

## Post-Flood Development of Mass Treatments at the National Library of Florence: The Roots of Library Conservation

### INTRODUCTION

November 4, 2016 marks the 50th anniversary of the most devastating flood in Florence since 1333. The average person has never heard about it, even though at the time students and their professors the world over, flocked to Florence to help in the initial rescue and clean-up. But those of us who were there and lived through the following months have indelible memories. (Figs. 1 & 2)

It is widely recognized that the vital and respected profession of book and paper conservation has its origins in the philosophy and treatments developed in the aftermath of the flood, in response to the immense challenge of dealing with so much damage to hundreds of thousands of rare books and documents in the libraries of Florence. I am a calligraphic designer, not a conservator, but I was there, and have first-hand knowledge of how the huge Restoration System was set up in the National Library, the Biblioteca Nazionale Centrale di Firenze (the “BNCF”), during 1967. It is important for the profession to know its history so the story needs to be told before it dies, along with those who experienced it.

My late husband was the bookbinder and library conservator Peter Waters, who died in 2003. This is largely his story and that of his team members, who played a vital part in the restoration operations in the BNCF following the flood. In this talk I will describe the setting up of that massive Restoration System. It is impossible to cover this story adequately in a short talk, but it is covered in great detail in my new book called *Waters Rising: Letters from Florence* published this April 2016 by Cathleen Baker of The Legacy Press. (Fig. 3)

For giving information about past events, personal letters and eye witness accounts have powerful authenticity. In nearly 500 pages my book contains all the letters Peter and I wrote to each other during the months following the flood. Peter’s letters, almost fifty of them, were his chief diary. After his

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Fig. 1. Book “mono prints” on the ceiling.



Fig. 2. BNCF November 1966, BNCF basement.

death, for easy reference, I extracted all the relevant technical information from his letters and notes for a Narrative-Diary section. There are over 280 photos, mostly taken by Peter, of damaged books and treatments devised for them, and also



LEFT TO RIGHT

Fig. 3. Peter, 36, on leave from Florence at home with Sheila, Spring 1967.

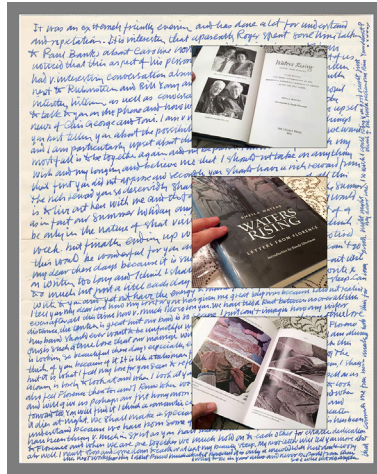


Fig. 4. From *Waters Rising*: the book and one of Peter's letters.

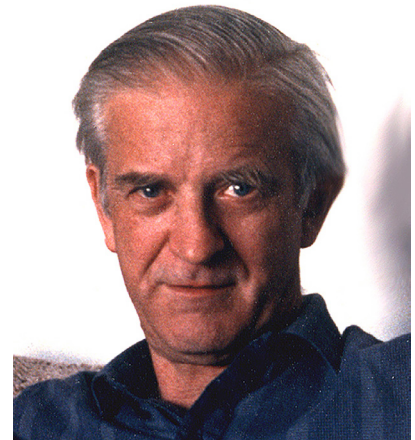


Fig. 5. Peter Waters when at the Library of Congress.

included is a section of some of Peter's student bookbindings, and later commissioned and exhibition bindings, that he made before the flood. I am very grateful to Cathleen Baker for the huge amount of time she has so enthusiastically given to this project, and to our eldest son Julian Waters, her co-designer, and for his immense help in preparing visuals for this talk. I am also indebted to Randy Silverman for introducing us to Cathleen, and for his masterful introduction about Peter's life, work and impact on the library field, naming him Father of Preventive Conservation. This presentation is but a microcosm of the much bigger story told in the book. *Waters Rising* comes with a remastered DVD of the 40 minute film about the Restoration System made by Roger Hill and Peter in 1968. (Fig. 4)

I will use many of Peter's own words, taken, not from his letters but from his article in the 1969 edition of *The Penrose Annual* (a British annual review of the graphic arts since 1895), because his own descriptions of the fully-developed sections of the Restoration System are so succinct that I cannot hope to improve on them. I quoted the same extracts in two previous overview talks, the first time was in 2006 in New York University's 40th anniversary symposium in Florence. Those proceedings were published by Archetype Publications, entitled *Conservation Legacies of the Florence Flood of 1966*, where more technical information can be found in the talks by Tony Cains and Chris Clarkson. The second time was in the National Gallery of Art in Washington, DC for the 45th anniversary. The Franco Zeffirelli film, *Florence: Days of Destruction*, was shown on both occasions.

As a direct result of his pioneering work in Florence, Peter served as Chief of Conservation at the Library of Congress

in Washington DC from 1971 to his retirement in 1995. He was Technical Director of the setting up of the BNCF's vast Restoration System from the end of November 1966 to October 1967. I became directly involved myself and spent a total of three months working with Peter in the BNCF during 1967. (Fig. 5)

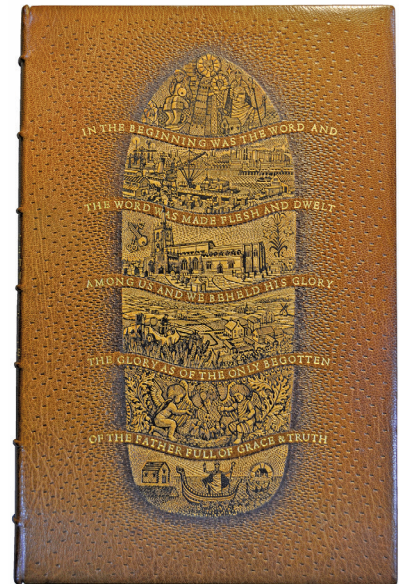
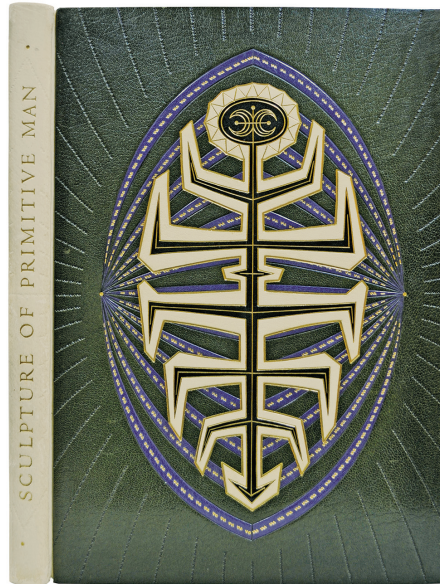
#### WHY WAS PETER CHOSEN TO PLAY A LEADING ROLE?

Peter's work in England before he was forty is not as well-known as his time in the Library of Congress, so I will give a little of his background to explain why he was chosen to lead the British team. He had no experience of dealing with damaged books on such a massive scale—who had?—but he had a reputation as an innovative designer-bookbinder and manuscript restorer, in partnership with Roger Powell (who had restored and rebound the Book of Kells in 1953). (Fig. 6)

Peter and I met while we were masters-degree students at the Royal College of Art, London (the RCA), in 1949. He specialized in fine bookbinding, lettering and typography and I in calligraphy, lettering and typography, and Roger Powell was our bookbinding tutor. Peter had previously spent four years from the age of fourteen studying bookbinding with William Matthews at Guildford College of Art. We married in 1953 and ran our own businesses of commissions and part-time teaching. In 1957 we moved from Woking, Surrey to Froxfield, Hampshire for Peter to become Roger's full partner. From college days Peter and I collaborated on all our commissions, actively or with design critique and I designed illustrations that were used on many of his and Roger's bindings. (Figs. 7 & 8)



Roger Powell & Peter Waters  
Howard M. Nixon



LEFT TO RIGHT

Fig. 6. Peter with his partner Roger Powell.

Fig. 7. Binding "Sculpture of Primitive Man".

Fig. 8. Binding of Book of Donors for Chelmsford Cathedral, UK.

#### THE CALL FOR HELP

On Friday afternoon, November 25, 1966, Peter was phoned by Howard Nixon, Keeper of Printed Books at the British Museum. Nixon had been contacted by Dr. Casamassima, Director of the BNCF, who needed advice on restoring at least 110,000 badly damaged rare 16th and 17th century printed volumes. These included 90,000 of the Palatina and Magliabechiana collections, a primary source for western scholarship and the nucleus of the library. Howard Nixon knew Peter's work well. When Peter was only 21 and still at the RCA, he was commissioned by Nixon to design a binding for *Le Livre Anglais* exhibition in Paris in 1951. Peter revived the tradition of pre-1500 blind-stamped binding and Nixon bought the book for the British Library's permanent collections. So Nixon had confidence in Peter's ability to assess the unusual and desperate situation at the BNCF and make recommendations. (Fig. 9)

Nixon asked Peter to choose two colleagues and fly to Florence the very next day! Tony Cains, a skilled private binder and Dorothy Cumpstey, an expert teacher of binding, were able to drop everything to go with him. The three arrived in Florence, complete with gum boots, without any clear mandate and were set to work in the Forte di Belvedere to look for mold on dried books. These were arriving by the truckload every day from grain and tobacco drying facilities in Italy. Wet, muddied books had been dried en masse and inevitably many had suffered further damage from the heat.



Fig. 9. Dr. Casamassima with Sandy Cockerell.

In the Forte working conditions were uncomfortable with no heat and little water and students were busy scraping dried mud off books. Meanwhile, student volunteers were still digging books out of the BNCF basement, wiping off excess mud with wet sponges and scattering sawdust over them to absorb some water. In the three weeks after the flood over 400 truckloads had already gone to drying plants. (Figs. 10 & 11)

Peter describes the state of the dried books in his Penrose Annual article:



LEFT TO RIGHT  
Fig. 10. Tony Cains,  
Unknown, Peter,  
Dorothy Cumpstey.

Fig. 11. Student  
volunteer Mud  
Angels loading  
trucks outside the  
BNCF.



LEFT TO RIGHT, TOP ROW THEN BOTTOM ROW  
Figs. 12-16. Examples of damaged books.

Despite good superficial cleaning before drying and the wise rule by the Director at the beginning, that none of the books should be opened before arrival at the dryers, many of them, arriving at the Forte, resembled abstract sculptural forms. Vellum and leather covers were distorted and shrunk. Book stacks in the library have characteristic openings at each end and vellum bindings stored originally at the ends of the stacks had rotted where the water had run through these shapes, combining with the vellum to form a glutinous mass. Other covers were defaced with a combination of mud, sawdust, oil and mold and edges were badly stuck with gelatin, mud and sawdust. (Figs. 12, 13, 14, 15 and 16) The books had been stood upright to dry in the heated dryers, allowing water and gelatin to drain. The concentration of gelatin was greatest in the openings between the sections, leaving them brittle. Covers that had been too hurriedly ripped off had dragged the sewing through the backs of the sections. The water, combined with excessive gluing of the spine when originally

bound, had accelerated the damage to the backs of the sections. Early 16th century spines suffered least because they had been pasted with starch paste rather than hide glue. The leaves of books bound in limp vellum withstood the flood better than most.

This was a very important finding because it led to the later development of non-adhesive and limp vellum binding techniques.

#### PETER'S VISION

Only four days after the team's arrival, a high level meeting showed that there was no plan at all for the future, beyond dry-cleaning, wrapping and storing the often very badly distorted books. In that state they would be unusable by readers, maybe indefinitely. Peter questioned this policy and suggested an outrageous idea: to set up a colossal dry cleaning, washing, drying and pressing plant to save and store the majority of the

collections, wrapped, but flat, to await mending and re-binding. The effect of this idea on Director Casamassima was dynamic and from that moment he supported the team and the implementation of Peter's plan, no matter any opposition. In fact, he cut through enough red-tape to warrant a prison sentence in normal times.

It was decided that the whole series of operations would eventually be carried out in the BNCF itself. The Power Station had a large number of sinks and plenty of hot water and during November 100 untrained students were working around the clock in 8 hour shifts. They were washing large books, causing even more damage by separating their leaves while wet, a technique normally requiring immense skill. The British pointed this out so were asked to take over and train them in their new system of washing, not from the wet state but after dried books had had their sections separated ("pulled") by the students working in the Forte. Tony Cains took charge at the Forte and Chris Clarkson joined them to direct the Power Station Students. (Fig. 17)

The original briefing had called for an advisory visit to Florence by Peter, Tony and Dorothy, but from November through April Peter stayed there for most of the time. At home I became the liaison between binders and restorers going out to help and the British Italian Art and Archives Rescue Fund. Peter describes that expansion of the team and the funding supplied.

It became clear that a great deal of additional help was needed and we appealed for more British restorers and binders, particularly those with teaching ability. In the following months over forty people worked for periods of from two weeks to several months developing the system and training volunteers. The team included members of the British Museum Stationery Office Bindery and the most distinguished private restorers, binders, and teachers of binding in Britain. This flow of help was organized by Howard Nixon and supported by the British Italian Art and Archives Rescue Fund, whose major effort in Florence became concentrated on the BNCF. From time to time the team was joined by restorers from many other countries. Guidance on chemical problems was given to the team by the British Museum Research Laboratory in collaboration with the Istituto di Patologia del Libro in Rome. (Figs. 18 & 19)

#### PREPARATIONS TO MOVE THE WHOLE SYSTEM TO THE BNCF

Peter then describes the preparations made, from December through March, for the move to the BNCF. Very early it was clear that expert careful selection for appropriate treatment would be needed for each book, on its journey through the system, and at Peter's request, Roger Powell, then 70 years old, arrived in early December to concentrate on this skilled



Fig. 17. Students washing books at the Power Station in the revised system.



Fig. 18. Peter, Tony, Elizabeth Greenhill, Sally Lou Smith, Stella Patri, Charles and Pamela Gott (nee Fowler).



Fig. 19. Peter's photo of team members in May 1967.

LIB.		TITLE										VALUE
CAT. NO.		SYM-BOLS	ORIGINAL STRUCTURE		REPAIR	25	Stabbed joint		COVERING			
PHOT.		☒	COVER	1	As necessary		SEWING	50	Full			
S		⊞	Full	2	General dry cleaning	26	Original holes	51	Limp			
C		⊞	Stiff	3	General mending	27	Alum-tawed thongs	52	Yap edges			
P		?	Limp	4	Fold mending	28	Vellum thongs	53	Quarter and vellum tips			
W		!!!	Half	5	Reinforcement	29	Herring bone	54	Case			
FC		~	Quarter	6	Swing plates	30	Double cords	55	Box			
M		≈	Alum-tawed pig	7	Do not trim edges	31	Single cords	56	Alum-tawed pig			
Se.		≈	Vellum	8	SIZING & ADHESIVES	32	Seaming cords	57	Vellum			
For.		R	Calf	9	Parchment size	33	Sawn-in cords	58	Calf			
Fin.		R	Goat	10	Gelatine size	34	Linen tapes	59	Goat			
WASHING	YES	NO	Goat	11	Starch paste	35	Linen braid	60	Native-dyed goat			
OK			Sheep	12	Polyvinylacetate	36	Stab	61	Pulp			
OK			Others	13	'Glutofix	37	Link-sewing	62	Buckram			
S		⊞	SEWING	14	Methyl cellulose (Tylose)	38	Linked overcasting	63	Reback			
B		⊞	Original	15	Soluble nylon	39	Machine	64	Refurbish			
1/2 A		NT	Thongs	16	TYPES OF PAPER	40	Stabbed joints	65	Restore as original			
D		⊞	Double cords	17	Handmade	41	As necessary		TITLING			
Ph	Before	After	Herring bone	18	Mouldmade	42	BOARDS	66	Original			
			Single cords	19	Machine-made	43	Laced-in	67	Manuscript			
			Sawn-in cords	20	Japanese mending	44	'Split'	68	Tool			
			Tapes	21	Lens tissue	45	Original	69	Label			
			Laced-in	22	Heat-set tissue	46	Cased		TREAT WITH			
			Two-on	23	ENDPAPERS	47	HEADBANDS	70	Saddle soap			
			HEADBANDS	24	'Italian'	48	Handsewn, laced-in	71	Potassium lactate			
			Thread, laced-in		'Made'	49	Handsewn, thread	72	Paranitrophenol			
			Thread		'Library'		Handsewn, silk	73	Lanolin & neatsfoot oil			
			Silk		Tipped		Stuck-on					
?		OTHER INSTRUCTIONS										
!!!												

Fig. 20. Record card for each book.

work and to train more experts in selection. Peter describes this process.

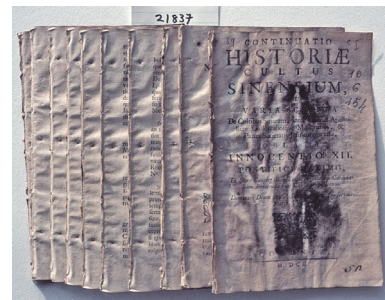
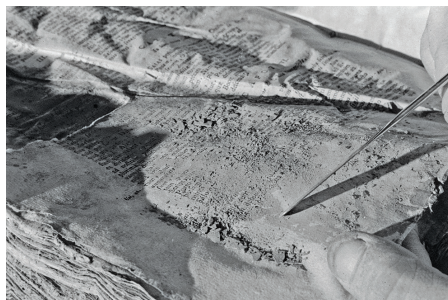
Before a book enters the restoration system, it has to be classified according to its value and the treatment it requires, and details of historical interest are recorded. Symbols were devised during our first week at the Forte to make international interpretation easier and designed to warn a student or worker of the state of the book and how it should be handled. For instance, OK indicated that a student could handle a book, whereas the international road 'stop' sign showed that it was particularly valuable and should be reserved for specialist treatment. In the beginning, these signs were written on a slip of paper, but now a detailed printed restoration card and photographs of the original binding and any significant pages, accompany each book with classification and directions for treatment. The card also indicated the history of the original structure by means of an enlarged symbol system with other relevant details.

He closes that paragraph with a very important sentence: "These symbols guard against the temptation to make the system more important than the books that are fed into it".



Fig. 21. Peter and Sheila working on the record card originals.

To add a personal note here, during the month of May 1967, while working with Peter, I designed these cards, drew the symbols and wrote all the wording in plain, legible hand lettering, camera-ready for printing by the thousands, one card in English, the other in Italian. (Figs. 20 & 21)



LEFT TO RIGHT

Fig. 22. Mud being scraped from a dried book at the Forte.

Fig. 23. Students pulling books.

Fig. 24. A pulled book.

On his Sundays off, Peter photographed several hundred damaged books, his personal collection of slides finally numbering 1100, and insisted that every book should be photographed before treatment. In less than two years, over 50,000 volumes were photographed to preserve their history.

#### DESCRIPTIONS OF PROCEDURES FOR TREATMENT

##### CLEANING AND PULLING

Next Peter describes the actual procedures of treatment in the present tense. The first was cleaning and pulling.

As much caked mud as possible is removed dry by flexing the edges of the leaves and the remainder is flaked off with spatulas and sharp blades. Then the book is collated and the sections are separated by careful cutting of the sewing from the spine. Covers, headbands, cords, threads, fragments and the record card etc. are placed in envelopes and catalogued. The sections are prepared for washing by interleaving with wet strength paper at frequent intervals. Hand-colored prints are protected where necessary with a 3% solution of soluble nylon in alcohol. (Figs. 22-24)

##### WASHING AND DRYING

Each leaf is supported on a floating wooden board and washed individually by soft brushing in warm water containing a saturated solution of Topane (2hydroxydiphenol). This is followed by gentle squeezing of the whole book which is then pressed to remove excess liquid. Bleaching, de-acidification and re-sizing are done where necessary. At the Power Station the washing was done in rusty sinks covered in polyethylene sheeting. In the library, there are multiple stainless steel sink units totaling forty compartments, and all are water-jacketed and thermostatically controlled. Random pH measurements are being taken with a Pye flat-head electrode pH meter before and after washing. (Fig. 25) At the Power Station, sections were hung to dry on terylene lines, but in the library

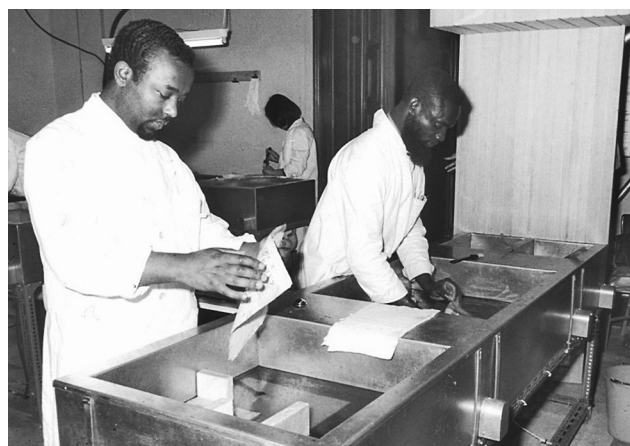


Fig. 25. Washing books in the new water-jacketed sinks

they are laid flat on racked trolleys in purpose-made, electrically-warmed, automatically-controlled drying cabinets. A final collation is made by a librarian and the book is then wrapped for storage. (Figs. 26 & 27)

I must add here that Sandy Cockerell, an engineer as well as a well-known private binder and manuscript restorer, was the prime advisor in the design and fabricating of these large drying cabinets, trolleys and racks, and worked closely with Peter during several visits. (Fig. 28)

##### MENDING OF TEARS AND LACUNAE

Peter's article continues with descriptions of the new mending and binding areas set up in the main reading room. This was unprecedented in a country's national library!

Although the original intention was to send the prepared books to binderies throughout the world for mending and binding, by April 1967 it was apparent that this would be impracticable, mainly because of the wide diversity of standards and the



Fig. 26. A trolley being loaded with trays.



Fig. 27. A loaded trolley being pushed into a drying cabinet.



Fig. 28. Sandy Cockerell stretching olive netting for a drying tray.



Fig. 29. The mending area in the converted main reading room.



Fig. 30. Japanese tissue mending: cutting with a ruling pen.



Fig. 31. Heat-set tissue: mending tears with a tacking iron.

impossibility of maintaining proper controls. It was therefore decided that mending, the most time-consuming operation of all, should be done in the library and that binding should follow. A mending department was designed for thirty workers (the maximum number for whom space and wages could be found), to be housed in the main reading room for at least a year or so. This was ready in August 1967, when the training of about five unskilled workers per week was undertaken until the room came into full operation. (Fig. 29)

Mending methods had to be devised suitable for the scale of the operation and the condition of the paper. Long-fibered Japanese tissue paper is used to form patches, with adhesive designed to spread through to the area around the mend and remain flexible. A lens tissue is specially treated and used principally for the mending of tears. Many of the books have been reduced almost to single leaves and, on average, every section has at least two folds needing repair. (Figs. 30 & 31)

When I worked in Florence for five weeks in late spring of 1967 Peter designed the mending stations, and I drew plans



and elevations for their construction. Each unit had a small light box inserted in the desktop and plenty of storage space on either side. In the summer we were in Florence for nine weeks and I had the immense pleasure of watching the desks being carried in and installed in the reading room. We left our youngest son Chris in the care of our mothers but took Julian 10 and Michael 7 with us. They reveled in exploring the entire library and made special friends with the electrician they nicknamed Sparks.

#### THE FINAL STAGE OF REBINDING

Peter wrote:

A bindery was started in September 1967. Many of the smaller books will be rebound in limp vellum. A study is being made of the early Italian limp vellum structures as so many of the library's books are bound in this way. When the structure is sound, it is a long-lasting binding, strong and pleasant to handle and fairly quick to make. A limp vellum style, unique to the library, is being evolved, as, compared with the work of the 16th and 17th centuries, limp vellum binding of today has become decadent. (Figs. 32 & 33)

In the DVD that comes with *Waters Rising*, Chris Clarkson, who has become recognized for his expertise on vellum structures, makes a limp vellum binding from start to finish. Peter makes a leather binding. You see only their hands and arms and no faces.

#### PRINT RESTORATION

A print restoration department, with on-the-spot chemical analysis, was set up adjacent to the reading room by William Boustead, Chief Conservator to the National Art Gallery in Sydney, funded by the Australian government, and he trained a nucleus of workers in print restoration. It was later looked after by the chemist Joe Nkrumah who stayed on for seven years.

#### THE RESTORATION SYSTEM POST-1967

After October 1967 Peter left the technical direction of the Restoration System to Tony Cains, the operation being funded for a further three years by the American Committee to Rescue Italian Art (CRIA). Mostly back in England, Peter resumed working with Roger Powell, teaching part-time at the RCA and joined as co-director with James Lewis, in a three-year program of back-up research for the BNCF, overseen jointly by the Imperial College of Science and Technology and the RCA, funded by the American Council on Library Resources.

During 1967 the student labor force at the BNCF was gradually replaced by about 100 Italian workers, the restoration estimated to take about 25 years, though it still continues today, fifty years later. The whole system was



Fig. 32. Richard Young and Stella Patri teaching sewing.



Fig. 33. Rebound books.



Fig. 34. Limp vellum bindings.



Fig. 39. Peter (retired) with one of the encased U.S. Charters of Freedom, c.2000.



TOP TO BOTTOM, LEFT TO RIGHT  
Figs. 35-38. Before and after treatment.

gradually moved to basement rooms so the reading rooms could be reclaimed. Through the years the workforce dwindled through lack of financial support, and now it is down to about seven people, in a lab outside the BNCF, under the direction of Alessandro Sidoti.

INTERNATIONAL TRAINING: THE FUTURE

The dream of setting up an international training center at the BNCF never materialized because of insufficient funding and too few expert restorers available to continue training. Even so, the legacies of the BNCF experience gave impetus to the new profession of library conservation, with the Library of Congress leading the way. Peter was given the task of designing its large comprehensive department from scratch, and from 1969 to 1971 he “commuted” from England ten times to the Library of Congress until our family immigrated to the USA in 1971. During the following two years he was able to persuade the curators to think more broadly in terms of what Peter called “phased conservation” (now termed “preventive conservation”), instead of merely sending single items for repair to the library’s bindery. Since then, conservation laboratories have been set up throughout the world, many of them directed and staffed by conservators trained at the Library of Congress, and later at other centers too. (Fig. 39)

SUMMARY

Tragedies and disasters often bring out the best in people involved, and the great Florence flood certainly did that. So much good has come from its aftermath in the world of book and paper conservation. All who labored there will never forget the experience and many of them have since taught and influenced countless others. Tragically Peter died in 2003 at only 73 from mesothelioma, through exposure to asbestos

in his twenties. I wish he could have been here to talk to you himself. He brought the skills of a designer-craftsman to the wider world of library conservation, and used what he called “sideways thinking” to solve problems. He also felt that some treatments can cause more harm than good. I feel honored to have played a small part in the effort myself, as a support to Peter. By sharing these first-hand memories I hope I have given you a feel for that momentous time after the flood and an appreciation of why the Florence experience was so pivotal.

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