

RESTORATION AND PRESERVATION OF DOCUMENTS

*A Summary of a Report prepared by Churchill Fellow
James Bruce.*

PART I

In 1973 the Winston Churchill Memorial Trust awarded a Fellowship to Mr. James Bruce, the Document Repairer in the Queensland State Archives. The Fellowship enabled Mr. Bruce to travel to the United Kingdom, Canada and the United States to extend his knowledge of the techniques and materials used in the restoration and preservation of documents and record material and to investigate new trends in this field. His period of study extended from April 13 to July 29, 1973, though during the period he was able, with the consent of the Winston Churchill Memorial Trust, to take three weeks' leave in Europe (from the middle of June till early in July).

Mr. Bruce has prepared a report for the Trust; the full report is too large to print in *Archives and Manuscripts*, but with the consent of the author and of the Trust the Editor plans to take some parts of it and reproduce them in this and successive issues.

Brief summaries will suffice for Mr. Bruce's visit to Wolvercote Paper Mill, Oxford; Guard Bridge Paper Mill; the Engineering Branch of the Imperial College of Science and Technology, London S.W. 7; the Scottish Record Office; and the National Archives and Records Service, Washington. These summaries will be given in the next issue of *Archives and Manuscripts*. Also in the next issue an extract will be given from Mr. Bruce's report, on the India Office Library and India Records Office; the report on the Public Archives of Canada will be held over for the November issue of *Archives and Manuscripts*.

The Hand Restoration methods of the Public Record Office, London, are described in the present extract.

The Public Record Office, London

There are two widely-used methods of restoration currently employed throughout the world. One method is restoration by hand, and the other is restoration by lamination. Lamination is used in all the centres that I visited, but as the greatest reliance is placed on this method in Canada and the United States, I shall treat this process fully when I come to deal with the Public Archives of Canada. Hand repair and restoration methods are practised widely in Britain, and it seems appropriate to deal with the methods used in the Public Record Office in this first extract from my report.

Hand restoration and preservation of documents and maps involves the following procedures:

1. Inspection of document including obtaining pH readings.
2. Cleaning and bleaching.
3. Deacidification by
 - (a) aqueous method, or
 - (b) non-aqueous method.
4. Resizing and drying.
5. Restoration by use of
 - (a) Bodleian (hand or mould made paper), or
 - (b) Japanese tissue.

The programme of my stay at the Public Record Office was planned on the basis of four weeks, but due to holidays and a public service strike, the time was reduced to three weeks. Four courses of instruction are held there:

- (a) Document restoration.
- (b) Parchment restoration.
- (c) Map restoration.
- (d) Seals and lamination restoration.

Because of the brief period of my study there it was decided that I should be instructed in the basics of document and map restoration only. Document restoration was carried out for two weeks and map restoration for one week. The Public Record Office techniques give a guaranteed extension of document

life of one hundred years, given proper storage. The general name for these techniques is Bodleian restoration.

Working conditions were very good although the placement of benches did result in some obstruction of natural light. There was plenty of space between work benches, hot water was available, and the area was centrally heated. An ambient temperature of 25.5°C is maintained. The work benches have large deep drawers and incorporate a light table and are surfaced with grey laminex. High tools with backs are supplied. Both fluorescent and natural lighting are available at every bench, along with a swivelled table lamp. There are also fire extinguishers, and a fire alarm system.

Document restoration, map restoration, binding and laminating operations are all carried out in separate but adjacent rooms. The map room is similar but has two large map tables 9' x 9' and 2' from the floor to allow one to reach over to the centre. Heaters are erected over the centre of the map tables for drying purposes. A full range of pH meters and indicators is available. Other equipment includes a guillotine, book presses, paper trimmers, document dryers, an electric drill with stand, stainless steel frames, sheets of perspex, terylene sheeting, fumigation machines, a fumigation cabinet, plus tools and equipment. Fumigation is carried out in a small thymol cabinet.

The processing of documents for restoration was controlled by a foreman's job sheet, on which were noted the number of the document, its accession classification, and the date it was received for restoration. It was then inspected, its sheet size determined, pH readings taken, dirt adherence estimated, and the stain observed. This last mentioned detail is important because the restoration paper must follow the grain in the original. The ink was tested by a drop of leacidifier (magnesium acetate, eight grams to one gallon of water) for stability. Then one of the following procedures was adopted –

- (a) edge repair;
- (b) full repair;
- (c) full repair with seal on document;
- (d) full repair with message on back.

a) Edge repair. A strip of polythene was placed on the light table and sponged with deacidifier. The document was placed on the polythene and sponged over with the deacidifier working from the centre of the document towards the sides. It was then reversed and the ink was sponged with a flick motion, but not rubbed. It was then left to relax while the repair paper was cut with the grain running the length of the strip. The repair paper was dampened and pasted (Clam paste), then placed on the document and smoothed down with a fairly dry sponge. The light in the light table was turned on and an edge was scored down in a wavy fashion from one-quarter of an inch to three-eighths of an inch in from the side of the document with a needle, leaving a boot effect at the bottom and the top of the document. Then the score was smoothed down with a moist roller which made for an easier pull-away. The waste edge was lifted with two fingers and pulled away (not torn away) from the repair. The repair edge was smoothed down with a dry folder and surplus paste sponged off. The document was then placed between heavy blotting paper to dry. It was subsequently placed between pressing paper to press overnight. Next morning the document was removed from the press and trimmed to size.

b) Full repair. This process involves backing the document with a full sheet of repair paper. Polythene was laid on the light table and sponged over with leacidifier. The document was placed on the polythene with the ink facing up. This was then sponge-deacidified with a flick motion and then reversed and the plain side done likewise. It was left to relax while the repair paper was cut to full size with the grain running the right way. After the repair paper was damped and pasted, it was placed on the plain side of the document, working air bubbles from the centre towards the side. The surplus paper round the edge was then trimmed off.

c) Full repair with seal on document. The polythene was laid on the light table and sponged over with a deacidifier. The document was placed on the polythene

with the seal uppermost and sponge-deacidified. The document was then reversed and sponge-deacidified then left to relax while the silk and repair paper were cut to size. After dampening the repair paper and pasting, it was placed on the side of the document without the seal. A sheet of perspex was then pasted heavily. Then terylene was placed on the perspex and slightly paste washed. The polythene was lifted with the document and reversed over on to the terylene with seal uppermost. (Repair of the seal, if it should be necessary, is of course an entirely separate procedure). After placing polythene over the whole of the document and smoothing it down with a dry sponge it was lifted off and placed in a rack. When it was dry the document was lifted off carefully from the perspex and terylene and trimmed to size, and sent to the Seal Room for the seal to be repaired.

(d) Full repair with small message written on the back of the document. The procedure is exactly the same as for full repair, but before applying repair paper the silk was cut to half inch bigger all round than the written message and placed on the document and pasted. The repair paper was pasted and placed over the silk and then a window cut to show the writing through the silk.

After the documents have been restored, guards made from glazed cartridge were cut to sizes 14-1/4 inches x 4 inches, and 14-1/4 inches x 8 inches. If there was only a single document, one guard was used. The guard was tipped on to the front of the sheet. If there was only one folded document, then the guard was tipped on to the back of the sheet. If there was a section of six documents then three to four guards were allowed. The guards were then folded around each section and sewn with a saddle stitch. Each document, as it was guarded, was placed one up and one down. When all documents had been guarded and sewing was completed the end of the guard was cut off diagonally with a pair of scissors. Then they were laid in a frame, and three sheet paste board strips, each 14-1/2 inches x 1 inch, were cut to build up the back. Each document was placed in by separately building up the back and keeping it level with the front of the file by adding strips until it was 2 inches thick, which is the maximum thickness for a file in the Public Record Office. Boards were cut for covers, the size being 14-3/4 inches x 10-5/8 inches with a 1-inch hinge and a 3/8-inch joint. Two end sheets were cut to 14-1/2 inches x 10-5/8 inches. Then the file was clamped in a file holder and holes were drilled in five places and then saddle-sewn temporarily. When removed to the guillotine the back was trimmed. The covers were then made of buckram in the appropriate colour for the department. A spine the same thickness as the file and 14-3/4 inches long was made and covered with buckram turned in on the waste paper. Holes were punched in the hinged cover, and it was placed on the file and tied off with a very strong twine. The advantages of this filing system are that:

- (a) The documents can be readily removed from this file;
- (b) It is simple to photocopy without removal;
- (c) If another document has to be inserted it is just a matter of renewing the twine; and
- (d) Preservation criteria are fully met.

Maps

The first step in restoring a map is for the document to be inspected, as is done in the repair and restoration techniques described earlier. The sample map to be restored was 24 inches x 18 inches mounted on 32-lb. mould-made paper and holland backing. There was a slight dirt adherence and a small inscription written on the back of the map. Deacidifier (magnesium acetate) was added to water and paste. The map was cleansed off with an eraser and ink-tested; which test proved it to be stable.

Terylene was laid on the bench top and moistened slightly. Air bubbles were removed and the map placed on the terylene and moistened. The map was lifted from the terylene and placed on one side. The backing paper was cut with a 4 inch margin with the grain running the correct way. The silk was cut with a 1-inch margin. The backing paper was placed on the terylene and moistened and pasted liberally. This paste had to have a slow adhesion because of the larger

surface area of maps. There was a small inscription on the back of the map so a piece of non-stick material was cut and placed over the writing, then a piece of manila and finally another piece of non-stick material. The map was then lifted and placed on to pasted backing paper 4 inches in from the guarded end and 1 inch in from each side. The air bubbles were smoothed out with a roller, using light pressure as there was a tendency to squeeze all the paste out from under the map. Then the edges were sponged free of surplus paste. Silk was then placed on the face of the map and pasted from the centre towards the sides. The repair paper was moistened and pasted, then laid around the edges of the map, being scored with a needle in a wavy but not accentuated pattern, about 1/4 inch to 1/2 inch all round the edge of the map. The folder was dipped in water and smoothed over the score. This allowed for moisture to penetrate into the score and made for an easy pull away. Surplus repair paper was then eased away. The map was lifted off the terylene and placed on drying sheets for a few minutes whilst the terylene was pasted, washed and smoothed out. The map was then placed back and covered with polythene and smoothed down once again with a moist sponge. The polythene was removed and the map allowed to dry off overnight. It was placed in a press the next day for a period of 24 hours. After pressing, the map was trimmed of surplus repair paper and attached to a cylinder. A 3½ foot diameter cylinder was selected, being 4 inches wider than the map and a piece of cloth 18 inches x 8 inches was cut and attached to a cylinder leaving 8 inches overlap and 4 inches either end. The map was attached to the overlap and sewn on. Ties were sewn on the bottom of the map. Finally it was rolled up with the ends of the cloth being tucked into the roller and tied off with one classification ticket pasted on one side and the other hanging at the end so as to be visible when the map was stored.