



## **SCAN Conservation Report**

**Dagmar Hinz**  
**SCAN Archive Conservator**  
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## **Summary**

Because of concerns about possible damage to original archives, conservation was included as an essential part of the SCAN project.

The aim of this report is to review conservation input during the project, as well as comparing the risks of damage to original documents that are

1. digitised and subsequently withdrawn from public use
2. not digitised, but available to the public.

### **Review of conservation input**

- the original plans and agreements
- description of the actual involvement of the conservation section
- the problems that were encountered and consequent changes to the original plan
- the experience from this project and advice for planning of future projects, including staffing numbers and grades

### **Comparison of risk**

- description of the risks and damage the testaments have been exposed to before digitising and would have continued to be exposed to without digitising
- description of the risks and damage during and after digital imaging
- recommendations on preservation policies for the testaments

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## **1. Introduction**

The original plan for the Testaments project was to produce a complete index for the wills and testaments. It soon became clear that this would cause a substantial increase in requests for and therefore handling of this material. In addition to the increased burden on search room and repository staff the original documents were likely to suffer a much higher level of wear and tear. It was decided that the most effective way to manage this risk was to digitise the material, while recognising that this process also carried a certain level of risk

Two decisions were made:

- to withdraw the original testaments from consultation after the digital images were made available
- to create a SCAN conservation team as part of the Testaments team.

This report aims to review the benefits of the involvement of the conservation team in SCAN and of the withdrawal of the testaments.

For this the original project plan will be compared to the work carried out during the project. Advice is given on similar future projects.

This is followed by a consideration and comparison of the risks and damage occurring to the originals with or without a digitisation project. Recommendations are given to ensure the future safety of the original testaments.

## **2. Conservation involvement in Testaments Project**

### **2.1.Original plan**

#### **2.1.1. PID**

The involvement of SCAN conservation in the Testaments Sub-Project was outlined as followed in the Project Initiation Document:

- Advising the team leader on all aspects of conservation
- Providing conservation support for Special Archives Services
- Preparing testaments for digital capture
- Preserving them for permanent storage

Specific responsibilities:

- to assess conservation needs of all material to be digitally captured
- to select appropriate conservation techniques, treatments and materials to ensure ease of handling and legibility of text
- to ensure necessary preservation and storage of material after digital capture
- to oversee out-of-house binding of hard copy surrogates
- to maintain accurate records of work undertaken and materials used
- to liaise with NAS conservation staff and ensure agreement on treatments and procedures
- to implement document handling training for SCAN digitising and other staff as required
- to advise SCAN staff on preservation issues as appropriate
- to report on progress to the team leader

The PID also states that

- the original testaments will be placed in phase boxes and stored in environmentally controlled conditions
- the original testaments will be withdrawn from public and subsequent consultation will be via the digital image
- the preservation conditions of the original testaments will be improved
- close liaison will take place between SCAN and NAS conservators over assessment and procedures.

SCAN conservation staff was to include

- one Chief Conservator at Grade B2 and
  - two conservators at Grade B1/2.
- (see Appendix A1 and 2 for job descriptions)

Risks identified in the risk log that are relevant to conservation were:

- Failure to achieve deadlines
- Liaison difficulties within Conservation Services (CS) between NAS and SCAN staff

- Conservation or digitising staff incapacitated

### **2.1.2. Additional agreements**

It was also agreed that

- NAS conservation would carry out a condition survey in advance of the project,
- an IT system would be operated for the agreement on treatments with NAS conservation, for treatment reports and for tracking testaments location and
- all Commissary Court testaments (up to 1823) would receive conservation treatment, while Sheriff Court volumes (1824 onwards) were to be treated only in extreme cases.

## **2.2. Involvement of SCAN conservation during project and its benefits**

### **2.2.1. Advising the team leader and SCAN staff on all aspects of preservation and conservation**

Advice was given on:

- Purchase of bookcradles (see Appendix B)

The choice of bookcradles was especially difficult due to the tight bindings and small margins of some of the testaments volumes. A dummy book with similar properties was prepared and this was tested on various cradles. A cradle was chosen for optimum compliance with two criteria:-

1. providing as much information (writing) as possible on the resulting image
2. causing minimum damage to the volumes.

- Purchase of trolley for glass plate negatives. (Digitising for Internet Resources)

A trolley with smooth action was chosen with tilted shelves on which the negative boxes could be secured safely.

- Purchase of lights

Flashlight had been ruled out for health and safety reasons. Conservation advised on cool lights instead.

Advice was also given on several other minor issues throughout the project.

Text and images were supplied for the conservation pages of the SCAN website.

**Outcome:-** Conservation advice, including advice on equipment, was essential in minimising the risks for damage to the originals.

### **2.2.2. Preparing testaments for digital capture**

Most of the original testaments (see also 2.4.2) were assessed and, if necessary, treated. Treatment proposals were approved by the NAS conservation manager.

Treatments included:

- Dry cleaning
- Flattening
- Resizing of weak paper
- Washing
- Repairs of physical damage

Treatments were chosen with the aim of

- minimising risks to originals through handling during digital capture
- ensuring the legibility of the text and therefore the quality of the image

Records of treatments and materials used were maintained.

**Outcome:-** Conservation treatments of originals before digital capture further minimised the risks of damage to the testaments.

### **2.2.3. Preserving testaments for permanent storage**

Digitised testaments were

- provided with preservation packaging (made-to-measure boxes for volumes and folders, standard NAS boxes for warrants) and
- placed in environmentally controlled storage.

**Outcome:-** This will greatly reduce physical damage, chemical deterioration and biological attacks in the future.

### **2.2.4. Providing conservation support for Internet Resources**

Conservation work was carried out on some of the material to be imaged by the Internet Resources digitiser.

**Outcome:-** The risks to the original objects were therefore reduced.

### **2.2.5. Implementing document handling training for SCAN digitising and other staff**

Handling training was given to

- Genealogical Society of Utah (GSU) supervisor and volunteers (with special emphasis on digitising and numbering volumes and flat paper material – Appendix C1)

- Internet Resources digitising staff (including specific guidelines on photographic material with an emphasis on glass plate negatives – Appendix C2)

The training was followed up by continuing advice on handling issues especially for unexpected problems, e.g. documents attached to volume pages (eiks).

**Outcome:-** The handling training was effective in giving the digitising staff and volunteers an awareness of potential risks and provided them with essential guidelines on how to prevent them. They were encouraged to flag up items in need of conservation of any material that was not assessed by conservation and to discuss unexpected handling questions they encountered. In general they responded well to this.

#### **2.2.6. Environmental control**

The environmental conditions in the camera rooms were monitored. The environment in these rooms is not controlled. The conditions were therefore found to be unstable and especially the relative humidity levels were at times extreme with over 70% in summer and under 20% in winter.

**Outcome:-** Severe problems with the environmental conditions were identified in the small camera room. This was reported to the accommodation services branch who took measures to level out extremes as much as possible. There were still concerns about bringing the glass plate negatives into this room afterwards. The digitiser was therefore given a table of safe conditions for gelatin dry plates and asked to check the environmental conditions each time before fetching and imaging this material.

#### **2.2.7. Communication within SCAN**

Communication within SCAN was essential and generally worked well. Communication paths used were information access through the s-drive, regular Testaments Team meetings and regular informal discussions between conservation and other SCAN staff.

**Outcome:-** Communication was essential to the planning and reviewing process.

### **2.3. Problems encountered**

#### **2.3.1. Recruitment**

The original objective to employ three conservators could not be achieved at any time through the project. Two conservators were

employed: the Chief Conservator started April 1999, the Conservator August 1999. A third conservator was not found despite attempts to recruit one.

The Chief Conservator resigned before the end of the project (September 2001). He was not replaced, as the length of contract that could be offered was deemed to be unattractive to prospective candidates.

### **2.3.2. Incapacity of staff**

The chief conservator was on sick leave repeatedly during his last year with SCAN, including a continuous long-term sick leave of four months.

### **2.3.3. Difficulties in meeting targets**

Difficulties in meeting targets were encountered because of

- recruitment problems
- some testaments requiring more work than anticipated
- high throughput by digitising volunteers and staff

### **2.3.4. Liaison with NAS conservation**

Communication between NAS conservation and SCAN (including non-conservation staff) was not always immediate or effective. Occasionally this affected the exchange of information as well as the decision making processes.

Attitudes of the communication partners were sometimes negative. This was at times harmful to decision making processes, slowing them down or leaving the result unclear.

Continuous efforts were made though to maintain communication and this was achieved.

## **2.4. Modifications of original plan**

Due to the difficulties of meeting targets for a constant supply of material to the digitising team the work of the SCAN conservation unit had to be reviewed regularly.

### **2.4.1. Treatments**

Changes to treatments included:

- Repair work had to be reduced further, e.g. by concentrating on damage that was near writing and therefore involved a greater risk of loss of information. Only major damage was repaired in other cases.

- Flat paper warrants were placed in transparent polyester wallets for imaging. This required some initial experimentation by the imaging staff, but resulted in a considerable reduction in repair work.

#### **2.4.2. Exclusion of material**

Some material had to be excluded from the conservation assessment programme.

- Volumes

At the beginning of the project all Commissary Court volumes were assessed and, if necessary, treated.

Since the later volumes were generally in good condition it was then decided to exclude the later years from conservation assessment to maximise throughput. First the volumes from 1800 to 1823 were excluded. Then all remaining volumes from the years 1750-1800 underwent a very brief conservation assessment and, apart from a few volumes, were given the go-ahead for digitising.

For material that was not assessed by conservators (including Sheriff Court volumes) the department relied on the judgment of the Preservation Assistant (see 2.4.3.) and the digitising volunteers to flag up occasional needs for conservation.

- Warrants

Of the warrants Aberdeen, St Andrews, Wigtown, Brechin, Stirling and Kirkcudbright have been or will be conserved and imaged. Although there are warrants in several more courts it was decided not to include them within the scope of this project, due to the major conservation requirement.

- Internet Resources material

A decision was made early on by the Chief Conservator that material imaged by Internet Resources was not to be assessed. Instead, it was recommended that the conservation team should be informed about the collections to be imaged. Additionally, the digitiser was made aware of possible conservation problems and was asked to flag up any object in need of conservation.

When the Chief Conservator left SCAN and the conservation team came under joint (later full) management of NAS conservation, conservation needs of this material were attended to by a NAS conservator.

#### **2.4.3. Staffing**

When it became obvious that a third conservator could not be recruited, it was decided to employ a Preservation Assistant without previous training/experience instead.

The job objectives originally envisaged for the assistant were:

- Numbering and dry cleaning volumes and documents to be digitised
- Making up boxes for digitised material
- Data-input of information on conservation work
- Liaison with volunteer staff carrying out preparation of volumes for digital capture
- Miscellaneous support duties for the two SCAN conservators (see also Appendix A)

During the time the Preservation Assistant worked with the project she took on additional responsibilities including:

- Providing damaged bindings with acid free paper covers
- Preparing warrants for conservation work
- Placing warrants in polyester sleeves for digitising and repackaging them afterwards
- Assisting with environmental monitoring

These and other miscellaneous responsibilities kept the Preservation Assistant fully occupied, sometimes even requiring her to prioritise a large number of tasks.

That sufficient responsibilities were found for the Preservation Assistant shows the benefit of an untrained assistant to this project.

The assistant was trained and supervised by conservators. Although this involved valuable project time, the help the assistant provided significantly outweighed the training input in this project.

#### **2.4.4. Line management**

The line management of the SCAN conservation section was transferred from the SCAN Testaments Team Leader to the NAS Conservation Manager. This was to ensure a better integration of the SCAN conservation team into NAS conservation. The transfer was finalised September 2002 after a period of shared line management.

#### **2.4.5. Documentation**

When it became obvious that throughput had to be increased, some aspects of documentation had to be reviewed. Specifically, transferal of documentation into electronic format was given up and the treatment proposal system between SCAN and NAS conservation was deformed.

#### **2.4.6. Involvement of NAS conservation staff**

The project could not have been completed successfully without the help of NAS conservation. Up to eight conservators have worked on preparing the testaments for five months to date (11/03/2003).

## **2.5.Discussion**

By looking at the original plans, the problems encountered and the resulting changes in work patterns, it became obvious that conservation work had to be kept to an absolute minimum during this digitising project. This was the only way to ensure sufficient throughput to keep up with the digital imagers.

The resulting minimal conservation work had to be adequate to ensure both the safety of the originals during the digitising process and the legibility and therefore quality of the image. This treatment might not always be adequate though for the long-term preservation of the objects (see also 3).

### **The experience of this project has shown the following points to be of vital importance when planning a digitising project:**

- Essential conservation treatments (and non-essential, but desirable) should be established well in advance. This should include consideration of preservation related work that can be carried out by untrained assistants. This type of work will be part of some, but probably not all projects.  
Allowances should be made for unexpected necessary treatments. Some are bound to become obvious only later on, even if the material has been surveyed in advance of the project.
- The level at which conservation staff should be employed can then be considered, with the possibilities ranging from untrained/inexperienced assistants to fully trained conservators. Staff without training or experience should work under the supervision of experienced conservation staff.
- The number of conservation staff necessary and the ratio of digitising staff to conservation staff requires careful consideration.
- Working procedures and treatments chosen have to be reviewed continuously.
- Handling training for digitising staff by conservators is essential, and handling procedures should be under continuous review.
- For planning and reviewing both conservation work and handling issues immediate, continuous and effective communication between all parties is vital. This includes communication between conservation and curatorial as well as conservation and digitising staff.

### **3. Comparison of preservation risks and damage with and without digitising**

Withdrawing the original testaments and substituting digital images will obviously prevent a lot of damage associated with continuous handling of documents.

Nevertheless, there were also a lot of risks for damage involved in the digitising process. This chapter aims to compare the risks to which undigitised original documents would have continued to be subjected, with the risks to which documents are exposed in the digitising process.

#### **3.1.Preservation risks and damage before and without digitising**

##### **3.1.1. Handling**

Before imaging the testaments were available for readers in the search room. This involved them being handled by people from the public. Although there is some handling advice available in writing and advice is given by search room staff, the handling by untrained people is a major risk to the documents.

##### **3.1.2. Transport**

The Commissary Court testament registers (pre-1823) used to be stored in the Historical Search Room of General Register House (GRH), so no transport was necessary when they were requested. The Commissary Court warrants and the Sheriff Court registers are stored at Thomas Thomson House (TTH) and have to be brought to GRH by van. They are at risk of damage if they are not packed and secured safely.

##### **3.1.3. Photocopying**

Microfilms are available for most of the Commissary Court testament registers. The quality of these is very variable, mainly due to the condition of the original documents. No photocopying of the original registers, for which microfilm is available, is permitted.

There is no microfilm of the Sheriff Court (post-1824) registers, and there are many requests for photocopies. Only registers in very poor condition or above a certain thickness are considered unfit to be photocopied.

Photocopying involves many serious risks through handling, light and heat. This damage is cumulative.

##### **3.1.4. Packaging**

The testament volumes were placed on the shelves without protective packaging.

The packaging of the warrants was unsuitable. The quality of the packaging materials was not of modern preservation standard. The folders around the individual warrants were too small. The protruding

edges of the documents were therefore very vulnerable and in most cases already severely damaged.

### **3.1.5. Storage**

The Commissary Court testaments registers were stored in an uncontrolled environment in the Historical Search Room. This involved risks through unsuitable relative humidity and temperature.

## **3.2. Preservation risks and damage during digitising**

### **3.2.1. Handling**

- Handling by staff and volunteers

The material was handled by several people during the project for paginating, indexing (post-1824 registers), conservation and digitising. This involved risks, and it was impossible completely to prevent damage.

The risks were minimised by training the volunteers in handling archival material and creating an awareness of possible damage through unsuitable handling practices (see also 2.2.5).

Because of this measure further damage through handling was minimal, although it was not possible to monitor it in all cases.

- Mechanical damage through the digitising process

The strain on the volumes during digitising was considerable. Each page had to be opened and was held open by the cover glass with a light pressure.

The choice of bookcradles prevented the worst damage, especially the 120° cradles for the Commissary Court volumes. But some strain on the bindings could not be avoided. This is an effect of every opening. It is cumulative and will eventually lead to damage.

### **3.2.2. Light exposure**

Archive material is endangered by light exposure, since light catalyses chemical reactions. Damage through light exposure could not be avoided and this too is cumulative. No visible damage was done, but any future light exposure will eventually lead to visible damage.

### **3.2.3. Environmental conditions**

The environmental conditions (relative humidity and temperature) in the camera rooms are only partially controlled (see 2.2.6). Some cumulative damage resulted from storage in these areas. However, it has to be remembered though that the Commissary Court testaments registers had also been stored in an uncontrolled environment before

the start of the project. The Sheriff Court registers and the warrants had only been in climate-controlled storage at TTH since 1994.

Damage to especially sensitive material (glass plate negatives) was minimised by additional guidance (see 2.2.6)

### **3.3.Potential future preservation risks and damage**

The original testaments are now stored in preservation packaging in a controlled environment. All items that were especially fragile for handling have received conservation treatment that has not only minimised risks of handling during digitising but also of possible future handling. Additionally they will be withdrawn permanently from public use.

The testaments should therefore be as safe from future damage as they could be. But some risks still remain:

#### **3.3.1. Natural Ageing**

All archive material ages naturally. The speed of ageing can be influenced by environmental conditions and light exposure. The chosen storage for the digitised material and the decision on withdrawal after digitising will keep the ageing at a relatively low rate.

#### **3.3.2. Incomplete conservation treatments**

Because of time restrictions the conservation treatments during the project had to be kept to a minimum and were focused on aims specific to the digitising process (safety during handling and legibility of text).

Although a minimal conservation approach is desirable for preservation purposes in many cases, some of the testaments would have benefited from further treatment. This material would probably be less seriously affected by natural ageing in future if additional treatment had been carried out.

#### **3.3.3. Withdrawal policy**

A decision has been made to withdraw the testaments after digitising. There might be cases in the future when researchers have reasons for requesting the records. Some reasons will probably be seen as significant enough to produce the records. This will especially be the case if the paper and bindings themselves are the objects of study by paper historians or material scientists. Opinions as to the validity of a request might vary between members of staff.

Looking to the long term, staff changes could possibly lead to a change of policy from withdrawal back to production of the testaments.

#### **3.3.4. Future projects**

The Commissary Court testaments registers were microfilmed previously and have now been digitised. As explained in chapter 3.2. damage during these kinds of projects is cumulative.

As technology changes and improves constantly there is a risk that the same material might be chosen again for a future surrogate project.

### **3.4. Discussion**

Chapter 3.2. shows that the damage through the digitising process in this project is considerable, whether it is visible or not. Invisible damage is inherent in the material and will have an effect on the future deterioration of the archives.

This damage will have to be weighed against the benefits of withdrawing the testaments from consultation. A real comparison is impossible because the risks and damage with or without digitising are of a different nature. No attempt has been made during the project to monitor any damage by measurement or analysis, so a judgment has to be based on observation.

Conservation treatments that have been carried out had some beneficial effects to the records (see 3.3.2 for its limits) and so will the new packaging, better storage arrangements and prevention of further handling. It is impossible to say whether the material would have been treated and placed into improved storage without this project. This makes comparison more difficult yet. Considering the workload of NAS conservation it is unlikely that a project of this scope would have been undertaken in the foreseeable future.

*Despite the difficulty of a conclusive comparison, there has been a net benefit to the preservation of the testaments by making surrogate images available and withdrawing the originals.*

This judgment assumes that they would not have received preservation/conservation attention otherwise. It also depends on future implementation of the withdrawal policy. As outlined in chapter 3.3.3 there may be cases that will justify the production of testaments for readers. In such cases a clear policy needs to be applied. It should be agreed not only verbally but also in writing. Ideally, an additional agreement should be put in writing to exclude records already digitised from future projects to create surrogates.

#### 4. Conclusions and recommendations

SCAN conservation contributed to the project by providing preservation and conservation advice, treating documents before digital capture and implementing handling training. This helped to keep the risks to the original material to a minimum.

Keeping the throughput of the SCAN conservation section at an appropriate level proved very difficult. The main reasons for this were

- recruitment problems and long-term incapacity of staff,
- unexpected extent of necessary treatments and
- the high throughput of digitising volunteers and staff.

It was therefore decided to

- change treatment and documentation policies,
- exclude some material from conservation,
- employ an untrained assistant and
- involve NAS conservation staff in the project.

Recommendations for future digitising projects:-

- essential conservation treatments should be established in advance (with allowances for unexpected treatments),
- the level at which conservation staff should be employed (ranging from untrained assistants to fully qualified conservators) should be considered carefully,
- the number of necessary conservation staff and the ratio of digitisers to conservators should be considered carefully,
- working procedures and treatments should be reviewed continuously and
- good communication between all parties should be ensured.

The options of digitising the original testaments or not digitising them and continuing to allow access to them both involve risks for damage to the originals.

The risks to the testaments before digitising or without digitising were identified as damage through

- handling,
- transport,
- photocopying,
- inadequate packaging and
- inadequate storage.

Risks and damage during digitising occurred through

- handling,
- light exposure and
- environmental conditions in the camera rooms.

Future risks for damage after digitising are

- natural ageing,
- a change of the withdrawal policy and
- possible future surrogate creation projects involving the same material.

The risks to the testaments were/are considerable in both cases, with or without digitising. A conclusive comparison is impossible since the risks are partly of different nature. Damage was monitored by observation only and the possibility of the testaments being included in a NAS conservation programme is unknown (though unlikely)

**It may reasonably be asserted that the benefits to the testaments as a result of conservation for the SCAN project, and their subsequent withdrawal from public use, outweigh the risks and damage caused by the digitising process.**

**These benefits are dependent upon the withdrawal policy being upheld and ruling out possible future surrogate creation projects involving the same material.**

## **5. Appendix A: Job descriptions**

### **A1: Chief conservator**

Conservator. (Grade B2)

Main responsibilities

to advise the team leader on all aspects of conservation, as well as providing conservation support for Special Archive Services

to prepare the testaments for digital capture and subsequently preserve them for permanent storage

Specific responsibilities

- to assess conservation needs of all material to be digitally captured
- to select appropriate conservation techniques, treatments and materials
- to ensure necessary preservation and storage of material after digital capture
- to oversee out-of-house binding of hard copy surrogates
- to maintain accurate records of work undertaken and materials used
- to line manage the two conservators (Grade B1)
- to liaise with NAS conservation staff and ensure agreement on treatments and procedures
- to implement document handling training for SCAN digitising and other staff as required
- to advise SCAN staff on preservation issues as appropriate
- to report on progress to the team leader

### **A2: Conservator**

Conservators. 2 at Grade B1/2 (to be appointed)

Main responsibilities

to assist the chief conservator in all aspects of preparation and preservation of digitally captured material

Specific responsibilities

- to carry out a full range of conservation techniques as directed by the chief conservator
- to assist in the maintenance of accurate records of work undertaken
- to assist the chief conservator in liaison with NAS conservation staff and in implementation of document handling training for SCAN staff

### **A3: Preservation Assistant**

Job title: Preservation Assistant

Band: A

Pay range: 3

General Duties:

- Numbering and dry cleaning volumes and documents to be digitised
- Making up boxes for digitised material
- Data-input of information on conservation work
- Liaison with volunteer staff carrying out preparation of volumes for digital capture
- Miscellaneous support duties for the two SCAN conservators

Staff to be managed: None

Other resources to be managed: None

Specific Objectives:

- Numbering and dry cleaning pre-1823 testaments registers and warrants
- Liaison with volunteer staff to ensure numbering of all post-1823 testaments registers
- Data-input and production of statistics from the database
- Boxing and putting away all digitised material

## **6. Appendix B: Evaluation of bookcradles**

### **BOOK CRADLES**

#### **Requirements**

- To present the volume at a suitable attitude in relation to the camera head.
- To hold the volume steady in order to allow multiple shot colour photography.
- To allow the volume to be imaged as far into the gutter margin as possible without damage to binding, paper or ink.
- Ease of use is important, the equipment should be virtually foolproof. To this end simplicity of operation is important.

This report will discuss the various book cradle systems which were tested and examined during the recent camera trials and visit to Germany and also demonstrated at the Society of Archivists conference.

#### **Book cushion**

Although this is not a book cradle in the normal sense of the word, it did prove to be very effective due in part to its multi adjustable nature. In order to capture an image deep into a tight binding margin it was necessary to clip the page being imaged, weights could also be used but were less effective. Using equipment such as clips and weights has an obvious down-side, they are aesthetically challenging and in the case of clips may prove harmful to the volume if used carelessly.

#### **GKL**

This book cradle works on a split table design which allows a volume to be imaged either one or two pages at a time. In this case the book is pneumatically lifted up against a sheet of plate glass through which the image is taken. The main drawback of this system is that all books are forced to open to 180°, also the gutter margins are pushed together as the book platform comes into contact with the glass. This obscures text where scribes have written close into the gutter margin.

#### **GKL Prototype**

A small table mounted version of the above, this cradle had all the drawbacks of the full sized equipment. It was also time consuming and fiddly to use.

#### **GKL 120° cradle**

This cradle was not available for testing. It seems GKL produce these cradles to order only. The operation of this cradle was explained to me in some detail. It sounds like a good idea but I was left concerned about page movement between the first and third shots when using a three colour camera. In conclusion GKL cradles, although well designed and high quality did not offer any solutions to our particular problems of tight backs and negligible gutter margins.

#### **Society of Archivists Conference Trade Fair**

July 27<sup>th</sup> 2000

iCAM Book cradle evaluation.

This book cradle features simple but effective modifications to the cradle demonstrated by GKL during the camera trials last February. These modifications will allow the cradle to function in a similar way to the IKM cradle tested in Germany. The main difference is that the book platform remains static, the glass platen is hinged so that it may be lifted to allow the book pages to be turned. ( the IKM book cradle has a fixed glass platen, the book platform is lifted and lowered using pneumatics ).

Once the cradle is set up for a specific volume, the book platform is raised manually by turning a handle which works on a slow screw. This movement is only required to fine tune the height of the volume in relation to the glass platform as pages are turned .

The main difference between the iCAM and the IKM book cradles is that the iCAM is manually operated. This could be considered an advantage as this system has fewer moving parts and does not require a compressor. Another advantage of the iCAM cradle is the adjustable angle of the book platform. Where the IKM is set at 120 degrees the iCAM may be set at 90 or 120 degrees. 180 degree operation is possible on both cradles.

### **Allan Buchanan Book cradle**

This cradle is used in the National Library of Scotland, Microfilming and digital capture unit. It features a 90 degree cradle with both sides of the cradle 45 degree from the platform. The camera column is attached at one side of the cradle, also 45 degree from the platform, so that the images are taken from the pages resting on the side of the cradle opposite the column. This side of the cradle is fixed so that it is always parallel to the camera lens, while a recess for the spine and the side of the cradle for the pages not to be imaged are adjustable according to spine width and opening of the book.

The adjustments for the perfect cradling of the spine in the recess provided for it are rather complicated and time consuming. It is nevertheless possible to pad the cradle in a way that the adjustments are unnecessary or at least rarely necessary. In that case the cradle would still have the advantage of having an angle of just 90 degree which is only possible because of the camera being mounted 45 degree from the platform rather than above the book. The padding would also have the advantage of more flexibility in shifting the book in a position that allows as much as possible of the writing in the margins to be imaged.

This cradle is the most gentle to the volumes because of the small angle of opening and because of the lack of any forced further opening through pressure of a glass plate.

The disadvantages are that if the writing goes right into the gutter margins of a tightly bound book there is slightly less information captured than is the case with the IKM cradle described below (see comparison of images on the pages below). Also, if wanting to capture as much information as possible from the gutter margin, the page to be imaged would be very curved and so the image will be slightly distorted.

There might be a possibility of slight movement of the page through the triple imaging if it is not held down by glass.



### **IKM 120° Book Cradle**

The IKM cradle was designed for use with a microfilm camera, it has been available for a few years now and is considered to be proven technology. This is an advantage; some new designs may be tempting but they are not proven in terms of ease of use and reliability.

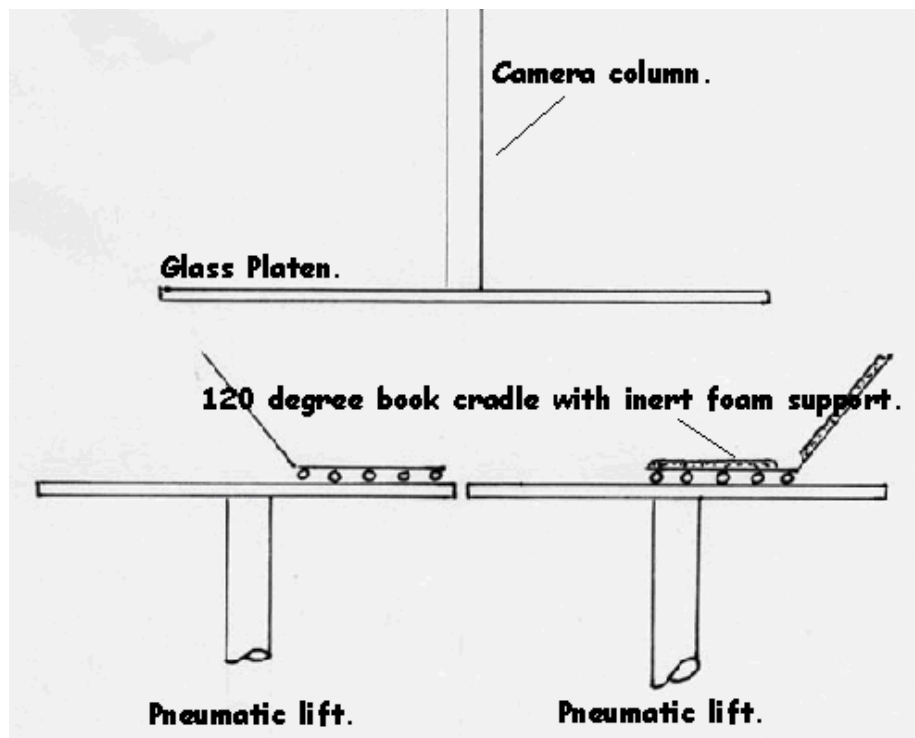
This cradle was inspected and tested at the factory in Germany. To facilitate this test Dagmar bound a volume to replicate the problems tightly bound volumes were presenting to us. These problems were identified as tight bindings, little or no gutter margin, text obscured due to the two previous problems and some fragility of bindings, paper and ink. The test volume was sewn on recessed cords, the last

section was over-sewed, the backing shoulders were set at right angles to the text block and the spine heavily lined to restrict opening.

The text block was made up of A3 sheets folded to A4 after being printed with a line of alphabet running from left to right over the fold, this was used to act as a gauge to show how close in to the gutter margin we could image with the cradle.

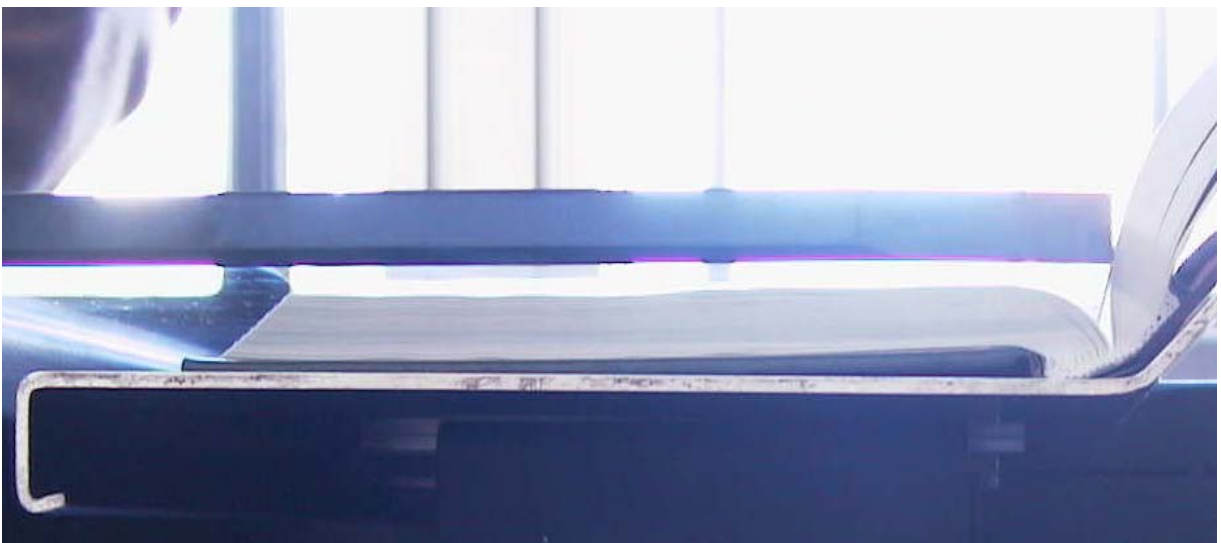
The cradle works by lifting the book up to the glass platen so that only one page at a time is presented to the camera. The book is held in the cradle at 120 degrees as shown in the diagram and photographs. This method allowed the side being presented for imaging to be lifted up to the glass platen effectively holding the page being imaged perfectly still. The pressure the book is under at this point varies between 4 and 8 bar. This low pressure ensures that the book cannot be crushed in the cradle accidentally.

I feel that this cradle easily out performs all other cradles I have seen. The only system which captures an image as deep into a tight margin are a book cushion and clip. Using the book cushion and clip has several disadvantages. Danger to the folios of a volume through careless use of the clip, aesthetically the clip is impossible to conceal, throughput may also be affected using the cushion and clip method. Although the cushion throughput was not tested, ease of use was and in my opinion the cradle was far easier to use with less risk of damage to the volume.



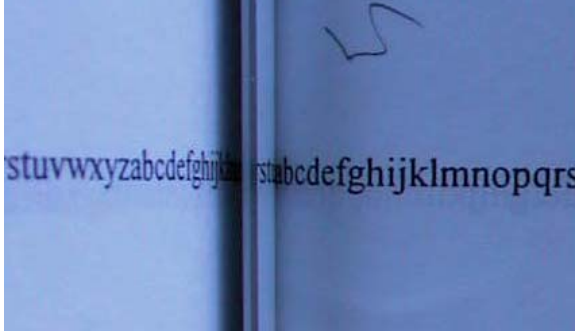
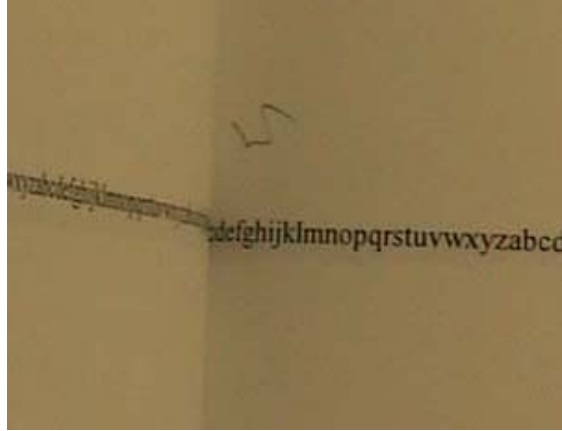
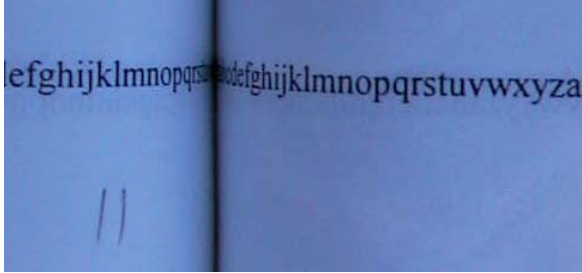
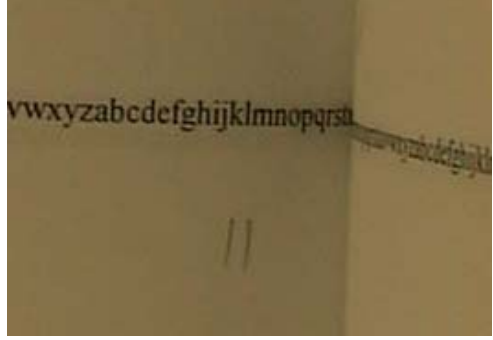
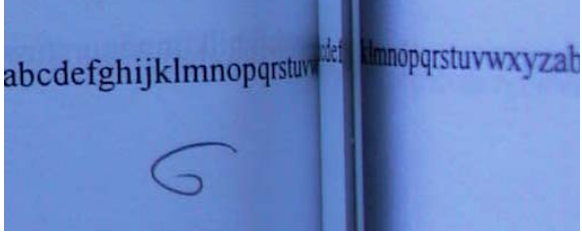
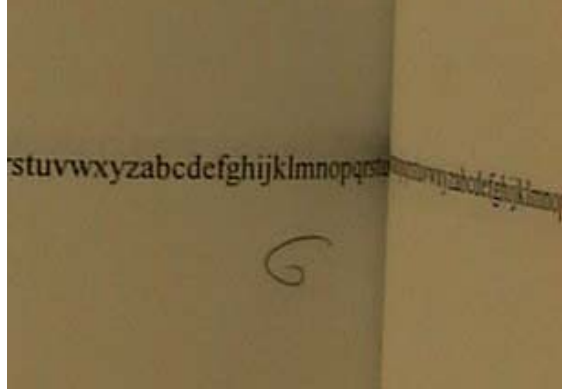


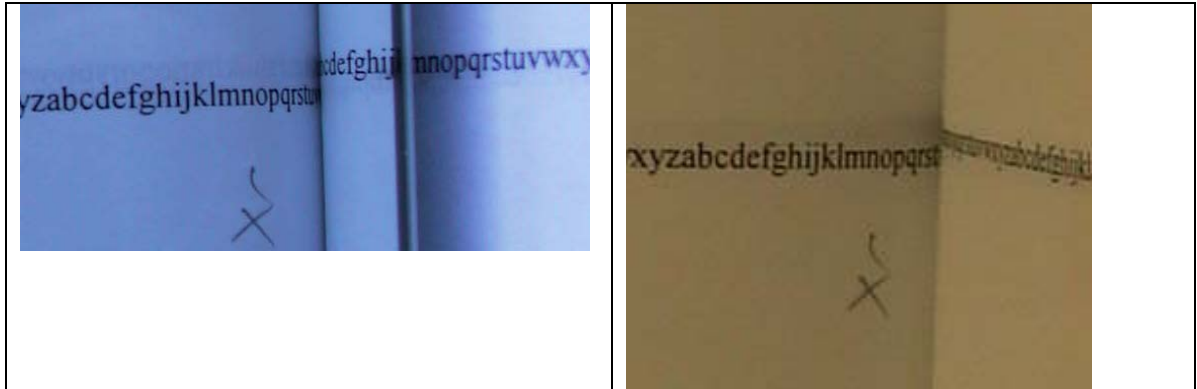
The top picture shows the dummy volume on the 120 cradle prior to the cradle being lifted to the glass platen.



The bottom picture shows the book lifted against the glass platen at 4 bar. Note that the inert foam shown on the diagram is not in place here.

The following page contains images taken with the SCAN camera. These images can be checked against Dagmar's dummy book. This lets us witness how well the IKM 120 book cradle functions.

IKM 120 degree book cradle	Allan Buchanan 90 Degree Book Cradle
	
	
	



### **iCAM Book Cradle**

Evaluation by Peter Dickson

Society of Archivists Conference Trade Fair 27/6/2000

This book cradle features simple but effective modifications to the book cradle demonstrated during the camera trials in February.

These modifications will allow the cradle to function in a similar way to the IKM cradle. The main difference is that the book platform remains static, the glass platen is hinged so that it is manually lifted to allow page turning. (The IKM cradle has a fixed glass platen; the book platform is lifted and lowered using pneumatics).

Once the cradle is set up for a specific volume, the book platform is raised manually by turning a handle which works on a screw. This movement is only required to fine-tune the height of the volume in relation to the glass platen as pages are turned.

The main difference between the IKM and the iCAM book cradles is that the iCAM is manually operated. This should be considered an advantage as this system has far fewer moving parts and does not require a compressor. Another advantage over the IKM model is the adjustable angle of the book platform. Where the IKM model is fixed at 120°, the iCAM may be set to 90° or 120°. 180° is an option for both cradles.

Peter Dickson

## **7. Appendix C: Handling guidelines**

### **C1: Handling guidelines**

#### **Document Handling Guidelines**

##### **Introduction**

The Keeper of the National Archives of Scotland is charged with, among other duties, the preservation of the records of Scotland. Preservation Services Branch through the Conservation Department is responsible for developing policy on the preservation and conservation of all collections held by the National Archives of Scotland. The importance of this is that being seconded from the NAS conservation dept. SCAN conservation staff are responsible for the conservation and preservation of all archive material undergoing digital imaging by SCAN.

Given that the earliest of the testaments date back almost five hundred years, all those involved with the imaging of these archives must be trained to handle archive material with care. Not only is the archive material old, fragile and irreplaceable, it is also part of this country's rich cultural heritage and as such must be handled with care and respect.

##### **Guide to handling Testament Volumes**

This guide to handling is aimed at SCAN staff and GSU volunteers who will be involved with the digital imaging of the Testaments and warrants. It is designed to be used in line with the present NAS Handling Code of Practice but more specific, showing where the particular weaknesses, handling and production problems of both volumes and flat material lie.

##### **Training in the Handling of Archive Materials.**

- 1/** Talk and handout (to include NAS Handling Code of Practice) on the issues and practice surrounding the correct handling of archive material.
- 2/** Showing of videos relating to correct handling principals.
- 3/** Practical demonstrations showing best practice for the handling volumes and documents.

### **Basic guidelines for the handling volumes.**

**1/ Always wash your hands** before and after handling archive materials. Never lick or apply moisture to fingers to flick pages over. Do not slide one folio against another in an attempt to separate one from the other.

**2/ Always use two hands to carry or move a volume**, the majority of them are large, heavy items. When moving more than two volumes trolleys are available and must be used. This is for the safety of both the records and the staff.

**3/ When handling these volumes during image capture** it is important that the volumes are never forced to open beyond their natural degree. Allowing the bindings to open too far may break the spine, this in turn will hold up production as a conservators time is taken up repairing the damage.

**4/ When paginating**, use a 2B pencil, making a light mark. Heavy use of a pencil will mark through the folio and off set onto the previous folio. Pens and permanent markers must be kept away from areas where archive documents are being worked with.

**5/ If while imaging a testament volume the binding structure starts to come apart** it is important to report this to the conservation department immediately. This may be inconvenient but the old saying a stitch in time saves nine was never as true. Please also report any other damage incurred by the archive material during imaging whether this damage is inherent or accidental.

**6/ Always ensure that the volume is fully supported** using an appropriate book cradle. If a volume can not be imaged using the book cradle (e.g. because it is too small) support it with e.g. a book cushion or some plastazote foam. If the volume needs to be held open during capture always use equipment supplied by or vetted by the conservation department. Use as instructed by conservation staff.

**7/ Take time to ensure the quality of the image.** Double handling of archive material due to an unacceptable image must be kept to an absolute minimum.

**8/ No drink or food will be consumed or stored in the camera room or in any area out with designated canteens.**

**9/ If some residual debris is found on the folios of a volume**, this may be brushed off using the brush provided. The brush must not be used for any other purpose as it may become contaminated.. Folios must not be cleaned using hands to sweep debris off. This also could contaminate the folios with grease. Do not blow debris off the book as this could cause ingress of the debris elsewhere, including eyes!

**10/ Where text is obscured for any reason**, ( folded corners, debris which has adhered to the page etc. ), please call conservation for help.

**11/ Make sure that you always have enough desk space** for unpacking and other handling purposes.

### **Additional guidance for handling flat material.**

- 1/** If flat material is stored in see through plastic wallets (Melinex), image through the Melinex whenever possible. If the item in the wallet is folded, remove and unfold it for imaging. Carefully place it back into the Melinex.
- 2/** When unfolding flat material always take the time to assess how the folio is folded. Much damage can occur when an already weakened folio is opened in haste. Care should also be taken when refolding the documents.
- 3/** Always take care to ensure when refolding a document, it is folded back into its original folds.
- 4/** Make sure that large items are supported completely. Ask the conservator for a large enough board if you have none available.
- 5/** When using weights and other pieces of equipment use only such items as supplied or vetted by the conservation department. Use as instructed by conservation staff.

### **Binding styles which contrive to make the imager's life difficult.**

The following is a brief explanation of some of the physical problems caused by the binding techniques used on a high percentage of the testament volumes. This explanation is intended to allow an understanding of the techniques used in the past and their limitations. This will in turn engender a sympathetic approach to handling these archives.

It is understood by archive professionals that all items are at risk during reprographic processing. This is true of digital imaging also. Items, in particular volumes are at great risk due to the very nature of this imaging project. The very fact that hundreds of volumes are being imaged in their entirety presents a clear risk.

The remit for SCAN Conservation is to present the archive material in a suitable condition for digital capture, provide handling guidelines and training to reduce the risk of damage during capture, and to record all details of conservation requirements and treatments throughout the life of the project.

#### **Two-on Recessed Sewing**

A high percentage of testament volumes are sewed and bound in a particular style. This style is called two on recessed sewing. Two on sewing is where two or more ( three on etc.) sections are sewed on the volume with one pass of sewing cord and needle. Recessed sewing involves sawing into the section backs ( the spine of the book ) in order to recess the cord sewing supports.

The main reason for this type of sewing structure was to increase production in the bindery in order to meet demand driven by print shops. This style is rarely used now as it is recognised as an extremely weak sewing technique which does not respond well to reprographic handling.

It is not only because it is weak that this sewing structure is unsuitable. Problems are also caused by the volume not being allowed to open fully due to the

nature of the recessed sewing. Add to this the too heavy back linings and we have a volume which is reluctant to function properly. Most of these bindings have now been re-bound several times. In the past, each time a volume was re-bound while retaining the original sewing, the sewing suffered when the old linings and adhesives were scraped off the spine along with fiber from both paper and sewing cords. This scraping action has the effect of hardening the (animal) glue adhesive while weakening the spine, this renders the spine even less flexible. A high percentage of these volumes open particularly poorly at the joints. The first and last sections do not open all the way to the spine folds of the sections, this has the undesirable effect of hiding text from view. All these problems are in turn exaggerated by narrow binding margins.

Although, as already mentioned, the joints are tight and the margins narrow, it will be difficult to justify dis-binding a volume.

### **Paginating volumes.**

1. Paginate 50 folios at any one time, this is equal to pagination of 100 pages.
2. By paginating 50 folios at a time it is easy to check for mistakes and limit the amount of correction required. Pagination in this manner allows a check to be made against the foliation marks, if the foliation marks show a mistake remember to allow for this when checking. Imagine paginating an entire volume only to find a mistake at folio number 25.
3. All pagination to be done using a 2B pencil.

### **Criteria for Disbinding of Testamentary Volumes**

- Physically damaged text cannot be treated by in-situ repair methods
- The method and manner of binding is causing and will continue to cause damage to the text block

**No volume which remains in original and contemporary binding or in a binding of historic interest should be dis-bound to facilitate image capture. Please note retention of original structure to be paramount .**

Peter Dickson  
Dagmar Hinz

## **C2: Handling guidelines for photographs and related material**

### **HANDLING GUIDELINES FOR PHOTOGRAPHS AND RELATED MATERIAL**

- Do not eat, drink or smoke in a room that holds photographic material.
- The temperature and humidity in the digitising room should be within the safe range for gelatine emulsion photographs as shown in the diagram from the Museums & Galleries Commission (see separate hand-out). If the environment in the room is outwith these recommendations, do not bring photographic material into the room until the conditions have improved.
- Always work on a clean surface area. If necessary, cover the surface with cheap, plain paper (like unprinted newspaper), which can be changed as soon as it becomes dirty.
- Do not remove material from its sleeves if not absolutely necessary. If they have to be removed, remove the packing material (also interleaving tissue) by lifting it, not by sliding it over the photograph. If unprotected photographs are stacked, remove one at a time, also by lifting, not dragging them. Lift them with both hands, by two opposite edges.
- Wear gloves while handling photographic items while or after removing them from any packaging and do not touch the gelatin/image surface. Wear cotton or surgical gloves for prints and film negatives, surgical gloves for glass plate negatives.
- Use two hands to hold the item and if possible support it with one of the support trays, especially if the photograph is fragile, brittle or large.
- Do not stack loose, unprotected prints or glass plate negatives on top of each other. Nothing should be placed on top of photographs. Never put them face down.
- Always handle only one photographic item at a time.
- Remove envelopes from negatives and not vice versa. If a photograph appears stuck to its container, do not attempt to remove it but call a conservator.
- Do not attempt to flatten rolled or curled prints. Call a conservator.
- Do not try to force two photographs apart. Call a conservator.
- Support photographic albums on a book cushion.
- Avoid the use of ink, especially felt-tip pens near the photographs.
- Do not use adhesive tapes, staples, pins, metal paper clips and rubber bands on the photographs.
- Do not put any of the material near heat sources or fresh paint. Keep the exposure to light as short as possible.

#### Glass plate negatives (gpns)

- Only take as many gpns to the digitising room as you expect to finish to the next tea or lunch break (2-3 hours).
- Shift boxes supporting them underneath with one hand.
- Transport the boxes with gpns on the trolley provided.
- To unpack the gpns, place the box on its side in the support construction provided.

- Only remove one gpn at a time, sliding it out of the box with one hand whilst supporting it underneath with the other hand. Lay it down on a clean surface and open the four flap paper packaging.
- Check for sharp edges and for any cracks. Even small hairline cracks can snap very suddenly when the plate is handled. Beware that even if one part of the plate seems in sound condition the other end of the plate might be extremely fragile. Call a conservator when finding any cracks or breaks.
- Wear surgical gloves when handling the gpns.
- Handle gpns on the edges only, holding it on opposite edges when lifting.
- Lift and place down gpns horizontally. Never put them down on the edge.
- Only put them down on a clean and/or protected surface.
- Always put them down onto the glass side, with the emulsion side up.
- Do not stack gpns on top of each other. Do not put any other pressure or weight onto them or put anything onto the emulsion surface.
- Use support tray as often as possible when moving gpns, especially larger or thinner ones.
- Always handle only one gpn at a time.
- Do not try to brush or blow off any dust or dirt. Call a conservator if gpn needs to be cleaned.
- When imaging, do not switch light box on any longer than necessary.

#### Health and safety awareness

- Glass plate negatives:  
Be very careful to prevent cutting yourself. Even with careful handling a plate might break suddenly. If you find a plate already broken, call a conservator. Wear surgical gloves and only handle on the edges. This is not only to protect the image but also because some processes used mercury.
- Cellulose acetate or nitrate base film negatives:  
Plasticisers and gases that come off deteriorating film can cause skin or throat irritation. Wear cotton or surgical gloves and handle on edges only. Switch on an extractor.  
Nitrate base film: Beware of fire risk. Inflames easily in high temperature.
- Mould spores: avoid touching any material affected by mould and call a conservator.

#### **Dagmar Hinz**