Everyday, in libraries across the world, our cultural heritage—the essence of civilization—is slowly disintegrating. This is not the theme of a sci-fi movie plot. Instead, the problem lies in a simple change that actually helped to increase access to the information found in books.

Nineteenth century paper manufacturers unwittingly created a nightmare for librarians when they switched from using cotton or linen to wood pulp. Although the new less expensive manufacturing process made books more affordable and accessible, the process left an acid residue that, over time, breaks down the paper fibers, creating brittle pages which eventually crumble to the touch.

While we can't turn the clock back and bring brittle books back to life, there are treatments available—singly or in mass quantity—to deacidify or neutralize books that are not yet brittle. In January 2001 the University of Iowa Libraries began sending their newly acquired English language publications from South Asia to Preservation Technologies in Cranberry Township, Pennsylvania for mass deacidification treatment. Preservation Technologies uses a process called “Bookkeeper”. The Bookkeeper technique deposits magnesium oxide particles that neutralize the acid and leave a protective alkaline reserve.

Limits on budget demanded treating a
targeted area. “We decided to go with incoming rather than older material,” Ed Shreeves, Associate Director, University of Iowa Libraries stated. “Treating material as it arrives is more efficient and greatly reduces future costs.”

The majority of United States publications are now being published on acid-free paper meeting national permanent paper standards, as are most publications from developed countries. The publications of developing countries are a mixed bag—publications may be printed on high quality long lasting or on highly acidic paper. The University of Iowa Libraries’ program focuses on South Asia because its publications have a significantly high percentage (65-75%) of acidic paper. Similarly, current titles from Africa, South America and other parts of Asia are often published on acidic papers that would benefit from treatment.

Susan Hansen in the Preservation Department tests each book to distinguish safe alkaline material and unsafe acidic materials. The test is based on the pH of the material. Susan pencils an infinity symbol (∞) on those books passing the pH test—levels of 6.8 or above—and sends them on for shelving. The books needing treatment are packed and sent to Preservation Technologies. Each treated volume has a label attached by Preservation Technologies. The labeling of the books that pass the pH test and the books treated by Preservation Technologies allows staff to monitor the condition of treated and untreated books on a long-term basis.

Decades from now faculty and students researching and studying South Asian topics will greatly benefit from today’s mass deacidification program. They will be able to use deacidified books that do not crumble to the touch.

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Grinnell College Libraries is a four year, liberal arts college located in Grinnell, Iowa with an enrollment of about 1,300 students. Grinnell recently celebrated its sesquicentennial, and so materials in our collection generally do not predate the mid-to-late nineteenth century. We have a separate science library, and our archives and special collections are located in the same building with our main circulating collection. At Grinnell College Libraries, we began to think seriously about the role of preservation in our daily operations after individuals from monographic and serial binding, processing and repair, and cataloging attended a 1989 Library Binding Institute (LBI) conference in Seattle.

Sending representatives from a number of areas within the library to the LBI conference gave us the background we needed to restructure our organization and to replace materials and practices with those that conformed to the Library Binding Standard (8th edition)\(^1\) and the principles of reversibility. It was also an important factor in infecting the larger group with enthusiasm for the many changes we were preparing to initiate over a short period of time. Preservation, especially in the small organization, must be part of the routine and mindset of every individual on the staff. Staff members in all areas handle collections, whether preparing exhibits, cleaning the building, preparing material for shipping to another institution, working with shelving, photocopying, or preparing other kinds of storage. Knowledge and understanding of preservation practices is important whether the staff member is the director of the organization, a student assistant, volunteer, full or part-time employee.

The National Institute for the Conservation of Cultural Property states that collections care must be fully integrated into the daily life of all cultural institutions\(^2\) in so far as they participate in the activity of preserving the national heritage. Collection surveys undertaken by Franklin & Marshall, Amherst, and Grinnell College librarians confirm the role small collections play in this mission. The surveys showed that college library collections are often in better condition than those of large research libraries and that the overlap with other collections nationally was much smaller than one might have expected.\(^3\) Survey results demonstrated the importance of our

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by Rebecca Stuhr, Jean Reavis and Sheryl Bissen
collections to the nationwide effort to preserve the written word, and thus our responsibility to maintain these collections into the future.

To accomplish our goal of introducing a full-fledged preservation program into our operation, we appointed one person to coordinate preservation activities. This assignment fell to the collection development librarian following the model at Franklin & Marshall College, and based on the premise that decisions of what and how to preserve material effect the shape of the library collection and are effected by the mission of the collection. The collection development librarian at Grinnell College Libraries supervises acquisitions and serials which includes binding of serials and monographs. Incorporating preservation into this position changes its nature, broadening its scope to collection management.

Our transformation into an institution where preservation is an integral part of our operations included the reconsideration of how our materials would be processed, shelved, stored, and kept clean, a review of our environmental conditions, the selection of a new bindery accompanied by the revising of our monographic binding policy, and the institution of a brittle books review operation.

The brittle books review is part of the overall condition review that takes place as books are returned to the circulation desk. Circulation assistants set aside books that need repair. Those items are sent to the processing and repair area where the library assistant in charge determines whether a book can be treated in-house or must be sent out to the bindery. Books that cannot be treated in-house but are brittle, or appear to be unique or valuable are sent to the preservation librarian for further review. At this stage books are examined for brittleness and frequency of circulation, relevance to the collection and presence in other Iowa collections. The availability of a replacement is then determined. A book might be replaced by a reprint, new edition, preservation photocopy, or through an out-of-print search. If the item cannot be replaced, or if use is limited it may be returned to the shelf in a phase box or other storage device.

All processing and repair of materials includes the evaluation of products used (papers, glues, pockets) for reversibility and appropriate pH level. Staff and student assistants are trained in how to handle books in a nondamaging manner whether packaging books for transport to binderies or other lending institutions, shelving, processing new books, or repairing older books.
Besides these components of establishing and operating a library preservation program, other areas of the library incorporate preservation into the daily routine. Circulation workers identify items to be sent for assessment in processing and repair. Interlibrary loan staff must determine if an item is either too valuable or too fragile to be shipped out for use at another institution. Collection development and acquisitions personnel need to take condition and possible storage or treatment issues into consideration when purchasing out-of-print books or accepting gifts.

At the Grinnell College Libraries, we made changes to the routine handling and processing of material with little additional cost. The everyday processing of material, binding budgets, janitorial services, exhibit cases and individual storage devices, purchase of microfilm or microfiche to replace newspapers are often part of an existing budget. Heating and air conditioning are generally, but not always, already operational, although modifications and enhancements may be necessary. These elements constitute efforts and expenditures for preservation. Additional money may be needed for investment into appropriate repair supplies, some small pieces of equipment and appropriate tools (a small book press, rubber mats, bone folders, cloth tape for tying, book cloth), the retraining of employees, and ongoing attendance at workshops and conferences. A major reallocation of financial resources is not a requirement for a solid preservation program that encourages the continued good health of a collection. Gaining the commitment to and an acceptance of the principles of preservation on the part of every member of the library staff will be the single most important factor in whether an institution succeeds or fails in their preservation endeavors.

Routine use of protective enclosures is an important part of any library’s preservation activities. At Grinnell College Libraries we use a variety of enclosures including music-score binders, archival folders, custom clamshell boxes, phase boxes, pam binders, and four flap enclosures. Four flap enclosures are used throughout our library collection but primarily for two categories: material going into our East Asian Collection and material selected through the brittle books review process.

Books in our East Asian Collection come in a variety of nonstandard heights. The paper is extremely lightweight, and spines are often sewn, but have no additional supportive material. Many of these books will fold immediately under their own weight if shelved upright and so require supplementary support. We want to preserve the traditional string bindings and decorative papers that cover many of the books in our collection, and so commercial binding is out of the question. We have found the most effective way to protect these books is to house them in custom-made four flap enclosures. The heavier outer boards of the enclosure provide the necessary support for the material to stand undamaged on the shelf, and the lighter weight four flap inner folder encloses the item to protect it from sunlight and environmental pollutants. The snug fit protects the item as it is moved on the shelf or in circulation. No sewing or stapling is necessary so nothing is done to alter the existing condition of the book. The enclosures have an 8.6 pH level and

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**Measuring for custom four flap enclosures:**

Often works needing custom four flap enclosures are quite old and cockled making it difficult to accurately obtain a good measurement. Measure the length and the width of the book and if it is at a 16th of an inch go to the next 1/8-inch. To measure the depth or thickness of the book, lay it flat on a table. Lightly place your hand on the top cover, measure the thickness of the spine and then the fore edge by standing a ruler up on end on the table top, first against the spine and then at the fore edge. Use the measurement that is greater to create a good fit for each volume.

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**UPS email confirmation of shipments**

is now available including expected delivery date and optional on-line tracking. To take advantage of this service, include your email address with your LBS or Archival Products order and request UPS on-line tracking.
include a 3% calcium carbonate reserve. This buffering is important because of the acidity of most material in the East Asian Collection. As yet we have no deacidification program at Grinnell College.

We use four flap enclosures for the following kinds of East Asian material:

- traditional string bound books with spines one inch or narrower
- adhesive bound or sewn through the fold books with spines one inch or narrower and with lightweight or fragile paper
- paperbacks with damaged covers, brittle or fragile paper, thin spines, and lightweight construction that will not support themselves when shelved upright.

Protective covers are chosen for books going through the brittle books review if they are in poor condition but do not circulate frequently. We choose either a phase box or a four flap enclosure. We prefer phase boxes for the larger books, and four flap enclosures for the smaller items.

Although we often choose four flap enclosures for the smaller items, we've enclosed several small volumes together into one enclosure of nearly two inches in thickness. We've also used four flap enclosures for discreet collections of posters, large music scores, groups of maps (both open and folded) and letters. The height, width, and depth dimensions are limited only by the ingenuity of and the construction material available to the technician creating the enclosure. The largest four flap enclosure we have requested to date was made for a collection of posters, measuring in inches 26 (h) x 19.5 (w) x .25 (depth). These, along with a slightly smaller item, a music score, measuring 24 (h) x 21 (w) x .25 (depth) are not shelved upright but are laid flat on special oversized shelving.

Ready made folders come multi-scored so that they can be adjusted to fit the item snugly in all dimensions. We have our folders custom made to an exact fit, and so the inner flaps are only scored once. To enclose an item, we open the outer boards, and all flaps. The item (or items) to be enclosed are placed in the center of the flaps with the item's spine toward the spine.
of the enclosure. The flaps are folded in beginning with the top flap, then by the bottom, right, and finally the left flap. Once on the shelf, enclosures are indistinguishable from other books. The spine is covered in a light green C cloth. The outer boards come up over the top of the enclosure similarly to that of a book binding. We place barcodes on the inside of the outer board, rather than on the book itself. Call number and other identifying labels fit easily on the back spine of the folder.

To process each individual item for the shelf after it has been cataloged, we do the following: for East Asian material, we pencil in the romanized form of the book’s author and title and apply the property stamp on the title page. On the following page we pencil the catalog number and stamp the date of processing. We then insert the tattle tape. To the folder we adhere a spine label for the call number and place clear tape over the call number label. The call number is formatted from Innopac, our in-house integrated library system. We paste a bookplate on the upper left corner of the inside cover. A barcode is attached on the uppermost flap, centered along its top edge. Although it is possible to attach Velcro dots to the inside cover and the uppermost flap, we have not found this step to be necessary to ensure proper closure of the folders.

We prefer to attach our title labels to the enclosure spine. However, if the spine is not wide enough, we will attach the label to the front cover. The title labels can be printed in most languages, including Chinese, by using NISUS Word Processor software on a Macintosh. For Chinese language titles, the characters are arranged vertically. The NISUS software can also create graphics. We use this feature to draw a box around the Chinese characters. This gives the label a professional look and serves as a guide for standardized sizing and appearance.

The unique nature and generally sound condition of the collections of small college libraries requires careful handling. We place barcodes on the inside of the outer board, rather than on the book itself. Call number and other identifying labels fit easily on the back spine of the folder.

Processing books for mass alkalization

The University of Iowa Preservation Department is currently participating in a CIC cooperative program to alkalize bound books. Preparation for shipment of books to the Preservation Technologies plant includes the following steps:

**Sending**

- Receive books from the marking department.
- Spot test each book for alkaline paper using the Abbey pH pen with a trial swatch on the tail edge of the book. Suspect positives should be checked in a corner of a last printed leaf.
- Record separate counts for alkaline paper books and acid paper books.
- Mark alkaline paper books in pencil in the gutter margin of the lower board opening. Mark an infinity sign plus the date of the spot test.
- Return alkaline paper books to normal processing flow (to circulation).
- Shelve acid paper books in book repair area until 375-400 books are gathered. Charge out from the library and generate a packing list. Confirm shipment count.
- Choose a duplicate (discard) book to use as a control volume. Cut the book in half using the guillotine. Retain one half, clearly marked with shipment number. Pack the other half for shipment.
- Pack acid paper books in the plastic totes following Preservation Technologies (PT) guidelines.
- Prepare pallet and advise shipping department of the need for a pickup.

**Receiving**

- Unpack books from plastic totes. Store totes for future shipments.
- Verify shipment count.
- Check in books for shelvable condition and the presence of the PT treatment label.
- Send books to acquisitions department for online alkalization note.

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libraries mean that it is essential that we do what we can to preserve these collections for the long term. An enthusiastic and well-informed staff will make the transition to using appropriate materials and practices a smooth one. Making use of readily available technologies such as protective covers, including the four flap enclosure, is a significant element of our preservation routine and has proven to be a cost efficient, practical and successful method for extending the life of a valuable segment of our circulating and noncirculating collection.

BIBLIOGRAPHY

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