

**The Medieval Girdle Book
and
Advanced Paper Conservation Workshops**

**Amigos Fellowship Final Report
December 2004**

Submitted by

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Detail of 15th century painting

With the kind support of Amigos Library Services I was able to attend two courses in 2003 which were extremely important to my professional and personal career development. One, a week-long workshop in the history and construction of the medieval girdle-book, the other a week-long workshop in advanced paper conservation.

THE MEDIEVAL GIRDLE-BOOK

The town of Montefiascone

In August of 2003 I returned to the small Tuscan hill-town of Montefiascone, 80 miles north of Rome, full of anticipation of a week filled with medieval history, and anxious to learn about the development and construction of a rare book format, namely the girdle-book. Having worked as hand bookbinder for nearly thirty years and being especially intrigued by early and medieval book structures, the girdle-book was a topic eminently suited to my interest as librarian and hand bookbinder.

Three years before I had been in Montefiascone during my sabbatical leave for 2 weeks on another training course in the series of workshops of the Montefiascone Library Project organized by Ms. Cheryl Porter of London. Montefiascone, once a very important town where popes and church leaders came for rest and relaxation at the Rocca di Papa, the fortified castle at the town's highest point, as well as to avoid certain unpleasantnesses that beset the Holy City of Rome, is a most accommodating and welcoming town. It offers the visitor a variety of pageants, festivals and other ways to enjoy a spirited stay. Montefiascone claims some of the finest wine in the region, Est! Est!! Est!!!, which was the undoing of a prelate on his way to a papal coronation several hundred years ago. My previous sojourn in Montefiascone had been a most successful one in which I was one of 14 participants from 12 countries to learn about and construct a very early Coptic-type binding in wooden boards.

In 2000 the course was conducted at the Seminario Barbarigo, now a school for young boys, but previously a seminary for priests. Its library with many important early and special materials had quite deteriorated due to neglect and a lack of funds, until Ms. Cheryl Porter had made it her project to attract bookbinders, preservationists and volunteers to come and help restore some of the infrastructure, as well as begin to catalog and inventory the collection.

Medieval girdle-books are little known even amongst knowledgeable people who work with books and are entrusted with their care. I had become interested in them some time ago after reading about an exhibition that featured one of these rare objects. Seeing that a class in the history and construction of the girdle-book was offered I enrolled immediately, especially since it was being taught by the same teacher I had had three years before, and in the same town.

Due to various circumstances at the Seminario, the course in 2003 was taught in the basement of the local public library, a building dating from the mid-16th century with two-foot thick walls and stairs that had been trodden by thousands upon thousands of feet - their use having left deep indentations in the center of each riser.

The location in the basement was a great advantage, as it was cooler than the classroom at the Seminario had been. The heat of 2003 had arrived in Montefiascone with a vengeance; temperatures soared there and all over Europe, preventing some trains and buses from running, making people languid and irritable, and sending us students scramble to Lago Bolsena, a few miles by bus from the town, every afternoon as soon as class was over. Although class was over, our conversations ranged over the just-learned material and over other, book-related topics.

History of the girdle-book

The distinguishing feature of this book format is its long extension of the leather cover along the lower edge of the book, which allows it to be carried by hand, or be tucked under the belt, held there by a large knob or hook incorporated into the overhanging leather. Judging by contemporaneous representations in paintings, sculptures, drawings and in verbal descriptions the majority was made between about 1450 and 1650, mainly in what is now Germany, the Netherlands and England. Only about two dozen still exist, making it a very rare witness to medieval life between six hundred and seven hundred years ago.

In the development of the book from clay tablets and scrolls to the codex format, the girdle-book plays a small role, but as a distinct format it represents an important part of this evolution. Girdle-books had many uses, but in most instances they are shown in the hands of religious persons, e.g. monks used them to keep their hands free during work but with easy access to the required prayers books that were tucked into their cincture. Knights, ladies, gentlemen, and persons of the law are depicted with girdle-books especially when traveling. Symbolic uses show them with apostles saints, popes, royal personages, the Virgin Mary, and evangelists. The girdle-book combines in one ingenious design a handy way to have a book ready for use, to store it and to protect it.

They are represented in painted altars, in carved church pews, on tombstones and on reliquaries, in woodcuts of the 15th century and in etchings/engravings of the 17th century - yet today only twenty-three known examples remain, in libraries, museums, and private collections. In the United States The Newberry Library in Chicago, the New York Public Library and Yale University each owns one example, the others are in Europe. Most of the twenty-three girdle-books contain religious texts, however four are legal texts. Eleven are parchment manuscripts, seven are paper manuscripts and five are printed works. Nineteen of the girdle-books originate in the fifteenth century and the remainder date from the sixteenth century. They are in collections in Austria, Germany, the Netherlands, Denmark, Sweden, Estonia, Poland and England.

The earliest depiction to date of a girdle-book occurs in Kassel (Germany) in the 2nd half of the 14th century, the latest is shown in an illustration of the Augsburg Interim, in 1548. Others will surely be found that extend the date range beyond what is known at this point. A sort of proto-type of the girdle-book is found on the tombstone of one Jeanne Brichard,

dated 1312 in Paris, France. A rosary hangs from her right arm, from the left arm hangs a book, in the general shape of a girdle-book but suspended through a very long loop over the arm, with the book ending just above her left knee.

On the whole girdle-books were small in height and width but quite thick, which made them easy to handle and just the right size to cradle them in the open hand. They cannot have been too heavy as they would otherwise have pulled too much on the supporting belt.

As I began research into the girdle-book before taking the course, I was struck by the dearth of material regarding this fascinating object. The majority of articles on the topic are in German, with Ursula Bruckner's listing and description of the books standing out as the most complete. Several articles by J. A. Szirmai, author of the excellent *Archaeology of medieval bookbinding* provide information about individual volumes, and he sets out a most useful pattern to follow for investigating and documenting the books. One finds contributions by the authors Otto Glauning, Hugo and Lisl Alker, and Jean (Hans) Loubier, though their concern is mainly with the occurrence of visual representations of the girdle-books. Lists of sculptures, prints, paintings, etc. have been compiled that show the books in the hands of various personages – including in the hands of the devil!

The need for a comprehensive inventory and description of the surviving girdle-books has been commented on by the above writers. However, to date no publication exists that brings together past research and illustrations of all existing examples. In 1890 only four girdle-books were documented Adam, 13 and 14 are mentioned respectively in 1926 by Loubier and Glauning and by 1995 the now documented twenty-three examples are listed by Ursula Bruckner. The list of representations in the visual arts has in the meantime grown to nearly nine hundred instances. Girdle-books may be stored in libraries without being recognized as such because the pouch part was often cut away to facilitate storing the books on shelves. Only careful and detailed study can reveal these examples.

Because of the terminology used to describe them some confusion exists as to how many girdle-books really still exist. The German word Beutelbuch (pouch book) is sometimes used interchangeably with Buchbeutel (book pouch) – two concepts which clearly describe two different items: pouch book is a more accurate description of the book than book pouch – by which one would envision a separate pouch into which the book was dropped. Only the English expression girdle-book connects the book with the girdle (in German Guertel), in this case referring to a belt or cincture. In a majority of representations the book is carried by hand, grasping the leather extension of the binding.



St. John the Baptist, Strahow near Prague (Czech Republic), 2nd half of 15th century

Construction of the binding:

Bindings of girdle-books fall mainly into two categories. In the book with a primary binding only the cover has been extended on the lower end of the book and is simply a continuation of the leather covering the boards. It can end in a knot, or a Turk's head, can have a hook, can be tied off with a thong of leather or be threaded through with a thin leather strap to be pulled through the belt.

The second category consists of the book in its primary binding with an additional detachable or undetachable jacket. This secondary binding is constructed after the volume is bound and the book is slipped into it or glued to it. The purpose of the extended leather skirt, or the additional cover being in each case to keep the book clean, free from rain, sleet and snow and free from dust. Of course it also denotes a certain wealth of the owner as much more leather is needed for its construction, and is sometimes embellished with finely wrought clasps, bosses and closures. In several cases there is evidence that the girdle-book was given as a wedding present to the bride. A detachable secondary covering could also have been used interchangeably with another volume of the same size.

The girdle-book we constructed during the course in Montefiascone is of the second type. The aim of the course was to produce a book close to specifications of the one held at Cambridge University Library but incorporating elements of other examples as well.

Before coming to the class in Montefiascone course participants had to construct a book of the correct size to fit the pre-cut pine boards for the covers. The recommendation was

for 140g/sm acid-free off-white or antique good quality drawing paper, folded into 23 signatures of 102 mm height and 77 mm width with a sewn thickness of 50 mm. Sewn with good Irish linen thread on three 3-mm wide leather supports in a double hole single sewing, once erroneously called the Flemish style.

I chose to take along two pieces of my own leather, one dark brown the other lighter in color, both fine quality goat skins with a distinct grain. Each bookbinder has a specific set of tools he is used to that travels along to workshops. One feels like a journeyman rolling up one's tools in a pouch and tying it up with a leather strap, ready the next day for another day's work.

The first day of the seminar was spent going over the history and construction of girdle-books with a slide presentation to illustrate salient points and emphasize various binding steps we were preparing to undertake.

The hands-on part began by attaching (lacing) the boards onto the sewn volume. After chamfering the edges of each board to give them a slightly softer shape, a small chisel is used to prepare the double slits in the pine covers through which the leather supports on which the book is sewn, are pushed; this produces a very strong attachment of boards to book. Measuring, marking, chiseling out the wood, and finally lacing the thongs through took the better part of the day, but by the end of it the volume was taking on a pleasant handy shape. Learning how to construct the correct type of medieval corners was next and at the end of the day the primary covering of the book was complete.

Normally, when binding a book in leather the hair side is on the outside. This primary cover, however, was made with the flesh side of the leather out thus providing a better bond with the secondary cover that was constructed with the flesh side in, making the whole ensemble less slippery by giving it a good grip.

After carefully examining the prepared books for any weaknesses of construction the leather was measured for the secondary binding. Its distinct shape covers the book completely on all four sides when closed, and thereby provides excellent protection. Twice as much leather, and sometimes more depending on the size of the extension, is needed for the secondary cover as for the primary cover to allow for the overhanging skirt part of the binding.

As with all bookbinding by hand exact measuring, cutting and sewing are extremely important and affect not only the appearance of the final product, but its function as well. Learning several new ways of stitching leather to leather to prepare the secondary binding helped us reconstruct the exemplar as closely as possible.

For me one of the most difficult parts of the binding was learning how to make the Turk's head, the woven knot that holds the book attached to the belt. Weaving the leather strips supported on the handle of a hammer and adjusting them to the correct tightness demanded much practice and was therefore very time consuming.

The final step was to attach the clasp to the back cover by cutting slits in the secondary binding and lacing the leather strip with the clasp through them. The thorn, the counterpart to the clasp, which had been hand-forged out of brass, was attached to the front cover by drilling a shallow hole and inserting the piece of brass shaped to receive the clasp.

Some of the students chose to use white, undyed leather and we all learned about and experimented with various dye stuffs, all of them natural materials such as barks and lichens. Often medieval books were made with brightly colored leathers and the students who dyed their covers pink, red and green came away with some very cheerful books. At the end of the week the girdle-books were ready and we proudly displayed them to each other.



My girdle book opened showing the construction of the secondary binding and the pockets into which the book is placed.



My girdle-book showing the primary covering in light brown (flesh side out) and the secondary cover in dark brown leather (flesh side in). Note the construction of the medieval corners, and the laced-in leather supports on which the signatures are sewn. End-sheets on this side are left unpasted to show the construction of the book.



The closed girdele-book

Evaluation of the course

The week had passed quickly, we had been immersed in our work, and every participant had come away from the workshop with a good understanding of the purpose, the history, the construction and the use of this unique type of medieval book. Our instructors, Dr. Nicholas Hadgraft, a specialist in early and medieval book structures, and Mr. Jim Bloxam, of Cambridge University Library were excellent teachers with extensive knowledge of the history, development, significance and current research into the girdle-book. Since the workshop I have spoken informally with many colleagues about this fascinating medieval book format and am slated to participate at the Iowa Conference of the Future of the Book in Iowa City in July of 2005. In addition, I prepared and exhibited a poster board at the University of San Diego's International Week's Fair, highlighting projects that had been supported by the University's Internationalization and Interdisciplinary Development Committee, who kindly supported my attendance at the Montefiascone and Ascona workshops.

Further plans

As a direct outcome of this workshop I have decided to begin the Medieval Girdle-book Documentation Project.

I have recently been notified that the University of San Diego has awarded me a Project-based Professorship for the 2005-2006 academic year, which will provide some funding and release time from my position as Head of Cataloging and Preservation Programs at Copley Library to pursue the project of documenting the remaining girdle-books.

My aim is to visit all locations where girdle-books are housed, to describe them in bookbinding terms, to photograph them and obtain background information as to their provenance, their makers, places of manufacture, etc. The instructor of both courses in Montefiascone, Mr. Jim Bloxam, Senior Conservator at the Cambridge University Library will collaborate with me in this endeavor with the stated goal of publishing an inclusive listing with illustrations, of the remaining 23 examples. As of this date no such comprehensive resource exists and our joint work will fill this gap in the literature of bookbinding.

Finally, I would like to express my gratitude again to AMIGOS Library Services, who were generous in their support of my pursuit of the medieval girdle-book.

References:

(Please note that my mother language is German)

Adam, Paul. **Der Bucheinband. Seine Technik und seine Geschichte.** Leipzig, Seemanns Kunsthandbuecher, 1890.

Alker, Hugo and Lisl. "Beutelbuecher in Oesterreich", in **Gutenberg Jahrbuch**, 1955.

Alker, Hugo und Lisl. "Beutelbuecher aus Oberoesterreich", in **Gutenberg Jahrbuch**, 1956.

Alker, Hugo and Lisl. "Unbekannte Darstellungen von Beutelbuechern aus Wiener Sammlungen", in **Gutenberg Jahrbuch**, 1957.

Alker, Hugo and Lisl. **Das Beutelbuch in der bildenden Kunst. Ein beschreibendes Verzeichnis.** Mainz, Verlag der Gutenberg-Gesellschaft, 1966.

Alker, Hugo and Lisl. "Das Beutelbuch in der bildenden Kunst. Ein beschreibendes Verzeichnis: Ergaenzungen", in **Gutenberg Jahrbuch**, 1978.

Bruckner, Ursula. "Beutelbuch Originale", in Richard Landwehrmeyer und Hans Erich Teitge, in **Studien zum Buch- und Bibliothekswesen**, 1995.

Bruckner, Ursula. "Das Beutelbuch und seine Verwandten – der Huelleneinband, das Faltbuch und der Buchbeutel", in **Gutenberg Jahrbuch**, 1997.

Glauning, Otto. "Der Buchbeutel in der bildenden Kunst", in **Archiv fuer Kunstgewerbe und Gebrauchsgrafik**, 1926.

Loubier, Jean (Hans). "Ein Original-Huelleneinband in Goeteborg", in **Werden und Wirken: ein Festgruss Karl W. Hiersemann, zugesandt am 3. September 1924 zum siebzigsten Geburtstag und vierzigjaehrigen Bestehen seiner Firma.** Leipzig, K. F. Koehler, 1924.

Neumuellers-Klauser, Renate. "Auf den Spuren der Beutelbuecher", in **Gutenberg Jahrbuch**, 1980.

Neumuellers-Klauser, Renate. "Beutelbuch-Darstellungen in der Kunst der Spaetgotik", in **Anzeiger des Germanischen Nationalmuseums**, Nuernberg, 1996.

Oppitz, Ulrich-Dieter. "Weitere Spuren von Beutelbuechern", in **Gutenberg Jahrbuch**, 1993.

Oppitz, Ulrich-Dieter. "Weitere Darstellungen von Beutelbuechern und Huelleneinbaenden", in **Gutenberg Jahrbuch**, 1995.

Szirmai, Janos A. **The Archaeology of medieval bookbinding**. Aldershot, Ashgate, 1999.

Szirmai, Janos A. "The archaeology of bookbinding and book restoration", in **Quaerendo**, 26/2, 1996.

Szirmai, Janos A. "Ein neu-aufgefundenes Beutelbuch in Berlin, in **Gutenberg Jahrbuch**, 1990.

Szirmai, Janos A. "The girdle book of the Museum Meermannno-Westreenianum", in **Quaerendo**, 18, 1988.

THE ADVANCED PAPER CONSERVATION WORKSHOP

After the week in Montefiascone I traveled to Ascona in Switzerland where I had registered in an advanced workshop for paper preservation. This, too, was not a new location for me as I had spent nearly 8 weeks here in 2000 as part of my sabbatical leave. At that time I attended four workshops at the well-known Centro del bel libro, which is divided into the Department of Book Design, and the Department of Preservation and Restoration.

One of the courses I had taken in 2000 was the basic paper preservation workshop and now I was eager to extend my knowledge and add to my skills with the advanced course.

The town of Ascona

Ascona is situated in the south-easterly section of Italian-speaking Switzerland, on the northern end of Lago Maggiore, just west of Locarno. It is a renowned resort area with a mild climate, palm trees and tropical flowers, and is surrounded by towering mountains.

Music and the arts are important components of life in Ascona, as are beautiful churches, and fine food with an emphasis on locally grown vegetables and fruits, and locally produced breads, hams and cheeses. Once a year, in the fall, the town holds its chestnut festival, when all foods sold in open-air stalls along the lake front have chestnuts as their main ingredient.

In the evening music streams out of restaurants and cafes, mostly live ensembles playing every type of music from folk songs to jazz. It is truly an international environment with a lively mix of visitors who enjoy this beautiful town, strolling its narrow streets and lake shore till all hours of the night.

As in Montefiascone, the heat was unrelenting, and again, as in Montefiascone, the lake offered a place to cool off.

The Paper Restoration Course

Since classes at the Centro del bel libro are kept very small, on the average no more than 6 participants are admitted per session, there was excellent interaction between the teacher, Ms. Renate Mesmer and her students. All students had brought various paper objects to repair; I had taken two etchings and three engravings of different sizes that needed mending, cleaning, in-filling of missing areas, and resizing.

The course over five days was structured to cover the following areas:

1. Properties of cellulose and the chemistry of paper
2. pH measuring
3. Repairing tears and missing areas
4. Paper washing techniques

5. Dry methods of paper cleaning
6. Bleaching
7. Undoing old repairs
8. Removal of pressure adhesive tapes
9. Fixing of colored materials (pencils, pens, stamps, etc.)
10. Tricks of the trade
11. Review of the literature

Each segment was introduced through discussion, a slide presentation and questions and answers before the hands-on work could begin. The Restoration and Repair Department is equipped with the latest equipment and materials all of which was at our disposal.

My main objective was to work on as many of the prints as I could, of which an 18th century intaglio print from England, a 19th century etching of Italy and a 19th century engraving of the church where I was married were the most important. All three needed cleaning and lent themselves to the various options of wet and dry cleaning and some bleaching.

Cleaning began with the dry methods of using soft brushes, and special erasers to gently loosen the dirt. We learned to treat very small areas at first and do all erasing towards the edges of the materials with light strokes. Properties and uses of several types of erasers were explained, as well as the powdered erasers which are moved around the paper with one's fingers. These are especially useful when working on thin papers and delicate images.

Washing paper

I used three washing techniques with my prints.

The first is a "floating bath" by which the object, slightly moistened on the back with a mixture of water and ethanol supported on a piece of spun polyester material, is placed on the surface of the water and remains there. This loosens some of the dirt gently and is very suitable for delicate materials where the surface should be kept as dry as possible. Afterwards the object is placed on a piece of blotter, and the loosened dirt is taken up with another blotter. The print was left to dry overnight on a drying rack.

The second technique is total immersion of the print in lukewarm water with the print supported on a sheet of spun polyester material. To make the object more absorbent it is sprayed with a mixture of deionized water and ethanol beforehand. Not much water is needed in the tray, just enough to cover the object completely. After about 25 minutes some of the dirt had been loosened and was being washed away when the water was agitated gently. The water was changed and this step was repeated four times until the water remained clear. The print was placed on a blotter and left to dry on the drying rack.

The third technique is capillary cleaning of paper and I quote from a description by Judith Chantry in **Paper Conservation News**, No. 68, December 1993 in which she describes a capillary cleaning unit developed by Zajicek and Tinwell of the State Library of South Australia.

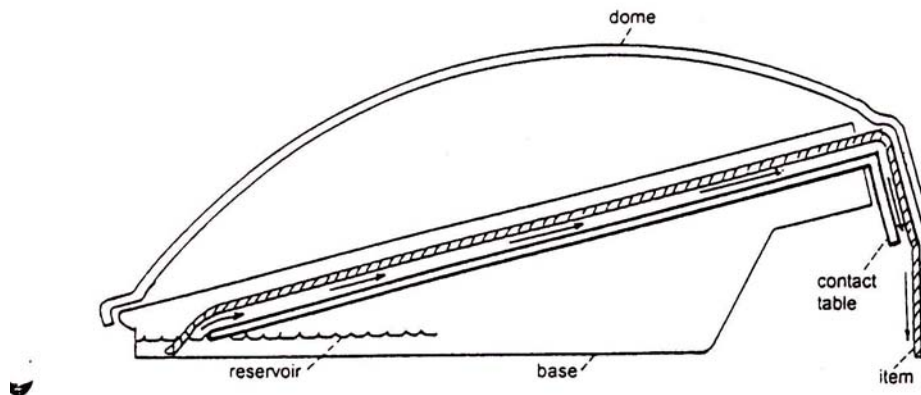
It was used there mainly to soften adhesives or backing materials, but it works equally well for cleaning the object:

“It (the three part unit) consists of a moulded clear PVC base which acts as a reservoir, a contact table of Perspex acrylic sheet and force-blown acrylic dome-shaped lid. A series of holes are pierced through the lid at strategic intervals to prevent formation of condensation and permitting air movement within the chamber whilst maintaining a constant humidity.

In use, a sheet of filter paper is laid on the contact table which is placed at an angle in the base reservoir of water. The end of the paper not immersed is led over the curved top edge of the table and trimmed to a tail (its dimensions and shape being dictated by the size of the object to be treated and the speed at which the operator wishes the wash water to flow) and this tail is led to a receiving beaker or other suitable container. A layer of synthetic cloth is wetted and laid on top of the filter paper then rolled flat; its free end is trimmed to match the filter paper tail. If required the pH of the wash water can be adjusted with calcium hydroxide.

The item to be treated is supported on polyester film, relaxed, then laid onto the contact table and gently assisted to make total contact with the paper/cloth interface. Care must be taken to ensure that no air bubbles remain or dirt will gather round these areas and become difficult to remove. Within two to three hours there should be signs of softening and/or separation, at which point the document can be removed from the contact table ... The document can be returned to the contact table to continue the cleaning process and, once clean, put on to felts to dry or laid straight onto a prepared backing.”

Please see illustration below which accompanies the above excerpt.



I used this technique with one of my prints and it functioned remarkably well. Through the capillary action of the polyester support the wash water moves along below the object and as it does it dislodges and transports impurities away from the paper into the receptacle at the other end. After several hours the accumulated dirt had been washed from the paper; I then resized the print with a very weak methylcellulose wash and put it on the drying rack overnight.

The commonalities of the three wet cleaning methods are

- a. the preparatory moistening of the object in order to relax it and make it more absorbent;
- b. the polyester support, which can be augmented by a piece of Mylar at the time the print is lifted out of the water. This will prevent wrinkling or bending of the cleaned object
- c. the loosening action of the moving water
- d. the drying cycle. Complete drying is an important step toward restoration of the paper object, the crucial part being to dry the object without wrinkling or creasing.

Since the influence of water seems to activate the fibrils of the paper and helps them bond anew, the quality of the paper object is improved after washing. To impart added structure to the paper a light methylcellulose or wheat-starch sizing can be applied, using a thick blotter between the paper object and the suction table (turned to “low”) to absorb the excess water.

On hand of an old book from the Centro’s collection we learned how to wash individual pages without having to disbind the book by masking carefully the parts of the book that were not to be touched.

Usually when all pages in a book need to be cleaned the book has to be taken apart completely in order to treat each sheet. This is a most labor intensive procedure and requires many skills, including the skill to rebind the book to the original dimensions to have it fit again into its original binding.

Our instructor demonstrated how a bound book, after it is taken out of its cover can be cleaned providing the paper is of excellent quality and the binding is still intact. A container is filled with enough water to assure complete coverage of the whole book. The book is then suspended into the water from a small frame that supports the open book about half-way through it. The frame rests on the edge of the tub and the water is agitated somewhat after about an hour. The book is then lifted out of the tub, the water is changed, and the steps are repeated until the water runs out of the book clear.



Book suspended in water for about an hour

To dry the book it is gently lifted from the frame and closed with very slight pressure, just enough to expel the majority of the water. Thin blotters or even uncolored paper towels can be used to interleaf ever 10 pages or so; these blotters have to be changed frequently, to absorb as much water as possible. Once the book is fairly dry, and this may take a day or more, it can be fanned out to air dry, or can be dried in a small drying chamber with a fan blowing against a wall of the drying chamber and reflecting the warm air onto the book's open pages.

Bleaching of paper

All types of bleaching can damage the object, it should never be undertaken lightly or without understanding the chemical and physical changes that take place. Bleaching should be considered a last resort after all other procedures have proved ineffective.

As there are many different types of paper made from various raw materials, one of the most important steps before undertaking any kind of bleaching is testing whether, and how, the paper and the inks used for the images, will react to water.

At the workshop we used sun bleaching and discussed at length bleaching using an artificial light bank. Light bleaching is a relatively new procedure in paper conservation to reduce local as well as overall staining in the paper. Only organic colors can be bleached, dirt will not be removed through bleaching. Iron gall ink and other colored inks also react to bleaching, as well as inks used in stamps and in signatures on official documents. It is therefore important to learn how to mask areas that should not be exposed to the sun. For this step we experimented mainly with Cyclododecan.

Cyclododecan comes in the form of crystals, but is waxy in appearance after it has been melted at 60C – 90C, and in that state evaporates very quickly. The object is first hydrated with a spray of water, alcohol or ethanol and the Cyclododecan is applied with a brush to the areas to be masked, such as on a seal, a signature, special illustrations, etc. both on the front and back of the

document to be treated. Applying Cyclododecan to both the front and back assures complete saturation of the paper to prevent bleaching where it is not needed.

In light-bleaching the object is placed on a carrier of Mylar or hollytex for ease of transportation, and is put in a tray filled to about two inches with deionized water, adjusted with calcium hydroxide to pH 7.5-8. It is submerged and set under the light bank for several hours. This is a slow process and can therefore be monitored carefully. Never leave an object in the water overnight or when you have to walk away from the work area for any length of time. When the desired result has been achieved, the object is lifted out of the water and rinsed several times in fresh deionized water. Depending on the fragility of the object, it is supported on a piece of felt or blotter and placed on a drying rack until completely dry.

In very stubborn cases one or two drops of chlorine bleach can be added to each gallon of water. This will necessitate adjusting the pH value with calcium hydroxide as the pH value drops with the addition of chlorine bleach.

Another bleaching process makes use of available sunlight. To sun bleach, follow the procedures as above, but place the tray on a sturdy table, off the ground and in a sheltered sunny place away from strong winds, dirt, birds, etc. Keep an eye on the tray from indoors. A sheet of Mylar is placed over the tray, elevated from the top of the tray to prevent a greenhouse effect as the water would become too hot. From time to time the water is agitated gently and if the object rises to the top of the water, it is submerged carefully; if the top of the paper becomes dry, a spray of the water/alcohol/ethanol mixture will rehydrate it.

In strong sunlight this procedure may not take long and must be monitored carefully. The paper can be lifted from the tray with the Mylar carrier and examined indoors, out of the strong sunlight and if necessary can be put back into the bleaching tray.



Before



and after sun bleaching

After the bleaching process is finished the paper is rinsed several times with deionized water to remove all traces of impurities that the water has freed and to get rid of any chlorine that may have been added. It is put on a felt or blotter and left on the drying rack overnight.

If necessary a light wash of methylcellulose can be applied as a sizing agent after light bleaching as this will consolidate the fibrils of the paper and impart additional strength to the object.

Additional work done at the workshop

Instruction each day lasted eight hours, and as pointed out at the beginning of this report, our days were occupied with many topics of which washing and bleaching of paper objects were but two procedures new to me. In addition much time was spent in testing papers and inks for their reaction to water, alcohol, ethanol; experimenting with various solvents used to remove remnants of pressure adhesive tapes, glues and pastes; determining the correct Japanese tissue papers to be used for mending and repairing tears; coloring and dyeing of paper to match old documents and pages in books; learning the uses of various adhesives and their properties; in-filling of missing parts of papers with paper slurries; learning the use and construction of drying, and hydrating “sandwiches” using Goretex, blotters and felts; becoming familiar with suction and vacuum tables, drying and hydrating chambers, and using new and adapted tools.

The one-week course made us very aware of the work that needs to be done in restoring and preserving prints, documents, drawings, paintings, wall papers, stamps, maps, paper banknotes and a myriad other types of paper based objects. Paper conservation and restoration is a complex subject where knowledge of chemistry and physics is important. We were able to get only a glimpse of the procedures, techniques and processes that can be applied, as well as the kinds of results that can be expected. And everyone came away from the workshop realizing that to become proficient at this kind of work takes years of training and learning.

Evaluation of the course and future uses of the knowledge gained

To be able to concentrate totally on one topic for eight hours a day, for five days, and to exchange experiences, problems, solutions and failures with like-minded persons, to be instructed by an exceptionally knowledgeable teacher with wide-ranging interests and experience in paper restoration was a powerful learning experience. The Centro del bel libro is known worldwide as an excellent training center in the area of book design, restoration and preservation.

I learned a series of new procedures and techniques, many of which I can apply to my work as Head of Cataloging and Preservation at the University of San Diego, where I established a Book Repair Station as part of my Department. I have taught one of the staff members some of the repair techniques and they are now used regularly. Additionally, I make use of my newly acquired skills in my own bookbinding and restoration work.

Recently I prepared and presented a poster session during the University of San Diego's International Week Fair, where international projects were highlighted that had been partly funded by the Internationalization and Interdisciplinary Development Committee, which had kindly supported my attendance at the Montefiascone and Ascona workshops. When opportunities arise to pass on what I learned, I will do so with pleasure and thereby extend the effect the workshop in Ascona had on my personal and professional development.

I wish to thank AMIGOS Library Services again for generously providing funds to make it possible for me to study Advanced Paper Conservation in Ascona. Your support is gratefully acknowledged and appreciated.

References:

(Please note that my mother language is German)

Bamber, Gascoigne. **How to identify a print.** London, Thames and Hudson, 1986.

Bandow, Cornelia. "Cyclododecan in der Papierrestaurierung", in **Restau**ro, Nr. 5/1999.

Banik, Gerhard und Gabriela Krist. "Loesungsmittel in der Restaurierung". (No publishing details available.)

Brunner, Felix. **Handbuch der Druckgrafik.** Niederteufen (Switzerland), Verlag Arthur Niggly, 1984.

Degner, Ralf. "**pH messen, so wird's gemacht**". Weinheim, 1995.

Diringer, David. **The book before printing.** New York, Dover, 1982.

Hind, Arthur M. **A history of engraving and etching from the 15th century to the year 1914.** New York, Dover, 1963.

Hunter, Dard. **Papermaking. The history and technique of an ancient craft.** New York, Dover, 1974.

Mayer, Ralph. **The artist's handbook of materials and techniques.** Rev. ed. New York, Viking Press, 1959.

Neevel, Reissland. "Das Tintenfrass-Projekt", in **Restau**ro, 3/1998.

Shapiro, Cecile and Lauris Mason. **Fine prints: collecting, buying, and selling.** New York, Harper & Row, 1976.

Trobas, Karl. **Grundlagen der Papierrestaurierung.** Graz, 1987.

Waechter, Otto. "Sonnenbleiche", in **Restau**ro, Nr.4/1999.

Waechter, Otto. "Restaurierung und Erhaltung von Buechern, Archivalien und Graphiken", **Studien zu Denkmalschutz und Denkmalpflege.** Wien, 1975.

Waechter, Wolfgang. **Buchrestaurierung.** Leipzig, VEB Fachbuchverlag, 1983.

Waechter, Wolfgang. **Buecher erhalten, pflegen und restaurieren.** Stuttgart, Hauswedell, 1997.

Whitman, Alfred. **The print-collector's handbook.** London, George Bell & Sons, 1901. (Republished by Tower Books, Detroit, 1971.)

Wimmer, Tanja, and Anna Haberditzel. "Neue Fixierverfahren im Praxistest", in **Restauero**, Nr. 7/1999.