

# CCI Newsletter

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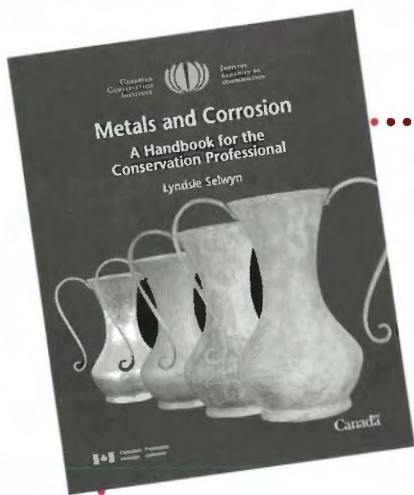
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## Metals and Corrosion: A Handbook for the Conservation Professional

by Lyndsie Selwyn

This book discusses the chemical and physical characteristics and the corrosion products of nine common metals: aluminum, copper, gold, iron, lead, nickel, silver, tin, and zinc. It answers questions about these metals and their corrosion problems indoors, outdoors, and in archaeological settings, and is intended as a reference for conservators and conservation scientists: a place to refresh their memory, get started reading the literature, or look up alloys, plating combinations, and particular corrosion problems encountered with metals in museums. It will be an ideal tool for all heritage professionals who survey, care for, or treat metals, or who come across metals during the course of their work.

ISBN 0-662-37984-5 – 21.5 x 28 cm (8.5 x 11")  
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Cover: Alex Colville inspects the condition of his painting *Horse and Train* which was treated at CCI for the Art Gallery of Hamilton.

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# A Day with Alex Colville

Debra Daly Hartin, Senior Conservator, Treatment and Development Division - Fine Arts

**H**orse and Train, by Alex Colville, is an icon in Canadian art. The unsettling image of a horse running towards an oncoming train, combined with the precision of the artist's technique, is captured in the memory of all who have seen the painting or one of the many reproductions of the image. Upon viewing the painting, art gallery visitors often comment that it is darker than they recall, questioning whether it is changing in tone over time. It had also been noticed that there is a craquelure over the painting's surface, a condition rarely seen in Colville's work. The recent renovation of the Art Gallery of Hamilton provided an excellent time for CCI to undertake a technical examination and assessment of the work as well as the necessary treatment.

A technical examination was done to determine the nature and cause of the craquelure and to determine if the painting's appearance had changed significantly due to darkening. Such an assessment requires familiarity with the artist's materials and techniques. Colleagues in several institutions — the Art Gallery of Ontario, the McMichael Canadian Art Collection, the New Brunswick Museum, the Art Gallery of Nova Scotia and the National Gallery of Canada (NGC) — allowed the author to examine other works by Colville, and to study associated documentation in the gallery files. They also provided insightful comments on the condition and treatment of various Colville works. This investigation culminated in discussions with the artist himself.

## Visit to Ottawa

With the generous support of the Art Gallery of Hamilton, Alex Colville

visited Ottawa, February 16, 2004. With CCI staff, Mr. Colville and his daughter Ann Kitz spent the morning in front of *Horse and Train*. In the afternoon, Stephen Gritt, Chief Conservator at NGC, arranged for several paintings in their collection to be examined in NGC's conservation laboratory. During this memorable day, invaluable information was obtained from the artist on his materials and techniques and, specifically, his thoughts on the appearance of *Horse and Train*.

Upon seeing the painting, Mr. Colville was relieved to observe its condition



*Horse and Train*, Alex Colville, 1954 (54.3 cm x 41.5 cm).  
Owned by the Art Gallery of Hamilton; overall,  
during treatment. Photo: Jeremy Powell, Carl Bigras.

and felt its appearance had not changed in a major way. There was nothing in the technical examination to suggest the painting had become darker. It is dark because it was painted that way. The tone was created by a deliberate choice of colour and pigmented glazes. The artist completed his vision by designing and constructing a frame that accentuates the somber, dark impact of the work. Mr. Colville noted: "Right from the beginning,

I thought of this painting as dark; dark in the visual sense and in the metaphysical sense."<sup>1</sup>

## The artist's technique and media

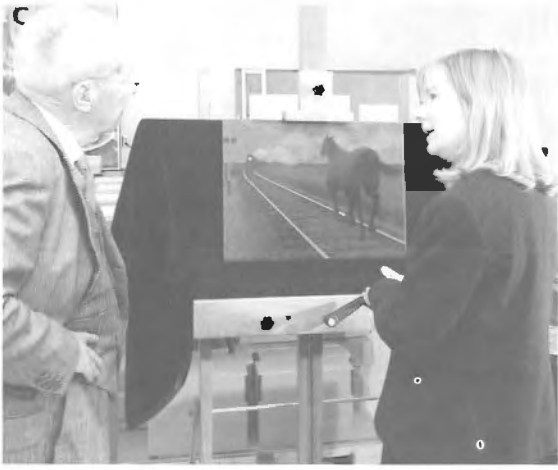
Colville's paintings begin with sketches and preparatory studies. Having had difficulty rendering the horse, the artist recalls making a three-dimensional model of it from which he made drawings. The artist transferred the design of the horse and the tracks to the prepared panel using a transfer cartoon currently in the collection of the Art Gallery of Ontario. Thin black lines from the transferred drawing can be seen in areas of exposed ground. Fine indentations or scoring, into what would have been a still malleable ground, are visible along the contours of the horse and train track.

The artist prepared the hardboard support with two to three coats of ground on the front surface and a thinner coat on the reverse to reduce the tendency of the panel to warp. The front surface was sanded smooth and thin washes of colour were applied to the ground in preparation for the design layers. The image was built up in a detailed, precise manner often using extremely fine brushstrokes, which are characteristic of Colville's work.

A thin coat of dammar varnish was applied to the surface as a protective layer.

The 1950s was a period of transition and experimentation in Colville's choice of paint media. The artist moved from oil paint, used in his student and wartime paintings, to a faster drying medium, which allowed

1. All quotes are from Alex Colville, in conversation; Ottawa, February 2004.



Alex Colville discusses *Horse and Train* with Debra Daly Hartin. Photo: Jeremy Powell.

“When I first started using acrylic polymer emulsion, I acquired the paint in jars. It was really liquid. I used that for years.” In front of his paintings at NGC, the artist spoke about his preference for a paint with little body, that produces a flat, matte or semi-matte film. In the final stages of his acrylic paintings, Colville generally applies a thin layer of synthetic varnish to protect the surface. He continues to design the frame for each painting he finishes.

Colville’s technical process is thorough, meticulous and

deliberate. He makes every effort to impart a high degree of permanence to his works. “I really want the paintings to last. Right from the beginning, I’ve always felt this way. The idea that some painters have, that they actually like the paintings to age and transform ... there’s nothing I’d like more to avoid.” Since the late 1950s, he has often written detailed notes on the reverse of his paintings, describing the materials used: “I thought the more information I give for possible use by conservators and so on, the better.”

*Horse and Train* is in good condition; however, there is a fine *cracquelure* over the surface. This type of cracking, often referred to as drying *cracquelure*, could have been caused by the materials he used. It is also likely that an ill-advised cleaning attempt, early in the life of the painting, could have contributed to the problem. A light surface cleaning has recently been completed. Inpainting of minor abrasions to the painting and the original frame will be done soon.

The painting will be featured in the Art Gallery of Hamilton’s exhibition of treasures from its permanent collection entitled “Lasting

*Impressions: Celebrated Works from the Art Gallery of Hamilton.*” This exhibition will re-open the newly renovated gallery and will tour six venues across the country in 2006–2007. A significant publication that will include an article on the technical examination and conservation of the painting will accompany the exhibition.

#### Acknowledgements

This project has contributed to the knowledge about one of Canada’s foremost painters. I would like to express my appreciation to colleagues in various institutions who allowed me to examine Colville’s paintings and related documentation. I am grateful to the Art Gallery of Hamilton for their support of Alex Colville’s visit to Ottawa and to Stephen Gritt, Chief Conservator, NGC, for making the arrangements to view and discuss the paintings at NGC. I would like to acknowledge the work of Kate Helwig and Jennifer Poulin, Conservation Scientists at CCI, who sampled and analysed cross sections, and Jeremy Powell and Carl Bigras, Scientific Documentation Technologists at CCI, for their photographic documentation of the painting. Finally, I would like to express my gratitude to Alex Colville and his daughter Ann Kitz, who came to Ottawa to view *Horse and Train* and who provided us with such valuable information.

him to work in layers and apply distinct, fine, juxtaposed strokes of colour. He used casein tempera in many paintings of the period, such as *Three Sheep* (1952; NGC) and *Couple on a Beach* (1957; NGC). He left many casein paintings unvarnished, preferring flat, matte surfaces that remain in pristine condition today. Recalling this period, Colville also describes using pigmented stand oil glazes over underpainting done in gum arabic emulsion. He believes this is the technique used in *Horse and Train*, although gum arabic has not been identified in the analyses done so far. Mr. Colville has generously allowed us to study his 1945 version of *The Artist’s Handbook of Materials and Techniques* by Ralph Mayer, which includes his notes on the mixtures he was using at the time, as well as his experiments with driers to obtain a suitable drying time and surface appearance.

A turning point in his choice of media came following a visit he made in 1963 to Ralph Mayer’s studio in New York. Mayer described a new polymer paint that he felt was the most stable paint available. Colville was introduced to Henry Levinson, President of Permanent Pigments Inc., manufacturer of Liquitex paints, from whom he obtained paint samples. He has used the acrylic medium ever since.



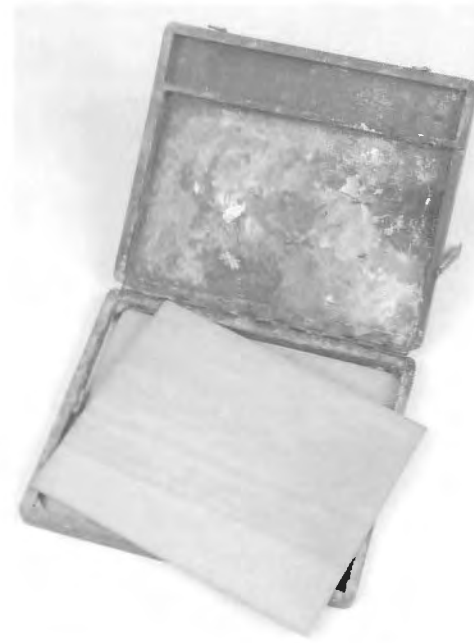
Discussions at the National Gallery of Canada in front of several paintings by the artist. Photo: Jeremy Powell.

## CCI Acquires A.Y. Jackson and Barker Fairley Paint Boxes

by Ian N.M. Wainwright, former Manager of the Analytical Research Laboratory, CCI

**O**n April 7, 2004, the Canadian Conservation Institute (CCI) acquired two special paint boxes — one that had belonged to A.Y. Jackson of the Group of Seven and one that had belonged to Jackson's friend, critic and artist Barker Fairley.<sup>1</sup> These paint boxes were part of the Estate of Dr. Naomi Jackson Groves (a niece of A.Y. Jackson who passed away in 2001), and became available for purchase through Walker's Fine Art & Estate Auctioneers in Ottawa. It was Carol MacIvor, a former Senior Communications Advisor at CCI, who noticed the announcement in the *Ottawa Citizen* that the paint boxes were to be auctioned. She was adamant that they be acquired by a public institution — both for research purposes and to ensure that they would be accessible to the Canadian public — and she quickly alerted CCI. Once at the auction, MacIvor learned that the A.Y. Jackson paint box was part of a lot that also included a record player, a briefcase, a tray, a duffel bag containing a sleeping bag, and a folding cot (the briefcase, tray, and duffel bag bear the monogram "A.Y.J."). Shortly before midnight, she was successful in her bid to acquire the paint boxes for CCI. She brought the various items to CCI the following day and they were soon documented and placed in a secure vault.

The fact that the paint boxes came directly from the Estate of Dr. Groves provided a unique opportunity to document for posterity their provenance, ownership, and time of use based on personal accounts (this is not always the case — even for painting materials from well-known Canadian artists). We are indebted to Anna Brennan, Literary Trustee for Dr. Grove's Estate, for giving us a detailed recollection of the history



A.Y. Jackson (left) and Barker Fairley (right) paint boxes.

of the paint boxes and the probable time at which they were used. Jackson moved from Toronto to Manotick, a community south of Ottawa, in 1955 to be closer to his family. By 1962 this arrangement was no longer convenient, and he rented out the Manotick studio and found an apartment on Maclaren Street in Ottawa. He remained in Ottawa until 1968, at which time he suffered a stroke and, at the invitation of his friends Robert and Signe McMichael, moved to Kleinburg, Ontario. The paint box was moved from the Maclaren Street apartment to Dr. Grove's home at that time, and Brennan believes it dates from Jackson's Ottawa period. However, an earlier date for his use of these painting materials cannot be ruled out as yet. Research into the date of manufacture of the paint tubes should shed additional light on their chronology.

The two paint boxes are valuable additions to CCI's collection of

historical reference materials especially because of their direct connection to A.Y. Jackson. Both the Jackson and Fairley paint boxes contain a good representation of paint colours in tubes and on palettes. The Jackson box also contains a selection of paint tubes from Grumbacher and Winsor & Newton. Analysis of the paints will add considerably to our database of analytical and historical information on 20th-century Canadian artists. This information continues to prove useful for curatorial and art historical research, conservation of paintings, and studies of individual works related to authenticity and art fraud.

1. Jackson went on a number of canoe trips with Dr. Barker Fairley of the University of Toronto, who was an early friend of the Group of Seven. One particularly memorable trip is recorded in his autobiography. (Jackson, A.Y. *A Painter's Country*. Toronto, ON: Clarke, Irwin & Co. Ltd., 1963, pp. 74-75.)

## The Christian Island 'Astrolabe'

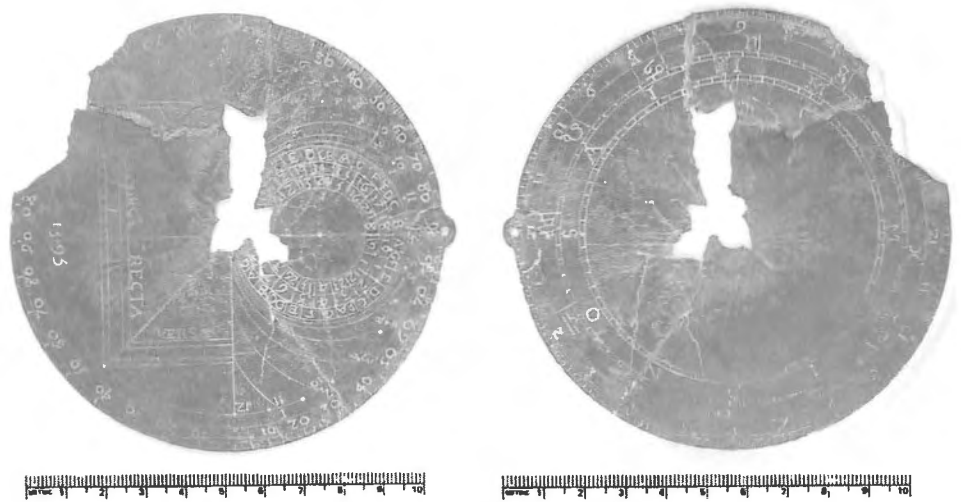
by Kate Helwig, Senior Conservation Scientist, Analytical Research Laboratory; Robert L. Barclay, Senior Conservator, Treatment and Development Division - Objects; and Jeremy Powell, Senior Scientific Documentation Technologist, Analytical Research Laboratory

CCI recently examined an important piece of Canada's scientific heritage — an early scientific instrument known as the Christian Island 'astrolabe'.

The device, shown in the adjacent photo, was found in the ruins of Fort Ste. Marie II, the site of a 17th-century Jesuit mission on Christian Island, near Penetang, Ontario. Elijah Monague, an Ojibway who lived in the area, made the discovery some time in the 1920s and later sold the instrument to a Dr. Starr. In 1950, Dr. Starr's widow donated the astrolabe to Victoria University Library (Toronto), which remains its custodian.

The instrument has been examined by a number of experts and a description of it has been published by Peter Broughton.<sup>1</sup> According to Broughton, all agree that while it is not a true astrolabe, it is engraved with many of the scales found on such instruments. He also notes that although it bears the date 1595, this might not be the actual date of manufacture because the maker may have been "adapting, albeit clumsily, some standard design." He goes on to say that the discovery of the astrolabe at Fort Ste. Marie II links it with the Jesuit missionaries who spent the 1649–1650 winter there.

Astrolabes are generally composed of a circular plate engraved with scales and degree markings (known as the mater), suspended by a ring at the top, and a pointer (or alidade) that pivots at the centre. These devices are used to find latitude or to determine time and calendar dates by the sun and the stars. Only two other astrolabes of similar age have been discovered in Canada. Both are mariners' astrolabes: one, dated 1603, is thought to have belonged to Samuel de Champlain, and was



Front (left) and back (right) of the Christian Island 'astrolabe'.

found near Cobden, Ontario, in 1867; the other, dated 1628, was found off the coast of Newfoundland. The Christian Island astrolabe is in poor condition compared to these other two instruments. It has no alidade, a portion from the centre of the mater where the pivot would have been is missing, and the metal is fragile and cracked.

We examined the Christian Island astrolabe to determine information about its condition and chemical composition and to provide recommendations for its storage and display.<sup>2</sup> The astrolabe was examined visually and under low-power microscopy. It was then photographed in normal light, raking light and ultraviolet fluorescence. An X-radiograph was also produced. Subsequently, areas of the astrolabe were analysed non-destructively by X-ray fluorescence to determine the principal elements comprising the alloy. Small samples of corrosion and the bronze-coloured adhesive were also studied using a variety of analytical techniques.

The metal was found to be a copper alloy that has a relatively low concentration of zinc and small amounts of tin, lead, iron, antimony and silver. The composition is consistent with historic copper alloys known collectively as 'brasses'. The multitude of cracks on the surface indicate that the metal is very brittle. An X-radiograph of the astrolabe confirmed the extent of the cracking. As well as showing the details of the fine cracking, the X-radiograph showed a thin line of radio-opaque material along one of the cracks. This corresponds to a high atomic number material, possibly lead or tin solder.

A section on one side of the astrolabe has been attached very clumsily with a bronze-coloured adhesive. The adhesive, which fluoresced bright orange in ultraviolet radiation, was found to be composed of shellac mixed with talc and brass flakes. We considered the possibility of removing this repair, but decided that the surrounding metal is so fragile that this treatment might cause more

damage. This is a very conservative approach, but we believe the rarity and fragility of the object warrant it.

Microscopic examination showed that the corrosion products, identified as malachite and cuprite, are well-attached and generally stable. Malachite and cuprite are commonly found on bronzes buried in soil. They are expected to be stable at normal levels of relative humidity (RH), but we have recommended that an RH level above 80% should be avoided.

The present mounting system, between sheets of glass in a wooden frame, seems to have protected the astrolabe very well since this mounting was applied some time in the 20th century. The mount

sandwiches the fragile metal between the two pieces of glass and keeps it flat and stable. The mounting system also has, by now, a certain historical quality, which also argues for retaining it. The twisted wire, which originally held the object in the mount, was removed. A metal-on-metal contact is never a good idea for long-term use because it can promote electrolytic action in some circumstances. Instead, a small, acid-free cardboard insert has been used to support the astrolabe within the glass container.

Because of glare on the glass, the astrolabe in its current mounting system is not as visible as might be desired by researchers. However, this problem will now be offset by the availability of the photographic

and descriptive material that we produced during our examination. This documentation sheds new light on the fine details of the Christian Island astrolabe, as befits such an important and rare example from our scientific past.

## References

1. Broughton, P. "The Christian Island 'Astrolabe'." *Journal of the Royal Astronomical Society of Canada* 80, 3 (1986), pp. 142–151.
2. Helwig, K., B. Barclay, and J. Powell. "Examination and Analysis of the Christian Island Astrolabe." Unpublished report. Ottawa: Canadian Conservation Institute, 2002.

## Coins from a Time Capsule

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

July 2003 was the centenary of the building of the United Church in Manotick, Ontario. In July 1903, a time capsule filled with memorabilia was inserted ceremonially behind the church's cornerstone. When it was removed from its century-long resting place last summer, the time capsule proved to be a stoppered glass bottle in which could be seen tightly rolled documents. Since *Time Capsules* (CCI Notes 1/6) was published, the process of opening such containers has become a little less problematic for people who have not dealt with this kind of material before. Nevertheless, help from CCI was welcomed because the ground-glass stopper of the bottle was sealed with a resinous material that resisted opening. On testing, the sealant proved to be gum arabic. Gentle warming and application of a little moisture soon released the stopper. Among the newspapers, journals and handwritten material carefully removed from the bottle

were several coins of the period.

As is common in time capsules, deterioration of the acidic paper documents within the closed environment had caused the metal objects to corrode significantly.

Figures 1 and 2 show the copper and silver coins as they came out of their resting place between layers of paper. The copper coins were covered with a crusty green corrosion layer, completely obliterating their designs, while the silver had a thinner, black layer of corrosion. At first sight, such coins can be disappointing to the officials who are present at the opening, especially the copper ones, which in this case appeared to be beyond recovery. It was the general



Figure 1. 1886 one-cent coin, obverse, before treatment.



Figure 2. 1881 quarter, obverse, before treatment.

consensus that nothing could be done with them. However, microscopic examination showed that beneath the loose, crystalline surface the original features were remarkably intact. This is a common feature of copper objects. With judicious chemical treatment and careful work with picks and scrapers, much of the original surface can be recovered. CCI's most recent publication (*Metals and Corrosion: A Handbook for the Conservation Professional*)

provides a wealth of examples of corrosion products with accompanying colour pictures. It also gives insight into the complicated and intriguing nature of metals and their reactions with the environment.

Once the identity of the corrosion on the Manotick time capsule coins had been established, treatment was fairly straightforward. For the copper coins, a dilute solution of sodium sesquicarbonate was applied to each one. Once it had begun to react, the corrosion products could be gently picked away.

When the original features had been revealed, an application of mild metal polish brought back the shine.

Figure 3 shows one of the one-cent coins after treatment. The blackened surface of the silver coins was easier to treat. The corrosion was gently removed with silver polish on a small cotton swab, resulting in an almost perfect return



Figure 3. 1886 one-cent coin, obverse, after treatment.



Figure 4. 1881 quarter, obverse, after treatment.

to the original bright appearance, as the quarter in Figure 4 shows.

## The CCI Library Reopens

*Joy Patel, Manager, Library Services*

Although the work of the Institute typically focusses on conserving and preserving, a dramatic transformation has recently taken place in its core research resource. The CCI Library was one of the first areas targeted in Phase One of the remediation and renovation project at 1030 Innes Road. The library's transforming journey was longer and more difficult than anyone could have predicted, but the destination now reached makes the trials of the past year all worthwhile.

In July 2003, the library was closed. Its entire unique collection was packed into boxes and moved offsite into temporary storage. The definition of "temporary" was repeatedly extended, causing considerable hardship both within CCI and for outside researchers and students. Meanwhile, from temporary quarters on the second floor, the library staff valiantly operated a mini-library of basic reference texts, current periodicals and newly purchased publications, and provided other library services while they worked on plans for the new library and learned many hard lessons about patience.

All agree that this patience has paid off. The changes in the library, which officially reopened in the fall of 2004, have to be seen to be fully appreciated (as the accompanying photograph shows). New mobile, compact shelving provides more efficient storage and ample room for growth. A separate room houses audiovisual and multimedia resources, as well as more fragile print publications. Client areas include enclosed cubicles, adjoining study carrels, open work tables, and three public-access workstations. The pleasant corner lounge, for reading or for conversation, features natural light, comfortable seating, and proximity to the most popular current journals and new books. Office and client service areas have been designed to be both functional and attractive, balancing the light, open environment with the warmth provided by beautiful wood finishes.

Some things have not changed, however. The quality and depth of the highly specialized

collections, and the commitment of the staff to museology and conservation and to client service, have certainly been "preserved." To increase accessibility to the library's resources and services, we are also developing a new, more client-friendly library system and Web catalogue, and have eliminated fees for loans and document delivery services within Canada.

All are welcome to experience what is old and what is new in the CCI Library, by visiting us either at Innes Road or through the CCI Web site.



## CCI has a New Director General!

CCI was pleased to welcome our new Director General on June 21, 2004. Jeanne Inch brings to the Institute a strong background in management, a long professional interest in science, research and development, and a personal interest in cultural heritage. We hope everyone will be as excited to get to know her as we are.

### **What originally sparked your interest in cultural heritage?**

Well, it goes back a long way. I come from a family that never threw anything away. And so I find myself with a home full of objects from my family's past. There's a rocking chair in my living room that my Boyer ancestors brought to New Brunswick before the American Revolution. There's an old tea box that I believe belonged to my great-grandmother MacFarlane who was born in India in the mid 1800s. The set of leather-bound Shakespeare plays that my grandmother Inch collected in rural New Brunswick in the early 1900s. The 1850s sewing machine. The oil painting by my grandmother Gowling. The 1890s Limoges china. A china doll. And the books, photographs, letters, from previous generations. These objects represent, for me, tangible evidence of my family's history, where my parents, grandparents, great-grandparents came from, their day-to-day lives, their experiences. So my interest in material cultural heritage began subconsciously, simply because my family valued and treasured objects from the past.

### **When did you first become aware of CCI and the work carried on here?**

I became aware of CCI when I first joined the Department of Canadian Heritage in February 2003. But I did not really begin to appreciate the uniqueness of the Institute until I

saw the poster advertising the position of Director General. I was amazed at the scope of the Institute, its expertise and its international reputation, the fact that it has a fleet of trucks!! I am still amazed. I occasionally pinch myself when I remember that, in 2001, I decided I wanted to move away from science and technology policy and to manage a scientific or research organization. And then there's the point that a conservation research institute is much, much more interesting to me than a micro electronics or biotechnology research institute would be.

### **How would you describe your initial approach to the job?**

I would say I began in a listening mode. CCI has a unique culture, given its expertise, and its history. So, I have tried to take it very slowly, meeting as many staff face-to-face as possible during my first few weeks. Asking questions. Listening. Trying to be sensitive to the way CCI has operated in the past. Introducing my ideas slowly, testing them. Backtracking when staff explained that I'd misunderstood. I saw myself as the stranger, and knew that the most important thing for me to do was to build relationships and gain the trust of staff.

At the same time, I'm a doer, so I was really eager to get into the job and start doing things. My management style is very much results-oriented. Which is a good thing, because there is enormous pressure in the Government of Canada these days to be accountable, and to demonstrate results, value for money, relevance of programs to the needs of clients. I've also got to make sure that the work we do here is consistent with the strategic objectives of Canadian Heritage. CCI is one of the Department's key instruments for ensuring the preservation of

Canada's moveable cultural heritage. All of this means having a sound basis for making decisions and setting priorities on what research projects to undertake, which site visits to make, what treatments to provide, what books to publish.

### **What things have impressed you most about CCI and its staff?**

Their passion for their work. Their expertise... incredible expertise. Their competence. Their humanity. Not to mention, the great softball players.

### **Do you have any special goals you would like to accomplish in your first 6 months/1 year with CCI?**

Yes, yes I do. Certainly, my top priority is to ensure the renovations to the building are completed by next fall so that we can get back to full operation.

One short-term goal is to get a good understanding of CCI's clients — both current and potential. I want to know what their needs are and what services we are providing them. Which heritage institutions we are serving and which we are not serving. Beginning in September, I will be going out across the country to meet as many clients as possible. I want to understand for myself what the challenges are for museums, archives and art galleries, and how CCI is contributing and can continue to help them address these challenges.

My second goal is to establish a decision-making framework as a basis for setting research priorities over the next few years. Research is an international activity. We certainly contribute to the world's understanding of the science of conservation. And we certainly benefit from our international activities, in which we bring back

to Canada new knowledge that we can share through our treatments, workshops, etc. But, given our mandate within the Department of Canadian Heritage, our research must focus on unique Canadian challenges, whether they are the special needs of Aboriginal communities, the risks to collections posed by our climate, the financial constraints of museums and art galleries that need cost-effective solutions for managing their collections.

Over the next year, I would also like to look at what services we offer and what's missing. How we deliver services to clients. How those services are marketed and to whom. What partnerships we could create to leverage other resources and to increase efficiencies. Always keeping in mind our mandate — which is conservation and preservation — and our highly specialized expertise.

I can't forget, in all of this, that having happy and healthy staff and having the right staff in the right place is central. I realized long ago that executives have a responsibility to support their employees, just as employees have a responsibility to support their executives. It just doesn't work otherwise — not in the short term and certainly not in the long term. So, ensuring a balance between personal life and work life. Ensuring people are appreciated, that their good work is recognized. Saying thank you ... many times a day.

**CCI is exceptional in that it brings together conservators and scientists. How do you see this evolving in the future?**

Well, two heads are better than one. Two perspectives on an issue lead to a better solution. One of the things that intrigues me about CCI is that it is so diverse: under one roof (almost), we have world-renowned scientists, photographers, librarians, technicians, an engineer, an education professional, editors,

administrative and human resource staff, and some of the best conservators in the country. It's quite remarkable for that... and it's an opportunity and a strength to have such a diversity of skills and perspectives in one place. I'm hoping to take advantage of that.

**CCI is known both as a knowledge organization based on a strong research and development program, and as a service provider offering a wide range of conservation, scientific and training services. Do you see any challenges in maintaining both activities in the future?**

None at all. Our research provides the knowledge and expertise that are the basis of every one of our services. And our services to clients provide an opportunity to apply that knowledge and to get feedback on what further research needs to be done — and, going farther, sharing this feedback with our colleagues at Canadian Heritage who do the broader program and policy development. CCI's strength is this interdependence, the feedback loop that research provides for services and vice versa. It helps us to constantly review our services and how we deliver them and to whom.

**It is important for CCI to be sensitive to the needs of the Canadian heritage and conservation community so that it can meet these needs effectively, yet within the constraints of resource allocations. How do you see your role in promoting dialogue between CCI and its clients?**

As I said earlier, I'm going to be out among the clients, asking questions, listening. One of my strengths, if I may say so, is building relationships with clients, relationships in which everyone benefits, relationships that are there for the long term. One thing I would like to do is a thorough analysis of our clients needs, and of the various resources in Canada, including CCI, that can support them. CCI cannot meet every conservation challenge in Canada. So it's a

question of building partnerships. More importantly, we need to look at how we can build the capacity of heritage institutions to address their own needs. CCI does this now through our workshops, publications, site visits, etc. I believe we need to strengthen our efforts in this regard.

**What is your vision of CCI in the future?**

Generally speaking, my vision is that CCI continues to be a centre of excellence for conservation in Canada, recognized worldwide for our research, appreciated by the heritage community in Canada for our services, focussed on measurable results, and a fun and satisfying place to work. Not forgetting that a vision for CCI must be shaped within the broader policy agenda and priorities of Canadian Heritage.

**Have you developed a long-term plan to ensure CCI becomes the Institute you envision?**

It is far too early for me to develop a long-term plan. This year, I am going to concentrate on developing a realistic three-year business plan, with a few key priorities and measurable results. That work, plus other efforts — the strategic research framework, the review of client services, the thinking that needs to be done about strengthening the conservation capacity of heritage institutions — will feed into a long-term plan. All of this needs to be done, not slowly, but at a pace that allows opportunities for CCI staff, management and clients to share their views.

**What is your personal philosophy of life... and work?**

Simply, I want to do interesting work, work that is challenging, involves lots of contact with people, and is intellectually stimulating. If my work is interesting and fun — and it certainly is at CCI — then it is a lot easier to have a sense of well-being and good health. And energy after hours to devote to what's most important: family and friends.

## Jeanne E. Inch

Director General and Chief Operating Officer  
Canadian Conservation Institute – Department of Canadian Heritage

Jeanne Inch was appointed Director General and COO of the Canadian Conservation Institute (CCI) in June 2004. Ms. Inch has a varied professional background, having worked in government, academe and the private sector, and in various arenas, including journalism, public relations and fundraising, innovation policy development, university research, and international policy and programming.

From 1992 to 2003, Ms. Inch held increasingly responsible positions at the Department of Industry Canada. As a Director in the Innovation Policy Branch, she was responsible for economic analysis of the innovative performance of firms; policy development in the areas of commercialization of research, technology clusters and technology transfer; and international science and technology policy and operations. For four years, she was Canada's representative on science and technology committees of the Organization for Economic Cooperation and Development (OECD) in Paris and of the Asia-Pacific Economic Cooperation (APEC) forum. Before joining the




Innovation Policy Branch, Ms. Inch was the Project Manager for the APEC SME Business Forum and Exposition, which brought over 3000 SMEs (small, medium enterprises) from across the Asia-Pacific region to Ottawa in 1997. She received the Government of Canada Merit Award (1997) for this work. Previous positions at Industry Canada were as an analyst in the University Research Policy Directorate; the policy advisor to the Assistant Deputy Minister for Industry and Science Policy; and the senior officer responsible for departmental and ministerial consultations.


Before joining the Government of Canada, Ms. Inch was the project manager for the Canadian Committee on Women in Engineering (CCWE), a public-private sector committee that examined and made recommendations regarding the environment for and participation of women in engineering.

Ms. Inch worked for several years as an editor and information officer at the University of New Brunswick in Fredericton. In 1987, she was recognized by the Canadian Council for the Advancement of Education with the 1987 Communication Award for Best Achievement in Research Writing. She began her career in Western Canada as a journalist, focussing on health and education issues.

Ms. Inch has a Bachelor of Arts (Canadian History and Literature) from Mount Allison University in Sackville, New Brunswick. She is a graduate of the Management Development Program for Women at the University of New Brunswick, Fredericton, and has a Certificate of Accreditation in Public Relations (1993) from the Canadian Public Relations Society.



# Preserving my Heritage



The Canadian Conservation Institute launched a new Web site — “Preserving my Heritage” — in 2002. 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.

Visit us at: [www.preservation.gc.ca](http://www.preservation.gc.ca)

## 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

### Early Treatments for Waterlogged Wood

by David Grattan, Manager, Conservation Processes and Materials Research

The treatment of waterlogged wood is a central issue in the conservation of shipwrecks or archaeological wet-sites. Waterlogged wood (i.e. wood that is saturated with water) retains its form but loses substance and strength through bacterial degradation with increasing age. Such wood can distort or disintegrate entirely on drying. Although Canada is rich in archaeological wet-sites and also in historic shipwrecks, and Canadian institutions have pioneered many techniques to preserve the finds

from such sites, it is in Europe where the early history of treatment is found.

The conservation of waterlogged wood seems to have begun independently in two locations: Denmark and Switzerland. In Denmark, ancient burials found preserved in the peat bog had waterlogged wooden artifacts associated with them. By the mid 19th century, these were routinely treated by soaking them in a boiling solution of alum (potassium aluminum sulphate) in water. This mixture entered the wood as a liquid and replaced the water. On cooling, it congealed and created a solid mass that physically prevented the wood from shrinking when drying. This process was first described sometime in 1859 by Jorgensen "a trusted

servant" of the King of Denmark, and was used extensively until the mid 20th century. It was another Dane — namely Brorson Christensen — who in the 1960s developed a much better method of treating waterlogged wood using a water-soluble plastic (namely, polyethylene glycol) and who also described this early history of treatment. His book *Conservation of Waterlogged Wood in the National Museum of Denmark*,<sup>1</sup> is probably the most erudite writing on the topic. It is a wonderful resource for those interested in the treatment of waterlogged wood.

1. Christensen, B.B. *The Conservation of Waterlogged Wood in the National Museum of Denmark*. Studies in Museum Technology, No. 1. Copenhagen: National Museum of Denmark, 1970.

## Science of Conservation

### Ultraviolet Fluorescence Photography using a Digital Camera with Electronic Flash Strobe

by Carl Bigras, Senior Scientific Documentation Technologist, Analytical Research Laboratory

The use of digital photography for scientific documentation is quickly making headway, as is its use in ultraviolet (UV) fluorescence photography.

Fluorescence is created when paints and other coating layers, such as varnishes, are excited by long-wave UV radiation. The excited coatings then re-emit the energy in the visible range of the spectrum. However, because the intensity level of the visible fluorescence is much lower

than that of the UV radiation that is reflected from the object, effective photography requires that the reflected UV be excluded using a combination of blocking filters.

CCI's standard method of UV photography with a film camera uses electronic flash strobes equipped with 18A-type glass filters (Schott UG1); the strobes provide the excitation energy and the filters block the reflected UV radiation. These strobes are characterized by very high energy output, short flash duration, and consistency. This technique eliminates the problems typically



An image captured using normal digital photography (left) as compared with one captured using ultraviolet fluorescence technique (right).

associated with film that is used with "black light" fluorescence tubes (i.e. long exposure, reciprocity failure).

When this standard UV fluorescence photography method was first tested with a Nikon D1X professional digital camera, the resulting images were found to be very red overall. This suggested that there was some interaction between the digital camera and the UG1 UV filters that allowed the infrared (IR) radiation to pass through the barrier filters and lens. Spectrophotometer tests were then done on different kinds of 18A-type glass filters from various manufacturers to see if this problem could be corrected. Results revealed not only the usual peak at 365 nanometres (nm), but also another peak in the IR region between 700 and 800 nm. Some filters

even had a higher transmission curve in the IR region than in the UV region.

Although regular film is not sensitive to IR radiation (beyond 700 nm), a digital camera's CCD (charge-coupled device) is generally sensitive to both red and IR radiation. Camera manufacturers are, therefore, incorporating a cyan-coloured, IR-blocking filter on the CCD's surface to exclude IR radiation. To make sure that this is effective, we conducted a spectrophotometer test with a filter integrated to the CCD. Results showed that although the camera recorded a lot less IR radiation, the transmission in the 700 to 900 nm range was still

between 4 and 1.25%. Hence the filter decreased the camera's sensitivity in the IR region but did not completely eliminate it.

In an effort to improve the effectiveness of digital cameras for UV fluorescence photography, additional tests were conducted using the same barrier filters as above but with the addition of a #486 UV / IR cut-off filter from B+W filter (Jos. Schneider Optics). In this case, all IR reaching the CCD was eliminated. The final UV fluorescence digital image achieved with this technique is similar to results obtained using colour slide film.

## On Display

### More Fragile Than It Seems

by Jan Vuori, Conservator, Treatment and Development Division - Textiles, and Alastair Fox, Conservator, Treatment and Development Division - Furniture and Decorative Arts

When first viewing the *Bannière de Ste-Anne de Caraquet* (152 cm by 91 cm excluding the cross and finials), one immediately focusses on the beautiful decoration — silk embroidery, appliqués, metallic ribbon, and metallic thread couching that covers almost the entire front surface. The overall impression is of a beautiful textile that has been treasured since it was made well over 100 years ago.

Yet time has not been so kind to the fabric that bears all of this elaborate decoration. The fabric is a warp-faced satin in which extremely fine and sparsely spaced silk warp yarns cover much thicker cotton weft yarns. The fineness of the silk warps, and the fact that silk is very susceptible to light damage, helps explain its loss in many areas. At first glance, this damage seems restricted to the centre top and bottom — areas that would have been subject to the most movement when the banner was prepared for, and carried in, processions. However, examination

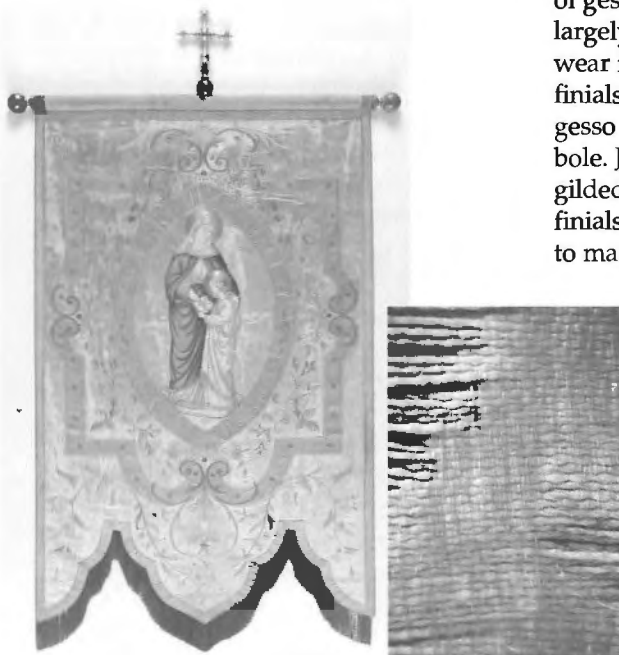
under magnification reveals that the silk warp is broken, or partly or completely missing, in up to 70% of the total surface area.

A variety of couching and adhesive techniques were used to secure the loose and drooping cotton wefts. This will prevent them from shifting and further damaging the adjacent silk. The construction of the banner (front and back panels each consisting of decorated satin, cotton scrim, and

linen lining bound by metallic ribbon trim) complicated matters because the various layers did not lie flat and repairs had to be done through the existing areas where there was loss.

The metallic ribbon and fringe were both cleaned with solvent to remove oils and salts that might contribute to further corrosion.

The gilded wood cross and finials had cracked, loose and missing areas of gesso. Although the gold leaf was largely intact on the cross, because of wear it was missing from much of the finials. The losses were filled in with gesso and then coated with red clay bole. Just the areas on the cross were gilded with gold leaf, and the worn finials were coated with a gilt cream to match surrounding areas.



*The banner after treatment.*

*Detail of the banner.*

The banner, cross and finials were attached to a fabric-covered, padded, solid support covered by Plexiglas that will protect them during display, transportation and storage.

The *Bannière de Ste-Anne de Caraquet* is now on display at the Musée acadien de Caraquet in Caraquet, New Brunswick.

## Ian Wainwright Retires from CCI

by P. Jane Sirois, Conservation Scientist, Analytical Research Laboratory

Ian Wainwright retired on July 16, 2004, as Manager of the Analytical Research Laboratory at the Canadian Conservation Institute after 32 years of public service. Ian joined CCI in July 1972 after graduating from McGill University where he studied mathematics, physics and art history. CCI was just starting up and was at that time located in the National Gallery of Canada in downtown Ottawa. During Ian's years at CCI, he was involved in research into a wide range of art and archaeological materials using physical and chemical methods. Ian's areas of interest included the application of polarizing microscopy, X-ray spectrometry, scanning electron microscopy and X-ray microanalysis to problems in conservation science and archaeometry and to the scientific examination of museum objects.

Ian was the senior scientist specializing in microscopy before becoming Manager of the Analytical Research Laboratory (ARL). He has been active in the research into the analysis, recording and conservation of Aboriginal rock painting and petroglyph sites in Canada since first arriving at CCI. Ian collaborated with the Ontario Ministry of Natural Resources, Sears and Russell

Consultants (Toronto architects), and other partners to conserve the petroglyphs (*Kinomagewapkong*, "The Teaching Rocks") at Petroglyphs Provincial Park, Ontario. In response to CCI's research and recommendations, a protective structure was built over the petroglyph site in 1985.

Ian has written over 50 papers on a wide range of subjects including reviews of rock art recording methods and scientific methods of examination. Other topics include: Slatechuck Creek argillite used by Haida carvers; the wall paintings at the Mogao and Bingling Grottoes (Peoples' Republic of China); the examination of a Tsimshian stone mask from Kitkatla near the mouth of the Skeena River; and collaborative research with the Instituto Nacional de Antropología y Pensamiento Latinoamericano on the analysis of rock painting sites in Argentina including the World Heritage Site, Cueva de las Manos, in Patagonia. Ian was also the principal author of the chapter on the artists' pigment lead antimonate (Naples) yellow in Volume 1 of *Artists' Pigments: A Handbook of Their History and Characteristics* published by the National Gallery of Art (Washington, DC) in 1986. He examined, with his ARL colleagues and others, paintings and objects by Tom Thomson, Rembrandt, and Hobbema, among many others.

Ian was a pioneer in applying database management systems in conservation. By 1973, he was working on developing systems for storing conservation and analytical data for CCI. He served as editor of the *Journal of the International Institute for Conservation—Canadian Group* from 1976 to 1978 and was Manager of ARL from 1993 until July 2004. Ian



has been an active supporter of Art and Archaeology Technical Abstracts (AATA) and was a great promoter of conservation, CCI and ARL through newsletters and journal articles, lectures and media interviews. He also acted as a mentor to many of his colleagues who have benefitted greatly over the years from his vast experience. Ian was very proud of ARL's role in serving museums, law enforcement agencies, conservators, curators, archaeologists and others. He always strove to maintain a very high standard of scientific and technical excellence.

Ian can now be found on Vancouver Island, British Columbia, on the other side of Canada from CCI, enjoying the mountains and ocean and being closer to his two children. He is still active in conservation science research and rock art conservation and site management.

I would like to thank Ian very much for his immense contribution to all his colleagues in ARL and to the field of conservation science in general to which he has contributed greatly over the years. We wish him all the best.

More information on  
CCI and its activities  
can be found on  
CCI's World Wide  
Web pages:  
[www.cci-icc.gc.ca](http://www.cci-icc.gc.ca)

## CCI at the *Canadian Antiques Roadshow*

by Cliff McCawley, Director, Special Projects, and Shanna Ramsay, Marketing Officer

The *Antiques Roadshow UK* is almost an antique itself. In its 27th season, the show is watched by viewers around the world, and its popularity shows no signs of diminishing. It is a widely watched show for a variety of reasons: it is informative, sometimes funny, and there is always a possibility that someone is unknowingly carrying an object that is exceedingly rare and perhaps worth more than they ever dreamed possible. It has a wide appeal to a range of age groups and people. An American version, *Roadshow*, produced by PBS (Public Broadcasting Service), began its eighth season in January 2004. Now Canada has its own version. Wallace Cove Productions of Saint John, New Brunswick, under executive producers Mark Pedersen and John Brazill, put together a production team and a group of experts and began shooting the *Canadian Antiques Roadshow* in May 2004.

From the first show at the Imperial Theatre in Saint John, and with shows in Halifax, Gatineau (Quebec), Toronto, Saskatoon and Calgary, to the final show at the Vancouver Public Library, the production team in the space of less than a month filmed enough material for 14 shows. A happy, but tired, Mark Pedersen said they had planned for 1500 visitors per location and had issued tickets accordingly. This is on average what they got. More than 2200 turned up in Halifax. However, as Mark Pedersen said, "many ticket holders brought along family and friends for support, and we didn't have the heart to turn them away."

CCI decided to participate in a number of the shows to raise awareness of collectors for preservation issues, and to connect those collectors to the

conservation community. CCI staff members said that participating in the Gatineau, Saskatoon and Calgary shows was an enjoyable and rewarding experience. It was amazing to see the long lines of people clutching their family heirlooms, flea market finds, and thrift shop treasures. These objects included everything from gold-embossed books, to wall hangings and silver samovars, to early Canadian teaching kits. Large items, such as furniture, had been collected the day before by the production team. There were some wonderful pieces there too.

CCI staff moved among the visitors and experts and along the lines of waiting people. In conversation, they emphasized the importance of heritage and the part that the Department of Canadian Heritage and the conservation community play in conserving it. It was fascinating for CCI staff to look at people's treasures and hear their stories.

Conservators gave advice about the condition of objects, how to store them properly, how to find a professional conservator if the object needed cleaning, conserving or repairing, etc., and where to find other generally available resources. There was a great deal of interest in CCI's *Preserving my Heritage* Web site where the general public can obtain advice and

information on caring for a wide variety of objects. Visitors and experts alike visited the CCI booth to ask the conservators to have a closer look at their pieces and to get more detailed information.

One of the most appealing aspects of the event was that, following the chats with *Canadian Antiques Roadshow* experts and CCI staff, most visitors left with a renewed appreciation for their object's craftsmanship, origin, history and material make-up — regardless of the monetary estimate they received.

It was generally agreed that the venture was a great success. The producers are already planning next year's shows. The *Canadian Antiques Roadshow* can be seen on CBC Television beginning in January 2005.



At the Canadian Museum of Civilization in Gatineau, conservator Wendy Baker (right) discusses preservation issues with the owner of this painting.

# Museum Planning at Revelstoke, British Columbia

by Brian Laurie-Beaumont, Senior Planning Advisor, Preventive Conservation Services

In October 2003, the Department of Canadian Heritage's Vancouver regional office suggested that the Revelstoke Community Futures Development Corporation send their conceptual plan for relocating the BC Interior Forestry Museum to CCI's Senior Planning Advisor for review. Debra Wozniak, the Corporation's Special Projects Coordinator, subsequently contacted me with the request. Careful examination of the plan revealed that, although it was visually appealing, it raised many questions. Thus, in my comments to them I addressed issues such as market analysis, programming, collection development, business plan, and, of course, capital and operating budgets — all standard components of most planning reviews.

After considering my observations, the Corporation asked me to facilitate a strategic development planning workshop for the Forestry Museum's board of directors. An invitation was also extended to three local cultural institutions that had their own development issues: the Revelstoke Museum and Archives, the Revelstoke Railway Museum, and the Visual Arts Centre — an art gallery operated by local artists. Economic development staff were also present at the workshop, which was very useful because they represented the arm of local government that would be responsible for shepherding whatever development might ensue.

The first day of the meeting focussed on the planning process: what type of information is needed, and why and how that information is used in different areas of planning. Examples of other institutions and statistical averages were discussed, including thoughts on how these might apply to Revelstoke's organizations. The day concluded with a presentation about

other types of cultural heritage approaches. These were presented to inspire the participants to consider alternative approaches to some of the objectives and challenges facing their organizations.

The second day dealt with the Forestry Museum's specific needs, and attendance was therefore limited to its board of directors and staff. This day was more of a "visioning" exercise. While those present had generally accepted the original idea of simply building a bigger and better museum that focussed on the forestry industry, it had become clear during the first day that some might have wanted more. As facilitator, I suggested other forestry-related themes that had their own market segments. Working with the group, I drew up an expanded list of possible themes, noting how they could be inter-related in terms of programming and perhaps collection. These ideas were then grouped and prioritized for future consideration.

Planning, however, is more than just detailing a dream. It is necessary to make the project affordable for the size of the community. Therefore, to provide a sense of reality, I helped the group devise a pro-forma list of space and staffing needs with estimated costs. Next, on the one hand to keep project costs down and on the other to reach into the community, the participants explored ways of spreading out the programming to areas already existing in the town. Each of the three other cultural institutions were considered as was the nearby Parks Canada site and even commercial enterprises.

By the end of the day, the Forestry Museum board of directors and staff had developed a far different concept than what they had started with. The new concept included the original forestry idea, but added other related

themes that would appeal to a wider audience. It had the potential to attract more diverse project funding and had greater revenue-generation possibilities. The revised concept incorporated natural history, Aboriginal peoples' use of the forests before and after European colonization, recreational uses, the forestry industry, and the impact on the biosphere.

It is important to note that developing a concept is not the same as making a decision on what to actually build. It merely helps create a group vision with enough information to be able to decide what has to be done next to explore an idea.

The most critical factor was to test the hypothesis that the wider theme would attract enough people to generate a significant level of attendance and attract other support to assure project viability. To that end, although some tourism information did exist, a market analysis was recommended. Revelstoke is fortunate in that, even though their local population is small, they sit right on the Trans-Canada Highway — which has a sizeable travelling population. The question was whether or not these people could be persuaded to stop. It was further suggested the market analysis be wide enough to incorporate information applicable to other area cultural heritage organizations. This expansion would get the most value from the market analysis effort and would benefit overall tourism. The Revelstoke Community Futures Development Corporation conducted the research during the summer and fall of 2004.

Another factor was whether or not the other potential players would be interested in discussing some type

of shared programming and other mutually beneficial activities. This review was also conducted over the same period. Various means and the degrees to which assets, from collections and programming to space and staff, could be shared were discussed.

By the end of 2004, the Forestry Museum as well as all the other local cultural heritage organizations will be in a better position to consider their next development steps. At that point, the concept will be refined to what is logical in this situation. More planning will

be needed on items such as public programs, collection development, functional programming, and site selection. It will, however, be more focussed and cost-effective. Whatever project results, Revelstoke will know it has done the best job possible.

## On the Municipal Beat: Connecting with Communities

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

"We have an airplane and a locomotive on display in our city park — both are rusting — we need a restoration and maintenance plan." "What type of paint should be used to protect our historic cannon?" "Our municipality is planning to start a museum — can you help?" "The town has commissioned outdoor murals — what should we tell the artists?"

These are some of the questions received over the past few years from municipal staff across Canada. Questions have come from a town clerk, a director of parks and recreation, a heritage committee member, a manager of arts and culture, a treasurer, and a chief financial officer, among others. CCI has responded by providing advice and, where appropriate, making a site visit to assess the condition of the object and recommend an action plan. The Institute has also put municipalities in touch with professional conservators who can perform restoration and conservation treatments.

Cities, towns, villages, and hamlets across Canada are the keepers of monuments and other large-scale heritage objects that have significant meaning in their communities. These monuments are the symbols of collective memory, and often commemorate a significant achievement, wartime sacrifice, or a famous local resident. Municipalities may also be involved in commissioning public art installations such as outdoor murals and sculpture,

and often provide funding to local heritage institutions such as museums, art galleries, historic sites, and archives. CCI has provided many services for these institutions since 1972, and continues to do so.

To gather more information about the needs of municipalities with respect to heritage preservation and to raise awareness about the conservation profession, CCI participated in the trade shows of the annual conferences of the Federation of Canadian Municipalities (FCM) in Edmonton in May 2004, and the Association of Municipalities of Ontario (AMO) in Ottawa in August 2004. This was the first time that CCI had participated in these conferences, delegates to which are mainly mayors and councilors from municipalities of all sizes. Our display showcased conservation assessments and scientific analyses carried out for municipal and other clients. It stood out among the vendors related to solid waste management, water and wastewater systems, liability insurance, cleaning equipment, and environmental assessment. At the FCM, we shared space with the Department of Canadian Heritage's Cultural Capitals program, which recognizes the past achievements of municipalities with



Michael Harrington (right, in business suit) discusses CCI services with municipal officials at the FCM conference in Edmonton.

an ongoing commitment to arts and culture. The program also provides matching funds for special activities that integrate arts, culture, and heritage into other aspects of community planning.

These conferences/trade shows provided an excellent opportunity for face-to-face discussions and exchange. The top issues that emerged were:

- strategies for saving architectural heritage
- creation of heritage sub-committees on municipal councils
- sources of funding
- preservation of industrial heritage objects
- cultural tourism

In another first, several CCI staff attended the annual conference of

the Creative City Network in Regina in October 2004. The Creative City Network is an organization of Canadian municipal employees who work on policy, planning, development, and support for arts, culture, and heritage. Prior to the conference, a half-day workshop entitled *Aging Gracefully — From New to Old: Lessons Learned in Developing, Conserving, and Preserving Public Art* was presented by two CCI conservators, specialists in industrial collections and fine arts, respectively. This workshop provided basic conservation guidelines for public art projects; stressed the importance of involving a conservator at all stages of the project; introduced

participants to looking critically at design, materials, and site details; and emphasized the importance of regular maintenance. It was well-received by participants, and provided an excellent opportunity to hear the concerns of those working at the grassroots level and to deepen our understanding of how the Institute can serve their needs.

City and community issues are high on the federal government's agenda. This was evident by the presence of more than 20 federal exhibitors at the FCM, and speeches by several federal politicians, including Prime Minister Paul Martin. Over the last decade, the Government of Canada has

committed nearly \$12 billion in new funds for infrastructure projects across the country. The funding supports public infrastructure in areas such as water and wastewater treatment; urban transit; roads and highways; cultural, recreational, and urban facilities; broadband communications; and safe and efficient Canadian border crossings into the United States.

For further information about the services offered by CCI to municipalities, and to municipal museums, archives, and art galleries, visit our Web site ([www.cci-icc.gc.ca](http://www.cci-icc.gc.ca)) or contact Client Services at 613-998-3721.

## 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 2004–2005. Additional workshops will be posted on our Web site at [www.cci-icc.gc.ca](http://www.cci-icc.gc.ca) [under Learning Opportunities] as they are confirmed.*

### Fall 2004

#### Standards in Conservation

Hosts(s): Société des musées du Québec  
Location: Centre de conservation du Québec, Québec, QC  
Date: December 8, 2004  
Contact(s): Martine Bernier  
Tel.: (514) 987-3264  
E-mail: [bernier.martine@smg.uquam.ca](mailto:bernier.martine@smg.uquam.ca)  
Leader(s): Jean Tétreault

#### The History and Treatment of Works with Iron Gall Ink

Host(s): Library and Archives Canada (LAC) Gatineau Preservation Centre  
Location: Gatineau, QC  
Date: February 21–23, 2005  
Contact(s): Christine Bradley  
Tel.: (613) 998-3721 ext. 250  
E-mail: [christine\\_bradley@pch.gc.ca](mailto:christine_bradley@pch.gc.ca)  
Leader(s): Maria Bedyński (LAC), Sherry Guild, Season Tse

#### Emergency and Disaster Preparedness for Cultural Institutions

Hosts(s): British Columbia Museums Association  
Location: Kelowna Art Gallery, Kelowna, BC  
Date: March 4–5, 2005  
Contact(s): Jim Harding  
Tel.: (250) 356-5694  
E-mail: [JHarding@museumsassn.bc.ca](mailto:JHarding@museumsassn.bc.ca)  
Leader(s): Deborah Stewart, David Tremain

### Winter 2005

#### Artifacts in Aboriginal Cultural Centres

Host(s): Inuit Heritage Trust  
Location: Iqaluit, NU  
Date: January 28–29, 2005  
Contact(s): Ericka Chemko  
Tel.: (867) 979-0731  
E-mail: [echemko@ihti.ca](mailto:echemko@ihti.ca)  
Leader(s): Carole Dignard, Tom Stone

#### Works of Art on Paper

Hosts(s): Museums Alberta  
Location: Calgary, AB  
Date: March 25–26, 2005  
Contact(s): Carrie Herrick  
Tel.: (780) 424-2651 ext. 223  
E-mail: [Learning@museumsalberta.ab.ca](mailto:Learning@museumsalberta.ab.ca)  
Leader(s): Sherry Guild

## 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 May 1 to October 31, 2004, CCI staff were involved in the following activities:

### Conferences/Meetings

International Centre for the Study of the Preservation and Restoration of Cultural Property (ICCRUM) Meeting, Rome, Italy, May 10–12, 2004  
Charles Costain chaired the meetings of the ICCROM Bureau.

Canadian Archaeological Association 37th Annual Meeting, Winnipeg, MB, May 12–16, 2004  
Charlotte Newton attended.

Haida Repatriation Conference, Massett, Queen Charlotte Islands (Haida Gwaii), BC, May 20–22, 2004  
Tom Stone and Jane Sirois presented "Caring for Aboriginal Collections."

Association of Canadian Archivists Conference "Accountability and Ethics in the Archival Sphere," Montreal, QC, May 27–29, 2004  
CCI participated in the trade show where the booth was staffed by Paul Bégin, Joe Iraci, and Shanna Ramsay.

Canadian Association for Conservation of Cultural Property (CAC) 30th Annual Conference, Quebec City, QC, May 27–30, 2004  
Nancy Binnie presented "On-site and On-track: Working with the Project Manager to Deliver the Goods: Reinstatement of a Stencilled Ceiling in the Main Lobby of the Federal Building, Winnipeg" (co-authored with Alastair Fox); Marie-Claude Corbeil presented "La technique picturale de Jean-Paul Riopelle : esthétique

et conservation"; Jane Down presented "Degradation of Cyanoacrylate Adhesives in the Presence and Absence of Fossil Material"; Robert Arnold, who is the Treasurer of the Canadian Association of Professional Conservators (CAPC) Board of Directors, attended the CAPC Annual General Meeting and a joint meeting between the Boards of Directors of the CAC and CAPC.

Federation of Canadian Municipalities, Edmonton, AB, May 28–31, 2004  
CCI participated in the trade show where the booth was staffed by Charles Costain, Michael Harrington, and Mary-Lou Simac.

American Chemical Society 36th Central Regional Meeting, Indianapolis, IN, June 2–4, 2004  
Marie-Claude Corbeil presented "The Scientific Examination of the Sanders Portrait of William Shakespeare" as part of the symposium "Chemistry, Art, and Archaeology."

Wet Organic Archaeological Materials (WOAM) Conference, Copenhagen, Denmark, June 7–11, 2004  
Malcolm Bilz presented "The Relationship between Maximum Moisture Content and Wood Density for Waterlogged Archaeological Wood" (a poster co-authored with Nicola Macchioni, Istituto per la Valorizzazione del Legno e delle Specie Arboree, Italy); Tara Grant also attended.

American Institute for Conservation of Historic and Artistic Works (AIC) 32nd Annual Meeting, Portland, OR, June 9–14, 2004  
Carole Dignard presented "Nd:YAG Laser Cleaning: Further Developments on the Yellowing Issue" within the Objects Specialty

Group session and was also one of the presenters during the "Demonstration of Various Materials Cleaned with a Laser"; Stefan Michalski presented "From Slide Rule to Database: Development of a Computerized User-friendly Light Damage Calculator" in the Research and Technical Studies group; Season Tse presented "The Art of Cleaning Paper and Textiles: Strategies and Techniques of Using Water, Bleaches, and Enzymes (co-authored with Maria Trojan-Bedynski of Library and Archives Canada, Sherry Guild, Debra Daly Hartin, and Jan Vuori); CCI also participated in the trade fair where the booth was staffed by Debra Daly Hartin and Jean Tétreault.

"Conservation of Digital Prints" (presented by Martin Jurgens), Instituut Collectie Nederland, Amsterdam, Netherlands, June 15–18, 2004  
Ed Kulka attended.

"Aqueous Systems for Cleaning Historic Textiles" (presented by the American Institute for Conservation of Historic and Artistic Works in partnership with the Winterthur Museum, Garden and Library), Winterthur, DE, July 26–30, 2004  
Renée Dancause attended.

Association of Municipalities of Ontario Annual Conference, Ottawa, ON, August 22–25, 2004  
CCI participated in the trade show where the booth was staffed by Debra Daly Hartin, George Prytulak, Shanna Ramsay, and Mary-Lou Simac.

International Institute for Conservation of Historic and Artistic Works 20th International Congress

"Modern Art, Modern Museums,"  
Bilbao, Spain, September 13–17, 2004  
Marie-Claude Corbeil presented  
"Analysis of the Painted *Ceuvre*  
of Jean-Paul Riopelle: From Oil to  
Mixed Media" (co-authored with  
Kate Helwig and Jennifer Poulin);  
Helen McKay also attended.

Association of Manitoba Museums  
Annual Conference, Winnipeg,  
MB, September 18–19, 2004  
Jean Tétreault presented  
"Museum Lighting."

"BigStuff: Care of Large Technology  
Objects" in Canberra, Australia,  
September 29 – October 1, 2004  
Lyndsie Selwyn attended.

International Council of Museums  
(ICOM) 20th General Conference,  
Seoul, Korea, October 2–8, 2004  
David Grattan presented "The  
Challenge of the Preservation  
of Intangible Heritage: The  
Importance of Electronic Media."

Metals 2004: International Conference  
on Conservation of Metals, Canberra,  
Australia, October 4–8, 2004  
Lyndsie Selwyn presented  
"Overview of Archaeological Iron:  
The Corrosion Problem, Key Factors  
Affecting Treatment, and Gaps in  
Current Knowledge."

Creative City Network  
Annual Conference, Regina,  
SK, October 13–16, 2004  
Debra Daly Hartin and George  
Prytulak presented "Aging Gracefully  
— From New to Old: Lessons Learned  
in Developing, Conserving, and  
Preserving Public Art"; Brian  
Laurie-Beaumont also attended.

British Columbia Museums  
Association Conference,  
Nanaimo, BC, October 14–16, 2004  
Tom Stone presented "Merged  
Competencies: Covering All The  
Bases?" and took part in a panel  
discussion during the session  
"Getting By With a Little Help  
From My Friends"; CCI took part  
in the trade show where the booth  
was staffed by Mary-Lou Simac  
and Tom Stone.

Ontario Museum Association Annual  
Conference "Nogojiwanong At the  
Foot of the Rapids," Peterborough,  
ON, October 21–23, 2004  
Joe Iraci presented "Preservation  
of Modern Information Carriers";  
Michael Harrington was a panelist  
in the session "Peterborough Flood  
and its Impact."

Museums Alberta Annual  
Conference, Grande Prairie,  
AB, October 21–23, 2004  
Paul Marcon presented "Exhibits:  
Fabrication and Design, Part 1."

## Lectures

"Conservation of Ethnographic  
Wooden Objects" was presented by  
Bob Barclay on June 6 and 7, 2004, at  
the Norwegian University of Science  
and Technology, Oslo, to students in  
the International Course on Wood  
Conservation Technology.

"Environmental Monitoring  
Equipment" was presented by  
Maureen MacDonald on September  
23, 2004, and "Deterioration of  
Wooden Artifacts" was presented by  
James Hay on September 24, 2004, at  
the Canada Museum of Science and  
Technology in Ottawa, ON, as part  
of the Ontario Museum Association  
course "Artifacts."

"Waterlogged Materials: Best Dream  
or Worst Nightmare" was presented  
by Judy Logan, and "The Treatment  
of Waterlogged Archaeological  
Wood" was presented by Malcolm  
Bilz, on October 6, 2004, at Queen's  
University in Kingston, ON, to  
students in the Master of Art  
Conservation program.

"An Introduction to Coins and  
Medals" and "A Discussion of Skin,  
Leather, Bone, Ivory and Keratin"  
were presented by Tom Stone on  
October 27, 2004, at Queen's  
University in Kingston, ON,  
to students in the Master of  
Art Conservation program.

## Workshops

*Salvage of Archival Collections* was  
presented by David Tremain and  
Joe Iraci on June 17, 2004, in  
Ottawa, ON, as part of the House  
of Commons Resource Information  
Management Program. The  
workshop included a short  
presentation by Joe Iraci on  
"Disaster Recovery of Modern  
Information Carriers."

*Preservation Management for Seasonal  
Museums* was presented by Deborah  
Stewart on September 11–12, 2004,  
at the Northern Life Museum in  
Fort Smith, NT.

*Conservation of the Senate's Heritage  
Furniture* was presented by Alastair  
Fox and James Hay on September  
13–14, 2004, at the old Printing  
Plant in Hull, QC, for the Senate  
of Canada.

*Preservation of Works of Art on  
Paper* was presented by Ed Kulka  
and private conservator Julia Landry  
(Leaf by Leaf Book and Paper  
Conservation Services, Halifax, NS)  
on September 25–26, 2004, in  
Halifax, NS, for the Federation  
of Nova Scotia Heritage.

*Artifacts in Aboriginal Cultural Centres*  
was presented by Tom Stone and  
Janet Mason on September 30 –  
October 1, 2004, at the Woodland  
Cultural Centre in Brantford, ON,  
for the Ontario Museum Association.

*Storage Planning for Cultural  
Institutions* was presented by  
Helen McKay, Siegfried Rempel,  
and Cliff Cook on October 4–5, 2004,  
at the Beringia Centre in  
Whitehorse, YK.

*Linking Parabolas in International  
Exchange: Colloquium on Curatorship  
2004* (a workshop on planning  
and carrying out international  
exhibitions) was presented by  
Charles Costain and Canadian  
colleagues from the Musée de la

civilisation in Québec City, the National Gallery of Canada, the Centre for Exhibitions Exchange, the Canadian Museums Association, and Lord Cultural Resources Planning & Management, and in collaboration with colleagues in Taiwan, on October 12–14, 2004, in Tai-Chung, Taiwan, to about 200 Taiwanese curators.

*Conservation of Historical Furniture* was presented by Alastair Fox and James Hay on October 21–22, 2004, at Queen's University in Kingston, ON, to students in the Master of Art Conservation program.

### Site visits for facilities development or upgrading

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

British Columbia — Entertainment and Media Arts Society, Burnaby; Canadian Museum of Rail Travel, Cranbrook; Nelson & District Museum, Art Gallery and Archives, Nelson; Biblical Museum of Canada, Vancouver; Bella Coola Valley Museum, Bella Coola; Museum of Northern British Columbia, Prince Rupert; Art Gallery of Greater Victoria, Victoria; Kelowna Centennial Museum and Kelowna Art Gallery, Kelowna.

Alberta — Metis Crossing (Metis Nation of Alberta), Victoria Landing; Alberta Foundation of the Arts and Provincial Museum of Alberta, Edmonton; Sir Alexander Galt Museum, Lethbridge.

Saskatchewan — Moose Jaw Museum and Art Gallery, Moose Jaw; Duck Lake Museum Regional Interpretative Centre, Duck Lake; Organization of Military Museums of Canada, Regina.

Manitoba — Northern Plains Museum, Brandon; National Residential School Museum, Portage la Prairie; Métis Interpretation Centre, Saint Laurent.

Ontario — The Royal Canadian Regiment Museum, London; Bytown Museum, Ottawa.

Quebec — Université de Sherbrooke Art Gallery, Sherbrooke.

Nova Scotia — Mi'kmaq College Institute, Membertou; Mi'kmaq Cultural Network, Millbrook; Mi'kmawey Debert Heritage Interpretation Centre, Debert.

Yukon — Big Jonathan House, Pelly Crossing; Teslin Tlingit Heritage Centre, Teslin.

### Other site visits

Trent-Severn Waterway National Historic Site, ON — From May 16 to 27, 2004, Nancy Binnie worked with the Parks Canada Underwater Archaeological Services Unit to document submerged fish weir structures in Sunset Bay, Lovesick Lake, a site that is believed to be the oldest documented freshwater fish weir structure in Canada.

Deadman Bay, Lake Ontario (east of Old Fort Henry, near Kingston, ON) — On June 23, 2004, Nancy Binnie worked with the Parks Canada Underwater Archaeological Services Unit to recover two wood pieces from the wreck of the ship *Princess Charlotte*. These highly characterized waterlogged wood samples had been underwater for 7 years as part of a long-term wood deterioration study.

H.M.C.S. *Glace Bay* and H.M.C.S. *Kingston*, south of Prince Edward County, Lake Ontario (near Picton, ON) — From July 5 to 7, 2004, Nancy Binnie provided on-site consultation to Arrow Recovery Canada and the Aerospace Heritage Foundation of Canada as they searched for models of the Avro Arrow CF-105.

Parliament Hill, Ottawa, ON — From July 5 through 9, 2004, Alastair Fox and James Hay treated the 80-year-old

teak and ebony floor in the Reading Room of the Senate. From July 7 to August 31, 2004, Robert Arnold, Wendy Baker, Debra Daly Hartin, and Helen McKay, together with contract conservators Bonnie McLean and Mary Hough, completed work on ceiling and architectural wall elements; consolidation, filling, and inpainting of losses and reintegration of painted surfaces; and conservation treatment of mural paintings in the Senate Banking, Trade and Commerce Room 256S, Centre Block.

Supreme Court of Canada, Ottawa, ON — From July 12 to August 20, 2004, Alastair Fox and James Hay cleaned and polished the walnut panelled walls in the Judges' offices. While there, they also repaired a chair belonging to one of the Judges (July 22).

Colony of Avalon Archaeological Project, Ferryland, NL — On July 14, 2004, Charlotte Newton worked in the field conservation lab at the Colony of Avalon Archaeological Project, a 17th-century English colony being excavated by archaeologists from Memorial University of Newfoundland.

Ruggles River, Quttinirpaaq National Park, Ellesmere Island, NU — From July 24 to August 7, 2004, Tara Grant provided on-site field conservation and training for a salvage excavation of a Thule site on the Ruggles River. This was a collaborative project between Parks Canada and the Department of Culture, Language, Elders and Youth, Government of Nunavut.

RCAF Memorial Museum, Trenton, ON — On August 2, 2004, Nancy Binnie and Alastair Fox inspected a Halifax bomber being restored by museum volunteers after its recovery from 50 years underwater in Lake Mjøsa, Norway, and the highly corroded wing of a Nike booster rocket recovered from Lake Ontario, to see the condition of aircraft remains that have been submerged in freshwater environments for

about the same amount of time as the Avro Arrow CF-105 test models located in Lake Ontario.

Fanshawe Pioneer Village, London, ON (which operates under the London and Middlesex Heritage Museum with the support of the Upper Thames River Conservation authority and the City of London) — On August 3–4, 2004, Nancy Binnie and Alastair Fox carried out an investigation of historic paint colours in four buildings: Lochaber Free Presbyterian Church, Trinity Anglican Church, Jury Farmhouse, and S.S. #19 Fanshawe School House, in support of a building restoration scheme that is being partially funded by a grant from the Benjamin Moore Community Restoration Program.

Bytown Museum, Ottawa, ON/Diefenbunker, Carp, ON — On September 1, 2004, Bob Barclay and Cliff Cook inspected the Bytown Museum's existing storage facility and then examined the proposed new storage space for the Bytown's stored collections at the Diefenbunker in Carp, ON. From September 29 to October 1, Wendy Baker and Siegfried Rempel visited both locations to follow up on this proposed move, assessing the nature of the stored collection, its state of readiness for the move, and the layout of the new storage space; developing recommendations for the move; and discussing various move-related issues with staff of the Bytown Museum.

Ontario Lacrosse Hall of Fame and Museum, St. Catharines, ON — On September 28, 2004, Tom Stone and Janet Mason inspected an early 20th century lacrosse trophy that may be treated at CCI.

Library and Archives Canada, Ottawa, ON — On October 6, 2004, Wendy Baker prepared a condition report and treatment proposal for a plaster bust of Joseph-Israël Tarte (attributed to Louis-Philippe Hébert).

MacKenzie Art Gallery, Regina, SK — On October 14, 2004, Debra Daly Hartin examined two paintings by Cornelius Krieghoff in preparation for one of them coming to CCI for treatment.

### CCI Honoured by Sir Sandford Fleming College

At its Academic Awards Ceremony in June 2004, Sir Sandford Fleming College presented CCI with the Partnership in Education Award in recognition of the Institute's long-term commitment to the students of the Collections Conservation and Management program and the Museum Management and Curatorship program. As one of more than 500 community partners of Fleming College, CCI was very honoured to be chosen to receive this award.

Kevin Asselin, Academic Team Leader for the Centre for Community Development and Health, introduced the award which was presented by Program Coordinator Gayle McIntyre. In accepting, Michael Harrington, Chair of the Joint Advisory Committee for the two programs, said that he was humbled by the dedication of Fleming staff and their continued efforts to offer the students the best preparation possible to meet the needs of a quickly evolving workplace.

CCI takes pride in this recognition and will continue to support the building of preservation capacity in Canada.

### Canadian Antiques Roadshow

In the spring of 2004, CCI was pleased to provide information to participants in the CBC-TV production of the *Canadian Antiques Roadshow* in three locations:

Canadian Museum of Civilization, Gatineau, QC,  
May 14 — Bob Barclay, Wendy Baker, Renée Dancause,  
David Grattan, Ed Kulka, Cliff McCawley,  
Helen McKay, Shanna Ramsay, and Jan Vuori.  
Western Development Museum, Saskatoon, SK,  
May 22 — Wendy Baker, Renée Dancause,  
Janet Mason, and Shanna Ramsay.  
Calgary Stampede Centre, Calgary, AB,  
May 26 — Charles Costain, Renée Dancause,  
Michael Harrington, and Shanna Ramsay.  
For more information about the *Canadian Antiques Roadshow*, see the article on p. 13.

### Long-Service Awards

CCI is proud of the commitment and dedication of its staff. A number of them were honoured with long-service awards in the spring of 2004.

**15 years service:** Paul Bégin, Malcolm Bilz,  
Nancy Binnie, Carole Dignard,  
Joe Iraci, Barbara Patterson

**25 years service:** Jeannine Fernandes,  
Charlotte Newton

**35 years service:** John Egan

## Deputy Minister's Awards

Each year the Deputy Minister of the Department of Canadian Heritage recognizes various employees/teams for outstanding contributions. Two of the teams honoured with Deputy Minister's Awards during National Public Service Week in June 2004 included CCI staff.

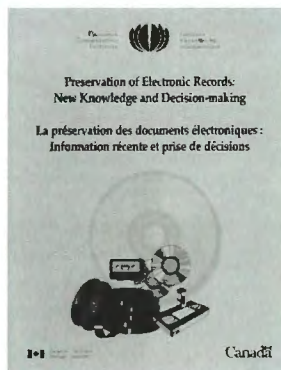
### Organizing Committee for "Symposium 2003 - Preservation of Electronic Records: New Knowledge and Decision-making"

The organization of this symposium was a collaborative effort among CCI, Library and Archives Canada (LAC), and the Canadian Heritage Information Network (CHIN).

Members of the Organizing Committee included Christine Bradley, Jane Down, Sophie Georgiev, Bruce Gordon, Nicole Guénette-Allen, Joe Iraci, Colette Landry, Linda Leclerc, Barbara Patterson, Shanna Ramsay, Mary Lou Simac, Tom Strang, and Linda Street (from CCI); Louisa Coates, Richard Green, Greg Hill, Wanda McWilliams, and Mary Murphy (from LAC); and Patricia Young (from CHIN).

### Treatment team for *Death of General Wolfe*

Treatment of this painting was a collaborative effort among CCI staff members Debra Daly Hartin, Elizabeth Moffatt, Jeremy Powell, Jane Sirois, and Peter Vogel, assisted by Gilbert Gignac (Curator, Library and Archives Canada), Catherine Johnston (Curator at the National Gallery of Canada), Andrea Kirkpatrick (Curator at the New Brunswick Museum), and Kim Muir (advanced conservation intern at CCI).

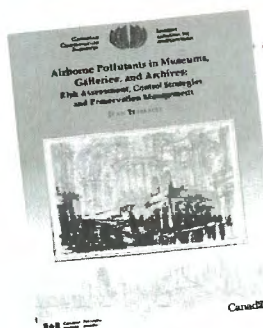


## Preservation of Electronic Records: New Knowledge and Decision-making — Postprints

Symposium 2003 - Preservation of Electronic Records: New Knowledge and Decision-making was held in Ottawa, Canada,

from September 15 to 18, 2003. Hosted by the Canadian Conservation Institute, Library and Archives Canada, and the Canadian Heritage Information Network, the symposium aimed to increase awareness of the issues surrounding the preservation of electronic records by bringing expert and leading-edge opinions to a large audience including small and medium-sized archives, libraries, and museums. The program was based on the chronological decisions that need to be made as electronic records come into a heritage institution, and covered broad subject areas such as value criteria, authenticity criteria, factors to be considered in developing a preservation strategy, preservation strategies for information content, and media knowledge (deterioration, storage, longevity, disaster recovery, etc). This book of postprints contains the complete text of all papers presented at the symposium (in the language of presentation) along with abstracts in both English and French for each one. It will be useful for anyone with electronic records in their collections.

ISBN 0-662-68620-9 – 21.5 x 28 cm (8.5 x 11") – paperback  
221 pp. – 2004 – In Canada: CAN\$50 – Other countries: US\$50

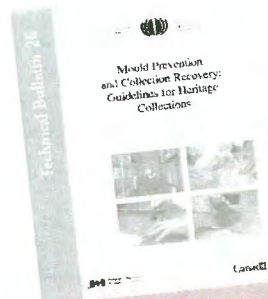


## Airborne Pollutants in Museums, Galleries, and Archives: Risk Assessment, Control Strategies, and Preservation Management

by Jean Tétreault

This book attempts to define the key airborne pollutants for indoor museum environments and provide 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 policy of individual museums. It will be an ideal reference for anyone (e.g. museum directors, building and collection managers, conservation professionals, material scientists, exhibit designers, HVAC engineers, indoor air consultants, and architects) involved in making decisions regarding the preservation of collections.

ISBN 0-662-34059-0 – 21.5 x 28 cm (8.5 x 11") – paperback  
168 pp. – 2004 – In Canada: CAN\$50 – Other countries: US\$50



## TB #26 - Mould Prevention and Collection Recovery: Guidelines for Heritage Collections

by Sherry Guild  
and Maureen MacDonald

Mould infestation in heritage collections can damage artifacts and may pose a health risk to individuals who work with these collections. This Technical Bulletin presents information on mould morphology, prevention of mould growth, actions to take should mould occur, and health effects relating to mould exposure. It informs the reader how to remove mould growth from artifacts and it describes the appropriate personal protective equipment to wear when working in a mould-contaminated environment or when working with mould-infested artifacts.

ISBN 0-662-35932-1 – 21.5 x 28 cm (8.5 x 11") – paperback  
35 pp. – 2004 – In Canada: CAN\$20 – Other countries: US\$20