



CCI Newsletter

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Power of the Press: Treating a Chandler & Price "Old Series" Platen Printing Press

by George Prytulak, Conservator, Ethnology Section

This past year, CCI continued its commitment to industrial artifact conservation with the treatment of a Chandler & Price 12 x 18¹ platen printing press for the MacBride Museum of Whitehorse, Yukon.

The press (serial no. D1129) was made in Cleveland, Ohio, at the turn of the century and was one of the first ever used in the Yukon. It made its way to Whitehorse via Bennett, B.C., in the year 1900, and was used by the *Whitehorse Star* — the first "gold rush" paper — until the 1940s. Its history is linked to the settlement of the Yukon, the Klondike gold rush, and the building of the White Pass and Yukon Railway.

For interpretive purposes, the MacBride Museum wanted the press to be restored to a semblance of its condition of last use. This would allow it to be operated slowly by hand in order to demonstrate its complex sequence of movements to museum visitors.

Description and History

In many ways, this artifact is a paradigm of everything involved in the treatment of industrial artifacts. Like many industrial artifacts, the press is utilitarian in nature, designed strictly for business with little thought for beauty or sentiment. This accounts in large part for its sorry fate. Once it had outlived its usefulness in the 1940s, it was literally pushed aside



Contents

Power of the Press by George Prytulak	1
Conservation and Recording of Rock Art in Argentina by Ian N.M. Wainwright	4
A New Director General for CCI	6
Heritage Services Division Joins CCI by Brian Laurie-Beaumont	6
Focus on...University of British Columbia Museum of Anthropology by Judy Logan	8
A Tablet-Woven Treasure by Ela Keyserlingk	10
Infrared Spectroscopy at CCI by Elizabeth Moffatt	12
Laser Scanner on Show at the G7 by Réjean Baribeau	14
Setting Our Sights On-Site by Fiona Graham	15
Internships	15
Training and Marketing Initiatives	16
Upcoming Training Presentations	16
CCI Services: Seminars, Lectures, Workshops, and Visits	17

*Installing an original ink roller on the
Chandler & Price printing press.*

by the march of progress. Difficult to throw away and impossible to melt for scrap in a remote non-industrial town, the unglamorous machine gathered dust in a corner of the *Star* building until the 1970s. The newspaper moved to a new location at that time, and the decision was made not to take the old press along. Finding a suitable home for it was not easy. Its relative newness and its cumbersome size and weight (2200 pounds/1000 kg) gave it little appeal in the eyes of private collectors or antique dealers. Through the years, parts had been removed and recycled for other uses, so the press was no longer functional or complete.

Due to severely limited indoor storage space, the press was stored outside on the museum grounds. This machine was designed for indoor use, so a period of several decades outside naturally took its toll. The bare steel surfaces (approximately 45% of the total surface area) were completely rusted and every one of the 50-odd movable parts was seized in place. More than 40 parts had been lost or stolen, including two wooden feed tables. Over 90% of the original finish had been destroyed by the elements. A number of cast iron parts had been broken. The 27 oil holes, which consist of nothing more than vertical or oblique holes in the tops of the bearings, filled up with dirt and water and served as miniature flower pots for moss, causing deep pitting in the surface of the journals inside.

Over the years, the press was repeatedly vandalized, serving on many occasions as an altar for the sacrifice of discarded bottles. Dirt and debris continued to collect in every crevice and cavity. In an effort to spruce up the grounds, the rusted surfaces were eventually covered with thick coats of grey enamel paint.

In the late 1980s, the museum turned its attention to the long-overlooked press. Restoration was the natural course to choose, but the resources necessary for such an undertaking were too limited at the museum or at any other site in the Territory. CCI was contacted and, after years of delicate negotiations, the press made its way here in June of 1994. Restoration concentrated on three areas: 1) making the

object complete; 2) rendering it movable; and 3) recreating an authentic finish.

Because of the often lamentable condition of old industrial artifacts like this press, treating them may strike some conservators as a bleak prospect. The saving grace of these objects, however, is the fact that they were mass-produced. Mass-production means that the object was produced in substantial numbers, usually by an identifiable manufacturing company at a fixed location. It is not an anonymous, one-of-a-kind, or eccentric object. It was created and functioned within a complex supporting infrastructure. Considerable effort went into perfecting the design of the object and the machines and processes that had to reproduce it repeatedly and successfully. In addition to design and manufacturing, the infrastructure included marketing, distribution, and servicing. In general, the infrastructure disintegrates with the passing of the original company, but many of the pieces seem to survive, often in less obvious forms and places.

The conservator has a world of information and resources to tap in the course of treating such an artifact. With a little luck and a lot of detective work, it is possible to track down descriptive, illustrated trade literature and numbered parts lists; surviving examples of similar machines can usually be located in private or public museum collections; interchangeable replacement parts (either discarded originals or new replicas) can often be acquired and incorporated in the reconstruction or can be used as patterns for reproduction work; and collectors and restorers willing to share their technical experience will frequently be encountered along the way. Fortunately, much of this has materialized in the Chandler & Price project.

The National Museum of Science and Technology (NMST), for example, displays and operates a smaller version of the Chandler & Price press in its print shop exhibit, and it has some rare trade literature (a 1902 sales brochure and a 1930s illustrated parts list) in its library, all of which proved invaluable. Letterpress operation is a popular hobby in North America. Two journals devoted to

the subject are published every month in the U.S.A. It was through the publisher of one, *The Printer*, that CCI acquired many missing parts for the MacBride press.

Other museums and archives across Canada have been equally helpful, kindly searching through their catalogue files, storage areas, and libraries for links to Chandler & Price's past.

Several interesting problems became evident fairly early on in the project. For one thing, the 12 x 18 model from this era is relatively rare. Being the third largest of six sizes ("Large Quarto"), it was too large for most small print shops, which printed mainly handbills, tickets, and calling cards. This press was made for a more limited clientele, one that ran off limited editions of weekly newspapers. Moreover, Chandler & Price redesigned their presses and included much needed safety features in 1911, reintroducing the line as the "New Series" to distinguish it from what would thereafter be called the "Old Series." Being large, heavy, and

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dangerous, the "Old Series" presses have never been favoured by collectors. One literally cannot give them away, even to museums. Only one other intact example has been located, in the Burnaby Village Museum just outside Vancouver, B.C.

This problem of model size was not expected to cause difficulties; the Chandler & Price press is, after all, considered to be the Ford "Model T" of printing presses. Over 34,000 such presses were said to be in use in 1910, and the company remained in business until 1978. But Chandler & Price, unlike most automobile manufacturers, did not economize by sharing parts between its different model sizes. Only a No. 12 part will fit a 12 x 18 press. Thus, even though two complete 10 x 12s and one 14 x 20 model were offered to CCI, not a single part could be used from them.

Treatment

The press was disassembled with the help of heat, penetrating oil, and paint stripper. Stubborn assemblies were persuaded to come apart with a rain of hammer blows against hardwood blocks and, in one instance, with a six-ton hydraulic jack (courtesy of the NMST railway shop). The parts were cleaned with Grit-O-Cobs organic air abrasive to remove residual paint, dirt, and grease. As mentioned, almost 45% of the surface area is bare machined steel and all of it had rusted. Traditional industrial and conservation techniques were judged to be inappropriate for this project: the former would be too aggressive and the latter would be not aggressive enough. The ideal solution, as suggested by Michael Harrington of CCI's Furniture and Wooden Objects Section, was to use 3M "surface conditioning" materials (*Scotch-Brite*) and pneumatic tools. This material removes oxide without erasing the original tool marks and wear patterns on the metal substrate.

All of the rusted surfaces have now been derusted and polished, and the moveable assemblies can be turned manually with little effort. As an improvement on the original design, the 27 oil holes have been filled with felt plugs. These will allow oil to reach the bearings without abrasive dust entering.

Painted Finish

A few traces of original bright blue paint were uncovered during disassembly and cleaning. These traces were no longer representative of the original appearance, since they had weathered to a dry pigment state. Mixed with linseed oil and/or oil varnish, the saturated pigment would have appeared much darker — so dark that most restorers believe the presses were originally black.

Analysis by CCI's Analytical Research Services Division (ARS) revealed that the original pigment was artificial ultramarine blue. No white lead pigment had been added to lighten the hue, perhaps because it was once judged to be incompatible with this blue.² No other white fillers such as zinc oxide or chalk were found either, suggesting that dark blue was the intended colour.

ARS also analyzed a black metal filler that had been used to smooth out the surface of the cast iron parts of the press. The filler was composed of boiled linseed oil mixed with a black mineral filler similar to ground slate. Recipes for this kind of paste filler are common in early 20th-century texts on painting.

The press was originally surfaced with this filler, then was painted with the translucent, dark blue paint. This would have given it a distinctly blue-black lustre, which is most evident when it is compared with true black paints.

Decorative gold striping followed the coats of blue, apparently after the press had been assembled. Traces of gold lines on the parts from both Cleveland and Whitehorse indicate that the lines were fairly heavy (generally 3/8" [9.5 mm] wide) and that they stopped whenever the painter encountered an obstacle such as a gear. The execution was far from perfect. Some lines were off-centre and strayed from a straight path. They appeared to have been done by a practiced hand trying to keep pace with production.

The metallic pigment, according to ARS analysis, was powdered brass,

a compound known as "bronze powder" in the paint industry.

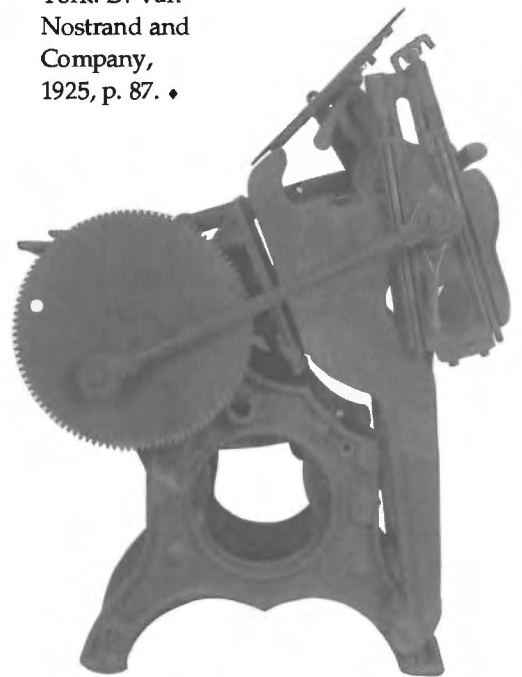
For interpretive purposes, the painted finish has been recreated with modern materials: synthetic body filler (polyester resin) as a surfacer, followed by black industrial primer and a top coat of spar varnish mixed with ultramarine blue pigment. Gold striping has been applied by a professional sign painter. A final clear coat of varnish completes the finish.

Treatment of the Chandler & Price printing press is near completion. Once it is finished, the press will be shipped back to Whitehorse and will become part of a permanent exhibit at the MacBride Museum.

Endnotes

1. 12 x 18 refers to the inside dimensions (in inches) of the rectangular chase, the cast iron frame that holds the inked type. Unfortunately, the chase is detachable and is rarely left on the machine, so the size of the press must be determined in some other fashion. As it turns out, the first number (12) is impressed on almost every cast part, preceding the general part number. Thus, on this press, Part No. 78 reads as Part No. 1278. The same part on a smaller 10 x 12 press would read as Part No. 1078, and so on.

2. Maximilian Toch. *The Chemistry and Technology of Paints*, Third Edition. New York: D. Van Nostrand and Company, 1925, p. 87. ♦



Conservation and Recording of Rock Art in Argentina

by Ian N.M. Wainwright, Acting Chief, Analytical Research Services Division

A collaborative project is under way between CCI and researchers in Argentina to develop conservation, recording, and site management strategies for Argentina's rock art sites. The project falls within a broader mandate to preserve all of Argentina's archaeological heritage. The sites in Argentina bear many similarities to rock art sites in Canada that CCI has examined over the years. CCI's role in this project is to offer advice based on experience in Canada and to provide analytical support to investigate the pigments, binding media, and mechanisms of deterioration of the rock paintings.

The project was initiated in 1994 by Dr. Diana Rolandi de Perrot, Director of the Instituto Nacional de Antropología y Pensamiento Latinoamericano (under the Secretary of Culture within the federal Department of Education). The coordinators of the project are Professor Carlos Gradín of the National Council of Scientific and Technical Research (CONICET) and Carlos Aschero of the Universidad Nacional de Tucumán. The research team includes María Mercedes Podestá, María Onetto, Liliana Manzi, Gabriela Guraieb, Ana Aguerre, members of CCI staff, and other experts in such fields as photography, chemical analysis, surveying, and geology. Together, the team members bring to the project an enormous wealth of experience and knowledge of rock art archaeology and anthropology.

Funding from Argentina's Secretary of Culture, supplemented by a generous grant from the Fundación Antorchas, made it possible for the author, as a representative of CCI, to journey to Argentina, visit two rock painting sites, and present a three-day seminar — "Theory and Practice of Rock Art Conservation and Recording" — to 50 participants from Argentina, Chile, and Brazil.

The rock art sites in Argentina that are being studied are located in the province of Santa Cruz in Patagonia. They



Members of the research team at La Cueva de las Manos.

are expressions of a hunting and gathering culture that occupied the region from at least 9,000 years ago to the end of the prehispanic period.

A research team flew from Buenos Aires to the port of Comodoro Rivadavia and then drove to the town of Perito Moreno. The first site, *La Cueva de las Manos* ("Cave of Hands"), which was recently designated a National Historic Monument, is located in a spectacular canyon of the Rio Pinturas, a few hours' drive south of the town. Visitors to the site are particularly struck by the rock walls just outside the entrance to a cave shelter that are covered with many paintings of hands. On approaching the site along a paved road, one may be lucky enough to pass herds of guanacos (a relative of the llama); depictions of these graceful animals are also visible on the rocks. Like the hands, the guanacos were executed in various hues of natural mineral pigments.

The *La Cueva de las Manos* site consists of a series of rock faces on either side of and within a cave in the cliff high above

the canyon floor. The site is currently enclosed with chain link fencing. One of the objectives of the study is to evaluate alternatives to this fencing that will protect the pictographs, control the flow of visitors, and allow for enhanced interpretation of the site.

Raising public awareness of and concern for the fragility of the rock art and for its preservation is a high priority of the project. The collaborators plan to prepare educational material about the site and the archaeology and natural history of the region, as well as a database of photographs, videos, and other documentation. Mario Sánchez and his assistant Betina Sánchez were at the site to record the pictographs photographically and on video. At the same time, a team from the Universidad Nacional de Tucumán were surveying the entire site and making a detailed topographical plan of it.

In addition to such basic tasks as recording the existing graffiti at the site and taking note of visitor services and impacts, I removed a number of microscopical samples for analysis by x-ray

diffraction, infrared spectroscopy, and x-ray microanalysis. These analyses, which have been started by Kate Helwig of CCI's Analytical Research Services Division, have already turned up some interesting results. In addition to pigment and media analysis, CCI will be investigating the formation of mineral accretion on the site and the possibility that a preparation layer may have been used for some of the rock paintings.

The second site visited, *Cerro de los Indios* ("Indian Hill"), is located just outside the village of Lago Posadas. As with *La Cueva de las Manos*, visitor impact, especially graffiti, is of prime concern. Both sites are well known locally and receive considerable national as well as international visitation, which results in a certain amount of vandalism. Although not as severe as can be observed at some sites around the world, vandalism here appears to be on the rise.

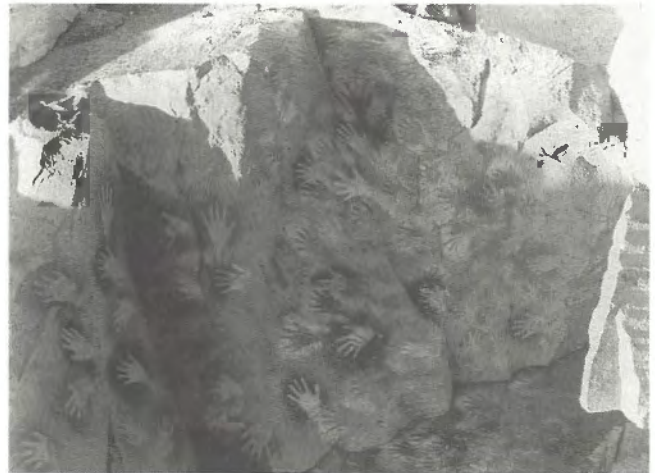
Many of the rock paintings at *Cerro de los Indios* are quite high up, which would have made observation and sampling difficult had the researchers been without a sturdy and versatile ladder. Sampling was nevertheless fairly tricky at both sites as the research team attempted to obtain representative material in as unobtrusive a way as possible. In addition to samples from the rock art per se, Carlos Aschero provided samples of pigment excavated from a site at the foot of *Cerro de los Indios* to determine whether there is a relationship between these pigments and the pigments used for the pictographs.

An especially encouraging aspect of the trip to Patagonia was the great interest in rock art shown by the concerned citizens of Perito Moreno and Lago Posadas, whether provincial officials, landowners, business people, avocational archaeologists, or visitors' centre staff. All were concerned about the protection and conservation of the sites in view of the increase in development and tourism in the area. The research team had a number of fruitful discussions with people from the area, who were very generous in sharing their views concerning the sites.

The three-day seminar that I gave took place from 13 to 15 March in a lecture room at the Instituto Nacional de Antropología y Pensamiento Latinoamericano in Buenos Aires. The content was similar to the workshops I had presented previously at the Centre de conservation du Québec in Quebec City and at Parks Canada's Historic Resource Conservation Lab in Dartmouth, Nova Scotia. Thanks to superb simultaneous translation into Spanish by Dolores Elkin, the seminar moved along briskly and covered a number of topics such as natural weathering, photographic and photogrammetric recording, dating, treatment, and site management. The lecture format was supplemented with videos of Canadian

rock art, including the Lloyd Walton film *The Teaching Rocks*, produced by the Ontario Ministry of Natural Resources and narrated by Ojibwa Elder Fred Wheatley, about the rock art at Petroglyphs Provincial Park, Ontario. *Operation Rock*, produced by Bjorn Simonsen in 1975, about the helicopter rescue of a large boulder with petroglyphs from Ringbolt Island in Kitselas Canyon of the Skeena River, British Columbia, gave the audience a different perspective on rock art conservation in Canada.

The rock art conservation project is the first of its kind to take place in Argentina and has already resulted in a productive exchange of ideas. The seminar was a further opportunity for a large group with a common interest to gather and share their considerable knowledge and to learn about the work that CCI has done in the area of rock art conservation. ♦



Rock painting of hands at La Cueva de las Manos.

"Fabric of an Exhibition: An Interdisciplinary Approach" Textile Conservation Symposium '97

The Canadian Conservation Institute, Department of Canadian Heritage, is hosting the first biennial North American Textile Conservation Symposium from September 22 to 25, 1997 in Ottawa, Canada. Curators, designers, conservators, and other museum professionals will address issues related to the successful exhibition of textiles. In addition to the formal presentations and poster

sessions, tours of museums and facilities in the Ottawa area and demonstrations of techniques will be offered. The proceedings of this symposium will be published.

An international call for papers will appear in the spring of 1996; however, preliminary submissions are welcome.

To receive further details, please write to Michaela Keyserlingk
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A New Director General for CCI

On July 19, 1995, Deputy Minister Marc Rochon announced personnel changes in some senior management positions within the Department of Canadian Heritage. CCI is one of the areas in the Department that was affected by these changes.

In early August, Charles Gruchy left his position as Director General of the Canadian Conservation Institute to take on the responsibilities of Director General of the Heritage Branch in the Cultural Development and Heritage Sector. At the same time, Bill Peters assumed the responsibilities of Director General and Chief Operating Officer for CCI.

Bill Peters brings a varied background and a wide range of experience to CCI.

After attending the University of Manitoba, Mr. Peters worked for five years as a journalist before joining the Department of Forestry in 1967. Subsequent positions with a variety of line departments and central agencies combined policy and communications experience, including senior responsibility at the Department of the Environment, the Department of Consumer and Corporate Affairs, and the Ministry of State for Economic Regional Development. Mr. Peters spent two years with the Historic Sites Program at Parks Canada, and became Director General of the Heritage Branch in 1992.

CCI staff wish Mr. Gruchy every success in his new position, and welcome Mr. Peters to the Canadian Conservation Institute. ♦



Bill Peters, CCI's new Director General.

Heritage Services Division Joins CCI

by Brian Laurie-Beaumont, Chief, Heritage Services Division

The Assistant Deputy Minister for Culture and Heritage has approved the transfer of the Heritage Services Division (DHS) of the Department of Canadian Heritage (PCH) from the Heritage Branch to the Conservation Services Directorate of the Canadian Conservation Institute (CCI). DHS provides development planning and specialized technical design services to PCH and to the museum and heritage communities. The move was made to recognize and increase existing interactions between DHS and CCI, and to underline the key roles that project planning, building design, and equipment play in collection preservation concerns. This initiative allows CCI to expand its range of collection preservation services nationally and internationally.

Background

The Heritage Services Division began in the late 1970s as part of the Museum Assistance Program (MAP). Two objectives were identified for DHS: the federal government required that it have the capacity to evaluate the planning

preparedness, design quality, and cost estimates of projects submitted for funding from the public purse; and the museum community required it to be a knowledgeable and objective source of experienced professionals to assist in specialized subject areas.

Starting with a staff of two, DHS managed several MAP funding programs related to capital development and collection preservation. At the same time, the unit developed specific expertise in museum development and design planning issues. With their unique position at the federal level and the fact that they reviewed many and varied development projects, the unit's staff not only were exposed to a range of problems and solutions, but also could disseminate the information they learned across the museum community through project assessments.

During the 1980s, DHS acquired technical expertise in security and fire protection. On the planning side, institutional programming began to emphasize

market development (as distinct from public promotion) to improve revenue generation. Several publications were produced on security, fire protection, and designing planning terms of reference. The internationally recognized book *Planning Our Museums*, edited by Barry Lord and Gail Dexter Lord, was a project of this unit. The aim has always been to impart knowledge to clients so they can make informed decisions relevant to their own situations.

Heritage Services Division Today

In 1990, with the regionalization of funding programs, the advisory service activities of the Museum Assistance Program were reorganized under the Heritage Services Division. DHS is headed by a Chief and includes two Collection Preservation Advisors, who are experienced in applying collection preservation norms to building and equipment systems design (i.e., environmental control, storage, and lighting); a Security Advisor and a Fire Protection Advisor, who both specialize in systems design and operating procedures; as well as a Planning

Advisor, who is responsible for advising on strategic and heritage facility functional planning, market development, and fund raising.

The Division has four primary activities: 1) analyzing planning, marketing, and capital project applications submitted under various departmental funding programs; 2) evaluating facility design issues for the Movable Cultural Property Program; 3) conducting institutional visits to assist heritage organizations to identify development and design issues and to outline potential solutions; and 4) providing educational support to the museum and heritage communities through publications and seminars. DHS also provides clients with design guidelines and criteria on specific collection protection issues. This assists clients when working with private sector consultants to produce final design documents.

Over the years, the Division's client base has developed steadily. Instead of focussing only on the Museum Assistance Program, DHS now deals with a wider range of departmental assistance programs such as the Movable Cultural Property Program, the Cultural Initiatives Program, and the Insurance

Program. DHS provides specialized advice to Parks Canada as well as to heritage projects in other federal departments, and is now expanding beyond museums to projects involving heritage interpretation centres and archives. DHS staff have also begun to respond to inquiries for assistance from foreign governments. In addition to international goodwill, the unit's interest in such work is to engage in an exchange of information on techniques and technology as well as to initiate opportunities abroad for Canadians working in the heritage field, in both non-profit and private sector capacities.

Innovations in Service Delivery

The Heritage Services Division is a prime example of the government's experiment in telework. Most DHS staff work full-time or part-time from their home teleworking offices, although a small central office is maintained in downtown Ottawa. All offices are connected to the Department of Canadian Heritage via the department's e-mail network, and communication with clients is done by telephone, fax, mail, and Internet. There has been a considerable savings in office accommodation and an improvement in staff productivity. Most

of the unit's activities are with museums and heritage projects outside Ottawa, and telework has improved access to clients located in different time zones across Canada. It also simplifies communication with overseas contacts in DHS's gradually growing international presence.

DHS is exploring other useful applications to assist its clientele and to improve productivity in times of increasing demand and static or declining resources. One project is to create self-assessment forms for reviewing security, fire protection, environmental control, and storage. The objective is to provide long-distance initial guidance on facility development by obtaining detailed information from institutions. Ultimately, this statistical information could be stored on a database that would be available to the non-profit and related private sector communities. Another project is to produce electronic publications in a multimedia format. Such an interactive product will give the "reader" access to as little or as much information specifically related to a given context as is required. One day, this may all be distributed through a heritage bulletin board on the electronic highway. ♦

"The Conservation of Vegetable Tanned Leather"

February 22 and 23, 1996
Ottawa, Ontario

The International Institute for Conservation—Canadian Group (IIC-CG) and the Canadian Conservation Institute are sponsoring a two-day seminar on the care of vegetable tanned leather, to be held at the Canadian Conservation Institute. The instructor, Christopher Calnan, is a private conservator working with the School of Environmental Sciences, University of East Anglia, UK, and is the former Director of the Leather Conservation Center, Northampton, UK. Mr. Calnan will discuss ways of recognizing deterioration, causes of deterioration, how to assess the condition of leather through micro-chemical and micro-physical means, methods of

conserving vegetable tanned leather, and ways of testing the durability of new leathers. A maximum of 15 participants will be selected based on regional and institutional representation. Seminar fees will be \$100.00 CDN for IIC-CG members and \$125.00 CDN for non-members.

For further information, contact Janet Mason or Carole Dignard at Canadian Conservation Institute
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New Price Structure for CCI Publications

CCI has examined the implications of charging for *CCI Notes* and *Technical Bulletins*. It was concluded that, in these times of financial restraint, these publications could no longer be provided free of charge to clients outside Canada. Consequently, as of April 1, 1995, overseas and American clients began to pay for *CCI Notes* and *Technical Bulletins*. Publications are still distributed free of charge to Canadian clients. For further information or to order publications, please contact Extension Services at CCI.

Focus on...University of British Columbia Museum of Anthropology

by Judy Logan, Chief, Archaeology and Textiles Division

Opened in 1947, the University of British Columbia (UBC) Museum of Anthropology (MOA) is best known for its ethnographic collection, but is probably equally well known for the spectacular architecture of its building. The museum's current building, which was designed by Arthur Erickson and was opened in 1976, is a work of art in its



Tile stove in the Koerner Ceramics Gallery.

own right and is a showcase for the very rich material culture of the B.C. First Nations. When it was designed, the museum incorporated state-of-the-art features, such as open storage for its ethnographic collection. Located in a physically beautiful setting in a rain forest on a cliff overlooking the entrance to Vancouver Harbour, the museum brings a feeling of the natural environment into the ambience of the main gallery.

A new wing was opened in 1991 to display an impressive ceramic collection donated to the museum by Dr. Walter Koerner. One of the most striking objects in the gallery is a ceramic tile stove that was treated and restored by CCI staff. Made of glazed earthenware tiles, the

Hafner stove was acquired by the museum in 1989. It was probably made in Central Europe in the mid-sixteenth century. When the museum received it, many tiles on the stove were broken and some were missing. The inside surfaces had slight deposits of soot that gave them a pleasant, smoky smell. Conservation treatment consisted of cleaning the glazed surface. The original soot was left on the interior, as were residues of unfired clay that had been packed between the tiles during one of the times the stove had been re-assembled. The damaged tiles were repaired, and missing decorative elements were moulded with moulding rubber and were cast in plaster-of-paris. The infills and replacement tiles were in-painted with acrylic paint and then were glazed with a clear acrylic (Acryloid B-72) to closely match the colour and gloss of the original tiles. An internal support was designed that would allow the original and replacement tiles to be hung in such a way that the original configuration would be represented without damaging or altering the tiles. The colourful stove was re-assembled at UBC in time for the opening of the new gallery.

Another cooperative project between MOA and CCI took place in the mid-1980s, when MOA was asked to provide samples of pigments and binding media for a CCI study of pigments used by indigenous peoples. A total of 164 minute samples were obtained from 61 of the museum's artifacts, including wooden chests, masks, rattles, carved wooden dishes, and mortars. The complete study involved the analysis of over 1,300 samples obtained from artifacts in the collections of seven Canadian and four international museums.

As part of a study of the effectiveness of conservation treatments,

CCI staff re-examined several artifacts that had been treated at CCI and returned to various museums. The study included 10 objects belonging to MOA. These artifacts, which were treated between 1978 and 1980, include a chain mail shirt, a basket, shadow puppets, a poison arrow, and masks. The repairs to the objects are all in good condition. It is interesting to note the stability of the adhesives and fillers that were used in the treatments. These include polyvinyl acetate emulsions, cellulose nitrate, polyvinyl butyryl and methyl cellulose, AJK dough, Japanese tissue, parchment, and wood. In all cases, there was no distortion or movement between the original and the repair materials. One reason for this is undoubtedly the excellent conditions under which the objects are stored at MOA.

The MOA is under the administration of the University of British Columbia. As such, one of its important functions is teaching. MOA's integration of conservation training, the functions of a museum, and the academic curriculum of a



Conservation Intern at MOA.

university is unique in Canada. Subjects that are addressed in MOA's training programs include questions of ethical responsibility. For example, how can conservation adapt to the issues faced by a working museum: changing audience, need of public access to the collections, and concerns of First Nations?

Since it began in the late 1970s, the museum's Internship Program has gone through several changes, largely in response to changes in funding sources. Originally, two internships were funded by the federal Museum Assistance Program: a post-graduate training opportunity in preventive conservation for students coming from academic conservation programs, and training for personnel responsible for collections care in small museums. MOA recently received support from the Getty Grant Program for an internship program for graduate conservators in preventive conservation and treatments within the context of a functioning museum. In 1991, the museum received funds through the John Grant Memorial Award to allow a student from UBC to gain experience in conservation by doing an internship that consists of training one morning per week during one semester.

Besides running the internship program, the conservator of the MOA teaches two university credit courses at the fourth-year undergraduate level. Students who take these introductory courses often pursue further training in specialized conservation programs. The museum continues to accept students from conservation training programs for curriculum internships and as volunteers. The Conservation Department is also active in British Columbia's Aboriginal Stewardship Intern Program, which accepts six First Nations students annually.

Recently, CCI benefitted by having one of our senior staff members spend a year working with the MOA's conservation staff, taking part in all the museum's activities as well as team teaching one semester of an undergraduate conservation course. The opportunity for CCI conservators to work in the environment that MOA has created goes a long way to ensuring that our staff

remain aware of issues important to museums.

From April 26 to 30, 1995, the UBC Museum of Anthropology, the UBC Department of Anthropology, and representatives from First Nations hosted a conference to draw attention to the richness of wetlands as a cultural resource. "Hidden Dimensions: The Cultural Significance of Wetland Archaeology" brought archaeologists, conservators, and wetland managers from 13 countries together for very productive and informative meetings. Four people from CCI attended to present papers and to chair a one-day conservation session. This conference represents the most recent cooperative effort between CCI and the UBC Museum of Anthropology in over 20 years of working together on various projects.

MOA has acted as the host institution for several CCI seminars and workshops, including two in 1987 on archaeological conservation. In the past two years, the museum has facilitated cooperation between the Sto:lo band council, the UBC Department of Anthropology, the University of Toronto, and CCI in providing conservation treatment for artifacts associated with the wet component of the Scowlitz site, located at the confluence of the Harrison and Fraser Rivers. The artifacts, which consist of a collection of basketry, cordage, and a slate/wood knife, are the property of the Sto:lo Nation, and will be stored at the UBC Laboratory of Archaeology until the band establishes its own museum. The week before the "Hidden Dimensions" conference, two more basketry fragments were found at the site and were sent to CCI. The Institute will accept for treatment any additional waterlogged artifacts found during further excavation at the site. By analyzing and treating this collection, conservators hope to develop a better understanding of treatments for waterlogged, water-resistant plant material.



Research Associate in Conservation at MOA.

MOA is currently mounting an exhibit, entitled *From Under the Delta*, in which basketry and cordage from several sites, including Scowlitz, are displayed. Of particular interest to conservators is the state of the artifacts that have been treated with different grades of polyethylene glycol. These collections of artifacts will form the catalyst for further discussions between UBC, First Nations, and CCI about what is considered an optimum result in terms of appearance and surface finish of basketry and cordage.

Dialogue between CCI and client museums is very important. Over the past 20 years, MOA and CCI have developed open and constructive communication that has made use of the expertise that exists in both institutions. We look forward to many more years of fruitful association and professional development as museums and governments adjust to social, cultural, and technological change. And, of course, all staff members at CCI welcome the opportunity to spend some time working in such a beautiful part of our country, in one of Canada's most interesting museums. ♦

A Tablet-Woven Treasure: The Gondar Hanging

Ela Keyserlingk, Senior Conservator, and Jan Vuori, Conservator, Textiles Section

The Gondar Hanging arrived at the Textile Section of the Canadian Conservation Institute (CCI) in June 1993. The late seventeenth/early eighteenth-century Gondar Hanging originally hung in one of Ethiopia's Christian churches, and is the largest known tablet-woven textile in the world. Measuring 5.22 m by 2.18 m, it is made of spun heavy silk and consists of three vertical panels (see Figure 1). Woven into each panel is a series of motifs with iconography relating to the Ethiopian church and royal family. CCI conservators were asked by its owner, the Royal Ontario Museum (ROM), to stabilize the hanging's condition so that it could be exhibited and viewed on both sides.

In tablet weaving, warps are threaded through tablets that, when rotated,



Figure 1. The Gondar Hanging after treatment.

create sheds where wefts are inserted. This is a very old technique, but is usually used only for narrow bands such as belts and trimmings. In this case, approximately 350 tablets were required to weave each of the hanging's three vertical panels. Patterns and images are identical on both sides of the hanging; only the colours are reversed.

When the Gondar Hanging was received at CCI, it was very dirty and the silk fibres were weak and powdering. Loss of warps, particularly the original white warps used only in the central panel, disrupted the images. These losses also exposed underlying wefts, which had subsequently become broken and tangled. The hanging's top and bottom were frayed and uneven, and there was a large hole near the top of one panel.

In order to gain a better understanding of how the hanging was constructed, a detailed weave analysis was conducted by textile specialist Mary Frame. Ms. Frame's report was a great help in interpreting the lost design elements in the central panel. Her report included a set of unique semi-transparent drawings that followed yarns through both sides of the weave at once, thereby helping conservators to visualize how various methods of repair might affect the structure of the hanging.

Preliminary analyses were done at CCI. Scientists from the Analytical Research Services Division undertook polarized light microscopy, which revealed that the six colours of warp yarns were all cultivated silk (*Bombyx mori*) fibres. Dye analysis identified madder (red), indigo



Figure 2. To keep accurate records, the hanging was divided into 21 sections. A large colour photocopy of each section was inserted into a Mylar envelope. The initial condition of the section was traced on one side of the envelope, and the treatment that was applied to that section was traced on the other.

(blue), indigo and weld (blue-green and yellow-green), unripe buckthorn berries (yellow), and a soluble redwood that was probably brazilwood (yellow-brown, formerly red). Thermal analysis recorded physical evidence of the fibre deterioration. An overall, very detailed photographic record was produced to chronicle the condition of the hanging as accompaniment to the written descriptions (see Figure 2).

In September 1993, CCI hosted a day-long meeting to provide a forum in which the team of textile conservators who would treat the hanging could get input and advice from art historians, curators, and scientists. Through slide lectures and informal discussions, University of Toronto Professor Michael Gervers, a ROM research associate, provided a wealth of information about the hanging's history and about the significance of the imagery portrayed on it. Dr. Adrienne Hood, ROM Assistant Curator-in-Charge, outlined the museum's curatorial wishes and the physical limitations of storage and display within the museum building. Art historian Professor Stanislaw Chojnacki, who has lived in and regularly visits Ethiopia, shared his knowledge and appreciation of the country's art. Dr. David Jarzen and Susan A. Jarzen, from the

Canadian Museum of Nature, presented a pollen analysis that confirmed the Gondar Hanging's origin in Northern Ethiopia, and provided evidence about the origin of Ethiopian silk.

At the same meeting, textile conservators from other institutions who have experience in dealing with flat oversized textiles were invited to share their expertise. Nabuko Kajitani from the New York Metropolitan Museum of Art; Linda Eaton from the Henry Francis DuPont Winterthur Museum, Winterthur, Delaware; and Eva Burnham of the McCord Museum of Canadian History, Montreal, were able to examine the hanging at length and generously offered their advice. After much discussion, these experts agreed in general with preliminary tests that indicated the hanging would benefit from washing.

In order to perform wet cleaning safely, a particularly difficult challenge had to be overcome: keeping the hanging immobile and fully supported while the various wash baths were applied and removed. To this end, a vacuum wash table large enough to hold the hanging was designed and constructed on site by Stefan Michalski of CCI's Environment and Deterioration Research Division.

Before washing, weak areas of the hanging were covered with a soft synthetic net, and pH and colorimetry readings were taken. The washing procedure took 12 hours and was divided into nine steps: wetting out, first application of anionic detergent solution, rinsing, second application of anionic detergent solution, rinsing, realignment, final rinsing, blotting, and drying (see Figure 3). Especially thrilling was the moment during the wetting out when the air in the lab suddenly became filled with the sweet aroma of ancient incense emanating from the wet hanging. This odour was final proof that the hanging had come from a church and not an imperial palace.

The result of the washing was gratifying. The silk yarns regained much of their original lustre, the colours were significantly more vivid, and many of the discolorations were either removed or reduced in intensity. In addition, washing enabled the hanging to be relaxed and realigned, thereby removing creases, folds, and distortions.

The next phase of the treatment involved physically stabilizing the weak, tangled, or otherwise damaged areas of the hanging. A minimalist approach

was taken. The hanging was made physically secure for display, transportation, and storage with the least amount of interference to its structure. Both sides of the hanging were treated so that either side could be displayed. Exposed wefts were aligned and couched in place with hairsilk, and weak areas were reinforced by stitching with suitably coloured silk threads. The area surrounding a large hole was stitched between two patches of silk crepe that had been dyed with Ciba Geigy Irgalan dyes to match the underlying colours of the hanging. The patches physically stabilize the area without obscuring either side of the textile. For display purposes, a life-size photograph of a sound area of the hanging can be placed under the hole to visually compensate for the area of loss.

When the hanging arrived at CCI for treatment, it had four tabs: two were stitched to the top edge with modern linen thread and two were detached. A curatorial decision was made to remove the tabs for separate treatment because their original locations could not be determined conclusively. Mounts for the tabs were designed by CCI Paper Conservator David Hanington to facilitate their use as study pieces.

For storing, transporting, and displaying the hanging, two aluminum tubes were covered with needle-felted polyester and custom-dyed silk fabric. The stored hanging is rolled on one tube. The second tube is used to display portions of the hanging in a scroll-like fashion on a solid support when there is insufficient space to display the entire textile.

In January 1995, the Gondar Hanging was returned to the ROM. It was one of the largest single conservation treatments ever undertaken at CCI. It tested the ability of CCI staff to cooperate on a broad scale to bring a large and complex project to a successful conclusion on schedule. CCI team members included conservators, scientists, photographers, and support staff, each of whom was touched by the magic beauty of the Gondar Hanging and all of whom collaborated in its preservation. ♦



Figure 3. Gently sponging the anionic detergent solution through the hanging. The moveable bridge enabled conservators to reach all areas of the hanging.

Infrared Spectroscopy at CCI

by Elizabeth Moffatt, Senior Conservation Scientist, Analytical Research Services Division

Infrared spectroscopy has been used extensively for many years to identify a wide variety of organic and inorganic materials associated with artifacts and works of art. It is, in fact, the first step in many analyses conducted in CCI's Analytical Research Services Division (ARS) because it provides an overview of the constituents of a sample. Organic materials such as varnishes, paint media, adhesives, and plastics, and many inorganic materials such as certain pigments, minerals, and clays, can be identified by infrared spectroscopy. As well, changes in the composition of a material as the result of natural or accelerated aging can sometimes be detected by infrared spectroscopy. The technique is currently being used to monitor and study chemical changes in samples as part of several research projects being conducted in the Conservation Research Services Directorate.

Infrared spectroscopy is based on the absorption of infrared radiation by the chemical bonds in a molecule as they undergo various types of vibrations. The frequency and the intensity of an absorption are related to the type of bond and the type of vibration. To acquire a spectrum, a sample is placed in the beam of the spectrometer using a sampling accessory appropriate to the nature and size of the sample. Precise identification requires matching the spectrum of a sample with spectra of reference materials of known composition.

Dispersive instruments, such as the Beckman 20 and Perkin-Elmer 283 grating spectrometers, were used at CCI during the 1970s. Infrared spectroscopy was revolutionized during the 1970s and 1980s with the development of Fourier transform infrared (FTIR) spectroscopy. The major components of an FTIR spectrometer are an infrared source, a Michelson interferometer, a laser, a detector, and a computer. The computer is an integral part of the FTIR system. It has led to many improvements including better quality spectra, data storage,

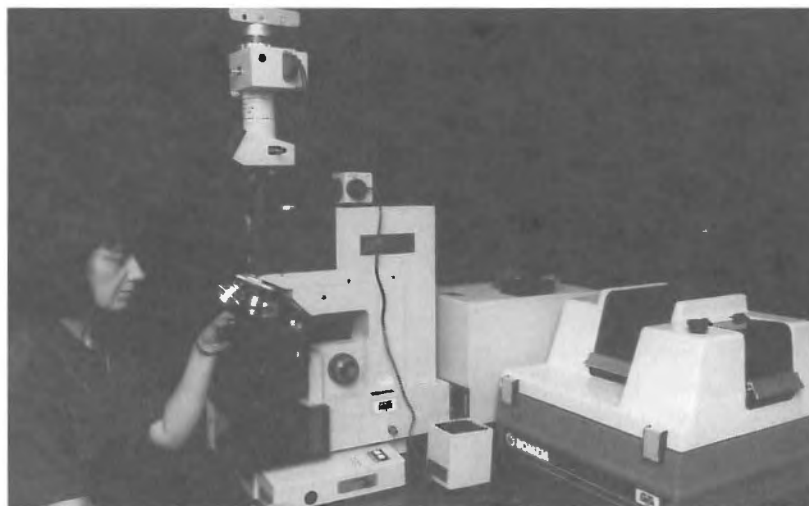


Figure 1. The FTIR spectrometer with the IR-Plan microscope.

data processing techniques, search software, and reduced analysis time.

FTIR technology also allows the use of micro techniques that were not practical using dispersive instruments. This is a great advantage in the analysis of artifacts and works of art because the amount of sample that must be removed from an object is very small.

CCI's first Fourier transform system (a Nicolet 5DX) was acquired in 1983. The current FTIR system, in use since 1990, consists of a Bomem Michelson MB120 spectrometer coupled to a Spectra Tech IR-Plan Research microscope (see Figure 1). As well as greatly reducing the sample size required, the microscope accessory has allowed more sophisticated analyses to be undertaken. A specific portion of a sample, such as a layer or an inclusion, can be analyzed by masking the rest of the sample.

Since 1976, a diamond anvil cell has been the sampling accessory of choice for samples from artifacts and works of art. Sample preparation consists of applying a sample to one diamond and carefully assembling the cell to press the sample into a thin film. The sample can be recovered uncontaminated

for other analyses, an important consideration when working with small samples from artifacts.

One of the limitations of the FTIR technique is related to the range of the detectors. The spectrometer cannot detect absorptions below 400 cm^{-1} , and the microscope accessory cannot detect absorptions below 700 cm^{-1} . This means, for example, that the spectrometer cannot detect sulfides such as the pigments vermilion and cadmium yellow, and that, with the microscope accessory, oxides such as zinc white and hematite cannot be detected. These pigments would normally be identified by x-ray diffraction.¹

The complementary nature of FTIR and x-ray diffraction can be illustrated with the example of Prussian blue. This pigment can be difficult to detect in paint samples by x-ray diffraction. However, the strong infrared absorption of the pigment's carbon-nitrogen triple bond at 2090 cm^{-1} is readily detected by FTIR, even at low concentrations of the pigment, because there are no interfering absorptions in this region of the spectrum.

Infrared spectroscopy is a comparative technique, so a comprehensive collection of reference spectra is essential. Staff consult spectra acquired in the laboratory over the past 20 years as well as numerous published atlases of spectra. CCI is participating in an exchange of spectra with other institutions as part of the Infrared User's Group for the Analysis of Artistic and Historic Materials. A two-volume atlas, *Art and Conservation Materials Infrared Spectral Library*, recently compiled by the Getty Conservation Institute, contains over 1,200 spectra relevant to the conservation field. Spectra are also provided in a digitized form, which can be transferred to computerized library search programs. Exchange of spectra between institutions has been facilitated by the development of software that allows spectra acquired with different instruments to be converted into a standard format.

FTIR is an important technique for analyzing commercial products. Over 800 products have been analyzed at CCI during the past 20 years. These include display and storage materials (e.g., plastic sheets and enclosures, foams, packing material), varnishes (e.g., natural resins, acrylics, ketone resins), and cleaning products (e.g., detergents, polishes, erasers). Many of these samples were submitted by museum workers who wanted to assess the suitability of the products for use in conservation. Several hundred epoxy, acrylic, and poly(vinyl acetate) adhesives have been analyzed as part of the screening process for the Adhesive Testing Project conducted by CCI's Environment and Deterioration Research Division.

Diverse samples submitted by CCI's clients and identified by FTIR include waxy crystals from a mummy's head, buttons made from vegetable ivory (a type of nut), and a sticky coating on a Ukrainian-Canadian Easter egg. The paint and surface coatings on a 1965 Rolls Royce decorated with a brightly coloured floral motif, which had once been owned by John Lennon, were analyzed to aid in treatment selection. Ethnographic paints, amber, archeological specimens, samples from Chinese wall paintings, and blooms on paintings have also been analyzed.

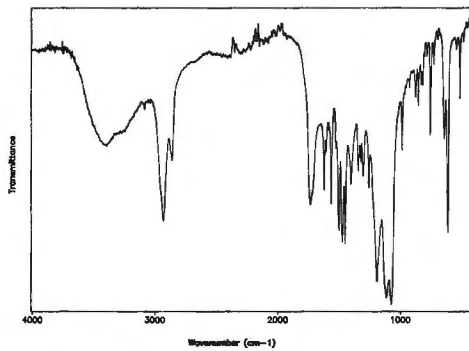


Figure 2. Infrared spectrum of the red paint from *Sous-terre*, indicating toluidine red, a barium sulfate extender, and a drying oil binding medium.

FTIR is one of the techniques being used to analyze paint samples from works by Paul-Émile Borduas, Alfred Pellan, and David Milne as part of the Canadian Artists' Painting Materials Research Project. FTIR analysis of over 250 paint samples from 26 works by Quebec artist Alfred Pellan is in progress.² Pellan used a varied palette that included several synthetic organic pigments. Figure 2 shows the spectrum of a red paint from *Sous-terre*. The red pigment was identified as toluidine red, a pigment frequently used by the artist.

Identification of organic pigments and synthetic binding media by infrared spectroscopy has proven useful in provenance studies. Knowledge of the patent date and production history of these materials can establish the earliest possible date of execution of a work. For example, a painted bison hide robe attributed to the late nineteenth century was found to be painted with three organic pigments: lithol red, benzidine yellow, and dianisidine orange. Lithol red, the earliest of the three pigments, was patented in 1899. Benzidine yellow was patented in 1911 but was not produced commercially until 1938.³ Therefore, the robe could not have been painted in the nineteenth century.

In another study, paint samples from the *Self-Portrait of Artist with Four Chiefs* by Henry H. Cross, in the collection of the Glenbow Museum, were analyzed.⁴ The painting is signed, is dated 1875, and bears the inscription "Copyright 1916". It depicts the artist holding a palette in the presence of four Indian

chiefs. Historical information revealed that Cross had not met all the chiefs together and that the chiefs were portrayed as they appeared during the 1870s and 1880s. The orange-red paint from the palette was identified as a synthetic azo pigment, known by the name "Fire Red". Since this pigment was patented in 1905, the work could not have been painted in 1875.

Research is being conducted at CCI to develop methods to measure the deterioration of collagen fibres from native skin and semi-tanned leather artifacts.⁵ These methods can also be used to assess the effect of conservation treatments on the stability of collagen fibres. FTIR microspectroscopy is one of the techniques being investigated. Spectra of single fibres can be obtained with the infrared beam polarized parallel and then perpendicular to the fibre axis. The amide III band (1230 cm^{-1} to 1300 cm^{-1}) of the collagen spectrum shows greater absorbance with parallel polarization, but the difference diminishes as the molecular structure of the collagen breaks down. The FTIR technique can therefore provide semi-quantitative information about the deterioration of collagen fibres.

FTIR is an analytical tool used in a number of projects in CCI's Conservation Processes Research Division. It can be an effective technique for monitoring polymer degradation that occurs by oxidation; for example, the infrared spectra of Polyox before and after accelerated aging are shown in Figure 3. The development of a carbonyl (C=O) peak at 1700 cm^{-1} , indicative of oxidation, can

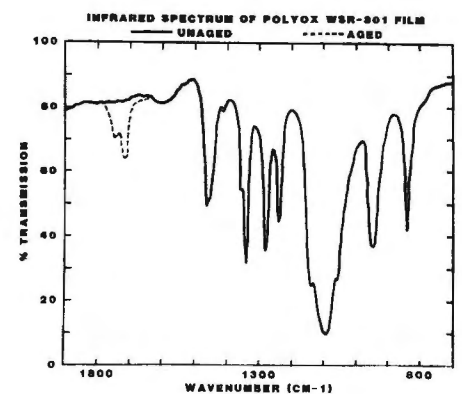


Figure 3. Infrared spectra of Polyox before and after aging.

be measured quantitatively to determine the rate of polymer degradation. Parylene films are also being monitored by FTIR during light aging experiments.⁶

In the area of paper research, some of the experimental material (e.g., coatings on paper and photographic media) used in the evaluation of commercial mass deacidification processes was analyzed by FTIR.⁷ FTIR is also routinely used to determine the presence of adhesives, gelatin size, and lignin in paper. Wash water samples from textiles have been analyzed to determine the presence of protein and detergent residues.

FTIR is essential in the study of modern materials for both the identification of plastics and their additives and the study of polymer degradation. The deterioration of cellulose nitrate plastics has been investigated using this technique.

For certain types of organic compounds, more detailed information can sometimes be obtained from chromatographic analysis, following initial classification of the sample by FTIR. For example, analyzing natural resins and drying oils by gas chromatography/mass spectrometry often provides a more precise identification. Most natural dyes would be better characterized by high performance liquid chromatography.

FTIR is an indispensable technique for identifying a wide range of materials. When it is used in combination with the various x-ray, microscopical, and chromatographic techniques available at CCI, many types of samples associated with artifacts and works of art can be characterized precisely.

Endnotes

1. Jane Sirois, *CCI Newsletter*, No. 8, October 1991, pp. 4-6.
2. Marie-Claude Corbeil, Elizabeth Moffatt, and David Miller, *CCI Newsletter*, No. 14, September 1994, pp. 13-14.
3. T. C. Patton. *The Pigment Handbook*, Vol. 1. New York: John Wiley & Sons, 1973.
4. E. Smithwick, *Henry H. Cross*. Calgary: Euro Type Publishing, 1994.
5. Gregory S. Young, *CCI Newsletter*, No. 7, March 1991, pp. 9-10.
6. David Grattan, *CCI Newsletter*, No. 11, April 1993, pp. 3-4.
7. Season Tse, *CCI Newsletter*, No. 15, March 1995, p. 7. ♦

Laser Scanner on Show at the G7

by Réjean Baribeau, Conservation Scientist, Analytical Research Services Division

This past February 25 and 26, Brussels hosted the Group of Seven Ministerial Conference on the information society. This conference brought together major world leaders involved in development of and policies for the electronic highway. As a supplement to the G7 Conference, 150 international participants were invited to display the leading edge of communications technology in booths spread over four stories of the European Parliament. The Canadian Conservation Institute was one of the participants and, jointly with the National Research Council of Canada (NRCC), presented how three-dimensional laser imaging technology may be used to digitize museum objects. Réjean Baribeau of CCI, as well as Marc Rioux, Luc Cournoyer, Jacques Domey, and George Forester, all of the NRCC, saw ministers and industrialists from G7 member countries, members of the European Parliament, and over 1,500 accredited media representatives file past their booth.

Together, CCI and the NRCC have developed a laser scanning system linked to a computer that can make detailed three-dimensional recordings of the shape and colour of objects (for more information, see Ian N.M. Wainwright and John M. Taylor, "NRC's Laser Scanner for Recording and Replication," *CCI Newsletter*, No. 6, September 1990, pp. 6-9). The demonstration at Brussels included making computer graphic reconstructions of museum objects based on input data. Participants could interact with the "virtual" objects by turning, shrinking, or enlarging them, and by lighting them with synthetic light sources. The various results could be observed using stereovision glasses for a striking visual effect.



Réjean Baribeau improves the image for Canadian Industry Minister John Manley, while Jacques Domey praises the merits of the technology to Canadian Secretary of State Jon Gerard.

By allowing objects to be circulated electronically and their nooks and crannies examined as desired, three-dimensional colour imaging promises to be a powerful tool in the information society of the future. ♦

Setting Our Sights On-Site: Heritage Services Site Visits

by Fiona Graham, Collections Preservation Advisor, Heritage Services Division

The Heritage Services Division (DHS) has been conducting site visits to museums, galleries, and other heritage organizations for almost 11 years. With an average of approximately 80 visits per year, this activity has played an important part in fulfilling DHS's mandate to provide technical and development planning advice to the Canadian museum community. Heritage Services advisors have travelled to sites in every Canadian province and territory, and have thus gained experience with a wide variety of situations.

Visits have been coordinated through the regional offices of the Department of Canadian Heritage, and this service can now also be accessed through the Canadian Conservation Institute. Visits are often linked to a prospective application to a federal granting program such as the Museums Assistance Program. In such cases, site visits are undertaken in order to assess a particular project that museum staff have in mind for funding. Occasionally, a regional Museum Consultant will request a general site visit so that a DHS advisor can provide an overview of the museum's collections preservation needs or can discuss the need for long-term planning.

The range of areas covered during site visits is as broad as the expertise of the Heritage Services advisors. Subjects can include building and equipment upgrades related to collections preservation (such as environmental control, mechanical and architectural design, or storage systems), fire protection and security, strategic planning, market development, and fund raising. Naturally, a significant part of any visit is advising the museum about where the assistance of other professionals is required.

Technical advisors examine the museum site, building, and equipment, and discuss priorities for upgrading with staff. A specific project such as a storage equipment upgrade, for example, would be examined in the context of the

building's condition, the location and layout of the collections storage area, the state of environmental control in the building, the use of the storage collection, and the future development of the collection. A visit to assess the security needs of an organization would not only involve recommendations for locks or electronic surveillance systems but would also include discussions of standard procedures that affect the security of the collection.

In the case of new construction or major renovation, Heritage Services staff frequently meet with the client and with architects, engineers, and other consultants that the client has hired in order to ensure that the museum's needs are understood and met by those who are designing and carrying out the project.

Planning advisors meet with staff and board members to assist in analyzing completed studies, to discuss the development of terms of reference for various types of planning studies, or to discuss a fund-raising program. A planning advisor may meet with a group who plan to open a new museum to outline the steps that must be taken to achieve this goal. Site visits are frequently arranged when complex issues must be discussed or when assessing the existing facility is fundamental to advising on development options. Two or more advisors will often travel together to a museum in order to assist with both technical and planning questions.

Site visits generally last one to three days, although in some cases the nature of the site or of the project dictates a longer stay. The comments and suggestions made on site are then reinforced and supplemented by a written report. Slide presentations summarizing the main points of the report may also be produced. The written report can be used as a working tool while projects are planned and effected. The reports and the presentations are often used in informing other staff of the existing

problems and proposed solutions and in fund-raising efforts. In the future, museums will be able to request multi-media presentations as well. Heritage Services staff offer ongoing advisory support during the planning, implementation, and evaluation stages of every project.

Heritage Services has conducted site visits for the purpose of designing projects for clients such as Government Services and Parks Canada. The work is proving to be very challenging and rewarding. The possibility also exists for undertaking work outside of Canada, which will expose DHS staff to a whole new range of experience.

Through site visits, Heritage Services Division staff help museums and museum collections to survive and develop so that they can continue to inform and delight the Canadian public. Site visits result in the visited museum receiving important and valuable information, but they also provide a wonderful opportunity for DHS advisors to experience and truly appreciate the value of the heritage we are working to preserve. ♦

Internships

The following individuals have recently participated or are currently involved in an internship at CCI.

Zubair Ahmed Madani, Senior Paper Conservator, National Museum of Pakistan, Karachi, Pakistan. April 3 to September 29, 1995. (Professional Development Internship—Works on Paper Section).

Bonnie McLean, student, Master of Art Conservation Program, Queen's University, Kingston, Ontario. May 1 to July 31, 1995. (Curriculum Internship—Fine Arts Section).

Training and Marketing Initiatives

In early 1995, two staff working groups were formed to examine CCI's training program and to explore the possibility of new marketing initiatives. These areas are being considered in light of changing financial circumstances and the desire to explore different ways of serving clients.

The Training Committee is beginning a review of CCI's Seminar, Fellowship, and Internship Programs in response to needs expressed by stakeholders, new technologies becoming available, and

declining financial support from traditional sources. Input from museums associations, educational institutions, government agencies, professional associations, and individuals is being sought as part of an informal consultation process. To express an opinion about future directions for CCI's training program, please write to the Training Committee in care of CCI, 1030 Innes Road, Ottawa, Ontario K1A 0M5, or send e-mail to mary-lou_simac@pch.gc.ca by November 15, 1995.

The Marketing Committee has been grappling with issues such as identifying internationally marketable services and products, possible marketing methods, targets for revenue generation, and ways of ensuring that any work done for international clients does not impact negatively on the Institute's Canadian client base. Results of the discussions are expected to indicate how CCI may take steps to minimize the effects of reduced funding while maintaining the high level of service to which the Institute is committed. ♦

Upcoming Training Presentations

Please contact the provincial museums association listed to confirm details or to register for any of these CCI training presentations. Times and places are subject to change.

October 1995

Quebec

(Société des musées québécois)

"Séminaire sur les matériaux modernes"

Dates: October 26-27, 1995

Place: Centre de conservation du Québec, Quebec City

November 1995

British Columbia

(British Columbia Museums Association)

"Scientific Examination of Works of Art"

Dates: November 3, 1995

Place: Royal British Columbia Museum, Victoria

Alberta

(Alberta Museums Association)

"Adhesives Used in Textile Conservation"

Dates: November 16-17, 1995

Place: University of Alberta, Edmonton

January 1996

Saskatchewan

(Museums Association of Saskatchewan)

"Scientific Examination of Works of Art"

Dates: January 18, 1996

Place: Ukrainian Museum, Saskatoon

February 1996

Manitoba

(Association of Manitoba Museums)

"The Care of Historical Furniture Collections"

Dates: February 1-2, 1996

Place: Canadian Heritage Parks Building, Winnipeg

Newfoundland

(Museum Association of Newfoundland and Labrador)

"Storage and Display of Textiles"

Dates: February 17-18, 1996

Place: Newfoundland Museum, St. John's

Nova Scotia

(Federation of Nova Scotian Heritage)

"Care of Works of Art on Paper"

Dates: February 23-24, 1996

Place: Acadia University Art Gallery, Wolfville

March 1996

Manitoba

(Manitoba Heritage Conservation Service)

"Treatment of Wet Organic Archaeological Materials"

Dates: March 7-8, 1996

Place: Manitoba Museum of Man and Nature, Winnipeg

New Brunswick

(Association Museums New Brunswick Inc.)

"Care, Cleaning and Basic Repair of Ceramic and Glass Objects"

Dates: March 29-30, 1996

Place: Saint John

"Framework for Preservation of Museum Collections"

The "Framework for Preservation of Museum Collections" assists conservators, collection managers, and other museum professionals in assessing threats to their collections.

The chart groups threats to museum collections under nine agents of deterioration and outlines methods of control. Stages for controlling each agent of deterioration are listed under five general headings: avoid, block, detect, respond, and recover/treat.

The chart costs \$20.00 CDN plus shipping and handling charges. To order, please contact

Extension Services
Canadian Conservation Institute
Department of Canadian Heritage
1030 Innes Road
Ottawa, Canada K1A 0M5
Tel.: (613) 998-3721
Fax: (613) 998-4721
e-mail: cci_publications@pch.gc.ca

CCI Services: Seminars, Lectures, Workshops, and Visits

In co-operation with provincial museum and art gallery associations, CCI responds to specific needs within the museum community by offering workshops, seminars, and lectures 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.

March 1995

Ela Keyserlingk presented a paper on "The Ultrasonic Mister: A Novel Treatment for Powdery Paints of Textile Artifacts" in New York City at the Costume Institute of the Metropolitan Museum of Art Symposium on "The Conservation of Eighteenth-Century Painted Silk Dress."

Wojciech Jakobiec visited the Ross Memorial Museum in St. Andrews, New Brunswick, to provide basic instruction to staff and volunteers on the care of historic rugs, and to assess the condition and conservation needs of a tapestry being considered for treatment at CCI.

Debra Daly Hartin visited the National Gallery of Canada, Ottawa, to examine a Renoir painting that had just been returned from an exhibition in Australia. The Gallery required that the condition of the painting be assessed by an outside agency as part of the loan agreement.

David Tremain presented a slide talk on CCI and conservation to the Arnprior and District Historical Society, Arnprior, Ontario.

Stefan Michalski gave a lecture to students of the Master of Art Conservation Program at Queen's University, Kingston, Ontario, on "Current Issues in the Relative Humidity Response of Wooden Artifacts."

Chantal Emond and **David Tremain** responded to a flood at the Department of National Defense Library, Ottawa, and provided advice on how to air dry a number of books.

Ian Wainwright presented a three-day seminar on "Theory and Practice of Rock Art Conservation and Recording" to an audience of 50 archaeologists at the Instituto Nacional de Antropología y Pensamiento Latinoamericano in Buenos Aires, Argentina. Ian also consulted on the conservation of two rock art sites in Patagonia (see article in this issue).

James Bourdeau visited conservation laboratories and consulted with staff at the Herzog Anton Ulrich Museum in Braunschweig, Germany, the Doerner Institute in Munich, Germany, and the Istituto Centrale del Restauro in Rome, Italy.

Seminars

"Current Issues in Light and UV Deterioration" and "Current Issues in the Relative Humidity Response of Wooden Artifacts"

Stefan Michalski at the Winnipeg Art Gallery, Winnipeg, Manitoba.

April 1995

Paul Marcon attended meetings of the D-10 ASTM Committee on Packaging, and participated in the Task Group to Study and Establish Performance Specifications for High-Value Non-Replaceable Objects, held in Chicago, Illinois.

Marie-Claude Corbeil spent several days at the Centre de conservation du Québec in Quebec City, Quebec. She took samples of works that were being treated there, and worked on the project to restore the Ursulines Chapel in Quebec City.

David Tremain participated as a lecturer/instructor at a conference held in Boston, Massachusetts, on Emergency Planning and Response, organized by the U.S. National Parks Service.

Deborah Robichaud attended the Interim Meeting of the Working Group on Training and Education, ICOM-CC, in Maastricht, The Netherlands.

Several CCI staff members participated in the conference "Hidden Dimensions: The Cultural Significance of Wetland Archaeology," held at the University of British Columbia, Vancouver, British Columbia. **Judy Logan** spoke during the Plenary Session on "Wet Sites: Challenges for Conservation." **Tara Grant** and **Malcolm Bilz** presented the paper "Conservation of Waterlogged Artifacts from the Scowlitz Site in British Columbia" during the session on Conservation and Preservation Issues, which was co-chaired by **Judy Logan** and **David Grattan**. **David Grattan** also presented a paper, which was co-authored by himself, **Malcolm Bilz**, **Tom Daley**, **Judy Logan**, and **Clifford Cook** on "Scientific Aspects of the Treatment of Waterlogged Wood and a Review of Some Recent Processes."

Bob Barclay consulted on viols at Hart House, University of Toronto, Toronto, Ontario. Bob also treated the Cataraqui Prow, the remains of the forepart of a ship that was found in the 1950s in Kingston Harbour, at the Marine Museum of the Great Lakes at Kingston, Ontario.

Peter Vogel and **Robert Arnold** consulted with staff at the Musée des Augustines de l'Hôtel-Dieu de Québec and the Centre de Conservation du Québec, both in Quebec City, Quebec, regarding several treatment projects.

Seminars

"19th-Century Artists' Oil Painting Materials and Techniques"
Leslie Carlyle and **Patricia Smithen** at the Art Gallery of Ontario, Toronto, Ontario.

May 1995

Jan Vuori, **Eleonora Nagy**, and **Bob Barclay** presented a one-day information session on the care of artifacts at the Cathedral-Basilica of Notre Dame, Ottawa.

Several CCI staff members participated in the conference of the International Institute for Conservation—Canadian Group (IIC-CG) held in Calgary, Alberta. **Season Tse**, **Charlie Costain**, and **Janet Wagner** acted as facilitators of the Textile Research Focus Group. **Charlie Costain** spoke on "Evaluating the Light Sensitivity of Coloured Materials in Museum Collections," and **Stefan Michalski** presented the paper "Museums Environment Specs Revisited. Again. Oh God, Not Again." **David Tremain** presented a paper entitled "Water, Water Everywhere, Nor Any Drop to Drink: The Need for More Disaster Training for Conservators." **George Prytulak** spoke on "Rust and Industrial Correctness." **Jane Sirois** presented the paper "A Material and Technical Investigation of Early Oil Paintings by David Milne," which was co-authored by **Kate Helwig**, **Elizabeth Moffatt**, and **David Miller**. **Tara Grant** attended as Secretary of the IIC-CG, and **Jean Tétreault** was elected President.

CCI staff members also gave presentations at the IIC-CG training session entitled "Conservationally Correct: Realities and Innovations for Exhibitions." **Jean Tétreault** spoke on "Display Materials: Theoretical and Practical Aspects," and **Stefan Michalski** made presentations on "Upgrading Old Display Cases," "Lighting Options and Trends," and "Light Damage by Security Lighting." **Wayne Kelly** spoke on security issues related to display.

Tara Grant consulted on the conservation of a waterlogged basket for the State Museum of Alaska in Juneau, Alaska.

David Tremain and **Chantal Emond** carried out a collection survey at the Collège militaire royal in Montreal, Quebec. Recommendations regarding the care and conservation needs of this collection were prepared and sent to the client.

James Bourdeau visited the Musée du Séminaire de Saint-Hyacinthe, Saint-Hyacinthe, Quebec, and the Saint Gabriel Museum, Montreal, Quebec, to consult with staff on several treatment projects.

At the request of the Provincial Archives of Manitoba, **Paul Marcon** visited the site of the new storage facility for the Hudson's Bay Company Archives. He met with the Provincial Archivist, the architect, and the engineering consultant to review the conceptual study for the new archival storage facility.

Marie-Claude Corbeil was interviewed by a journalist from Radio-Canada as part of the "Enjeux" series of programs about fraud and the art market. Taping was done in CCI laboratories. **Jane Sirois** also participated.

Stefan Michalski and **Charlie Costain** participated in the meetings of the ISO (International Organization for Standardization) Committee on Document Storage Requirements held in Ottawa, at which a draft document was written. **Charles Gruchy** also attended the ISO meetings.

Gordon Fairbairn, **Eleonora Nagy**, **Daniela Kolbach**, **Michael Harrington**, and **Suzanne Lalonde** visited the Rideau District Museum in Westport, Ontario, to give advice on a wide range of questions regarding artifact display.

James Bourdeau and **Patricia Smithen** examined a series of 28 large-scale outdoor murals in Welland, Ontario. They met with local task force members and recommended a comprehensive plan for the conservation of the murals.

Charlie Costain was a member of a panel that discussed "A Realistic Look at Relative Humidity Specifications" at the meeting of the American Association for Museums in Philadelphia, Pennsylvania, which was organized and chaired by **Karen Potje** of the Canadian Centre for Architecture.

David Hanington, **Chantal Emond**, and **Zubair Madani** travelled to Arnprior, Ontario, to install the *Map of Upper Canada*, which was treated recently at CCI. They returned to Arnprior to present a slide-illustrated talk to members of the museum community on the treatment of the map.

Nancy Green retired as CCI's Professional Development Officer.

Seminars

"Guidelines for the Selection of Materials for Use in the Display, Storage, and Transportation of Museum Objects" **Scott Williams** and **Malcolm Bilz** at the Acadian Museum of P.E.I., Miscouche, P.E.I.

"Adhesives Used in Textile Conservation" **Jane Down** and **Ela Keyserlingk** at the Curatorial Centre, Western Development Museum, Saskatoon, Saskatchewan.

June 1995

Ela Keyserlingk and **Jan Vuori** presented a paper on "Wet Cleaning an Oversized Textile on a Vacuum Wash Table: A Treatment Phase of the Gondar Hanging at the Canadian Conservation Institute" at the meeting of the American Institute for Conservation (AIC) in St. Paul, Minnesota. **James Bourdeau** presented a paper entitled "Varnishes: Authenticity and Permanence: A Report on the Ottawa Colloquium" at the meeting.

George Prytulak and **Bob Barclay** presented lectures on industrial artifacts to the Heritage Society of British Columbia in Cranbrook, B.C.

Tara Grant made a site visit to Discovery Harbour, Penetanguishene, Ontario, and to Sainte-Marie among the Hurons, Midland, Ontario, to consult on the treatment of archaeological artifacts that had been excavated. Several artifacts were brought to CCI for treatment.

Eleonora Nagy and **Wojciech Jakobiec** visited the Centre de Conservation du Québec (CCQ), Quebec City, to complete condition reports and treatment proposals for four eighteenth-century polychrome sculptures from the shrine of Saint Anne de Beaupré. This is under consideration as a co-operative project between CCI and the CCQ.

George Prytulak and **Ed Patten** (Chief, Conservation and Restoration, National Aviation Museum) examined a Lancaster Bomber on display in Windsor, Ontario.

Kate Helwig and **Marie-Claude Corbeil** took part in a segment on the scientific examination of museum objects, which will be presented as part of a television broadcast in "The Creators" series.

Tom Stone co-taught the PREMA Project International Course with Davis Mumba of the Museums of Malawi. The course, sponsored by ICCROM, was hosted by the University of Ghana in Accra. This is the second time that the International Course was held in Africa. Davis spent two weeks at CCI in May preparing course material with Tom.

Janet Mason and **Michael Harrington** travelled to the Canadian Canoe Museum in Haliburton, Ontario, to give on-site advice on the packing and shipping of more than 300 canoes and small watercraft. CCI will be advising with regard to adapting the newly acquired Outboard Marine Corporation factory building to house this large collection.

Marie-Claude Corbeil presented a poster on the study of materials used by Canadian artists at the joint conference of the Société des musées québécois and the Canadian Museums Association, held in Montreal, Quebec.

Tom Strang delivered a paper on "Pest Management in the Modern Herbarium: Directions for the Future," and **Jane Down** presented a paper on "Adhesives in Herbarium Collections" at the Society for the Preservation of Natural History Specimens (SPNHC) workshop on "Managing the Modern Herbarium." Tom also co-authored a poster with Mike Shchepanek of the Canadian Museum of Nature entitled "Fast Elevated Temperature Control of Insects in Vascular Plant Specimens."

As part of the "What Are Appropriate Standards for the Indoor Environment?" symposium held at New York University, Institute of Fine Arts, Conservation Center, **Stefan Michalski** presented a talk on "Twenty Years of National Environmental Guidelines and Their Implementation in Canada," and was a member of a discussion panel.

Ela Keyserlingk acted as a consultant regarding textile terminology to the Art and Architecture Thesaurus Program of the Getty History Information Program.

Leslie Carlyle consulted with professional colleagues at the University of Cambridge and with conservation staff at the Tate Gallery in London. She also visited and consulted with staff at the Centraal Laboratorium in Amsterdam, The Netherlands. Leslie attended a symposium on "Historical Painting Techniques, Materials and Studio Practice," where she presented the paper "Beyond the Collection of Data: What We Can Learn from Documentary Sources on Artists' Materials and Techniques."

Marie-Claude Corbeil and **Jane Sirois** spent three days at the Art Gallery of Ontario, Toronto, where they used a portable x-ray spectrometer to analyze many paintings in a non-destructive manner. This work was done as part of two studies: one on the works of Tom Thomson and another on the paintings of David Milne.

Gordon Fairbairn retired as Senior Conservator in CCI's Furniture and Wooden Objects Section, and **Stan Frydryn** retired as Conservator in CCI's Archaeology Section.

Seminars

"Care of Machinery Collections" George Prytulak and Bob Barclay at the Fort Steele Provincial Historic Park, Fort Steele, B.C.

July 1995

Tom Strang spoke on "The Effect of Thermal Methods of Pest Control on Museum Collections" at the Third International Conference on Biodeterioration of Cultural Property in Bangkok, Thailand.

A.P. (Joe) Dorning retired as Chief of Extension Services at CCI.

August 1995

Tara Grant joined the Arctic College Archaeological Field School, Iqaluit, Baffin Island, N.W.T., to act as site conservator and to teach a course in basic field conservation. This is the third year that Tara has taken part in this program.

Peter Vogel and **Robert Arnold** visited the Art Gallery of Hamilton, Hamilton, Ontario, to assess the conservation needs of and to provide advice on the future care and storage of a large number of paintings by Norval Morrisseau that had been given to the gallery by the artist.

Suzanne D. Lalonde left her position as Registrar at CCI to pursue other career opportunities.

Seminars

"Care of Machinery Collections" George Prytulak and Lyndsie Selwyn at the Dawson City Museum, Dawson City, Yukon.

Preventive Conservation in Museums

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