

## The Recent Conservation Treatment of Portrait Miniatures at Library and Archives Canada

### ABSTRACT

In many museums, the expertise for the treatment of portrait miniatures often resides in the objects or paintings conservation labs, while in archival related institutions, it often resides in one of the paper conservation labs. As with any specialty, the ability to maintain expertise over the long term requires a transfer of knowledge to other conservators. Since 2003, Library and Archives Canada (LAC) has invested in the development of in-house expertise for the conservation of portrait miniatures (Trojan-Bedynski et al., 2011). In 2015, a condition survey of LAC's portrait miniatures collection was conducted by conservators, with two main goals; to use as a tool in succession planning, to identify and address items requiring condition reports, conservation treatment, further monitoring or additional preservation care, such as re-housing or frame repair.

Portrait miniatures are subject to a wide variety of physical problems, often a result of inferior materials, poor handling or improper storage conditions. This paper will focus on the recent conservation treatment of several miniature portraits on ivory at LAC. Specific case studies will examine various conservation activities, including; documenting the condition of portrait miniatures, opening various types of encasements, cleaning and mould removal, consolidation of flaking paints, humidification and flattening of warped ivory, repair of cracked or broken ivory supports and the often lengthy process of acquiring and replacing a missing or broken cover glass.

### INTRODUCTION

Early miniatures in Europe were painted with opaque colours on vellum. In 1705, Venetian artist Rosalba Carriera introduced ivory as a replacement for vellum. Artists recognized the translucent quality that an ivory support could lend to a miniature painting, which led to a rapid change from the use

of opaque paints to more transparent watercolours. By 1720 ivory had replaced vellum as the most common support for portrait miniatures. (Aiken, 2000)

The portrait miniature collection at Library and Archives Canada consists of over 130 miniatures, which are part of a much larger portrait collection documenting the history of Canada. Though there are several early portraits as well, the majority of LAC's miniatures were created during the 19<sup>th</sup> century by European, American and Canadian artists, trained in French or English miniature painting methods. (Trojan-Bedynski et al. 2011) The majority of the collection is painted in watercolour on ivory, though the collection also contains enamel on copper, porcelain, card, vellum and glass supports.

### SURVEYING AND CONDITION REPORTING

The recent condition survey of LAC's portrait miniatures collection, has allowed conservators the opportunity to assess and document the condition of each miniature and to transfer knowledge related to past treatments and history of the object. During the survey, photographs were taken of every item and a spread sheet was created specifically for conservation, which included the materials of each miniature and whether condition reporting, conservation treatment, monitoring or re-housing was required. (figure 1)

LAC conservators reviewed a variety of sample condition report forms from other institutions, which had been designed specifically for the documentation of portrait miniatures. A new, narrative condition report was created for LAC's miniatures, which allowed for the insertion of images and expandable fields of information. The 4 major components of each miniature; the paint layer, support, glass and frame components were described and assessed by grading their condition on a scale of 1-5. An overall condition rating for the object was then assigned and used to prioritize items most in need of conservation treatment. (figure 2) Condition reports were completed for all new items to the collection and included treatment proposals when conservation treatment was necessary. Conservation treatment of the miniatures

---

Presented at the Book and Paper Group Session, AIC's 44rd Annual Meeting, May 13–17, 2016, Montreal, Canada

Intellect. container label	photo	Title	DRAWER 5 Home loc. barcode #	Container barcode #	Media type	Mikan #	Page 2 of 2 Content note
1984-119-1 MIN-070		Major John Norton, Teyoninhokarawen, the Mohawk Chief, painted by Mary Ann Knight, 1805	113402280005	2000792890	Watercolour, gouache and varnish on ivory	2836984	No treatment required. New frame created in 2013, foam opening in the storage box needs to be enlarged for better fit
1984-175-1 MIN-071		Adress Miss Jessie White Painted by Hugo Meisel, ca 1920	113402280005	2000792891	Watercolour on porcelaine, mounted on card	2837671	No treatment required. <b>Requires a frame and glazing.</b> Prepare specifications for a new frame
1984-118-1 MIN-072		Captain John Ross, R. N., painted by Mary F. Hamilton, ca. 1834	113402280005	2000792892	Watercolour on ivory in lg gold frame	2837341	Condition report done: <b>Requires new frame and glazing</b> as current frame is damaged- Prepare specifications for a new frame
1984-168 MIN-073		Portrait Of Unknown Male (possibly a member of the Sise Family?)	113402280005	2000792893	Wax silhouette adhered to card, in a 2pc oval wooden frame	2939421	Condition report done: <b>Treatment required:</b> (Wax is cracked but still adhered to backing. Velvet from case interior is sticking to wax.)
1982-202-1 MIN-074		Admiral Sir Charles Ogle, Bart. Painted by Cornelius B. Durham in 1850.	113402280005	2000792894	Watercolour, (varnished), on ivory, adhered to 2 sheets of paper	2837556	Condition report and treatment proposal done. <b>Treatment required:</b> (Requires opening for cleaning of ormolu and treatment of the ivory)
1981-062-2 MIN-075		Madame Georgianne Chaussé, mother of the artist. Painted by Juliette de Lavoye, ca 1926	113402280005	2000792895	Watercolour on ivory with a 3pc hinged display case	2837558	no treatment required

Fig. 1. (LAC collection survey spreadsheet).

**CONDITION AND TREATMENT REPORTS**  
**MAPS & MANUSCRIPTS CONSERVATION LAB**

Accession No.	0000-000 C-083509 MIN-028	Work order No.	NA
Mikan #	2939198	Bar code	2000792511
Examined by	Doris St-Jacques	Date of exam	May 11, 2015

**DESCRIPTION OF OBJECT**

Title	Simon Fraser, Master of Lovat, who raised the 78 <sup>th</sup> Highland Regiment.	 <b>Recto</b>	
Artist	Unknown		
Date of Execution	ca. 1900-1910		
Object Materials	Parchment primary support (to be confirmed), card secondary support, push fit brass coloured oval frame with hanger, blank paper label on the verso, white paper oval spacer, oval convex glass		
Manufacturing Technique	Watercolour miniature portrait		
Object Medium	Watercolour, with flaked gold painted accents on the jacket.		
Inscriptions	On verso of the frame, "Gen Simon Fraser 78 <sup>th</sup> Reg"		
Primary support	Possibly parchment, to be confirmed after opening		
Secondary support	White card	Dimensions (cm H x W)	7.0 x 5.5cm
Frame/Encasement type	Push fit oval metal frame, with a hanger at top. Has been engraved on verso with "K&Co." along bottom edge.		
Glass type	Oval, convex glass		

**CONDITION**

Surface layer	Relatively good condition, no evidence of surface dirt or mould.	
Paint Layer	There are losses along the bottom edge, in the red area of the jacket, likely due to abrasion as the paint layer does not appear to be cracked or flaking.	
Primary support	Slightly cockled, lifting from the secondary support at the bottom edge, though appears to be securely adhered overall otherwise.	
Secondary support	White card is slightly cockled and has paint brush strokes around the miniature.	
Frame/ Encasement	The bottom and left edge of the frame seem to have blood on the recto. There are several small, light scratches on the recto surface, while the verso has several, much deeper scratches overall. There are two holes in the metal of the frame back, likely where a cord was once attached, though has been replaced with a polyester cord. After him on the front of the frame is tarnished, as is the outer rim at the top of the frame. Scruff marks on the back surface have exposed the metal beneath the gold coloured finish.	

**CONDITION AND TREATMENT REPORTS**  
**MAPS & MANUSCRIPTS CONSERVATION LAB**

Glass	The oval, convex glass contains pits and bubbles created during manufacturing of the glass.
Previous repairs	None visible
Housing	Currently housed in a BS box with Japanese tissue covered Ethafoam.

Paint Layer Condition Rating	1    2    3    4    5
Support Condition Rating	1    2    3    4    5
Glass Condition Rating	1    2    3    4    5
Frame/Encasement Rating	1    2    3    4    5
Overall Condition Rating	1    2    3    4    5

RECOMMENDED TREATMENT		TIME
Open the frame, remove the miniature and clean the interior and exterior of the frame and glass. Examine and record the support material of the miniature. Seal (if possible) any exposed areas of the metal beneath the finish to slow future corrosion. Replace the current paper spacer with a properly cut spacer, made to fit the miniature. Re-assemble the miniature, spacer, glass and encasement.		
Documentation		Condition, recommended treatment and treatment reports Photo documentation ST, DT and AT
Total		

APPROVAL FOR TREATMENT AS PROPOSED			
Recommended by	Doris St-Jacques	Date	May 14, 2015
Approved by		Date	

Fig. 2. (New condition report created for LAC miniatures).

began with the items determined to be at the greatest risk, starting with any items containing mould. Miniatures were only opened if necessary and only if they were able to be treated at that time.

In 2011, the Journal of the Canadian Association for Conservation, published an article entitled '*A Portrait Miniature Project at Library and Archives Canada*', by conservators Maria Bedynski of Library and Archives Canada, Carol Aiken, private conservator from Baltimore Maryland and Alan Derbyshire from the V&A museum. Tables in the article provide guidelines for the treatment of various repairs to miniatures on vellum or ivory and were a valuable resource for determining appropriate methodologies for recent portrait miniature treatments.

#### CASE STUDY 1: SIR JOHN SPARROW DAVID (JSD) THOMPSON, FORMER PRIME MINISTER OF CANADA

Our first case study is a 3.7 x 9 cm mourning brooch containing a portrait of Sir John Sparrow David Thompson by artist Bonne de Bock. (figure 4) Following Thompson's death, the brooch was presented to his wife, by their good friends Lord and Lady Aberdeen, the Governor General of Canada and his wife. The miniature is adorned on the recto with pearls and bull's eye agate stones. The pin clasp on the verso can be unscrewed and removed, allowing the locket to be attached to the accompanying bracelet and worn on the wrist.

#### EXAMINATION

Initial examination indicated the presence of mould, seen as a cloudiness on the underside of the glass. (Figure 5) The right side of the brooch containing the portrait, was filled with what appeared to be tiny wood fibres and dust. (Figure 6) An archivist at LAC had requested that the miniature be examined to determine the possibility of it being a painted photograph on ivory. Due to the presence of the mould and

the dirt particles inside the locket, as well as the request from the archivist, it was necessary to open both sides of the locket to allow for proper cleaning and further examination.

The cover glass and portrait were held inside the locket by a pressure fit. It was possible to remove the materials from the locket by gently prying the metal bezel upward. The slightly deeper metal bezel on the right half of the locket, held the portrait and the cover glass together by means of metal prongs. (figure 7) These prongs required straightening to allow the portrait and the cover glass to be removed from the bezel. The cover glass was very slightly convex even though it was less than two millimeters in thickness, making it extremely delicate and impossible to replace if broken.

Once the bezel containing the portrait had been removed from the locket, it was evident that the support wasn't ivory as initially believed, but was white milk glass. Tin or Zinc oxide, lead arsenate and phosphates were among the most



Fig. 4. JSD Thompson mourning brooch, Before Treatment (LAC# R5240-28-1).



#### LEFT TO RIGHT

Fig. 5. Mould on the underside of the glass.

Fig. 6. Wood fibres and dust inside the portrait side of the brooch.

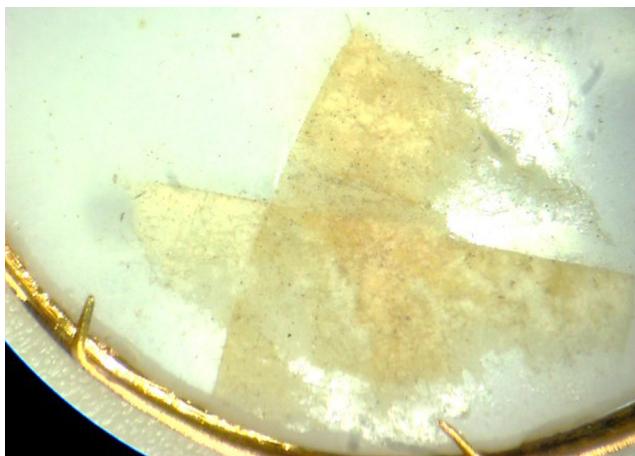


Fig. 7. Metal prongs on the verso of the bezel, holding the cover glass and portrait together.



Fig. 8. William Topley photograph of JSD Thompson (LAC # C-068645) on the left, and the portrait miniature (R5240-28-1) on the right.



Fig. 9. Images of the neck area of the miniature, viewed at different angles, showing several reflective grey areas in the portrait.

common ingredients used to produce white milk glass. In the Thompson miniature, the milk glass was a ‘pot’ or ‘pot metal’ glass, which is white throughout the thickness of the glass. (Whitman, 2007) The use of milk glass in painted portrait miniatures resulted in a similar luminescence to portraits painted on ivory and milk glass was a much less expensive alternative to ivory.

#### MILK GLASS AND OPALTYPES/OPALOTYPES

Further examination of the miniature was conducted by LAC conservators and photo conservator Greg Hill of the Canadian Conservation Institute, who agreed on the presence of a gelatin-based, positive photographic image under the paint layer.

The portrait was determined to be an opaltype, or opalotype, referring to the milk glass used as the support. The original opaltype technique was patented in 1857 by Glover and Bold of Liverpool, and involved wet collodion and silver gelatine. In general, opalotypes can be created using one of two basic techniques. Either a carbon print is transferred onto the milk glass, or a light-sensitive emulsion is coated on the glass surface, a negative image is exposed onto the surface and the emulsion is then processed. Analysis at the Canadian Conservation institute would be required to determine the exact photographic process used in this particular opaltype, as much of the image is heavily overpainted with an opaque bodycolour. Regardless of the exact type of photographic process beneath the overpainted image, only small areas of the miniature required conservation treatment. The consolidation of these areas would not inhibit further analysis of the miniature. The image used for this particular opaltype may possibly be a re-print of a photograph of Sir Thompson, by the famous Canadian photographer William Topley, taken in Ottawa in 1891, 3 years prior to Thompson’s death. (figure 8) The Topley photograph is shown at the left, and the painted opaltype miniature is shown on the right.

These two images of the face and neck areas, have been photographed at slightly different angles to reveal the reflective qualities in some of the grey, yet unpainted areas of the miniature. (Figure 9) On the left, there are several grey areas around the mouth, the chin and the base of the neck. The image on the right shows those same grey areas as quite reflective, though the source of the reflectance cannot be attributed to the milk glass shining through, as these areas are grey in normal light, not white, as they would be if the milk glass was showing through. This is another indication of the presence of an emulsion layer.

An assessment of the condition of the paint layer revealed cracking and curling of the paint on the figure’s lips, cheek and in the hair. (figure 10a-b) Tiny beads of gum Arabic had been applied around the edges of the lapel to simulate a satin trim on his jacket. (figure 11) A small area near the top left of the unpainted background was also flaking, though this area



Fig. 10a-b. Flaking paint in the hair, cheek and lips of the Thompson miniature



Fig. 11. Gum arabic on the lapel of the jacket, to simulate a satin trim.



Fig. 12. An area of the unpainted, flaking background.



LEFT TO RIGHT

Fig. 13. Hand inscribed name of A Moreau and the date of 1895 inside the brooch.

Fig. 14. Cleaning the underside of the metal bezels.

Fig. 15. Application of a 1% gelatine consolidant to areas of flaking paint.

was unpainted, so the flaking was further indication of the presence of an emulsion layer on the glass. (figure 12)

#### CLEANING AND CONSOLIDATION

Following the removal of the contents of the brooch, two inscriptions of the name A. Moreau were revealed; they were scratched into the metal, along with the date of 1895, the year the locket was presented to Mrs. Thompson. (figure 13) The significance of the Moreau name remains unknown. The inner edge of the bracelet is stamped with the 'Birks' jeweller's name, indicating that the bracelet may have been fabricated at a later date than the locket, which does not bear the 'Birks' name.

The filigree wire around the hair strand in the left side of the locket was carefully cleaned with a fine bristled brush to remove green copper based corrosion products from between the twisted strands of wire. The cloth behind the hair was also cleaned to remove loose copper corrosion particles which had been transferred from the filigree wire. The undersides of both metal bezels were cleaned with a lightly dampened swab and soft brush to remove the loosened residue. (figure 14) The cover glasses were each immersed in water for several minutes to soften any surface dirt, and then cleaned with a non-abrasive glass polishing cloth.

Following testing of various adhesives, gelatine was selected as the consolidant using a 1% solution of 200 bloom Type B gelatin in reverse osmosis (RO) water. The cracked paint layer in the lip and cheek areas were consolidated by brush application, and the flaking emulsion layer in the background near the top of the miniature, was also consolidated with a 1% gelatin solution, applied with a Becker Ultrasonic mister. (figure 15) A fine application tip was used for the application, along with a Mylar mask, to confine the consolidant to the flaking area. The miniature was allowed to dry thoroughly.

The verso of the milk glass was cleaned using a lightly dampened swab to remove loose surface dirt and the remnants of a water soluble paper tape. A soft brush was used to clean the recto of the locket between the edges of the bezel and the stones. As both methods of consolidation were successful in closing the gaps in the cracked paint, no in-painting was necessary. The components of the locket were then re-assembled.

#### CASE STUDY 2: ETHEL AND ROBERT MCKENZIE

Our second case study includes the portrait miniatures of Mrs. Ethel McKenzie and her husband Robert Tait McKenzie, painted by Russian born artist Leo Dubson, in 1927. (figure 16) Dubson lived in Paris for many years, eventually working in the United States. The miniatures are 9.5 x 13 cm and both are painted in watercolour and heavily applied gouache bodycolour on very thin sheets of tangentially cut ivory. Leo Dubson used a stippling effect to create fine detail, combined



Fig. 16. Portrait miniatures of Robert and Ethel McKenzie.

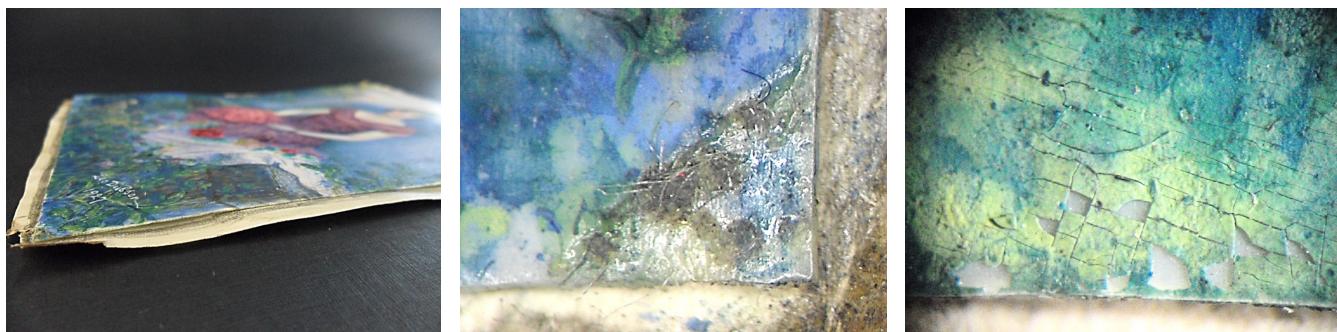


Fig. 17. Scratching technique used to create highlights and add texture.

with a scratching technique using fine needles to create highlights and texture in the paint layer. (figure 17)

#### CONDITION

On each of the two miniatures, an acidic wood pulp paper backing has been adhered at the corners with a proteinaceous adhesive, causing the backing paper to cockle as a result. The cockling of the paper caused distortion of the thin sheets of



LEFT TO RIGHT

Fig. 18. Each miniature was warped as a result of the paper backing adhered to the verso.

Fig. 19. Gummy adhesive on the recto of the McKenzie portraits.

Fig. 20. Cracking and flaking paint has resulted in many losses.

ivory. Each miniature was out of plane and warped along both axes. (figure 18)

Paper fibers were embedded in a gummy adhesive residue on the corners of the recto of both miniatures. Conservators were able to remove most of the adhesive mechanically with tweezers, though it was necessary to apply a small amount of 75% ethanol: water on a nearly dry brush, in order to sufficiently soften and remove the remaining adhesive without disturbing the paint layer. A thick layer of glossy adhesive was also present along the left edge of the recto of the Ethel McKenzie miniature, though it was water soluble. (figure 19) The thick adhesive was locally reduced with the use of lightly dampened swabs, without disturbing the paint layer beneath. Several areas in the paint layer on both miniatures were cracked, flaking and often they were no longer in contact with the ivory. (figure 20) There were many losses in the paint layer which was cracked and flaking, and the bare ivory was exposed in several areas. The areas containing green and yellow paint were badly cracked, while most of the blue painted areas were quite powdery and easily damaged.

#### PAINT CONSOLIDATION AND REMOVAL OF THE BACKING PAPER

Various adhesives were tested to find one which would not alter surface gloss, would be sufficient in strength to secure the flaking areas and would not alter the colour or solubilize the media. A 2% methylcellulose solution was selected as the consolidant for brush application to the cracked and flaking paints, coaxing them back into contact with the ivory. (figure 21) The blue powdery pigments were treated with a single application of 1.5% methylcellulose, applied with a Becker ultrasonic mister. Loss areas were not in-painted.

To reduce the humidity required for the removal of the backing paper, the paper was removed dry, leaving some paper fibres and the adhesive remaining on the corners of the ivory support. To protect the ivory from the application of too

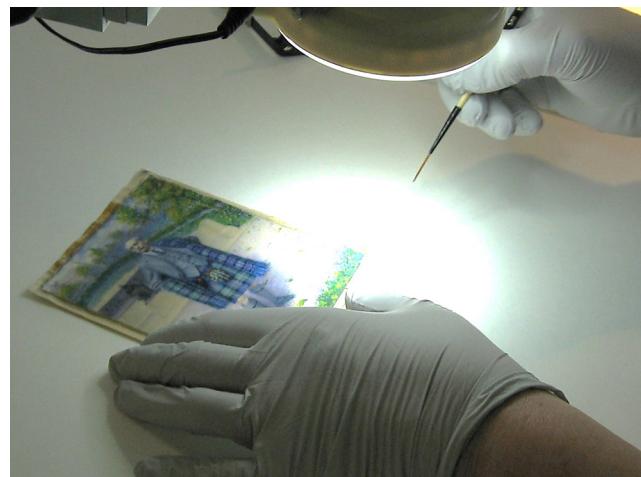


Fig. 21. Consolidation of the cracked and lifting paint, using methylcellulose adhesive.



Fig. 22. A mylar mask was created to protect the ivory during removal of the residual adhesive on the verso.

much moisture during the removal of the adhesive, a Mylar mask was created to protect the ivory, exposing only the areas where the paper fibres and adhesive remained. (figure 22) Squares of a rigid 3% gellan gum were applied to the corners exposed by the mask, allowing conservators to monitor the progress through the clear gel. After approximately 5 minutes, the gellan gum was removed, lifting the paper and much of the residual adhesive with it. (figure 23) The remaining adhesive was quickly removed from the ivory with swabs. This process was also repeated for both miniatures.

#### HUMIDIFICATION AND FLATTENING OF THE IVORY

The miniature of Ethel was placed in a tent over humidified Goretex, but the thin sheet of ivory began to react too quickly, so the miniature was quickly moved to a sealable plastic container, containing a bed of loose, non-decrepitating silica gel, conditioned to approximately 10% over the ambient RH. A plastic grate, covered with Reemay had been placed at the bottom of the container, to elevate the miniature off the surface of the silica gel. (figure 24) The container was sealed and the miniatures were turned every 30 minutes until the ivory relaxed easily when flipped over.

To dry a humidified ivory miniature, Alan Derbyshire of the V&A museum recommends the use of a silicone-coated paper on either side of the humidified miniature, placed between two sheets of glass and clamped during drying. As LAC conservators were unable to locate a source of silicone-coated paper, a trial was conducted using a silicone-coated Mylar against the recto of the miniature, with a layer of absorbent blotter beneath the miniature to prevent the retention of too much humidity against the ivory. Rare earth magnets were used to secure the layers together onto a metal plate beneath the ivory and blotter. (figure 25) Unfortunately, the strength of the magnets required to hold the layers together risked sudden movement of the magnets toward each other during the setup. As a result, the drying system was modified, placing the miniature between two sheets of silicone-coated Mylar and glass, clamping the edges of the glass to keep the ivory flat during drying. (figure 26) Once dry, the McKenzie miniatures were placed into sealed micro environments to reduce the possibility of future warping of the thin ivory. The sealed miniatures were then returned to their original frames.

#### CASE STUDY 3: PORTRAIT OF GENERAL JAMES WOLFE

This last case study is a portrait of General James Wolfe, who is one of the most frequently painted figures in LAC's miniatures collection. The miniature is painted by an unknown artist, in watercolour with gum Arabic, onto a 9.2 x 11.8cm sheet of tangentially cut ivory. The portrait is a copy of a painting also by an unknown artist, which is part of the collection of the National Portrait Gallery in London. The frame



Fig. 23. When the gellan gum squares were removed, the paper and much of the adhesive was stuck to the gellan gum.



TOP TO BOTTOM

Fig. 24. Humidification of the ivory using a sealed chamber with non-decrepitating silica gel.

Fig. 25. The use of rare earth magnets to dry the miniatures was deemed too risky, as the magnets could shift suddenly.

Fig. 26. The miniatures were clamped between silicone coated Mylar and glass to dry and flatten the ivory.



is a pinned, ornate two piece metal frame, with a convex, rectangular glass. The verso of the frame contains the inscription: 'General James Wolfe, Born 1727, Died 1759'. (figure 27) An insignia and the date of 1927 had been painted into the miniature along the right edge.

#### CONDITION

The ivory sheet contained four full breaks, which extended from the top to the bottom edge, three partial breaks, which were also vertical in nature. The edges of the ivory pieces had begun to curl upward and there was evidence of previous retouching along the breaks. Darker paint colours contained a larger proportion of gum Arabic, and were therefore quite glossy in appearance. Some areas of the paint layer contained a scratch technique to create texture and highlights, though other areas in the paint layer had simply been damaged by abrasion. The miniature had shifted inside the frame and was in contact with the glass which, though chipped around the edges, was still intact. As several areas of mould and fungal growth had been identified on the underside of the glass, it was necessary to open the miniature to remove the mould. (figure 28)

#### OPENING THE PINNED FRAME

The metal frame was a two piece frame, (figure 29) held together with pins, though several pins were missing and those that remained did not have any head, so they could not be pulled out. The pins would need to be drilled or pushed inward. As drilling the pins inward could potentially damage the metal around the pin holes, conservators opted for pushing the pins inward, just far enough to allow the top layer of the frame to slip past the tips of the pins. Some pins moved much more easily than others, which was further explained once the frame was separated. Some pins, which were not original, were tapered, and could only be pushed in a short distance. (figure 30) Once the frame was opened, the exposed



Fig. 27. The inscription on the verso of the Wolfe miniature.

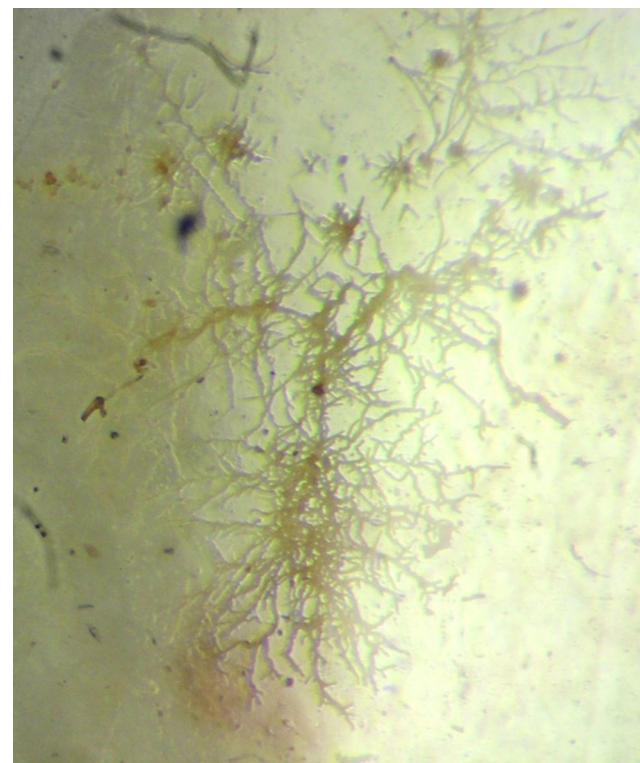
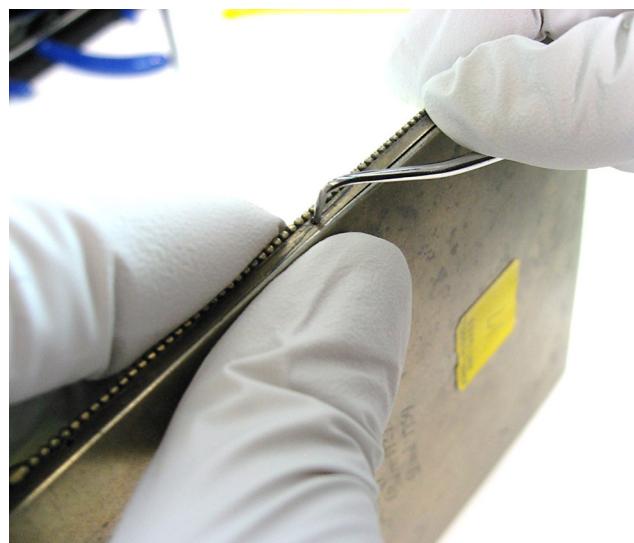


Fig. 28. Mould and fungus on the interior of the glass.



#### LEFT TO RIGHT

Fig. 29. The two-piece, pinned metal frame of the Wolfe miniature.

Fig. 30. A close-up of the tapered pins which complicated the opening of the frame.



Fig. 31. Separating the two card layers with a long, single-edged blade.

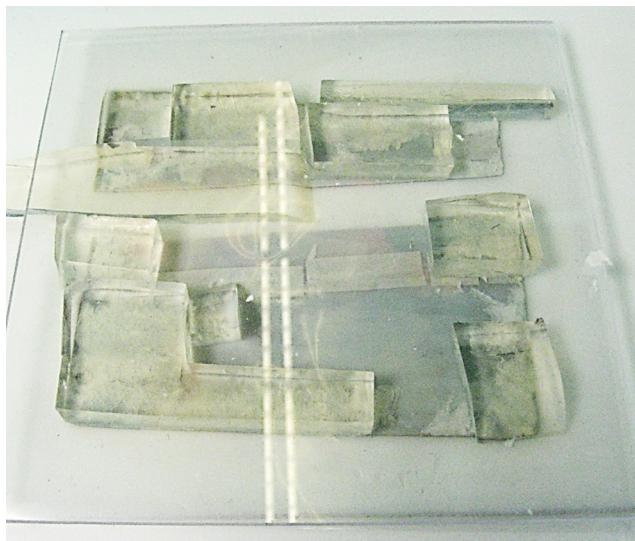


Fig. 32. The white paper tape on the verso of the break edges, was removed with a 3% gellan gum.



LEFT TO RIGHT

Fig. 33. Humidification of the ivory pieces, over pre-conditioned silica gel.

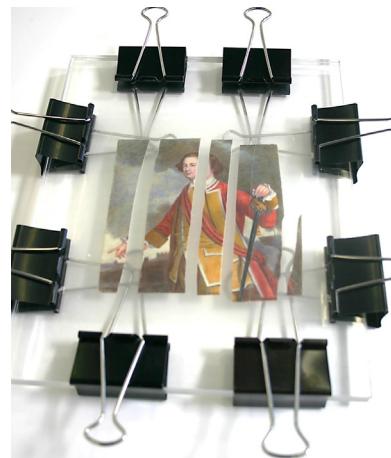


Fig. 34. Drying the humidified pieces between silicone-coated Mylar and glass.



Fig. 35. Repairing the miniature from the center of the ivory outward, using hand applied pressure.

foil edge was carefully pried outward to allow for the removal of the miniature.

#### REMOVAL OF THE SECONDARY SUPPORT

The ivory support was adhered to two layers of card. The adhesive between these layers was dry and the cards had already partially separated. With the help of a long, flat, single edged blade, the two layers of card were completely separated, turning the miniature while using the blade to gently cut between the cards. (figure 31) The white, 2-ply card remained adhered to the verso of the miniature but since the adhesive between the miniature and the card was also quite brittle, the majority of the card was able to be removed dry, revealing a white, paper-based tape on the ivory, which had been used to repair the breaks in the support before it was mounted to the cards. (figure 32) A rigid 3% Gellan gum was used to soften the remaining adhesive and the tape, removing the residue with swabs.

#### HUMIDIFICATION, FLATTENING AND REPAIR OF THE IVORY

Immediately following the removal of the card layers and the adhesive, the miniature pieces were placed in the sealed humidity chamber, (figure 33) flipping the pieces every 30 minutes, over several hours, until evenly humidified. The pieces were then placed between silicone-coated Mylar and glass, clamping the edges until dry. (figure 34) The miniature was allowed to remain between the layers for several weeks while other treatments were completed. Breaks in the ivory were repaired from the center outward, beginning with the break along the right edge of the face. (figure 35) The miniature was held in the conservator's hand, applying gentle pressure to the break edges while applying small dots of cyanoacrylate adhesive to the verso along the break.



LEFT TO RIGHT

Fig. 36. The repaired miniature, viewed from the verso in transmitted light.



Fig. 37. Each repaired break was reinforced from the verso with Japanese tissue.



Fig. 38. The repaired and in-painted portrait of General James Wolfe.

The miniature was kept almost vertical during this process to prevent the adhesive from seeping between the breaks and onto the image side of the miniature. Repairs continued in this manner, until all sections had been re-assembled. (figure 36) The miniature was then clamped between silicone Mylar and Plexiglas until dry.

The break edges were then reinforced on the verso using Japanese tissue and a very dry wheat starch paste, (figure 37) placing the miniature immediately back between Plexi to keep it flat during drying. The edges of the tissue were trimmed and the recto of the miniature was then retouched using Gamblin conservation colours. (figure 38) General Wolfe was then returned to his frame, using the same tapered pins to close the two piece frame.

#### GLASS REPLACEMENT FOR MINIATURES

The component of a portrait miniature which often poses the greatest difficulty is the cover glass. Miniatures can often contain several pieces of both coloured and clear glass within the same item. (figure 39) Convex glass replacement for small items presents several additional challenges. The metal bezel that the glass rests in is often so thin and so precisely fit to the glass, that once the convex glass is removed from the metal bezel, it is often impossible to fit them back together. If that precisely fit cover glass would ever require replacement, it would be absolutely necessary to provide that metal bezel to the glass maker to ensure a proper fit.

Past attempts to replace missing or damaged cover glasses for miniatures, have led LAC conservators from high tech optics companies, to blown-glass artists and watchmakers in



Fig. 39. Miniatures may contain several layers of glass, which can be challenging to replace.

various countries. At the moment we do not have access to a manufacturer of convex glass within Canada, so to have a very precise fitting cover glass made, it would be necessary to ship the metal bezel which surrounds the glass, to a glass maker outside of Canada, allowing them to customize the glass to fit the bezel. This is problematic, as a result

of the Canadian Cultural Property Export and Import Act, which restricts the movement of cultural property out of the country. As a result, we are in need of a convex glass supplier within Canada and we are always happy to receive new contact information for glassmakers.

## CONCLUSION

The recent survey and the development of a new, narrative condition report at Library and Archives Canada, have provided conservators with the opportunity and necessary materials to record the condition of portrait miniatures in greater detail and to use that information to identify miniatures which are at the greatest risk of damage. The ability for conservators to conduct conservation treatments on portrait miniatures in their collections, not only assures that miniatures in their collections will remain accessible, but could also provide institutions with a more detailed description of the materials present in the miniature and the techniques used in its creation. Ongoing work with miniature collections assures further contribution to the body of knowledge available on these unique materials and to the development and continuance of the expertise for those responsible for portrait miniature collections.

## MATERIAL NOTES

- *Non-decrepitating silica gel*: A loose silica gel used to control the RH of the humidity chamber, as the gel does not readily disintegrate upon direct application of water.
- *Gellan gum*: A high molecular weight exopolysaccharide, used as a gelling agent in food, biomedicine and the pharmaceutical industry. When mixed with water and heated, it forms a gel upon cooling. Gellan gum is used at low concentrations (1-4%) for various conservation treatments, including washing of paper and stain removal, though deacidification and bleaching agents can be incorporated into the gel for use in paper conservation.
- *Opaltype or Opalotype*: Also known as a milk glass positive. This is a positive photographic image formed by carbon transfer, or by the application of a light sensitive emulsion onto opal glass/milk glass, onto which a negative image is exposed. The exposed emulsion is then processed. Opaltypes were never extremely popular and were no longer being created by the 1930's. (Osterman 2007)
- *Milk glass*: Also known as opal glass. A translucent white glass, which can be either 'pot' or 'pot metal' glass, meaning it is solid white, or 'flash coated', which coats a layer of white glass over the surface of clear glass. (Whitman 2007)

## BIOGRAPHICAL INFORMATION ABOUT THE PEOPLE BEHIND THE PORTRAITS

### *Sir John Sparrow David (JSD) Thompson 1845-1894*

Over the span of his career, Sir John Sparrow David Thompson served as a court reporter, a lawyer, alderman, attorney general of Nova Scotia, member of the Supreme Court of Nova Scotia, Premier of Nova Scotia and Canadian Minister of Justice, spearheading the revision of the Criminal Code in Canada. He served as Canada's fourth Prime Minister for only two years, when he suffered a heart attack at Windsor Castle, only minutes after Queen Victoria had sworn him in as a member of the Imperial Privy Council. Out of respect, the queen held an elaborate funeral for him and the ship HMS Blenheim, which later transported his body back to Canada, was painted black for the solemn occasion.

### *Robert and Ethel McKenzie*

Robert was a metal sculptor with over 200 works located worldwide. Among his extensive work history, he was an educator, a surgeon in the First World War and is known as the father of modern day physiotherapy. Prior to marrying, he was the physician to Canada's Governor General Aberdeen and his wife, who later served as attendants in the McKenzies' wedding party. Robert's wife, Ethel (O'Neil) McKenzie was a poet, a musician and an educator, and together the couple lived in both Canada and the United States. They eventually returned to Canada to purchase the Mill of Kintail in Almonte, Ontario, which they restored and is now a well-known conservation area.

### *General James Wolfe (1727-1759)*

General Wolfe was a British army officer, commander of the expedition that took Quebec in 1759. He died from his wounds during battle, on the Plains of Abraham.

## BIBLIOGRAPHY

- Aiken, Carol: *Literature that addresses characterization and conservation of portrait miniatures*. Studies in Conservation, Vol. 45, Issue 1, March 2000, pg3-9
- Aiken, Carol: *Materials and Techniques of the American Portrait Miniaturist, (chapter in American Portrait Miniatures in the Manney Collection, by Dale T. Johnson)* Metropolitan Museum of Art, 1990 pp27-37
- Derbyshire, Alan, Satomi Kitano, Nigel Meeks, Caroline Cartwright, Chris Stain and Geoffrey Mitchell: *A study of the microstructure of thin sheets of ivory using SEM and ESEM*
- Johnson, Dale T., *An Introduction to the History of American Portrait Miniatures: (Chapter in American Portrait Miniatures in the Manney Collection)*, Metropolitan Museum of Art, 1990 pp 13-26

- Peres, Michael R., editor: *The Focal Encyclopedia of Photography*—  
Focal Press, 2007 pp. 62, 72
- Espinoza, Edgard O'Niel, Mary-Jacque Mann: *Identification Guide for Ivory and Ivory Substitutes*. 2<sup>nd</sup> Edition, Washington, DC: World Wildlife Fund (1992). pp 1-37
- Espinoza, Edgard O'Niel, Mary-Jacque Mann: *The History and Significance of the Schreger Pattern in Proboscidean Ivory Characterization*. Journal of the American Institute for Conservation, Vol. 32 No. 3: (1993): pp241-48
- Hornbeck, Stephanie: *Ivory; Identification and Regulation of a Precious Material*. Smithsonian National Museum of African Art. pp1-10
- Murrell, Jim: *Structural Defects in British Portrait Miniatures*. Conservation today: papers presented at the UKIC 30th Anniversary Conference, London, 1988. pp. 71-75
- Murrell, Jim: *The Restoration of Portrait Miniatures. Conservation of paintings and the graphic arts: preprints of contributions to the Lisbon Congress, 9-14 October 1972, p.821-824 (1972)*. pp 129-133
- Osterman, Mark. 'Milk Glass' p. 94 and 'Opalotype' p.99 in *The Focal Encyclopedia of Photography: Digital Imaging, Theory and Applications, History and Science*. Edited by Michael R. Peres, Focal Press, 2007.
- Trojan-Bedynski, Maria, Carol Aiken, Alan Derbyshire, Gilbert Gignac and John Grace: *A Portrait Miniature Project at Library and Archives Canada*. Journal of the Canadian Association for Conservation, Volume 36, 2011, pp 15-28
- Whitman, Katharine: *The History and Conservation of Glass Supported Photographs*: George Eastman House and Image Permanence Institute, Rochester, N.Y., 2007, pp1-96

DORIS ST-JACQUES  
Senior Paper Conservator  
Library and Archives Canada  
Gatineau, QC  
[doris.st-jacques@canada.ca](mailto:doris.st-jacques@canada.ca)

MARIA TROJAN-BEDYNSKI  
Senior Paper Conservator (Retired)  
Library and Archives Canada  
Gatineau, QC  
[maria.bedynski@canada.ca](mailto:maria.bedynski@canada.ca)