

Dawson & Hind

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Dawson and Hind

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Unsolicited articles are welcome. Address all correspondence to:

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Cornell Wynnobel

Dawson and Hind – recipient of:
AASLH Certificate of Commendation '78
CMA Award of Merit '79

Simon James Dawson was appointed by the Canadian Government in 1857 to explore the country from Lake Superior westward to the Saskatchewan. His report was among the first to attract attention to the possibilities of the North West as a home for settlers. He was later to build the Dawson Route from Lake-of-the-Woods to Winnipeg, Manitoba.

William George Richardson Hind accompanied his brother, Henry Youle Hind, as official artist, when the latter was in command of the Assiniboine and Saskatchewan exploration expedition of 1858. W. Hind revisited the North West in 1863-64 and painted numerous paintings of the people and general scenes.

Association of Manitoba Museums 1

Editor's Forum 2

ANNUAL FALL SEMINAR AND GENERAL MEETING

Tenth Anniversary Seminar 4
Mary Ellard and Grant Tyler

Minutes of the Annual Meeting 6

Workshops:

Archaeological Exhibits:
An Exciting Cultural Heritage Resource 11
Dr. E. Leigh Syms

Control of Insect Pests in a Small Museum 25
Catherine Collins

Interpretation and the Community Museum 33
Rob Gillespie

Care and Cleaning of Textiles 39
Christine Feniak

Care and Storage of Works of Art on Paper 46
Charles A.E. Brandt

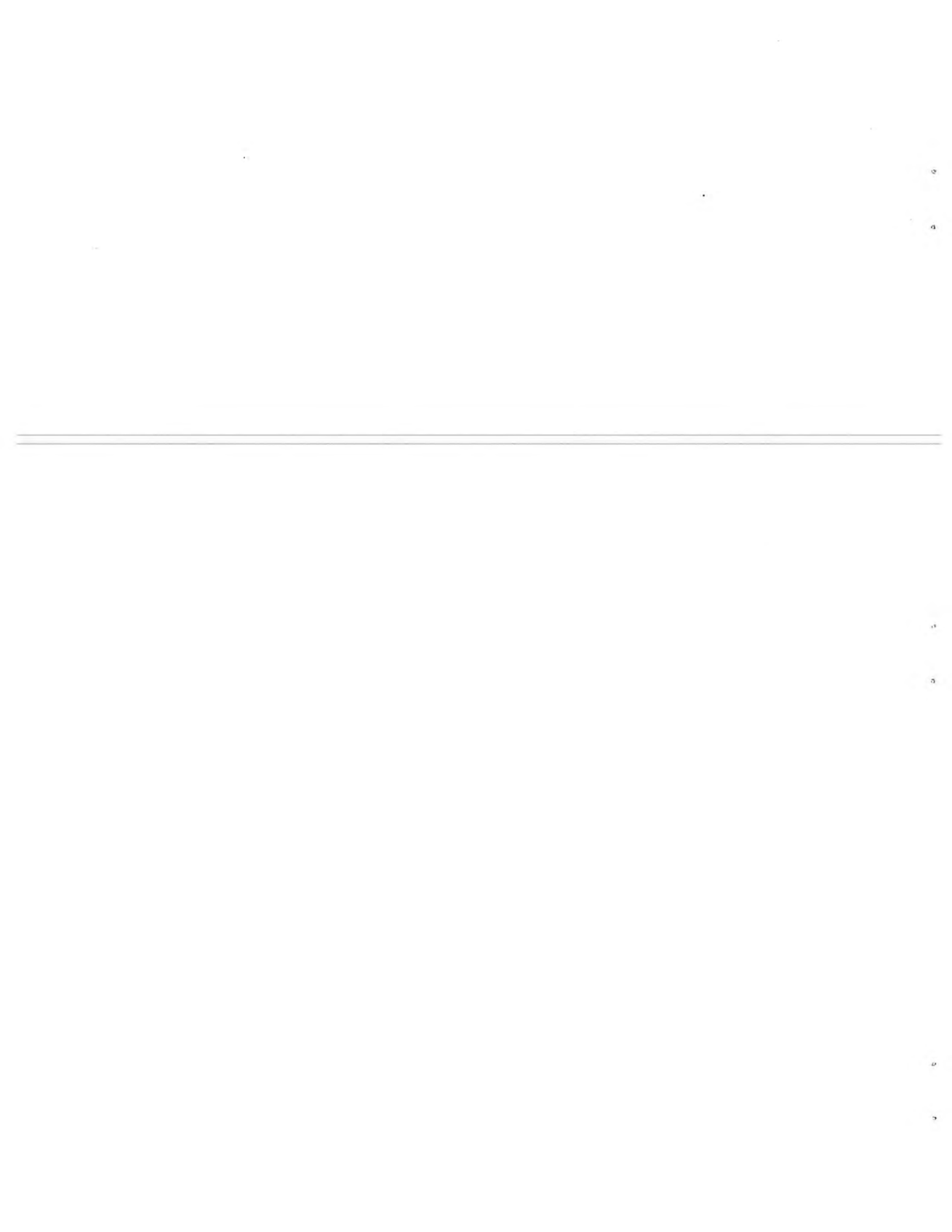
Care of Natural History Specimens 58
Jack Dubois

Historical Documentation:
Going Beyond the Obvious 62
Claire Zimmerman

Cataloguing Military Uniforms 65
David Ross

Notes to Contributors 72

Cover: Rosser Street, Brandon circa 1919. Photo courtesy the Manitoba Archives. Brandon is one of several centres in Manitoba celebrating its 100th anniversary this year.



Association of Manitoba Museums

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Swan Valley Museum
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AIMS OF THE ASSOCIATION

President **Object**
The advancement of museum services in Manitoba by:

1st Vice-President

2nd Vice-President

Secretary

a) promoting the protection and preservation of objects, specimens, records and sites significant to the natural and human history of Manitoba

b) aiding in the improvement of museums in their role as educational institutions

c) acting as a clearing-house for information of special interest to museums

d) promoting the exchange of exhibition material and the arrangement of exhibitions

e) co-operating with other associations with similar aims

f) other methods as may from time to time be deemed appropriate

Treasurer **Invitation To Membership**
You are invited to join the Association of Manitoba Museums so as to take part in its activities and provide support for its projects.

Activities and Projects
A number of activities and projects are planned to help the AMM achieve its objectives. These include:

Winnipeg

a) the publication of a regular newsletter and/or quarterly to discuss the activities of the museums, provide information on exhibits, and to distribute technical and curatorial information

Manitoba East

b) a regularly updated list of museums in the Province, including their main fields of interest and a list of personnel

c) conducting training seminars aimed at discussing problems of organization, financing, managing and exhibitions at an introductory level

Manitoba West

d) organizing travelling exhibits to tour Manitoba

e) the completion of a provincial inventory to assist in preserving our cultural heritage

MEMBERSHIP CLASSIFICATIONS

Individual Membership - open to any resident of Manitoba who wishes to promote the aims of the Association, whether or not he or she is connected with a museum. Annual fee - \$10.

Associate Membership - this includes institutions and individuals outside the Province of Manitoba who wish to promote the aims of the Association, whether or not such member is connected with a museum. Annual fee - \$10.

Institutional Membership - this is restricted to museums located within the Province of Manitoba. Annual membership fee is based on the museum's annual budget as follows:

	Annual Budget	Membership Fee
Student Councillor	100	15
	1,001	25
	20,001	35
	40,001	50
	80,001	75
	160,001 plus	100

Past President Further information may be obtained by writing to the Secretary-Treasurer, Association of Manitoba Museums, 190 Rupert Avenue, Winnipeg, Manitoba R3B 0N2

Editor's Forum

B. DIANE SKALENDA

Editor

Dawson and Hind

The Tenth Anniversary Seminar held in Brandon last October had all the makings of a very special event—dynamic workshops, pleasant social activities, and comfortable surroundings. Delegates from all over the province had an opportunity to exchange ideas, solve problems and voice their concerns at the Annual Meeting.

We were extremely pleased to have David Ross, Director of the New Brunswick Museum, as our guest speaker at the Tenth Anniversary Banquet. David was a great supporter of the community museums during the Association's formative years. He was Manitoba's first Museums Advisor and was instrumental in developing the Service. His concern for the future of our community museums was indelibly recorded in his two popular publications *Museums in Manitoba: An Inventory of Resources* and *A Path for the Future*. David's presence made this occasion very special indeed.

Also most appropriate on this occasion was the awarding of an Honourary Life Membership to John Dubreuil of the Swan Valley Museum. Mr. Dubreuil was one of the original council members of the Association and served as its President from 1975 to 1977. His work on behalf of the Association continues and is most appreciated by the membership.

We are very pleased to publish in this issue the papers of the workshops given at the Tenth Anniversary Seminar. Without exception, they were informative, professionally presented, and well received. They covered many aspects of museology and will be of interest to all our readers. Military buffs will enjoy David Ross' article on cataloguing military uniforms. For the museum with an emphasis on prehistoric Manitoba, Dr. Leigh Syms' article is both interesting and practical. Conservation techniques are always, or at least should be, of interest to those in charge of our heritage. This interest was catered to with workshops on how to control, or

prevent, insect infestations, and how to look after the textiles, natural history specimens, and works of art on paper in your collection. These workshops were presented by some of the top conservators in Manitoba—Charles Brandt of the Provincial Archives of Manitoba, Cathy Collins of the Manitoba Museum of Man and Nature, and Christine Feniak of Parks Canada; as well as Jack Dubois, Assistant Curator of Mammals at the Manitoba Museum of Man and Nature.

Cataloguing, although necessary, has the reputation of being a tedious chore. Claire Zimmerman proves that it can be an intriguing and exciting process in her article "Historical Documentation: Going Beyond the Obvious". And finally, Rob Gillespie, who has set up interpretation programmes for Parks Canada throughout the prairies, shares some of his innovative ideas in his article on interpretation methods for community museums.

Special thanks to Museum Technician Trainee Mary Ellard for her assistance in producing this issue of *Dawson and Hind*. We both hope you enjoy it and the wealth of information it contains.

B.D.S.

UPDATE:

Applebaum Report

The co-chairmen of the Federal Cultural Policy Review Committee formally presented their summary of briefs to Communications Minister Francis Fox in January. The 300-page document summarizes the submissions and the hearings held in 18 cities. Chapter three of the report is devoted to Heritage. The Committee's final report is expected

this summer. In accepting the summary, Mr. Fox indicated that he was moving away from the "white paper" concept and anticipated instead that with the final report as a guide, the government would be acting more quickly with an "action plan approach" that will involve a "series of announcements" of federal cultural strategy.

Canadian Society of Decorative Arts

The Canadian Society of Decorative Arts held its inaugural meeting last November. The Society, a national non-profit organization, will provide a forum for all those interested in the decorative arts—interior design, furniture and furnishings, silver and other metals, ceramics, glass, graphics, textiles, theatre arts and aspects of architecture, industrial and landscape design.

The Society proposes to publish a journal and quarterly newsletter, to promote exhibits relevant to historical and contemporary design, and to offer lectures and seminars by noted Canadian and International authorities in the decorative arts. In these and other ways, the Canadian Society of Decorative Arts will provide an important medium of communication with other organizations and agencies in allied fields.

For membership applications and further information, contact the Canadian Society of Decorative Arts, P.O. Box 4, Station B, Toronto, Ontario M5T 2T2 — Telephone (416) 977-0414, ext. 225.

Prairie Canada Summer Program

A unique education/vacation program on prairie culture will be offered this summer by the University of Regina's Canadian Plains Research Centre. Called Prairie Canada Summer Program, the package features two one-week programs of lectures, tours and field trips.

The first program will be held July 18-23 in Winnipeg at the University of Manitoba. Among the topics to be discussed are: the past, present and future of the native peoples of the prairies; the history and diversity of religious life on the prairies and the effects of the prairie environment on regional architecture.

The other segment of the Prairie Canada Summer Program, to be held July 25-30 at the University of Regina, will explore the physical and biological basis of the prairie environment; the ways in which the prairie is viewed by artists and writers; settlement patterns on the Canadian prairies; and the role of the Royal Canadian Mounted Police in the development of the Canadian West.

For more information, contact the Prairie Canada co-ordinator, Canadian Plains Research Centre, University of Regina, Regina, Saskatchewan S4S 0A2 — Telephone (306) 584-4758.

Tenth Anniversary Seminar

MARY ELLARD
GRANT TYLER

Museum Technician Trainees
Manitoba Museum of Man and Nature

This year's seminar marked an important event for the Association of Manitoba Museums — our tenth anniversary! Housed once again in the Agricultural Extension Centre in Brandon, the conference was held from October 28 to 30.

Early registration took place on Wednesday afternoon, followed later in the evening by a wine and cheese reception. At 8 p.m., the Brandon Jazz Band performed, while members of the AMM enjoyed the opportunity to socialize.

Thursday morning began with opening remarks from AMM President, Tim Worth, and greetings from the City of Brandon conveyed by a representative of the Mayor. Linda Harrington, Student Councillor for the AMM, discussed the possibility of museology students assisting in community museums.

There were four workshops held in the morning. David Ross, Director of the New Brunswick Museum, focused his talk on the identification of military uniforms. He brought several useful references to the attention of the participants to aid them in cataloguing.

At the same time, "Archaeological Exhibits: Turning a Box of Strange Items into an Exciting Cultural Heritage Resource", was the topic presented by Dr. Leigh Syms, Curator of Archaeology at the Manitoba Museum of Man and Nature. His enthusiasm for his field was reflected in a most stimulating and informative session.

After a coffee break, two more sessions were held. Charles Brandt, Chief Conservator at the Provincial Archives of Manitoba, spoke about the care and storage of works of art on paper. Valuable information on conservation was explained in a straightforward manner.

Simultaneously, Rob Gillespie from Parks Canada, discussed interpretation methods for community museums. Participants will be able to uti-

lize his ideas to help make their interpretive programmes more successful.

Following the morning sessions, delegates attended meetings for their respective regions of the AMM. The Report of the Heritage Working Group was presented over lunch. Committee members, Dr. David Hemphill, Executive Director of the Manitoba Museum of Man and Nature, Mr. Dick Wilson, President of Wilson Furniture Limited, and Mr. Roger Selby, Director of the Winnipeg Art Gallery, led the discussion.

In the afternoon, members gathered together for the AMM Annual Meeting. During the proceedings, a proposal was put forward that Mr. John Dubreuil, AMM Past President, be made an Honorary Life Member, in recognition of his work



Terry Patterson with President Tim Worth following a presentation at the Annual Banquet recognizing her many years as secretary of the A.M.M.

with the Association. Other topics on the agenda included the election of new councillors and a re-vamping of the membership fee structure.

The Tenth Anniversary Banquet was held that evening. Guest speaker, David Ross, well known to the museum community, reflected on his involvement in museums over the years. Tom Nickle and Cornell Wynnobel added to the evening's entertainment by organizing an auction. A wide variety of goods were donated by members and the bidding was lively. Overall, everyone enjoyed celebrating the AMM's Tenth Anniversary. It was a memorable evening.

Workshops continued on Friday morning. Christine Feniak of Parks Canada, spoke on her area of expertise—"The Care and Cleaning of Textiles". At the same time, an attentive group received practical advice on the care of natural history specimens from Jack Dubois, Assistant Curator of Mammals at the Manitoba Museum of Man and Nature.

The last two concurrent sessions were given by Catherine Collins, Assistant Conservator and Claire Zimmerman, Cataloguer, both from the Manitoba Museum of Man and Nature. Cathy lectured on the control of insect pests in a small museum. Claire's presentation, "Not Always Elementary My Dear Watson", outlined some of the detective work required in historical documentation.

All the workshops were highly informative and stimulating. The speakers demonstrated such knowledge and enthusiasm for their subject areas that the participants left the seminar feeling both challenged and motivated.

Friday afternoon culminated with a field trip to Souris where we were served a delicious lunch at the Souris Golf Club and then toured the Hillcrest Museum.

We are sure that all who attended will agree that the Tenth Anniversary Seminar was well organized, highly productive, and a great success!

MINUTES OF THE TENTH ANNUAL MEETING
OF THE ASSOCIATION OF MANITOBA MUSE-
UMS, HELD AT THE BRANDON AGRICUL-
TURAL EXTENSION CENTRE, BRANDON,
19 OCTOBER 1981

Respectfully submitted by:
Claire Zimmerman, Secretary

The Tenth Annual General Meeting of the Association of Manitoba Museums (1972) Inc. was called to order at 3 p.m. by President Tim Worth. Fifty-six delegates were present.

Neil Carleton, Prairie Regional Officer, Museums Assistance Programs, National Museums of Canada, and Linda Lazarowich, Chairperson of the Canadian Museums Association Award of Merit Committee, were introduced to the meeting.

Minutes of the previous annual meeting had been distributed with the seminar kit and were declared adopted as printed. No business arose.

President's Report

Tim Worth indicated that much as happened over the past year to influence the growth and health of Manitoba's museum community. Council met six times through the year in various parts of the province.

The report of the Cultural Policy Review Committee, and arising from that, the final report of the Heritage Working Group, were both responded to by Council. It was felt that the large number of historical organizations and institutions in Manitoba were shown little consideration. As in the past, Council will continue to strive to improve this situation.

Manitoba Interlake was created through the redistribution of Manitoba Central and Manitoba North regional boundaries. It was felt that the area would be better served by a separate councillor. The boundaries of this new region will correspond to those of the Interlake Regional Tourist District.

Mini-seminars were held in all regions this spring, attended by 111 representatives. Additional training schemes are currently under investigation.

The AMM received a grant from the Provincial Government as well as publication assistance through Historic Resources for production of *Dawson and Hind* and the brochure *Museums in Manitoba*. We are indeed grateful to the office of Mr. John McFarland for this help.

The AMM was represented twice at CMA meetings in Ottawa. Contact with other provincial and national organizations gives the AMM a perspective of its own development, plus support at other levels.

The logo of the AMM, unveiled to the membership at the last annual meeting, was used on a cover of *Dawson and Hind* and on this year's conference badges and buttons. Eventually it will be used on the Association's letterhead.



Manitoba's museum community was saddened by the loss of Mr. Watson Crossley – one of the founders, and an Honourary Life Member, of the Association of Manitoba Museums.

Moved by T. Worth, seconded by D. Skalenda, that the report be approved.

MOTION CARRIED

Treasurer's Report

Treasurer Marie-Paule Robitaille referred to the auditor's report printed in detail and distributed in the conference kit.

With no questions arising, it was moved by Ms. Robitaille, and seconded by M. Prince, that the report be accepted as printed.

MOTION CARRIED

Nominating Committee Report

The Chair was turned over to John Dubreuil who presented a list of nominees. Each position

was voted upon separately with nominations requested from the floor. The resignation of Cornell Wynnobel necessitated filling the position of First Vice-President. Claire Zimmerman accepted nomination as Secretary and resigned her position as Councillor-at-large.

Council for 1981-82 is as follows:

Elected for a two-year term:

President	Tim Worth
Second Vice-President	Terry Patterson
Secretary	Claire Zimmerman
Treasurer	Marie-Paule Robitaille
Councillor-North	Joe Robertson
Councillor-West	Eleanor O'Callaghan
Councillor-at-large	Warren Clearwater

Elected to fill remaining year of term:

First Vice-President	Henry Marshall
Councillor-at-large	Grant Tyler

Officers retaining positions for coming year:

Councillor-East	Peter Goertzen
Councillor-Central	Terry Farley
Councillor-Winnipeg	Barry Hillman
Student Councillor	Linda Harrington
Past President	John Dubreuil

H. Marshall questioned who would be responsible for the new Interlake region. T. Worth replied that members from the region requested not to have an elected councillor at this time. Instead a representative from each museum would attend Council meetings in rotation over the next two years, until familiar with the duties and the region.

Presentation of Resolutions

I Proposed Changes to the Bylaws

Within the pre-conference kit, resolutions concerning a reclassification of membership were distributed.

A. Be it resolved that Bylaw 4 (Classification of Membership), subsection "Honourary Members" be amended by the deletion of the following words:

"...except that they shall not be entitled to vote and provided further that Honourary members may not be elected to the Council nor as officers of the Association".

Moved by T. Patterson and seconded by P. Clarke.

MOTION CARRIED

Bylaw 4, subsection "Honourary Members" now reads:

"Honourary membership may be conferred upon any person who has rendered valuable assistance to the Association or who is in the opinion of the Council otherwise worthy of this honour. Honourary membership shall be conferred by a majority vote at any general meeting of members, the name having first been recommended by the Council. Honourary members shall be exempt from the payment of dues to the Association".

B. Be it moved that Bylaw 6 (Voting Rights), subsection (a) be amended by the deletion of the words:

"...and Honourary members", from the sentence "Associate members and Honourary members may not vote".

Moved by T. Patterson, seconded by P. Clarke.
MOTION CARRIED

C. Be it moved that under Bylaw 6(Voting Rights) each Honourary member shall be entitled to one vote.

Moved by T. Patterson, seconded by P. Clarke.
MOTION CARRIED

This shall now become Bylaw 6 (e).

II Proposed Changes to the Membership Fee Structure

Moved by M. Robitaille, and seconded by C. Wynnobel that the Membership Fee Structure be approved as distributed.

Student Membership	\$ 3.
Individual Membership	10.
Associate Membership	10.

Institutionship Membership (based on annual budget):

100 - 2,000	\$15.
2,001 - 20,000	25.
20,001 - 40,000	35.
40,001 - 80,000	50.
80,001 - 160,000	75.
160,001 plus	100.

Lengthy discussion took place on membership classifications, additional classifications, cost of servicing each member and issuance of tax receipts.

Executive was requested to look into the various suggestions proposed and to present a new outline of membership categories and criteria for the next annual meeting.

MOTION CARRIED

New Business

I Reports from Regional Meetings:

Manitoba North

Discussion focussed on the report of the Heritage Working Group.

Manitoba East

Delegates from Manitoba East discussed happenings throughout the year and the Heritage Working Group's Report.

Manitoba Central

This group discussed ways of arousing more interest in mini-seminars and encouraging smaller museums to get involved.

Manitoba West

Arranged for the next mini-seminar to be held in Reston. Speakers and topics were proposed.

Winnipeg

The Winnipeg group explored the reasons for poor communication within the district. It was suggested that an informal meeting of CMA and Winnipeg AMM members be held at a community museum.

Manitoba Interlake

Manitoba Interlake delegates discussed the role of a councillor. They decided to send one person in turn from each museum in the Interlake to attend Council meetings over the next two years since all museums in the area are quite new.

Discussion arose as to the legality of this decision.

Moved by Roger Selby, and seconded by H. Marshall that Council respect the wishes of the Interlake region to have a representative rather than a councillor attend meetings.

II Honourary Life Member

T. Worth proposed that John Dubreuil be appointed Honourary Life Member. In a short commendation, he outlined Mr. Dubreuil's contribution to the AMM, from his attendance at the formative meetings through various positions he had held on council.

Members showed their approval with a hearty round of applause.

Mr. Dubreuil thanks the AMM for the honour and asked that members give the Council more support in the future.

III Motion of Thanks

Joe Robertson proposed a vote of thanks to all those who contributed to the success of the conference:

- On Job Trainees
- Museums Advisory Service
- Brandon Agricultural Extension Centre
- National Film Board
- Parks Canada
- David Ross
- Guest Auctioneers - T. Nickle, C. Wynnobel
- Seminar Planning Committee
- All donors to the auction

The motion was seconded by Terry Farley.

MOTION CARRIED

IV Appointment of Auditor

Nancy Dillow inquired about the appointment of an auditor for the coming year, as required by most provinces.

Discussion resulted in the following motion:

Moved by D. Skalenda, and seconded by H. Marshall that we approach T. Nickle to audit our books.

E. McCallum mentioned that this is out of order with the AMM constitution and by-laws.

Moved by B. Birks, seconded by E. McCallum, that the membership propose to Council that they approach T. Nickle to audit the books.

MOTION CARRIED

The original motion was then voted upon.

MOTION CARRIED

V Annual Reports

L. Lazarowich suggested that printed reports on such things as training, membership, nominations be prepared for each annual meeting. This would assist in documenting the Association's growth. She also suggested that out-dated files be forwarded to the Association's archivist.

D. Skalenda noted that the annual report has been printed in the Dawson and Hind over the years. T. Patterson commented that as secretary for many years and self-appointed historian she has maintained the past files of the AMM.

A motion of adjournment was made by Jean Dupont, second by N. Dillow. Meeting adjourned at 4:20 p.m.

ASSOCIATION OF MANITOBA MUSEUMS

Statement of Revenue and Expenditures
October 1, 1980 to September 30, 1981

Revenue

Province of Manitoba Grant	\$2,000.00
Membership Fees	1,580.00
Seminar Revenue	1,290.95

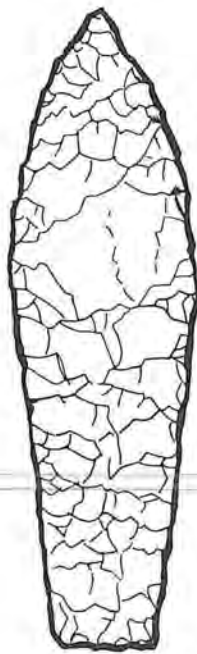
TOTAL REVENUE **\$4,870.95**

Expenses

Seminar Expenses	1,689.19
Travelling Expenses	1,226.61
Secretarial Fees	700.00
Dawson and Hind Covers	662.38
Postage, Xerox and Telephone	633.58
Printing Expenses	181.60
Design Expenses	250.00
Membership Fees	40.00
Office Expenses	23.73
Miscellaneous	36.50

TOTAL EXPENDITURES **5,443.59**

Excess of Expenditures over Revenue **\$ 572.64**

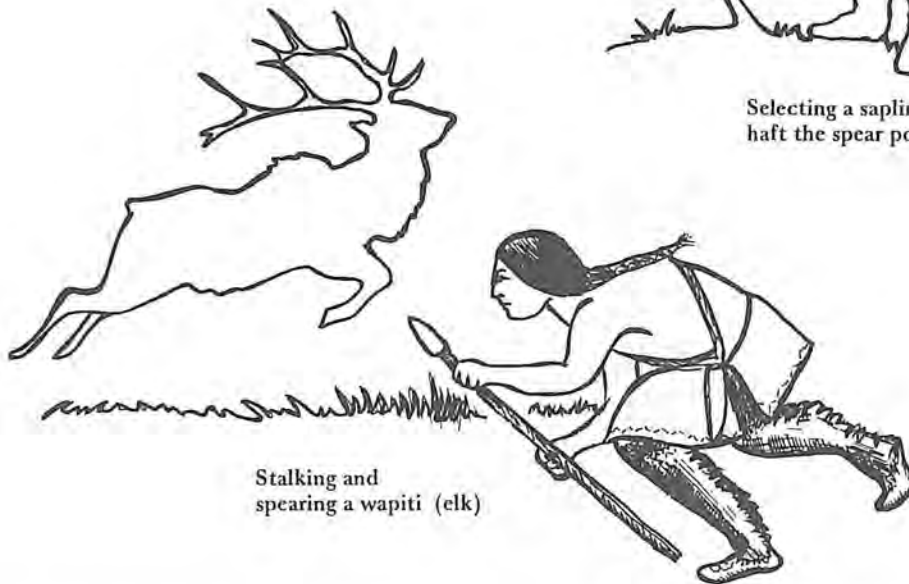


Boy watching his father make a point

THE ARTIFACT—A SPEAR POINT
PART OF A WIDE NETWORK OF ACTIVITIES
AND LEARNING EXPERIENCES



Selecting a sapling to haft the spear point



Stalking and spearing a wapiti (elk)

Figure 1 A spear point is not only an object; it is the result of numerous learning experiences undertaken to exist and have a meaningful life

Illustration: Lillian Krutish

Archaeological Exhibits: An Exciting Cultural Heritage Resource

DR. E. LEIGH SYMS

Curator of Archaeology

Manitoba Museum of Man and Nature

Most museums have at least several boxes of "dusty curios" which include hammerstones, stone knives, flakes and other items that have been donated by local collectors. Museums that attempt to display these items often do so with limited success due to lack of knowledge about what the materials represent, lack of ideas of how to present the items in an effective manner, and lack of budget and personnel to build elaborate displays. However, exciting displays can be developed with modest budgets when there is a basic understanding of what the archaeological materials represent and how to choose topical modules to suit the local collection.

What are Archaeological Materials?

Archaeological materials represent the remains of groups of people who lived in the recent or distant past — stone tools left by 300,000 year old ancient forms of men in Europe, 11,000 or 800 year old tools left by the ancestral Indian groups living in Manitoba, historic forts and their remains from the fur trade era, contents of French war ships sunk in the St. Lawrence, early settlers' homes, and industries of 40 years ago such as glass works or brick factories to name only a few. Archaeological materials, therefore, include numerous items from different societies over a very long period of time.

Archaeological materials should not be confused with paleontological items such as dinosaur bones. Man and dinosaurs were never in contact, nor ever overlapped in time, despite this common misconception that has been perpetrated by the fanciful fiction of Edgar Rice Burroughs' Tarzan, the Flintstones, Alley Oop, and a host of mediocre Hollywood and Japanese movies. Dinosaurs became extinct about 65 million years ago. Our famous local source of marine dinosaurs, the Cretaceous bentonite mines of the Morden district, are circa

90 million years old. In contrast, the earliest human or human-like forms, the Australopithecines of Africa, date back only 3-4,000,000 million years, the earliest evidence for Native North Americans is 30,000-50,000 years ago, and earliest Manitoba evidence is about 11,500 years ago.

Archaeological items are identified as being part of our heritage resources. Archaeological items, be they stone spear points, musket balls, or Hudson Bay pipes, are cultural items. We use the term "cultural" in a broad anthropological sense meaning part of the ideals, beliefs, behaviour, and technology of members of a society; rather than in the narrow sense referring to the performing arts such as ballet, theatre, or classical music. Archaeological items, therefore, represent a major part of the 11,500 years of Manitoba's Indian heritage. This heritage includes a number of distinctive ethnic groups; plus the much more recent remains of several Euro-American ethnic groups who, combined with the Indian ethnic groups, make up a major part of our cultural mosaic. These items represent an important resource—a major part of the record of Manitoba's heritage. I will be dealing primarily with the Indian part of archaeological resources.

Archaeological Themes as a Focus

Museum exhibits should be exciting, colourful, informative, and educational. With archaeological items, these goals can be readily achieved by emphasizing a theme, i.e. a central message or major insight about lifeways, rather than emphasizing the artifacts themselves.

There are hundreds of themes that can be exhibited. The choice of themes will depend, in part, upon the nature of local collections. However, even a couple of items can be used in an exciting and informative display module by surrounding them

with black and white or colour prints, maps, charts, diagrams, and typed text. A roll of photographic film and a SLR camera such as a Pentax can be used to transpose published illustrative material to a colourful and informative part of your exhibits. In fact, small exciting exhibits can be developed without the use of a single artifact! Themes can be developed along the following lines:

THEME A

Archaeological items represent the remains of people who lived in a group or society of numerous other people and who had to interact with members of other groups.

It is important to think of the individual artifact in your museum collection as the focus of an ever-widening circle of ideas, relationships between people and influences of various kinds (figure 1). A spear point is not merely an item of beauty (like a pebble from a beach), or an uninteresting broken item. It is an item made by man, who, as a boy had to:

- learn how to chose the right rock and to flake it carefully by watching the older men in his tribe
- chose an appropriate sapling, glue and sinew to produce a handle
- learn the behaviour of the animals and how to stalk them
- learn to hunt cooperatively with other men
- learn the socially-accepted manner of sharing food when he was successful.

The person who made and used the spear point was not only part of his own family group, but also part of a tribe whose members often ranged hundreds of miles throughout the yearly seasonal round. In addition, he was probably in contact with foreign people from other tribes in order to trade for non-local items and exchange information about enemy tribes and bison herds.

THEME B

The cultural history of Manitoba, as revealed through archaeological research, represents thousands of years of evolutionary development, i.e. change through time.

This theme can best be shown as a chronological development. Since most artifact collections have a variety of items of different ages, it is possible to mix items and drawings to show the local antiquity of human occupation (figure 2). Some points to note:

- a) Ancesters of Indian groups may have been in North America at least 40,000 years and probably longer.

- b) The last glaciers have obliterated much of the early record in Manitoba so we deal only with the last 11,500 years—beginning with the Clovis hunters.
- c) Environment and resources have undergone marked changes. Circa 11,000 years ago, there was the huge Glacial Lake Agassiz in eastern Manitoba, which was bordered in the north by a glacier, coniferous forests in the southwest, and occupied by hunters who lived by hunting large mammoths.
- d) Certain cultural diagnostics can be used to date major changes, e.g. Paleo-Indian hunters used a large lance point, Archaic hunters used the atlatl or spear thrower with medium-sized dart points (figure 3), the bow-and-arrow became widespread only 1200 years ago, and pottery came into use only 2500 years ago.

Many local sites represent areas that have been reoccupied many times over thousands of years. The local collection is much more meaningful if the points are identified according to type and age and are mounted according to chronological age (figure 4). The materials can be shown as a series of occupation layers and the diagnostic tools, the spear or arrow points, can be mounted vertically to show the multiple camps. Furthermore, the various numbers of the different types of points can be quantified to show the relative numbers for each camp, e.g., one Agate Basin, eight Oxbow, twelve Middle Woodland, five Late Woodland, and two historic points.

THEME C

Native peoples were astute traders involved in continental-wide trade networks.

Several non-local materials were traded from tribe to tribe over thousands of miles. A copper tool from your collection was probably made from copper mined on the north shore of Lake Superior (figure 5A). Catlinite (red pipestone) used for many pipes, was mined in southwestern Minnesota. Conch shell beads came from the central part of large ocean-dwelling snails living off the Gulf coast of Florida and the Atlantic coast of the southeastern United States. These latter items were traded through many hands in an elaborate trade network of Mississippian cities and villages plus village tribes on the Missouri River before being collected by members of the local nomadic tribesmen. Dentalium shells which are often portrayed on garments of Natives in the Historic Period were being traded onto the Plains as much as 2,000 years ago. These shells came from the west side of Vancouver Island and were traded over the mountains and across the Plains as far east as the Red River.

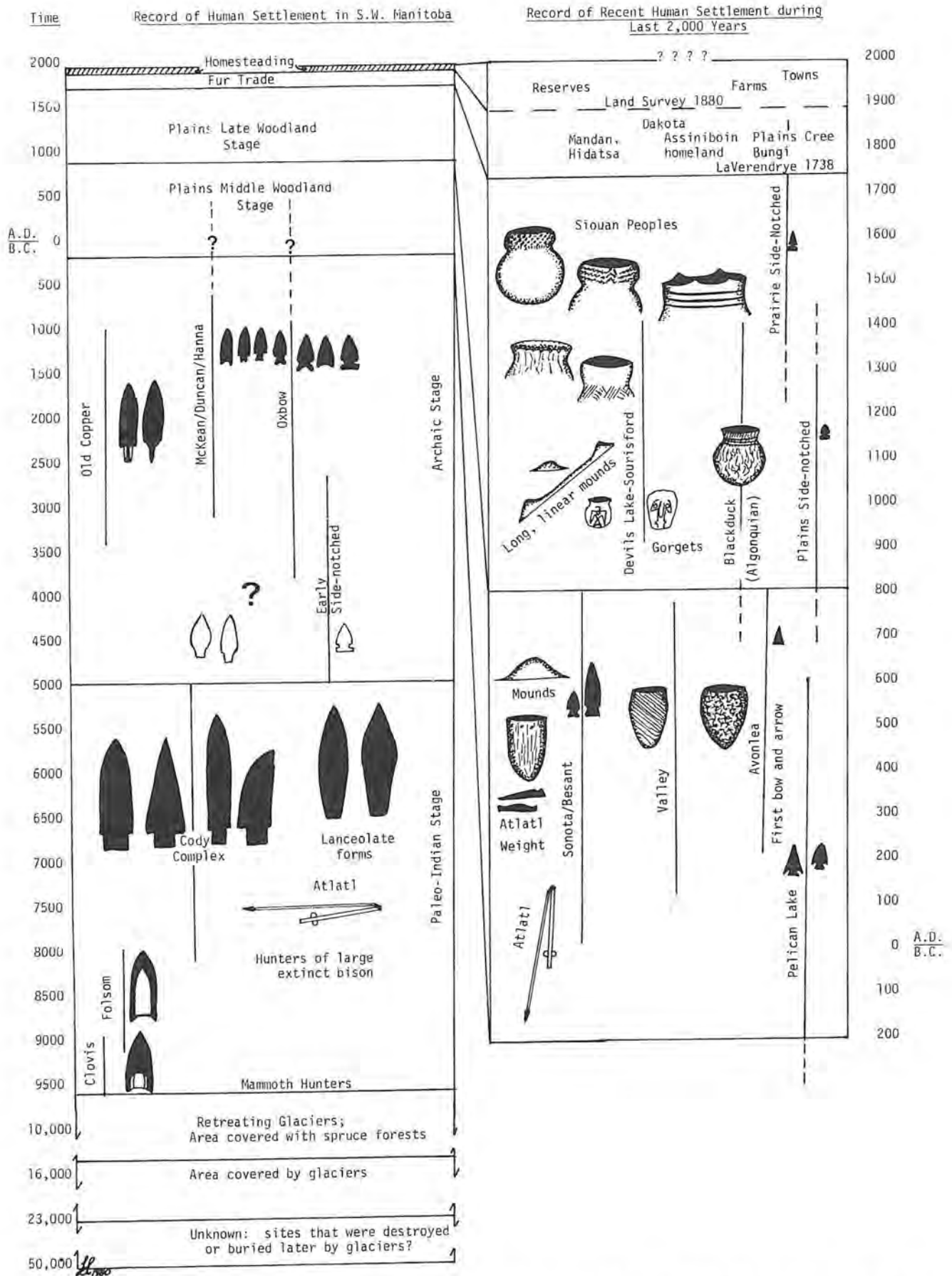


Figure 2 Cultural history chronology for southern Manitoba developed by L. Syms and drafted by L. Pettipas



Figure 4 A simple yet powerful exhibit showing cultural developments, i.e. the multiple occupations from a site, as a series of layers. (The original in the Nebraska State Historical Society Museum uses numerous colours to accentuate the different cultural levels).

An exhibit showing the varieties of local and non-local stone materials can help people view their own collections differently and help them develop a new appreciation of the mobility of Indian peoples during their traditional way of life. Not only did the various tribes use local stone such as Swan River Chert from western Manitoba or Selkirk Chert from the Red River Valley, they travelled hundreds of miles to obtain good quality alternatives such as Knife River Flint.

Knife River Flint is a shiny brown rock which was quarried from shallow depressions in the grasslands of western North Dakota. This material was carried back to various parts of Manitoba in bundles. Some of these concentrations turn up as caches that were buried and never picked up. Paleo-Indian hunters made up to 70% of their points from this material (Pettipas 1970). While it was commonly used for scrapers but rarely for points during the Archaic Period, it was used extensively during the period A.D. 100-800 when as much as 80-90% of all materials were made of Knife River Flint.

Early historic accounts make frequent references to Native peoples' trading. Numerous tribes would come together at trade fairs (figure 5B) or meet individually. Being astute businessmen, they tried to control the trade of historic items and had undoubtedly tried to control materials prior to the Historic Period. The Assiniboin tried to control their role as middlemen between European fur traders and the Blackfeet of Alberta. Likewise, the Mandan living in villages on the Missouri River of North Dakota tried to prevent fur traders from going farther up river for the same reason.

THEME D

Housing was highly variable from tribe to tribe, depending upon the environment and strategy of adaptation that had been followed.

This theme can be effectively portrayed by means of small models (figure 6). Examples are the snow igloo, skin tent, and walled semi-subterranean tent of the Inuit (Eskimo), the oval wigwam, tipi, and A-frame of the Woodland groups, the tipi of the Plains nomadic groups, and the circular earth lodge (original geodesic dome) of the Plains village tribes. Variability, portability, and availability of different local resources provide the basis of a message which helps to demonstrate the inventive genius and cultural complexity of Native North Americans.

THEME E

Native peoples from different environments developed very different subsistence strategies.

Some displays can, and should, be developed without the use of artifacts. The Algonquian tribes such as the Cree, of the northern Boreal Forest, the Siouan tribes such as the Assiniboin and Dakota on the Plains, the caribou-hunting Chipewyan of the northern Sub-Arctic, and the Inuit (Eskimo) of the Arctic all had very different lifestyles. In each area, they had different resources and invented different tools for utilizing these resources. The adaptation to each environment can be portrayed by means of photos, e.g., hunting moose, fishing and reaping wild rice in the Woodlands versus hunting bison (misnamed buffalo by early Europeans) on the Plains. In addition, birchbark canoes were characteristic of the Plains.

THEME F

Camp life was a myriad of activities with a marked sexual division of labour.

Tools associated with hunting, trapping, or warfare were associated with men and boys. Therefore, spears and arrow points can be displayed as part of men's activities. Other items include shaft smoothers and scrapers for making hunting tools and drills for making perforations in bone and

MUMMY CAVE

PROFILE OF CULTURE LAYERS

DATED BY RADIOCARBON PROCESS

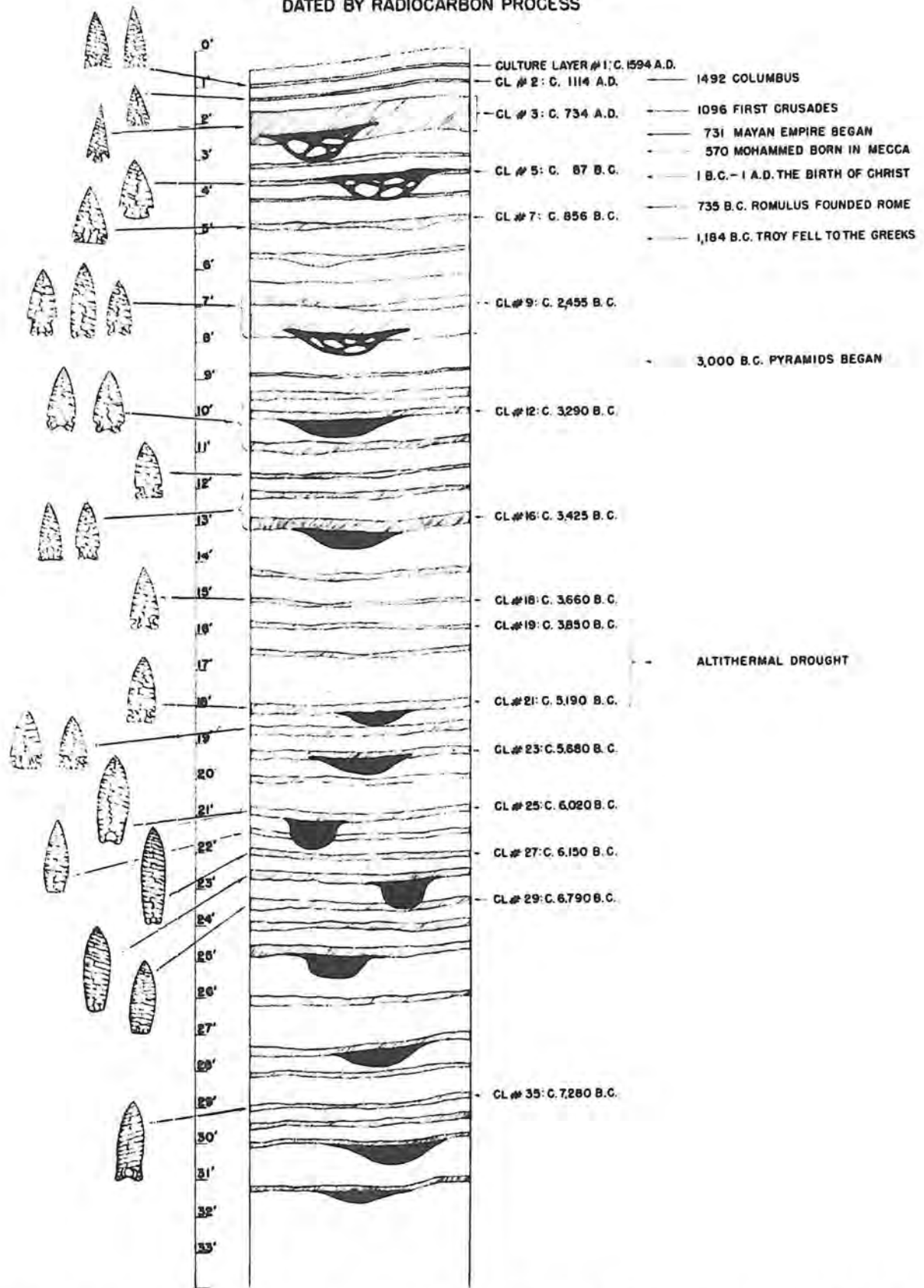


Figure 3 Sequence of occupations from Mummy Cave Site, Wyoming, showing the change in point forms on the Northern Plains

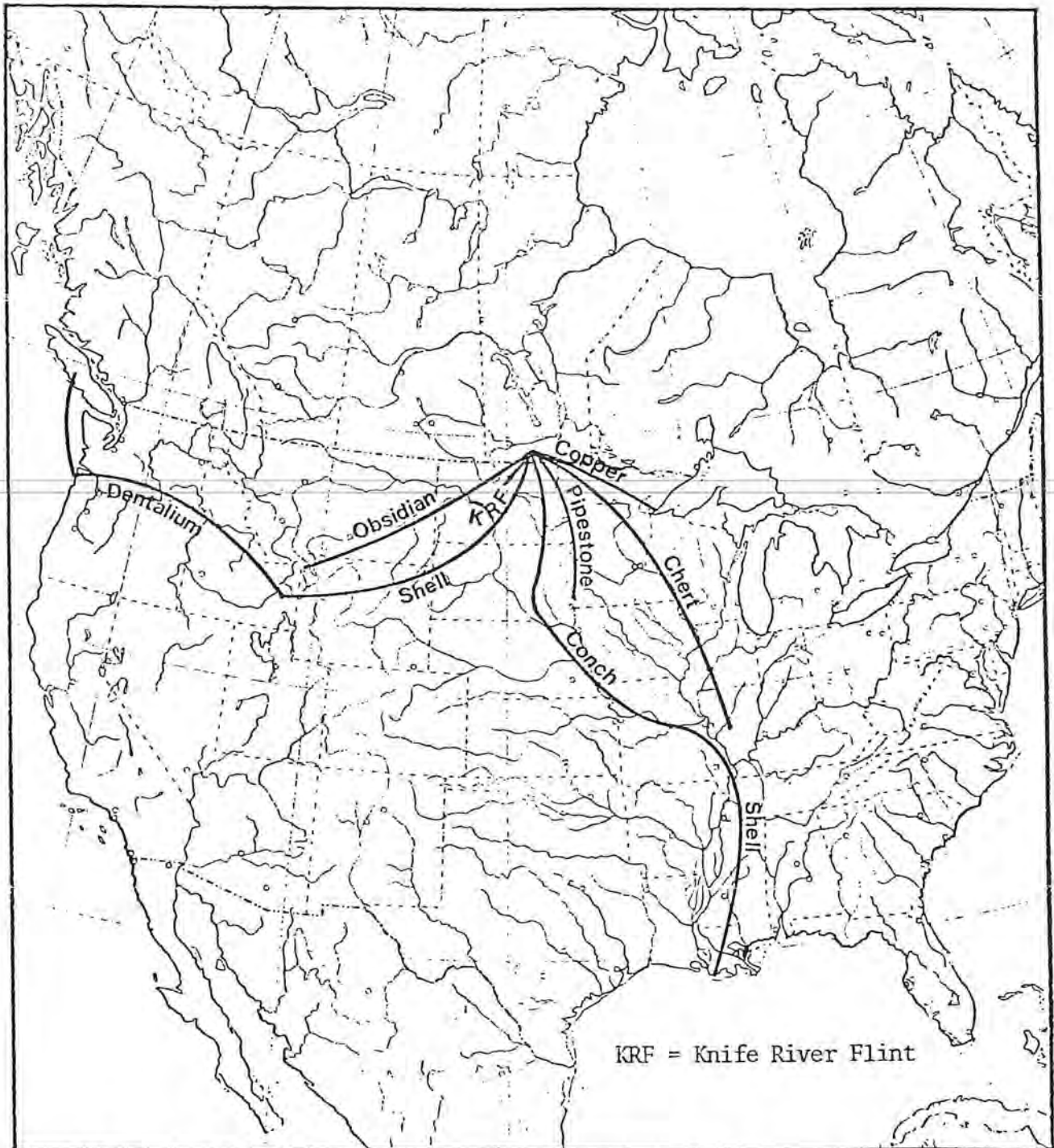


Figure 5A Sources of non-local raw materials found in archaeological sites of Southwestern Manitoba

MATERIALS BEING TRADED FROM TRIBE TO TRIBE AS PART OF A CONTINENTAL-WIDE TRADE NETWORK
 See Figure 5A (above) and Figure 5B (opposite)

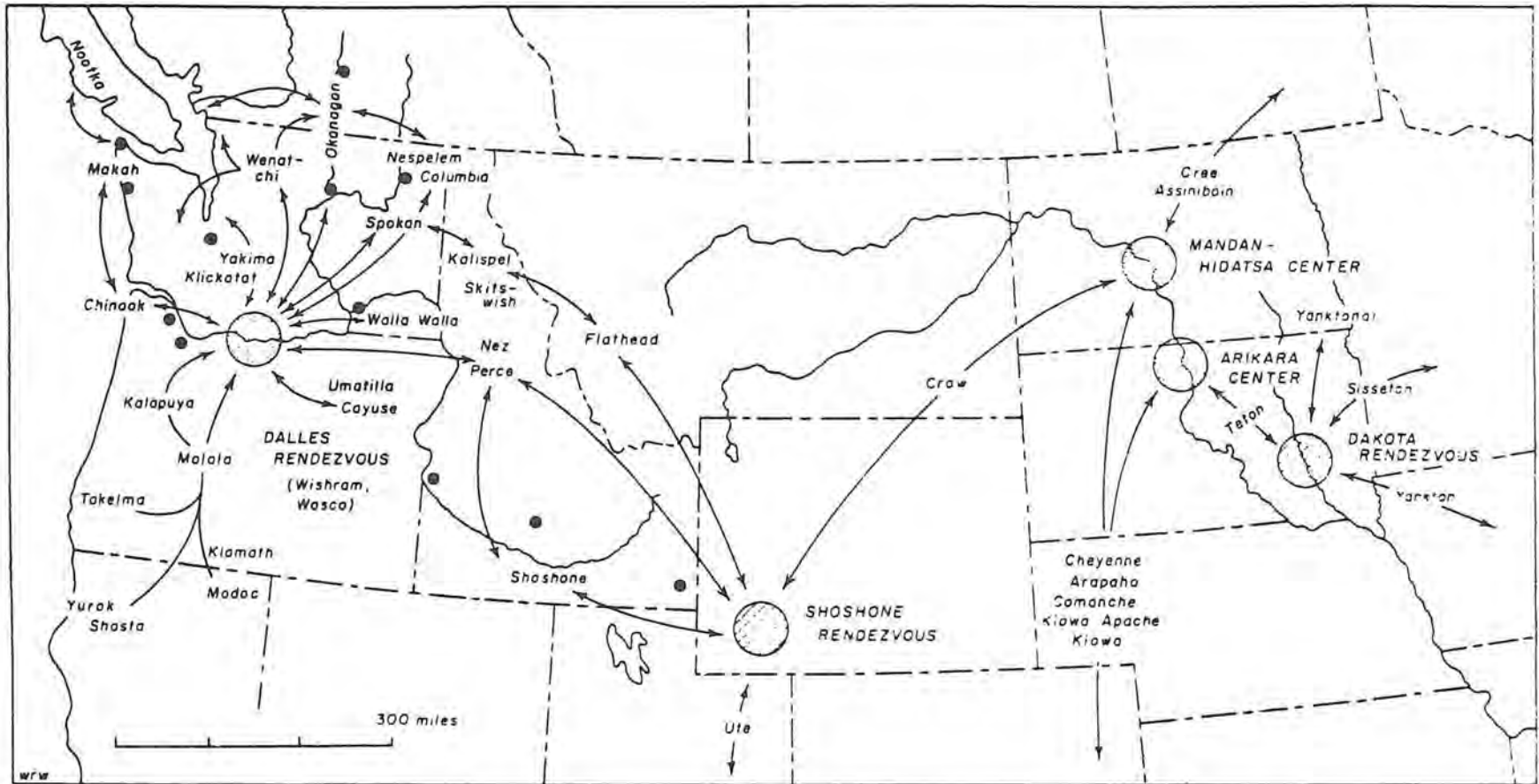


Figure 5B Trade network for historic Indian tribes on the Northern Plains of the U.S.A. (Wood 1972)

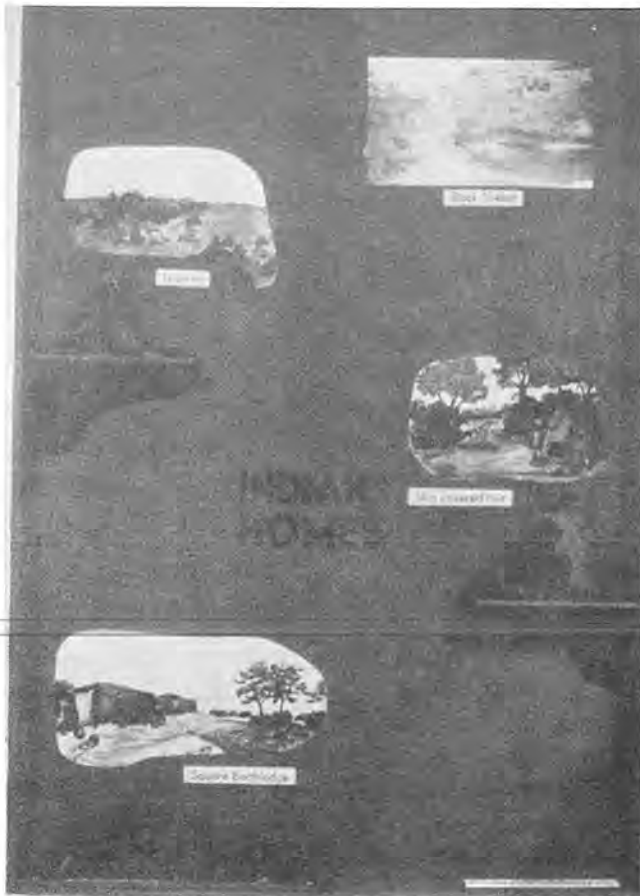


Figure 6 (A and B)

A set of mini reconstructions of Plains Indian houses showing (A) models on shelves with accompanying photographs and (B) models on stepped platforms covered to give sense of landscape.

stone. Men were more often involved with appealing to religious forces and performing religious rituals; most items that involve religious activities can be associated with men.

Women, on the other hand, were involved primarily with food procurement, processing, clothing manufacturing, and the manufacturing of household items. Among the village tribes of the Missouri River, they also looked after the crops and processed the food. Therefore, the list of tools used by women might include bone and stone scrapers for working hide and wood, axes, grooved mauls (as hammers), knives for skinning and butchering, bone and stone awls for making clothes and drilling holes in items, needles for sewing and making nets, and spatulate-shaped tools as bone marrow extractors. Other items included clam shells as containers, bone quill flatteners, bone and hair paint brushes.

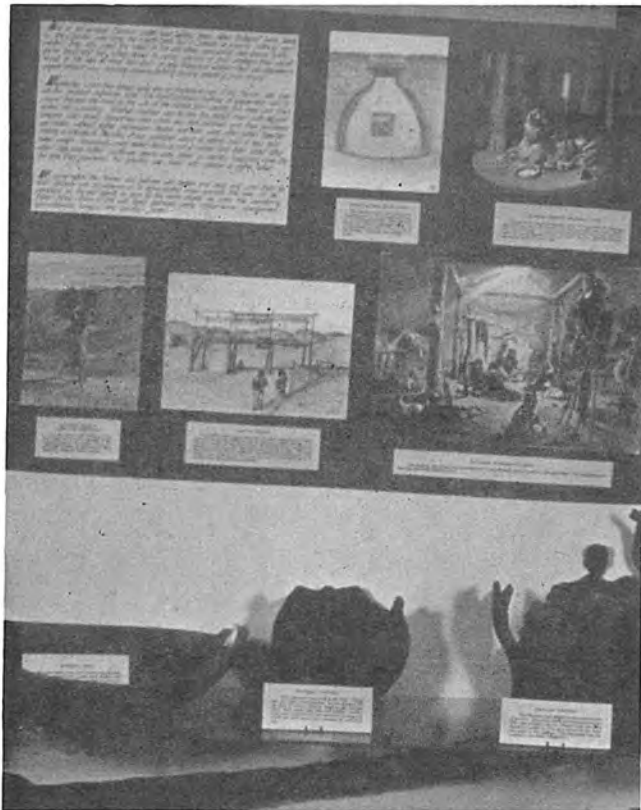
A camp scene, therefore, consisted of numerous people performing a variety of tasks (figure 7).

In addition, children would be playing and learning new skills to become the future adults. A variety of displays can be developed around the manufacturing of tools and activities utilizing them (figure 8).

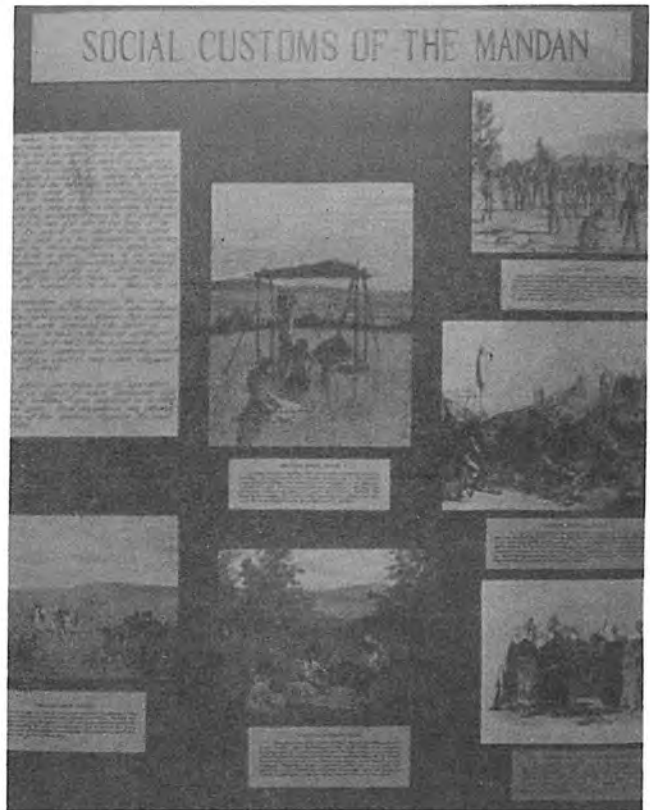
THEME G

Religion and art reflect both the importance of religion and the available time to do more than merely survive.

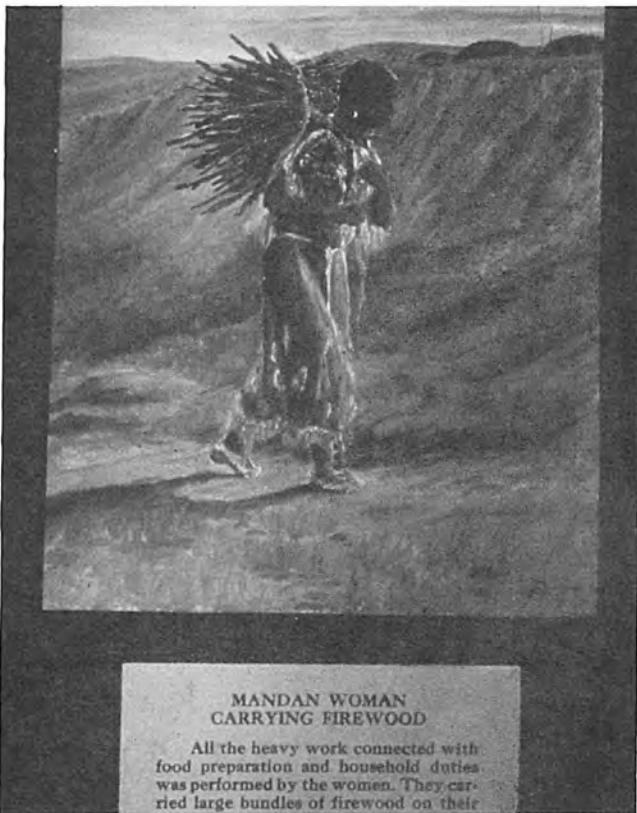
Religion permeated all aspects of Indian life. Several items may be used as the focus of this topic, e.g., petroforms or stone figures associated with religious performances, pictographs or rock paintings reflecting the use of religion and magic, carvings of bone and stone, and carvings on utilitarian items (figure 9). For southern Manitoba many of these items seem to be most common in the Devils Lake Sourisford Burial Complex dating circa A.D. 900-1300. Among the carved stone items are tubular pipes, incized tablets and effigies of bison.



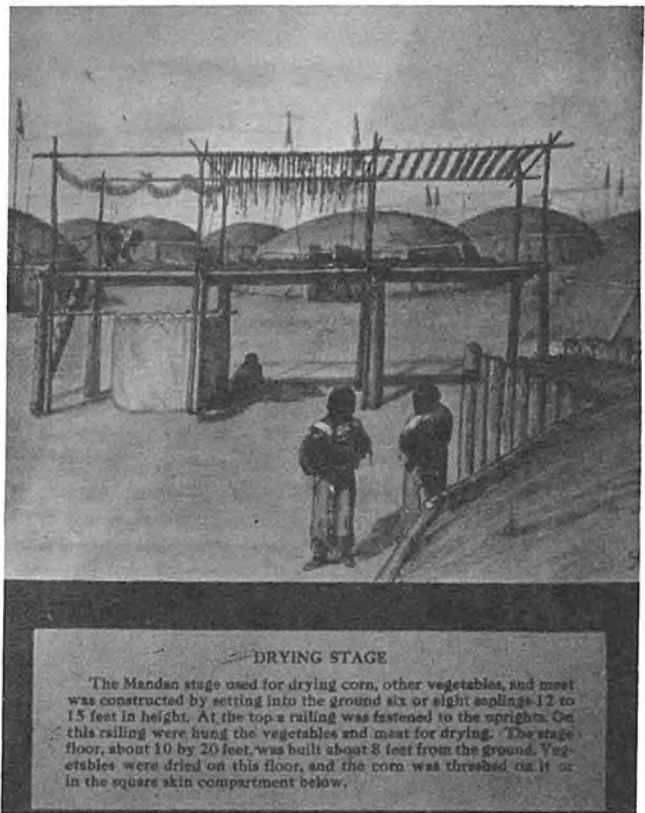
Overview of Mandan Foods and Foods Preparation Exhibit



Overview of Mandan Social Customs Exhibit



Close-up from Foods and Food Preparation Exhibit showing Mandan woman collecting firewood



Close-up showing drawing of food-drying (original use of solar energy for dehydrating foods)

Figure 7 Dynamic displays using a few artifacts plus accompanying photographs and brief captions. (Former exhibit of the North Dakota State Historical Society; originals in colour).



Figure 8 Layout techniques using a limited number of tools and captions in simple cases (these examples are from the Nebraska State Historical Society Museum)

Sources of Information

A successful exhibit requires some background or assistance in obtaining information. I would suggest the following — depending upon what is available to you:

1. Courses in anthropology to obtain a general understanding of tribal societies, courses in archaeology on the identification of archaeological materials, and courses in ethnography or ethnohistory on the traditional lifeways of Native peoples at the time of European contact.
2. Books on archaeology which are available at book stores or libraries of all of the universities and in some public book stores.
3. Publications of the two amateur archaeological societies. These include articles on local collections, and local research problems.

a) **Archae-Facts.** The journal of the Archaeological Society of Southwestern Manitoba, Brandon.

b) **The Manitoba Archaeology Quarterly.** The Manitoba Archaeological Society, Winnipeg.

4. Government publications

The Historic Resources Branch of the Province of Manitoba has published numerous pamphlets and brochures for the public that are free. They have also produced a number of technical monographs on excavations which contain important data on local sites and they are currently preparing a glossary of archaeology terms for the public.

5. Television series

For those who are within the sphere of Winnipeg cable television, there is a programme entitled *Manitoba Archaeology* every second Sunday on Channel 13. For those who cannot get this channel, video-tapes of these programmes are available, free-of-charge, from the Extension Dept., University of Manitoba.

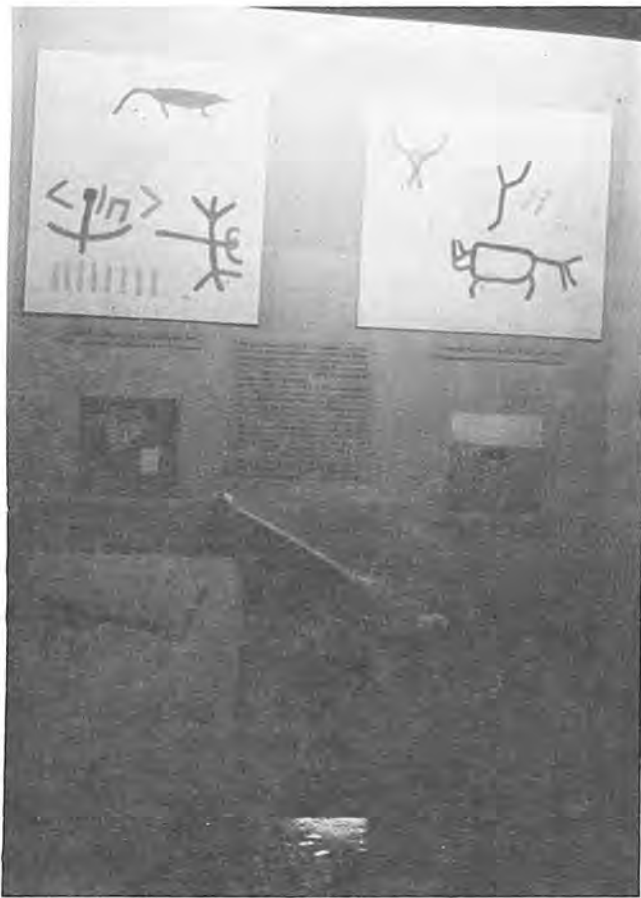


Figure 9 Examples of exhibits of religious tools and features built by Plains Indians, using artifacts and drawings (from the Museum of Natural History, Regina, Saskatchewan)

6. Professional archaeologists

There are several archaeologists associated with various institutions throughout the province. Despite the fact that they work at archaeology five or six days a week, these people are generally, or at least occasionally, available to identify artifacts and to give talks to local groups (Appendix B).

porary or travelling exhibits from time to time.

APPENDIX A – A Selected Partial Sample of Archaeological References

7. Museum exhibits

- a) **Community museums.** A few of the community museums, such as the Antler River Museum in Melita, have identified their materials around some themes.
- b) **University museums.** All three universities have temporary and/or long-term exhibits. Some also have research materials laid out; frequently analysts will take the time to explain the items being analyzed.
- c) **Manitoba Museum of Man and Nature.** This museum is developing archaeological units in all of its galleries. It also has tem-

A. GENERAL

- Hlady, Walter M. (editor) (1970). *Ten Thousand Years Archaeology in Manitoba*. The Archaeological Society of Manitoba.
- Jennings, Jesse D. (1974). *Prehistory of North America*. McGraw Hill Book Co. (Can be purchased at university book stores).
- Pettipas, Leo F. (editor) (1982). *An Introduction to Manitoba Archaeology*. Papers in Manitoba Archaeology, Popular Series No. 3, Historic Resources Branch.

Whiteford, Andrew H. (1973). *North American Indian Arts*. Golden Guide Book. (The best \$2.-\$3 book that you can get; available in most book stores).

B. ARCTIC/SUB-ARCTIC

a. General

1. McGhee, Robert (1978). *Canadian Arctic Prehistory*. National Museum of Man, Ottawa.
2. Gordon, Bryan C. (1981). *Man-Environment Relationships in Barrenland Prehistory, Musk-Ox*, Vol. 28, pp. 1-19.

b. Art

1. Taylor, William E., Jr. and George Swinton (1967), *Prehistoric Dorset Art, The Beaver*, pp. 4-19.

C. NORTHERN BOREAL FOREST

a. General

1. Dickson, Gary (1980). *The Kame Hills Site*. Final Report No. 9, Papers in Manitoba Archaeology. Historic Resources Branch.
2. Wiersum, W.E. and M.A. Tisdale (1977). *Excavations of UNR 23, the Notigi Lake Site*. Publications in Archaeology, Historic Resources Branch.

D. SOUTHERN & EASTERN BOREAL FOREST

a. General

1. Badertscher, Pat (1980). *The 1979 Excavations at FbMi-5, Swan River, Manitoba*. Preliminary Report No. 6, Papers in Manitoba Archaeology. Historic Resources Branch.
2. Buchner, Anthony P. (1980). *Studies in Eastern Manitoba Archaeology*. Miscellaneous Papers No. 10, Papers in Manitoba Archaeology. Historic Resources Branch.

3. Carmichael, Patrick H. (1977). *A Descriptive Summary of Blackduck Ceramics from the Wanipigow Lake Site Area (EgKx-1), 1975 and 1976*. Miscellaneous Papers No. 5, Papers in Manitoba Archaeology. Historic Resources Branch.

4. Gibson, Terrance H. (1976). *The Winnipegosis Site*. Preliminary Report No. 2, Papers in Manitoba Archaeology. Historic Resources Branch.

5. Mayer-Oakes, William J. (1970). *Archaeological Investigations in the Grand Rapids, Manitoba, Reservoir, 1961-62*. University of Manitoba Press, Winnipeg.

6. Saylor, Stanley (1977). *The 1976 Excavations at EgKx-1, Wanipigow Lake*. Preliminary Report No. 4, Papers in Manitoba Archaeology. Historic Resources Branch.

7. Snortland-Coles, J. Signe (1979). *The Duck River or Aschikibokahn Site of West-Central Manitoba: The Role of the Northern Marsh in the Subsistence of Lake Woodland Peoples*. Final Report No. 7, Papers in Manitoba Archaeology. Historic Resources Branch.

8. Steinbring, Jack (1980). *An Introduction to Archaeology on the Winnipeg River*. Miscellaneous Paper No. 9, Papers in Manitoba Archaeology. Historic Resources Branch.

9. Wheeler, Clinton J. (1978). *The Caribou Lake Project, 1977*. Preliminary Report No. 5, Papers in Manitoba Archaeology. Historic Resources Branch.

b. Art

1. Various authors (1976). *Studies in Manitoba Rock Art: I Petroforms*. Miscellaneous Paper No. 2, Papers in Manitoba Archaeology. Historic Resources Branch.

2. Various authors (1978). *Studies in Manitoba Rock Art: II Rock Paintings*. Miscellaneous Papers No. 8, Papers in Manitoba Archaeology. Historic Resources Branch.

E. PLAINS AND PARKLAND

a. General

1. Hamilton, Scott (1976). *The Cultural History of the Harris Site Seen Through the Wong Collection*, Archae-Facts, Vol. 4, No. 2, pp. 2-20 (Journal of the Archaeological Society of Southwestern Manitoba).
2. Carmichael, Patrick (1981). Prehistory of the Turtle Mountain District: An Initial Sketch. Popular Series No. 2, Papers in Manitoba Archaeology. Historic Resources.
3. Syms, E. Leigh (1976). *Early Man Lived 12,000 Years Ago in Southwestern Manitoba*. Canadian Geographic Journal, Vol. 93, No. 2, pp. 64-67.

b. Paleo-Indian Stage

1. Pettipas, Leo F. (1976a). *A Clovis Point from near Manitou, Manitoba*. Archae-Facts, Brandon.
2. Pettipas, Leo F. (1976b). *Environmental Change and Cultural Dynamics during the Paleo-Indian Period with Special Reference to Manitoba*. Papers in Manitoba Archaeology, Miscellaneous Papers No. 1. Historic Resources Branch.
3. Pettipas, Leo F. (1980). *The Paleo-Indian State in Manitoba*. (Free brochure from Historic Resources Branch).

c. Archaic Stage

1. Dyck, Ian (1970). *Two Oxbow Settlements in Central Saskatchewan*. NaPao, Vol. 2, No. 2. (Journal of the Department of Anthropology and Archaeology, University of Saskatchewan, Saskatoon).
2. Haug, James K. (1976). *The 1974-75 Excavations at the Cherry Point Site (DkMe-10): Stratified Archaic Site in Southwest Manitoba*. Papers in Manitoba Archaeology, Final Report No. 1. Historic Resources Branch.

d. Woodland Stage

1. Callaghan, Brian (1979). *A Study of the Ceramics from the Gordon Randall Collection in the Killarney Region of South-Central Manitoba*, Archae-Facts, Vol. 6, No. 3-4.

2. Kehoe, Thomas F. (1973). *The Gull Lake Site: A Prehistoric Bison Drive in Southwestern Saskatchewan*. Publications in Anthropology and History No. 1, Milwaukee Public Museum, Milwaukee.

3. Syms, E. Leigh (1974). *History of a Refuse Pit: Interpreting Plains Camp Activity at a Microcosmic Level*, Plains Anthropologist, Vol. 19, No. 66, pp. 306-315.

4. Syms, E. Leigh (1977). *Cultural Ecology and Ecological Dynamics of the Ceramic Period in Southwestern Manitoba*. Plains Anthropologist, Memoir 12.

5. Syms, E. Leigh (1979a). *The Devils Lake-Sourisford Burial Complex on the Northeastern Plains*, Plains Anthropologist, Vol. 24, No. 86, pp. 283-308. (Also reprinted in Archae-Facts, Vol. 7, No. 1).

6. Syms, E. Leigh (1979b). *The Snyder Dam Site (DhMg-37), Southwestern Manitoba: Two New Ceramic Components*, Canadian Journal of Archaeology, No. 3, pp. 41-67.

7. Tole, Raymond E. (1978). *The Cultural History of the Homer Davis Site Seen Through the John Mountain Collection*, Archae-Facts, Vol. 6, No. 1.

e. Historic

1. Tottle, Terry (1981). *The History and Archaeology of Pine Fort*, Preliminary Report No. 7, Papers in Manitoba Archaeology. Historic Resources Branch.

2. **Research Bulletin.** Numerous short bulletins available by writing Parks Canada.

NOTE:

All publications put out by the Manitoba Historic Resources Branch are free. They include a number of pamphlets as well.

APPENDIX B – Archaeological Groups and Institutions in Manitoba

Provincial Archaeologist
Manitoba Historic Resources Branch
Dept. of Historical Resources & Cultural Affairs
200 Vaughan Street
Winnipeg, Manitoba
R3C 0V8
Telephone: 944-4392

Curator of Archaeology
Manitoba Museum of Man and Nature
190 Rupert Avenue
Winnipeg, Manitoba
R3B 0N2
Telephone: 956-2830

Director of Archaeological Research
Parks Canada, Prairie Region
621 Academy Road
Winnipeg, Manitoba
Telephone: 452-9521

Supervisor, Laboratory of Archaeology
Department of Anthropology
University of Manitoba
Winnipeg, Manitoba
Telephone: 474-9492

Supervisor, Laboratory of Archaeology
Department of Anthropology
University of Winnipeg
515 Portage Avenue
Winnipeg, Manitoba
Telephone: 786-7811

Staff Archaeologist
Dept. of Sociology and Anthropology
Brandon University
Brandon, Manitoba
Telephone: 728-9520

Manitoba Archaeological Society
P.O. Box 1171
Winnipeg, Manitoba

Archaeological Society of Southwestern Manitoba
Box 50, Brandon University
Brandon, Manitoba
Telephone: 728-9520



**An 800-year old pot made by the Plains Indians,
decorated with four abstract mythological creatures**

Control of Insect Pests in a Small Museum

CATHERINE COLLINS

Assistant Conservator

Manitoba Museum of Man and Nature

Insects are the most prolific inhabitants of the earth. Just over 86,000 species have been described in North America alone. Fortunately, only a few can survive in the artificial environment found in a museum. Insects feed on certain materials in the wild and will consume the same type of materials on objects in museum collections. Since insects by nature are resilient and adaptive, they can present a great hazard to a museum collection.

To prevent damage of the collection by insects, many large museums subscribe to the practice of fumigating all incoming artifacts and organic materials destined for entry in storage areas and exhibition halls. This practice calls for an in-house fumigation chamber and also assumes that the chemicals used in fumigation have no adverse effects on any materials contained in the treated artifacts. This is not always true. This preliminary fumigation, however, is not intended to be a substitute for a thorough programme of pest control. Fumigation does not confer on the treated objects any subsequent resistance to attack by insects, as the chemicals, used properly, have no residual effect. There is no point in fumigating an object if it is stored thereafter in a dark, dirty, humid, rarely-visited area — conditions in which insects flourish.

Every museum must have an all-encompassing policy for the control of insect pests. This policy includes good housekeeping throughout the building, systematic inspection of the museum collection, environmental control and vigilance for insects on the part of the staff. On this account, the small museum has a decided advantage over a large institution with extensive varied holdings.

Figure 1 outlines a programme designed for the control of insect pests. The programme commences with the inspection of all incoming artifacts and continues with preventative measures, such as good

housekeeping and periodic surveillance of the collection. This system is supplemented when necessary by judicious use of an appropriate insecticide. Identification of any pests is vital to the selection of a method to eliminate the infestation. By following this programme, it is possible to minimize damages to a museum collection by insects with minimal risk to the artifacts and staff.

Common Insect Pests

Before undertaking a programme for their eradication, it is necessary to identify the species of insect. Identification will distinguish between those insects that are a genuine threat to museum property and those that are misplaced from their environment and hence will die naturally before completing a life cycle. The insects commonly encountered within Canadian museums are wood-boring beetles, clothes moths, and carpet beetles. Other less common pests include silverfish, firebrats, booklice, cockroaches, hide and larder beetles.

Wood-boring Beetles

The powder post beetle (*Lyctus* spp.) and the furniture beetle (*Anobiid* spp.) are occasionally encountered in Canadian collections. The former prefers to feed on the sapwood of poorly-seasoned hardwood, rare in old museum artifacts. The furniture beetle infests both hard and soft woods, especially old wood and may also feed on wickerwood and the cheaper grades of plywood.

The infested wood is damaged primarily by the small, white, common-shaped beetle larvae. The larvae chew through the interior of the wood filling the excavated areas with a mixture of faecal matter and macerated wood known as "frass". Eventually the voracious grubs cease feeding and enter an inactive pupal stage within the wood. The emergence of the

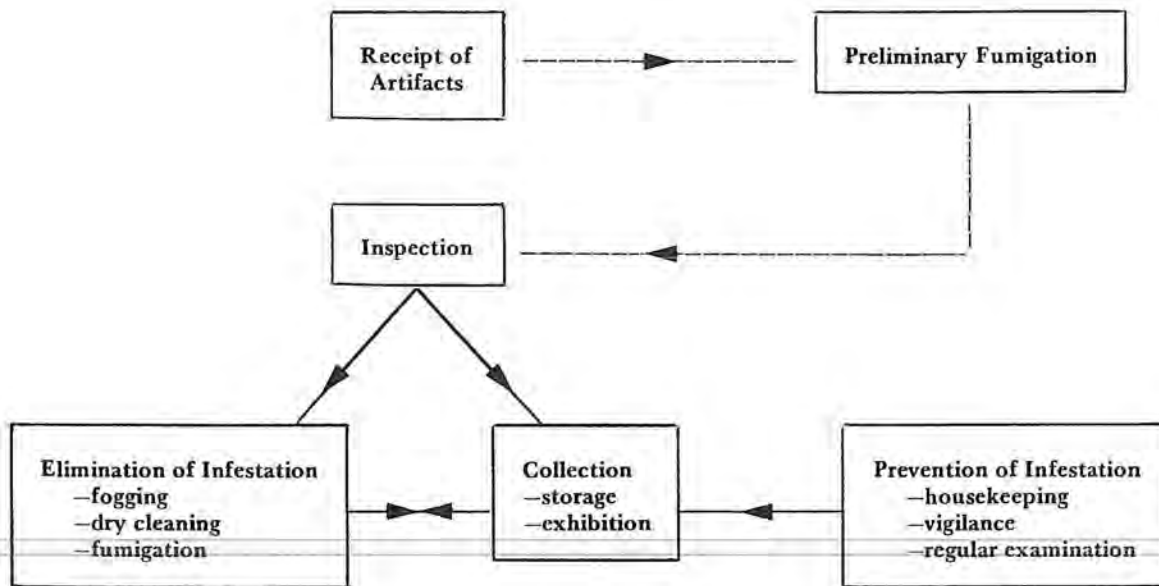


FIGURE 1 – A STRATEGY FOR THE CONTROL OF INSECT PESTS WITHIN A MUSEUM

adult beetles results in the appearance of exit holes on the surface of the wood. Any other material covering the surface—paint, paper, metallic leaf, and leather—may be damaged as well.

The adult beetles are dark reddish-brown in colour, measuring between 2.5 and 5 mm in length. The female completes the insect's life cycle by mating, then depositing eggs on a wooden substrate. Crevices, joints, old exit holes and rough surfaces, such as the undersides and backs of furniture, are preferred areas. After a brief incubation of a week or so, the eggs hatch and the new larvae begin to burrow in the wood.

Fortunately, these insects are now less of a threat to collections than was once believed. The beetles cannot reproduce in wood which is less than 10% by weight of water. Wood which is stored for an extended period of time at relative humidity levels of less than 50% will be too dry to sustain them. Although wooden artifacts entering the museum from outside may be infested with wood-boring beetles, once inside the dry museum the insects will die out within a generation or so. An exception are ethnographic objects that have been treated in use with animal oils. These should be inspected regularly as they may maintain a sufficiently high moisture content to support the larvae of wood-boring beetles.

Clothes Moths and Carpet Beetles

Artifacts containing keratin and chitin are susceptible to attack by clothes moths and carpet beetles. Keratin is a protein comprising hair, horn, feathers, hooves, claws and baleen while chitin is the main ingredient of the exoskeleton of insects. In the museum, these pests will damage a variety of objects including pelts, woollens, quillwork, mammal, bird and insect specimens.

Canadian museums may harbour two species of clothes moths: the webbing clothes moth [*Tineola biseliella* (Hummel)], also known as the common clothes moth, and the casemaking clothes moth or fur moth, [*Tinea pellionella* (L.)]. The discovery of the adult moths, white to silvery grey in colour and about 1.5 cm across the wingtips, is usually the first indication of an infestation within a collection. However, it is the larvae which are responsible for the damage to objects. The larvae spin white larval cases or feeding tunnels: the casemaking clothes moth larvae produce small, compact larval cases while those of the webbing clothes moths are stringy and silky.

Unlike the larvae of clothes moths, the carpet beetle larvae move about as they feed, thus the damage they inflict is not localized. On woollen fabrics the larvae eat the nap and leave the base, and on furs, they shear the hairs close to the hide. Carpet

beetle larvae may damage cotton, jute, silk and even wooden objects that have been assembled with proteinaceous adhesive. The larvae are yellow to brown grubs, measuring 5 to 13 mm, and are covered with fine, dark hairs. Since they shun light and they are rarely seen, evidence of their presence is apparent from cast-off skins shed during growth.

The adult carpet beetles are oval, about 3 mm in length and mainly grey to black in colour. In Canada there are three common species: the varied [*Athrenus verbasci* (L.)], the common [*Athrenus scrophulariae* (L.)], and black [*Attagenus megatoma* (Fabricus)]. The adults can be distinguished by the scale patterns on the wing covers. The varied and common carpet beetles have mottled wing covers with irregular patterns of white and reddish-orange scales on a dark background. The black carpet beetle is uniformly black or dark brown.

Other Pests

There are several additional insect pests that may occasionally be spotted in museum collections. These are either associated with particular activities, or else are indicative of certain environmental conditions which require immediate attention.

Hide Beetles

In the wild, hide beetles [*Dermestes maculatus* (De Geer)] subsist on dried flesh. Zoologists use these insects in captivity to clean the bones of specimens. These beetles are omnivorous and voracious. It is advisable to keep beetle colonies outside a museum. Any incoming cleaned bones must be scrupulously inspected, especially the interior cavities of skulls and hollow shafts of long bones.

Larder Beetles

Frequently a resident of catering establishments, the larder beetle [*Dermestes lardarius* (L.)] occasionally infests museum collections. Its presence usually indicates inadequate supervision of caterias and staff rooms. Both the adults and larvae are injurious. The larder beetle, like the hide beetle, is omnivorous and potentially very destructive. Larder beetles are oval, 6-8 mm long and black with a yellowish band across the middle of the wing covers. The larvae are brown hairy grubs, 7 mm long at maturity.

Silverfish, Firebrats and Book Lice

These insects do not have larvae or pupae but hatch from eggs as nymphs. The nymphs are identical to the adults, but much smaller and usually molt several times before reaching maturity. Both the nymphs and adults are harmful to museum objects.

Silverfish [*Lepisma saccharina* (L.)] and firebrats [*Thermobia domestica* (Packard)] can be easily recognized by two antennae and three tail-like appendages. Both will grow up to a centimeter in length at maturity. Silverfish are pearly grey in colour whereas firebrats are mottled grey. They feed on starch, sugar and protein sizes, gums and glue.

Booklice [*Liposcelis divinatorius* (Muller)] are minute grey and white insects no larger than a pinhead. Typically found in the pages of musty old books, these insects are also capable of damaging protein glue, starch paste, leather, cotton and silk.

All three of these insects share a preference for warm, very moist conditions. Their appearance in a building is an indication of an excessively damp micro-environment arising, for example, from a leaky roof, pipe or sink — conditions requiring immediate attention.

Cockroaches

Four species of cockroaches may occasionally be spotted in museum collections and in libraries. These are the american [*Periplaneta americana* (L.)], oriental [*Blatta orientalis* (L.)], german [*Blattella germanica* (L.)] and brown-banded cockroach [*Supella longipalpa* (Fabricus)]. Depending on the species, these insects vary from 12 to 38 mm in length at maturity and are tan to dark brown in colour.

Cockroaches have characteristically flat, broad bodies which allow them to hide in cracks and crevices during the day and to emerge at night. They favour the paste and glue in bookcovers but will eat through cloth and paper spines of books in order to reach these foods. At the same time, they excrete a dark-coloured liquid which can stain the infested items.

A. PREVENTATIVE MEASURES

The backbone of a museum's policy for pest control should consist of a number of preventative measures. These require some investment of time and diligence on the part of the museum's staff.

1. Inspection of Incoming Material

When an object enters the museum, it should be unpacked for inspection in a separate restricted area. A special room designated as a "Holding Area" should be set aside to receive and hold all incoming material until it can be certified to be free of pests. Ideally this area should be located next to the museum's loading dock. It should have a separate ventilation or air-conditioning system. If this is not feasible, the existing connections to the museum's

ventilation system (vents, ducts, etc.) should be physically sealed off from the rest of the system, as these can be routes for the escape of insects out of the holding room and into the entire museum.

In the holding area, newly-received objects, together with their containers and packing materials, must be examined closely for signs of insect infestation. Bear in mind that the active larvae of most museum pests prefer dark, sheltered areas. In examining a garment, for example, look under collars and flaps, open folds and seams, etc. On furred items, look around the sheltered bases of the hairs. Keep any insects or insect debris that you might find for identification.

On inspecting wooden objects, check joints, cracks, undersides and any unfinished, rough areas. Look for the flight holes made by wood-boring beetles. Check around these holes for the presence of fresh "frass", the powder made by tunnelling beetle larvae. This may not always indicate an active infestation since any movement of the object could dislodge old frass from insect tunnels within the wood. To resolve the question of whether the frass originates from an old or new infestation, clean out some of the apparently active holes, then place the object with the clean holes located over a piece of fresh paper. Leave the item undisturbed for a few days. The subsequent appearance of fresh frass tends to indicate an active infestation of wood-boring beetles.

Insects may be carried into the museum on items other than artifacts such as floral arrangements and display and packing materials. Travelling exhibits and artifacts on loan should not be exempt from inspection for pests. In addition, there is always the chance that insects can enter a building through an indirect route such as roof exits, air-exhaust louvres, and unsealed windows. These additional routes of entry necessitate constant vigilance for pests on the part of the entire staff.

2. Good Housekeeping

Good housekeeping is a critical factor in the control of museum pests. Aside from being detrimental to all types of objects, dust and debris provide shelter for insect eggs and larvae. Some soiled materials are actually more enticing to pests in a dirty condition. All items which are potential breeding grounds for insects should be cleaned before entering storage. Often all that is required is a thorough vacuum cleaning and dusting with a soft brush. If you are in doubt, it is advisable to consult the Museums Advisory Service to avoid damaging an object in the process of cleaning. Some objects, particularly ethnological materials, should not be

cleaned since removal of the "dirt" may destroy evidence of the object's use.

The maintenance of a clean environment, particularly in the storage areas, is essential for the prevention of insect outbreaks. It is advisable to follow a regular housekeeping schedule for these areas—vacuum shelves, cracks, baseboards, etc. Use a light-weight vacuum cleaner with disposal bags which can be burned after use or bagged in plastic and discarded the same day. Insect repellants can be painted on low-lying fixtures in storage areas. Insect traps containing poisoned bait can be placed in storage for the control of crawling insects.

Food preparation, eating, and storage should be discouraged in areas where the museum collection is stored, catalogued or exhibited. These activities attract rodents and insect pests, not to mention risk soiling artifacts.

3. Inspection of Stored Artifacts

Storage areas tend to be dark and infrequently visited — two factors which account for the crisis proportion of most insect outbreaks. It is, therefore, advisable for the curatorial staff to follow a systematic and regular inspection of the collection for signs of insect activity.

4. Vigilance

Constant vigilance throughout the entire museum is as an important part of insect pest control as regular inspection and cleanliness of the museum collection. Every member of the museum staff should be acquainted with the damage that insects can inflict. All staff members should be on the alert for any signs of insect infestation throughout the museum — in stairwells, hallways, workshops and basement areas; as well as storage facilities and galleries. Once again, please remember to trap insects for identification purposes.

B. METHODS FOR THE CONTROL OF AN ACTIVE INFESTATION

Once an insect outbreak has been identified, there are a number of options for the eradication of the pests. The choice of methods will depend on a number of factors: the extent of the infestation; the types of material involved; the insects; and practical factors such as cost and labour. The insecticidal treatment may entail sterilizing other items, such as display cases and mounting materials, which may have been in contact with infested materials.

TABLE 1

SCHEDULE FOR INSECTICIDES FOR USE IN A SMALL MUSEUM

INSECTICIDE	PRODUCT NAMES	EFFECTIVENESS	DIRECTIONS FOR USE	DOSAGE	PRECAUTIONS
Dichlorvos	Vapona, No-Pest Strip (contains 20% dichlorvos)	A contact and stomach poison with fumigant action, effective against flying & crawling insects	Use to fumigate infested items in an airtight box or bag for at least one month at 25°C (77°F). Cut an appropriate size of strip for the enclosed volume. Hang above artifacts	One strip per 1000 ft ³ (28m ³) for 3-4 months only	Handle with gloves in well-ventilated area. Do not allow contact with artifact
Paradichlorobenzene	PDB, PARA, Paracide, Paradow, also found as major ingredient (99%) in deodorant blocks	Fumigant action against carpet beetle larvae and clothes moths	Crush blocks into flakes for use. Suspend in an airtight case or bag for not less than one month at 25°C (77°F)	1 lb/100 ft ³ (450g/28m ³).	Handle with gloves in well-ventilated area. Avoid breathing vapours. May soften some varnishes, plastics, and wax and tarnish metallic threads. Forms chlorine gas in closed container that may bleach specimens. Do not allow contact with specimens. Effective against mildew.
Naphthalene	Moth flakes, moth crystals	Use as a repellent for clothes moths	Same as Paradichlorobenzene	1 lb/1 ft ³ (450g/.028m ³)	Handle with gloves in a well-ventilated area. Do not allow contact with specimens
Pyrethrin and its synthetic variations (pyrethrin, resmethrin, allethrin, etc.	Raid House and Garden Bug Killer, Black Flag, Ortho Home and Garden Spray (contains 0.25% pyrethrin)	Contact poison for use in knock-down sprays against flying and crawling insects	See manufacturer's directions	See manufacturer's directions	Do not spray artifacts directly as staining may occur. Avoid breathing vapours

1. Fumigation

Fumigation is a sterilizing technique in which an infested object is exposed to a lethal concentration of a gaseous, toxic chemical known as a fumigant. The fumigant may be supplied as a liquid, solid or gas, but regardless of its initial state, it performs its functions as a gas. This property enables the toxic materials to penetrate the infested items, including the insect respiratory system and to diffuse away afterwards.

Fumigation must be done in an enclosed, airtight space, otherwise a sufficiently toxic concentration of a fumigant may not accumulate. Some fumigants will kill eggs, larvae, pupae and adults in one treatment (ethylene oxide, methyl bromide). Others need either two exposures or a sustained treatment. The residual toxic effect of fumigants on insects are negligible.

Fumigation is a very versatile technique. It can be done on a large scale in buildings, under tarpaulins or in specially-designed chambers. A simple form of fumigation can be carried out on a small scale within a museum without resorting to the use of a costly chamber. Articles to be treated can be placed in an airtight container along with an appropriate quantity of a solid volatile insecticide such as Vapona (20% dichlorvos strips), paradichlorobenzene or naphthalene (*See Table 1 for details*). A metal or sealed wooden chest is preferable. Large plastic refrigerator containers are also useful for small items. Flexible articles such as clothing and furs may be sealed individually in polyethylene bags. Unpunctured heavy grade garbage or leaf bags are excellent. The insecticide should not be placed in direct contact with the enclosed artifact. It should be placed in a small muslin or net bag and suspended above the items in treatment since the toxic gases are heavier than air. During the time of enclosure, it is important to maintain a temperature of about 25°C. Fumigants used in this fashion will not kill the insect eggs. Provided this temperature is maintained, the eggs will hatch and attain a vulnerable stage of development within 20 to 30 days. Items to be fumigated must remain enclosed for at least one month, longer if possible. After a suitable time has passed, open the bags in a well-ventilated area and allow the contents to air for several hours before handling the items. The treated contents may be gently vacuumed through a nylon screen to remove the dead insect fibres.

2. Fogging

Fumigation is often confused with another insecticidal treatment known as fogging or spraying. Fogging consists of spraying an infested area with

a solution of an insecticide using a specially designed atomizer or fogger. This device produces a cloud of droplets so fine and light that they float on air and are carried throughout the area. Unlike fumigation, the lethal chemical cannot penetrate the materials treated. Fogging merely distributes the insecticide over all of the exposed surfaces and hopefully on the unwanted insects. Only the insects which are touched by the insecticides will be killed. The larvae of many museum pests tend to burrow into sheltered areas to pupate and will be protected against anything short of fumigation. Also, the hard wing covers of adult beetles and hair on the larvae of carpet beetles and clothes moths may prevent the poison from contacting the soft vulnerable tissue beneath.

It is doubtful whether a small museum will have either the fogging unit or safety equipment required for fogging. Seek out a reputable commercial exterminator. The success of fogging depends on the observation of the following guidelines:

- i) The infestation must be localized and physically confinable; seal all escape routes for insects, i.e. doors, windows and ventilation ducts with tape and polyethylene.
- ii) When fogging, avoid directing the spray on artifacts as dampening with the volatile solvent in the insecticide formulation may cause staining.
- iii) After spraying, leave the area sealed and undisturbed for at least 12 hours, then flush the area thoroughly with air before activity resumes.
- iv) Repeat the fogging within 20 to 30 days in order to eliminate any new insects which will have hatched from the eggs that survived the initial treatment. Keep the treated area at about 25°C in the interim.

Owing to its limitations, the risk of staining the artifact and the use of non-residual contact insecticides, fogging may not be an appropriate solution to an insect outbreak amongst the collection. However, it is still a suitable way to sterilize an area in preparation for receipt of incoming material or after the removal of infested material.

3. Spray Bombs

Insecticides in aerosol cans are just an expensive method of fogging. The manufacturers of these products are limited by law to the use of non-residual, knock-down insecticides which kill only on contact. Spray bombs are a convenient, temporary treatment and are useful in containing an infestation

until it can be eradicated more effectively. As in fogging, do not spray objects directly—the propellants and diluents in these formulations may damage artifacts.

4. Dry Cleaning

Dry cleaning is one of the best methods to protect woollen textiles against clothes moths. The action of the dry cleaning solvents will kill any existing infestation, including eggs. Dry cleaning also precludes reinfestation. The larvae of clothes moths cannot survive on a diet of pure keratin alone, i.e. clean wool, but requires sugars and proteins found on raw wool or wool soiled by wear.

Not all woollen items can withstand dry cleaning. Many fabrics are too fragile to withstand the tumbling and air drying involved in dry cleaning. The dyes may not be fast in dry cleaning fluids. A woollen garment may have other components, such as plastic or celluloid buttons and beads, synthetic and silk lining materials, which cannot be dry cleaned. Every material contained in a garment must be first tested to ascertain whether it will be damaged by the dry cleaning fluids.

5. Other Methods

There are several additional methods for the control of insect outbreaks which are of limited use within the museum context. These are reviewed briefly as they are frequently encountered as suggestions:

a) *Mothproofing*

As protection against moths and carpet beetles, many woollen fabrics and fur goods are treated by "mothproofing". Mothproofing can be done by the manufacturer, at dry cleaning establishments, or by the consumer using aerosol mothproofing sprays. Mothproofing formulations are much like spray bombs, and contain an active insecticide, presently a supposedly low toxicity organochloride called methoxychlor, dissolved in a volatile solvent such as xylene, deodorized naphtha or mineral spirits. Perfumes and an aerosol propellant are also added. Mothproofing is not recommended for use on museum artifacts. The solvents and propellents may damage dyes and paints and have a degreasing quality which is detrimental to the natural oils on furs. In addition, labels on mothproofing sprays specify that the articles to be treated are clean, otherwise the soil may react with the mothproofing solvents to cause staining. However, not all museum items can be readily cleaned.

b) *Light, Cold, Desiccation*

For every species of insect there is an optimum humidity and temperature for growth and reproduction. Theoretically, the manipulation of these conditions might provide a way to control an outbreak of insects.

Many old-fashioned household remedies for the eradication of insects are based on the principle of moving the infested material into an environment unsuitable for the insects. For example, it is frequently suggested that clothing infested with moths or carpet beetles be exposed to hot sun or sub-zero temperatures. While it is true that the larvae of both will die on prolonged exposure to sunlight, the larvae can take cover quickly and survive. In addition, sunlight will not kill insect eggs. When larvae are exposed to freezing temperatures, they become comatose. As a result, their metabolic rates are lowered and they cease to feed until normal temperatures are restored. By delaying development, the insects can survive unfavourable environmental conditions and starvation. These old remedies are stop-gap measures, useful for the postponement of a rampant infestation. Provided an object is not harmed by treatments like desiccation, freezing or exposure to bright sunlight, and few museum artifacts would not be drastically affected, these measures might have some emergency application.

C. INSECTICIDES AND THEIR USE IN A SMALL MUSEUM

Safe and intelligent use of any insecticide requires an understanding of its use, mode of action, limitations and toxicity.

1. Definition of an Insecticide

An insecticide is a chemical having a toxic action on insect life. There are four basic modes of action of insecticides: stomach, contact, fumigant and residual. Many insecticides fall into more than one category. Stomach insecticides must be ingested in order to have an effect and are thus included in food baits or applied to surfaces where insects feed. Contact insecticides act through the soft tissues of insect bodies. The hard wing covers of beetles and the hairs on larvae may protect them from the necessary body contact with this type of insecticide. Fumigants are volatile, toxic chemicals which enter the insects through their respiratory systems. Residual insecticides are those whose poisoning action persists long after application. Organochlorides like DDT are examples of residual insecti-

cides. The sale and use of residual insecticides is now largely prohibited across North America.

The ideal insecticide is one which will kill all stages in the life cycle of an insect pest without affecting non-target organisms and the infested object. This insecticide should be easy to administer, inexpensive, quick-acting and non-residual for anything except insects. Almost every chemical that is toxic to insects is also toxic to humans to some degree. Commercial insecticide formulations may include other ingredients, solvents, propellants, perfumes and so on, which may be inappropriate for application to museum artifacts.

2. Toxicity and Consumer Protection

All insecticides for sale in Canada must be registered with Agriculture Canada under the Pest Control Products Act. Provincial and local governments may impose further restrictions on the use of a particular chemical. By law, each product must be labelled in accordance with its registered use. The label gives the following types of information: guarantee (in terms of percentage of active ingredients); marketing type (domestic, commercial or restricted); categorization (insecticide); formulation (solution, pressurized spray, etc.); precautions for use; directions for use. The label may also list additional ingredients such as solvents and synergists. The latter are compounds added to increase the effectiveness of the main insecticide. It is your responsibility to acquaint yourself with the information provided on the product package. The user's greatest protection against accidental injury or poisoning lies in reading the label. If you do not read, understand and follow the label instructions, do not use the product.

3. Insecticides for Use in the Small Museum

Table 1 contains a schedule for the use of insecticides presently available to curators of a small museum. Because few small museums have access to a fumigation chamber, the use of fumigants such as ethylene oxide and methyl bromide is not discussed. This topic is covered succinctly in publications listed in the bibliography.

In summary, the control of insect pests in a museum is not an easy task. In the long-term interests of the environment, the days of broad-spectrum re-

sidual insecticides have passed. The current approach to pest control is a conservative one based on a number of preventative measures and supplemented with the use of relatively low toxicity insecticides.

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Interpretation and the Community Museum

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What is interpretation? The word has been bandied about at great length for the past ten years. Everyone is setting up interpretation divisions. Federal, provincial and city governments are hiring interpreters for their parks. A result of this interest in interpretation has been the formation of Interpretation Canada—an organization made up of interpreters from various government departments such as Parks Canada and the Manitoba Historic Resources Branch, wildlife services, and community museums. The five chapters of Interpretation Canada—Western, Central, Ontario, Quebec, Maritime—meet annually to discuss problems, exchange ideas and talk about new developments. Although interest in interpretation methods has grown tremendously over the past few years, the concept remains fairly straight forward. The aim of good interpretation is to present a body of information to the visitor in an interesting and enjoyable fashion. Rather than “educating in the traditional sense of the word”, our job is to stimulate minds and imaginations so that they will extend beyond the artifact, the exhibit, or the demonstration to try to find out more about a particular subject.

Interpretation methods need not be restricted to large institutions with large budgets. By investing time, and some imaginative thinking, community museums can utilize straight forward, inexpensive, and effective interpretation methods. The degree of sophistication you choose to develop depends upon the amount of time and funding you have to invest. Let me emphasize, however, that an elaborate interpretation programme does not necessarily guarantee success. I have seen exhibits with considerable funding completely fail to reach the visitor. On the other hand, I have been taken through small community museums by individuals who have made the entire collection come alive.

There are a number of factors you should consider before your museum proceeds to develop an interpretation programme. Probably the first question you should ask yourself is just what is the purpose of your museum? Your organization was set up for a reason. What is it? Is it to preserve a certain group's way of life? Is it to preserve a local



The blacksmith interpreting his trade at Lower Fort Garry National Historic Park
Parks Canada



Hanging out the laundry on a windy day—an added touch that brings to life the Engineer's Cottage at Lower Fort Garry
Parks Canada

region's history? This broad, general purpose can then be broken down into a number of smaller topics or themes. It may seem like an exercise in the very obvious, however, it is necessary in order to establish a clear, set direction for an interpretation programme to follow.

Similarly, identify the type of visitor you are trying to reach. Are your visitors mostly local people who visit your museum on a number of occasions throughout the year, or are they travellers making their one and only visit? Are there a large number of school children visiting your museum? These are very necessary questions to ask before you develop an interpretive programme.

You must also consider potential locations for your programme. Do you want it to take place entirely in the exhibit area, or would you prefer an orientation/introduction area where groups can assemble before they see your programme.

Naturally, the amount of funding available to your museum is of great importance. You must assess your greatest needs and determine what you can afford. Interpretation is more than just a large, flashy exhibit.

Most importantly, you must take into consideration the type of people you have working for you. Are they paid staff or volunteers? How many hours do they work? What type of training do you provide for them?

Once you have examined these variables, it should not be that difficult to set up an interpretation programme that will meet the needs of your museum.

Didactic Exhibits

For most visitors, the most visible aspect of any museum is the exhibits. For this reason, considerable care should be given to exhibit development. Once again, you must determine what is the

purpose of the exhibit. What would be the answer if you were to ask a visitor to your museum what message he or she thought you were trying to communicate. If there is a fair degree of uncertainty, then maybe you should reconsider your approach. It is fine if your museum chooses to simply display a number of interesting artifacts in a pleasing manner, however, most interpretive programmes go further. It is important to address questions such as what were the artifacts used for? When were they used? Who used them? Was the period in which they were used significant to the history of the area? The manner in which you deal with questions of this nature will determine how successful your exhibit will be.

Obviously, your exhibits will be effected by the amount of funding and expertise you have at your disposal. Do not select techniques which you do not have the expertise to develop. In addition to being very expensive, dioramas are extremely difficult to do well. Choose a method which will suit your purpose as well as provide as professional an appearance as possible.

Publications and Posters

Many visitors enjoy leaving a museum with a memento of a pleasant experience. A poster or a nice brochure often fills the bill. Again serious thought should be given to its purpose. A brochure could reflect the history of the community or simply be a guide to interesting historical resources in the area. Why not consider something designed to keep children-occupied in the car such as colouring books, puzzles, etc.?

Do you have some interesting photographs which you feel would interpret the theme of your museum? Is there a local artist who could do something for you? The Museums Advisory Service offers a layout service—contact them for advice.

Interpretive Tours

One of the most enjoyable ways to discover a community museum is to be guided by a knowledgeable and enthusiastic individual. This again gets back to the definition of interpretation—presenting a body of information in an interesting and enjoyable fashion. To do this, an interpreter must have two basic tools—a strong knowledge of the subject matter and the skills to convey this information to the visitor. I feel both are equally important. You can be the most effective speaker in the world, however, it soon becomes evident to the visitor if you do not know what you are talking about. Similarly, you may be a walking encyclopedia of information but if you cannot select material and present it properly, you will confuse the visitor. In most cases, the visitor looks upon museum personnel as “the experts”. Although that is a pretty high expectation, you should try to meet it as much as possible.

To obtain the knowledge, a person must have good, basic, pertinent information. The museum should provide some basic reading material for research purposes. Of course, there is always the

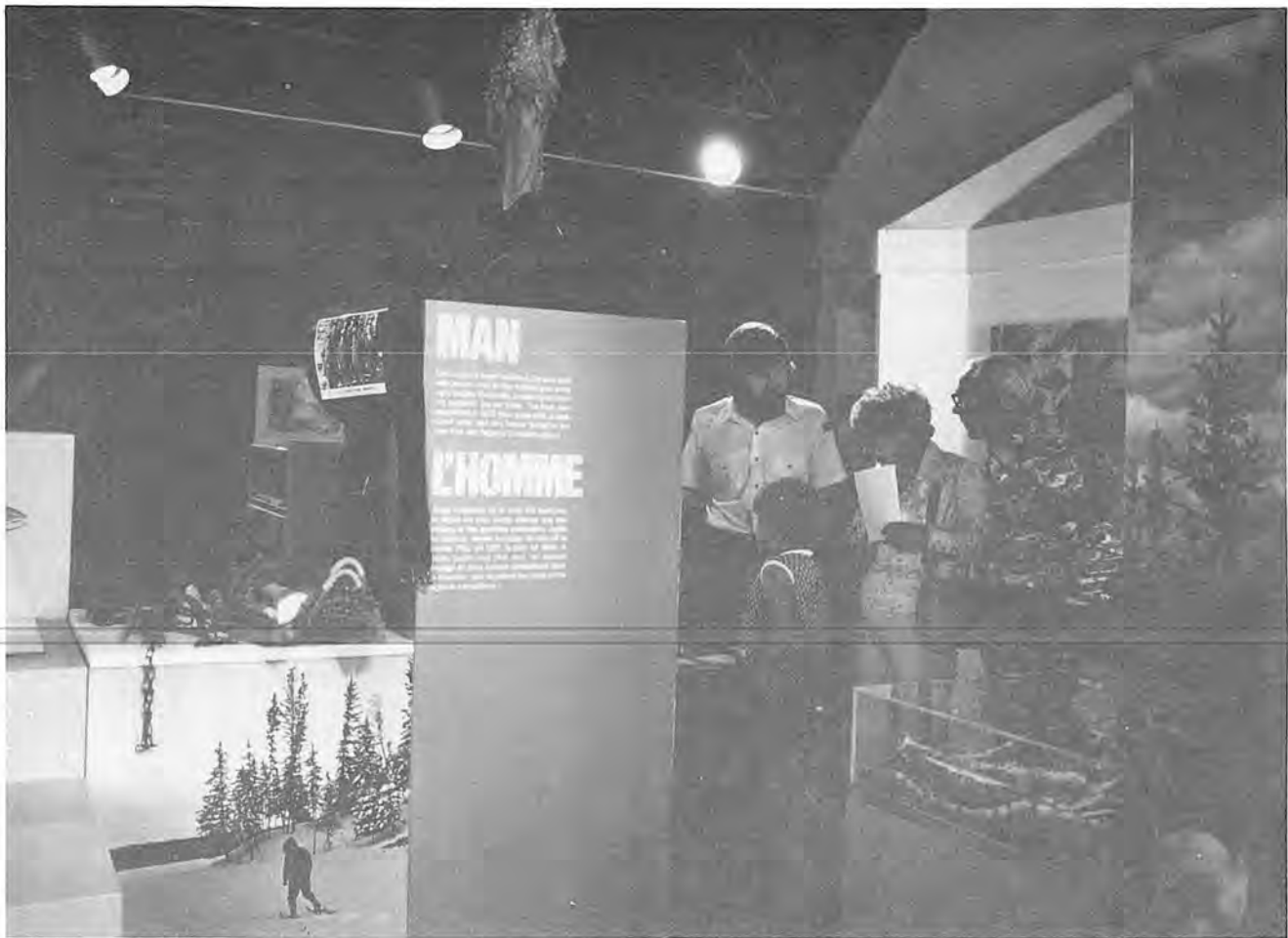
local library. If a person comes in unprepared, it is up to the museum to provide such direction. This research base should be constantly updated as it is a lengthy, ongoing process. If possible, start an oral history programme as it can provide invaluable research information for a local museum. For information on setting up an oral history programme, contact the Museums Advisory Service. Most community museums are not in a position to have curators, historians, and other professionals on staff. However, a great amount of research is done every year by high school students and university and technical college undergraduates. Some of this research may be relevant to your museum.

In addition to having a strong knowledge of the subject matter and the ability to explain it to the visitor, it is equally important to make a favourable overall impression. Both personal appearance and attitude of the interpreters reflect on the programme. The manner in which a visitor is greeted often creates an initial, long-lasting impression of the museum. Does the interpreter bother to find out where the visitors are from, how long they plan to stay, and any particular interests they might



Visitors enjoying an interpretive tour of the ruins of Fort Prince of Wales in Churchill, Manitoba

Parks Canada



Didactic exhibits play an important role in interpreting the natural history of the area at the Riding Mountain National Park Interpretive Centre Parks Canada

have? An interpreter cannot hope to offer all his/her knowledge to the visitor in half an hour, therefore, it is important to select material carefully. Decide what information is essential to interpret the exhibit properly and discard the “window-dressing”. Determine if the presentation is logical. Is there an introduction? Is the content meaningful? Is there a conclusion? It is important that these matters be brought to the attention of prospective interpreters during their orientation programme.

Restored and Furnished Buildings

An ideal way to communicate an historical feeling in a three-dimensional fashion is by re-furnishing a building to a certain period. To do this effectively, however, is an extremely demanding task requiring considerable funding, research, artifact conservation, and an ongoing maintenance programme. A perfect example of this method of interpretation is Dalnavert/Macdonald House in Winnipeg. If a museum does not have the capital to refurbish an entire building, then possibly some form of phasing could be considered.

Once the exhibit, reconstruction, period furnishing, etc. has been completed, a wonderful tool will have been created for your interpretive programme. Various media or programming can be used with your historical resources to complement each other and bring out the full potential of your museum. However, no matter what type of interpretive approach you choose, all must accomplish two very basic things. Firstly, they must clearly and concisely explain what you are trying to say and, secondly, visitors must be sent on their way having had an interesting and enjoyable experience.

Self-Guiding Publications

If you do not have a large staff, you might consider some form of self-guiding publication handed out by someone introducing the facility. In terms of security, it might be necessary to restrict entrance to certain areas.

Costumed Interpretation

If funding and personnel are available, consider costumed interpretation. This method can add an entirely new dimension to your programme



A Parks Canada Naturalist with a group of visitors on an interpretive tour

Parks Canada

involving period demonstrations, interpretive tours, etc. However, it is essential to demand accurate research into styles, materials and fabrication. Once again, consult the Museums Advisory Service for assistance.

Animation

This method describes situations where actual role-playing or stepping into historical characters is done. This method is extremely difficult to do well. If successful, the results can be fantastic. If done poorly, however, the situation can leave the visitor very embarrassed. It is basically a form of dramatic art totally dependent on the accuracy of the historical material available. Its success is dependent upon the interpreter's commitment to the programme, adequate dramatic training on the part of the animators, and making sure that the visitor is aware of what is happening. If done well, animated programmes can be extremely popular with schools.

Audio-Visual Presentations

Do you have access to films or other forms of audio-visual material that could be used in your museum programme? Contact the National Film Board or the Department of Education to obtain a list of 16 mm films that might be of use to you.

A second alternative, and one which I would recommend, is to present a slide talk. The concept is simple—a group of people in a comfortable situation given a well-researched and properly presented talk accompanied by relevant slides and artifacts. As you progress, the presentation can be made more sophisticated with the addition of music or sound effects. The equipment needed is very basic — just a slide projector and a screen. Just be careful to tailor your talk to the group you are addressing. Take into consideration if they are rambunctious sixth graders, worldly twelfth graders, a church group, or a local baseball team.

Interpretive Walks

Have you ever given any thought to actually offering tours at various historical resources. This certainly has been done by various natural history

museums and societies. It can be done in historical settings as well (e.g. Curly Tyler and the soldier settlements in the Riding Mountain area).

It is important to do some preparatory work before you visit the site. Some form of introduction is necessary. Often the resources are merely ruined foundations, therefore, an historical slide show illustrating the buildings as they appeared is very helpful. Since you are going outside, make sure that everyone involved has transportation, proper clothing, food, and that the weather is suitable. The rest is up to your imagination.

Special Events

Special events are a wonderful interpretive feature as they usually draw large crowds, create publicity for the museum, and involve a number of community people. However, you must consider how they would fit into your interpretive programme. Would a special event contribute to the goals of your museum? Would your visitors benefit from it? I was at a threshing event last summer. It was a lot of fun, but other than a lot of noise, plenty of activity, and an enjoyable time, I did not get a lot out of it. There was no information provided. Possibly just enjoying the demonstration was enough to encourage the spectators to find out more about the equipment and lifestyle of the early 20th century. However, a brief introduction explaining the equipment, how important it was to a period of prairie agriculture, and how it effected

the people, would have added that much more meaning to the day's activities.

Extension Programmes

As community museums it is important to make the community aware of your existence. Get out and talk to people. If you have enough people and some funding, take your slide talks, interpretive walks, artifacts and special events out to the community. Visit schools, community organizations, senior citizens' homes, and sports clubs to introduce and explain your museum. Teachers will love you and most people will be happy to know you have a programme.

Conclusion

Interpretation is not a new and mysterious concept, however, to set up an effective interpretation programme requires serious thought and a realistic idea of just what can be accomplished. Five factors should be examined:

- Purpose
- Audience
- Facilities
- Funding
- Staff

Once these have been assessed, you will be well on the way to planning a well-organized and enjoyable interpretation programmes for the visitors to your museum.

Care and Cleaning of Textiles

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Textiles are a vital part of any museum's collection. Along with food and shelter, clothing is a basic necessity, especially in our climate. There is, therefore, a great amount that can be learned by seeing how different people, at different times, clothed themselves. By looking at artifacts such as blankets, embroideries, rugs or hangings, one can see the designs that were popular, the materials that were available, and the techniques that were used. Costumes of an era can give one the feeling of that time and place: who the person was, what they wore, how they held themselves, how they moved, and what their status was in society. One may even get an idea of the political and artistic trends of the time.

Even the most common, ordinary articles of costume are very important to a collection. Wedding and christening gowns were usually carefully packed away and, as a result, well preserved. However, worn-out housedresses and work shirts, which often represented what was most commonly worn at the time, were usually torn up into rags after they served their purpose.

Rules for Handling Textiles

Even the textile treasures that have managed to survive long enough to become part of a collection will not last much longer if they are not given the proper basic care. Careful handling is extremely important to materials which have lost most of their original strength through wear and age. Some basic rules for handling textiles are:

1. Wash your hands before touching anything. Everyone has tiny amounts of dirt on their hands, and over years of handling, this can build up on a piece. Perspiration, which is always present on your hands, is also very damaging to textiles.

2. Remove all jewelry, rings, or watches. Small rough edges can easily catch the fabric and cause tears.
3. Give full support to any piece you pick up or move. The weight of large pieces (e.g. long dresses or full skirts), is often too heavy to be supported by a small area of weakened material, such as the waist or shoulder seam. Give the textile the most complete support you can by spreading the weight over a large area.
4. Do not smoke, eat, or drink near textiles. The damage is done too easily and is too hard to repair.
5. Keep ballpoint pens away from textiles.
6. Be very careful with any bleach, chemical or even water that you may be using near a textile. Keep them around only as long as it is absolutely necessary.

Beware of Bugs and Beasts

When you first receive a textile that is to go into your collection, check it very carefully for any bugs or beasts it may be carrying. Check all the pocket corners, hems and creases for larvae or eggs, and shake or brush the textile gently to remove any you might have missed. Isolate the new textile from the rest of the collection to prevent the possibility of several lonely moths becoming an infestation.

Labelling

Labels are necessary in the proper cataloguing of a collection, however, they can do much damage if they are improperly applied. Never use stick-on,

iron-on or adhesive tape labels. These labels may or may not come off, however, their adhesives remain. Trying to remove the adhesives may remove the dye in the area or seriously weaken the fabric. Marking directly on a fabric with ink is also a bad idea since ink is equally difficult to remove, and may transfer to other areas of the fabric should it get damp. Never use pins or staples to fasten on labels as these often become rusty. Rust permanently stains and weakens materials.

Make labels by writing the number on a small piece of cotton twill tape in indelible ink (e.g. a laundry marker). Sew this label onto the piece. For convenience sake, and to reduce handling, choose a similar, inconspicuous area for labelling all textiles (e.g. the bottom right corner or the inside of the right cuff). If a label cannot be stitched on, write the number in ink on a small, white, preferably acid-free card. Tie this card to a strong area of the piece (e.g. through a buttonhole or the eyelet of a shoe) with light string or thread.

Storage

Good storage is the most important factor in the care of textiles. Often good storage conditions have allowed a textile to survive to the present. However, the same textile will not continue to survive for the next generation if good storage conditions are not maintained. Simple good housekeeping is often the key. It is necessary to control the following elements in order to control universal degrading factors:

- temperature and humidity
- light
- dust and dirt
- bugs and beasts

Temperature and Humidity

With warm temperatures and high humidity comes mould and mildew which stain and degrade fabric. Although in Manitoba we do not usually have problems with high natural humidity, broken pipes, leaky roofs and flooded basements will certainly provide enough moisture to promote mould growth, along with serious water damage. Try to avoid such disasters by choosing appropriate storage areas which you can inspect frequently.

Light

Textiles are among the most light-sensitive of all artifacts. Light severely damages dyes and badly degrades the material. In storage, light can be easily controlled by covering stored materials or putting doors on storage units. Keep lighting in the storage area to a minimum and turn off lights when they are not needed.

Dust and Dirt

Because of the woven structure of textiles, dust cannot be simply wiped away. Once imbedded in a fabric, dust becomes very difficult to remove. It may also carry contaminants that can degrade the fabric. Keeping dust to a minimum in a storage area is a question of good housekeeping. Cover any open storage with pre-washed cotton muslin to exclude both dust and light. Avoid using plastic garment bags as their static may attract dust. In addition, they lack ventilation and their stability over a period of time is questionable. Seal the doors of your storage units to keep dust out of drawers and closets.

Bugs and Beasts

Good housekeeping is the best way to keep pests out. As mentioned above, be sure new receipts are not contaminated and are as clean as possible before they are included in the collection. Do not attract pests — keep food and drink out of the storage area. Have frequent careful inspections for signs of bugs, and keep your storage area clean.

Types of Storage

There are several types of textile storage. Each is suited to a particular type of artifact. With all the methods, try to avoid sharp folds and uneven or concentrated stress on weakened fabrics, while at the same time allowing good air circulation around the textile.

Flat Storage

This method is for pieces which are flat, very heavy, or fragile therefore requiring the maximum amount of support. Examples of such pieces are:

- garments cut on the bias which would stretch out of shape when hung
- small, flat weavings or embroideries whose fabric can no longer stand the stress of folds
- heavily beaded or embroidered pieces whose fabric cannot support the weight of appliques
- garments whose material has become so weak it can no longer support its own hanging weight (e.g. weighted silk garments, garments with large, full sleeves or skirts)

Flat textiles are laid between layers of acid-free tissue paper in a drawer or box which has been lined with this tissue and labelled. Do not fill the box or drawer too full, as this will put weight on the bottom layers and can result in unnecessary handling of all the pieces when only one is needed.

With three-dimensional textiles, avoid wrinkles and sharp folds by stuffing and supporting folds, pleats, and creases with acid-free tissue. Also isolate any metal buttons, beads or embroideries from



Rolled storage method for smaller textiles Parks Canada

the rest of the garment to avoid any staining if the metal rusts.

Rolled Storage

This method is for textiles which are too large or too long to fit into a drawer without folding, or which are too fragile to fold. Examples are:

- lace edgings
- blankets and bedspreads
- shawls
- hangings and weavings

Textiles are wrapped around tubes of various sizes (from large carpet rolls to small kitchen wrap rolls) which have been covered with acid-free tissue. The textiles are rolled, without folds, along the warp thread (where possible), with acid-free tissue placed between the layers. Cover the rolled fabric with a dust and light-excluding protection of tissue or muslin, and secure the rolls with ties of wide cloth strips. Label each roll on the outside and put them on a rack or chain system that will allow air circulation and prevent the rolls from crushing each other. Small rolls may be stored in drawers.

Hanging Storage

This is for garments which are strong enough to support their own hanging weight, however, both the costumes and the hangers must be prepared to minimize the strain that is put on the shoulder area.

First, the hanger must be padded in order to spread the hanging weight over as large an area as possible. Broad-shouldered furrier hangers may be padded with polyester quilt batting and covered with washed cotton muslin to provide a good hanging support. Never use bare metal hangers, as these rust, distort the shoulders of the garment, and cause creasing and stress on the weak shoulder area.

Second, prepare the garment. Heavy costumes should be internally supported so that all the weight of the garment is not hanging from the shoulders. Attach long cotton twill tape loops to full skirts, or along the waistline of heavy coats, and hook the loops around the hanger. Close all fastenings so these will not catch or tear the fabric or decorations of others. Put garments into muslin bags, or cover the racks with washed muslin. Do not use plastic garment bags, as these lack ventilation and trap humidity and any bugs or beasts. They also attract dust, and there is question as to their long-term neutrality. Do not overcrowd the garments in a closet, as they could be crushed, sharp decorations from one may tear others, and contact staining may occur if the dirty or rusty metal buttons or decorations of one piece are pressed against another garment.

General Drawer Storage

This is for small pieces, which can comfortably fit into a drawer (e.g. shoes, gloves, stockings, and hats).

These garments should be lightly stuffed with acid-free tissue to prevent folds or creases. They may be secured in pairs and then placed in a labelled drawer which is covered to keep out dust and light. Do not overcrowd the drawers.

Display

Often the whole point of keeping a collection is to display it. However, improper display can destroy a textile in no time. Proper display techniques follow many of the principles of proper storage in trying to control the universal degrading factors of light, dust and dirt, and bugs and beasts. It is much easier to control these factors under storage, rather than display, conditions. Storage areas can be kept dark and clean and the textiles can be carefully and completely supported, while display areas must be lit, and the movement of visitors makes environment and dust control much



Smaller textiles safely rolled or laid flat and stored in a drawer with acid-free tissue

Parks Canada

more difficult. Simply putting a garment or fabric in a position in which it can be appreciated places much more strain on it than if it were properly stored. Thus, carefully consider which items you wish to display, and change your displays as often as possible.

The goal of good display is to control the following degrading factors:

- light
- stress
- dust and dirt
- bugs and beasts

Light

Light is incredibly damaging to dyes and fibres, but is necessary in display. To compromise, keep light levels as low as possible, and put ultra-violet light shields on all your light sources. Never allow sunlight to fall on a textile which is on display. As well as bleaching out the dyes, it will rot the fabric (consider how fragile the linings of old sun-rotted drapes get!). Drape and shield all windows in display areas.

Stress

With age, textiles weaken, and if stress is put on a small area, it will tear. Thus, the weight of a displayed piece must be spread over a large area. Never use pins, nails or tacks to hang a textile as this forces the whole weight of the piece to hang from a few threads. With small textiles, lay them flat on a fabric-covered inclined surface. Large textiles, such as quilts or rugs, may be mounted by attaching a sleeve along the back of the upper edge, running a rod through the sleeve and mounting the rod to the wall, or by attaching half a wide Velcro strip to the back upper edge, and the other half to a wooden slat mounted on the wall. All these methods distribute the weight across the whole piece.

It is also necessary to display three-dimensional textiles with a minimum of stress or strain. Put garments on a suitably-sized, suitably-shaped mannequin. Rather than iron a garment, let folds and wrinkles hang out. Never force a costume onto a mannequin, as this introduces a great amount of strain to the fabric which may cause it to split. Be-

ware of old store mannequins. Since "ideal" fashionable body shapes change over time, they often are not the right size and the shape may be totally inappropriate for your costume. For example, a 1960's "Twiggy"-shaped dummy is not properly shaped and cannot provide correct support for an 1880's bustle gown. It is much better for your costume and your display to build a more appropriate form.

The same ideas apply to small three-dimensional pieces, such as hats or shoes. If a form of the proper size and shape is not available, the items may be lightly stuffed with acid-free tissue to give them shape and support.

Dust and Dirt

Once dust settles on a textile it is very difficult to remove, so try to keep display areas as clean as possible. Change display pieces as often as you can, and periodically gently dust or vacuum the items using a low-power vacuum through nylon net screening. If possible, cover displayed material with muslin sheeting when the display area is closed.

Bugs and Beasts

Again, good housekeeping is the best deterrent for those unwanted visitors. Keep the display area clean and make frequent, careful inspections for infestations. Make sure all display material, such as logs, leaves, grasses or gravel, is thoroughly fumigated before introducing it into the display area.

Cleaning

To Clean or Not to Clean?

At first glance, cleaning a textile before it goes into storage or on display sounds like a good idea. Dirt in the fabric can cause physical and chemical damage, as well as serve as an attraction for bugs and beasts. Aesthetically, stains can hide the beauty of a piece. In storage, dirt from one piece can transfer to those surrounding it, spreading the potential damage.

However, it is important to think very carefully before washing a textile. A cardinal rule of conservation is that any process must be reversible. Washing is an irreversible process, and one that has many potential dangers. So much can go wrong! At home, if you wash something and the colour runs or it disintegrates in the washing machine, the problem is often solved by a few well-placed complaints or the purchase of a replacement. Even with "care" labelling, it happens to us all.

With old textiles, there are no "care" labels or washing instructions. There is no clue regarding the fibres or finishes used on outer material, the linings

or the inner linings. Even the type of soil that is present is a mystery. This is compounded by the fact that already age-weakened fabrics become more fragile when they are wet and heavy with water, so they must be handled with the utmost care. Old repairs on the textile may react to the cleaning solution differently from the rest of the material. Dyes may run, or they may be of a totally different fibre or finish.

There is also much potential value to soil on a fabric. It may be "historic", in that it shows how the piece was used or indicates how it was worn. An example could be the "dirt" on the fabric of the Shroud of Turin. Dirt along old seamlines and hems can help determine how some old garments were altered, and study of old lines often allows them to be changed back to their original style.

Consider the fragility of the textile to be cleaned. Washing is a very stressful process and the damage it may do to a fabric may be more harmful than the soil itself. There are also reactions which occur between stains and the fabric beneath them, making the fabric so weak that when the stains are removed, the fabric disintegrates, leaving holes where the stains were.

It is also important to realize how dirty the textile really is. With the development of modern, effective soaps, detergents and bleaches, modern standards of "clean" and "white" are a far cry from those of our grandmother's time. Her whites would never have been "whiter than white", and to bring them up to these standards is not historically correct or necessary.

Often, the best idea is simply to surface clean the textile, using a low-power vacuum covered with nylon netting, and protecting the textile with netting or screening. This will remove light dust and dirt and not damage the textile.

Colour Testing

Should you decide that cleaning would be beneficial to a textile which is strong enough to withstand the strain, test the colours of the piece to be sure they are fast. This is extremely important. First, put several drops of your proposed cleaning solution on a small, hidden area of the textile. Then roll a swab dampened with the same solution over the area, working the solution well into the fabric. Look for any signs of colour on the swab. Using blotting paper, absorb as much of the solution as possible from the fabric and check for colour on the paper. Let the paper dry, and check for colour again. Repeat this process for all the colours which are present on the textile. If any hint of colour is observed, *do not* wash the textile. It is much better to leave a textile slightly dirty



Vacuuming through a screen is a safe, gentle and quick method to clean a fragile textile

Parks Canada

and carefully stored than to have it permanently ruined by colours which have run in the wash bath.

Dry Cleaning

If wet cleaning is not possible, dry cleaning is often an alternative. Although water does the best job of any solvent because it is able to remove water-soluble stains and return a textile to a neutral state, dry cleaning may be necessary if:

- dyes are not fast to water
- finishes are water-soluble
- the textile is a complex garment
- the textile has many layers, some of which may have dyes that will run (e.g. quilts)

Be sure to talk to your dry cleaner before you allow him to clean your textile. Explain how fragile the piece is. Often special delicate or hand-cleaning services are available which use minimum heat and tumbling, and assure clean solutions.

Washing

If you have found that all your colours are fast, sandwich the textile between layers of nylon net-

ting, surrounding the textile with large basting stitches in white thread, through the netting. This provides a support for the textile in the water, and allows it to be handled when it is weak and heavy with water. With larger pieces, sandwich weak or damaged areas with netting, making the patches large enough that the basting may be done through adjacent strong fabric. Support large textiles with a layer of screening underneath the fabric, so that the material itself does not need to be handled when it is wet.

Use a clean pan, tray or tank which is large enough to accommodate the full size of the textile. Baking pans and photography developing trays are useful for smaller pieces, while larger textiles may be washed in wooden tanks lined with polyethylene sheeting. Fill the vessel with lukewarm water.

Do not use regular laundry detergents or soaps. These contain bleaches, optical brighteners, perfumes and softeners that old textiles do not need. Use a small amount (roughly ½ tsp. per litre) of Orvus or WA Paste, first dissolved in a litre of warm water, and then stirred into the water bath.

Immerse the textile in the water bath and allow it to soak for ten to fifteen minutes. Gently work the water through the fabric with sponges. Do not scrub or rub the material. If the water becomes very dirty, drain it and start again with fresh water.

Rinse the textile four to five times, until the rinse water runs clear. It is important to remove all the soap from the fabric. If any soap is left, it may discolour the material and act to attract and hold dirt to the fabric. Distilled water, or water that has been boiled and allowed to cool, should be used for the final rinse.

Remove excess moisture by rolling the textile in towelling, then lay the piece out flat, right side up, on glass. Gently smooth out any wrinkles and align the warp and weft threads to bring the material into shape. The tension between the material and the glass will allow the textile to dry flat. Lace may be pinned into shape on a plastic-covered tackboard, using brass pins that will not rust. Three-dimensional textiles may be stuffed with tissue while they are damp, and smoothed and shaped while they dry. Generally, allow textiles to dry naturally, away from sunlight or artificial heat.

Iron a textile only if it is necessary, and then at the lowest possible temperature. Do not iron in sharp folds as this is very hard on aged fabric. Never iron soiled fabric, because the heat can set in dirt and stains. If starch is considered necessary, use only a light solution of the old-fashioned powder starch, not the modern sprays. This must be washed out again before storage, as it damages and discolours fabrics over the long term and serves as an attraction and food for pests.

With good basic care, your textiles can continue to be an important part of your collection for years to come.

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Perlingieri, I.S., *How to Care for Textile Collections*, *History News*, Volume 36, Number 8, (August 1981), Pp. 42-44, American Association for State and Local History, Nashville.

MATERIALS

Acid-Free Tissue

Approximately 11 cents per 25" x 38" sheet
Museums Advisory Service
Manitoba Museum of Man and Nature
190 Rupert Avenue
Winnipeg, Manitoba R3B ON2
Telephone — 956-2830

Brass dressmaker's pins

85 cents/box of 200 (Eatons)

Cotton twill tape

¼" wide, 4.6 metres, 60 cents (Eatons)

Furrier hangers

Plastic, approximately \$1. (Eatons)

Laundry markers

\$1.75 (Eatons)

Mannequin making

Contact: Museums Advisory Service

Orvus Paste

\$3.95/pint; \$7.10/quart
Conservation Materials
Box 3884
340 Freeport Boulevard
Sparks, Nevada 89431

Terry towelling

100% cotton, 36" wide, \$3.45/yard
Mitchell's Fabrics
637 Main Street
Winnipeg, Manitoba

Ultraviolet Filters

\$1.50/fluorescent tube shield
Contact: Museums Advisory Service

Unbleached cotton muslin

84" wide, \$3.35/metre
Mitchell's Fabrics

WA Paste — Canada Packers 645 WA Paste

Cases of four jars
Approximately \$9.50 per 8½ lb. jar
Canada Packers
Chemical Division
1500 Clarence
Winnipeg, Manitoba
Telephone — 474-0843

Care & Storage of Works of Art on Paper

CHARLES A.E. BRANDT

Chief Conservator

Artistic and Historic Works on Paper

Provincial Archives of Manitoba

We are here because we are concerned about the materials of our civilization. We wish to preserve them. Museums, galleries, and to a certain degree archives, exhibit these materials. All of us house them. Our great concern is that they be preserved. This concern to preserve the materials of our civilization places a grave responsibility on us — a responsibility for the future of humanity.

I work at an archives. An archives is a form of museum. At the Provincial Archives of Manitoba we house priceless materials: The Hudson's Bay Company Archives with materials dating back to 1670; the Mss letters of Louis Riel; some of the Walter Phillips coloured woodcut prints; works of art by Musgrove, Lynn and Rindisbacher; the Hime Photographs; Public Records of the Government; and film and audio-visual material. Sometimes we exhibit. Usually our clients want to observe and study particular paper artifacts at their leisure. It is frightening to know that all of these materials are subject to deterioration.

At a 1969 conference, sponsored by the Graduate School of the University of Chicago, on the subject "Deterioration and Preservation of Library Materials", Edwin Williams of Harvard stated, "Everything in library collections was deteriorating yesterday, is deteriorating today, and will continue to deteriorate tomorrow."¹ This is true of the materials we house in our institutions. We can slow this process down, however, we can never totally halt it (unless we put everything into a deep freeze in total darkness). The forces which destroy these materials of our civilization to a great extent leave our houses and buildings intact. However, they seem to have a very keen appetite for the more important products of modern civilization.

A conservator has a very unique vocation: to slow down this process of deterioration as much as possible. Without question, the most important

function of our profession is to practice preventative conservation—something we can all share. As Chief Conservator, Artistic and Historic Works on Paper, Provincial Archives of Manitoba, I am currently setting up a paper conservation laboratory to care for archival materials, books, works of art on paper, and eventually film and audio-visual materials. My principle work is to prevent, as far as I am able, these forces of destruction from gradually destroying these materials of our civilization which are contained in the Archives. Hopefully, in the not too distant future, the Manitoba Heritage Conservation Centre will be established in our province. With Federal and Provincial assistance, this Centre will reach out to all of the museums, galleries, archives, and libraries in the province to assist them in the work of preservation and conservation of their important materials.

This spring I did a study-tour of various archives, museums, galleries, and conservation laboratories in the Philadelphia and Washington areas. This tour was funded in part by a grant from the Canadian Museums Association and by assistance from the Provincial Archives of Manitoba. At the Library of Congress, Peter Waters, the Restoration Officer, spoke of a conference in December 1976 at his institution. The purpose of the conference was to assess and evaluate the most pressing needs of the preservation community. The conference was primarily concerned with the preservation of paper materials. Materials printed prior to the 19th century are generally in reasonably good condition. Those materials published since 1800 (especially printed books) are now reaching advanced stages of embrittlement and deterioration. Materials published today, as well as in the foreseeable future, are being produced on paper which is no better than the book paper of the past century, and in some cases, worse. The collections of the Library of Congress now include ap-

proximately six million volumes which are so brittle they can only be preserved through microfilming. Because of their brittleness, they cannot be distributed for use. Some 60,000 of these have been specifically identified and are being filmed at the rate of 20,000 volumes per year. Mr. Waters stated that they are not able to keep up to the demand. While they are filming the 20,000 volumes, more are reaching the brittle, critical stage. At the present time, there is no fully-tested, feasible method for mass conservation treatment (deacidification and alkaline buffering) of such materials. Even if such a process did exist, it would benefit no more than 65% of the brittle books in library collections, since deacidification does not restore strength to paper already embrittled. There appears to be only two feasible preservation procedures for such brittle documents: 1) low temperature storage, and 2) microfilming to preserve the intellectual content.

Low Temperature Storage

This procedure refers to storage at low temperatures in warehouse-type structures or in underground caves where optimum temperature and humidity can

be maintained. Paper scientists generally agree that for every 10 degrees Celsius the storage temperature is reduced, the life of the paper can be approximately doubled.

Microfilming to Preserve the Intellectual Content

Microfilming is far less expensive than restoring a book. In 1976, it cost \$25 to microfilm the average 300-page volume. Microfilming is more expensive than low-temperature storage. There is, as I shall discuss later, some question of the life expectancy of microfilm. Our experience with microfilm is limited to some 50 years or less, while our experience with paper goes back nearly 2,000 years. Ideally, the solution to the problem of preserving brittle and deteriorating books and documents would be to provide low temperature storage for all such materials. The Newberry Research Library's new storage facility will be at a temperature between 55-60°F. The Provincial Archives of Manitoba is considering a temperature of 60°F ($\pm 3^\circ$) for archival storage in its present renovation planning. The Library of Congress is emphasizing microfilming of the brittle materials published during the last



Measuring illumination falling on a work of art by means of a Panlux Electronic Luxmeter Provincial Archives of Manitoba

century, with storage of the master microfilm negatives under ideal environmental conditions. The Library of Congress also proposes that low temperature storage facilities be provided for books.

During this study tour, I also visited the National Archives of the United States. The National Archives is greatly concerned about the lasting quality (permanency) of microfilm. In 1981, a press release³ was issued that stated that under the direction of Dr. Robert M. Warner, Archivist of the United States, the National Archives and Records Service has undertaken a comprehensive reassessment of microfilming as a preservation technique. An 18-member Archives' Committee on Preservation, headed by Dr. Norbert Baer of the New York Institute of Fine Arts, has established a sub-committee to study alternative forms of copying and their durability. Under a National Archives contract, Coulter Systems of Bedford, Mass., is surveying transparent electro-photography (TEP) as an archival storage medium. A National Archives periodic inspection of a representative sample of its vast microfilm holdings of 750,000 rolls is underway. A small but significant amount was found to have reduction and oxidation blemishes (also known as "redoc" blemishes or "measles"). These spots, microscopic in size, are sometimes found on microfilm stored in less-than-ideal environments. Dr. Warner points out that the bulk of our most historically-significant documentation has survived under conditions that would jeopardize the life of microfilm. Before placing full reliance on microfilm, or any other non-paper medium, Dr. Warner feels that we need to be certain that it will save money and more important, that it will outlast the paper.⁴ It is clear from this that archivists will ponder a long time before they recommend destruction of original records.

To understand why this deterioration is taking place we must understand something about the nature of paper itself. There are many examples of brittle paper, paper so degraded that one cannot turn a corner of a page without it breaking off. If it is a book, it cannot be rebound. It can no longer be distributed for research or study purposes. Such paper is no longer permanent or durable. "Permanence is the degree to which a paper resists chemical action which may result from impurities in the paper itself or agents from the surrounding site. Durability is the degree to which paper retains its original qualities under continual usage."⁵

Paper, as far as we can determine, was invented by Ts'ai Lun at the Court of the Chinese Emperor in the year 105 A.D. He is said to have made it from macerated tree bark, hemp waste, old rags and fish-nets.⁶ Most of the older papers were made from

plant fibres. Modern papers are made almost exclusively from wood fibres. Since paper fibres are organic materials, they are subject to deterioration. Paper made from such fibres can last for hundreds of years if properly stored in the right environmental climate. We think of the 12th to the 19th centuries as the period of good paper. I have examined paper from the 13th century in Germany and found it to be in almost perfect condition. During this period the paper was strong and durable. It was not until the late 17th century that Alum (which breaks down to form acid) was introduced into the making of paper to harden the sizing. Modern paper, with the exception of some of the permanent/durable acid-free papers which are being manufactured, have an expected useful life of less than 50 years (not that long if improperly stored). Later in this article we will be speaking about storage and its supreme importance.

CAUSES OF PAPER DETERIORATION

Acidity

This is primarily due to the alum-rosin sizing used in paper making. The alum is introduced to precipitate the rosin size. The size prevents the inks from feathering. Alum, however, eventually breaks down and one of its side products is sulphuric acid. The formation of this acid is accelerated by high temperatures and high relative humidity. Most papers manufactured today contain this alum-rosin sizing. The acid in paper acts as a catalyst to bring about the hydrolysis of the cellulose fibre and leads to a decrease in the length of the polymeric chain molecule through random scission of the chains. The strength of the fibre is decreased so that the fibre becomes weak and brittle and is finally reduced to a powder.

Use of Unpurified Wood Fibres (Groundwood)

One way of producing woodpulp paper is to grind the wood timbers down by the use of large grinding wheels. The fibres are consequently weaker (shorter) and lignin (a kind of glue that holds the fibres together) is left in the pulp and in the paper. Lignin degrades to form acid which brings about the acid-catalysed hydrolysis of the paper fibre. Lignin also makes the paper more susceptible to deterioration by light. The period from 1850-on is considered the "Era of Bad Paper", principally because during this time alum-rosin sizing and groundwood came into common use.

Pollutants

There are many harmful gases in the atmosphere such as sulphur dioxide, nitrogen dioxide, ozone, hydrogen sulphide, etc. Sulphur dioxide first forms sulphur trioxide which in turn reacts with moisture to form sulphuric acid. This reaction can occur within your paper artifact.

Invisible Ultraviolet Radiation

This light energy with its very short wave lengths can create havoc in paper. It can excite molecules, divide them, cause bleaching, and be altogether destructive. Natural sunlight entering your home or institution has a high content of this harmful radiation. Also, many fluorescent tubes emit ultraviolet radiation. In addition, it is not the UV emission alone that is harmful, but also the quantity of light that can be damaging. We will speak of this later when we discuss "Lux levels".

Microorganisms (Mould and Bacteria)

Every room is full of tiny fungal spores that could develop into mould (mildew) if humidity is roughly 65% and the temperature 75-80°F. Fungi feed on the nutrients in paper, causing it to weaken and discolour.

Insects and Rodents

Most of us probably have seen a book that has been gnawed by a mouse or rat, and are acquainted with the damage caused by certain insects that penetrate and feed on paper materials.

Human Beings

Many paper artifacts have deteriorated through careless usage. How often have you observed someone xeroxing a book, pressing down on the spine to get a good impression thereby damaging the structure of the book at the same time?

Having examined some of the causes of paper deterioration, we are in a better position to understand what we mean by Preventative Conservation and the steps that we can take to slow down the deterioration that is taking place. I think that it goes without saying that acid-catalysed hydrolysis of cellulose is our main concern. If we can use paper that has no acid in its initial construction (paper that is permanent and durable), and if we can control the temperature and humidity of our institutions and safeguard them against harmful light radiation, the acid-hydrolysis of paper (breakdown of the cellulose fibre) will occur at a much slower rate. This brings us to the Arrhenius Equation: *scientists agree that for every 10°C decrease in temperature the useful life of paper is approximately doubled.*⁷

If the temperature of our storage or exhibit area is 31°C and we reduce it to 21°C, we will have increased the life expectancy of our paper by 100%. This is the best type of conservation that we can all practice – preventative! Research libraries today are considering lower temperatures for their storage areas. At the Newberry Library in Chicago, their new storage area has been designed with provision for temperatures ranging from 55 to 60°F. As mentioned, the Provincial Archives of Manitoba is considering a temperature of 60°F ($\pm 3^\circ$) for its storage areas. Along with temperature, relative humidity must be considered. Too high an RH hastens acid deterioration and leads to damage caused by mould and bacteria attacks. On the other hand, if the relative humidity is too low, paper artifacts become dry and will warp. A relative humidity of 40-50% is best for books; 45-55% for leather bindings; and 50-60% for vellum bindings.⁸

The ultimate means of providing proper temperature and relative humidity is through a well-designed central air conditioning system in which both temperature and relative humidity are rigidly controlled day and night, winter and summer, 24 hours a day, 365 days a year. Only the more fortunate museums will be able to achieve full environmental control. Smaller museums may be able to install portable humidifiers to increase the low indoor relative humidity during the dry months of winter. Dehumidifiers are extremely useful during the summer months. The most harmful aspect of relative humidity and temperature is what we call cycling: marked changes in temperature and relative humidity over a short length of time (during the day and night) or for extended periods. These changes result in internal stresses set up in the paper as it attempts to adjust to the changes. The best way to guard against this cycling is to first of all recognize when it is taking place, and then take steps to prevent it. This can be determined through monitoring devices that register the temperature and relative humidity. Some units are quite expensive; while others are very inexpensive but will give you a general indication.

To protect a collection against atmospheric pollutants requires some form of central air purification in which activated charcoal filters are utilized. Again, most small museums cannot afford such a system. Museums in rural areas have less pollutants to contend with. Care should be taken to keep windows closed. If possible, collections should be stored in containers that protect against the entrance of harmful pollutants. Dust particles carry with them the absorbed pollutants and therefore should be excluded from the building.

We have already mentioned the harm that light

can cause. Ultraviolet rays in sunlight and fluorescent lights promote the oxidation of cellulose and cause deterioration. Paper will last longer in the dark than in the light. Paper should be stored out of direct sunlight. Ultraviolet filters should be applied to fluorescent tubes and UV protective films can be applied to windows. Heavy draperies over windows will cut out harmful radiation.

Raymond H. Lafontaine is the author of *Technical Bulletin No. 5, entitled Environmental Norms for Canadian Museums, Art Galleries and Archives*⁹, issued by the Canadian Conservation Institute. These norms are extremely useful and, reprinted with permission from *Technical Bulletin No. 5*, are as follows:

SECTION 1 – Temperature Requirements

- 1.1 *The optimum temperature for exhibition and storage areas is 21°C, maintained year round with a daily fluctuation not to exceed ± 1.5°C.*
- 1.2 *The minimum acceptable temperature condition is a set point varying from 20°C to 25°C with a changeover rate of 1°C per month. The maximum permissible daily fluctuation is ± 1.5°C about the set point.*
- 1.3 *In many instances, the deterioration rate would be decreased at lower temperatures, however, the human comfort factor necessitates temperatures not lower than 20°C and not above 25°C.*
- 1.4 *Consideration must be given to those materials having special temperature requirements. For example, fur garments, animal skins and similar artifacts are best stored in a cold storage kept at 4°C ± 1°C, at the proper RH (see section 2) and with sufficient air circulation.*

SECTION 2 – Relative Humidity Requirements

- 2.1 *The optimum relative humidity condition for exhibitions and storage is a constant condition year round with a set point between 47% and 53% RH and with a daily fluctuation not to exceed ± 2%.*
- 2.2 *The minimum acceptable relative humidity set point for winter months is 38% and the maximum acceptable summer set point is 55%. Daily fluctuations should not exceed ± 3%. Occasional variations of*

as much as 5% are tolerable if these are the exception and not the rule. The set point changeover rate from winter to summer should be no faster than 5% a month.

SECTION 4 – Air Cleaning Requirements

- 4.1 *The level of dust removal should be 95% of particles, 1 µm in diameter or larger and 50% particles between 0.5 and 1 µm in diameter.*
- 4.2 *If unusually high levels of gaseous pollutants such as sulphur dioxide, nitrogen dioxide, ozone and hydrogen sulphide exist where the institution is located, some form of central air purification should be considered. Alternately, portable activated charcoal filters can be installed in problem areas. Electrostatic air purifiers and precipitators should not be used since they can produce ozone.*

SECTION 6 – Lighting Requirements

- 6.1 *Light levels should not exceed 50 lux (5 foot-candles) on sensitive objects such as works of art on paper, parchment, textiles, watercolours, felt pen drawings and not exceed 150 lux (15 foot-candles) on paintings and polychromes. As much as 300 lux (30 foot-candles) is acceptable on insensitive objects such as most stone and bare metals. Areas other than the exhibition area can be illuminated at the discretion of the designer; however, it should be remembered that the public requires a gradual decrease in lighting in order to adjust to lower levels.*
- 6.2 *Both incandescent and fluorescent lighting systems can be used. The ultraviolet radiation emitted by fluorescent lamps should not exceed 75 µ watts/lumen; otherwise a U.V. filter sleeve or a U.V. absorbing diffuser will be required. In order to minimize colour distortion, fluorescent lamps should have a colour distortion, fluorescent lamps should have a colour-rendering index of at least 85.*
- 6.3 *High pressure mercury and sodium lamps should not be used in exhibition and storage areas of museums, art galleries and archives because of poor colour-rendering properties and/or high ultra-violet radiation emission.¹⁰*

It has taken me some time to get to my principle topic: The Care and Storage of Works of Art on Paper. Actually we have been discussing preventative care and there now remains the discussion of storage of works on paper. Several years ago I participated, along with Ian Hodgkinson of Queen's University, in a lecture/workshop for artists/printmakers at the Nova Scotia School of Arts and Design in Halifax. I was extremely edified to see how concerned the printmakers were to execute their prints on permanent-durable paper and how susceptible they were to good principles concerning the care and storage of their prints. Later I spent a number of days at St. Michael's printmaking studio south of St. John's, Newfoundland. The printmakers there also were conscious of the need for printmaking papers of high quality.

Winnipeg has a long tradition of printmaking and printmakers. Brigdens employed well-known artists such as Bergman. Other artists taught and worked in such schools as the Western Academy of Art, Winnipeg School of Art, and St. John's Technical School where Walter J. Phillips taught and worked¹¹. Musgrove and Fitzgerald worked in the city. Some of their works come through my small atelier at home where I do private conservation work on selective works of art on paper. I am always amazed when removing the acid backing from a Walter Phillips' coloured woodcut print to find that the oriental paper (often mistakenly called rice paper) on which he printed his works of art is still in remarkably sound condition. I attribute this mainly to the permanent durable qualities of this paper which has a long, strong fibre, no alum-rosin sizing, and has not been weakened through excessive bleaching. Bergman also used oriental paper for his coloured woodcut prints, but not exclusively. There is a noticeable difference in the condition of his prints which have been printed on oriental and non-oriental papers.

Which brings me to my first point on the care and storage of works of art on paper. If we want our works of art to last they must be executed on paper that is permanent and durable, and stored in folders and containers that are acid-free.

A number of companies today are supplying acid-free, permanent-durable papers. Buntin Gillies of Ottawa supplies Harumi museum mounting board¹², designed according to the specification of the National Gallery. This comes in various plys. I have been told that Alex Colville uses this paper in ¼ ply to do some of his art work. Some of the standard artists' and printmakers' paper from Europe are definitely on the acidic side (pH of 5 to 5.5), while some of the English and North American papers are neutral and even on the alkaline side. I have tested some of these in my lab and know this

to be true. We also want to select a paper with a high Alpha-cellulose content. Such papers need not necessarily be rag or cotton inasmuch as some of the sulphite papers produced today meet this specification.

There are some properties that should be considered in selecting a good print or watercolour paper: there should be an absence of groundwood fibres, alum-rosin sizing, concentrations of iron/copper minerals, residual bleaching chemicals, and any acidic components that would produce a non-alkaline paper. For you to discover good permanent-durable papers it will be necessary to consult with chemists, manufacturers and paper conservators. Once you have selected your paper and executed a work of art on it, then it is necessary to exhibit and store the paper so that the permanent and durable properties are not diminished.

The purpose of matting a work of art is not just to provide an attractive border, but it is a means of providing proper protection, support and storage for the artifact. It is clear that the work of art should not be in contact with cardboard that is acidic, but rather acid-free. All materials within the mat should be acid-free, and this includes the materials that provide the hangers that attach the work of art to the back mat. If you are not doing your own matting, then it is essential that you discover exactly what materials your framer is using in his matting procedures. How often do we see a priceless print with a brown inner layer of the mat showing along the edge where the window has been cut and the brownish contamination on the print itself resulting from this acid core. It is unbelievable the materials and techniques that some matters and framers use: Filmoplast, pressure sensitive tape, masking tape, gluing the work of art directly to the window mat, and backing the work of art with acidic cardboard. In the Winnipeg area, I have especially noticed that a residual, yellowish type of cement (rubber?) was used in the past to secure a work of art. This adhesive is almost impossible to remove. Paper scientists at the Library of Congress are emphatic that Filmoplast should not be used to hang in any works of art on paper.

Little can be added to *The Care of Prints and Drawings with Notes on Matting, Framing and Storage* produced by the Restoration and Conservation Laboratory, National Gallery of Canada¹³. I quote parts of this pamphlet verbatim:

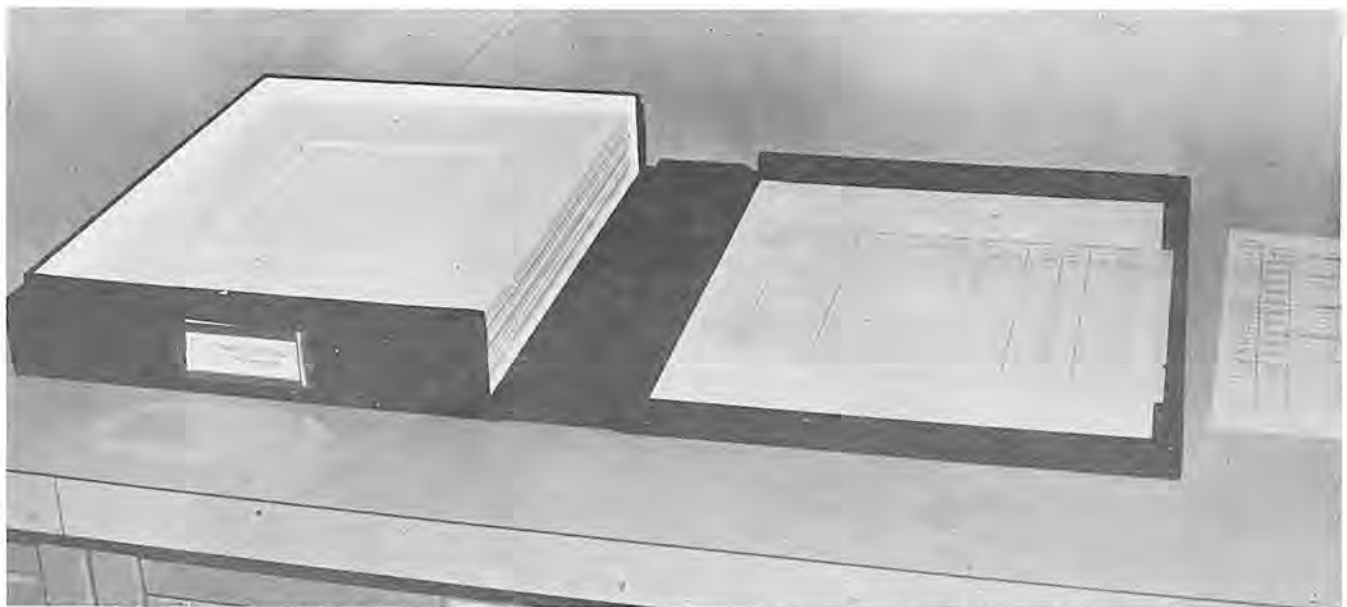
I MATTING A WORK OF ART ON PAPER

- 1) *The print or drawing should be hinged to the back sheet (as shown in Figure 1) and not to the overthrow or "window" portion.*

- 2) *The work can be secured to the back sheet of the mat by "T" or "pendant" hinges (as shown in Figure 2). Use two hinges at the top edge, cut from Japanese tissue, affixed with starch paste as the adhesive. In this way, the work is allowed to hang freely. Otherwise, wrinkles or cockling can result due to expansion or contraction of the work changes in relative humidity. Gummed cloth tape $\frac{3}{4}$ " (1.9 cm) wide can be used for hinging very large works. Never use scotch tape or masking tape, as these deteriorate, cause permanent discolouration, and cannot be removed safely if required later.*
- 3) *When it is necessary to display the full paper support on which the print or drawing is executed, the floating method is used. The hinges, made of Japanese tissue or gummed cloth tape, are attached to the back of the work of art and then folded and attached to the back mat. To make it stronger the hinge can be reinforced with a strip of paper or cloth tape (Figure 3).*
- 4) *Another method for securing works of art to the back mat, is to use commercially-available photo corners. For larger works of art or works on a secondary support, heavier corners can be made out of the $\frac{3}{4}$ " (1.9 cm) gummed cloth tape (Figure 4) or any acid-free paper, and cut to fit the work, thus avoiding future damage.*
- 5) *Dry-mount tissue must be avoided for hinging, because a high temperature is required for its application (dangerous to the work), and it is non-reversible.*
- 6) *The overthrow mat should be attached to the back sheet using 1" (2.5 cm) gummed cloth tape along the left margin (resembling a book, as shown in Figure 1).*

II STORING WORKS OF ART ON PAPER

- 1) *When storing a matted print, drawing or water-colour, insert a protective sheet of tissue paper cut to the full size of the mat, unless a Mylar "sandwich", mentioned in 1-6, is used. As an alternative, a sheet of clear uncoated 5 mil Mylar can be used as a protecting film. Round off each corner of the Mylar with scissors, as sharp corners can damage the surface of a work. Make sure only uncoated Mylar is used since some types of Mylar have a coating on one side for heat-sealing purposes.*
- 2) *Mylar or Plexiglas must not be used to protect charcoal drawings or pastels (fixed or unfixed) because pigment particles are drawn off the paper by the electrostatic charge continually present in plastic.*
- 3) *Store the matted works in heavy cardboard Solander boxes with hinged covers (Figure 5). When purchasing the Solander boxes, get assurances from the manufacturer that only neutral materials are used and that the interiors are lined with white acid-free paper. Storage in Solander boxes ensures that the works are kept from light, free of dust and scuffing. Acid-free cardboard folders can be used also for this purpose.*



A method for securing a work of art to the back mat by using corners made from gummed Holland tape

P.A.M.

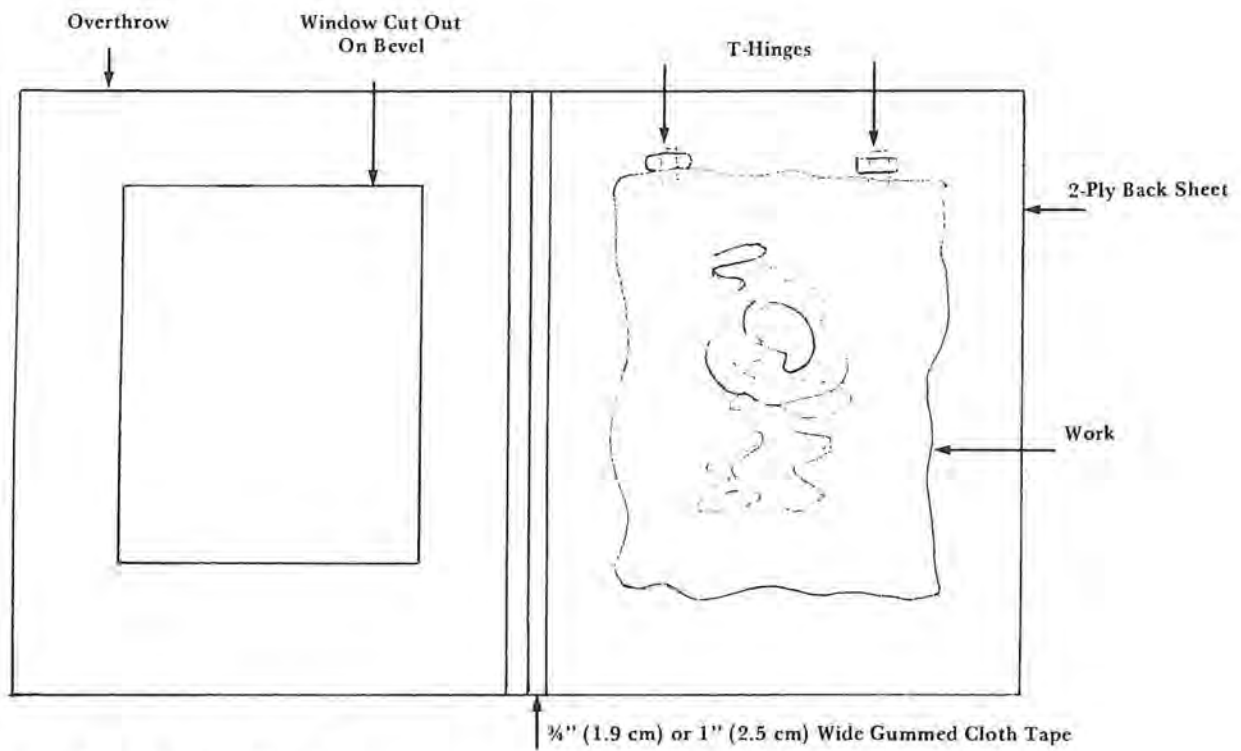


FIGURE 1 STANDARD MAT

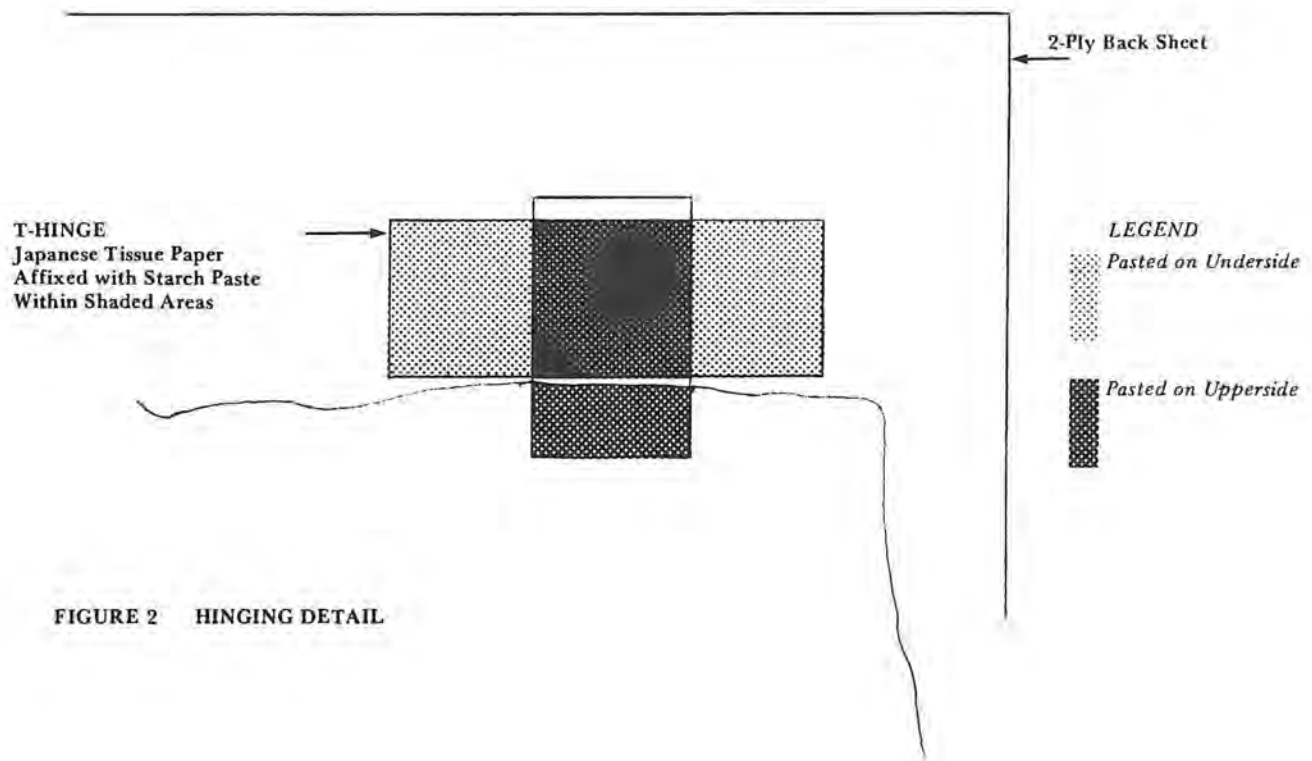


FIGURE 2 HINGING DETAIL

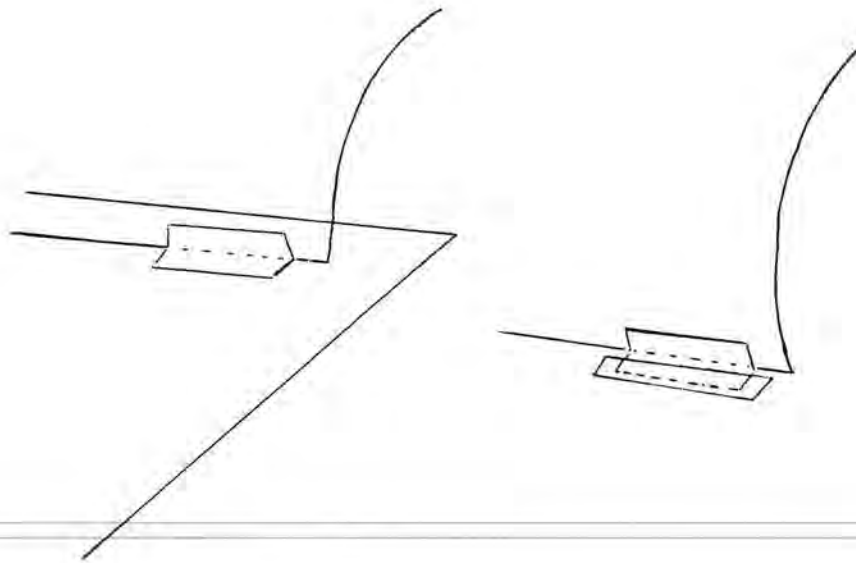
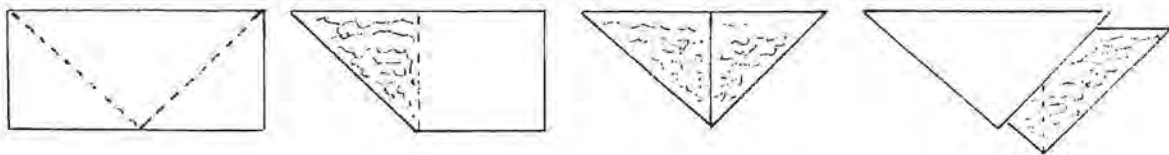


FIGURE 3 FOLDED HINGES



ADD TRIANGLE TO COVER
ONE GUMMED SIDE

FIGURE 4 CORNERS

III FRAMING

- 1) *Frame matted works under ultraviolet-filtering Plexiglas which helps to reduce the deteriorating effects of ultraviolet rays although it does not eliminate them completely.*
- 2) *Ultraviolet-filtering Plexiglas, because of its electrostatic effect, (as mentioned in II-2), must not be used over charcoal drawings or pastels. They should be framed under glass.*
- 3) *When shipping works of art framed under glass, make sure masking tape is placed over the glass in a grid pattern spaced not more than an inch apart horizontally and vertically. The tape will hold the glass in place, usually without damage to the work, if accidentally broken. (Plexiglas does not require masking tape nor should it be used, since it is difficult to remove).*
- 4) *As a backing, use a stiff, good-quality mounting board or corrugated plastic sheet. Corrugated cardboard, plywood or a wood panel should be avoided as a backing, since discolouration of the mat or work can occur.*
- 5) *Matted works having one dimension greater than 28 inches (71 cm) should not utilize metal frames for travelling. This type of frame is not*

sturdy enough to offer protection for larger works. Strong wood frames are recommended for larger sizes.

IV THE ADVANTAGES OF STANDARD DIMENSIONS FOR MATTING AND FRAMING

- 1) *Works of art on paper in the National Gallery collections are matted in four standard sizes:*

Size One:

35.6 cm x 45.7 cm (14" x 18")

Size Two:

40.6 cm x 54.6 cm (16" x 21½")

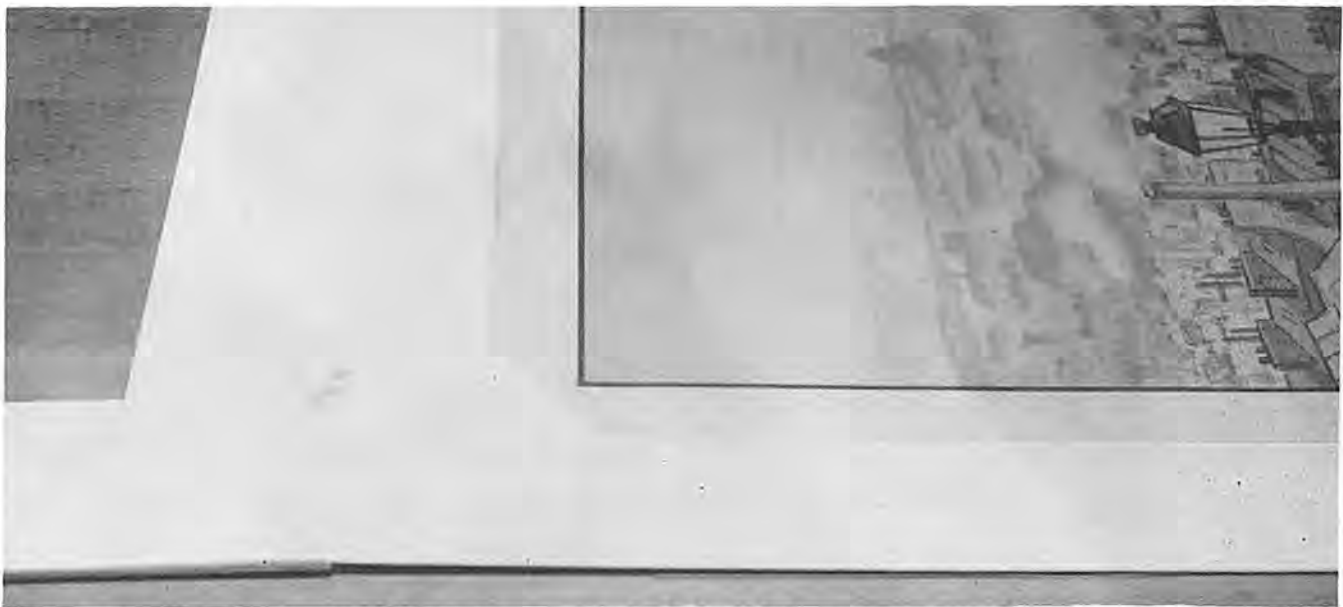
Size Three:

55.9 cm x 71.1 cm (22" x 28")

Size Four:

71.1 cm x 91.4 cm (28" x 36")

These dimensions are standard for print and drawing departments throughout North America and England (with occasional deviation in Size Two). These matted works are stored in Solander boxes or folders which are made to conform to these four sizes. Once installed in reusable standard size frames, these matted works can be shipped in reusable slot crates. Oversized works requiring special mats are usually kept permanently framed for safe handling and storage.



Matted works of art properly stored in a Solander box lined with acid-free paper

Provincial Archives of Manitoba



FIGURE 5 SOLANDER BOX

MATERIALS AND SUPPLIES

Cloth gummed tape for hinging*
 1 inch (2.5 cm) widths in 100 yd. (91.4m) rolls
 TALAS
 130 Fifth Avenue
 New York, N.Y. 10011

**Recent tests have shown that this tape becomes more acidic with age and that the adhesive is subject to discolouration. It does, however, remain the most acceptable of commercially-available products.*

Japanese paper and other useful materials
 TALAS
 130 Fifth Avenue
 New York, N.Y. 10011

Aiko's Art Materials Import
 714 North Wabash Avenue
 Chicago, Illinois 60611
 Telephone — 943-0745

Interleaving tissue paper
 Process Materials Corporation
 329 Veterans Boulevard
 Carlstadt, New Jersey 07072

Mylar
 5 mil (0.13 mm), type D, super clear, uncoated
 Dupont of Canada Ltd.
 Films Department
 P.O. Box 660
 Montreal, Quebec

Cellofas B-3500 (Sodium Carboxymethyl Cellulose)
 (This can be used as an adhesive for hanging in works of art)
 TALAS
 130 Fifth Avenue
 New York, N.Y. 10011

Solander boxes for storage
 Perry Coodin
 264 Holmwood Avenue
 Ottawa, Ontario K1S 2P9
 Telephone — (613) 235-0131

Acid-free folders and envelopes for storage
 The Hollinger Corporation
 3810 South Four Mile Run Drive
 Arlington, Virginia 22206

Ultraviolet filtering plexiglas UFI
1/8 inch (3.18 mm) thick
Canus Plastics Ltd.
340 Gladstone Avenue
Ottawa, Ontario
Telephone — (613) 232-2657

Anti-static cleaner for plexiglas—"Rez-N clean"
Plastics of Ottawa
216 Pretoria Avenue
Ottawa, Ontario
Telephone — (613) 235-1465

Corrugated plastic backing sheets used in framing
(Coroplast) — 48" x 60" (1.22 m x 1.52 m) and
48" x 96" (1.22 m x 2.44 m)
Crystaplex Plastics Ltd.
1825 Dundas Street East
Mississauga, Ontario L4X 1L6
Telephone — (416) 625-4200

Temperature and relative humidity recorders
Belfort Hygrothermograph Model 5-594-2. One
month chart drive. Battery-operated. Chart Num-
ber 15677 (range -12°C to 43°C and 0%)
Carleton Industries Ltd.
2414 Holly Lane
Ottawa, Ontario K1V 7P1
Telephone — (613) 731-4703

Crawford UV Monitor Type 760
Littlemore Scientific Engineering Co.
Railway Lane
Littlemore, Oxford OX4 4P2
England

Acid-free corrugated backing sheets, CD-158-BD
called Archivart
Process Materials Corporation
329 Veterans Boulevard
Carlstadt, New Jersey 07072

Ultraviolet filtering sleeves for fluorescent tubes
Comco Filter-Ray Sleeves in lengths 48" x 96"
Commercial Plastics and Supply Corporation
1127 Newmarket Street
Ottawa, Ontario K1B 4N4
Telephone — (613) 745-7043

Illumination measuring instrument — Gossen Panlux
Meter Model N
Hall Photographic Supplies Ltd.
1018 Wellington Street
Ottawa, Ontario
Telephone — (613) 725-3368

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Care of Natural History Specimens

JACK DUBOIS

Assistant Curator of Mammals
Manitoba Museum of Man and Nature

Natural history specimens found in community museums are of three basic kinds: mounts (stuffed birds and mammals), rugs or furs, and skulls or bones. This paper will address the care of these specimens particularly, but also may be applied to such articles as feather dusters, horn chairs and many leather or ivory goods.

Natural history specimens require the same basic conservation as any other class of artifact. The two most important requirements are protection from extremes of relative humidity and from ultra-violet light. In common with all organic matter, natural history specimens are quite susceptible to deterioration from dust, insects, rodents, handling, and chemicals in labelling, packaging, and associated storage materials. Let us go through each of these potentially harmful factors and look at them in terms of ideal conditions and determine the best compromise that normal circumstances will allow.

Relative Humidity

Common sense and past experience tells us that artifacts shrink and crack when kept under conditions that are too dry. When artifacts are kept under conditions that are too wet, mould grows on them. Books such as *Conservation and Restoration for Small Museums*¹ qualify "too wet" as above 65% and "too dry" as below 45% relative humidity. The ideal situation, therefore, is to have your museum heated, air-conditioned and humidity-controlled between these limits all year round. (Temperature is a factor only as it affects humidity—that is, the higher the temperature, the greater the amount of water the air can hold. Cooling causes the air to lose moisture as condensation). The reality of most community museums is that they are unheated in the cold, dry winter and air-conditioned by open windows in the hot, moist summer, thereby exposing the contents to the extremes of relative

humidity mentioned above. What can be done? If year-round heating and air-conditioning is not feasible, perhaps part of the building could be heated to create an inner sanctum where the most valuable specimens could be kept. Alternately, these same specimens could be moved to another building (e.g. basement, town hall, etc.) that is heated. Display cases act to buffer specimens against sudden changes in temperature and humidity and are valuable for other reasons, such as dust protection, which we will discuss later. Other factors that affect humidity are things like spotlights or even ordinary light-bulbs that heat and dry the areas around them. We are experimenting at the Manitoba Museum of Man and Nature with tightly-sealed cases containing various amounts of silica gel to control humidity, and with remote light sources to avoid the drying that comes with excessive heat. We have also built a case that is pressurized with nitrogen to stabilize temperature and humidity. To get back to the practical side, one of the first things to do at a community museum is to assess what you have. Look at your building for temperature/humidity zones, for example, uninsulated basements are often cool and damp. The attic is most likely cold in winter, and hot in summer, resulting in great seasonal variations in relative humidity. The main floor of any building is usually the most stable. Even on this floor, however, there will be areas near doors, sunny windows, furnace outlets, or radiators, etc., that will experience drastic changes in humidity on a daily basis. These areas are obviously the ones in which to entrust only your most inanimate, least valuable specimens.

Ultra-violet Light

Fading, or loss of colour, is an irreversible process caused by exposure to ultra-violet light, and one to which natural history specimens are very susceptible. Most of us are familiar with this process



Mounted mink specimens severely faded by ultra-violet rays

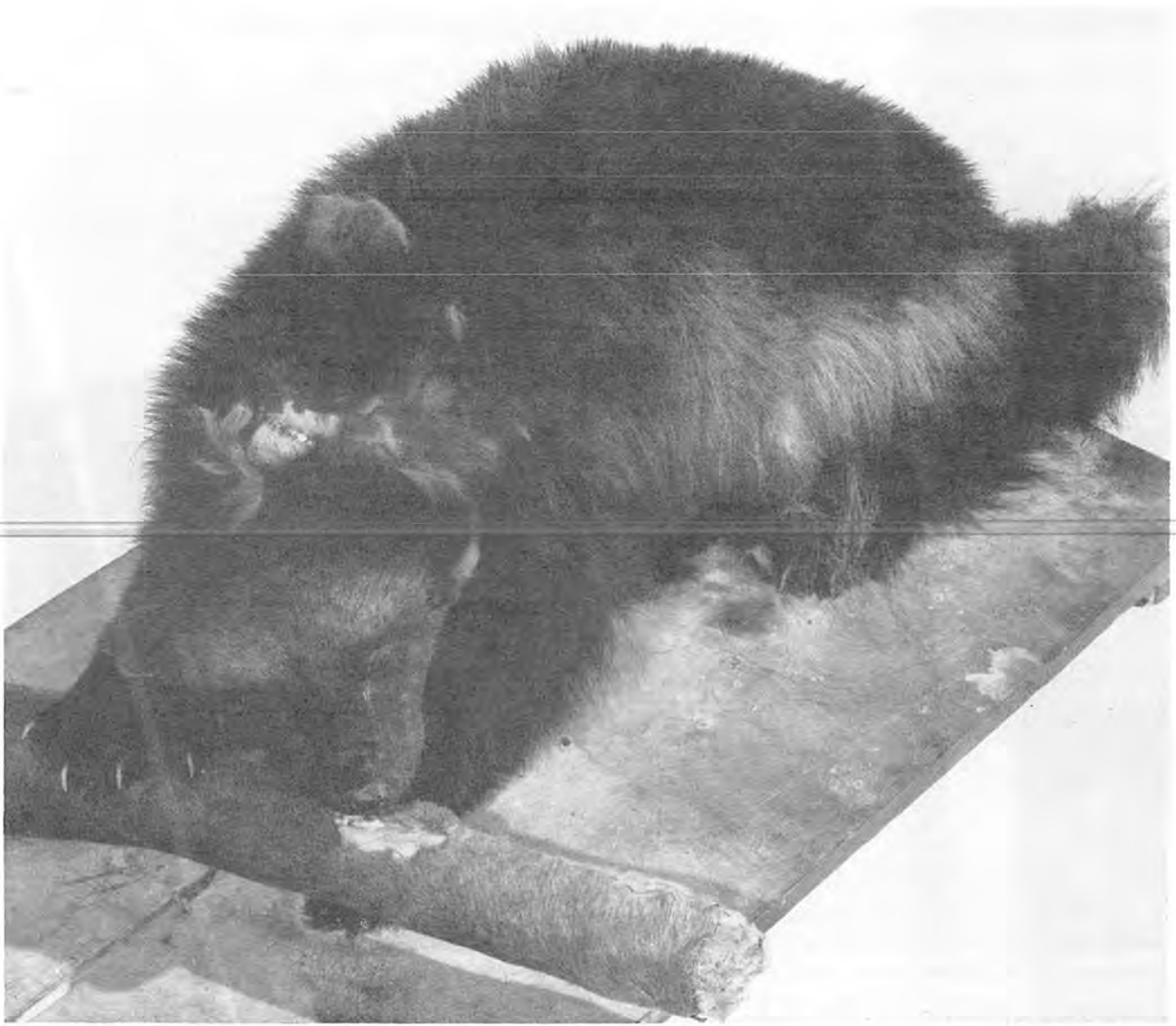
C. Douglas Smail

which is evident in curtains, paintings and anything left outside for long. Those museums featuring dark, heavily-curtained Victorian parlours are on the right track when it comes to protection from ultra-violet rays. Ideally, all specimens should be stored in light-tight cases and brought out only when needed. However, we are all in "show business" when it comes to specimens, therefore, we must consider what can be done to stop fading. If natural light must be used, an ultra-violet filtering film is available. It can be cut to fit any window, and prevents the entrance of harmful rays. Incandescent light bulbs give off very few ultra-violet rays, but most fluorescent tubes give off enough to do damage. This can be eliminated by the use of special sleeves over the tubes or by the use of "Philips Tricolor 37" or "Philips Softone 27" fluorescent tubes, which give off negligible amounts of ultra-violet rays. Contact the Museums Advisory Service of the Manitoba Museum of Man and Nature for information on ultra-violet filtering materials.

If the circumstances of your museum are such that you have to display specimens near windows or under standard fluorescent lighting, damage can be minimized by keeping the exposure as short as possible. For example, when the museum is closed all windows should be curtained or shuttered and the lights turned off. Storage areas should have the lights on only during actual use. Even when display areas are lit, it should be only bright enough to view the objects. Most of the large museums in North America which display groups of stuffed animals, have removed several fluorescent tubes from each case. In terms of the efficient use of space, possibly meeting rooms and offices could be located in front of windows, and other areas used for display purposes.

Dust and Dirt

The accumulation of dust and dirt over the years is a serious problem with natural history specimens,



Moth-eaten — a humiliating condition to be in for any self-respecting wolverine

C. Douglas Smaill

since the cleaning processes literally wear out the specimens. Now that coal and wood fired heating systems have given way to the cleaner systems of gas and oil, the main suppliers of dust and dirt in museums are the workshops, and outside air. The best solution is a central air-filtration system, but that can be expensive. Putting everything in a sealed case accomplishes the same result, but with the same problem—the cost. There are a few things that can be done inexpensively, such as covering the more valuable specimens with old sheets, plastic bags or what-have-you in the off season. Another preventative measure is confining all dust-producing activities, such as carpentry and refinishing, to another building or at least areas where specimens are not exposed.

In the long run, any specimen that is not given protection must be considered expendable. Old mounts can be gently cleaned by first blowing off as much of the dust as possible, rubbing in some warm sawdust or bran, and then vacuuming. Every time this is done, however, wear occurs and the life of the mount is shortened. Grease or extra stubborn dirt requires a solvent bath before the sawdust and vacuuming routine.

Insects

Modern cleaning and cold winters tend to keep insect problems down in Manitoba, but moths and carpet beetles show up eventually. There would be no problems if all material brought into museums were insect-free, all mounts were treated with an

insect-repellant, and all cupboards and corners were spotless and inspected weekly. Unfortunately, material tends to arrive unfumigated and untreated, and odd corners go uninspected for months. Before accepting organic material, whether wool, feathers, buckskin, or mounts, find out if it has been treated. If not, put it into a plastic bag immediately, or other sealed place, with a pest strip or moth crystals, for a week or more. Even a freezer can be used to kill bugs. Display cases or storage units containing organic materials should have some form of insect killer present at all times.

Rodents

As with insects, constant vigilance is required to prevent rodent-damage to valuable specimens. Through a set of circumstances, I was forced to spend the night in the back of a small natural history museum a few years ago. I was kept awake a good part of the night by the loud and vigorous gnawing of at least one squirrel and one or two mice! This fall, at the Manitoba Museum of Man and Nature, we have trapped over a dozen house mice that thought our building would be a nice place to spend the winter. They damaged some mounts in a very short time before they were trapped. We have poisoned grain and traps out at all times, as this is much cheaper than replacing specimens.

Handling

As with mounts left exposed to the other hazards, anything that is handled a great deal must be considered expendable. If your museum has rare and valuable natural history specimens that have to travel for some very good reason, always pack them as if they were china and include specific instructions on handling. Never assume the receivers know the proper way to handle things. If it is known beforehand that a mount will travel, it can be made up with a durable pose, that is, deliberately keeping easily-broken appendages such as wings, tails, and ears close to the body.

Chemicals

Although this particular area is of greater concern with artifacts such as paintings and metals,

natural history specimens are also susceptible to damage from chemicals in packaging and storage materials. Many papers used for packing contain acids or inks that, in time, may affect the specimens. The vapour from moth crystals, while great for repelling insects, melts some plastics, such as styrofoam, and turns plastic vials cloudy. Books such as *Artist Beware*² should be a part of every town library. It should be consulted carefully to learn of potential hazards and the precautions that should be taken when using any chemical—no matter how common.

Refurbishment

Many community museums have stuffed creatures that have been damaged by one or all of the above factors. Unfortunately, refurbishment is seldom successful. We have tried cleaning, sewing, and gluing hides, wings, tails, etc., and repainting noses and gums. The results are always less than satisfactory. Basically, an old mount can only be given a very superficial cosmetic face-lift. Fading cannot be reversed. Shrinkage of underlying materials is the same. If it is a valuable specimen because it is extinct, rare or of historic value, do the best you can, and then put it in a sealed, light-tight storage case with a pest strip. If it can be replaced with a new mount, fur rug, etc., spend your time and energy on securing a modern replacement.

The point, of course, is that prevention is indeed the best medicine. If natural history specimens are given the optimum environmental conditions and protection from insects, rodents, handling and chemicals, they will be preserved to educate and entertain indefinitely.

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Historical Documentation: Going Beyond the Obvious

CLAIRE ZIMMERMAN

Curatorial Technician

Manitoba Museum of Man and Nature

Every museum, whether large or small, has an obligation to its community, to other museums, and to posterity, to document its collections as accurately and completely as possible. Documentation can be defined as the factual information gleaned about each object in the collection. Some of these data are presented to the museum along with the object. Some are established by research. For our purposes, I would like to deal specifically with the documentation of historical collections.

The documentation process should begin the moment a potential donor or vendor arrives with an object for a museum. The initial receipt should contain as many answers as possible to the questions — who, what, where, when, why and how. Even if the donor's information is questionable, it should still be recorded along with any reservations the collector may have. As well, any additional material such as photos, letters or wills should be kept in a donor file or archives facility and cross-referenced.

Two levels of research should then follow. First, accurate research must be conducted to meet the standard requirements of the institution's accession record. Most museums attempt to complete this basic level of research. Artifacts are documented in terms of size, form, shape, design, texture and material; in other words, their physical attributes are recorded. In addition, an attempt is made to identify what an object is, who made it, when and where it was made, who used it, and when, where and how it was used.

Answers to these questions can be discerned or clarified using catalogues, collector's manuals, publications, patent research, comparison with documented artifacts and consultation with experts in the community

Presently, at the Manitoba Museum of Man and Nature, a former dental and medical assistant is

cataloguing our collection of dental and medical equipment on a volunteer basis. She is familiar with the terminology and, should questions arise, has professional contacts she can consult.

Knowledge of manufacturing processes and changes in manufacturing technology can provide clues to an object's make-up and date of manufacture. For example, bottles, like cake, are coloured by their ingredients. Glass recipes containing iron slag produce a black glass; cobalt a shade of blue. To make a truly clear glass, manufacturers began adding chemicals sometime after 1800. Exposed to sunlight for a period of time, these same bottles acquired a pale amethyst tint. The absence or presence of seam or mould marks on bottles are



Bottlecorker whose identity was determined through the aid of a 1929 Ashdowns General Catalogue

Claire Zimmerman

good indicators of methods of manufacture and correspond to various dates of production.

Markings on an object, whether they be trademarks, hallmarks or simply initials scratched on the surface can indicate the manufacturer, the date or place of manufacture, or the owner's identity.

In an issue of the *Material History Bulletin*, markings found on Medalta products between 1916 and 1954 are listed and examined. Identifying markings associated with the Medalta name are explored; as well as size and content markings, style numbers and names, designer's names, and colour or design markings.

As custodians of artifacts, we might think the process of documentation complete following these basic areas of enquiry. Each object could then be photographed and put to rest in a display cabinet or storage room. But is the job complete? What have we actually learned about the artifact and its relationship to the people, events and issues of the past? What have we been able to discover about the lifestyles, values and sensibilities of people in days gone by? Has the question "why?" been fully explored?

It would appear that a second, more sophisticated level of research is required; that is, consideration of the relationship between the artifact and its historical context. By comparing and contrasting the artifact with other relevant period pieces, as well as by examining primary and secondary sources, one has an opportunity to gain a fuller understanding of the artifact's past. Artifacts may then become interpretive vehicles illustrating social history, economic trends, religious beliefs, political expression and technological change.

To illustrate this secondary level of research, let us consider a regalia ribbon worn by a member of the Sons of Scotland, a benevolent and fraternal organization formed in Ontario in 1876. Research reveals that this organization has two major aims—to preserve Scottish culture and to maintain insurance funds for its members. It was one of some eight hundred distinct orders formed by 1925 in North America. These voluntary associations of the 19th and early 20th century performed a variety of social and cultural functions and occasionally some local economic or political task.

Rowland Berthoff, in *An Unsettled People: Social Order and Disorder in American History*, states that voluntary associations satisfied an even greater need which was to mediate between the individual and the mass; in other words, to prevent loneliness in an unstructured, evolving society.

"For all their elaborate ritual and costume, their official hierarchies, solemn moral pre-

cepts, fanciful traditions, and burial insurance schemes, their only indispensable function was simply to give the individual at least one highly organized social group to belong to."

Similarly, clothing might be studied to reveal more about clothes and the people who wore them, than about the ups and downs of waists and hems, and the ins and outs of sleeves and skirts.

During the Second World War and post-war years, fashions changed as a result of labour and materials shortages. A tailored suit worn in post-war years for semi-formal occasions might not suggest this at first glance. However, through research one might learn of the Utility Scheme introduced in May 1941 by Churchill's coalition government. This scheme required curtailment of trimmings, limits on the width and length of skirts and restrictions on the number of pleats. Fashion followed these dictates until 1952. The only escape was do-it-yourself dressmaking.

One might ask why this research is important. First of all, it contributes to the preparation of accurate and informative museum exhibits. Secondly, it provides information which is of tremendous value to other researchers. Thirdly, it provides the basis for determining insurance values and, fourthly, such research may prove critical to the proper care and conservation of objects.

Not doing this more intensive kind of research creates the possibility of incorrect identification of objects. It means that some artifacts may be collected and attributed to the wrong historical context and credited with false significance. A lack of research leads to an inconsistent collections policy. Items might be collected continually that have no real significance to the community. No research signifies an uninformed and out-of-date curator. As well, it guarantees more mistakes in the future. Fifty years, ten years, or even a year hence, a museum researcher may be misled either by information on file or by the types of artifacts collected.

Having outlined the levels of historic research and the reasons for such enquiry, I would like to suggest some helpful hints for effective research:

1. Establish research objectives. Set up a standard list of questions which will determine what significance, if any, an object has for your community. Ask these questions of every object in your collection and of every object offered to your museum.
2. Group your artifacts according to type before commencing your investigation. You'll get the



Sons of Scotland regalia ribbon ca. early 20th century
 Claire Zimmerman

most out of your research and time if you study a group of similar items at one time.

3. Establish permanent research files according to the subject areas and types of artifacts that your museum deals with. Information about a collection cannot simply be stored in the mind of a museum staff member. All too often the information is lost when he or she leaves.
4. Be aware of various kinds of source material and resource persons. Data such as local histories, newspaper clipping files, photograph collections, books, catalogues, and periodicals all help to keep a researcher up-to-date. Set up a standard reference shelf. Make use of inter-library loan services and search out available government services. Join local history clubs or other related-interest groups. Encourage your

local library to acquire books in which you are interested. Take advantage of the knowledge of local retired craftspersons and professionals. Many museums keep a special listing of collectors, craftspersons, scholars and professionals in their region who may be helpful in documenting particular collections. Such people can provide information not otherwise available to even a well-trained curator.

Finally, try to publish your findings. If need be, borrow the school mimeograph machine. As the keepers of our region's cultural and material heritage, we have an obligation to make as much information as possible about our collections available to others. It is important to remember in preparing exhibits and publications that the information we provide may ultimately be more valuable to future generations than the artifacts themselves.

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Cataloguing Military Uniforms

DAVID ROSS

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New Brunswick Museum

Editor's Note: The following article is reprinted from the publication of the same name which was published by The New Brunswick Museum in 1977. The publication, written by David Ross in collaboration with Rene Chartrand of Parks Canada, was the basis of Mr. Ross' workshop at the AMM 10th Annual Fall Seminar held in Brandon in 1981.

This paper makes only modest claims and probably has much to be modest about. It is intended to assist the museum worker, who is not familiar with the intricacies of military dress, to catalogue uniforms. It is hoped that it will introduce the cataloguer to the standard vocabulary of military dress terms, and perhaps ensure some standardization of catalogue descriptions.

It is a sad and illogical fact of the Canadian museum world that military uniforms are not considered to be part of the textile or clothing collection of the general history museum. It is sad, because there is a wealth of social history to be illustrated by uniforms. During the 19th century, men living literally in the backwoods of Canada, sent to London tailors for elaborate military uniforms, correct in every detail of the Imperial Army regulations. This is surely a clue to the status of the militia officer and even the private in Canadian society, worthy of investigation by the social historian. The Militia Department was the engine of patronage of the party in power from the very early days until well into the 20th century. One that worked very efficiently, with many varied inducements to offer, from impressive military titles to clothing contracts. For a detailed picture, those interested should read Dr. Desmond Morton's *Ministers and Generals: Politics and the Canadian Militia*. For an example of the militia as a ladder of social and professional advancement see also the same writer's life of General Sir William Otter, *The Canadian General*.

This neglect of uniforms is illogical because they were common wear prior to 1914 and mess kits could still be seen at socially important functions well into the 1950's. Canada's militia was a citizen-soldier army, so it is strange that the textile curator should treasure the frock coat but ignore the uniform worn by the same man.

To the outsider, military uniforms may seem very complex because of the great variety of buttons, colours, badges and braid which occur. But the distinguishing marks are all carefully and logically designed to provide evidence as to the rank and service of the wearer.

It is hoped that this paper will assist the textile curator and cataloguer to overcome the invisible barriers which at present exist between uniforms and civilian clothing and arouse their curiosity about an intensely interesting field.

The writers hope that the expert reading this will forgive the obvious simplifications, comment on the content and suggest additions or corrections. Such help would be sincerely appreciated.

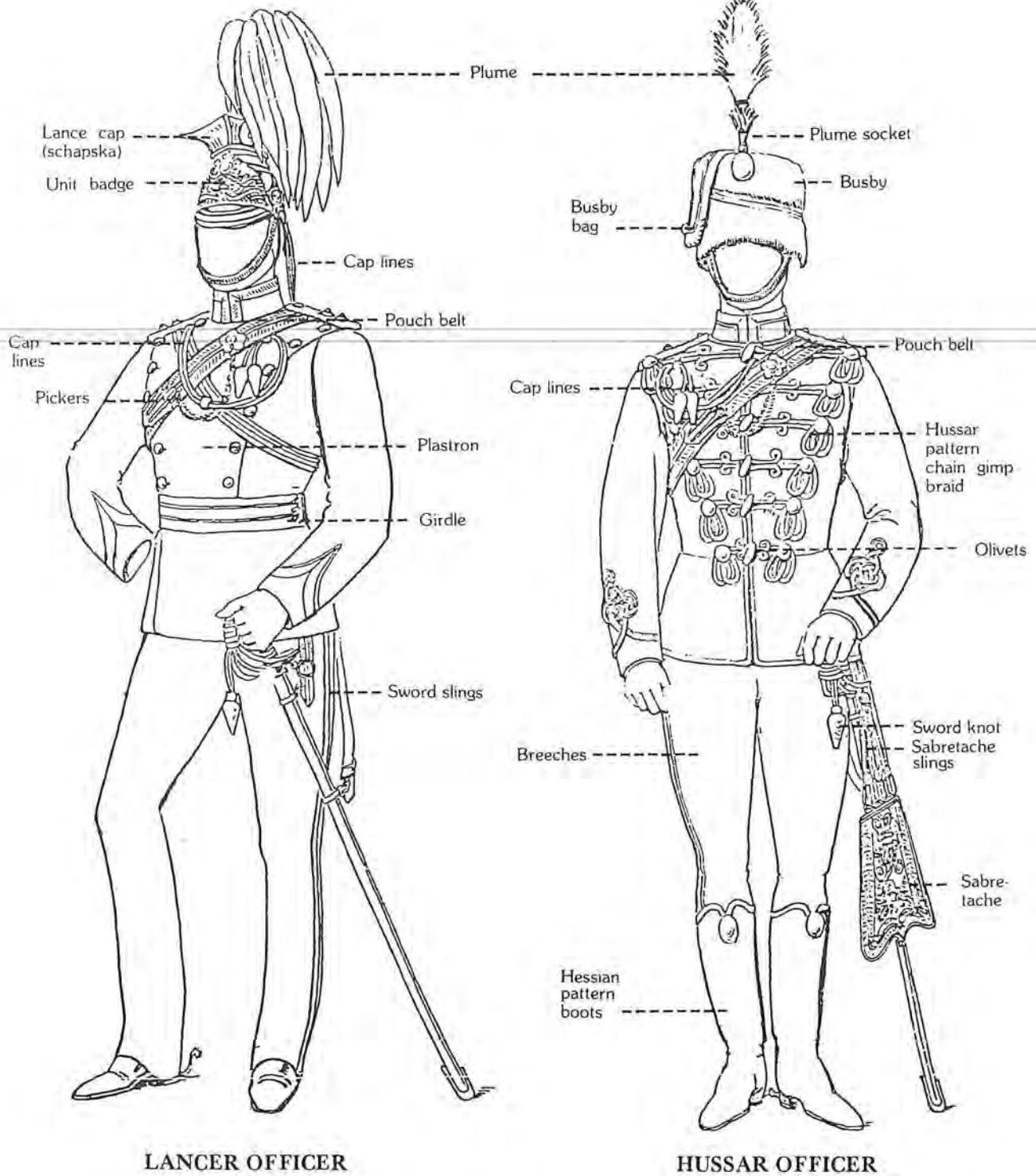
GUIDELINES

The museum catalogue entry consists of three principle parts:

- the name of the artifact
- a physical description
- details of the artifact's historical use and function

These guidelines deal with the first two parts. The physical description is the evidence upon which name or identification of the artifact is based. The cataloguer should be modest enough to realize that errors of judgement can be made in identifying a uniform, therefore a detailed description either written or photographic, should be available so that others can make a judgement of

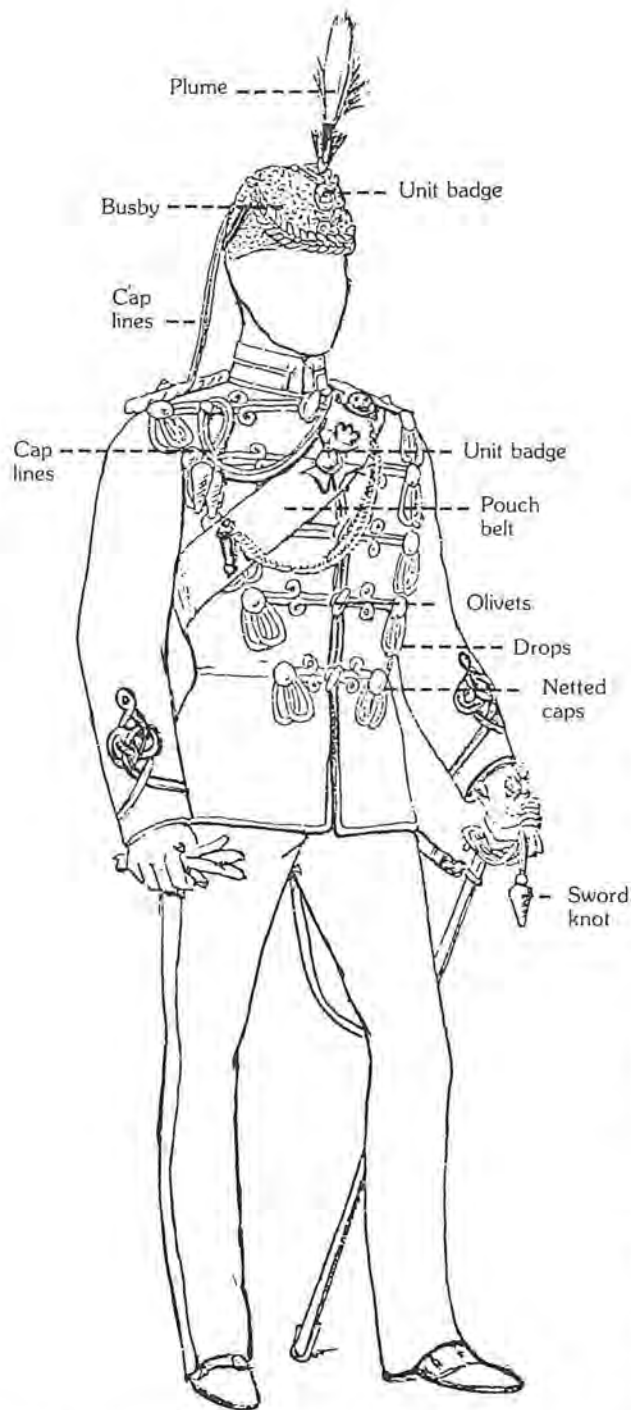
CAVALRY OFFICER'S FULL DRESS UNIFORMS



The colour of the collars and cuffs, the pattern of pouch belts would differentiate various regiments. Also the colour of the plastron and the cap badge in the case of lancers.

their own as to the validity of the cataloguer's decision.

Canadian uniforms closely follow the patterns of the Imperial Army. These guidelines should be supplemented by referring to the Official Dress Regulations. The following are the most readily available:



RIFLE UNITS—FULL DRESS, CIRCA 1900
Regiment officers wear rifle (dark) green tunic and trousers

Dress Regulations 1846: First published in London in 1846. Reprinted in 1971 by Arms & Armour Press, Lionel Leventhal Ltd., 677 Finchley Road, London NW2, England.

Dress Regulations 1900: First published by the War Office, London, 1900. Reprinted by Arms & Armour Press, 1969.

Dress Regulations for the Officers of the Canadian Militia 1907: Copies are available for consultation at the Directorate of History, National Defence Headquarters, Ottawa; at the Base Library, CFB Chilliwack, B.C., and the library of the Manitoba Museum of Man and Nature, 190 Rupert Ave., Winnipeg.

(The writers of this paper hope to publish shortly a facsimile edition of this book with additional photographs and an appendix containing the significant additions and amendments up to 1914).

For the best and most complete coverage of the varieties and changes of British military dress, cataloguers should consult:

British Military Uniforms from Contemporary Pictures, by William Y. Carman, published by Leonard Hill Ltd., London, England, 1957.

Another publication of value is the pattern book of the London military tailor, T.H. Holding, from which some of the figures in this paper are derived:

Uniforms of the British Army, Navy and Court: Published by T.H. Holding in 1894, reprinted in 1969 by Frederick Muller Ltd., Fleet St., London EC4, England.

The following books by Mr. A.H. Bowling, published by Almark Publishing Co. Ltd., 270 Burlington Road, New Malden, Surrey, England are also helpful:

British Infantry Uniforms 1660-1914

Scottish Regiments and Uniforms 1660-1914

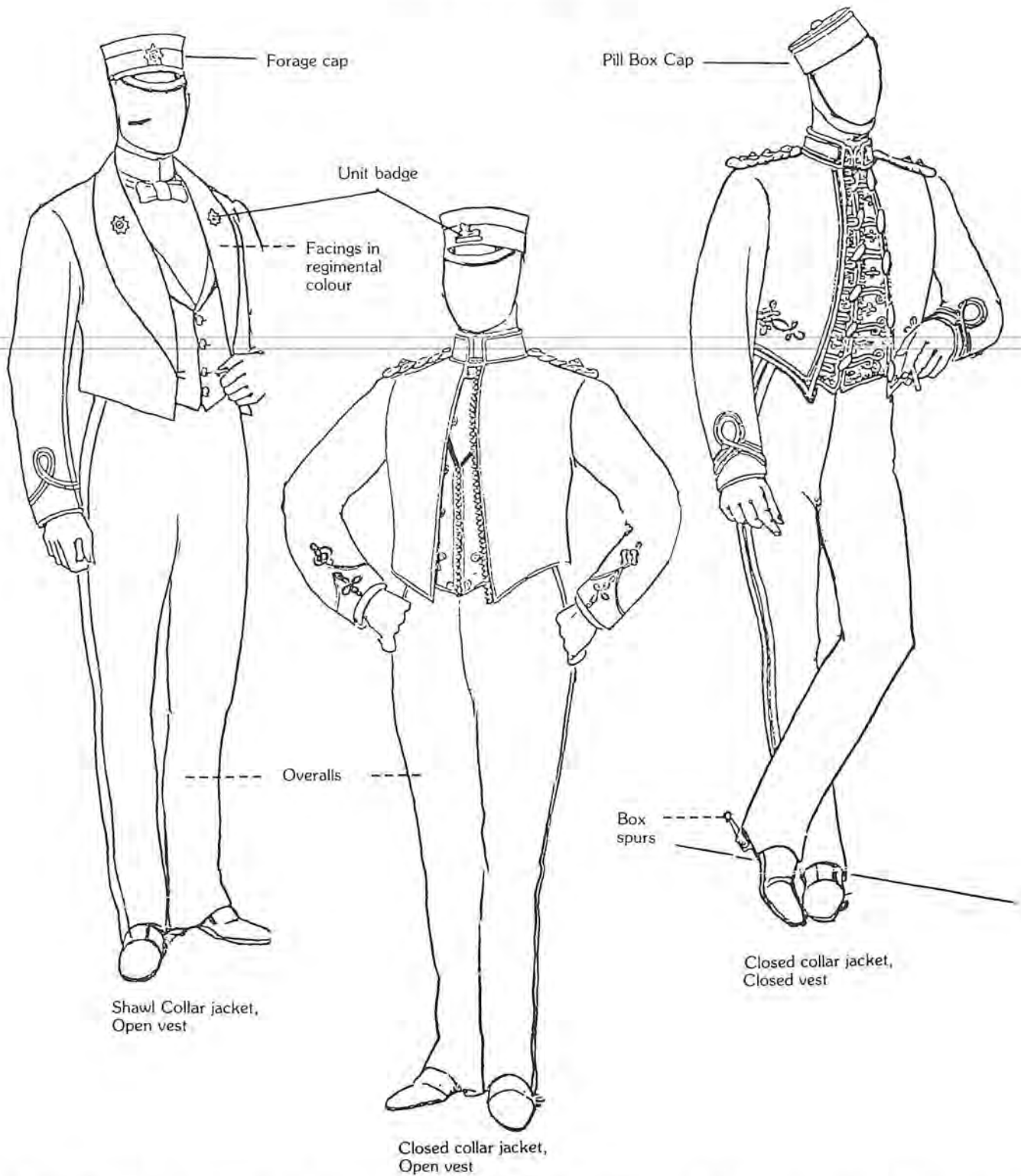
British Hussar Regiments 1805-1914

GENERAL

It is essential that all details of the parts of a military uniform be noted. Small variations are often the only difference between one rank and another or between one unit's uniform and another.

A uniform consists of a number of items. The catalogue entry should carefully list the parts in the museum's collection, i.e. rather than just say-

OFFICER'S MESS KIT



All three figures are wearing overalls strapped under their half Wellington boots. Overalls have seam stripes of regimental colours. Rank is indicated on the shoulder straps or by sleeve braid.

ing "Uniform, full dress, captain, 19th Alberta Dragoons 1908", add (3 pieces, helmet, tunic, and waistbelt)".

Note also any missing parts of the item which make up the full uniform or item. The inscriptions and symbols on the buttons and badges will often provide the identification of the wearer's unit and rank. Look at these first.

Footwear:

- Distinguish between riding boots, ankle boots, and shoes.
- Describe type — lace-up, slip-on, buckled.
- Specify the duty for which they are worn — combat, riding, levee, with mess kit, etc.
- Describe colour. Note: After the introduction of Khaki until the green uniforms were issued, say 1900-1965, officers wore brown footwear and N.C.O.'s and other ranks wore black, with few exceptions. (In the navy and air force all ranks wore black.)

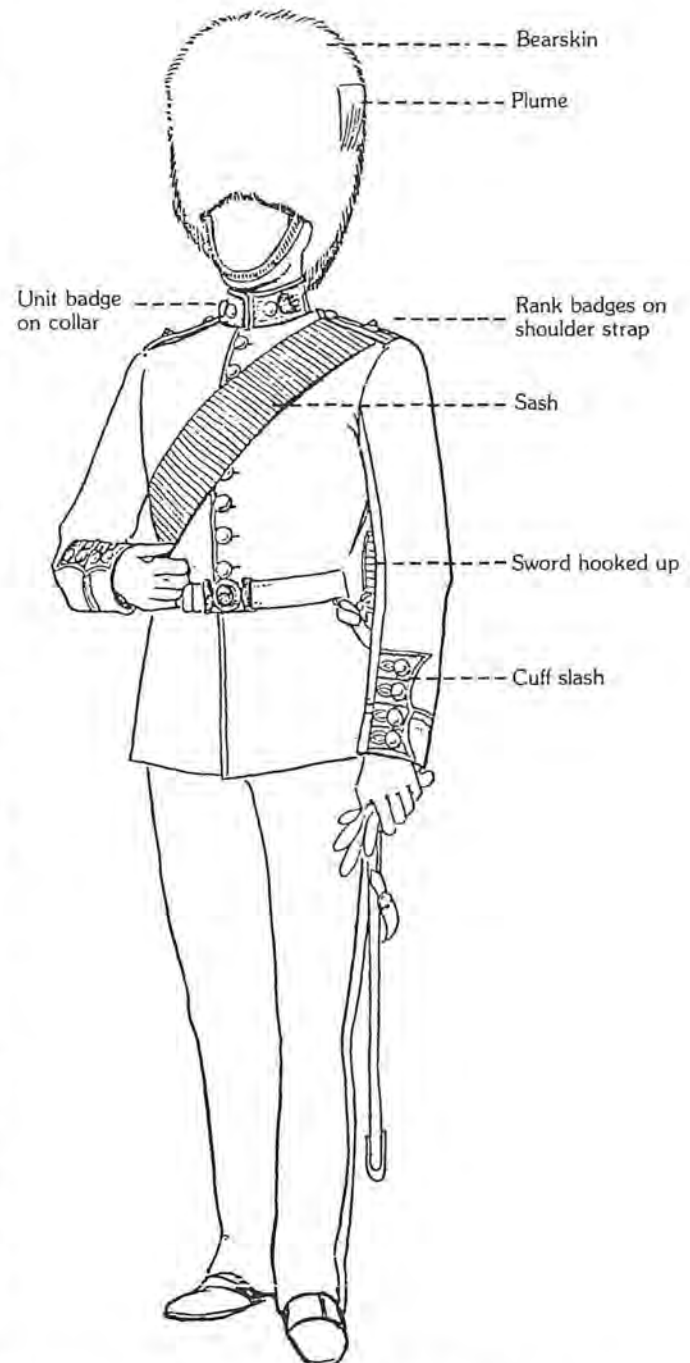
Spurs:

- Specify type. There were two main types — Box Spurs which clipped to the heel and had no straps, and Jack Spurs which were strapped to the boot with leather and/or chain straps.
- Specify metal — usually brass, gilt, silver or nickle-plated steel.
- Describe fittings and note if they are missing.
- Describe general shape. Is the part (Neck) holding the rowel straight or curved?
- Describe the rowel, spiked or smooth. (Note: rowels were sometimes replaced with a small coin; this can be a help in dating the spur's period of use.)

Trousers:

- Specify type:
 - Trousers*: Leg same width all the way down, wide at cuff.
 - Overalls*: Slim leg, tapering to the ankle, usually worn with strap under instep. Used with mess kit or for riding, worn with half Wellington boots and box spurs.
 - Riding breeches*: Flared from the hip to the knee, fastened below the knee with laces or buttons. Worn by cavalry officers and other ranks and by adjutants and field officers of infantry regiments.
 - Pantaloons*: A predecessor of riding breeches. Slim leg buttoning or lacing at the ankle or just below the knee. Worn with riding boots.
- Specify colour and type of cloth and give details of colour; width and design of seam stripes or piping.

- Enter full details of all markings, tailor's labels, stamps, etc.
- Describe buttons and enter marker's name if marked on button (usually on back).
- Describe fly opening — buttoned, zipper, drop front, etc.

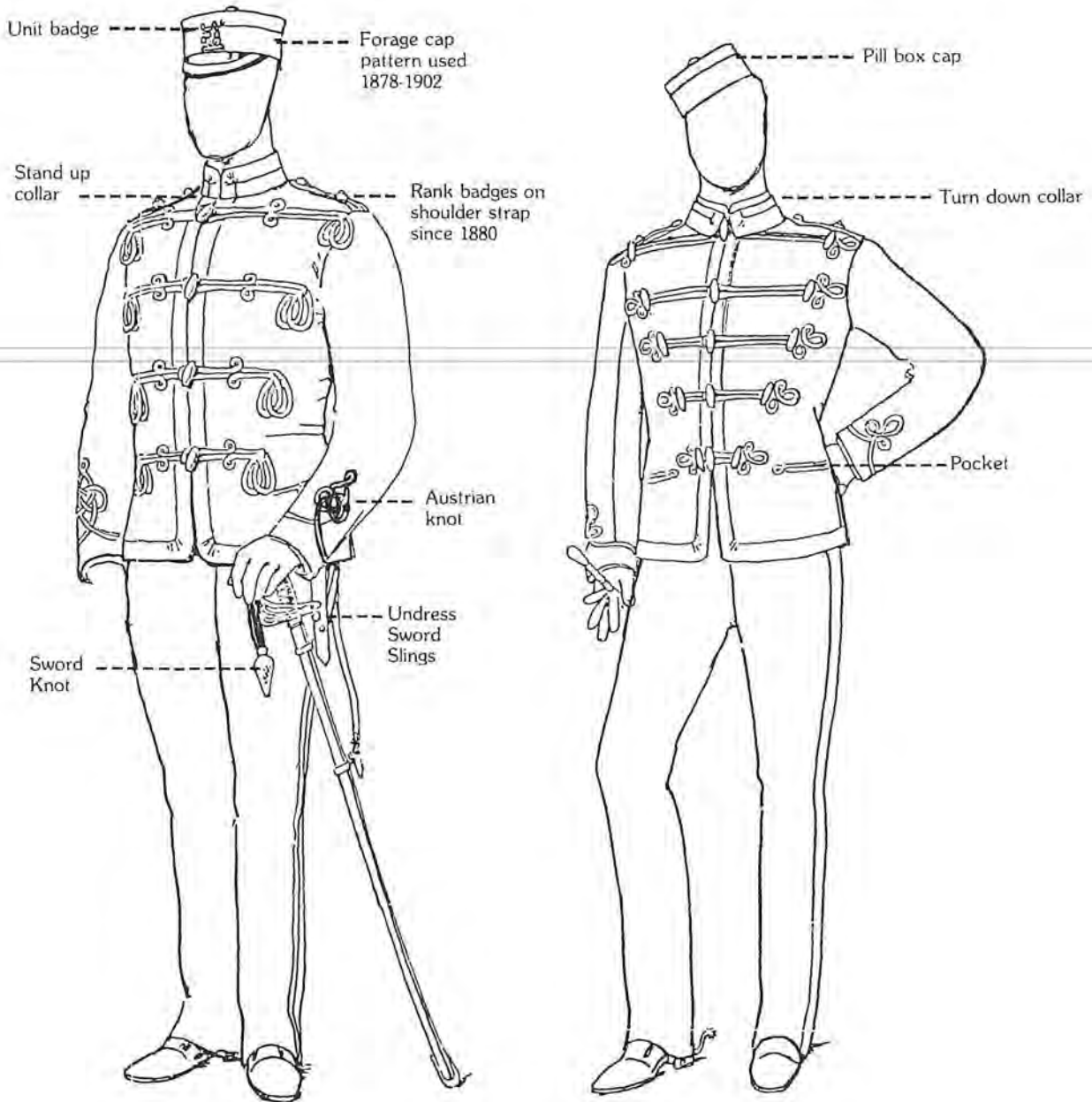


GRENADIER OFFICER, FULL DRESS, CIRCA 1900

In Canada this pattern of uniform was worn by such units as the Winnipeg Grenadiers and the Governor General's Footguards. The tunic would be scarlet, the trousers dark blue with a scarlet seam stripe.

OFFICER'S UNDRRESS UNIFORM

Patterns shown were in use with slight variations until 1896



Infantry Officer's undress or patrol jacket

Engineer Officer's undress or patrol jacket.
Artillery used same pattern except for extra loop.

Both jackets were dark blue with black braid and lace

Sashes:

- a. Describe material, dimensions and physical appearance.
- b. Specify how worn — over shoulder (left or right); around waist.
- c. Specify significance: Is it an officer's or an N.C.O.'s? On what occasion and with what type of uniform was it worn? Note: Sashes were worn over the left shoulder by infantry officers. After 1902 it was worn around the waist. Highland, kilted units wore it over the shoulder until the late 1960's. N.C.O.'s (Sergeants and above) wore them over the right shoulder until the late 1960's.

Belts:

- a. Specify dimensions, materials used and all attachments for slings and swords.
- b. Describe the type of fastening and its decoration in detail.
- c. Describe how worn. Most sword belts are worn around the waist, but some over the shoulder (highland regiments). Are they worn over or under the tunic or sash?
- d. Specify any component straps, e.g. shoulder straps for Sam Browne.
- e. With slings specify how many and their purpose, e.g. for sword, sabretache, etc.

Pouches and Pouch Belts:

- a. Specify dimensions, colours, materials and physical description.
- b. Specify type — full dress, undress, etc.
- c. Specify what unit they are used by.
- d. Specify if officer's or other rank's.

The Tunic:

This is the principal article of military dress and the most important from the viewpoint of the cataloguer. From study of the tunic, the following can be determined:

- a. **Rank:** From the decoration of the cuffs, collar and shoulder straps.
 - b. **Unit:** From the pattern of the button, from the collar badges and in some cases from badges on the shoulder seams.
 - c. **Career of the owner:** From the medal ribbons on the left breast.
 - d. **Name of the owner:** From the tailor's label or other markings inside.
 - e. **Name of maker and date of manufacture:** From the tailor's label.
1. The first step is to determine what type of uniform this is — full dress, undress, combat, service dress, frock coat, battle dress, mess kit, etc.

2. Determine the unit to which the wearer belonged.
3. Determine his rank.
4. Determine the date.

You then have your artifact name, e.g. "Full dress, Royal Winnipeg Rifles, Captain, 1908".

Details of Tunic:

1. **Collar:** Note colours, type and placement of lace and braid, and describe badges. Specify if high closed type, or open for collar and tie.
2. **Shoulder straps:** Note colour and type and specify any badges fixed to them.
3. **Cuffs:** Note placement, describe badges and inscriptions on them, and maker's name on back.
4. **Buttons:** Note placement, describe badges and inscriptions on them, and maker's name on back.
5. **Body of tunic:** Specify colours and details of tailoring, length, waist size and sleeve length. List any medal ribbons and qualification or long service badges.
6. **Inside:** Specify type of lining material, location of pockets and note in full all inscriptions, especially on the tailor's label, usually located inside the interior pocket.

Headdress:

Military headgear is made up of several component parts including chin-strap, plumes, badges, finial spikes, cap lines, etc. Be sure to note if any of these components are missing:

1. Determine what type of uniform the headgear is worn with — full dress, undress, combat, etc.
2. Determine the unit to which the wearer belonged, from badges or special regimental designs.
3. Determine if it is an officer's or other rank's headgear.
4. Determine date.

From this you have your artifact name, e.g. "Full dress Wolseley helmet, Royal Canadian Engineers, Officer, 1914."

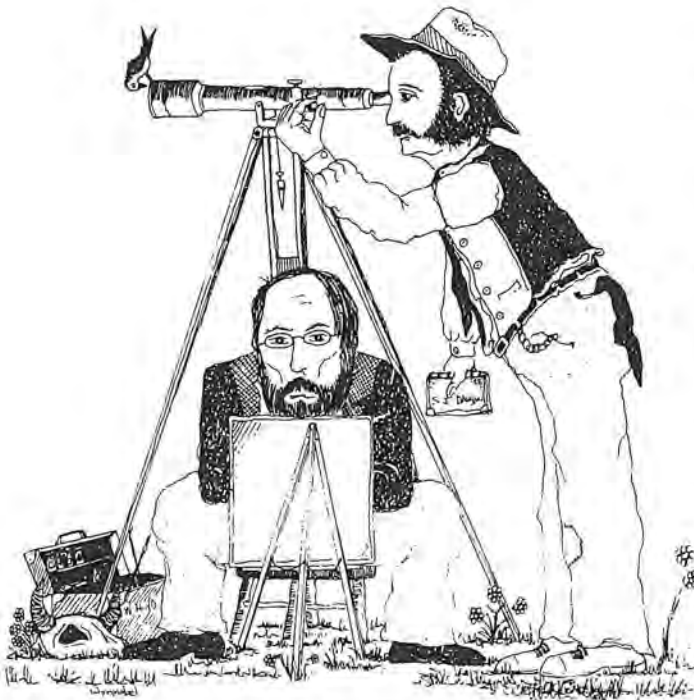
Physical description of headdress:

1. Specify the official name. This will save a lot of descriptive detail.
2. Describe badges, plumes, patches, flashes and all regimental distinctions.
3. Note any missing parts.
4. Note any inscriptions inside the headgear.
5. Specify materials, colours, dimensions, especially colour and metal fittings.

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2. As a rule of thumb, articles should be a **minimum** of four double-spaced pages; or a **maximum** of 20 double-spaced pages.
3. If possible and appropriate, we welcome photographs to complement articles. Black and white photographs are the most suitable for reproducing although colour photos can be used.
4. Please **do not cut or crop** photographs.
5. All photographs must be identified.
6. Photographs will not be returned unless requested, in writing, by the contributor.
7. Should an article include a bibliography, please list author, title, publisher, location and date of publication (as well as name of journal, if applicable).



S.J. Dawson and W.G.R. Hind

Please address all articles and correspondence to:

The Editor
Dawson and Hind
190 Rupert Avenue
Winnipeg, Manitoba R3B 0N2

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- b. Specify how worn — over shoulder (left or right); around waist.
- c. Specify significance: Is it an officer's or an N.C.O.'s? On what occasion and with what type of uniform was it worn? Note: Sashes were worn over the left shoulder by infantry officers. After 1902 it was worn around the waist. Highland, kilted units wore it over the shoulder until the late 1960's. N.C.O.'s (Sergeants and above) wore them over the right shoulder until the late 1960's.

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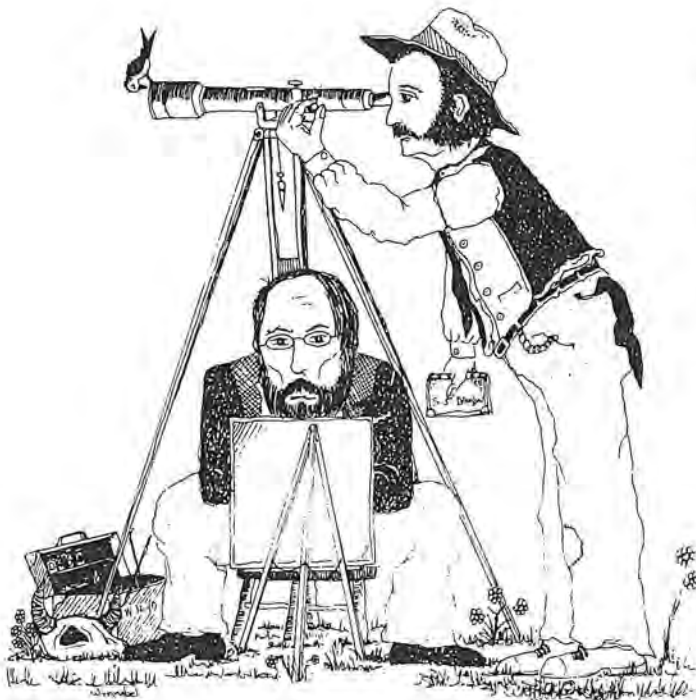
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