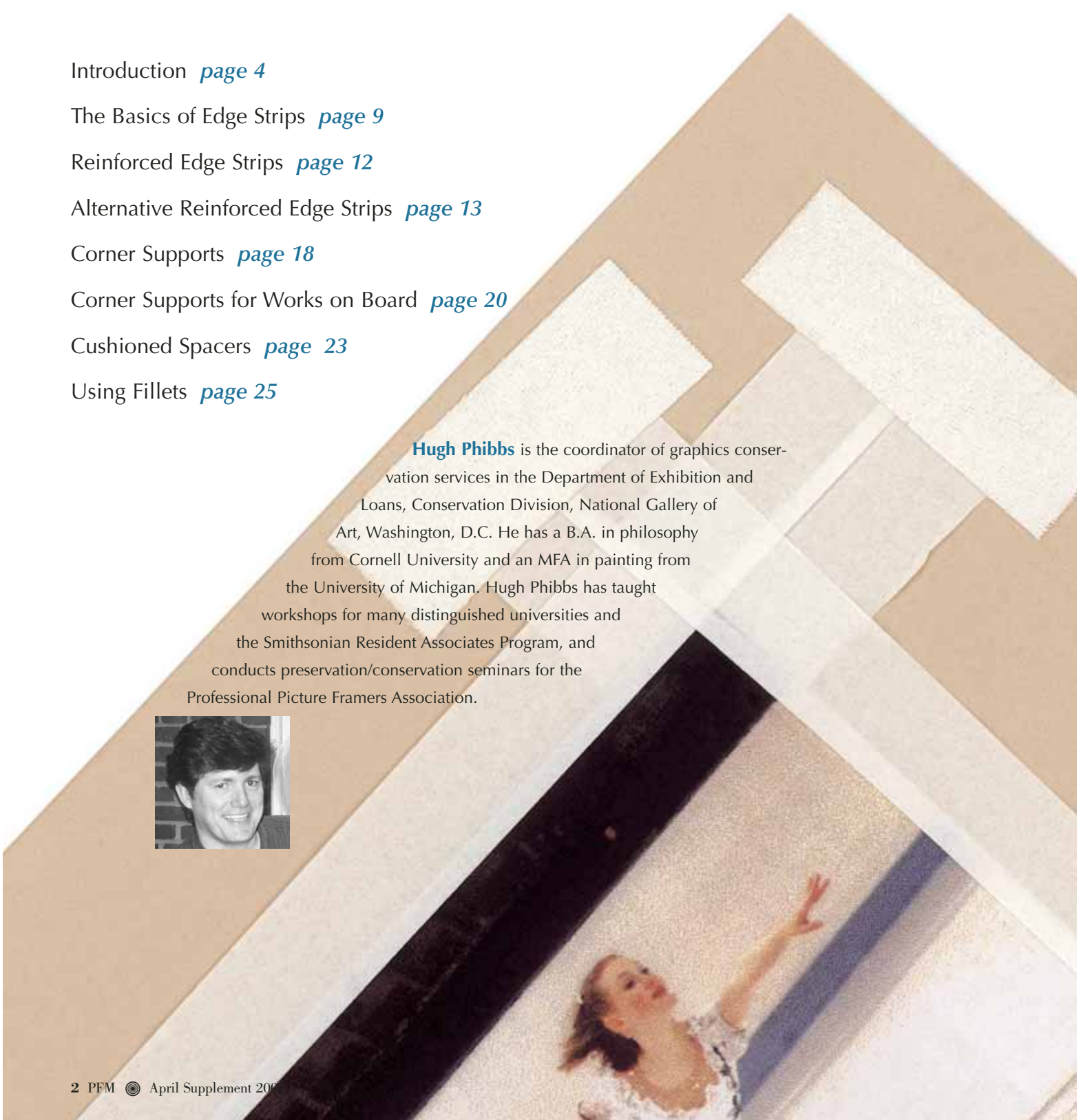
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Edge Strips and Other Hinge Alternatives for Preservation Framing

PRESERVATION IS A WORD WITH A luminously clear meaning. Anyone fluent in English understands that

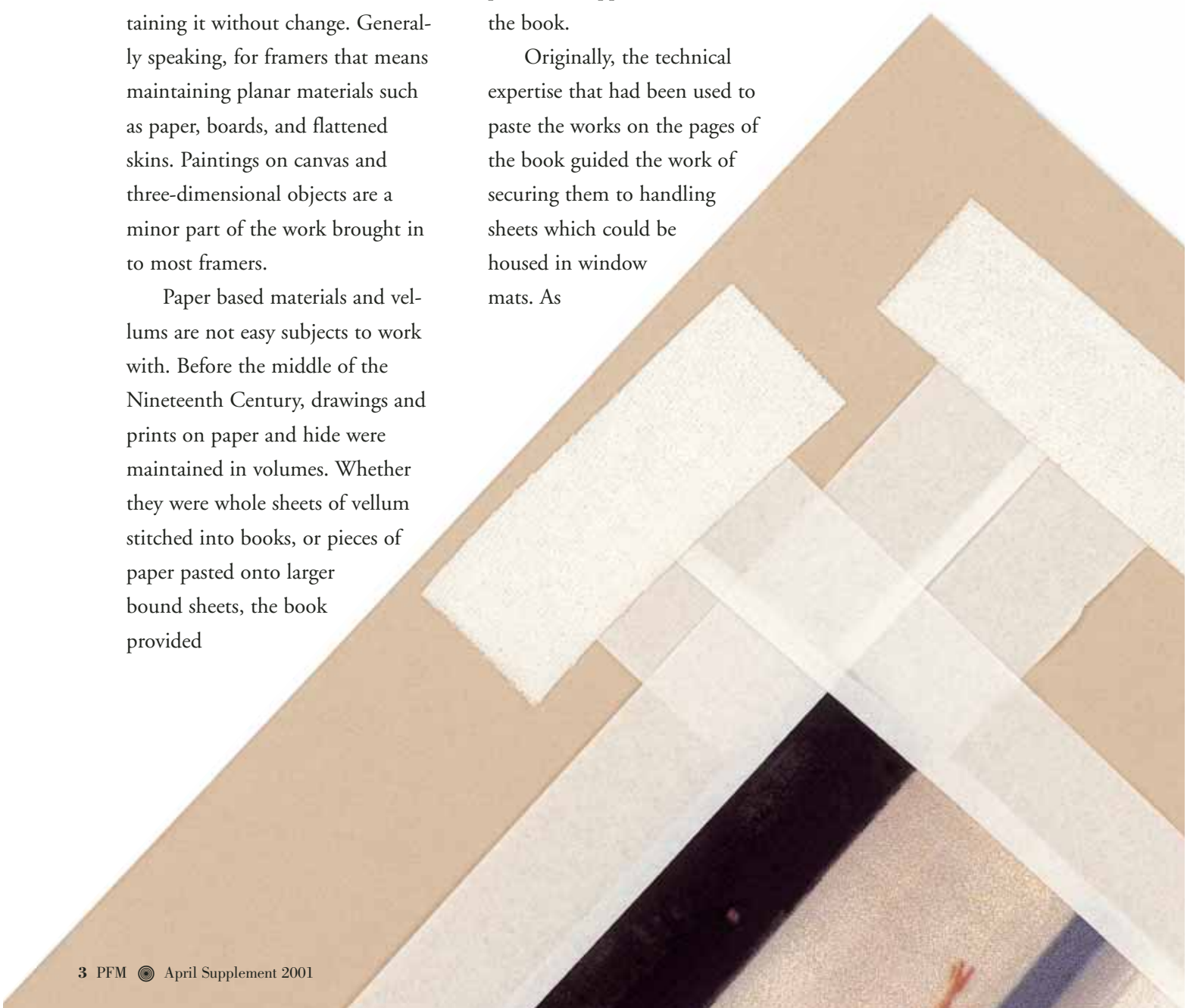
Introduction

preserving something means maintaining it without change. Generally speaking, for framers that means maintaining planar materials such as paper, boards, and flattened skins. Paintings on canvas and three-dimensional objects are a minor part of the work brought in to most framers.

Paper based materials and vellums are not easy subjects to work with. Before the middle of the Nineteenth Century, drawings and prints on paper and hide were maintained in volumes. Whether they were whole sheets of vellum stitched into books, or pieces of paper pasted onto larger bound sheets, the book provided

gentle restraining support and isolation from light and chemical or physical pollution. When such items were first unbound, the window mat was invented to give support which approximated that of the book.

Originally, the technical expertise that had been used to paste the works on the pages of the book guided the work of securing them to handling sheets which could be housed in window mats. As



appreciation for the maintenance of the print or drawing in its original condition grew, the practice of adhering all of its edges gave way to the use of paper hinges.

This meant that less of the margin of the sheet was affected by the paste, but it also meant that differing parts of the edge were being treated differently. When the sheet was installed in a window which left its edges exposed, the edge of the sheet between the hinges tended to cockle if the work was exposed to a more humid environment. Indeed, changing environmental conditions and repeated wetting and drying could cause the sheet to change shape at its margins or overall for such “floated” works. However, when the edges of the sheet were overmatted, the edges of the window could provide some restraint against the depredations of changing climate as long as the pressure on the edges of the sheet was moderate and not overly confining.

The other issue which raised problems for attachment with hinges was that of the adhesive itself. The most benign material for adhesion of paper is cooked vegetable starch. Both the starch in paste and the cellulose in paper are polysaccharides, polymers comprising chains of glucose molecules. The only difference between starch and cellulose is the angle at which the molecules are bonded. This means that there is little reactive potential between starch and

paper. Other materials which have been added to paste have increased the potential for change occurring in the paper to which it was applied.

Certain fungicides, such as thymol, that were added to discourage mold growth have been shown to cause discoloration in paper which is exposed to light. In other cases, pastes which were given a high pH with alkaline materials have slowed the discoloration of the portion of the paper to which they were attached (while the rest of the sheet changed color).

Pure paste should not cause such chemical changes, but it may contribute physical deformation of the area of the paper to which the hinges are attached. A far greater threat to the condition of the paper

is presented by misguided attempts at hinge removal.

Pressure-sensitive tapes may cause harm to a sheet to which they are attached if they are left in place and not removed. This is

Pure paste should not cause chemical changes, but it may contribute physical deformation to the paper where the hinges are attached.

because the adhesive on the tape will change, chemically, as it ages and can penetrate and alter the paper which it touches. Tissue and paste hinges that are secure are unlikely to do harm and should be left alone. Indeed, such hinges present a site to which new hinges can be affixed with little or no

change to the sheet. Hinge removal is extremely problematic and should only be attempted by a trained conservator. When several layers of hinges have been secured, one on top of another to a spot on

the sheet, the upper layers may be carefully pulled from the lower ones, but the last should always be left in place. Any moisture or solvent which is applied to the sheet locally is likely to cause oxidized portions in the paper to accumulate

at the edge of the wetted area where they will eventually form a tide line.

The problems associated with hinging also include the possible disturbance of extremely water-sensitive media, such as certain computer generated prints, and injury to the edges of the sheet if its hinges give up too readily in an impact accident. With all these factors in mind, one may infer that the appropriate time to hinge a work on paper is only when one has to. Use of a combination of over matting and properly designed edge supports decreases the risks that a framer must assume when handling papers, boards, and hides.

In a frame shop, only those items which are to be matted or installed with spacers with their edges exposed ("floated") require hinging. Where the edges of an

item can be covered, the option of securing it with appropriately designed edge supports should be considered. In designing such support, it is useful to begin by looking at instances in which paper and hide items have survived, in good shape, for hundreds of years. The clearest example of success in this area is the book. The vellums and parchments we see today, which go back as far as the Middle Ages, owe their flat-

ness and quality of condition to the fact that they were bound into robust volumes for most of their lives. The oldest European prints and drawings we can find have also benefited from long term storage in collector's volumes.

A sheet in a book is gently supported and restrained by adjacent pages. Well bound books are sewn at their spines—not simply glued—so that the pages can react to changes in relative humidity without undue restraint. Keeping this model in mind, we can ask how close the combination of a window mat and edge support can come to reproducing the conditions of a well bound volume.

When sheets of paper have been supported by their edges in the past, their corners have frequently been used as the portion to be secured. This should be avoided, since the corner is the weakest part

of the sheet. This weakness is evident in the extent to which the sheet will bend in that area. If an ordinary sheet of paper, such as bond or charcoal paper, is attached to a board with corner supports,

To the extent possible, the centers of the edges of the sheet are the best sites for support. Broad support for the bottom edge of the sheet is also needed.

and the board is turned so that the paper side is down, the paper can slip out of the corners as gravity pulls it down. If this same sheet is secured to the board by tabs of paper which overlap the center of each side, it should not fall out. Thus, to the extent possible, the centers of the edges of the sheet are the best sites for support. One

might ask whether this situation could arise in connection with a framed work since the edges will be covered and supported by the window mat. It is important that pressure from the window not be

depended on, since the frame may experience conditions in the future which will cause its backing board and back mat to warp away from the window, leaving the sheet vulnerable.

The need for broad support of the bottom edge of the sheet is evi-

dent when attention is paid to the consequences of impact to the bottom of the frame. When a frame falls off the wall, the sheet will continue to move after the frame, mat, and corners have come to a stop. This will result in impact creases: diagonal bends in the sheet at the bottom corners. These can be quite severe and even permanent.

The support must allow the sheet to expand when relative humidity rises. Most corner supports and flanges that are attached directly to the back mat will either lack this capacity or will be placed so that some of their edges are slightly wide of the edges of the sheet, allowing the sheet to slip out of place if the frame is jostled. Supports that have edges which are set next to the sides of the sheet, but are secured to the back mat at some distance from the corners of the sheet, can meet this test. The means of securing the support must be one that will maintain its hold as long as the item is in place. Pressure-sensitive adhesives can not be used since they will, in time, lose their hold due to the pressure of gravity, the loss of plasticizer, or the oxidization of the adhesive. Water-activated adhesives such as those found on linen tapes should not lose their hold over the years that an item can be expected to stay framed.

The supports themselves should be made from conservation-quality paper. This will make them chemically compatible with the material that they are supporting. It also means that if the support is designed so that its components are secured to the back mat at a distance from the edges of the enclosed work, then the paper which the support pieces are made of can expand and contract as the object does in response to changes to relative humidity. Paper also

allows for the support to give way if the frame receives an impact, and, in addition, it can be found in a huge variety of weights and finishes. This means an appropriate paper—one which will not abrade the surface of the item and will provide adequate support—should be available.

A variety of designs is necessary to accommodate the varying needs of different materials. As the supported item becomes thicker, the support must be more robust and must incorporate shims or

Ultimately, the framer must develop a sense of the appropriate chemical and physical issues raised by each item.

sinks designed to provide the space required. Pastels on board cannot have anything touching their front surface and should be supported with spacers which only touch their front edges. Paintings on canvas which lack a tacking margin and some fragmentary textiles may need padded spacers which can gently press on their edges to provide support. Ultimately, the framer must develop a sense of the appropriate chemical and physical issues raised by each item and how different strategies can be employed, adapted, or combined to meet those needs.

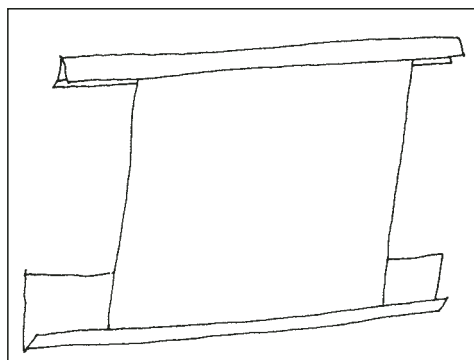


Figure 1

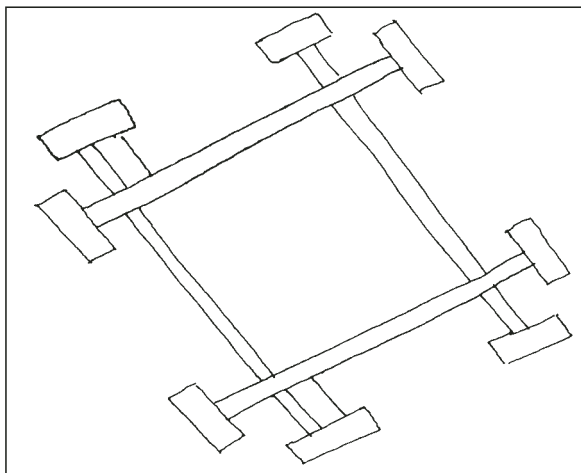


Figure 2

The Basics of Edge Strips

EDGE STRIPS ARE CREATED FROM folded strips of conservation-grade paper. Two strips will enclose the top and bottom edges, and two more will enclose the sides. The top and side strips can be made so that their front and back sides will be equal.

The easiest way to do this is to fold a sheet of paper a number of times and cut through it near enough to the fold to make strips of the width desired. The bottom strip should be much wider in back than it is in front. If the front is $\frac{1}{4}$ " wide, the back should be 1" to $1\frac{1}{2}$ " wide. This strip will have to be made by carefully folding one edge

of a strip of paper. The bottom strip will be strengthened by its thicker back the way an I-beam is strengthened by the center "I" section (Figure 1).

When the strips have been made and the art is weighted in place on its back mat, the top and bottom edges of the art should be enclosed in their respective strips. Weights should then be placed to these top and bottom strips to hold them in place. The side strips should be folded together and laid along one side of the art. The side strips should then be marked at the points where they will intersect the top and bottom strips and cut at their folds between those marks.

Next, the ends of the top and bottom strips should be fed through the cuts in the side strips so that the side strips can be slid down the top and bottom strips and onto the sides of the art (Figure 2). Each of the ends of the strips can be secured to the back mat with linen tape. A gentle tension can be applied to each strip as the second end is attached. This more solid bottom edge will not only lessen the possibility of corner damage in a fall from the wall, it will provide even more support across the bottom at all times.

As the size of the art increases, even stronger, more rigid strips may be necessary. The creation of more rigid strips depends on increasing the number of folds in them.

A strip of conservation-grade paper, 1" or 2" wide and long enough to exceed the longest dimension of the art, should be folded in two lengthwise. These strips should then be laid at the

edge of a table or other support which has a 90° angle between its top surface and its side. The strips should overhang the table or other surface by 1/8" and each strip should be creased by pressing it around that edge. The crease should then be reinforced by folding it flat with a bone folder.

One side should then be folded out, so that the resulting shape will comprise a compressed "Z" shape if seen in cross-section. This strip, with its compound folds, can be used with the art tucked into the fold on either side, depending on which will fit the dimensions of the mat better.

These strips will be fitted to the art using the same technique as the one-fold strips, with one precaution. Since these strips will be thicker than the one-fold strips, this thickness could emboss the edges of the art if pressure were applied to that area. This can be avoided by the addition of a shim mat to the underside of the window mat. This shim should be large enough so that its opening is larger than the art and will lift the window above the edges of the art with no pressure on them.

The limitations to the use of edge supports like these come primarily from the nature of the edges of the paper being matted. If the design covers the front of the sheet and must be seen in its entirety, hinges and a floating presentation may be needed.

If roughly 1/4" of the edges of the art to be framed can be covered, edge strips with a single fold and overmatting can be used. If slightly more than 1/8" of the sur-

face of the work being matted can be covered, edge strips with two folds placed close to the center of the strip, but on opposite sides, can be used in combination with a shim mat.

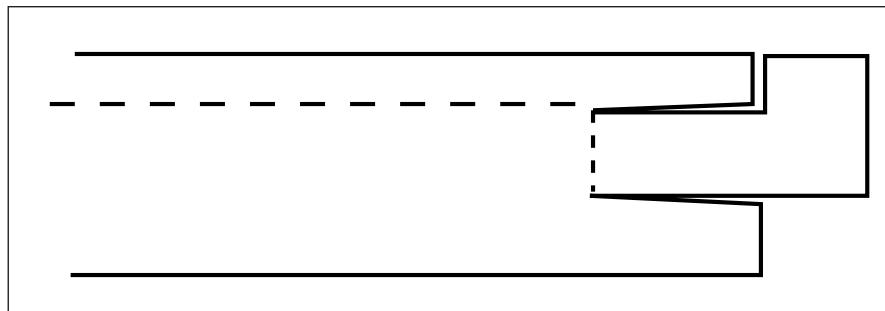


Figure 3

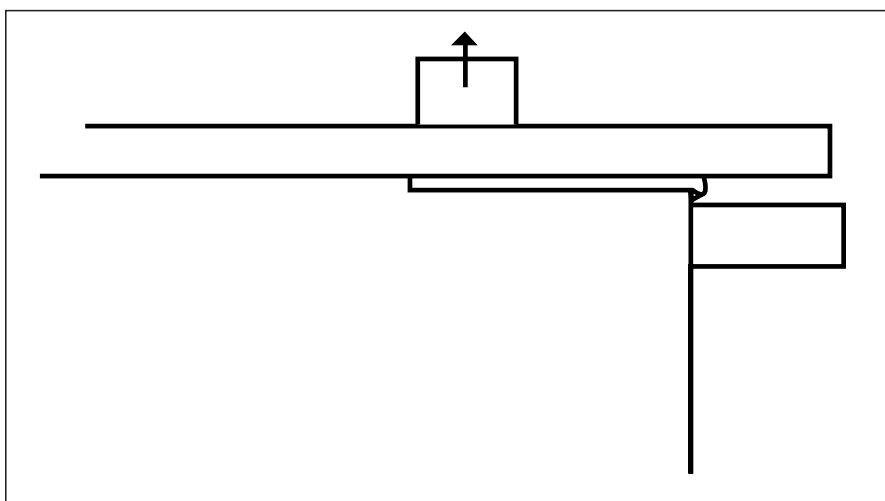


Figure 4

There are cases in which a work may have a large area which can be covered on its top and bottom portions but must have the areas near its sides exposed almost to the edges. If such a sheet can be held securely at its top and bottom margins while it is overmatted on all its edges, the overmatting at the sides can cover a minimal area of the sheet, between 1/8" and 1/6". Here, only two strips will be used to secure the sheet being matted.

The areas to be covered at the

top and bottom should allow for at least 1/2" to be enfolded in the support strips. These strips should be folded down their length along a line which parallels the center of the strip so that, when folded, there

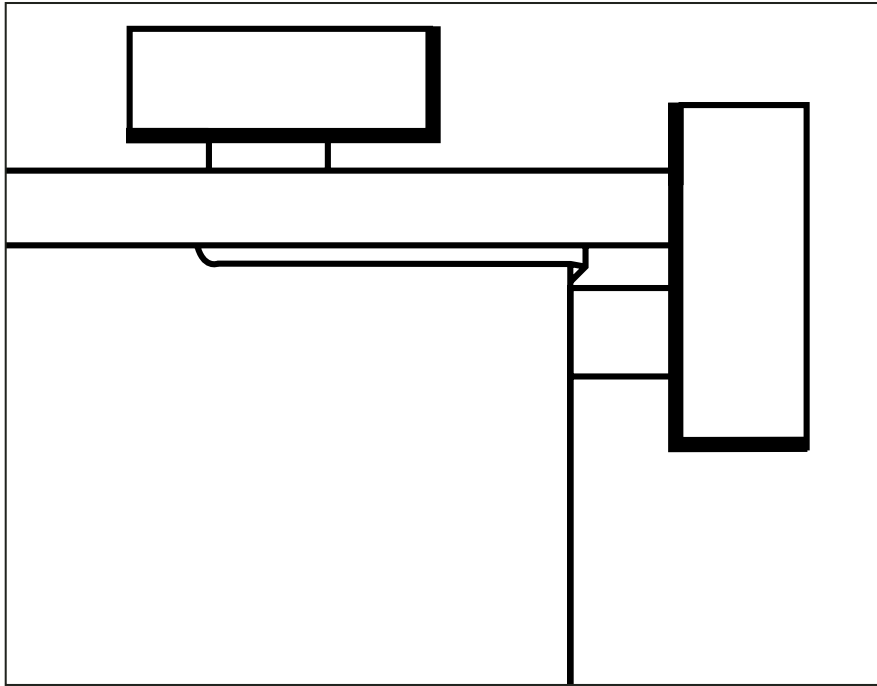


Figure 5

is more paper on one side of the fold than on the other. This will allow for more of the strip to be behind the item being matted and less in front so that the strength of the strip can be maximized.

When the strips have been folded, they can be laid along the top and bottom of the paper being matted and marks can be made on the strips to indicate the width of the top and bottom of the paper. The strips are then removed and a number of cuts are made in the end of each (Figure 3). These cuts will create tabs which can be folded around the upper and lower corners of the work and then secured to the back mat after their end portion

has been slipped through a slit in the folded part of the edge strip (Figure 4). These tab portions of the strips will serve to limit lateral movement of the work when it is secured in the window mat.

Ultimately, there will be two portions of the strip which will extend beyond each upper or lower corner of the work: two tabs which extend above the upper edge and two which extend below the lower edge. Eight strips of linen tape will be needed to snugly attach each of these areas to the back mat (Figure 5). This, of course, can only be done after the work has been properly positioned in the window and weighted in place.

Like other paper and linen tape edge support designs, this one allows for the expansion of the work in the window if the relative humidity rises, since the paper which comprises the support strips will also expand; conversely both will contract if the relative humidity decreases. These support strips do not enfold the entire perimeter of the sheet and are only safe for use on the sides of a matted item. It may be wise to include a note on the back of the frame to ensure that the frame is not left stranded on its side in light of the interrupted support on the sides of the art.

The lack of the complete support on the sides is a drawback of this design, but when weighted against the risks which hinges pose and the need for exposure of the edge portions of the work being

matted, it can certainly be justified when an ample portion of the work can be enclosed.

Reinforced Edge Strips

EDGE STRIPS CAN ACCOMPLISH THE support of smaller works quite effectively. However, as the size of the sheet grows, the need for increased support in the center of the bottom edge becomes more acute. Even well made, snugly secured strips lose their ability to provide steady support as the distance between the corners grows. A better design provides support from above the lower edge of the strip.

If one were to tape or paste the upper portion of the strip to the back mat, the potential contact between the adhesive material and the work being supported would present a problem. A better solution can be produced if a tab, cut in the back of the strip, is passed through a well-positioned slit in the back mat so it can be secured to the back side of the back mat.

If the edge strip is folded so that there is significantly more paper on its back side than on its front, there will be enough paper available so that the tab can be cut out of the middle of the back while the upper and lower portions remain intact (Figure 6).

The slit in the back mat should be cut so that it forms a bevel, which ascends from the

front side of the board to its back side when the board is standing in a frame. It should be placed approximately $\frac{1}{4}$ " above the line at which the bottom edge of the strip will sit when the installation is finished (Figure 7).

The placement of the slit can

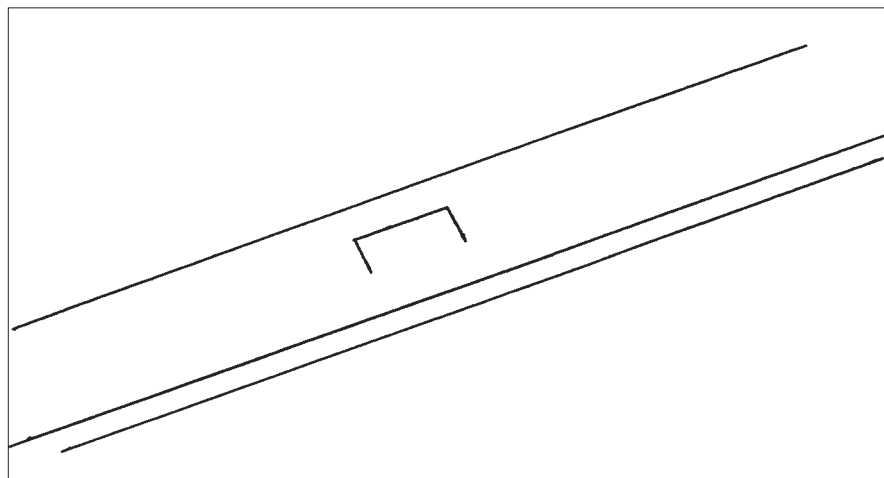


Figure 6

be properly located if the work being matted is first correctly situated in the window mat and the site of its lower edge is marked with a microspatula on the back mat. The work being framed can then be removed, and the slit cut in the back mat.

Before the work is resituated, the tab can be fed through the slit. The work can now be set in place and the other strips can be placed around its edges. The upper strip can now be added and both upper and lower strips can be weighted so they will remain in place while their ends are fed through the openings in the side strips.

Once the ends of all the strips have been secured with linen tape, the tab can be moved up or down in the slit until the proper support

for the bottom edge has been achieved. When it has, the tab can be affixed to the back of the back mat with linen tape. Where very wide works are being supported, more than one tab and slit combination can be employed along the bottom edge.

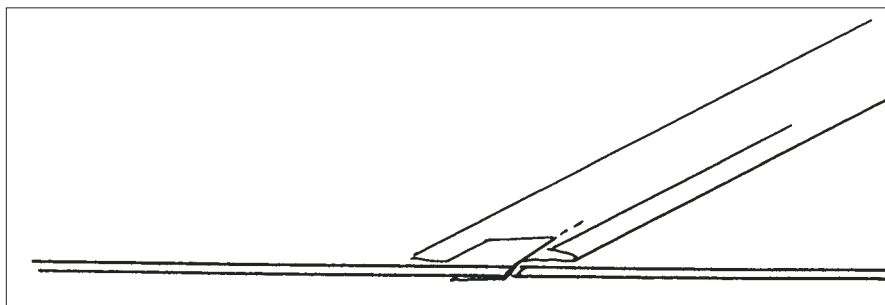


Figure 7

Alternative Reinforced Edge Strips

FOR LARGE WORKS ON ESPECIALLY heavy papers or on board, the need for a similar kind support at the bottom edge, where the weight of the sheet will fall, presents additional challenges. In these circumstances, it may be too cumbersome to pass supporting tabs through the back mat.

One might simply reinforce the strip with tabs of linen tape, but they will add bulk which might produce an impression on the edge of the art if the pressure in the frame increases. Any attempt to provide this type of support will run up against this problem and a brief consideration of the likely reaction of frames to environmental changes may be useful.

This possibility that the backing board might press the window against the glazing is raised if the backing board warps toward the inside of the package. This can occur if a backing board which contains paper is adhered to a strainer and is exposed to conditions of heightened relative humidity. For this reason, this sort of adhesion should never be employed. Alternately, if the outer membrane of the backing boards expands more than the inner, the warpage of the board will be away from the glazing and there will be less, rather than increased, pressure. This can occur as a response to rapid upswings in relative humidity.

Another possible source of deformation of the package within the frame is its inability to expand due to an insufficient allowance in the frame itself. Here, the entire package can warp in unpredictable ways which may increase or lessen pressure.

Most matting done by framers is not destined for stacked storage in a box and will avoid the pressure which gravity would impart. A mat package in a frame with sufficient allowance and a proper backing board should not be exposed to serious pressure and so some modification of the support can be considered.

Perhaps the simplest solution is the use of tabs which are cut from the back side of the strip and are folded out so they can be secured to the back mat with linen tape

below the edge of the strip.

These do create a gap in the strip underneath the work but this is unlikely to produce any impression as any pressure would be spread out down the rest of the strip (Figure 8). This approach can establish firm line of support, but it cannot add to the strip's ability to restrain the edge of the sheet from pushing out from under the front side of the strip. In the case of smaller strips, the tension applied to the strip as it is taped to the back mat can address this problem.

These tabs, cut out of the back side of the bottom strip and linen taped to the back mat below the lower edge, can ensure that the bottom strip will serve as a steady ledge without sagging and will spread the impact of a blow away from the corners if the frame is dropped.

The use of these tabs should be confined to the lower strip since they will impede the expansion of the item being supported in the event of a rise in relative humidity. The strips themselves are designed to allow for expansion since they are taped to the four-ply back mat outside the point at which they cross and the paper of which they are made will also expand if the humidity rises.

When the strips are installed around the art, they can be drawn snug from end to end as the linen tape is applied to each end. This will provide a modicum of restraint

against the front edges of the paper in the support. The longer the strips are, the less this restraint will be, especially at the center of each strip. This problem is compounded by the fact that the stiffness of the

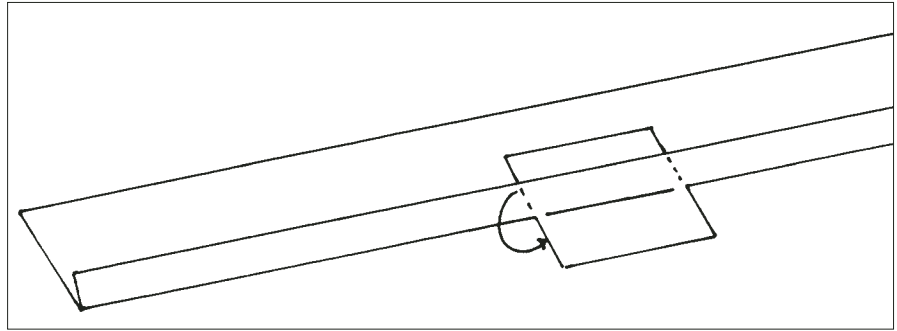


Figure 8

back mat will decrease as its size increases. It would be possible to address this last problem by substituting six and then eight-ply for the ordinary four-ply of the back mat as the size increases, but this would introduce considerable expense and weight.

Any adhesion of the back mat to a rigid support will remove whatever chance it has to expand and contract along with the art it is supporting, and if the attachment is confined to the edges of the back mat, it can be expected to warp.

A means of restraining the edges of the paper in the support so they will not pop out of the support strip if the back mat is flexed is called for. This must not confine the expansion of the supported artwork's edges, nor should it have the potential of embossing the edges of the artwork if pressure is applied to the front of the window mat.

Any support which covers only

a fraction of the edge has the potential of concentrating pressure on the portion of the paper it covers.

The difficulty in producing a reinforcement which will provide the appropriate pressure on the front of the strip comes from the fact that material which is rigid enough to produce the pressure will be thick enough to raise the pressure problem. Since the danger comes at the edge of the reinforcement, the problem may be addressed by eliminating those edges.

A model for this can be found in wet cut hinges in which the feathering of their edges diminishes their bulk so gradually as to render the hinges edgeless. Creating a similar edge in a five mil polyester is more difficult than wet cutting Japanese tissue.

If the polyester sheet is folded around a block of wood and the

reinforcements begins with a long cut sanded into a strip of polyester. When this is completed, the sheet is turned 90° and cuts are made which will be the sides of the reinforcement (Figure 9). When a series of those tabs have been created, they can be cut out in the polyester and holes can be cut in the unsanded rear portion of each tab. These holes will allow the tabs to be secured to the back mat with linen tape (Figure 10).

The tabs should be installed with the sanded side down so the diminished side of the edge will be facing the art. The tabs can be taped to the back mat at a slight distance from the outside edge of the strip to allow for expansion of the paper being supported. They will be rigid enough to provide support from this distance (Figure 11).

They should not be installed on top of the tabs described earlier to avoid pressure being directed to the area where the gap in the back of the strip is located. These reinforcements can be applied to all the edges of the work since they will not restrict expansion. The work of art which is supported in this manner should be restrained enough to permit normal handling, but it is still wise to place the backing board beneath it whenever it is lifted.

Ultimately, some works will be too large for this sort of support, but most papers which have enough rigidity to stand on their

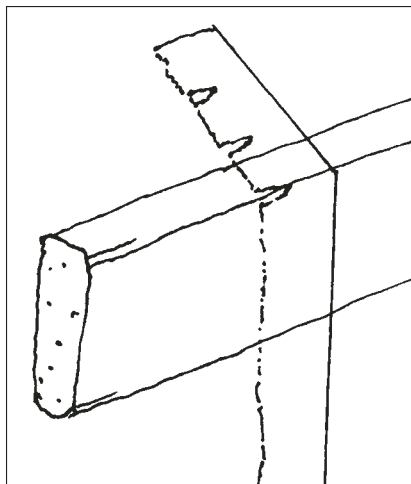


Figure 9

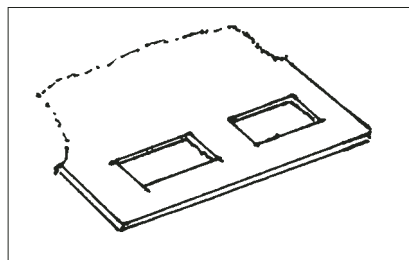


Figure 10

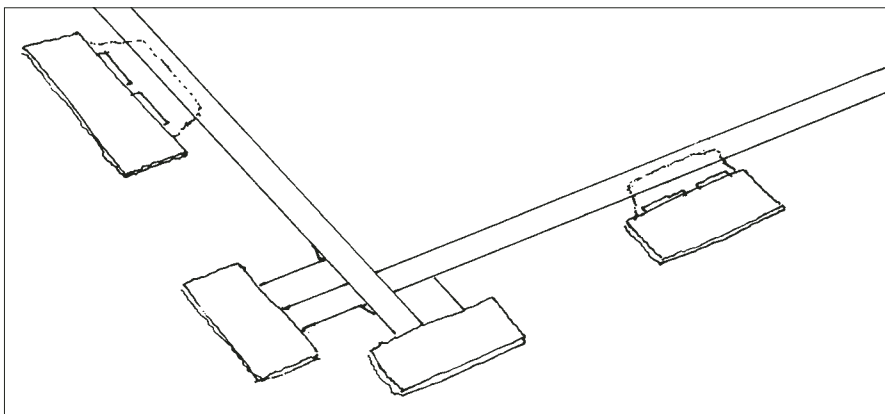


Figure 11

exposed corner is sanded until the sheet is cut, the edge which results will be graduated. If the wood has a somewhat rounded corner, the graduation will be accentuated.

The production of these rein-

bottom edges can be considered. The sizes in which window mats can be produced will be one limiting factor and the possibility that the item being framed may be pulled through the window by static from the glazing can be another.

As larger subjects are considered it must be remembered that the size of the strips must be scaled up and practicing on scrap materials to gain familiarity with the physics to be encountered is also recommended. This type of support is especially important when unfamiliar materials such as plastic substrates under the art are encountered since hinging options there are limited.

Corner Supports

THE MOST SUCCESSFUL STRATEGIES for edge support are built on methods that gently support the sheet on all its edges and allow for dimensional changes if the climate inside the frame package varies. The central portions of the edges of a sheet need support most critically. If the sheet is supported only at its corners, it might bend through its central portions and slip out of the corner supports.

This type of support also allows inappropriate handling to occur when those who are not properly informed may try to take the work out of its support by bending it without first freeing the

corner supports from the back mat. If a work on paper is supported by its corners and the frame falls off the wall, the work will probably suffer distortion at the areas adjacent to the spot at

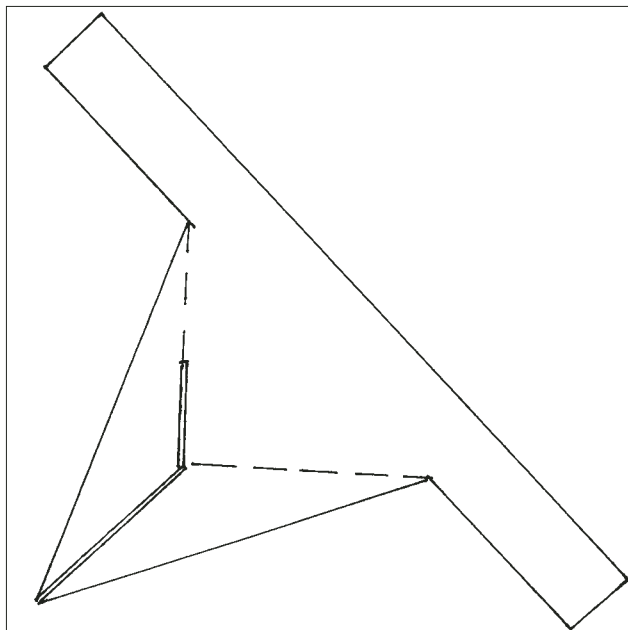


Figure 12

which the corners end.

Other problems that affect corner supports involve the means used to attach the support to the back mat. Whether the corner support is secured with linen tape across its face or with glue on its back side, it would be firmly affixed to the back mat and not permit the item being supported to expand if it encounters conditions of elevated relative humidity. Supports are often placed so that their edges do not abut the corner edges of the work being supported in an effort to address this situation. This may be wise, but it compromises the location of the work in its window mat and may allow it to shift enough during transit that abrasion

may occur. The fact that corner supports do not enclose the entire edges of the work makes this sort of abrasion possible regardless of the placement of the supports.

Another problem that affects

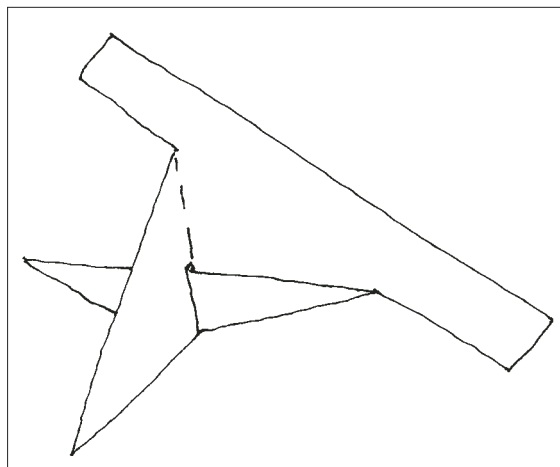


Figure 13

corner supports comes from their shape, which is typically triangular. Unless a large portion of the work being framed can be hidden under the window mat, a portion of the triangular face of the support may need to be cut away so that it does not show inside the corner of the window opening. This is often done with two cuts that are parallel to the outer edges of the support, leaving an L-shaped piece of the support in front. A difficulty encountered here is maintaining the strength of the support. Often, there is so little of the material left on the front of the support that it may tear at its corner.

A properly designed corner support should address these problems. It should allow for the expansion of the work without the requirement that it be fitted loosely

to the work's edges. It should have an L-shaped front surface without loss of strength at the corner. It should be made of material that is soft enough that the possibility of abrasion to the edges of the work being supported is minimized.

Even a design that meets all these criteria will still be supporting the work at its most vulnerable points and should only be used in extreme cases. A work on paper that has cockled edges which are not going to be relaxed might be a candidate for corner supports with a shim mat that holds the window up enough so that the window does not unduly compress the cockled edges of the work.

An ideal material for making a corner support that answers the problems outlined here are Japanese tissue papers. The best of these are handmade from very long fibers and are very strong, even when they are relatively thin. In addition, these papers have rather soft surfaces that can reduce the possibility of abrasion.

Corner supports can be made by cutting the paper into pieces (Figure 12). Because the paper is so thin, it's possible to cut a number of pieces at the same time if the sheet is folded several times before cutting begins.

This shape includes four tabs along its edges. Two tabs can be seen along the innermost corner under the work being framed. The other two tabs are found at the corner and will be folded over the

corner of the work and lashed through one another. Tab A has a slit long enough to allow Tab B to be threaded through it (Figure 13). When the tabs have been properly aligned, each can be secured to the back mat with a small strip of linen tape. As this is done, tabs that are across from one another can be used to create a modest tension. Once one tab is secured, the tab opposing it can be gently drawn away from it before its linen tape is fastened. This will aid in keeping the corner snug (Figure 14).

Because the linen tapes are secured at a distance from the edges of the work, the support itself can relax if the relative humidity increases, which eliminates the need to fit the support loosely to the edge of the work. The support is L-shaped in front to begin with and because it is doubled at its corner it will be strongest there. This sort of support is painstaking enough that it should be used primarily for extraordinary cases.

Corner Supports for Works on Board

WORKS THAT HAVE BEEN MOUNTED on larger backing boards may be housed with corner supports with more confidence. The boards may be important, but they are not as precious as the work itself.

Boards are more physically robust than sheets of paper and

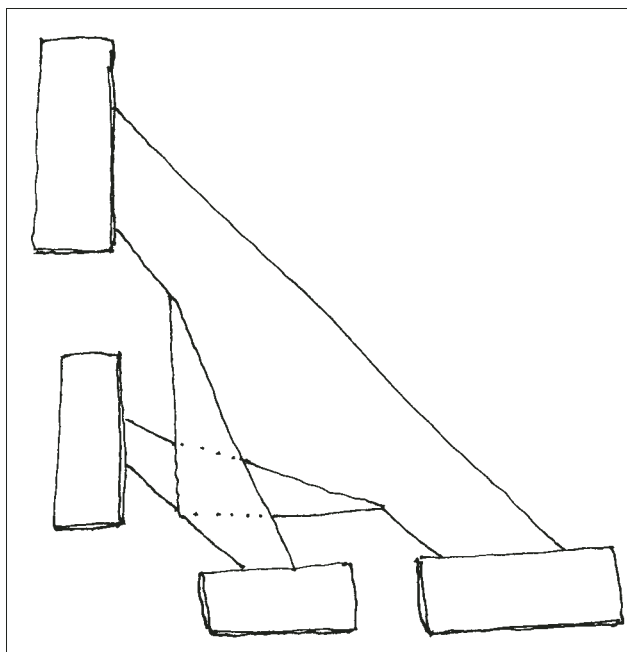


Figure 14

are not likely to suffer damage to their corners if the frame in which they are housed is dropped while they are supported by their corners. In fact, the corner support may break away as a hinge would, while a sink mat could transfer the impact more directly to the edge of the board.

Some works on board will leave ample room for the supports to enclose the corners without approaching the mounted work. Works that have been executed on board and cover the entire front surface would not be secured with corner supports because they would come in contact with part of the design. Special spacers, described in *Picture Framing Magazine's* February 1995 Preservation Supplement, can be used in such cases.

Making the Supports

THE MATERIAL USED TO MAKE corner supports should be strong enough to accommodate the weight of the board. The thick paper used to make folders for works on paper perform well in this role. It can be found in varieties thick enough to provide the strength needed, and it is buffered with an alkaline reserve, which is necessary to protect the work from the polyvinyl acetate glue used to secure the corners.

Folding and cutting corner supports can be rather tedious. A simple method for creating corner supports begins with a strip of the paper. Its end should be folded along a diagonal line so that one of its sides aligns with one of the sides of the strip (Figure 15). That end of the strip is again folded on a diagonal line in the same manner so that the first support has been folded (Figure 16). The strip can then be turned over and folded again on a diagonal line so that one of its sides is parallel to the long side of the first support (Figure 17). That move is repeated down the length of the strip with care taken to ensure the proper alignment of the sides of the supports that meet at the center of the square of paper that the folding creates.

When the folding is complete, the square of folded paper is cut from corner to corner down

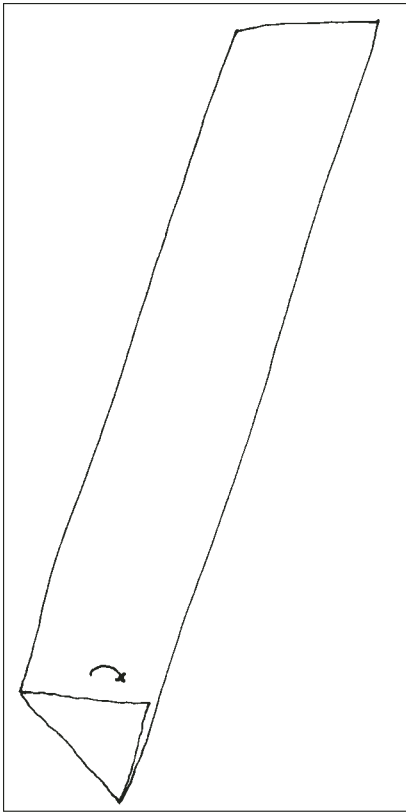


Figure 15

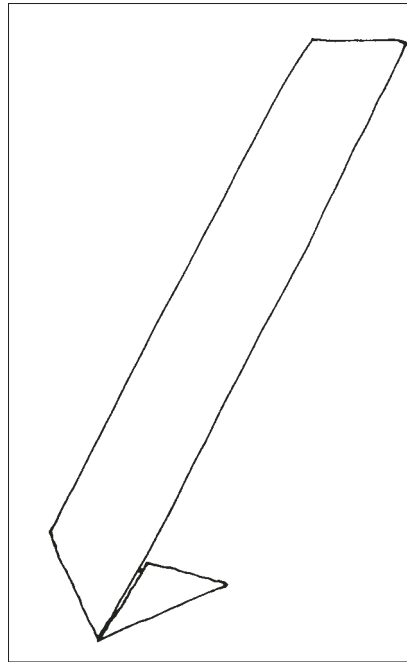


Figure 16

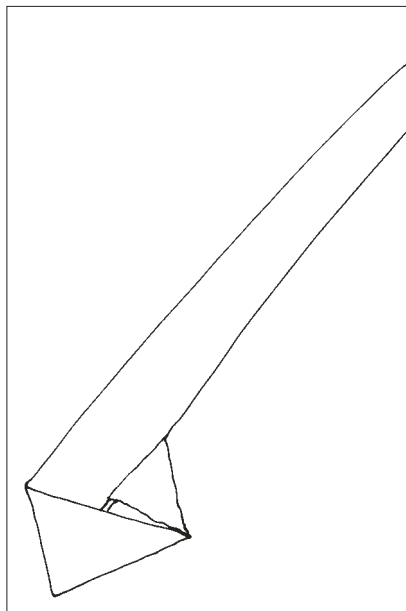


Figure 17

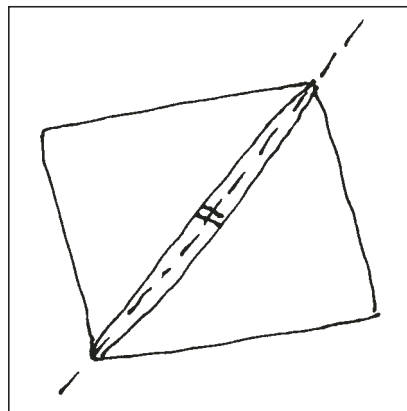


Figure 18

the line where the long sides of the supports meet (Figure 18). You've just created a set of corner supports.

Using the Supports

THE SUPPORTS CAN BE GLUED TO the back mat so that the two tabs on one of their sides will be secured to the surface of the mat. This will create a stronger bond than a strip of linen tape across the surface of the support. If the item to be supported is especially precious, a piece of board can be cut to the same outer dimensions as the work and can be used in its place to determine the placement of the corners. The board can be weighted in the window mat in the appropriate position, and the supports can be glued in place with PVA that has been carefully applied to the tabs with a cotton swab. When the corner is installed, the item should not be flexed or bent, rather, the back mat should be bent down to create a space for insertion of the support.

For items mounted on boards that are not integral to the value of the item, the substitute board can be left out. Here, a masking device can help to protect against glue accidentally reaching the back of the board. This device consists of a strip of polyester sheet that has a protrusion on one of its sides that forms a right angle (Figure 19). It can be inserted under the corner of

the board as the corner support is inserted and left in place until the glue is dry.

Supports of this type can be engineered so that items that may need to be shifted in and out of a

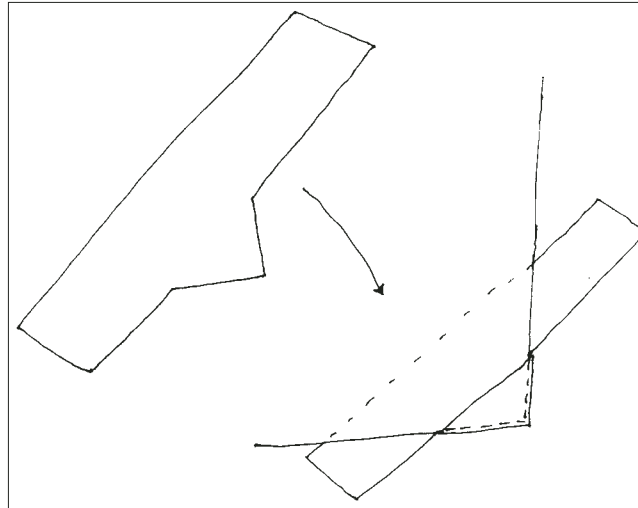


Figure 19

window mat can be moved without destroying the support. Collectors of memorabilia whose collections contain numerous pieces of the same size can benefit from this design. In this case, when the two supports for the upper corners of the board are secured, the upper tabs of the supports are left unglued. This will allow the owner to open the frame and fold out the upper tabs of the supports with a microspatula and slip the item out (Figure 20). Another item that has the same dimensions can be slipped into the lower corners and the upper tabs can be carefully slipped under the item's upper edge.

Whenever an item as thick as a board is housed in a mat, there must be a sink included to accommodate the bulk of the board.

When corner supports are used, it is difficult to place the sink on the back mat because it would get in the way during the installation of the board. Instead, the sink can be added to the back of the window

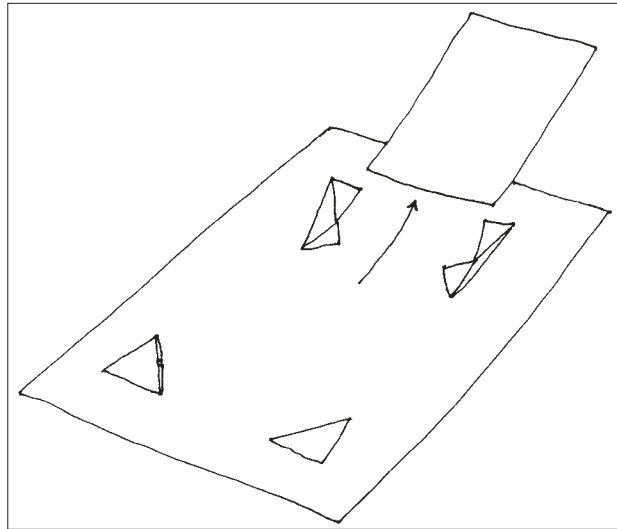


Figure 20

mat. Its inner dimensions should be significantly larger than the outer dimensions of the board so that there is no possibility of the edge of the sink engaging the edge of the board when the window is closed.

Cushioned Spacers

CERTAIN OBJECTS SUCH AS OIL paintings on paper or works which have had pressure-sensitive tapes on their back margins may be difficult or impossible to hinge. The oil or the old adhesives which may have impregnated the paper can render it water-resistant. Some of these works can be housed with edge supports such as edge strips.

In other cases, the desire to frame them with coverage of their margins may make that option less useful. This is especially true of oils on paper which may have been framed as if they were on canvas, with the frame coming over the edge of the painting.

This kind of problem may be handled with an appropriate spacer. In most cases, a spacer cannot be placed on the surface of the art because it would unduly abrade and constrain the work. Some designs for stretched paper spacers which can be used with art on board which is to be framed up to the edge were described in the *PFM* Preservation Supplement, "Creating Space for Preservation Framing," February 1995. However, these designs would not work with art which is not on a board and thus is not rigid.

If a spacer is to set on the edge of the art, it must give very gentle support and allow for some dimensional change in response to changes in relative humidity. A properly padded spacer can provide broad support with minimal adverse constraints.

The first question which must be answered in creating such a spacer is what can be used for padding. Wadded paper is an obvious candidate, but it may hydrate in conditions of elevated relative humidity and may lose its springy character. Synthetic foams, which may work well to create spacers for canvases, can press on the surface

of the paper with a persistence sufficient to restrain its expansion or contraction.

Spun polyester padding is a material which has been frequently used in textile conservation. It is chemically inert, and will not press aggressively on the surface of the art nor will it condense in more moist conditions.

The padding alone will not be sufficient to complete the design; strips of conservation quality board and strips of Japanese tissue to cover the padding and an archival adhesive are also needed. The polyester padding should be $\frac{1}{8}$ " thick to facilitate construction, since a thicker type would be difficult to handle. The height of the spacer will result from the thickness of the board and the additional thickness of the covering paper and should be roughly $\frac{1}{4}$ ".

To accommodate this kind of edge support, the frame must be made so that its lip will cover the edges of the art by at least $\frac{1}{4}$ " on all sides and so that the art will not come within $\frac{1}{16}$ " of the rabbet. Since the art will be so near to the rabbet, it is wise to line the rabbet of the frame with a vapor barrier such as an aluminum and plastic laminate. If the frame has a lip which is $\frac{1}{4}$ " wide, a spacer which is $\frac{3}{16}$ " wide can be made to be used under it.

This can be started by gluing the polyester padding to a sheet of conservation-quality board. When this is dry it can be cut into strips

on a paper cutter or with a knife and straight edge. These strips can be covered with Japanese tissue. Strips of tissue which are wide enough to wrap around the padding and board should be

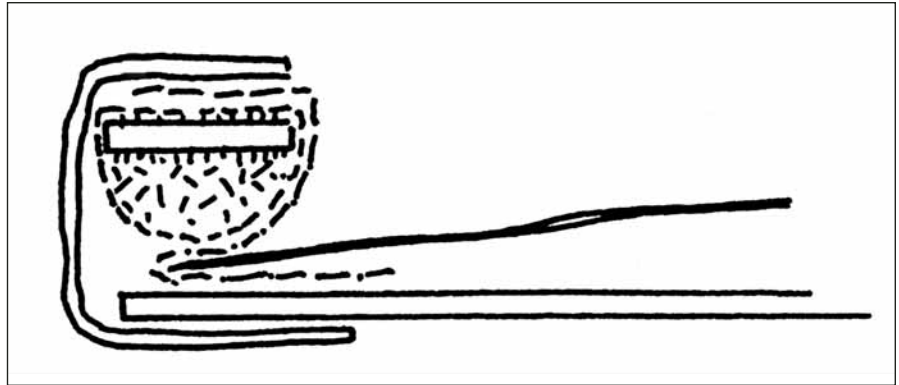


Figure 21

adhered to the board along one edge of the tissue, and when that has dried, the tissue can be pulled around the padding and adhered at its other edge to the board. An additional strip of Japanese tissue of the same width should be glued along one of its edges to the back of the board where the first strip has been attached. This strip will be folded around the spacer and folded back on itself so that it can form a trough which will prevent the art from slipping down or sideways and coming into contact with the frame. These strips should be allowed to dry so that any residual vapors from the adhesive will dissipate (Figure 21).

A back mat of four-ply conservation quality board should be cut so that it is slightly larger than the work of art. The spacers can then be mitered so that they fit the dimensions of the back mat and

taped to it along each edge with linen tape. The tape should be adhered to the board side of the spacer and should extend around its outside edge and be attached to the back of the back mat. This will allow the spacer to fold into place around the edges of the art.

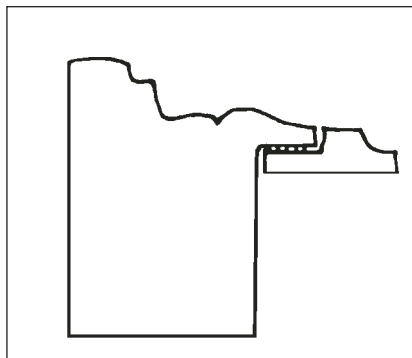


Figure 22

The second strip of Japanese tissue should be folded so that it covers the inside edge of the spacer and doubles back under the edges of the art. After the spacers have been dried and folded out, the art can be placed on the back mat and the spacers folded over its edges. Strips of linen tape can be placed over the miters at the corners run around to the back of the corners of the back mat to close the housing and secure the art.

If the housing has been properly sized, it should form a tray which gently supports the edges of the art and can be readily installed in the frame. This design is not one which will be needed every day, but can be very useful when problematic pieces need framing.

Using Fillets

THE WOODEN FILLET CAN BE AN attractive addition to a frame, but it poses a preservation dilemma. Even if the back of the fillet is sealed with a metal and plastic laminate, there is no guarantee that the face of the fillet may not emit harmful materials inside the frame package. Setting the fillet back so

that it is separated from the art by an inner mat which extends in for $\frac{1}{4}$ " can also be helpful, but this still leaves wood inside the package. The fillet can, however, be used outside the glazing to extend the lip of the frame and can become a valuable preservation tool.

Most frames on the market have a lip or rabbet width between $\frac{1}{4}$ " and $\frac{3}{8}$ ". This must hold the glazing securely and also provide enough room so that an adequate allowance (at least $\frac{1}{8}$ ") can be built into the frame to permit the expansion of the mat package if the relative humidity rises.

A lip of this size often leaves little room for error. If the glazing is cut to the same size as the mat package and is not cut off the frame, it will rest on the bottom leg of the frame. This means that it will rest on the bottom, and so while it may come within $\frac{1}{6}$ " of each side, its upper edge will be $\frac{1}{8}$ " from the top of the frame. This can be hazardous if the frame is lifted by means of its top, as any flexing can result in the glazing coming out from behind the lip. The addition of a fillet to the inside of a frame can increase this margin so that the necessary clearances can be maintained in larger frames. There are other problems as well which can be best addressed by a frame which has an extra wide rabbet or lip extension.

There are materials which have historically been framed without any window mat. In the Nine-

teenth century, many documents, such as decorated birth certificates, were framed between a piece of glass and a wooden backing with their frames coming over their edges. As harmful as this may have been, its role in the history of framing can not be ignored.

There are also works which have been done on heavy boards which may have been intended to be framed as if they were oil paintings or which may be so large that they can not be properly accommodated in a window mat. These thick boards can not be supported by tissue and starch hinges, and so another approach to framing them needs to be sought. Adding the fillet to the lip of the frame permits the site size of the frame to remain constant while the rabbet size can be increased to give the item being framed the room it needs.

In the Nineteenth century frames often had gilded liners built into them, which gives an aesthetic precedent for this use of the fillet. The most common was the flat and hollow pattern which can, at times, be found in multiple layers on the inside of some large painting frames. This same pattern is available as a fillet and can complement many profiles in current usage. Scraping off the coating which may be present on the bonding surface of the fillet will enhance its adhesion to the frame (Figure 22). It is generally safer to cut the fillet separately and add it after the frame has been assembled,

since it will be difficult to support from underneath during chopping or sawing of the framing itself.

One of the possibilities which an extended lip permits is the visual coverage of the edges of a work

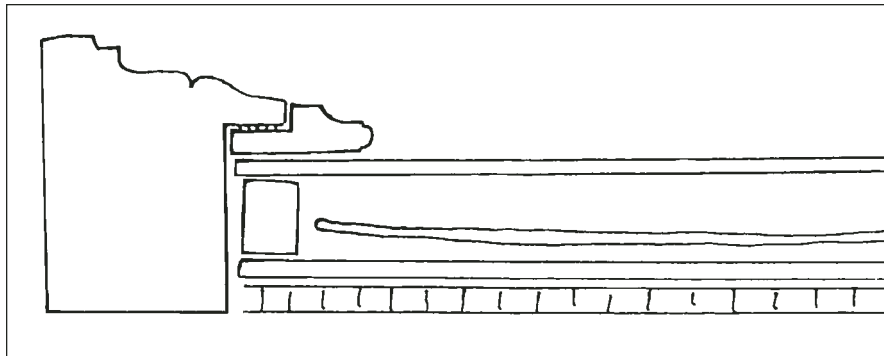


Figure 23

which may have been damaged, while the edges are actually kept at a safe distance from the sides of the rabbet. This can be accomplished by designing the frame so that its site, with the added fillet, will be small enough to visually cover the damage, and by hinging the work to a back mat which has been sized so that it will fit the frame and will permit a spacer to fit around the work without touching its edges (Figure 23).

Expanding the interior of the frame will also enable the use of techniques such as inverted “L,” paper-covered spacers, as described here and in the 1996 *PFM* Preservation Supplement. This type of spacer allows for the safe framing of such problematical items as pastels on board.

Oversize works which have been done on boards and which may be intended to be framed as if they were paintings can also benefit

from this use of a fillet. If such an item has a surface which will permit some contact with a spacer, the back side of the spacers can be lined with acid-free blotter paper to minimize its abrasive potential

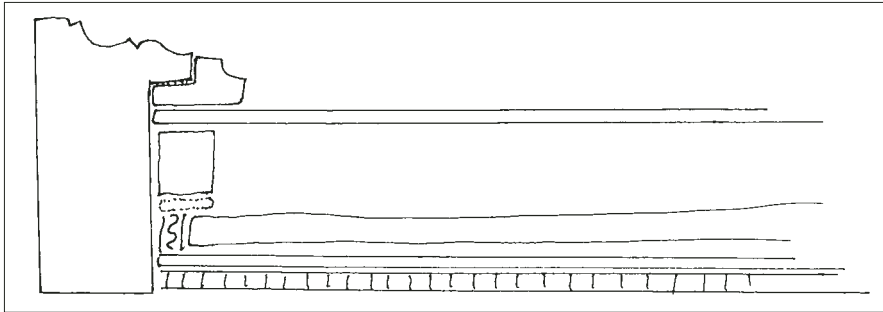


Figure 24

and the frame can be made large enough to permit the additional expansion which may be expected from oversize items.

To prevent the art from shifting in the frame, a layer of acid-free corrugated board can be placed between the edges of the art and the sides of the rabbet (Figure 24). This should hold the art during normal conditions, but should collapse in the event of a strong blow to the side of the frame or the expansion of the art caused by a rise in relative humidity in the frame.

Adding to the lip of the frame will provide this beneficial extra space without diminishing the strength of the frame. If the frame were rabbeted or hollowed out to create this space, it would be weakened. This extra space can enhance the opportunities for sealing the mat package since it gives greater coverage to the margins of the glazing where the seal will be applied.

Framers have made great strides stacking and layering mouldings to create more elaborate and dramatic frames. This idea can also be used to enhance the capacities of the frame as an instrument of preservation.

Conclusion

PERHAPS THE MOST EXCITING PART of preservation framing is its currency. The edge support techniques we may use today had not even been envisioned twenty five years ago. While we must ground our thinking in a knowledge of what has succeeded in the past, we must also maintain a constant effort to improve and extend our efforts.

Each of us can contribute designs and techniques and assess their performance over time. Framers are curious and inventive. When these impulses are tempered by self criticism and a submission to criticism of others, each of us can share in a future in which each generation can pass on materials from the past in a more perfect state of preservation.

Much of the information printed here was published earlier by Picture Framing Magazine in its Annual Preservation Supplements and monthly Preservation Practices column authored by Hugh Phibbs. Back issues and articles are available at www.pictureframingmagazine.com.