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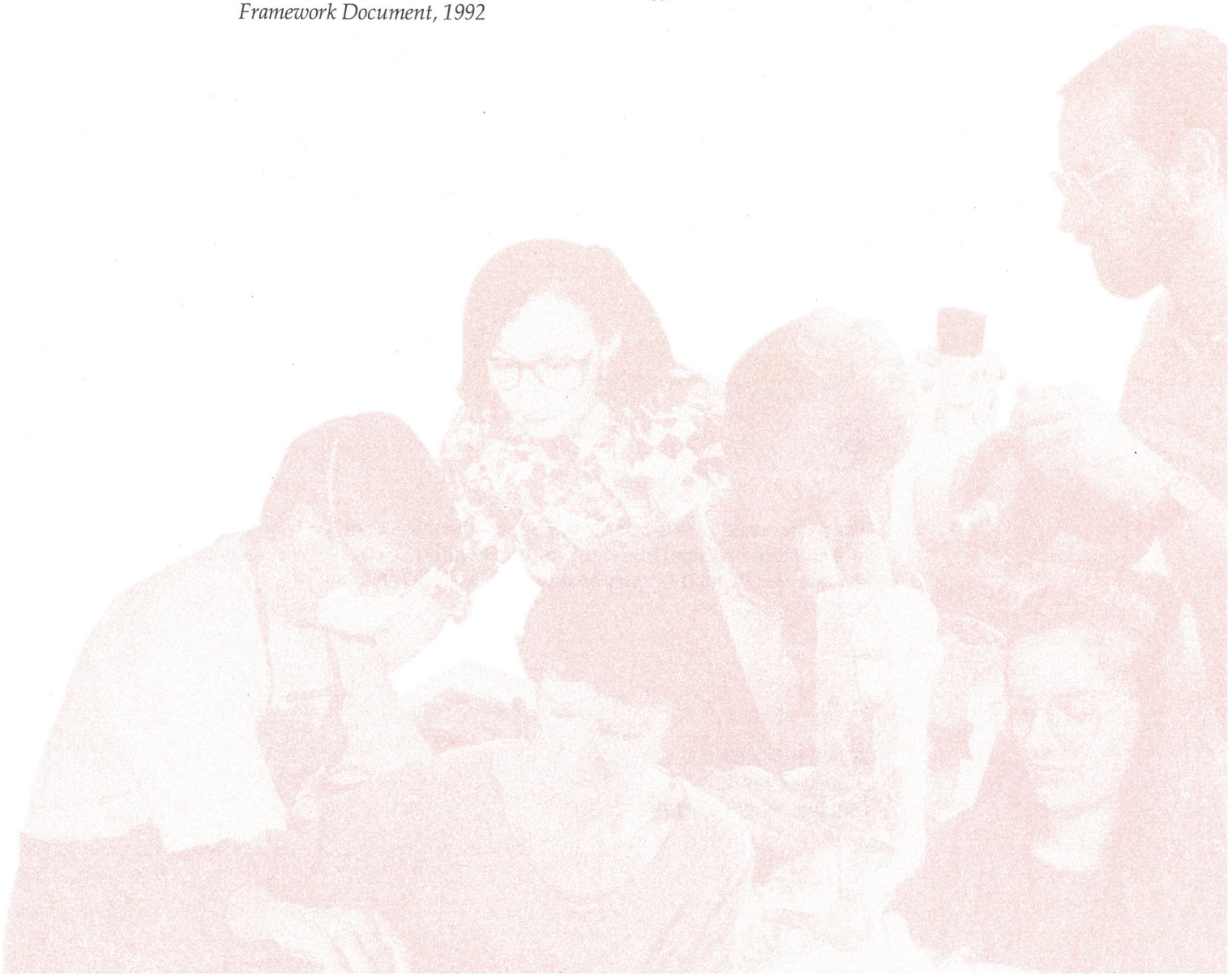
Canadian Conservation Institute
Institut canadien de conservation

Annual Report
1992 - 1993

Canada

Mandate

"The mandate of the Canadian Conservation Institute is to promote the proper care and preservation of Canada's moveable cultural heritage, and to advance the practice, science, and technology of conservation."
Framework Document, 1992



For additional copies or for further information about CCI services or programs, please contact

Canadian Conservation Institute
1030 Innes Road
Ottawa, Ontario
K1A 0C8
Tel.: (613) 998-3721
FAX: (613) 998-4721

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Introduction

On November 19, 1992, the Canadian Conservation Institute (CCI) became a Special Operating Agency (SOA) of the Government of Canada. This is the first Annual Report of the new agency since achieving this status. The purpose of this Annual Report is to provide an overview of the major events, initiatives, and projects that have been undertaken at the Institute over the last year.

Becoming an SOA has not changed the mandate of CCI. The *Framework Document*, which has been available to the public for several months, outlines CCI's status as an SOA, establishes the relationship between CCI and the Government of Canada, and incorporates our objectives and operating principles. The 1990 Canadian Museum Policy also states our mandate: "The Institute, created in 1972 to promote the preservation of Canada's heritage collections, has a mandate to prolong the life of those collections as long as possible." As an SOA, CCI will continue with its established programs and, as funding permits, will introduce new ones. We will consult with the museum community before we undertake any changes that will have an impact on our services or on our clients.

This year marked the 20th anniversary of the creation of CCI. We celebrated this event with an open house for our friends and colleagues. The Acting Deputy Minister of the Department of Communications, Michael Binder, attended and placed a time capsule in "The Captain", the statue that stands just outside the front door of the building and that has become CCI's unofficial mascot.

The year also saw the retirement of the Director of Conservation Research Services (CRS), Dr. Kenneth MacLeod. In many respects, CRS was his creation. His was a simple but effective style of leadership. He encouraged independence of thought and held the view that, given a clear objective, a good scientist would achieve high-quality work relevant to the problem at hand. Late in 1992, J. Cliff McCawley was appointed as the new Director of CRS.

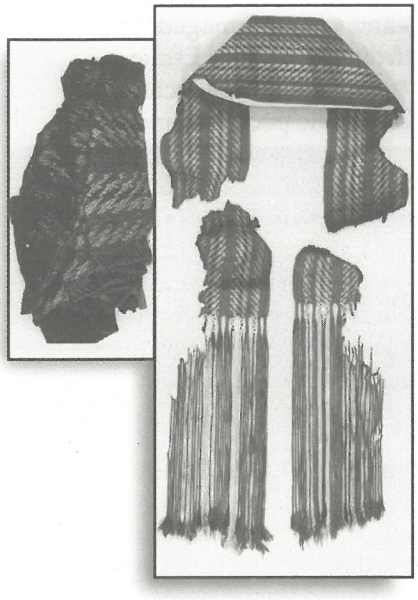
During 1992, a major initiative was undertaken to develop Service Standards that will help CCI to better serve Canadian museums. This move was also precipitated in part by CCI becoming an SOA. A questionnaire was developed to help determine how we can provide services in ways that will meet our clients' expectations and how we can improve the delivery of those services. The questionnaire has already been tested on a random sample of clients. In order to ensure unbiased analysis of the data, we plan to contract with an independent organization that will collect and analyze the results.

It is most important to look at what our clients, the museum community of Canada, can expect of CCI as an SOA rather than to look at what becoming an SOA means to CCI. As a Special Operating Agency, the Institute continues to pursue the objective of serving the museum community and continues to participate in activities that will help us to achieve this goal. We believe that CCI has established good working relationships with institutions across the country and abroad, and we intend to continue fostering these relationships.

As we approach the 21st century, CCI takes pride in its role as a federal cultural institution and looks forward to building on the accomplishments of the last 20 years by continuing to help preserve the evidence of our past.

Charles G. Gruchy
Director General and Chief Operating Officer,
Canadian Conservation Institute

Conservation Treatment



Fire-damaged ceinture fléchée, *before (left) and after treatment (right).*

Treating artifacts and works of art so they can be preserved for present and future generations is one of the key activities at CCI. Requests for treatment are evaluated on several criteria including the project's potential to generate new knowledge and to develop new processes and/or materials.

Following are some of the more notable treatments that were carried out at CCI in 1992.

Ethnology

The Ethnology Section completed work on a variety of fire-damaged artifacts including moccasins and *ceintures fléchées* from the Nipigon Museum, Nipigon, Ontario, and on smoke-damaged ceramics and glassware from the Billings Estate Museum in Ottawa. During this period, a giant spider crab from the Redpath Museum at McGill University, Montreal, Quebec, was repaired and remounted, and a white pelican from the Saskatchewan Museum of Natural History, Regina, Saskatchewan, was cleaned. Conservation treatment was also completed on such items as a Plains Indian war shield and a moss bag from the Provincial Museum of Alberta, Edmonton, Alberta, a Medewiwin birchbark master scroll from the Thunder Bay Historical Society, Thunder Bay, Ontario, and an argillite panel pipe from the Museum of Anthropology at the University of British Columbia, Vancouver, British Columbia. A number of historically significant scientific instruments from the Physics Department at Queen's University, Kingston, Ontario, were also treated, including a right-angled viewing telescope, a recording thermometer, and a portable transit telescope.

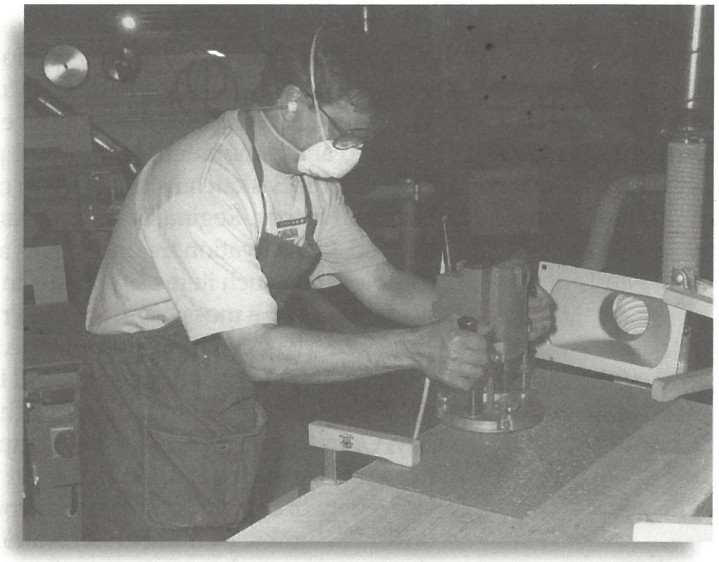
Eighteenth-century Zither

An 18th-century European zither from the Kings Landing Historical Settlement provided many learning opportunities for the Furniture and Wooden Objects Section. This rather complex composite artifact arrived at CCI in very poor condition. It required structural support, replacement of missing areas, and consolidation of its decorative mother-of-pearl inlay, gilt floral designs, and watercolour tint engravings.

Cleaning an 18th-century zither in the Furniture and Wooden Objects Laboratory.

After consulting numerous colleagues in Canada and around the world, treatments were devised and executed using methods, materials, and techniques that are at the forefront of current practice. Fine art and paper conservation techniques were adapted to the specific challenges of consolidating painted wooden surfaces, cleaning and applying a protective coating to applied engravings, and molding missing features. The properties of various filled epoxies were examined for use as wood fillers. Mica flakes and powders were used to simulate gilt. Conservators used these modern replacements to effect repairs that are unobtrusive and that cannot be confused with early materials.

The success of this project has allowed CCI staff to gain valuable first-hand experience that is now being passed on to colleagues across the country.



Cutting a recess in a bronze plaque.

Furniture and Wooden Objects

The Furniture and Wooden Objects Section was involved in treating a number of smoke- and water-damaged pieces of furniture from the Billings Estate Museum in Ottawa. These included a piano stool, a table pedestal, and a fire-screen. Treatments were also completed for a balloon-back chair and for a marine portrait on the inside of a chest belonging to the Kings Landing Historical Settlement, Fredericton, New Brunswick; for a papier mâché table from the Beaverbrook Art Gallery in Fredericton, New Brunswick; and for a small pipe organ belonging to the Bytown Museum in Ottawa.

Fine Arts and Works on Paper

Staff of both the Fine Arts and Polychromes Section and the Works on Paper Section completed the treatments of a total of 25 paintings, paper objects, and parchment documents. Work began or continued on 24 other treatment projects for various public museums, art galleries, and

In situ *treatment of* Les Prairies *at Montreal International Airport.*

Les Prairies

Staff of the Fine Arts Section carried out the conservation treatment of the painting *Les Prairies* by the artist Alfred Pellan (1906-1988). Pellan, one of the most renowned Canadian artists of this century, received the commission for this painting from Transport Canada in 1962. The painting was completed in 1963, and was originally installed on a curved wall in the new terminal of Winnipeg Airport. In the 1980s, the painting was removed from the terminal in Winnipeg and was reinstalled in a flat format in the terminal of Montreal International Airport, Mirabel, where it has remained on display since.

The conservation of this painting presented CCI staff with numerous challenges. The large size and fragile state of the painting precluded its transport to CCI. Consequently, the painting had to be treated *in situ* at Mirabel. Many hours were spent working in cramped quarters to consolidate and clean the fragile paint surface. Conservators carefully removed surface dirt and discoloured varnish, and in-painted losses to match the surrounding composition. A new stretcher had to be handmade and modified to properly support and fit the large and unusual shape of the painting.

The treatment of this painting provided CCI staff with the opportunity to study the technique and materials of one of Canada's most important contemporary artists. The research carried out during this treatment shed much new light on the conservation problems conservators might expect to find in other works by Pellan.

other cultural collections in Canada. Some of the more challenging and interesting projects included treating *Les Prairies*, a 6′ x 32′ painting by Alfred Pellan *in situ* at Montreal International Airport, Mirabel, Quebec; binding *Audubon's Birds of America, Volume III* for the Legislative Assembly Library of New Brunswick; treating three portraits by Wyndham Lewis for inclusion in a major exhibition of this artist's work at the Art Gallery of Windsor, Windsor, Ontario; cleaning a large painting, *Le Martyre de Saint-André Apôtre*, painted in 1821 by the artist Louis-Hubert Triaud, for La Fabrique de Saint-André de Kamouraska in St. André, Quebec; and beginning the treatment of a large tabernacle by the Québécois sculptor Thomas Baillargé (1791-1859), from the Cathédrale St-Germain, Rimouski, Quebec, scheduled to be part of a major exhibition of early Quebec sculpture at the National Gallery of Canada in the fall of 1995.

Paper conservator working on a paper suction table.

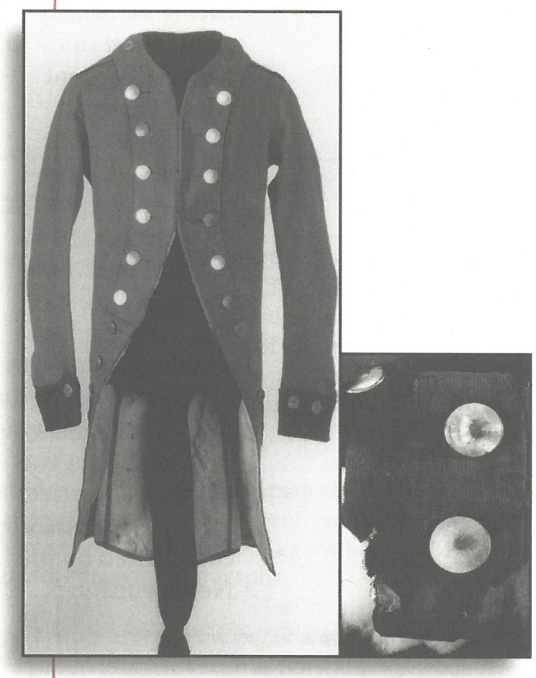
Archaeology

The Archaeology Section treated artifacts from eight sites in the Northwest Territories including Hazard Inlet, Somerset Island and Fungatsivvik, Baffin Island. Over 100 artifacts of skin, baleen, and bone were treated. As well, treatment of more than 700 wood artifacts was completed. Conservators also continued treating the remaining artifacts from Red Bay, Newfoundland. Several plaster pieces from the Mill of Kintail and two large plaster angels

Treatment of a Military Coat

The Textiles Section treated a military coat that dates from the 1760s and that is reputed to be the oldest military coat in a Canadian collection. The coat is part of the collection of the Niagara Historical Society and Museum, Niagara-on-the-Lake, Ontario. According to the Historical Society, the owner of the coat was Daniel Servos, who was an officer of the British Indian Department, one of the first settlers in Ontario, and a prominent citizen of Niagara-on-the-Lake.

There was extensive insect damage to the red wool outer coat and to the wool lining of the coat, and the brown cotton cuffs were significantly degraded. The holes in the red wool outer coat were backed with matching fabric, and wool was custom dyed to match and treat the numerous holes in the lining. The degraded cuffs were infilled and overlaid with silk crepeline. Corrosion spots on the gold-plated buttons were removed to conclude the comprehensive treatment of the military coat.



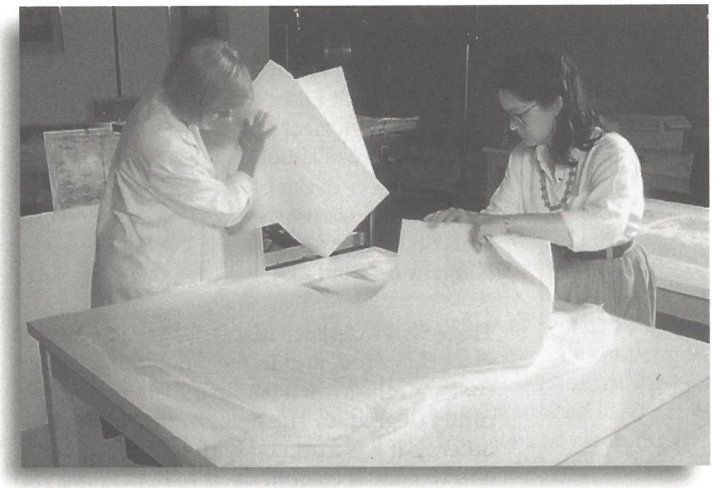
Military coat from the 1760s, before (right) and after treatment (left).

from the Prince Edward Island Museum and Heritage Foundation were completed during 1992-93.

Hot-washing composite artifacts in the Soxhlet system.

Textiles

In the Textiles Section, 1992 marked the successful completion of the treatment of the 1758 Carillon Banner from the Musée du Séminaire de Québec. Due to its very fragile condition, this banner had posed a formidable conservation challenge. Treatment of the Winnipeg Art Gallery's 16th-century tapestry entitled *Tobit Giving the Note-of-Hand of Gabael to Tobias and Raphael* came to an end after four years of diligent work. General Brock's 1812 felt cocked hat, a centrepiece of the Niagara Historical Society and Museum's collection, was stabilized and returned to its place of prominence in the museum. Conservation treatment was effectively carried out on a silk rowing cap, owned by the New Brunswick Museum, that was worn by a victorious Canadian team member at the Paris World Championships in 1867. A handmade Grenfell hooked rug belonging to Government House, Rideau Hall, Ottawa, was conserved and mounted for display. Two oriental rugs from Ross Memorial Museum in New Brunswick were also treated during the course of the past year.



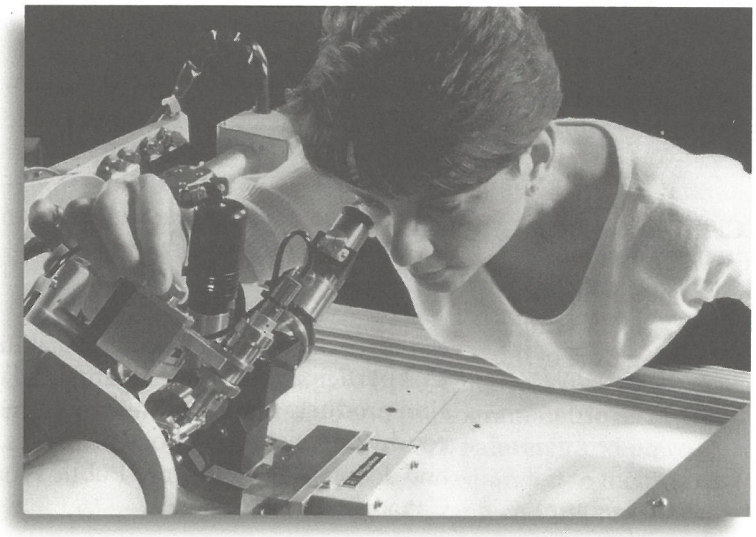
Wet-cleaning the Carillon Banner.

Overall Strategy

In previous years, the total time spent treating objects has been in the order of 12,000 to 13,000 hours annually, or about 25% of CCI conservators' time. The remaining time was devoted to other activities such as preparing and presenting seminars and workshops, responding to enquiries, supervising Interns and Fellows, and writing texts such as *CCI Notes* and conference papers to disseminate conservation information to other museum professionals. In early 1992, CCI reviewed conservation activities and established specific priorities and objectives. These included setting an annual treatment goal of 20,000 hours, achievable over three years (about 35% to 40% of CCI conservators' working hours). The initiative was very successful. During the 1992 calendar year, the first year of the initiative, over 18,000 hours of conservation treatment were provided to Canadian museums.

Conservation Research

This has been a productive year for research at CCI, a year during which a wide variety of projects were carried out. Some will have a profound effect on conservation measures adopted in museums in the future, while others are more specific in their outcome. All are of significant value to Canadian conservators, museums, and galleries.



A conservation scientist aligning a sample in the X-ray micro-diffractometer.

Following are some of the projects that have been undertaken during 1992 at CCI in the field of conservation research.

Canadian Artists' Painting Materials Project (CAMP)

This research project was initiated to address the problem of the lack of specific information on the paints used by 20th-century Canadian artists. The objective of the project is to develop a reference data base of analytical information on the materials used by established Canadian painters, with initial emphasis on the early and mid-1900s. Where possible, studies are coordinated with major retrospectives. During 1992, studies were completed on samples from paintings by William Berczy, and work began on the materials used by David Milne, Alfred Pellan, and Paul-Émile Borduas.

Paper

The most serious problem affecting the majority of paper-based holdings in Canadian libraries and archives is acid degradation. A number of commercial processes of deacidification are available, but their relative performance and their potential for damaging side effects are very uncertain. CCI has been collaborating with the Metro Toronto Chairman's Committee for the Preservation of Documentary Heritage in a project to compare these techniques.

Typical bound materials being treated in the mass-deacidification project.

Mass-deacidification Project

At the request of the National Library of Canada and the Metro Toronto Chairman's Committee for Preserving Documentary Heritage, CCI's Conservation Processes Research Division is evaluating commercial mass-deacidification processes. The aim is to identify the strengths and weaknesses of various processes and to formulate recommendations regarding their use. The processes under study are AKZO (diethyl zinc), FMC (magnesium butoxy-triglycolate), and Wei T'o (methoxy magnesium methyl carbonate).

The effect of each process is being studied on the following materials: naturally aged paper, new paper, bindings, labels, media, special papers, papers damaged by pollution or bleaching, and proteinaceous materials such as leather bindings, glue, gelatin size, parchment, and gelatin-based photographs.

During 1992, the work on naturally aged paper and on new paper was completed. It was found that all processes stabilize paper. Problems such as non-homogeneous buffer deposition and damage to bindings were noted. A large collection of treated books and paper has been assembled for didactic purposes and for long-term evaluation, and is available for viewing and study.

CCI staff inspect the National War Memorial during conservation treatment.

In a separate project, CCI is working with the Canadian Council of Archives to investigate the best method for removing acid from paper. In 1992, this work dealt with the effect of varying the washing time of old papers using pure water.

Metals

The great majority of metals that require conservation show some form of corrosion. Unlike much industrial research in which the removal of corrosion products and the stabilization of pure metal are of paramount importance, conservation research for metals often focuses on stabilizing the corrosion products.

In 1992, CCI completed a study of "rust convertors" for stabilizing artifacts such as machinery and vehicles that are exposed to the elements. Some years ago, CCI developed aqueous methods for stabilizing metal/wood composite archaeological artifacts that did not involve dismantling the artifacts and that avoided use of flammable or toxic solvents. In 1992, the final phase of this composite study was completed with an evaluation of the effect of sea water on the efficacy of the treatment. It is noteworthy that the process developed at CCI has been adopted in laboratories around the world.

The bronze sculptures of Parliament Hill are currently being cleaned and stabilized. CCI participated by investigating the corrosion products found on these monuments, conducting tests on various processes, and acting as an advisor to Public Works Canada.

A report on the relative performances of techniques for cleaning silver without damaging its surface was published in 1992.

Packing and Transporting Art Objects

Experimental research into the sensitivity of art objects to shock.

This year, CCI continued collaborating in a long-term international project concerning the proper packing and transportation of art objects. The goal of this project is to disseminate this information through publications, conferences, and seminars.

Proper packing requires an understanding of the transportation environment, the fragility of the object, and the characteristics of cushioning materials. This has become a particularly important area given the large increase in the number of travelling exhibits that are mounted by museums.

Although the potential hazards of transportation environments and the properties of packaging and cushioning materials are well documented, this information was not generally available to the museum community. Furthermore, until recently, little scientific data existed on the fragility of works of art. CCI has been studying the vulnerability of paintings to shock and vibration. Results to date indicate that paintings are moderately sensitive to shocks such as those that occur when packing cases are mishandled during loading or unloading operations. Vibrations during transit generally pose a lesser threat. It has been determined that paintings can be made much more resistant to damage from shock and vibration by applying backing boards.

Rock Art Research

CCI has conducted research on the conservation and recording of aboriginal rock art since 1972, and has applied the results to sites across Canada. Current research is focused on the recently rediscovered Nisula site in Quebec, on the sandstone petroglyphs at Writing-On-Stone, Alberta, and on monitoring the protective structure at Petroglyphs Provincial Park in Ontario. Experiments in the treatment of graffiti continue at Bon Echo Provincial Park, Mazinaw Lake, Ontario. Work on photographic and photogrammetric recording methods for rock paintings and petroglyphs has been expanded to include digital image processing and laser scanning.

At work in the fossil forest.

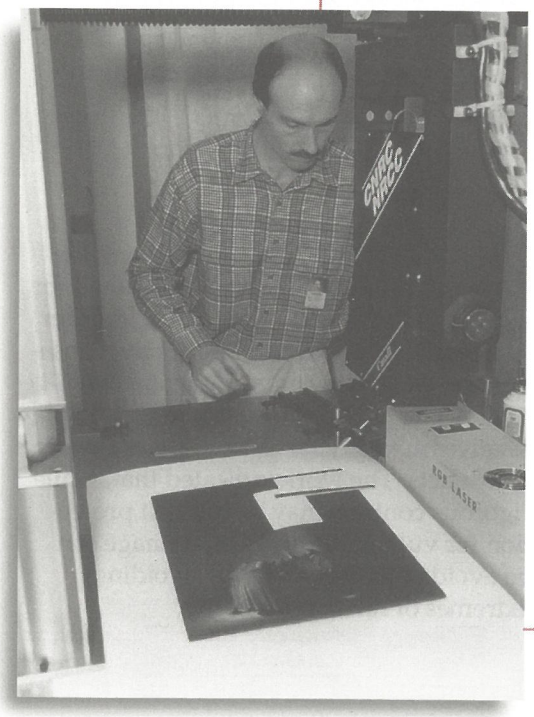
CCI also provided advice and information related to rock art sites in Canada such as St. Victor's Petroglyphs Historic Park and the Swift Current petroglyph site, both in Saskatchewan; the Leaf Rapids pictographs in Manitoba; and the petroglyphs in Pacific Rim National Park in British Columbia.

Fossil Forest

The fossil forest, which was discovered on Axel Heiberg Island, N.W.T. in 1985, is an assemblage of preserved warm-climate forests from the Tertiary period (ca. 40 million years old). More than 600 tree stumps, very large quantities of leaves, and forest debris are preserved intact and completely non-petrified on this site. At the request of the Canadian Museum of Nature, CCI has been monitoring the impact of research and natural erosion on the fossil forest. On-site erosion measurements and mapping were carried out during the 1992 field season. Analysis of the data was completed, and a publication on the subject was prepared.

Parylene

From 1986 to 1990, CCI scientists adapted the Parylene conformal coating process to preserve delicate specimens from the fossil forest. In 1992, CCI completed development of an apparatus to study the long-term effect of museum lighting on



Working with the laser scanner.

Developing a Laser Scanner for Recording Museum Objects

CCI is assisting the Autonomous Systems Laboratory of the National Research Council of Canada in developing a laser scanner camera system for the rapid, accurate, and simultaneous recording of the shape and colour of three-dimensional objects. Museum applications of this system include recording and comparing the shape and colour of objects at different periods of time, fabricating replicas, and aiding research related to artists' techniques and to art history (e.g., an artist's brushstroke technique).

In 1992, the emphasis was on developing the hardware and software for a system designed specifically for museum applications. Of particular significance, software was devised to integrate data from multiple view scans of complex three-dimensional objects. Thirty "typical" museum objects were borrowed from the National Gallery of Canada, the Canadian Museum of Nature, the Canadian Museum of Civilization, and the National Museum of Science and Technology for testing. Included were paintings by European and Canadian artists, a small bronze sculpture, mounted insects, an argillite plate, Northwest Coast masks, and scientific instruments.

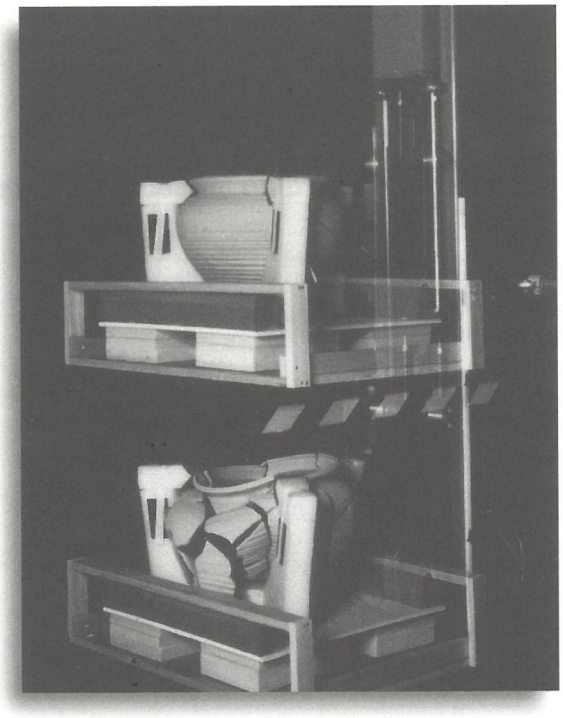
Parylene films and on other museum materials. Studies continued on the long-term thermal stability and durability of Parylene.

Adhesives

As part of a long-term project, CCI has been studying the properties of various commercial adhesives in order to assist conservators in selecting the best product for their needs. Epoxy resin, poly(vinyl acetate), and acrylic adhesives have been studied in some detail, and changes have been monitored over five years of "natural" aging. In 1992, the experimental phase and the final report (available on request) were completed.

Polyethylene Glycol (PEG)

Polyethylene glycol (PEG) is used in many conservation treatments, particularly for wet or waterlogged organic materials. CCI has been doing a long-term study to address the question of the inherent stability of PEG. The final phase of the study was completed in 1992 with a demonstration of the effectiveness of antioxidants in improving stability.



Demonstrating the effectiveness of modern packing materials for fragile objects.

Transportation of Art Objects

CCI is cooperating with the National Gallery of Art and the Conservation Analytical Laboratory of the Smithsonian Institution, both in Washington, DC, and with the Tate Gallery in London to try to establish proper packing and handling techniques to avoid damaging irreplaceable works of art. In 1992, CCI participated in presenting a series of seminars, on the packing and transportation of paintings, in Boston, Dallas, Vancouver, Los Angeles, Chicago, and twice in Washington, DC. During 1992, research at CCI included studies of the vibration characteristics of canvas paintings and of the sensitivity of canvas paintings to shock. Further, a computer program was prepared to assist museums in selecting appropriate packing foams.

Display and Storage of Artifacts

A properly designed display case protects museum objects from many threats, including theft, vandalism, fire, smoke, water, insects, pollution, and fluctuations in relative humidity. During 1992, data from studies carried out at CCI was assembled and a draft Technical Bulletin was prepared on the results.

Certain materials that are commonly used in display cases or in storage areas can damage artifacts and works of art. A presentation on selecting more appropriate construction methods and materials to solve these problems was given at a colloquium that was held in Paris in October 1992. This information will also be published.

A study on the use of "Ageless" oxygen absorber (a product of the Mitsubishi Gas Chemical Company) was completed. Oxygen absorbers can be used to stabilize materials that are susceptible to oxidation, such as plastics, rubbers, delicate ethnographic materials, and mineral specimens. Two draft manuscripts were written and a paper was published summarizing the results.

Environmental Norms

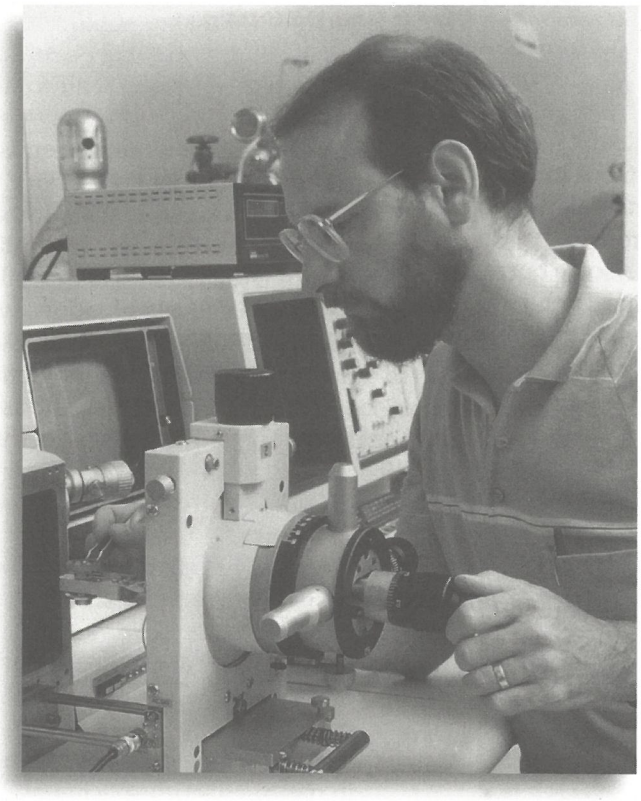
In 1992, CCI worked on rationalizing the strict environmental norms established for museums in the 1960s and 1970s. In order to assist museums in evaluating the consequences of adverse environmental conditions, CCI studied the effects of unsuitable relative humidity levels on different types of artifacts. The work indicated that, while rigorous controls may be the best protection for vulnerable artifacts, damage can be avoided in most cases by avoiding extremes of relative humidity.

Pest Control

In 1992, work in this area concentrated on the "integrated pest management" approach, which emphasizes preventive measures in addition to corrective action (e.g., fumigation). A summary of the results of CCI studies on non-chemical methods of control, such as freezing, were published. In addition, two Technical Bulletins on pest control were completed.

Natural History Research

CCI has developed a computer program to assist museums in maintaining fluid-preserved natural history specimens in stable conditions. This software allows alcohol concentration to be gauged from fluid density.



Scientist using a scanning electron microscope for analysis.

Analytical Methods

Research continued on developing techniques to detect changes in the molecular structure of collagen fibres associated with deterioration and with conservation treatments. This applies to objects made from skin, hide, parchment, vellum, and semi-tanned and tanned leathers, all of which are composed almost entirely of collagen. During 1992, an infrared microspectroscopic technique was developed to analyze single fibres. Microscopical shrinkage temperature measurements and methods of thermal analysis complement the infrared method in detecting structural change.

Complex natural-resin varnishes can be analyzed by gas chromatography following suitable sample preparation. The trimethylsilyl derivative was found to be particularly useful for characterizing di- and triterpene resins commonly found in traditional varnish recipes. Using the same technique, CCI conservation scientists devised a rapid method that clearly establishes the starting materials and processes used to prepare different ketone resins and that relates this information to when the resins were manufactured.

During 1992, the analytical capability on CCI's scanning electron microscope was improved by integrating a Voyager x-ray microanalysis system with digital imaging. The new system provides precise digital control of the electron beam, increased automation, digital image processing, and the acquisition of images from other devices through a video interface.

Services to the Museum Community

CCI provides a wide variety of services to the museum community, such as conservation site visits, collection surveys, emergency response in the case of disasters, and specialized training to museum workers across Canada. Staff also respond to requests for scientific assistance, offer specialized consultations, and provide advice to conservators in Canadian museums.

Scientific and Technical Services

CCI loans out environmental monitoring equipment.

CCI provides Canadian museums and galleries with advice on pest control and on methods of controlling the environment (i.e., temperature, relative humidity, light) within buildings, display cases, and storage areas. Canadian cultural institutions may borrow an environmental monitoring kit, which consists of a light meter, an ultraviolet light meter, and an psychrometer or a Humi-Check, from CCI for periods of three weeks. CCI loans recording hygrothermographs for three to six months. Other environmental monitoring equipment, such as hygrometers and electronic dataloggers, may also be borrowed for various periods of time. In the 1992-93 fiscal year, CCI processed 23 hygrothermograph loans and 35 loans of the environmental monitoring kit.

CCI scientists assist conservators with specific treatment-related problems by analyzing pigments, media, varnishes, wood, fibres, metals, corrosion products, and other materials found in objects. Staff also undertake non-destructive photographic examinations using visible, ultraviolet, and infrared techniques as well as x-radiographic examinations. During 1992, CCI completed 109 such analytical service requests: 50 were performed to assist treatment work within CCI, and 59 were undertaken at the request of external clients. The results of these service requests are available through the Commercial Product Analytical Reports series. This series was updated in 1992—the first update in three years—and now contains analytical reports on 733 different conservation-related products.

X-ray spectrometry being performed on a panel painting.

CCI is participating in the conservation treatment of the Ursulines Chapel sculptural decor. CCI undertook extensive analyses to document the original materials used for and subsequent modifications made to the various sculptural elements.

Conservation research scientists provide a scientific examination service to assist public institutions and law enforcement agencies with provenance, attribution, dating, or authenticity matters in well-justified cases. In 1992, examinations were undertaken on two collections of trade silver and on paintings attributed to Rembrandt and to Tom Thomson. Scientific assistance was also provided to the Metro Toronto Police and the Royal Canadian Mounted Police (RCMP) in an art fraud investigation. In addition, paintings attributed to Rubens and Picasso were examined on a cost recovery basis for the private sector.

In association with the Provincial Museum of Alberta, CCI participated in an experiment regarding the use of spot tests to detect the presence of arsenic and mercury in natural history specimens. The Museum's conservation staff performed spot tests on 63 skin, feather, and fur specimens, and sent samples of the specimens to CCI for instrumental analysis.

CCI offered Parylene coating of delicate materials as part of its services for the first

time in 1992. Coating was carried out for a number of clients including the Heritage Conservation Division of the Department of the Environment, the Transportation Safety Board of Canada, the RCMP, and the Canadian Museum of Nature.

CCI staff drew up design specifications for a small, remote, one-room dermestid colony for the New Brunswick Museum.

Workshop on preparing skins using Inuit techniques.

Museum and Site Visits

CCI conservators and scientists visited over 20 Canadian museums and related institutions during the 1992-93 fiscal year to advise on various aspects of preventive conservation. Some of the museums visited included the Canadian Canoe Museum in Ontario, the Basilian Fathers Museum in Alberta, the Deer Lake Historical Society in Newfoundland, and the Canadian Museum of Contemporary Photography in Ottawa.

Conservator removing soot from a glass bowl after a fire.

Surveys were undertaken and conservation needs were determined for the art objects on display at the National Arts Centre in Ottawa; for the ceramic collections at the Museum of Anthropology at the University of British Columbia in Vancouver, British Columbia and at the McCord Museum of Canadian History in Montreal, Quebec; and for the collection of the Assembly of First Nations, housed at their headquarters building in Ottawa. Reports were prepared that outlined advice and recommendations for the objects in each of these collections.

Staff of the Archaeology Section provided conservation support to three archaeological sites during 1992: Tungatsiuvik on Baffin Island, N.W.T.; Little Cornwallis Island, N.W.T.; and Ferryland in Newfoundland.

Disaster Response and Emergency Preparedness

As part of its mandate, CCI provides disaster and emergency response to cultural institutions across Canada. CCI has been able to extend the level of awareness of museum and conservation personnel in disaster response by giving advice and information through workshops presented to provincial and territorial museums associations, by producing *CCI Notes* on the subject, by attending conferences and training courses, and by participating in actual responses to disasters and emergencies in Canadian institutions.

During 1992-93, staff responded to approximately 30 enquiries from various public institutions across Canada for information on disaster-related topics such as disaster preparedness, salvage and recovery of artifacts, and freeze-drying. In addition, CCI responded to several requests for information from other government agencies, commercial companies, private individuals and organizations, and institutions in the U.S.A. and Australia.

Staff are frequently required to provide telephone advice to museum personnel after a disaster has occurred, to "talk them through" the recovery operation. During the 1992-93 fiscal year, CCI provided a team of conservators to guide and assist with recovery operations on site after a flood at the Calgary Police Services Museum in April and after an arson-related fire at the Billings Estate Museum in Ottawa in August.

Seminars and Workshops

CCI sends a representative to as many provincial museums association annual meetings as possible in order to provide general information on the Institute and to consult with museum workers and provincial training coordinators on the quality and relevance of CCI's services.

The Ancient Andean Textiles Workshop at CCI.

In collaboration with the provincial and territorial museums associations, CCI offers two seminars per year to each Canadian province and territory. In 1992-93, 250 heritage workers attended one of the 24 seminars CCI presented on such topics as "A Framework for Preventive Conservation" at the Ukrainian Museum of Canada, Saskatoon; "Care, Cleaning, and Basic Repair of Ceramic and Glass Objects" at the O'Dell Inn at Annapolis Royal, N.S.; "Care of Furniture and Wooden Objects" at the Emily Carr House in Victoria, B.C.; "Storage and Display of Textiles" at the Gore Bay Museum in Gore Bay, Ontario; "Treatment of Wet Organic Archaeological Materials" at the Prince of Wales Northern Heritage Centre, Yellowknife, N.W.T.; and conservation and recording of rock art, given in French, at the Université Laval, Quebec City, Quebec.

CCI staff gave a four-day furniture conservation workshop, including a one-day gilding workshop and a protective folders and box making workshop, to the students of the Art Conservation Techniques program at Sir Sandford Fleming College in Peterborough, Ontario. CCI also hosted a five-day workshop in Ottawa on ancient Andean textiles, and CCI staff led a two-day workshop on the care of archaeological materials at the Archaeology Department, Simon Fraser University, Burnaby, B.C.

A one-day CCI workshop on adhesives used in textile conservation was held for conservators in the National Capital region, and this session will be offered as a training course across the country in 1994-95.

Fellowships and Internships

In response to the diverse training requirements of the conservation community in Canada and abroad, CCI offers Fellowship and Internship programs.

The purpose of the Fellowship program is to give further practical experience to conservation scientists and conservators who have some work experience. Professionals are given the opportunity to expand their knowledge while participating in CCI services to museums, galleries, and related institutions across Canada. A limited number of conservation and conservation research fellowships are offered each year. There were seven fellowships awarded to conservators and conservation scientists in 1992-93.

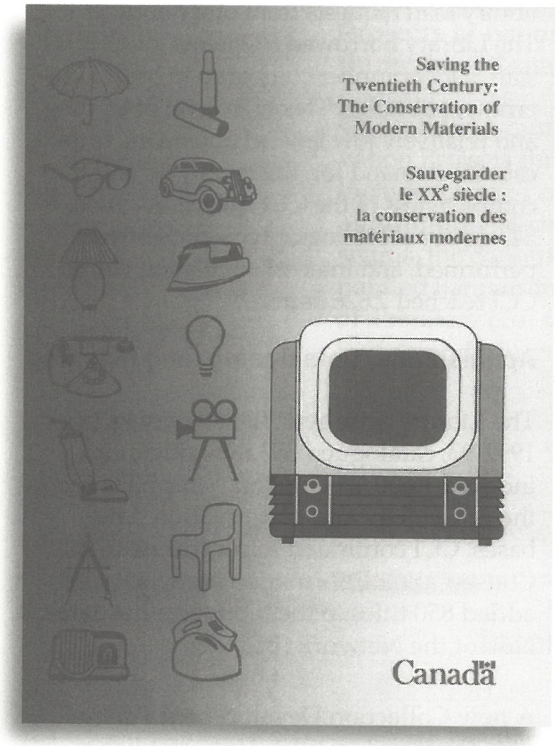
For the past 15 years, CCI's Internship programs have provided training opportunities to the conservation community and has promoted the exchange of conservation professionals. Internships are classified according to need, and comprise four distinct categories: curriculum internships, specialized technique internships, professional development internships, and conservation research internships. The length of an internship varies from several weeks to one year, depending on individual requirements. Although CCI considers providing opportunities for Canadian conservators, conservation scientists, and students to be its primary responsibility, it welcomes conservation workers from other parts of the world when time and space permit. In 1992-93, 11 interns came to CCI from Canada, France, and Germany to perfect their skills in conservation treatment or conservation science.

Tours and Public Awareness

To help promote the aims and activities of conservation and the knowledge of CCI's services, the Institute gives tours of its labs and facilities to the general public, to foreign visitors, and to college and university students in conservation, museology, and heritage fields. In 1992-93, CCI hosted 29 tours for 350 visitors. In addition, a public open house, attended by 215 visitors, was held as part of the activities celebrating CCI's 20th anniversary.

In support of efforts by various educational and scientific groups to increase awareness of the importance of science to Canadian society, CCI has hosted tours of its research laboratories for secondary and post-secondary school students. In addition, staff have given lectures at high schools on such topics as "Art, Archaeology, Heritage, and Chemistry: The Role of the Conservation Scientist in the Study and Preservation of Our Past" and "The Role of a Fine Arts Conservator."

Publications



The proceedings of an international symposium were published.

CCI is committed to making current information on conservation topics available to museum workers on a timely basis. CCI undertook an evaluation and revitalization of its publication program in 1992-93. This initiative was made possible through funds from the Canadian Museum Policy that was announced in 1990.

CCI distributes a *Publications List* that catalogues all the publications that can be obtained from CCI. This list is updated regularly as new material is made available. In 1992-93, 127,700 publications were distributed through bulk mailings, conferences, and handouts.

The CCI mailing list continues to grow. Currently, the mailing list includes approximately 3,000 institutions in Canada and around the world that receive publications such as *CCI Notes*, *Technical Bulletins*, and the semi-annual *CCI Newsletter*.

A review of the popular *CCI Notes* series was begun. Over the next three years, existing *CCI Notes* will be updated and revised, and original *CCI Notes* will continue to be published and distributed on new topics. In 1992-93, 17 new and revised titles were printed and distributed in the *CCI Notes* series.

A new title was added to the Technical Bulletin series. *Solving Museum Insect Problems: Chemical Control* was published in 1992. Production is continuing on new subjects in the Technical Bulletin series.

The 440-page book *Saving the Twentieth Century: The Conservation of Modern Materials*, the proceedings of an international symposium that CCI sponsored in 1991, is a landmark publication that was produced by CCI. This unique publication is an important source of information on a new and very challenging subject for conservators.

The CCI Library continued to publish and distribute the *Index to Museological Literature* to over 300 conservation organizations and museums in Canada and abroad.

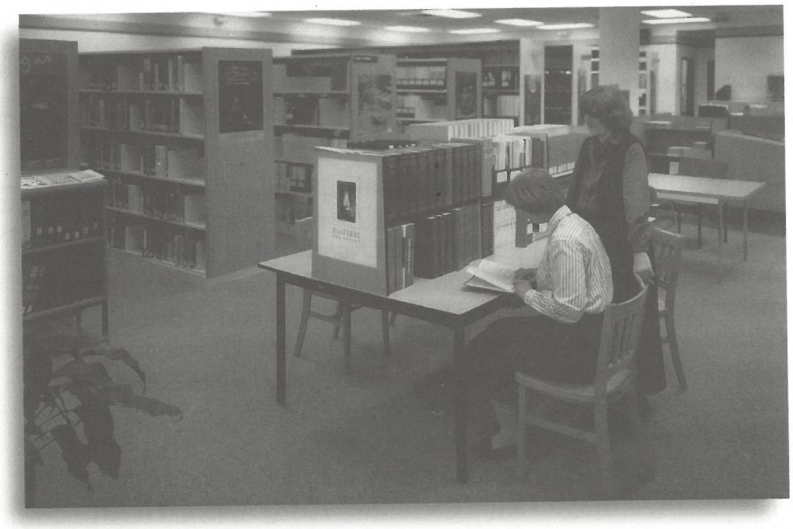
Library

During 1992, the Library staff undertook a number of projects that have had important impacts on client service and on improving access to collections.

Special Projects

The cataloguing and on-line query module of the Library management system was implemented. This enables users to have automated access to an inventory of almost 10,000 titles in the Library's Conservation and Museology Collections. The module also provides cataloguing support for Library staff.

Creation of the Museology Reference Database (BMUSE) is an important project that will provide on-line bibliographic access to the collections of the Museological Resource Centre at CCI and the UNESCO-ICOM Information Centre in Paris. BMUSE is expected to be made available to the public through the Canadian Heritage Information Network in late 1993. Activities during 1992 directed at preparing the database included completing an indexing policy; compiling a procedures manual, a data dictionary, and a list of key terms in English and French to be used in the database; and testing and demonstrating a prototype.



The CCI library.

Reference and Interlibrary Loans

The uniqueness and value of the Library collections are demonstrated by the diversity of the research requests received. During 1992, the Library received requests for information on preventive conservation of paintings from a conservator in Quebec City, on relative humidity and shells from the Canadian Museum of Nature, on infrared spectography from a student of Algonquin College, on transportation of archaeological objects from the National Etruscan Museum (Italy), and on protection of archaeological sites and artifacts from a Band Council in British Columbia.

In 1992-93, the Library staff responded to 1,100 bibliographic reference requests of which half were from the Canadian museum community. The Library received 1,019 interlibrary loan requests from other libraries. The Library borrowed 872 items for CCI staff, a low number compared to other Government libraries. This high level of lending and relatively low level of borrowing indicate the demand for, the quality of, and the completeness of the CCI collections. Also, 242 database bibliographic searches were performed, and internal circulation within CCI reached 2,626 items.

Acquisitions, Cataloguing, and Indexing

The Library acquired 703 new books in 1992-93, catalogued 353 new titles, and indexed 1,600 articles and pamphlets for the museology and conservation databases. CCI continued to contribute to the Conservation Information Network, and added 850 titles to the bibliographic database of the Network (BCIN).

A new Collection Development Policy was approved in 1992. This establishes guidelines for managing the collections in terms of acquiring new material (purchasing, gifts, exchanges), deaccessioning, and binding.

Canadian Museum Policy

The Canadian Museum Policy, approved in 1990, emphasized the need for the continued development of a comprehensive conservation program for Canada. This was to be accomplished through the implementation of the following four initiatives by CCI. During 1992-93, CCI took important steps in each of these areas.

To support the development of a French-language conservation training program

In 1992-93, CCI continued to provide technical and financial assistance to the Université Laval in support of the development of the French-language conservation training program. The province of Quebec will decide on the creation of the program, probably by late fall of 1993.

To undertake Priority Conservation Projects of national significance throughout Canada

CCI funded a number of Priority Conservation Projects throughout 1992-93. These include a survey of the extensive collection of furniture held by New Brunswick museums, the conservation of a series of painted banners in Manitoba, the treatment of a military coat for the Niagara Historical Society and Museum, and extensive work on a 17th-century polychrome sculpture belonging to the Nova Scotia Museum. The ongoing restoration of the altar in the Ursulines Chapel in Quebec City is a major project being funded by CCI in collaboration with the Ministère de la Culture du Québec and the Couvent des Ursulines. The altar project is being administered by the Centre de conservation du Québec.

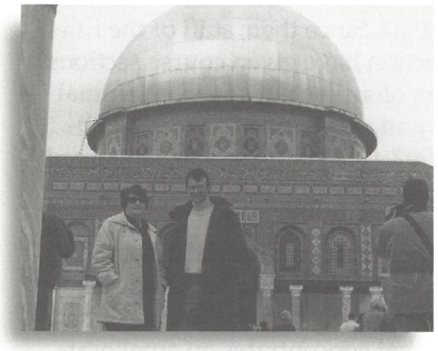
To disseminate conservation information through an enhanced publications program

As part of the revitalisation of the publications program at CCI, the *CCI Notes* series continued to be revised and updated, and new *CCI Notes* and *Technical Bulletins* were published. The section on "Publications" in this Annual Report gives more information on this initiative.

To support the operation of CCI's Museological Resource Centre

The Museological Resource Centre added 240 new books to its collection during 1992-93. It increased publicity on its collection and its services, and made major progress towards completing the automated bibliographic database BMUSE. Please see the section on the "Library" in this Annual Report for further details.

International Services



On location in Jerusalem.

As part of their professional activities, CCI staff attend international conferences and symposia, and occasionally provide services and advice on projects in other countries. In some cases, CCI recovers the costs of these services.

In 1992, CCI received consultation requests from 23 countries in areas all over the world: 200 requests from the United States of America, 16 from the United Kingdom, 13 from France, 36 from other European countries, 4 from the Far East, 8 from the Middle East, 4 from South and Central America, 2 from Africa, and 14 from Australia and New Zealand.

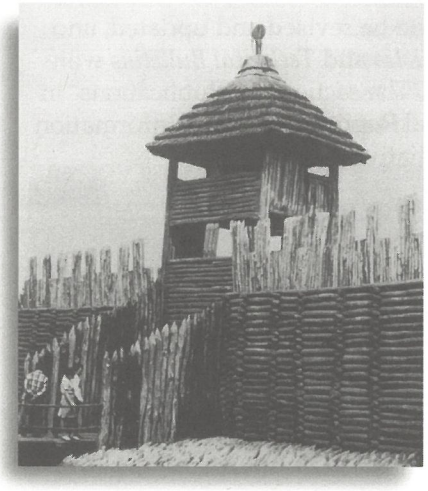
The following projects represent some of the more important international activities carried out by CCI staff during 1992.

David Grattan gave a course on the treatment of waterlogged wood at the Israel

Antiquities Authority in Jerusalem, and assisted the U.S. National Park Service by participating in a Value Analysis Workshop.

Gregory Young participated in a project on the conservation and preservation of natural science collections in Washington, DC.

CCI staff worked on a joint project with the staffs of the Tate Gallery in London and of the National Gallery of Art and the Conservation Analytical Laboratory of the Smithsonian Institution in Washington, DC, to develop a seminar and a series of workshops on the transportation of works of art. Paul Marcon undertook research, spoke at the colloquium that was held in London, and taught in the various workshops in North America and England. Charles Costain provided organizational support to the project.



The reconstructed entrance at Biskupin (700 to 400 B.C.).

At the request of the Wetland Archaeological Research Project (WARP), based in the United Kingdom, CCI conducted an evaluation of wood treatments for a sample of waterlogged wood from Biskupin, an archaeological site of major importance in Poland.

Tom Strang carried out a pest management survey at the Oakland Museum in California.

Leslie Carlyle was invited to present a paper as one of three international keynote speakers at a conference that was held at the Australian National Gallery, Canberra, and also presented lectures at the University of Melbourne and the University of Sydney. The conference paper and lectures covered recent research into 19th-century artists' materials and techniques.

CCI supported the ongoing conservation work at the site of the ancient city of Gordion in the plains outside the Turkish city of Ankara. This site, destroyed in the eighth century B.C., was home to the fabled King Midas and his predecessors. Furniture pieces that had been excavated in the 1950s were showing alarming deterioration. Valerie Dorge of CCI's Furniture and Wooden Objects Section worked on site to reconsolidate and support these unique artifacts.

Réjean Baribeau and John Taylor attended meetings to discuss developments of the laser scanner system with other research scientists at the National Archives in Washington, the National Gallery in London, "Restoration 92" in Amsterdam, Telecom Paris in France, and the Doerner-Institut in Munich.

A document entitled *Recommendations for the Conservation of Musical Instruments: An Annotated Bibliography* was completed this year, under the chairmanship of Bob Barclay. This addresses the need expressed by the International Committee for Musical Instrument Collections (CIMCIM) for a document that outlines good practices in the conservation and restoration of historical musical instruments.

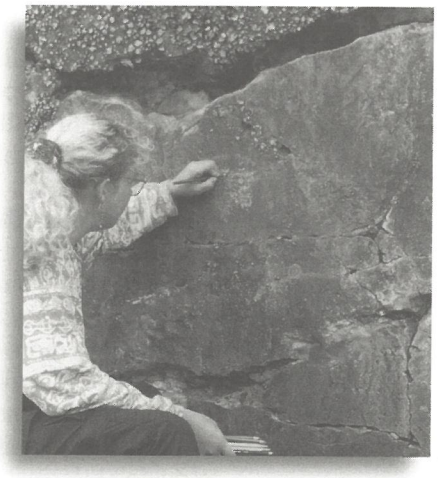
CCI runs Internship and Fellowship programs for conservators who wish to perfect their skills and to gain additional knowledge in specialized conservation techniques. In 1992-93, CCI accepted seven Fellows and eleven Interns from Canada and abroad.

The conservation of sub-Saharan African museum collections has been a major project of the International Centre for the Study of the Preservation and the Restoration of Cultural Property (ICCROM) since 1986, when the PREMA project was initiated. The project includes an eleven-month course in preventive conservation, national courses in selected African countries, a technical assistance program, and seminars for directors.

CCI's involvement in the PREMA project began in 1987. Since then, staff of the Ethnology Section have given course sections on the care of artifacts made from animal materials and on the care of wooden objects. In 1992, CCI staff were also involved in discussions and meetings on the course content and future directions of the PREMA program. Previous emphasis on restorative treatment, analysis, and documentation is giving way to a more global approach that concentrates on ameliorating causes of problems rather than treating

results. The program has now been moved from Rome to the Centre for Museum Studies at Jos, Nigeria, where members of CCI staff are to teach for a total of five weeks in the summer of 1993.

CCI continues to be involved in the international rock art community through contacts with professional organizations, publishers, and individuals in a number of countries. During 1992, CCI staff gave advice and information to researchers at Hueco Tanks State Park (Texas Parks and Wildlife Department), Texas Tech University, Getty Conservation Institute, Australian National University, Laboratoire de recherche des Musées de France, and Instituto de Antropologìa e Historia Hispanoamericana (Argentina).



Archaeological conservator treating graffiti at Mazinaw Lake, Bon Echo Provincial Park.

Professional Affiliations

CCI is Canada's national and international representative on matters relating to the conservation of moveable cultural property. Many staff members devote business and personal time to professional organizations and associations whose mandate is the promotion and advancement of conservation in Canada and abroad.

Charles Gruchy was the Chairperson of the Council of the International Centre for the Study of the Preservation and the Restoration of Cultural Property (ICCROM).

John Taylor succeeded J. Cliff McCawley as a Member of Council of the International Institute for Conservation of Artistic and Historic Works (IIC). Mr. Taylor is also Chairperson of the Local Arrangements Committee for the 15th IIC Congress, which will be held in Ottawa in 1994. Tom Stone is a member of the IIC's Technical Program Committee.

Several staff members were active in the International Institute for Conservation—Canadian Group (IIC-CG) during 1992-93. Nancy Binnie acted as Secretary, Jean Tétreault served as Treasurer, Maureen MacDonald chaired the Membership Committee, and Marie-Claude Corbeil chaired the Translation Committee.

J. Cliff McCawley chaired the Directory Board of the largest component of the International Council of Museums (ICOM), the Committee for Conservation. Other staff members played important roles in working groups as Assistant Coordinators and/or as Editors of newsletters: Tom Daley (Wet Organic Archaeological Materials), David Grattan (Resins), and Michaela Keyserlingk (Textiles). Bob Barclay served as Secretary of the Musical Instruments Committee of ICOM (CIMCIM).

Helen Burgess and David Grattan served on the Editorial Board of the Art and Archaeology Technical Abstracts (AATA) as Section Editors. Carole Dignard, David Tremain, and David Grattan contributed abstracts to AATA.

Helen Burgess acted as a member of the Working Group on Permanence of Paper that is part of the Canadian General Standards Board's Committee on Printing and Writing Paper.

Charles Costain served as Secretary of the Canadian Association of Professional Conservators. Tom Stone also served on the Executive of this group as a Member-at-Large.

Administration

CCI has been striving in a number of ways to improve the efficiency of operations through office automation. A committee representing all sections of CCI has been overseeing this process.

Financial management at CCI underwent several changes, most importantly in the area of handling budgets. Under the new system, managers can transfer funds within their budgets more easily as priorities change. To assist managers with the new financial management system, a database was installed to make entering and retrieving information, such as how much has been spent and on what, easier and much faster.

The Central Registry Service was automated in 1992 to improve management of the increasing amount of correspondence received at CCI. The new database stores ongoing operational records and includes data on all correspondence received over the last five years. This makes recording and retrieving information to respond to the thousands of enquiries dealt with by Central Registry each year a faster and smoother process.

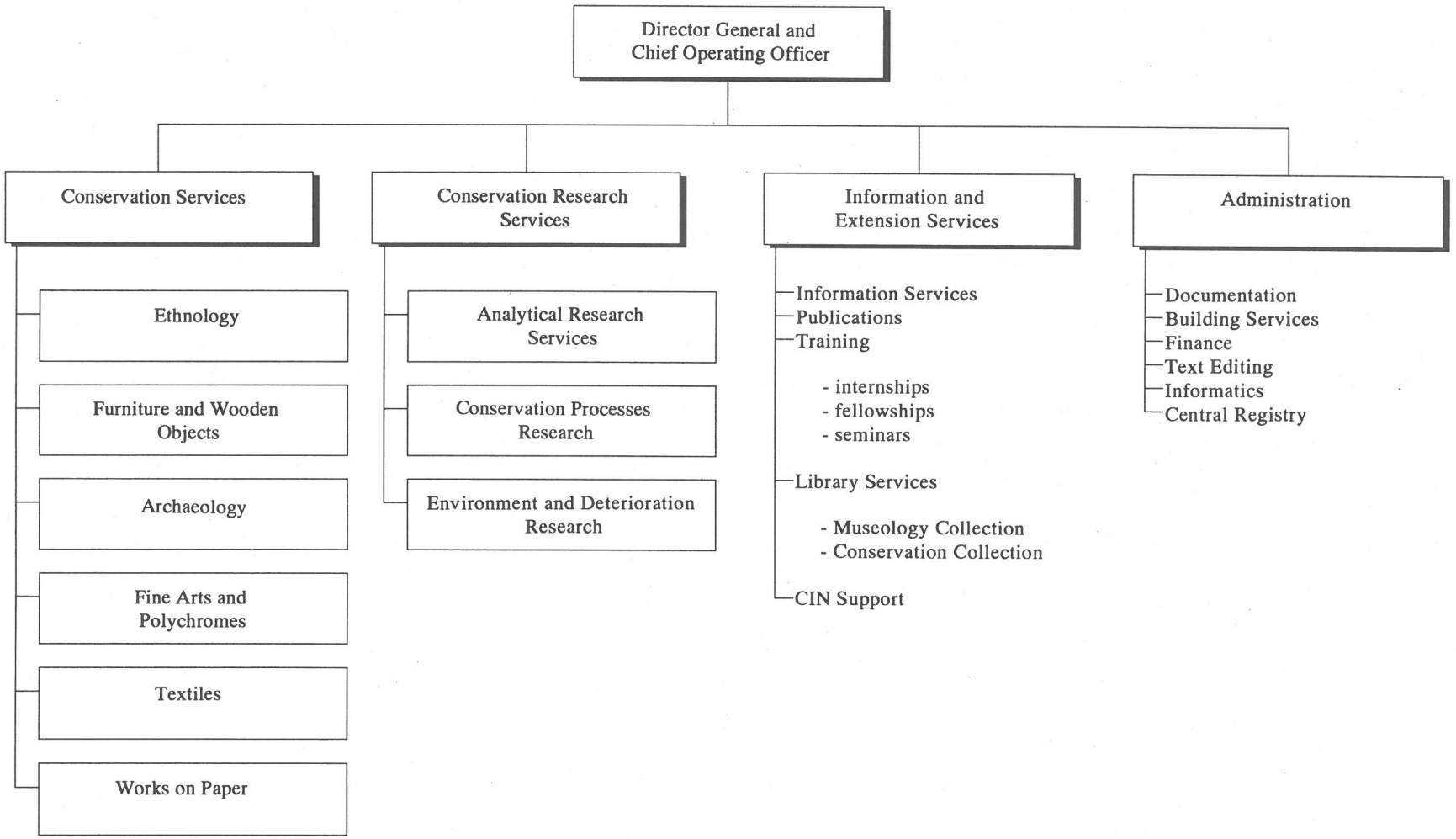
During 1992, a number of desktop computers—those of Chiefs, Directors, and administrative staff—were linked together with a Banyan Local Area Network (LAN). This system proved to be very effective in improving communications within CCI and with other parts of the Department. Plans were completed to link all CCI staff with the LAN by the fall of 1993.

Building Renovations

CCI's building at 1030 Innes Road in Ottawa underwent major preventive renovations and refurbishing during 1992-93 in order to improve the air quality throughout the building. The work was managed by Public Works Canada and included four "packages". Package number 1 involved cleaning and disinfecting the three main heating, ventilation, and air conditioning (HVAC) units and all "supply air" and "return air" ducts. In Package number 2, the fresh air intakes from the rear of the building were relocated above roof level to minimize the intake of exhaust fumes. Package number 3 involved several projects to repair damage to some of the architectural components of the CCI building that resulted from maintaining controlled relative humidity year round. Package number 4 was by far the most extensive, and also the most disruptive. This package dealt with the various exhaust extraction units and with the stacks on the roof that connect to fume hoods and extractors. Finally, a supplementary HVAC unit was installed to provide additional controlled fresh air to the labs.

Renovations at CCI...

Organizational Chart of the Canadian Conservation Institute



Financial Statement 1992-1993

Full-Time Equivalents	79
Salaries	$3,881,612
Operating:	
Postage and Freight	$65,170
Communications	51,572
Information and Printing	88,514
Professional and Special Services[1]	624,569
Travel[2]	245,949
Rentals	14,193
Repair and Maintenance	102,769
Utilities, Materials, and Supplies	392,572
Total, Operating	$1,585,308
Capital:	
Acquisition of Machinery and Equipment	$459,981
Contributions:	
Canada's Membership Fee to ICCROM and Priority Conservation Projects	$ 168,213
Total, SOB (Single Operating Budget)	$6,095,114
Revenue and Cost Recoveries	$ 37,238

Note: This is not an audited financial statement.

[1] Professional and Special Services include contractual work, Fellowships in conservation and in conservation research, consulting and advisory contracts, and some Priority Conservation Projects.

[2] Travel includes museum and site visits, conference attendance, professional association business, and travel for training and emergency services.