CCI Newsletter

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Canadian Heritage | Patrimoine canadien

Canada

Preserving my Heritage

The Canadian Conservation Institute has launched a new Web site — "Preserving my Heritage" — aimed at helping you care for and preserve your family treasures, heirlooms, and works of art. The site also provides an introduction to the fascinating world of heritage conservation and the work carried out by the Canadian Conservation Institute.

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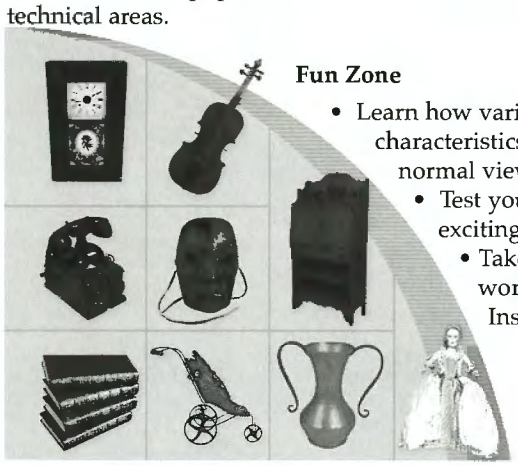

Fun Zone

- Learn how various photographic methods reveal characteristics of objects that are not visible under normal viewing.
- Test your knowledge of preservation in an exciting online game.
- Take a virtual tour of the laboratories and workshops at the Canadian Conservation Institute.

And much, much more!

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The Rewarding Challenges of Treating the *Death of General Wolfe*

by Debra Daly Hartin and Peter Vogel, Senior Conservators, Treatment and Development Division - Fine Arts

CCI recently completed the conservation treatment of the painting *Death of General Wolfe* by James Barry for the New Brunswick Museum. This was a team project that benefited from the collaborative efforts of conservators, conservation scientists, a materials historian, and curators from several institutions. The painting has many stories to tell. It speaks of a dedicated, accomplished artist and intellectual, having great ambition and aspirations, who eventually became notorious for his antagonistic temperament. It also speaks to a pivotal moment in Canadian history, and yet, intriguingly, the painting still holds many secrets relating to its provenance and aspects of its iconography.

Following training on the continent, James Barry returned to London where he began the most productive years of his career as a painter. Between 1771 and 1776, he exhibited 15 paintings at the Royal Academy and established himself as an accomplished painter of historical subjects. In response to Benjamin West's painting of the *Death of General Wolfe* (1770), which had been exhibited at the Academy in 1771 and is now owned by the National Gallery of Canada, Barry wanted to represent a more accurate and noble portrayal of the event. Barry's version depicts a smaller group of people, including only those who may have witnessed Wolfe's dying moments. However, the painting was not well received and was the last he ever exhibited at the Royal Academy. In fact, the painting disappeared for many years, re-emerging in 1901, when it was sent from New York to Montreal for an exhibition. At this time it was purchased by Sir Lees Knowles and given to the Lancashire Fusiliers, who displayed it in the Officer's mess. Sir Lees Knowles later bought it back and placed it in his country house. In 1929, Dr. John Clarence Webster purchased the painting and donated it, in 1932, to its current owner, the New Brunswick Museum.

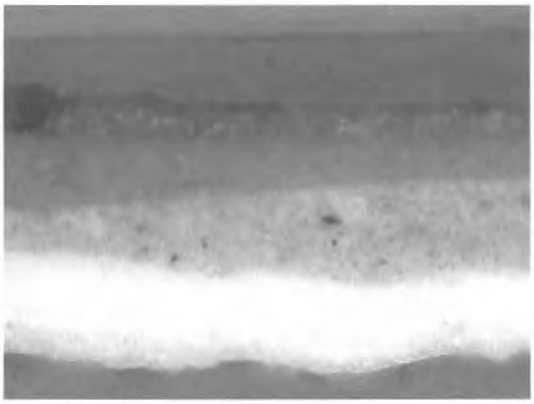
Upon arrival at CCI, the painting was structurally stable, but its appearance was heavily disfigured by layers of discoloured varnish and pigmented coatings. It was clear that early damage to the painting had resulted in major treatment. Repetitive damages, seen in horizontal lines across the painting, were likely caused by creasing while the painting was rolled, perhaps during an early journey across the Atlantic. The painting also suffered extensive paint loss across the bottom, as well as creasing and abrasion to the right side, particularly in the sky area.

Painting before treatment.

At least two early treatment campaigns could be distinguished. The tacking margins of the painting had been cut away and the painting lined to another fabric support. Blistering of the paint on Wolfe's torso, flattened peaks of impasto and the pointed imprint of an iron suggest damaging heat and pressure were used during this lining procedure. Early cleaning of surface coatings had been undertaken to varying degrees on different parts of the painting. Retouching had been applied over intermittent residues of dark varnish and small paint losses had been filled and retouched. In addition, successive layers of varnish and tinted varnish layers had been applied.

Treatment

The painting was examined thoroughly before treatment. X-radiography and infrared reflectography, undertaken by scientific documentation technologist Jeremy Powell, revealed the extent of paint loss and additional information on the artist's technique. During extensive scientific analysis by conservation scientists Jane Sirois and Elizabeth Moffatt, small samples taken from the painting were analysed and viewed in cross section to reveal the layered structure of the painting and to identify the pigments and media used. This technical examination, in addition to extensive research, consultation and collaboration, was required to develop a cleaning strategy. Kim Muir, advanced conservation intern, researched the artist's technique and writings, consulted with other conservators who had treated paintings by Barry, and studied sources available on the materials and techniques of other British artists of the time. This work involved consultation and



Barry was known for his sound painting technique. He expressed dislike for the experimental materials being used by other artists of the time. In this cross section from a red uniform in the painting, a conventional technique is evident. On top of the white ground, the first paint layer or "dead colouring" is applied. Details were added in the next layer, followed by glazes in the "finishing" stage.

collaboration with colleagues at CCI, Andrea Kirkpatrick (curator at the New Brunswick Museum), conservators and curators from the National Gallery of Canada, and conservators from international institutions.

A cleaning strategy was developed that involved cleaning in layers so that the appearance could be assessed constantly in order to determine how much further to proceed. It became clear that a pigmented varnish applied after the lining, but close to the painting's surface, was responsible for a dark cast which dominated the appearance of the painting. Where underlying layers permitted, this coating was removed and, in most areas, a thin "skin" of varnish, slightly darkened with black particles, was left intact. Where glaze layers were found, such as in the red uniforms, cleaning of the dark varnish was done minimally.

The exhibition "The Many Deaths of General Wolfe: Paintings by James Barry and Benjamin West," which presented the first, unique opportunity to compare and study these two major works, took place in December 2000 at the National Gallery of Canada in Ottawa. At this point, varnish removal in the foreground area had not been undertaken. It was decided that, for the exhibition, a varnish would be applied and inpainting would be done. Afterward, a decision would be made about whether the foreground should be cleaned. One difficulty was the presence of brown glazes in this area. Such glazes are difficult to distinguish visually from the darkened or pigmented coatings and are soluble in the same solvents used to remove the latter. It was decided that the painting would benefit from additional cleaning. The recently applied varnish was removed and the underlying varnish in the foreground area was thinned slightly. Details of the design, subtle colour nuances, and a slight brightening of highlights were revealed, all of which restored a greater illusion of depth and a better indication of the spatial relationships established by the artist. Removing the extensive overpaint also revealed details of the image, such as the blanket covering the fallen Native person. The origin of the conspicuous number "410" placed on the tomahawk is unknown. It is possible it was applied as a collection number and was therefore left in the hope that it will provide a clue to where the painting was during its missing years.

Due to extensive, uneven damage and previous restoration treatment early in its life, the appearance of the painting has been dramatically altered since it was first completed. With the removal of the subsequent obscuring coatings, we are able to better appreciate the portrayal that Barry intended. The painting is the focus of an upcoming exhibition at the New Brunswick Museum and will then return to permanent display as research on the remaining secrets of its provenance continues.

Treatment of this painting held many challenges, yet it also had its rewards. The opportunity to work so closely with curators Catherine Johnston (National Gallery of Canada) and Gilbert Gignac (Library and Archives of Canada) was a great privilege and pleasure. To see the painting now, in a condition closer to the monumental impact that Barry intended, is indeed extremely satisfying.

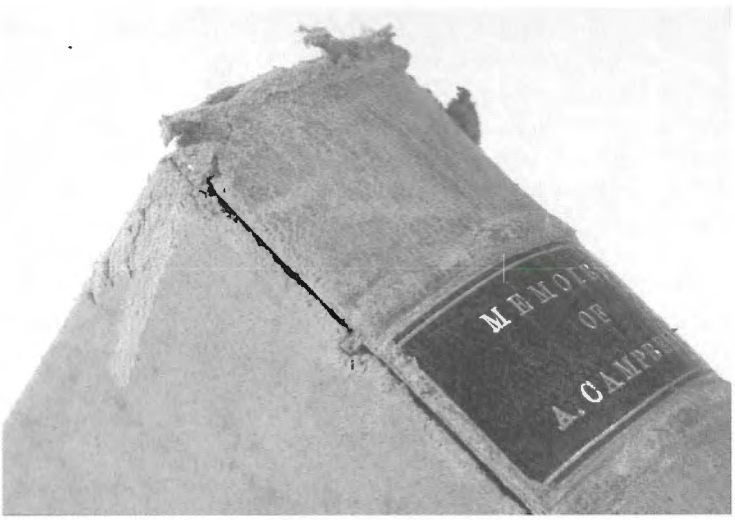
Death of General Wolfe, *James Barry (1775); 1.47 m x 2.39 m, New Brunswick Museum. After treatment.*

Guidelines for Pollutant Concentrations in Museums

by Jean Tétreault, Conservation Scientist, Preventive Conservation Services

The application of concentration standards for pollutants in museums is not a new phenomenon. A number of major museums have already adopted their own standards, but it has been very difficult to determine whether or not the levels were truly attained/maintained or if they resulted in any real benefits. This situation can be explained by the fact that few quantitative data are available to demonstrate the magnitude of the effects of various pollutants on museum objects. In this article I will present a brief history of standards for pollutants in museums and provide some new guidelines proposed by CCI.

Garry Thomson of the National Gallery in London was a pioneer in the field of environmental standards in conservation. As early as 1965, he decried the lack of information on the adverse effects of air quality in museums and called for steps to remedy this deficiency.[1] Despite the paucity of data, many collection managers, architects, and heating, ventilation, and air-conditioning (HVAC) engineers lobbied for reference values for the regulation of lighting, relative humidity (RH), and atmospheric pollutants in their institutions; they demanded standards! In 1978, Thomson, in his book *The Museum Environment*,[2] offered a good description of the nature of the damage caused by these three agents of deterioration, as well as a range of actions that can be taken to combat the problems. Only two pages of this book dealt with regulation of air quality, but these were promptly interpreted as standards. Given the lack of comparative data on the effect of pollutants on museum objects, Thomson based his observations on the condition of books stored in various locations. He noted that books in libraries located in the English countryside were in better condition than those in urban libraries. The damage suffered by books in urban environments was mainly associated with air pollution caused by burning coal (a primary source of energy in England at the beginning of the 20th century). Thomson therefore recommended that the levels of sulphur dioxide (SO_2) and nitrogen dioxide (NO_2) measured in the countryside — i.e. 10 micrograms per cubic metre ($\mu g\ m^{-3}$) for both pollutants — should become the suggested maximum levels for museums.



Deterioration (known as red rot) on a book covered with vegetable-tanned leather. This type of deterioration is caused by the transformation of sulphur dioxide into acid in the leather. The acidified leather surface chips off, and the underlying desiccated layer powders off when lightly rubbed.

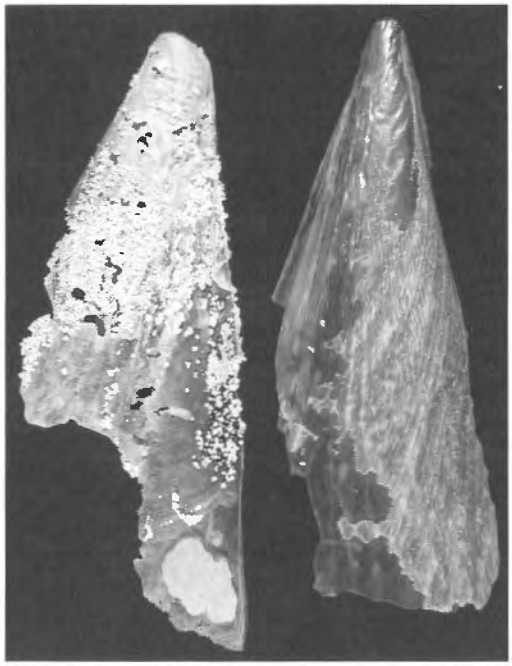
During the 1980s, North American archivists became very interested in pollutants; it was also at this time that central ventilation systems began to offer better regulation of air quality.[3] The list of controlled pollutants increased and even included substances produced within museums, such as acetic acid and formaldehyde. Standards based on technical performance proliferated: these standards prescribed the pollutant levels to be maintained by filtration systems, called for using the best available technology, or stipulated minimal pollutant levels. This encouraged a race to achieve the lowest pollutant levels. The lower the maximum allowable concentration of pollutants, the more prestigious the institution (to the great profit of the filtration industry!). This approach became increasingly removed from any correlation between pollutant levels and their impact on collections. In other words, the cost-benefit ratio became difficult to justify, indeed even to define.

In the meantime, a number of research projects throughout the 1980s and 1990s sought to better characterize the effects of pollutants on materials. All that remained was to analyse, standardize, and compile the data, and make use of them for the purpose of preserving collections. The approach that has been employed at CCI is similar to that used in risk management. It is based mainly on the concept of dose (the concentration of the pollutant multiplied by the duration of exposure) at which the first signs of deterioration caused by a pollutant

are measurable in a material. In the jargon of risk management, this dose is called the "lowest observed adverse effect dose" (LOAED). In accordance with the principle of reciprocity, for a given dose of a pollutant on an object, it is possible to calculate the exposure time required before signs of damage appear. For example, basic fuchsin (a green dye) first begins to turn a lighter colour at a dose of 10 micrograms of sulphur dioxide per cubic metre for one year (10 $\mu g\ m^{-3}$ yr). Therefore, if we want to prevent this slight colour change for a period of 10 years, the average concentration of sulphur dioxide must be reduced to less than 1 $\mu g\ m^{-3}$ (1 $\mu g\ m^{-3}$ x 10 years = 10 $\mu g\ m^{-3}$ yr).

Determining an acceptable rate of deterioration due to pollutants is the responsibility of the collection manager. This is not a matter of adhering to strict standards, but rather using a set of guidelines to choose a suitable preservation level based on the objectives and resources of the institution. Each institution can then take into account the benefits and costs of a control strategy along with their other preservation priorities.

A detailed list of acceptable doses for various pollutants and materials is provided in *Airborne Pollutants in Museums, Galleries, and Archives: Risk Assessment, Control Strategies, and Preservation Management*.[4] Although it is possible to determine the acceptable concentration of each pollutant for each type of object, this approach can be time consuming and expensive. Therefore, many museums will prefer to establish the maximum concentrations of the most harmful pollutants for a collection of average sensitivity. Table 1 presents the maximum concentrations of key pollutants for various preservation targets (a similar version of this table will appear in the 2003 ASHRAE Handbook[5]). However, it must be noted that these guidelines are not appropriate for hypersensitive materials [e.g. cellulose acetate, cellulose nitrate, certain dyes (such as alizarin crimson, turmeric yellow and basic fuchsin), lead, natural rubbers, silver, and polyurethane magnetic tapes], which are very sensitive to certain pollutants and represent special cases.



Efflorescence on seashells. The shell on the left has been exposed to acetic acid vapour and high RH. The shell on the right is the control sample. This type of deterioration is also known as Byne's disease in honour of Mr. Loftus St. Georges Byne who was the first to describe it in 1899. This type of efflorescence should not occur as long as RH is controlled, the sample is kept clean, and there are no materials nearby that emit high levels of acids.

Table 1. Air quality targets for museum, gallery, library, and archival collections

Key airborne pollutants	Maximum average concentrations for indicated preservation targets[a], $\mu g\ m^{-3}$ (ppb)			Reference average concentration range, $\mu g\ m^{-3}$	
	1 yr	10 yrs	100 yrs	Clean low troposphere	Urban area
Acetic acid	1000 (400)	100	100[b]	0.3–5	0.5–20[c]
Hydrogen sulphide	1 (0.71)	0.1	0.01	0.01–1	0.02–1
Nitrogen dioxide	10 (5.2)	1	0.1	0.2–20	3–200
Ozone	10 (5.0)	1	0.1	2–200	20–300
Sulphur dioxide	10 (3.8)	1	0.1	0.1–30	6–100
Fine particles ($PM_{2.5}$)	10	1	0.1	1–30	1–100
Water vapour	keep below 60% RH[d]				

Notes:

a: Preservation target is the length of time (in years) for which the objects can be exposed to the indicated level of pollutants with minimal risk of deterioration. These targets are based on the LOAED of most objects and assume that average RH is kept between 50 and 60%, temperature ranges between 20 and 30°C, and the collection is kept clean (if not, the maximum levels of key airborne pollutants for each class of targets may need to be readjusted). These values are not applicable to hypersensitive materials.

b: Because most objects have high NOAEL for acetic acid, concentrations below 100 $\mu g\ m^{-3}$ are not mandatory.

c: Acetic acid levels can be as high as 10 000 $\mu g\ m^{-3}$ inside enclosures made with inappropriate materials, such as fresh acid-cured silicone.

d: For permanent collections where the average RH has not been between 50 and 60%, maintain the historical conditions.

To assist in setting reasonable preservation targets, Table 2 provides targets that are attainable in various locations and under various conditions. This table is particularly useful when it is not possible to accurately measure pollutant levels, which often is the case. One of the greatest challenges in controlling pollutants is the high cost of pollutant concentration analyses; a complete program of analyses is often unaffordable for small or medium-sized institutions. Most of the published data dealing with pollutant levels in museums and archives were obtained with the help of government subsidies or with the collaboration of a conservation institute or a university with a scientific interest in the subject.

To attain a given preservation target — e.g. a 10-year period without evidence of damage for most of the items in a collection in a given location — it will be necessary to devise a strategy aimed at reducing the concentration of each pollutant and maintaining it at the designated level. Often, the museum will have to develop a series of specifications, i.e. a list of specific descriptions in terms of the performance requirements of the building's structural elements, equipment, materials, and steps to be taken. It will always be easier to comply with a set of specifications than to meet either a preservation target for a collection or a maximum pollutant level. With respect to enclosures (such as display cases and storage cabinets), the specifications are generally easy to apply and effective; for example, "Substances used for the manufacture of the display case must be sulphur-free (according to the lead acetate test)" or "No oil-based paint (oxidative polymerization)." For rooms, the specifications may include stipulations for such things as the type of filter with which the ventilation system should be equipped. However, with rooms it is much more difficult to predict the effectiveness of the specifications. This is due to the fact that pollutant levels in a room are affected by so many different parameters (such as the activities in the room, various sources of pollutants in the room, and infiltration of outdoor pollutants).

It is nearly 40 years since Garry Thomson first voiced his concern, but a better overall understanding of the effect of pollutants in museums is gradually becoming a reality.

1. Thomson, G. "Air Pollution: A Review for Conservation Chemists." *Studies in Conservation* 10 (1965), pp. 147–167.

2. Thomson, G. *The Museum Environment.* Second edition. London: Butterworths, 1986, pp. 268–269.

3. Wilhelm, H. *The Permanence and Care of Color Photographs: Traditional and Digital Color Prints, Color Negatives, Slides, and Motion Pictures.* Grinnell: Preservation Publishing Company, 1993, p. 563.

4. Tétreault, J. *Airborne Pollutants in Museums, Galleries, and Archives: Risk Assessment, Control Strategies and Preservation Management.* Ottawa: Canadian Conservation Institute, 2003. [This book covers in detail the challenges of pollution control in museums.]

5. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE). "Museums, Libraries, and Archives." Chapter 20 in *Heating, Ventilating, and Air-Conditioning: Applications.* Atlanta: ASHRAE, 2003. [This handbook is a reference for heating, ventilation, and air-conditioning engineers in North America and Europe.]

Table 2. Potential preservation targets for most collections

	Potential preservation target (in yrs)[a]				
		In enclosures with EM[b]		In enclosures without EM	
Air quality control in building	**In rooms**	**Without ES[c]**	**With ES**	**Without ES**	**With ES**
Natural ventilation or HVAC system with moderate-efficiency particle filter, no gas filter	1–10	≤1	10–100	10–100	≥100
HVAC system with gas and good-efficiency particle filters[d], building membranes that are good gas barriers, and basic control of visitor flow	10–100	≤10	10–100	≥100	≥100
HVAC system with gas and high-efficiency particle filters, building membranes that are good to very good gas barriers, and limited access	≥100	≤10	10–100	≥100	≥100

Notes:
a: Adverse effects of water vapour and hypersensitive materials are excluded.
b: Emissive materials (products and objects).
c: Efficient sorbent (enclosures are assumed to have an air exchange rate of once per day).
d: Assumes periodic replacement of the filters.

Adhesives Today: Exploring Current Adhesive Options and Application Techniques

In a word — spectacular! That is how CCI's Jane Down, Season Tse, and Jan Vuori described their experiences as co-presenters at the professional development workshop *Adhesives Today: Exploring Current Adhesive Options and Application Techniques*. The workshop was held at the Victoria and Albert Museum (V&A) and The British Museum, April 22–26, 2002, in London, England. This collaboration dates back to May 1999, when Zenzie Tinker, Senior Textile Conservator at the V&A, attended the first CCI professional development workshop *Adhesives for Textile and Leather Conservation: Research and Application*. Two years later, due to Zenzie's initiative, the V&A invited CCI to co-host a week-long professional development workshop focussing solely on adhesives for textile applications. The British Museum was invited to become the third partner, thus expanding the range of adhesives and techniques to be explored.

Workshop participants and instructors at the Victoria and Albert Museum.

Four days of the workshop were hosted by the Textile Conservation Studio of the V&A and one day by the Organic Conservation Section of The British Museum. Together with the V&A's Tina Cogram, Frances Hartog, Lynda Hillyer, Marion Kite, Boris Pretzel, and Zenzie Tinker, and The British Museum's Pippa Cruickshank, Vincent Daniels, Anna Harrison, Nicola Newman, Monique Pullan, Allyson Rae, Sophie Rowe, Helen Morgan Taylor, and Barbara Wills, the CCI team presented lectures and practical sessions, helped develop the program, and helped prepare the participants' binder of relevant information and reference samples. There were 18 participants, including 10 from the United Kingdom, four from the United States, and one each from The Netherlands, Switzerland, Brazil, and Italy.

Zenzie Tinker (left) helps participants during a hands-on session at the Victoria and Albert Museum.

Most of the mornings were devoted to lectures, and practical sessions took place in the labs in the afternoons. Lectures included an introduction to adhesives and bonding, histories of adhesive treatments for textiles at the V&A, CCI, and The British Museum, CCI research on poly(vinyl acetate), acrylic, and vinyl acetate/ethylene adhesives, the V&A adhesive research program, an introduction to starch and carbohydrate adhesives, doctoral research by Irene Karsten on selected adhesive treatments, and categories of condition (i.e. what should undergo adhesive treatment and when should previous adhesive treatments be reversed or left as is). In addition, various conservators from the V&A, The British Museum, the National Maritime Museum in Greenwich, the Textile Conservation Centre in Winchester, and private practice described numerous case histories. These cases not only illustrated many of the concepts described in the lectures, but also introduced a variety of innovative solutions to the types of real-life problems faced by conservators treating actual objects with the limitations they impose.

Practical sessions included examining different types of support fabrics, casting beds, and release substrates; looking at the role of the microscope in examining adhesive deposits and bonds; spraying Beva 371; investigating solvent and aqueous brush and roller techniques for applying adhesives; bonding the adhesive-coated backing to the object using hand-held iron, vacuum hot table, and solvent reactivation techniques; and examining methods for reversing the adhesive bond.

What was initially conceived as a professional development workshop turned out, in practice, to be much more, something akin to a mini-symposium on adhesives for textile conservation. The collective expertise brought together for the event was remarkable: the V&A's 40 years of experience with textile adhesive treatment and research, particularly with poly(vinyl acetate) adhesives; The British Museum's experience with starch pastes, carbohydrate adhesives, and innovative cold lining techniques; and CCI's experience with adhesive research, treatment applications, and adhesive workshop delivery. Not least was the extensive adhesive treatment experience of many of the participants, eight of whom gave presentations about their work. Throughout the week, the friendly atmosphere promoted the open and honest exchange of information that benefitted everyone, participants and presenters alike.

Another aspect that made this workshop so special was the opportunity to examine closely many textiles that had received adhesive treatments. At the V&A, some of these treatments were performed almost 40 years ago and were the pioneering treatments of their day. As such, these adhesive-treated textiles can be regarded as archival documents illustrating the development of an important branch of textile conservation. In addition, guided tours into the V&A galleries gave participants the chance to see many more textiles that had been treated with adhesives over the years. Viewing these textiles in the context of their exhibition in a gallery provided another way of appreciating the appropriateness and success of the adhesive treatments. Similarly, at The British Museum part of the day was devoted to examining various textiles that had received a variety of starch and carbohydrate adhesive treatments. Again, the rare opportunity to examine so many adhesive-treated textiles was extremely valuable. Although the treatments of some of the textiles viewed have been published, reading about conservation treatments is one thing and seeing the actual object is another. For a conservator, there is nothing like seeing the real thing.

Participants examine textiles treated with adhesives at the Organic Conservation Section of The British Museum.

Another factor that contributed greatly to the success of this workshop was the superb organization carried out by the staff of the V&A and The British Museum. One would think that closing down busy treatment labs and coordinating contributions from three institutions plus numerous individuals would create formidable complications, but in this case the effort appeared seamless.

Although adhesive treatments constitute a small percentage of all treatments performed on textiles, there is a great deal more to learn about this specialized approach. Jane, Season, and Jan returned to CCI enthused and full of ideas for research and treatment development possibilities. CCI colleagues had a chance to try out new materials and techniques through several "Adhesive Days" especially organized to share what was learned during the workshop. Hopefully, the new connections forged during the workshop will lead to future collaborations.

Coming Soon!

Airborne Pollutants in Museums, Galleries, and Archives: Risk Assessment, Control Strategies, and Preservation Management

by Jean Tétreault

This book defines the key airborne pollutants for indoor museum environments, and provides some basic tools to assess the risk to collections exposed to these pollutants. It also establishes guidelines for control strategies that give flexible, pragmatic solutions and provides a simple tool for cost–benefit analyses that can fulfil the principles and policies of individual museums. Visit the online Bookstore for news of this release! www.cci-icc.gc.ca

Treatment of a Pastel Portrait

by Edward Kulka, Conservator, Treatment and Development Division - Paper Lab

In 1895, a pastel on paper portrait of Major General John Small (1726–1796) was acquired by the Musée du Chateau Ramezay in Montreal. The portrait was drawn sometime between 1782 and 1796 by an unknown, but obviously talented, artist. It was on permanent display between 1950 and 1967, and a photograph taken during this period shows it to be in good condition — except for a single stain on the Major's shoulder belt. Apparently the portrait spent the next 28 years in storage, during which time staff noticed the appearance of more disfiguring stains. In 1995, the museum contacted the Centre de conservation du Québec (CCQ) and eventually CCI for assistance.

Records of previous restorations do not exist, although a close examination of the earlier photo suggests that the blue background and parts of the portrait — the cravat and to right of the neck — may have been reworked to cover areas where the pastel surface had been damaged. In unstained areas, the pastel medium was in good condition with vibrant, but unfixed, colours. The drawing arrived at CCI in a large, ornate, gold-toned frame with the glass directly against the artwork.

The pastel was executed on a thin paper, adhered to cloth and stretched on a strainer. Examination under the microscope revealed a rough, but shiny, amber-coloured surface. The stains disfiguring the surface all had lighter centres than edges (as do typical water stains) and varied in size, but did not penetrate to the back of the cloth.

An infrared spectroscopic analysis, undertaken by conservation scientist Elizabeth Moffatt in CCI's Analytical Research Laboratory, concluded that any foreign staining materials were below the detection levels of the instruments. In addition, sample analysis revealed a number of pigments and fillers, including barium sulphate, which dates the painting to later than 1782–1783. A small spot test on the right edge determined that the paper was extremely absorbent. A typical water stain soon formed, similar to others on the drawing.

Among the possible causes of the staining, moisture is the most likely culprit — probably the result of framing the pastel against the glass without a spacer. In a less than ideal storage environment, the stains may have appeared gradually over a number of episodes of high relative humidity. The spot test and conservation literature indicate that exposure to moisture can alter the appearance of pastel pigments. A 5-cm margin around the perimeter of the pastel was free of stains where the underlying wood strainer may have acted as a buffer and absorbed the moisture as it formed.

Treatment

After some initial testing with dental tools, a small stain was selected for removal. The clump of pastel was broken up using a sharpened stump, or tortillon. This action left a small pile of powder that matched the colour of the surrounding area (through a change in the refractive index). At this stage, one could either blow off the powder or reintegrate it into the relatively featureless background. Because the pastel powder was part of the original work, it was decided to reintegrate it into the background.

The smaller, softer-edged stains disappeared completely following this procedure, but stronger stains with more clearly defined edges were only reduced. The top layers could be broken up, but a thin dark layer remained firmly attached to the underlying support — possibly the result of moisture dissolving the prepared surface-coating on the paper. Reintegrating the powdered material failed to obscure the underlying stain completely. Additional testing showed that using sharper tools or overworking a persistent stain could make things worse, requiring additional retouching. Knowing when to stop became an essential part of the treatment.

The portrait before treatment.

Following the stain reduction, two strong tide lines (top and bottom left) and the dark lines of the previous restoration attempt were also diminished with the stump, and some retouching with pastel powders was done where necessary. A minor tear and the delaminated areas under the water stains were then repaired with wheat starch paste. Finally, the framing system was modified so that the inner frame element became the new spacer.

The pastel has now been returned to the Musée du Chateau Ramezay where it will be monitored for any re-occurrence of the stains.

Preventive Conservation Summer School

by Gisele Thomson, Learning and Development Officer, Conservation and Scientific Services

In June 2003, CCI will welcome about 25 people from Canada and abroad to picturesque Ottawa for a 3-week intensive experience in preventive conservation. During the course, participants will share ideas and perspectives and, in the process, link into a worldwide network.

This pilot course, *Preventive Conservation: From Current Issues to Common Strategies*, is a collaborative endeavour between CCI and the International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCROM). The purpose of the course is to reexamine how and what decisions are made when developing and implementing preventive conservation. Recent research and decision-making processes will be explored mainly through innovative and interactive approaches.

Four threads fashion the weave of this course: risk management and decision making; methods of communication and implementation relevant to local and national communities; emerging and missing knowledge; and, ultimately, integration of new information from the dialogue with colleagues and within heritage organizations. The exchange of knowledge and perspectives in the classroom and at social events will provide an exceptional opportunity to meet new people and discuss new ideas.

This course is shaping up to be an intriguing learning event. We look forward to telling you about it in a future edition of the *CCI Newsletter*.

For more information about this course, please visit the CCI Web site (www.cci-icc.gc.ca).

In Situ Preservation of Historic Spacecraft

by Robert L. Barclay, Senior Conservator, Treatment and Development Division - Objects

When space station *Mir* fell back to Earth in burning pieces over the Pacific Ocean in March 2001, it became clear that the world's heritage beyond the confines of our atmosphere was not receiving the attention it should. By any standard, *Mir* was a wonderful example of human technology, ingenuity, and spirit, and definitely a historic object worth preserving in any other context. Its deorbiting into the Pacific effectively disposed of a piece of machinery that had become obsolete. However, museum people have come to realize that the technical artifacts that characterized the 20th century are taking a back seat to works of art, pieces of furniture, and other examples of what has traditionally been considered worth saving for posterity. Randall Brooks of the Canada Science and Technology Museum and I have collaborated on a paper that addresses the issue of in situ preservation of large structures such as space stations and telescopes. In this paper, which appeared in the May/June 2002 issue of the *Journal of the British Interplanetary Society*,[1] we discussed the utility of stable storage places in mathematically determined locations in orbits around the Earth and Sun. Arguments were made for international decision-making structures and funding. As far as we know, this is the first time these issues have been raised. It remains to be seen what preservation measures and assessment strategies will arise in the future. One thing is certain: it is now time for the world's specialists in heritage preservation, space flight, astrophysics, and other allied disciplines to engage in discussions so that the loss of such an important historic object as *Mir* will not be allowed to happen again.

1. Barclay, R., and R. Brooks. "*In Situ* Preservation of Historic Spacecraft." *Journal of the British Interplanetary Society* 55, 5/6 (May/June 2002), pp. 173–181.

Editor's Note

These three regular features appear in each issue of the *Newsletter*. "The History of Conservation" looks at conservation treatments of the past, "The Science of Conservation" examines recent scientific analyses that have been conducted at CCI, and "On Display" highlights recent conservation treatments. Watch for them in future issues!

History of Conservation

Inedible Books

by Robert L. Barclay, Senior Conservator, Treatment and Development Division - Objects

In the late 19th century publication *The Enemies of Books* — one of the most entertaining reads in preservation literature — William Blades describes the relative edibility of books by "bookworms":

> One result of the extensive adulteration of modern paper is that the worm will not touch it. His instinct forbids him to eat the china clay, the bleaches, the plaster of paris, the sulphate of barytes and the scores of adulterants now used to mix with the fibre, and, so far, the wise pages of the old literature are, in the race against time with the modern rubbish, heavily handicapped. Thanks to the general interest taken in old books now-a-days, the worm has hard times of it, and but slight chance of that quiet neglect which is necessary to his existence.[1]

Clearly, in applying industrial mass production techniques to make paper as cheaply as possible, papermakers were inadvertently doing something right. Although a lot of 19th century paper is of deplorable quality, at least it does not provide a meal for insects. However, what the worm chose not to devour, time soon took care of. Copies I have seen of Blades's little gem are generally in very good condition. How ironic it would be if his printers had used "modern rubbish", thus saving his text from the worm, but consigning it to rapid decay by its own instability!

1. Blades, W. *The Enemies of Books*. 3rd edition. London: Trübner, 1881, p. 75.

Science of Conservation

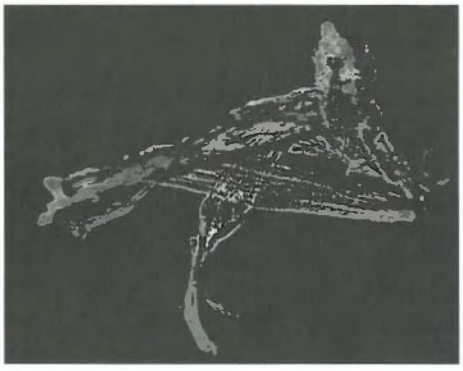
Quantitative Image Analysis in Microscopical Thermal Stability Measurements

by Gregory Young, Senior Conservation Scientist, Conservation Processes and Materials Research Division

The growing effort in conservation to characterize the condition of skin, hide, and leather materials now includes a powerful new tool for quantifying deterioration and documenting structural change due to treatment and storage. CCI has recently developed a quantitative image analysis technique that radically improves the precision and accuracy of microscopical shrinkage temperature measurements (a method that CCI introduced to conservation in 1990).

The original method measures the molecular thermal stability of minute sample quantities of collagen fibres extracted from a skin or leather. The samples are heated in water from room temperature to a maximum below boiling to determine the temperature range over which the fibres undergo a natural process of structural collapse and visible shrinkage. The more deteriorated the sample fibres, the lower the temperature range of this collapse.

The new quantitative image analysis technique captures an image every quarter degree Celsius during heating, so that fibre shrinkage is transformed into a digital process comprising millions of image pixels. This new digital quantification proceeds through four stages: (1) separation of the pixels representing the fibres

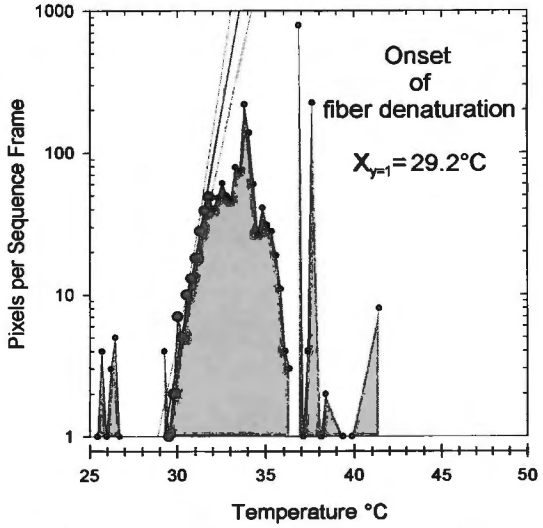


Left - One of 220 images taken of this fibre sample during heating. Right - After processing, the image contains only the pixels that represent shrinkage.

from those of the background, (2) conversion of the background pixels to zero intensity followed by (3) summation of the pixels representing just the shrinking parts of the fibres over each quarter degree temperature interval, and, finally, (4) plotting the counts in a graph. The resulting curve precisely marks the beginning and end of fibre collapse.

The new technique is currently being used to measure the preservation of the 10th century Archimedes Palimpsest, the oldest existing writings of many of Archimedes' theorems. Other significant parchment documents are also being studied.

Incorporating quantitative image analysis into thermal stability measurements has produced a truly objective analytical technique, one that has tremendous value for a broad range of research and conservation applications for skin and leather materials in museums, galleries, and archives. CCI plans next to employ the technique to characterize the effects of humidification on semi-tanned skin garments of First Nations.



The temperature of the onset of shrinkage is shown by plotting on a graph only the pixels that represent shrinkage in each image. In this graph, the onset is at 29.2°C.

On Display

Rehabilitation of the Supreme Court Justices' Chairs

by James Hay, Senior Conservator, Treatment and Development Division - Furniture and Decorative Arts

Ernest Cormier, one of Canada's highly renowned architects, was responsible for the design not only of the Supreme Court of Canada building, but also for its grand interiors. He designed and specified the lights, floors, walls, and all of the building's furniture. The building and furnishings continue to impress viewers due to their Art Deco style, luxurious materials, and first-class fit and finish in all respects.

Cormier was much less successful, however, in designing the Supreme Court Justices' chairs. While beautiful to look at, the chairs were supremely uncomfortable. To paraphrase Lloyd George, justices are measured from the chin up. However, their heights have varied from under 1.5 m (5 ft.) to nearly 2 m (6.5 ft.), and the chairs were apparently designed for people 2.15 m (7 ft.) tall. No wonder the chairs were annoying! Every one of the current justices has been using an Obus back support in the official Court chairs to minimize discomfort. Earlier attempts to accommodate the ergonomic needs of the justices had led to a rather savage amputation of the original legs and replacement with a swiveling, office chair spider base. Could the chairs be made comfortable while at the same time preserving their heritage value, or would they have to be replaced?

A joint project was created, led by the Heritage Conservation Program of Public Works and Government Services Canada, to explore and develop a range of possible options to resolve the justices' requirements. In the end, the chairs were preserved and were also reversibly modified. The justices' requirements for functional use were satisfied, while at the same time heritage values were preserved. The old, 1970s spider bases were removed and the legs were restored using Cormier's original plans. As well, the chairs were reupholstered in red leather specially dyed to match samples of the original material that had been lost in the 1970s intervention. The solution's key element was to provide each justice with an ergonomically correct back support, in a choice of three different sizes, that is attached with quick-release fasteners mounted in existing holes that accommodate their different heights.

Although justices may still look stern and serious, it will no longer be due to uncomfortable chairs!

CCI collaborated in an options analysis for the chairs and desks used by the Justices of the Supreme Court of Canada.

Ursus Dix

by Ian N.M. Wainwright, Manager, Analytical Research Laboratory

The conservation community has lost a respected and distinguished colleague and friend. Ursus Dix was killed December 20, 2002, when the bicycle he was riding was struck by a car near his home in Jonquières, near Avignon, France. He was 75. Ursus trained at the Doerner Institute (1948–1951) in Technique of Painting and worked as a conservator for the firm of Hammer in Ulm, Germany (1951–1953), and then Frost & Reed Ltd. (1953–1960), and the Bristol City Art Gallery (1960–1965) in Bristol, England. In 1965, he accepted a position with the National Gallery of Canada (1965–1973) where he was Conservator, Special Projects with the National Conservation Research Laboratory. Ursus was instrumental in developing Canada's then burgeoning conservation profession to which he brought both an exceptional technical understanding and a connoisseurship of works of art.

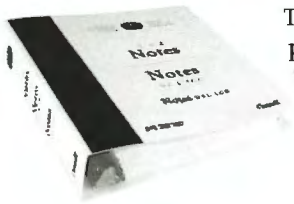
Ursus treated a number of masterpieces in the National Gallery collection, including *Job* (Jan Lievens), *Abraham and the Three Angels* and *Two Franciscan Monks* (Murillo), *Hope* (Gustave Klimt), *Baptism of Christ* (Abraham Bloemaert), *The Arrest of Christ* (Matthias Stomer), *Spring Ice* (Tom Thomson), and *Cardinal Lelio Biscia* (Andrea Sacchi). He was frequently called upon to accompany works of art for travelling exhibitions and was a key contributor to the Gallery's 1972 exhibition "Progress in Conservation." Ursus was also versed in the restoration of sculpture. Colleagues remember his superbly accurate replacement of missing pieces from the marble bust *The Empress Josephine* by French sculptor Joseph Chinard.

In 1973, Ursus joined CCI as Consultant Conservator, Fine Arts and was subsequently appointed Regional Director of CCI's Pacific Conservation Centre (PCC) in Vancouver. A colleague from that period remembers him as someone who "never said anything that was not very well considered." Ursus was the Director of the PCC from 1973 to 1979, after which he returned to Ottawa to rejoin the National Gallery of Canada as Head of its Restoration and Conservation Laboratory. Ursus held this position until October 1983 when he left for France with his wife Eva to look after the estate of his father, Expressionist painter Otto Dix.

Ursus was a Fellow of the International Institute for Conservation and the author of many publications including *The Materials and Techniques of Painting*, his translation into English of Kurt Wehlte's *Werkstoffe und Techniken der Malerei*, an undertaking he completed in his leisure time over several years. Ursus had considerable experience as a lecturer and teacher and is remembered as an extremely supportive colleague. He gave generously of his expertise and spent a great deal of time mentoring younger conservators in the practical and ethical ways of conserving paintings.

Ursus is remembered as a man who had a great joy of living. In the 1960s, he was among a few stalwarts who bicycled to work before it was common to do so. Ursus was very much a hands-on, nuts-and-bolts practitioner. He was a reserved man, neither effusive nor outward, who in his quiet and professional manner made an enormous contribution to conservation. He will be sorely missed.

Notas del ICC



The *CCI Notes* have always been a mainstay of CCI publications, and we are pleased to offer them in Spanish as well as English and French. The translation was done by the Centro Nacional de Conservación y Restauración (CNCR) in Santiago, Chile, under the auspices of a Memorandum of Understanding with CCI and with funding from the Fundación Andes. Clients in Central and South America and the Caribbean can obtain *Notas del ICC* directly from CNCR. All other clients can order the complete set from CCI.

21.5 x 28 cm (8.5 x 11") – 3-hole punched and inserted into binder – 1999
In Canada: CAN$85 – Other countries: US$85

More information on CCI and its activities can be found on CCI's World Wide Web pages:

http://www.cci-icc.gc.ca

A Memorable Afternoon with Eva and Ursus Dix

by Peter[1] and Gisela Vogel

While staying with friends in Cannes in August of 2001, we had the opportunity to visit Ursus and his wife Eva one summer afternoon at their home in Jonquières (a small hamlet in Provence about a half-hour away from Avignon).

The highway took us through Cézanne and van Gogh territory with Mt. Ste. Victoire immediately recognizable. Sunflower fields stretched as far as the eye could see and we arrived in Orange in good time. A gate in a stone wall running along the side of a poplar-lined road stood open; we drove in and parked. No house was visible and we wondered whether we were at the right place. No matter as it was utterly enjoyable. Cool, shaded greenery surrounded us: venerable old trees (mainly chestnuts and olives) and a gravel path meandered off. There was a perfect stillness. We then saw Ursus coming to greet us. He led us along the winding driveway; Eva welcomed us at the door.

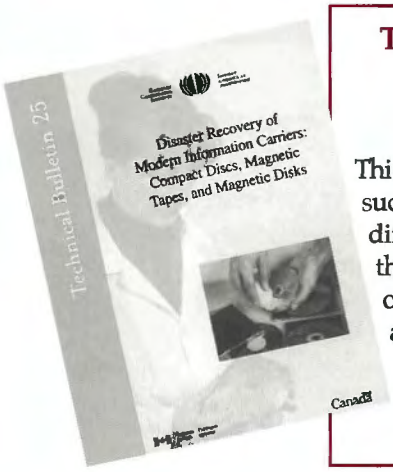
We had not seen each other for quite some time. Ursus and Eva looked the same, neither having changed in any obvious way, but we noticed immediately how well they had adapted to the setting around them. We entered the house through a door overgrown with vines in full fruit. It was a lovely old house — one that had started as a barn with an adjacent stable — so typical of Provence. It had been renovated and added onto, but unobtrusively so. It had beautifully laid out and furnished rooms, high ceilings, exquisite wood panelling. It was cool and quiet inside — a comfortable house, suited wonderfully to displaying great works of art. This experience was enhanced by the knowledge that here, a son was arranging his father's works of art and paying homage to him.

Ursus Dix (centre) with Eva in company with their guests.

Refreshments were served outside on the terrace, where trees shaded us from the hot afternoon sun. We spent a pleasant time reminiscing about the past, our families, our plans for the future, our life in Canada and theirs in France. Eva then took us around the garden. It bore her unmistakable imprint: her love for tending flowers, particularly roses. At the same time, it was also a natural garden. Ursus took pride in pruning the many tropical trees and shrubs. One had the impression of cultivated abundance, tempered wildness — Monet's garden transposed to Provence. The air was fragrant with the scent of lavender.

It was getting late when we parted, promising to see each other again whenever there was an opportunity to do so. We took with us an image of Ursus and Eva standing at the gate, waving good-bye. How happy and thoroughly content they were. It seemed that nothing whatever could disturb that peace.

1. Peter Vogel is a Senior Conservator in the Treatment and Development Division - Fine Arts.



Technical Bulletin No. 25 Disaster Recovery of Modern Information Carriers: Compact Discs, Magnetic Tapes, and Magnetic Disks

by Joe Iraci

This bulletin summarizes some procedures for the disaster recovery of modern information carriers such as CDs, magnetic diskettes, and magnetic tapes following immersion in tap water, seawater, and dirty water. Procedures are also given for dealing with media that have hard-to-remove deposits on them or have been exposed to heat, dust/dirt, mould, and shock. These procedures are a compilation of information from the few case histories published, recommendations made by experts in the field, and research performed at the Canadian Conservation Institute. The information in this bulletin represents one piece of a comprehensive disaster plan; for disasters to be handled effectively, other key elements such as those dealing with disaster preparedness also need to be in place.

ISBN 0-662-33031-5 – paperback, 15 pp. – 2002 – In Canada: CAN$10 – Other countries: US$10

How Are We Doing? Measuring Client Satisfaction with CCI

by Mary-Lou Simac, Client Services Manager, Information Services and Marketing

Since 1999, the Canadian Conservation Institute has measured client satisfaction with CCI services. Respondents have provided the Institute with a wealth of feedback over these past four years. An average of 127 questionnaires were sent out each year, with a response rate of about 55%. Questionnaires are sent after most CCI services, such as treatments, analyses, site visits, reports, and workshops, are completed. Clients who provided responses in the last round include museum, art gallery, and archive associations; museums in Canada, the United States, and England; an international conservation organization; private conservators in Canada and the United States; as well as the Parliament of Canada.

It is gratifying that client satisfaction levels are consistently high. Ninety-two percent of clients reported in the most recent survey that they were either "very satisfied" or "satisfied" with CCI services in relation to all nine criteria. One hundred percent of clients indicated that they were either "very satisfied" or "satisfied" with *overall value* and *usefulness of service provided.* The other seven criteria pertain to the application process, explanation of fees and services, dealings with staff, communication, and promptness of service.

As with any organization, there is room for improvement. For CCI, it is in the application process and promptness of service areas. An initiative is currently underway to develop an "e-services" component on the CCI Web site that will help us address the first issue. Clients with access to the Internet will be able to apply for most CCI services online. Electronic means of communication have become an increasingly important way of interacting with the Institute. We expect that this will only continue to grow in the future.

It is also gratifying to note the number of clients who take time to offer additional comments, often handwritten, frequently thanking conservators and conservation scientists by name. Additional comments often provide welcome suggestions for expanding or modifying services. A recent appreciative respondent even mentioned CCI's preparator, acknowledging his extraordinary effort regarding shipping arrangements for the loan of an environmental monitoring kit.

CCI staff are employees of the federal government and, as such, are members of the Public Service of Canada. One of the core values of public service is competence — an attribute that CCI staff continuously strive to exemplify.

CCI clients speak....

"We got more than our money's worth — thank you!"
from the National Archives of Canada

"This workshop exceeded our expectations."
from the Association of Manitoba Museums

"Very pleased with service of CCI, and would recommend it to others. Keep client informed when reports delayed due to testing, etc."
from a National Historic Site in Ontario

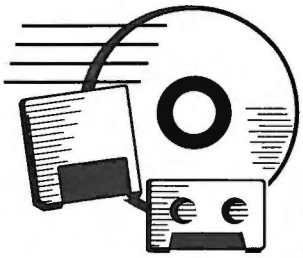
"Could not have proceeded without your service — great!"
from a private conservator in Ontario

"All the staff have been courteous and helpful. I value your services."
from a private conservator in the United States

"I have greatly appreciated the willingness of staff to provide ongoing advice. I, and my client, also appreciated the conservator's approach to a small community group. They speak often of his ability and willingness to speak to them on their level."
from the Halifax Regional Municipality, Nova Scotia

Long-Service Awards

On April 10, 2003, a number of CCI staff members were honoured with long-service awards:
(from the left) **15 years of service:**
Tom Strang, Tara Grant, Marie-Claude Corbeil, Jan Vuori
25 years of service:
Marc Sévigny, Collette Landry
35 years of service:
Bill Peters



Preservation of Electronic Records:
New Knowledge and Decision-making

La préservation des documents électroniques :
Information récente et prise de décisions

Symposium 2003

September 15 to 18 • Du 15 au 18 septembre

Announcement

For more information or online registration, visit the Symposium 2003 section of CCI's Web site www.cci-icc.gc.ca

The Canadian Conservation Institute, the Library and Archives of Canada, and the Canadian Heritage Information Network will be hosting **Symposium 2003 - Preservation of Electronic Records: New Knowledge and Decision-making** in Ottawa, Canada, from September 15 to 18, 2003.

During the last quarter of the 20th century, heritage collections have included increasing amounts of information stored on videotapes, audiotapes, computer tapes and disks, CDs, and DVDs. Although archives and libraries have the largest amounts of this material, much is also found in museums and even galleries. The purpose of the symposium is to increase awareness of the issues surrounding these records by bringing expert and leading-edge opinions to a large audience including small and medium-sized archives, libraries, and museums. The focus will be on making decisions and finding practical solutions that can be implemented immediately. The symposium will be of interest to anyone responsible for the preservation of collections including electronic records.

The program for the symposium will be based on the chronological decisions that need to be made as electronic records come into the heritage institution. Papers emphasizing new knowledge, case studies, or critical reviews will be presented on the following topics:

Value Criteria: What criteria can be used to identify records that should be preserved? How do libraries, archives, museums, and galleries approach this? Are they fundamentally different?

Authenticity Criteria: What criteria can be used to assess the authenticity of records that will be preserved? How do libraries, archives, museums, and galleries approach this? Are they fundamentally different?

Factors to be Considered in Developing a Preservation Strategy: What professional and institutional requirements must be considered in developing a preservation strategy? Does current information technology meet specific preservation requirements? What is the likely nature and quantity of future acquisitions?

Preservation Strategies for Information Content: What is the best strategy to preserve information content — maintain old technology, emulate old technology, migrate records within a proprietary format, convert to a standard format, or create a persistent object?

Media Knowledge: How do media (CDs, DVDs, magnetic tapes and disks) deteriorate? How should media be stored (including survey methodology) and handled? What is the longevity of media? What is the best method of recovering media from a disaster? How is good-quality media selected?

In addition to formal papers, posters will be presented in the traditional fashion on boards, or electronically in the form of Web pages.

Public Information Day

The symposium will kick off with "Preservation Quest: How to preserve your home movies, CDs, videos, and more" — a public information day on Sunday, September 14, 2003. The purpose of this event will be to increase awareness among the public that their personal electronic records (videos, CDs, audiotapes, etc.) have a short lifetime and to provide them with advice on preserving these items. It will be a lively and fun day including demonstrations, presentations, tours, films, and booths where the public can talk to the experts.

Canadian Conservation Institute | Institut canadien de conservation

For more information on the symposium and registration, please contact:
Christine Bradley
Canadian Conservation Institute
1030 Innes Road
Ottawa ON K1A 0M5 Canada
tel.: (613) 998-3721; fax: (613) 998-4721
e-mail: cci-icc_publications@pch.gc.ca

CCI Scientist Wins SVP Preparator's Award to do Cyanoacrylate Research

Jane Down, Senior Conservation Scientist at CCI, has won the Preparator's Award for 2002 from the Society of Vertebrate Paleontology (SVP). This US$5700 award will help CCI fund a research project on the stability of cyanoacrylate adhesives (for example, Krazy Glue, Paleobond, etc.) used with fossil materials. Valuable vertebrate fossils are being treated with cyanoacrylate adhesives because preparators like their handling properties. This puts these priceless fossil specimens at risk because cyanoacrylate adhesives have never been scientifically assessed for their stability and suitability for this purpose. Given the escalating use of these adhesives, assessment is urgently needed.

Winning this award will allow a team of CCI scientists to begin a three-part research project on these adhesives. The first part will be to investigate the stability of cyanoacrylate adhesives by monitoring a degradation product (formaldehyde) in the presence and absence of fossil material. Part 2 will continue this investigation by examining strength loss in various relative humidities and under ultraviolet (UV) radiation. The final phase (part 3) will be to investigate questions of suitability, such as application techniques, penetration, removability of the cyanoacrylate from the fossil, and comparisons to other adhesives, if the cyanoacrylates prove to be sufficiently stable (which will be determined from the results of parts 1 and 2).

Part 1 of this research focusses on the fact that when cyanoacrylates degrade, they produce formaldehyde. This degradation product will be monitored in the presence and absence of fossil material collected from different sites. Because cyanoacrylates tend to degrade more in alkaline conditions (they may also degrade in wet environments and under UV radiation), the team hopes to use a variety of fossil materials that are acidic, neutral, and alkaline to see if this or the diverse mineral content will have an effect on the degradation process. Ethyl and butyl cyanoacrylate and an ethyl cyanoacrylate with added acrylic will be tested to determine if one is more stable than another. (In medical literature, evidence has been presented that butyl cyanoacrylate degrades more slowly than the ethyl variety under specific medical in vivo conditions.) The results of part 1 should help to determine which type of cyanoacrylate is more stable with which type of fossil material and which cyanoacrylates warrant a closer look during parts 2 and 3. Part 1 of the research, which the Preparator's Award will help finance, began in January 2003. When completed, the results will be submitted for publication in a journal that is widely circulated in the paleontology community. Parts 2 and 3 of the research will be carried out later if warranted and if resources allow.

The CCI research team will include Jane Down as leader, and two additional scientists: Jane Sirois will help characterize the mineral content of the fossil material by scanning electron microscopy and X-radiography in order to establish well-defined terms of reference; and Elzbieta Kaminska will carry out further characterization of the fossil material (pH, ash content, porosity) and the experiments on the degree of degradation of the cyanoacrylates in the presence and absence of the fossils.

CCI is delighted to receive this award and very grateful to the SVP for the financial help that will enable this important piece of research to be completed and made available to the paleontology community.

Accolades for CCI

by Carol MacIvor, Senior Communications Advisor, Information Services and Marketing

During the past year, CCI and staff have been the recipients of numerous awards.

Deputy Minister's Awards

Each year, the Deputy Minister of the Department of Canadian Heritage recognizes employees who have performed outstanding work. Last June, CCI was presented with six of these awards during National Public Service Week (June 9–15, 2002).

Brian Laurie-Beaumont and Siegfried Rempel were recognized for their development and delivery of a three-day *Aboriginal Facilities Planning* workshop. Over the past three years they have presented this seminar in nine different cities, and more presentations are planned for this year. While preparing this course, Brian and Siegfried

studied existing Aboriginal facilities in Canada and the United States to ensure that the workshop would meet the needs and preferences of the community.

The second award went to the successful *Adhesives for Textile and Leather Conservation: Research and Application* workshop, which has been offered four times at CCI, most recently in September 2001. The workshop, which attracted participants from Canada and abroad, involves a strong practical element. During the workshop, participants receive hands-on experience using adhesives to conserve fragile textiles or leather artifacts. The workshop was such a success that the Victoria and Albert Museum in London, England, requested that it be given there, which it was in April 2002 (see article on p. 6). CCI staff involved in planning and delivering the workshop included Renée Dancause, Carole Dignard, Jane Down, Ela Keyserlingk (retired), Janet Mason, Season Tse, Jan Vuori, Janet Wagner, and Gregory S. Young.

CCI's third Deputy Minister's Award was for participation in a project at the Walters Art Museum in Baltimore, Maryland, involving the Archimedes Palimpsest. CCI's work established the condition of the parchment, identified the various inks, adhesives, accretions, and residues on the manuscript, reported on removing the modern binding adhesive, and assessed fungus and mould viability. The project received extensive coverage in three lengthy newspaper articles, two carried by the *Ottawa Citizen* (these articles eventually received an Honourable Mention in an international cultural heritage competition for journalists) and one carried nationally in the *National Post*. Members of the team were Jane Down, Maureen A. MacDonald, Carol MacIvor, R. Scott Williams, and Gregory S. Young.

The Canadian Artists' Materials Research Project, recipient of CCI's fourth Deputy Minister's Award, began in 1991. It provides museum curators with reference data for paintings and helps conservators devise treatments and select appropriate display and storage conditions. Law enforcement agencies also find the data useful for their investigations into art fraud. Over the past decade, the research team has studied the techniques and materials employed by Paul-Émile Borduas, David Milne, Alfred Pellan, Jean Dallaire, Cornelius Krieghoff, Tom Thomson, and Jean-Paul Riopelle. The team included Marie-Claude Corbeil, Kate Helwig, David Miller, Elizabeth Moffatt, and Jane Sirois.

The fifth award was for CCI's new Web site, *Preserving my Heritage* (www.preservation.gc.ca). Launched in May 2002, this site was designed to help the general public care for family heirlooms and works of art. It contains practical advice on how to care for objects found in the home, fun and informative insights into the practice of conservation, a photo gallery showing objects before and after treatment, an interactive game, virtual tours of CCI's conservation laboratories, information about careers in conservation, and links to related preservation sites. Involved in this project were Bob Barclay, Carl Bigras, Sophie Georgiev, Linda Leclerc, Raymond Lafontaine, Carol MacIvor, Barbara Patterson, Shanna Ramsay, and Mary-Lou Simac.

CCI was also recognized by the Deputy Minister for its participation in the disaster recovery at the Samaj Hindu Temple in Hamilton, Ontario. Following the terrorist attacks on September 11, 2001, the Temple was struck by arsonists. The building was destroyed and an extensive library in the Temple basement was damaged by water and smoke. CCI assembled a team of conservators on very short notice and was able to recover the library holdings from the flooded basement. The material was carefully wrapped, packed, and then frozen at the site before being transported to Montreal for freeze-drying. The team included Robert Arnold and Michael Harrington from CCI as well as two contractors, Gerry Kofsky and Iona McCraith.

GTEC Award

CCI's new Web site also received a prestigious medal in the Distinction Awards Program, an Annual Celebration of Excellence in Public Sector Management of Information and Technology. *Preserving my Heritage* was awarded the Gold Medal for "Unique Achievement in E-Government" in the category "National E-Government Awards." The medal was presented to team leader Raymond Lafontaine at the Distinction Awards Gala that kicked off Technology in Government Week 2002 (October 7–10, 2002).

Golden Jubilee Medal

The Queen Elizabeth II Golden Jubilee Medal was created last year to honour Canadians who had made "a significant contribution to their fellow citizens, their community or to Canada." CCI conservator Bob Barclay received one of these awards for his work in the care and conservation of antique musical instruments. The medal honours Bob's personal commitment and dedication to furthering the understanding, appreciation, and preservation of historic musical instruments and the recognition he has received both in Canada and abroad.

SVP Preparator's Award

Jane Down was awarded the Preparator's Award for 2002 from the Society of Vertebrate Paleontology (SVP). The award money (US$5,700) will help fund a CCI research project, led by Jane Down, on the stability of cyanoacrylate adhesives used with fossil material. For further information on this research, see the article on page 16.

Upcoming Workshops

CCI's educational initiatives are an essential means of communication. They allow us to share the results of our current research and conservation practices with you, the heritage community, while simultaneously learning about your emerging needs and concerns. We are pleased to provide the following workshops in collaboration with various Canadian heritage associations and organizations across Canada during 2003-2004. Additional workshops will be posted on our Web site at www.cci-icc.gc.ca [under Learning Opportunities] as they are confirmed.

Spring 2003

Musical Instruments
Hosts(s): Cantos Music Museum
Location: Calgary, AB
Date: May 5–6, 2003
Contact(s): Jesse Moffat
Tel.: (413) 543-5128
Leader(s): Bob Barclay

Aboriginal Facilities Development
Hosts(s): Ontario Museum Association
Location: Manitoulin Island, ON
Date: May 28–30, 2003
Contact(s): Cathy Blackbourn
Tel.: (519) 571-1576
E-mail: cate@golden.net
Leader(s): Brian Laurie-Beaumont, Siegfried Rempel

Packaging of Ceramics and Glass for Travel
Hosts(s): Burlington Art Centre
Location: Burlington, ON
Date: June 7, 2003
Contact(s): George Wale
Tel.: (905) 632-7796
E-mail: program@burlingtonartcentre.on.ca
Leader(s): Janet Mason, Judy Logan

Fall 2003

Construction of Mannequins for Historic Costumes
Hosts(s): Museum Association of Newfoundland and Labrador
Location: Bird Cove, NF
Date: September 27–28, 2003
Contact(s): Ute Simon-Okshevsky
Tel.: (709) 722-9034
E-mail: uokshevsky@nf.aibn.com
Leader(s): Janet Wagner, Renée Dancause

Emergency and Disaster Preparedness for Cultural Institutions
Hosts(s): Archives Association of British Columbia
Location: Maritime Museum of British Columbia, Victoria, BC
Date: October 20–21, 2003
Contact(s): Rosaleen Hill
Tel.: Tel.: (604) 709-9263
E-mail: rhill@aabc.bc.ca
Leader(s): David Tremain, Deborah Stewart

Emergency and Disaster Preparedness for Cultural Institutions
Hosts(s): Dryden and District Museum
Location: Dryden, ON
Date: November 3–4, 2003
Contact(s): Leah Gardner
Tel.: (807) 223-4671
E-mail: ddmuseum@mail.drytel.net
Leader(s): David Tremain, Deborah Stewart

Artifacts in Aboriginal Cultural Centres
Hosts(s): Prince of Wales Northern Heritage Centre
Location: Yellowknife, NT
Date: November 14–15, 2003
Contact(s): Rosalie Scott
Tel.: (867) 873-7664
E-mail: Rosalie_Scott@ece.learnnet.nt.ca
Leader(s): Tom Stone, Janet Mason

Winter 2003

Storage Planning for Cultural Facilities
Hosts(s): Museums Alberta
Location: Edmonton, AB
Date: February 13–14, 2003
Contact(s): Carrie Herrick
Tel.: (780) 424-2626
E-mail: learning@museumsalberta.ab.ca
Leader(s): Siegfried Rempel

CCI Services: Lectures, Workshops, and Site Visits

In cooperation with provincial museum and art gallery associations, CCI responds to specific needs within the heritage community by offering workshops, lectures, and site visits related to the conservation and care of museum and art gallery collections. CCI staff also participate in and present lectures to meetings of professional groups and associations.

For the period June 1, 2002 to April 30, 2003, CCI staff were involved in the following activities:

Conferences

Association des archivistes du Québec, Hull, QC, June 6–8, 2002 — Paul Bégin and Mary-Lou Simac staffed the CCI booth.

American Institute for Conservation, Miami, FL, June 6–14, 2002 — Jane Sirois participated in the workshop on *Safety in Decontamination of Cultural Objects*; Christine Bradley, Debra Daly Hartin, and James Bourdeau also attended and everyone assisted in staffing the CCI booth.

North Eastern Archaeometallurgy Research Group, Lehigh University, Bethlehem, PA, June 16–18, 2002 — Jane Sirois participated in the conference.

Indoor Air 2002 - The 9th International Conference on Indoor Air Quality and Climate, Monterey, CA, June 30 – July 5, 2002 — Jean Tétreault presented "Control Strategies for Airborne Pollutants in Museums."

19th International Congress of the International Institute for Conservation of Historic and Artistic Works in Baltimore, MD, September 2–7, 2002 — Season Tse presented "Highlights of Paper Research at the Canadian Conservation Institute"; Jane Down presented "Analysis of Archimedes Palimpsest"; Fiona Jones and Sherry Guild also attended the conference and everyone assisted in staffing the CCI booth.

13th Triennial Meeting of the International Council of Museums - Committee for Conservation (ICOM-CC) in Rio de Janeiro, Brazil, September 22–28, 2002 — Ian Wainwright presented a paper on the conservation of rock painting sites in Argentina including La Cueva de las Manos in Patagonia (the paper was given jointly with the Instituto Nacional de Antropología y Pensamiento Latinoamericano and the Instituto de Arqueología, Universidad Nacional de Tucumán); Marie-Claude Corbeil coordinated and chaired the session of the Working Group "Scientific Methods of Examination of Works of Art"; David Grattan completed his second term as Chair of the ICOM-CC; Carole Dignard, Jean Tétreault, Stefan Michalski, and Bill Peters also attended the conference and everyone assisted in staffing the CCI booth.

Old Master Drawing and Museum Lighting, Getty Conservation Institute, Los Angeles, CA, October 21–22, 2002 — Jean Tétreault presented "Guidelines for Lighting Levels in Museums."

Lectures

"Cyanoacrylate Adhesives" (a narrated PowerPoint presentation by Jane Down) was played at the Cyanoacrylate Forum of the Society for Vertebrate Paleontology in Norman, OK, on October 9, 2002.

"CCI's Epoxy Resin, Poly(vinyl acetate), and Acrylic Adhesive Research" was presented by Jane Down on November 6, 2002, at Queen's University in Kingston, ON, to students in the Master of Art Conservation program.

"Paper and Textile Research at CCI" was presented by Season Tse on January 15, 2003, at Queen's University to students in the Master of Art Conservation program.

"The Scientific Examination of the *Sanders Portrait of William Shakespeare*" was presented by Marie-Claude Corbeil on March 5, 2003, at Queen's University to students in the Master of Art Conservation program.

"La chimie au service de l'art et du patrimoine" was presented by Marie-Claude Corbeil on March 18, 2003, at the Université de Moncton to students in the Département de chimie et de biochimie.

Workshops for CCI's Learning Opportunities

Modern Information Carriers was presented by Joe Iraci and Tom Strang on June 10–11 and November 4–5, 2002, for the Canadian Centre for Architecture in Montreal, QC; on September 19–20, 2002, for the Archives Association of British Columbia at the Vancouver Public Library, Vancouver, BC; and on October 23, 2002, for the National Archives of Canada in Ottawa, ON.

Preservation of Collections: Paintings was presented by Debra Daly Hartin and Helen McKay on September 19–20, 2002, for the Association of Newfoundland and Labrador Archives at Queen's College in St. John's, NF.

Emergency and Disaster Preparedness for Cultural Institutions was presented by David Tremain and Deborah Stewart on September 20–21, 2002, for the Archives Society of Alberta in Calgary, AB.

Mount-making was presented by Robert Barclay and Carole Dignard on October 4–5, 2002, for Algonquin College of Applied Arts and Technology in Ottawa, ON; by Robert Barclay on November 2–3, 2002, for the Museum Association of Newfoundland and Labrador at Lester Garland House in Trinity, NF; and by Robert Barclay, Carole Dignard, and Tom Stone on January 23–24, 2003, for Sir Sandford Fleming College in Peterborough, ON.

Construction of Mannequins for Historic Costumes was presented by Janet Wagner and Renée Dancause on October 18 and 25, 2002, for Algonquin College of Applied Arts and Technology in Ottawa, ON.

Aboriginal Facilities Development was presented by Brian Laurie-Beaumont and Siegfried Rempel on September 18–19, 2002, for the British Columbia Museum Association in Kamloops, BC; on October 28–30, 2002, for the Manitoba Museum of Man and Nature Museum Advisory and Training Service in Winnipeg, MB; and on November 8–10, 2002, for the Prince of Wales Northern Heritage Centre in Yellowknife, NT.

Preservation Management for Seasonal Museums was presented by Deborah Stewart on November 1–2, 2002, for the New Brunswick Museum in Saint John, NB; and on March 7–8, 2003, for Museums Alberta in Red Deer, AB.

Works of Art on Paper was presented by Sherry Guild and Ed Kulka on December 2–3, 2002, for the Ontario Association of Art Galleries at the Agnes Etherington Art Centre, Kingston, ON.

Permanence of Artists' Materials - Paintings & Works of Art on Paper was presented by Debra Daly Hartin and Sherry Guild on February 6–7, 2003, for the MacKenzie Art Gallery in Regina, SK.

Historical Furniture was presented by James Hay and Alastair Fox on November 14–15, 2002, for Queen's University in Kingston, ON.

Precious Metals was presented by Tom Stone and Lyndsie Selwyn on February 13–14, 2003, for the Manitoba Museum of Man and Nature Museum Advisory and Training Service in Winnipeg, MB.

Other Workshops

Aboriginal Market Development was presented by Brian-Laurie Beaumont on September 23–24, 2002, for the Government of Yukon Heritage Branch in Whitehorse, YK.

The History and Treatment of Works on Paper Containing Iron Gall Ink was presented by Season Tse, Sherry Guild, and Maria Bedynski [Library and Archives of Canada - Gatineau Preservation Centre (LAC-GPC)] on November 7–8, 2002, at the LAC-GPC in Gatineau, QC.

Products Used for Display, Storage, and Transportation was presented by Jean Tétreault on November 18–22, 2002, for members of the Association pour le développement de la conservation et restauration in Lisbon, Portugal.

The Treatment of Waterlogged Wood was presented by Tara Grant and Malcolm Bilz on April 1, 2003, at the Wetlands Archaeology Research Project conference in Olympia, WA.

Site visits for facilities development or upgrading

Site visits conducted by Siegfried Rempel and/or Brian Laurie-Beaumont include the following:

British Columbia — Art Gallery of the South Okanagan, Penticton; Whistler Museum and Archives, Whistler; Art Gallery of Greater Victoria, Victoria; Bill Reid Foundation, Vancouver.

Alberta — Grande Prairie Museum, Grande Prairie; Red Deer and District Museum and Archives, Red Deer; Edmonton Art Gallery, Edmonton; Fort Saskatchewan Museum and Historic Site, Fort Saskatchewan.

Saskatchewan — Kenderdine Art Gallery, Saskatoon.

Manitoba — Manitoba Hydro, Winnipeg; Winnipeg Art Gallery, Winnipeg; Transportation Heritage and Technology Centre, Winnipeg; Métis Interpretation Centre, Saint Laurent.

Ontario — Parkwood Estate, Oshawa; Woodstock Art Gallery, Woodstock; Ottawa Art Gallery, Ottawa; Scouts Canada, Ottawa; Peterborough Centennial Museum and Archives, Peterborough; Art Gallery of Hamilton, Hamilton; Woodland Cultural Centre, Brantford; Cumberland Heritage Village Museum, Cumberland; Museum of Health Care, Kingston; Brockville Museum, Brockville; Ontario Provincial Police Museum, Orillia; Mnjikaning First Nation, Orillia.

Quebec — Cascapedia River Museum, Cascapedia; Museum Heritage Collections Centre, Montreal; Musée des Abénakis d'Odanak, Odanak.

Nova Scotia — Wagmacook Heritage Centre, Cape Breton; Black Cultural Centre for Nova Scotia, Dartmouth; Bear River First Nations, Bear River.

Prince Edward Island — PEI Museum and Heritage Foundation, Charlottetown; Confederation Centre Art Gallery, Charlottetown.

Newfoundland — The Rooms (a new cultural and heritage centre for Newfoundland & Labrador), St. John's.

Yukon — Kluane Museum of Natural History, Berwash Landing; Commissioner's Residence, Dawson; Kwanlin Dun First Nation, Whitehorse.

Nunavut — Kitikmeot Heritage Society and Cultural Centre, Cambridge Bay; Iqaluit Visitor and Interpretation Centre, Iqaluit.

Other site visits

As part of the ongoing Canadian Forces Museums' preventive conservation surveys contracted by the Directorate of History and Heritage of the Department of National Defence, Siegfried Rempel visited the Naval Museum of Alberta, Calgary, AB, and the Seaforth Highlanders Regimental Museum, Vancouver, BC.

Battle of the Restigouche National Historic Site, Pointe-à-la-Croix, QC, June 13–28, 2002 — Nancy Binnie assisted the Underwater Archaeological Services of Parks Canada - Ottawa Service Centre in conducting search and monitoring work on shipwrecks.

Pinhey's Point Historic Site, Dunrobin, ON, July 9, 2002 — Jean Tétreault, Maureen MacDonald, and Deborah Stewart conducted a site survey to look for obvious signs of deterioration due to water, light, mould, etc., and made suggestions for improvements with respect to visible and ultraviolet light, areas of water leakage, storage, fire, and security.

Gloucester Historical Society, Gloucester, ON, July 10, 2002 — Maureen MacDonald inspected the storage facility and display hall, and provided advice on improvements for storage and handling mouldy materials.

Musée d'art contemporain de Montréal, Montreal, QC, July 16–17, 2002 — Marie-Claude Corbeil and Kate Helwig took samples of the works of Jean-Paul Riopelle as part of the ongoing Canadian Artists' Materials Research Project.

Ruthven Park National Historic Site, Cayuga, ON, August 12–16, 2002 — Nancy Binnie and Alastair Fox surveyed the historic interior paint colours on the ceilings and walls of Ruthven Park Mansion.

Musée du Québec, Quebec City, QC, October 21–23, 2002 — Marie-Claude Corbeil and Kate Helwig took samples of works by Jean-Paul Riopelle as part of the ongoing Canadian Artists' Materials Research Project.

Federal Post Office Building, 715 Peel Street, Montreal, QC, October 22, 2002 — Nancy Binnie and Paul Heinrichs investigated paint colours on the exterior iron facade (at the request of Duschenes & Fish Architects/D.F.S. Inc.).

Centre de conservation du Québec (CCQ), Quebec City, QC, October 24, 2002 — Marie-Claude Corbeil consulted with CCQ conservators on a number of requests for analysis and took a variety of samples.

Art Gallery of Ontario, Toronto, ON — Marie-Claude Corbeil (January 31, 2003) and Jeremy Powell and Carl Bigras (February 4–6, 2003) examined paintings including a *Portrait of Henry VIII* attributed to the circle of Hans Holbein.

National Museum of the American Indian (Smithsonian Institution), Washington, DC, February 19–21, 2003 — Jane Sirois assisted in setting up an X-ray fluorescence testing procedure for artifacts in the collection.

Cumberland Heritage Village Museum, Cumberland, ON, February 13, 2003 — David Tremain, James Hay, and Bob Barclay provided advice on the stabilization of the collection damaged by water during a flood.

The Status and Future of Mass Deacidification in Canada

On February 23, 2003, CCI hosted a one-day discussion forum on mass deacidification for interested professionals. CCI staff involved included Paul Bégin, David Grattan, Sherry Guild, Joe Iraci, Ed Kulka, Jean Tétreault, and Season Tse.

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