

PROGRAM AND ABSTRACTS



SPNH C

SOCIETY FOR THE PRESERVATION OF
NATURAL HISTORY COLLECTIONS
12TH ANNUAL MEETING

JULY 8-13, 1997

UNIVERSITY OF WISCONSIN-MADISON

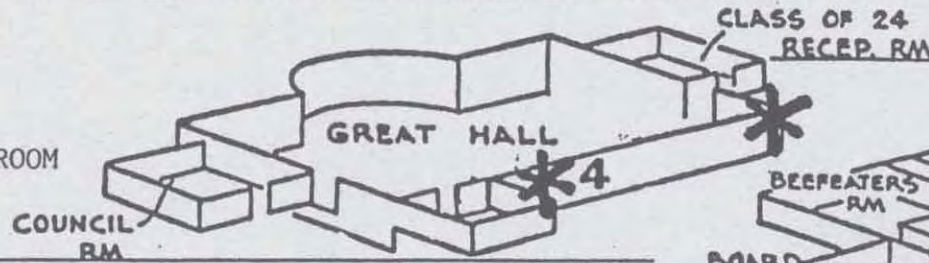
MEMORIAL UNION MEETING FACILITIES

* = RESTROOMS

▲ = PUBLIC PHONES

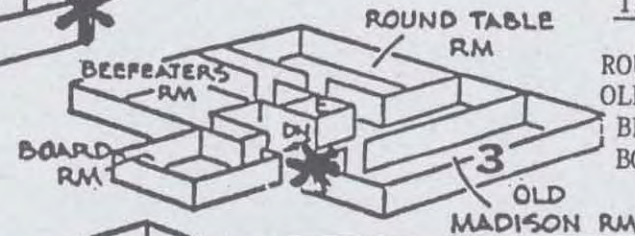
FOURTH FLOOR:

GREAT HALL
CLASS OF 1924 RECEPTION ROOM
COUNCIL ROOM



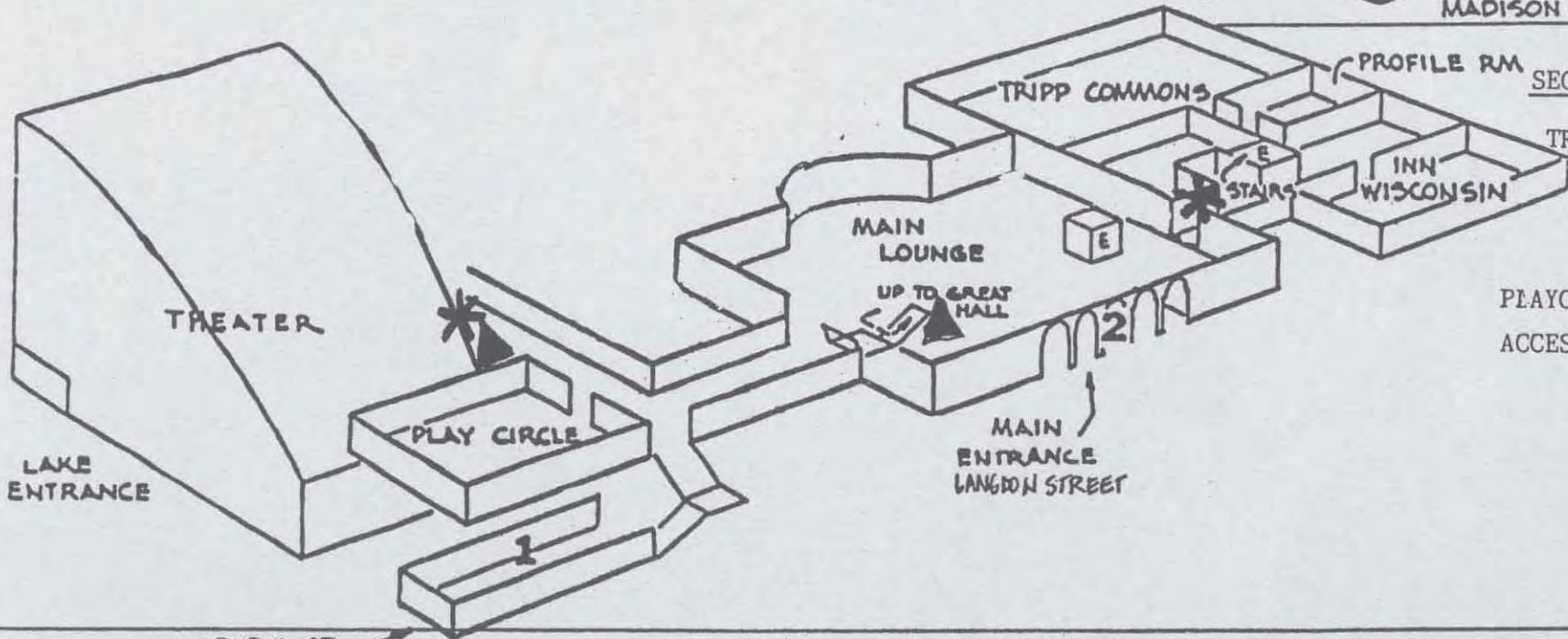
THIRD FLOOR:

ROUNDTABLE ROOM
OLD MADISON ROOM
BEEFEATERS ROOM
BOARDROOM



SECOND FLOOR:

TRIPP COMMONS
PROFILE ROOM
INN WISCONSIN ROOM
MAIN LOUNGE



PLAYCIRCLE THEATER
ACCESS TO UNION THEATER

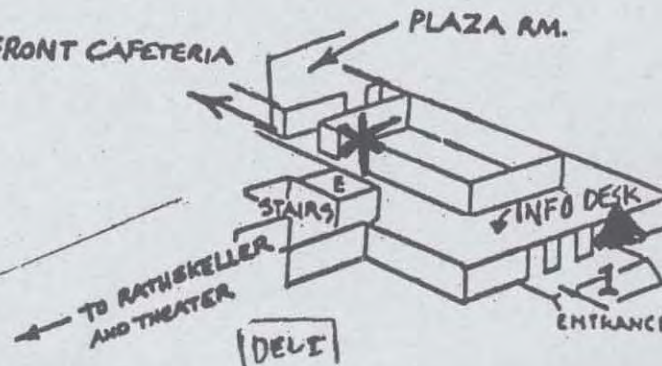
PARK ST. ENTRANCE

TO LAKEFRONT CAFETERIA

PLAZA RM.

FIRST FLOOR:

LAKEFRONT CAFETERIA
RATHSKELLER
UNION DELI
INFORMATION DESK



ACKNOWLEDGEMENTS

SPNHC '97 Local Committee

Ted Cochran
Scott Craven
John Dalman
Hugh Iltis
Frank Iwen
John Kirsch
Steven Krauth
Klaus Westphal
Mark Wetter
Dan Young

Cover Design: Steven J. Krauth, Department of Entomology

Campus Collection Map: University of Wisconsin Extension

Memorial Union Map: Memorial Union Publications

Program Layout: CALS Outreach Service

Historical Society of Wisconsin tour arranged by Paul Bourcier, Head Curator,
Museum Division, 816 State St.

State Historical Museum tour arranged by David Mandel, Director of Exhibits,
30 N. Carroll

Special thanks to Kerry Katovich, Nadine Kriska, Phil Pellitteri, Sharlene Grant
and Bryan Jensen.

PROGRAM – TUESDAY, 8 JULY 1997

8:00am - 5:00pm Registration in the Main Lounge

8:00am - 5:00pm Selected Committee Meetings (See Below)

MORNING

8:00am - 12 noon - Conservation Committee

8:00am - 12 noon - Documentation Committee

AFTERNOON

1:00pm - 3:00pm - Awards and Recognition

1:00pm - 3:00pm - Bylaws

1:00pm - 3:00pm - Conference

1:00pm - 3:00pm - Elections

1:00pm - 3:00pm - Finance

3:00pm - 5:00pm - Education and Training

3:00pm - 5:00pm - Membership

3:00pm - 5:00pm - Publications

3:00pm - 5:00pm - Sessional Committee on Professionalism

PROGRAM – WEDNESDAY, 9 JULY 1997

9:00am - 4:00pm Registration, collections open house and all day field trips.

Exhibitor/Poster Set Up

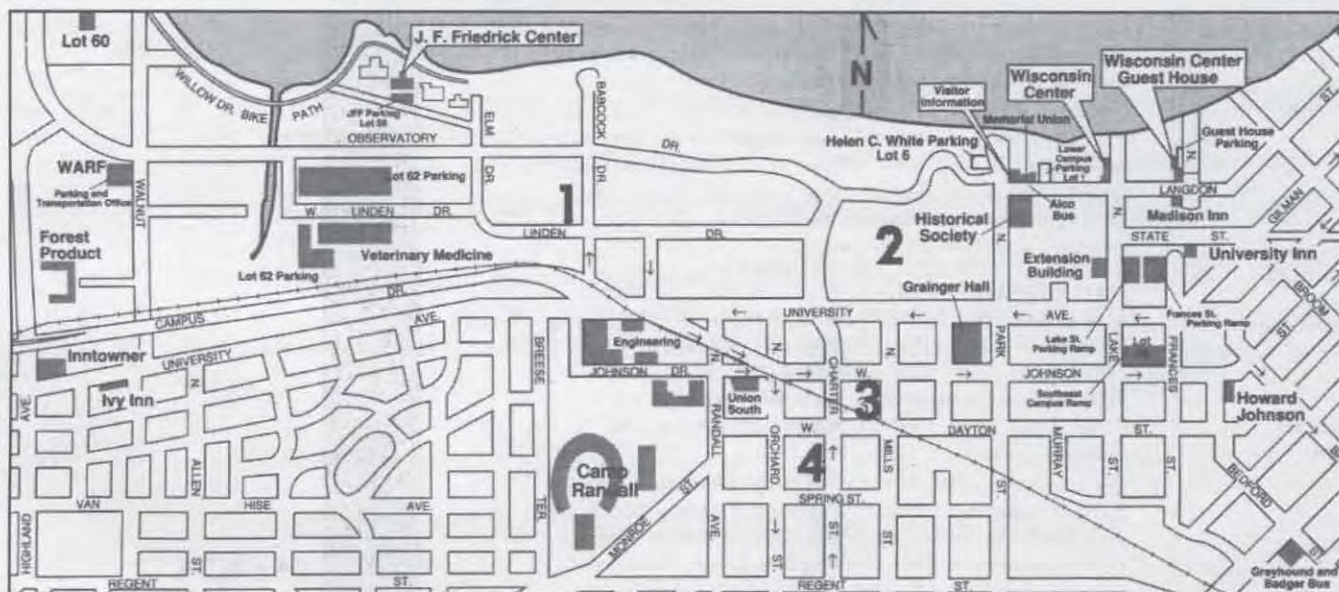
All Day Field Trips. Due to lack of response the organized trips had to be cancelled.

Taliesin - Shining Brow: The Frank Lloyd Wright Home and Studio, Spring Green, WI. Frank Lloyd Wright's Taliesin is a National Historic Landmark property and contains structures designed over seven decades. Together they reflect the totality of Wright's work and help explain why he cast such a long shadow in 20th century art and architecture. The trip includes charter coach service, a 90 minute tour of the Hillside Studio and Theater and lunch at the visitor center river-view cafe. A walk through Hillside is a walk through Wright's developing thought, from his first experiment in "breaking the box" to the embodiment of his dictum, "form and function are one," in the 5,000 square foot drafting studio (see Taliesin brochure in your registration packet).

Milwaukee Public Museum (MPM): "Butterflies Alive!" in the Steigleder Special Exhibits Gallery of the MPM. Its centerpiece will be a 1,000 sq. ft. walk-through Butterfly Garden, featuring hundreds of live North American butterflies. Surrounding the Garden will be displays on a variety of topics, from "butterfly basics" like how to tell a butterfly from a moth, to conservation issues including current research by MPM staff on endangered species. The exhibit will also showcase rarely displayed butterflies and moths from the Museum's outstanding worldwide Lepidoptera collection. The MPM has waived the admission fee for SPNHC members. Milwaukee Public Museum, 800 W. Wells, Milwaukee. Badger Bus depot (see campus map in program for bus depot location) information 255-6771.

All Day Collections Open House

9:00am - 5:00pm



See map above for numbered collection locations.

#1 - Insect Research Collection, 346 Russell Laboratories, 1630 Linden Drive

#2 - Herbarium, 155 Birge Hall, 430 Lincoln Dr.

#3 - Zoology Museum, 434 Noland Hall, 250 N. Mills St.

#4 - Geology Museum, A120 Weeks Hall, 1215 W. Dayton St.

PROGRAM – WEDNESDAY, 9 JULY 1997 (CONTINUED)

Wisconsin Historical Society - behind the scenes tours at 10am and 2pm. Conducted by Paul Bourcier. Group tours are limited to 12. A sign up sheet is at the reception desk in the Historical Society lobby, 816 State Street. Look for the SPNHC logo.

Continuous Shuttle Service to Botanical Gardens - 9 July

Free air-conditioned shuttle from the Memorial Union to the University of Wisconsin Arboretum's McKay Center and on to Olbrich Gardens, returning to the Memorial Union. Morning shuttles leave from the Memorial Union at 9:00 and 11:00am. SPNHC conference participants are invited to ride the shuttle free of charge to site(s) of their choice, leave the shuttle, tour the site on your own, and reboard when the shuttle returns. If you plan to visit both sites, a sack lunch is suggested.

(depart) Memorial Union	(arrive) McKay Center	(arrive) Olbrich Garden	(arrive) Mem. Union
9:00am	9:12am	9:47am	10:18am
11:00am	11:12am	11:47am	12:18pm
1:00pm	1:12pm	1:47pm	2:18pm
3:00pm	3:12pm	3:47pm	4:18pm

Schedule times are based on actual drive time plus 15 minutes for passenger loading and unloading.

12:00noon - 2:00pm	Lunch
2:00pm	Historical Society behind the scenes tour (group limit 12)
1:00pm & 3:00pm	Free Shuttle to Arboretum and Olbrich Gardens leaving Memorial Union (See schedule above)
2:00pm - 6:00pm	First Council Meeting (Large Meeting Room)
2:00pm - 6:00pm	WCCR (Meeting Room)
2:00pm - 5:00pm	Collections Open House
7:00pm - 10:00pm	Icebreaker (Tripp Commons/ Memorial Union)

PROGRAM – THURSDAY, 10 JULY 1997

CLASS OF 24 MEETING ROOM

*=presenter

MORNING SESSION. MODERATOR: ROBERT HUXLEY

- 8:30-9:00 Welcoming Remarks and Announcements. President's Opening Remarks (Class of 24).
- 9:00-9:15 **Jane C. MacKnight.** Pests at the Idaho Museum of Natural History.
- 9:15-9:30 **Deborah Q. Lewis.** The Modern Herbarium: NOT an Oxymoron!
- 9:30-9:45 **Lisa F. Palmer***, **Celeste Mir and Daisy Castillo.** Natural History Collections in the Dominican Republic: The Museo Nacional de Historia Natural and the Herbarium at the Jardin Botanico Nacional.
- 9:45-10:00 **Stuart J. Mangold.** The Role of the National Collection of Freshwater Invertebrates of South Africa in Research and Management of the Sub-continent's Water Resources.
- 10:00-10:15 **Andrew C. Bentley.** The JLB Smith Ichthyology Collection: the Past, the Present and Uncertain Future.
- 10:15-10:45 Coffee break, posters, vendors
- 10:45-11:00 **Elizabeth Merritt.** Balancing Resources and Collections Needs: Acquisitions and Accessions.
- 11:00-11:15 **James M. Bryant.** MAP II: A Tool for Collections Management Assessment & Planning.
- 11:15-11:30 **Barbara Moore.** The Conservation Assessment Survey as a Long-range Planning Tool: A Case Study at the Peabody Museum of Natural History.
- 11:30-11:45 **Amber Rowe.** Charles Darwin's Home - Collections Conservation Strategy.
- 11:45-12:00 **Sally Shelton.** Federal and International Scientific Permits: A Summary.
- 12:00-2:00 **Sally Shelton.** Permit Lunch: A Brown-bag Discussion of the Permitting Process and "How To" Go About It.
- 12:00-2:00 Lunch on your own.

AFTERNOON SESSION. MODERATOR: LORI BENSON

*=presenter

- 2:00- 2:30 Keynote Address: **Hugh Genoways**, Professor, Univ. Nebraska State Museum, "Challenges for University Science Museum Directors".
- 2:30-2:45 **Nancy Glover McCartney.** Discovering the Discovery Room: Divided Loyalties and Impacts on the Museum.

- 2:45-3:00 **Ingrid Birker*** and **Janet MacDonald**. Traveling your own Exhibitions - The Approach of a University Museum.
- 3:00-3:15 **Gretchen Anderson**. A Condor, Eagles and Spotted Owls: or How to Send a Bird with a Nine Foot Wing Span on a National Tour.
- 3:15-3:45 Coffee break, posters, vendors
- 3:45-4:00 **Andries J. van Dam***, **J.P.M. van der Ploeg**, **G.J.M. Koper**, **D. Bedeaux**. Conservation of Fluid Preserved Specimens: The Warping and Cracking of Plexiglas Jars.
- 4:00-4:15 **David Von Endt*** and **P.E. Hare**. Spirit Collections: Rates of Change in the Amounts and Stereochemistry of the Amino Acids in Hair at Elevated Temperatures.
- 4:15-4:30 **Agnes W. Brokerhof**. Acidity in Fluid Preserved Specimens.
- 4:30-4:45 **David Von Endt*** and **P.E. Hare**. Spirit Collections: Rates of Change in the Amino Acids of Bone at Elevated Temperatures.
- 4:45-5:00 **Jill L. Russ***, **Connie J. Kolman**, and **Noreen Tuross**. Time in a Bottle: The Effects of Fluid Fixation on Biomolecules.
- 7:00-11:00 Banquet & Dance (Great Hall/ Memorial Union)

PROGRAM – FRIDAY, 11 JULY 1997

CLASS OF 24 MEETING ROOM

*=presenter

MORNING SESSION. MODERATOR: DAVID VON ENDT

- 8:30-8:45 Announcements
- 8:45-9:00 **Kieran Shepherd.** The Design Methodology for the New Canadian Museum of Natures Facility: A Pragmatic Approach.
- 9:00-9:15 **Barbara Njie.** Moving Collections at the Canadian Museum of Nature: Planning and Execution.
- 9:15-9:30 **John Simmons* and Kate Shaw.** Design and Construction of a Fluid Collection Facility. Part I. Physical Plant.
- 9:30-9:45 **Kate Shaw* and John Simmons.** Design and Construction of a Fluid Collection Facility. Part II. Shelving.
- 9:45-10:30 Coffee break, posters, vendors
- 10:30-12:00 **Annual General Meeting**
- 12:00-2:00 Lunch. **Museums Heritage Group Roundtable.** A Brown-bag Discussion Group. James Bryant - moderator.

The Museum Heritage Round-Table was established in 1995 to create a network of individuals interested in the history and heritage of museums in North America. Members include a wide range of museum professionals and scholars concerned with issues of museum history, collection treatment and conservation, display methodologies and interpretation. The meeting open to all SPNHC members will provide an overview of the goals and mission of the group followed by an open discussion of issues related to preservation, programming, interpretation and funding. For more information contact James M. Bryant, Riverside Municipal Museum, (909)782-5273, FAX (909)369-4970.

AFTERNOON SESSION. MODERATOR: DAN YOUNG

*=presenter

- 2:00-2:15 **S.R. Fain, S. L. Williams, P. E. Haerand and D. W. Von Endt*.** The Relationship Between Preservation Treatment, Nucleic Acid Content, and Amino Acid Racemization in Otter Skin.
- 2:15-2:30 **Charles Messenger* and Pauline Tanden.** Computer Wizardry in Illustrations.
- 2:30-2:45 **Merridy Bradley.** Rebuilding the Canadian National Inventory.
- 2:45-3:00 **Sylvie Marcił.** The CMN Alymer Building Project - Part III. The Human Element: One Conservator's Perspective.
- 3:00-3:30 Coffee break

FEES FOR DATA PANEL. MODERATOR: JOHN SIMMONS

- 3:30-4:45 **Invited Panelists Include:**
Lynn Kimsey. Bohart Museum, Department of Entomology, University of California - Davis
Meredith Lane. NSF
Marc Ascerno. Department of Entomology, University of Minnesota
Chris Collins. University of Cambridge, Earth Sciences Department
Cindy Ramotnik. National Biological Service, University of New Mexico
Carol Malcolm. Texas Natural History Collection, University of Texas
- 4:45-5:00 President's closing remarks
- 5:00-6:30 Final Meeting of the Council

PROGRAM – SATURDAY, 12 JULY AND SUNDAY, 13 JULY 1997

Quality Management -- Quality Collections Care

Memorial Union

Building Opens at 8:00 AM

POSTERS

Moving Collections.

Benson, Lori

The Pendulum Swings: Comparing Exhibit Theory and Practices Between O. C. Marsh and R. S. Lull.

Chandler, Christine L.

Consequences for Research on Endangered Mammal Species Derived from Preparation and Preservation Methods Used on Collected Materials.

Gisbert, Julio; Rosa Fernández-Salvador and Rosa García-Perea

Demonstrating ZOE for Windows 95: A Biodiversity and Biological Collection Data Management System.

Green, Laura A.

Interpreting the SPECTRUM Documentation Standard in Natural History Collections.

Huxley, Robert

The University of Wisconsin-Madison Herbarium (WIS), 150 Years of Service.

Iltis, Hugh H. and Mark Allen Wetter

The Catalogue of Vascular Plants Types of Carlos Spegazzini: A Project in the Herbarium of Museo de la Plata (LP), Argentina.

Katinas, Liliana

Radiographic Assessment of Mummies for Museum Exhibit, Conservation, and Research: A Case Study.

Meier, Debra, Karl Reinhard, and Joseph Stavas

Bar Code Uses in the Mammal Collection at Texas Tech University.

Monk, Richard R.

A Custom Box for Holding the Wet Collections at the Canadian Museum of Nature.

Njie, Barbara

New Museum Storage Boxes and Trays Designed for the Canadian Museum of Nature.

Njie, Barbara

Down House - Brief History and Re-display Philosophy.

Rowe, Amber

Down House - Collections Conservation Data Base.

Rowe, Amber

The Whites of Their Eyes: Criteria for Selection of Fluid Stored Fish for Molecular Studies.

Russ, Jill L., Connie J. Kolman, Susan L. Jewett and Noreen Tuross

A Guide to the Identification of Common Clear Plastic Films.

Tarter, Allison L., Rebecca L. Heinrichs, and Stephen L. Williams

Establishing Some Guidelines: NSF-sponsored Workshop and Publication on Invertebrate Paleontology Collections.

Workshop participants, authors

ABSTRACTS

(alphabetically by author)

A Condor, Eagles and Spotted Owls: How to Send a Bird with a Nine Foot Wingspan on a National Tour.

ANDERSON, GRETCHEN

Conservator, Science Museum of Minnesota, 30 E. 10th St., St. Paul, MN, USA, 55101

Since 1985 the Science Museum of Minnesota has developed four large traveling exhibits containing natural history mounts: Wolves and Humans, Antarctica, Bears: Imagination and Reality, and Hunters of the Sky: An exhibit about Birds of Prey. Each exhibition has had its own challenges. In Bears there was a specimen that was too tall to fit into the truck. The rest of the crates were simply big. There is a naturally freeze dried seal in Antarctica that smells rancid. The most recent exhibit, Hunters, contains a condor in flight, a nest with partially fledged eagle chicks, a dozen eggs from rare and endangered species, and approximately 100 additional specimens and artifacts. It was estimated that this tour, like all of the others, would last 5 to 10 years.

With Hunters, collaboration between exhibits, touring, and conservation and collections management began early in the development process, even before the condor arrived. The goal was to develop methods for display, packing, shipping, handling, and monitoring specimens and artifacts to minimize damage during the long tour. The systems we developed were based on experiences with the previous touring exhibitions and knowledge of factors of deterioration for the specimens. Concerns and problems were examined and discussed and solutions were agreed on. The problems that were most thoroughly planned were the most successfully solved; the best was the condor.

Thursday, 10 July, 3:00pm

Moving Collections.

BENSON, LORI

Collections Management, Science Museum of Minnesota, 30 E. 10th St., St. Paul, MN 55101, USA

The Science Museum of Minnesota will open its new facility on December 31, 1999. The Conservation and Collections Management departments have been planning the move of 1.75 million objects and specimens from the current facility into the new facility. The project is estimated to take five years for packing, moving and reinstallation.

The collections of the Science Museum consist of 1.75 million objects and specimens in the areas of anthropology, paleontology, geology and biology. Currently, they are housed in a collections vault, the hallways in secured corridors, laboratories, science division offices and a warehouse. This project will bring the collections together in one area of the new building. Most will be stored in a centralized vault, with additional storage rooms for wet collections, type and figured collections and entomology collections. Additional storage rooms are planned for osteology reference collection and current research paleontology specimens.

The poster will present the process of developing a storage plan and work plans for this project.

Poster

The JLB Smith Ichthyology Collection: The Past, the Present and Uncertain Future.

BENTLEY, ANDREW C.

JLB Smith Institute of Ichthyology, Private Bag 1015, Grahamstown, 6140, South Africa

The Department of Ichthyology was established by Prof. J.L.B. Smith in 1946. The J.L.B. Smith Institute was founded after his death in 1968. In 1980 the Institute was proclaimed a Declared Cultural Institution and is accredited with the Southern African Museums Association. The Fish collection at the JLB Smith Institute of Ichthyology in Grahamstown represents the largest collection of southern African fish anywhere in the world. It is the largest collection in Africa and the second largest in the southern hemisphere. The collection consists primarily of an alcohol preserved wet collection but also includes a dry collection of skeletons and shark jaws, x-ray plates, photographic slides and ink drawings. The wet collection contains members of freshwater, marine and estuarine environments. It consists of over 54 000 lots encompassing well over 500 000 specimens. The oldest fish housed in our collection is from the 1860's. The collection is housed in the basement of the Institute on approximately 2 kilometers of shelving and is protected by a state-of-the-art Halon gas fire detection and protection unit. The collection is linked to an inhouse DOS based collection database called FISHNET which we are looking to upgrade in the near future to the windows based ZOE database. Future directions and developments both for the Institute and the collection are in jeopardy due to lack of funding and political reshuffling.

Thursday, 10 July, 10:00am

Travelling your Own Exhibitions - The Approach of a University Museum.

BIRKER, INGRID AND JANET MACDONALD

Redpath Museum/McGill University, 859 Sherbrooke St. West, Montreal, Québec, Canada H3A 2K6

Although primarily a teaching and research institution, the Redpath Museum of McGill University has also been mandated to "organize, sponsor, arrange for and participate in travelling exhibitions of museum specimens and objects, other museum material in its collections and from other sources." (Mother of Museums, 1990)

In order to achieve this goal the museum must have adequate space, funding and personnel to develop, create, manage and circulate exhibitions. In recent years a major thrust toward production of travelling exhibitions has promoted the museums reputation and activities within the university community, in the greater Montreal area and across the country. All costs associated with these travelling exhibitions are funded on the basis of grant applications and/or private sector support. However, since the Redpath has no exhibition specialist, the current level of programming has been achieved at the expense of the staff's curatorial responsibilities.

Many models and theories of how to prepare travelling exhibitions are available, with ranging degrees of complexity and cost. It is imperative that a small university museum carefully evaluate its exhibition objectives and find the appropriate level of programming at the most reasonable cost.

This presentation will summarize some of the steps that have been taken at the Redpath Museum to successfully produce and circulate three travelling exhibitions.

Thursday, 10 July, 2:45pm

Rebuilding the Canadian National Inventory.

BRADLEY, MERRIDY

Canadian Heritage Information Network, Department of Canadian Heritage, 15 Eddy Street (4th floor), Hull, Quebec, Canada K1A 0M5

The Natural Sciences National Inventory (NATS) was created in 1972 to fulfil Canada's obligation as a signatory to the UNESCO Convention on the Protection of World Cultural and Natural Heritage. NATS currently consists of a database including 38 data fields and 943 329 records from 16 museums. The purpose of NATS is to index Canadian collections enabling museum professionals to locate specimens (including types), validate museums' collections, identify gaps in collections, and compile data from diverse disciplines. Limitations to the growth of NATS have occurred in the past due to CHIN's consensus decision style and resource limitations on the size of the database structure and the number of participants. Limitations on the museums' side have included a lack of funding for cataloguing and data entry, concerns about identifying the locations of endangered species, about unauthorized use of the data, and about accessibility (fee or free, mediated or unmediated).

Current Internet Web technology allows for a broader spectrum of users, more contributing museums and disciplines, more fields and records, options to contribute (or not) certain data fields, and pictures to illustrate. Links to museum Web sites will enhance the index, allowing users to find more in-depth information from particular museums in any one search session. CHIN is investigating ways to give NATS the facility for museums to update their contributions directly from in-house systems. Canadian museums have a role in these new envelopments through an advisory panel and through contribution and participation. The Natural Sciences National Inventory is now accessible on CHIN's Internet Web site (<http://www.chin.gc.ca>).

Friday, 11 July, 2:30pm

Acidity in Fluid Preserved Specimens.

BROKERHOF, AGNES W.

Central Research Lab Objects/Art& Sci, Gabriel Metsustraat 8, Amsterdam, 1071EA, The Netherlands.

Two parameters proposed in the assessment of fluid-preserved collections are the hydrogen ion activity (pH) and the total titratable acidity of the fluid. Both parameters serve as indicators of past and future deterioration since acidic oxidation products are formed during degradation of both specimen and fluid, and an acidic environment can initiate further degradation, such as decalcification.

Many specimens are preserved in ethanol and determination of hydrogen activity in non-aqueous solutions requires more elaborate electrochemistry than a pH measurement in water. Results of pH measurements in solutions with varying ethanol content can only be compared with each other after correction with a "shift" factor. To investigate the relationship between pH and degradation by acid in the fluid, egg shells were exposed to water and 70% ethanol solutions with different pH. The results of these experiments illustrate the importance of proper interpretation of pH measurements for collection assessment.

Thursday, 10 July, 4:15pm

MAP II: A Tool for Collections Management Assessment and Planning.

BRYANT, JAMES M.

Curator of Natural History, Riverside Municipal Museum, 3580 Mission Inn Avenue, Riverside, CA, USA,

In these challenging times for collections-holding institutions of all kinds, one of the challenges is the establishment of ever higher levels of accountability, both to the collections professions and to the communities served by those collections. A vital tool in attaining such levels of accountability is an objective, professionally-informed assessment of an institution's collections management policies and procedures. The Museum Assessment Program, available through partnership between the American Association of Museums and the United States Institute of Museum and Library Services provides natural history museums with one such tool.

The theoretical framework of MAP combines methods of institutional self-study with peer review. MAP II - the Collections Management Assessment - focuses on collections policies, documentation, and preservation within the context of a museum's total operation. The process involves completion of a detailed self-study document followed by a professional collections surveyor's on-site visit, the product of which is a written report providing recommendations for institutional change and development, strategic planning, grant writing and Board training. Additional benefits of MAP II may include increased community support as well as improved public programming and professional services. Grants from IMLS are available to many institutions to cover much of the cost of participation in MAP.

Thursday, 10 July, 11:00am

The Pendulum Swings: Comparing Exhibit Theory and Practices Between O. C. Marsh and R. S. Lull.

CHANDLER, CHRISTINE L.

Yale Peabody Museum, Div. of Vertebrate Paleontology, P.O. Box 208118, New Haven, Connecticut, USA, 06520-8118

The Peabody Museum at Yale University houses one of the most historically significant collections of fossil vertebrates in the country. To both the public and scientific community alike, the names of Othniel Charles Marsh and the Yale Peabody Museum are synonymous. By invoking Marsh's name, one conjures up a picture of the Peabody's Great Hall of Dinosaurs with its mighty Apatosaurus (Brontosaurus) presiding over the hall and "The Age of Dinosaurs" mural as a backdrop. The twist is that this picture has little or nothing to do with Marsh and in all probability would have been viewed by him as an anathema. Many of the most famous of the Museum's exhibits actually owe their origination to the ingenuity and skill of Richard Swann Lull, Marsh's successor. An examination of the difference in their views on exhibiting material analyzed within the context of the environment at Yale in which they worked leads to some interesting corollaries about the relationship between the role of the college museum and its exhibition practices.

Poster

The Relationship Between Preservation Treatment, Nucleic Acid Content, and Amino Acid Racemization in Otter Skin.

FAIN, S.R., S.L. WILLIAMS, P.E. HAREAND AND D.W. VON ENDT

Smithsonian Institution, Washington, DC 20056; National Forensics Laboratory, United States Fish and Wildlife Service, 1490 East Main Street, Ashland, OR 97520; Strecker Museum, Baylor University, Waco, TX 76798; Carnegie Institution of Washington, 5251 Broad Branch Road N.W., Washington D.C. 20015

Many techniques for the preservation of skin have been used through time in natural history museums. For this report, skin from a river otter (*Lutra canadensis*) was divided into 14 sections, and each section treated with a preservative used in the past. Each section then was divided. Quantitative nucleic acid extractions were performed on each section to determine how preservation procedures affected the extractability and analyzability of nuclear and mitochondrial nucleic acids. The quality of the nucleic acid extracts was tested by PCR amplification of both mitochondrial (cytochrome b, 162 bp), and nuclear (SRY, 224 bp; and ZFX/Y, 442 bp) loci. Each section also was analyzed for amino acid composition to determine whether preservation treatment affected amino acid composition. Further, each section was analyzed by gas chromatography to determine whether individual amino acid residues had undergone racemization (changes in their stereochemical, D/L configuration). These results are important for determining which preservation treatments are suitable for preserving nucleic acid in mammal skins. Linking nucleic acid to protein/amino acid preservation is important, since changes in the D/L configuration of amino acids such as aspartic acid and alanine may be used to indicate whether the amount of nucleic acid present in the skin is of sufficient quality and quantity to be useful for genetic studies. In addition, the general state of preservation of skin may be predicted based on D/L ratios.

Friday, 11 July, 2:00pm

Consequences for Research on Endangered Mammal Species Derived from Preparation and Preservation Methods Used on Collected Materials.

GISBERT, JULIO; ROSA FERNÁNDEZ-SALVADOR AND ROSA GARCÍA-PEREA

Museo Nacional de Ciencias Naturales, J. Gutierrez Abascal 2, Madrid 28006, Spain

Perhaps the main goal of scientific collections is their utility for research. Therefore, the value of collection materials is related to the potential information they provide. This is most obvious for endangered species, because collection of new materials is sometimes unthinkable.

Based on a sample of Iberian desman (*Galemys pyrenaicus*, Mammalia, Insectivora) containing materials mounted and preserved following different methods, we analyze the problems found to gather potential information from these materials attending to their preservation status. Materials were preserved mostly in traditional study skins, skeletons and in fluid (70° ethyl alcohol). Some of the problems found are related to alterations due to the time (e.g. color fading), but many others are due to either the erroneous application of preparation and conservation methods, or to inadequate data collection.

Results of these mistakes negatively affect the development of studies on conservation of this species. *Galemys pyrenaicus* is endangered, and its populations are rapidly declining, specially in the south of its distribution range.

Traditional versus modern methods are compared, and advantages and drawbacks of each method are commented on.

Poster

Demonstrating ZOE for Windows 95: A Biodiversity and Biological Collection Data Management System.

GREEN, LAURA A.

Project Administrator, The MUSE Project, Dyche Hall-Natural History Museum, University of Kansas, Lawrence, KS 66045

The purpose of the Zoe Project is to design, program, distribute and support software for the management and curation of natural history collections. Zoe is a Windows 95-based database application that handles all aspects of the curation of biological collections including data entry and editing, labels and reports, queries, loans and invoices, and taxonomic information. The Zoe package includes the primary application plus a database setup program, customization, security, and the ability to share information over a network.

The software is still under development and input from collection managers on the user interface, design, and included data is being sought for many disciplines.

Poster /Demonstration

Interpreting the SPECTRUM Documentation Standard in Natural History Collections.

HUXLEY, ROBERT

Department of Botany, The Natural History Museum, Cromwell Road, London SW8, 5BD, UK

SPECTRUM is a series of standards for the documentation of museum collection. The Museums Documentation Association (UK) developed it as a framework for individual institutions to develop their own documentation policies and procedures. Because of its all-embracing nature, it was considered necessary to provide additional interpretation to facilitate its use in specialist collections. A group was set up to draw up guidelines for applying SPECTRUM to natural history collections. Natural history collections differ in several ways from most other Museum collections; for instance, the numbers of specimens and transactions dealt with and the ways they are used i.e. mainly for scientific research. This poster discusses some of these differences and how documentation standards can be adapted to maintain cost effectiveness and good practice and ensure that full documentation is applied to those collections that require it. A number of categories for applying different levels of documentation are suggested. Emphasis is put on cost effectiveness, prioritizing and the need for clear policy on how SPECTRUM is to be interpreted in a particular institution.

Poster

The University of Wisconsin-Madison Herbarium (WIS), 150 Years of Service.

ILTIS, HUGH H. AND MARK ALLEN WETTER

Herbarium (WIS), Department of Botany, Birge Hall, 430 Lincoln Dr., University of Wisconsin - Madison, Madison WI, 53706-1381

As the sesquicentennial of the 1849 founding of the Herbarium approaches, the UW-Herbarium has grown from Increase Lapham's original donation of just over 1,000 specimens to an important regional and international herbarium containing almost 1,000,000 specimens. The herbarium has the most important collection of native and naturalized plants from Wisconsin (300,000+) and strong holdings from temperate North America, especially the Upper Midwest, Mexico (especially from the Sierra de Manantlán Biosphere Reserve in Jalisco-Colima), and a collection of more than 3,000 ears of *Zea mays* from practically every land race of Mexico and Guatemala. In recent years the Herbarium has incorporated several "orphaned" herbaria, including those of Frank C. Seymour, George B. Van Schaack, Milton College, large part of the Catholic University of America (LCU), and extra-Wisconsin specimens [45,000+] from the University of Wisconsin-La Crosse Herbarium (UWL), as well as others.

This presentation will outline the historical development of the University of Wisconsin-Madison Herbarium, including a historical chronology of its Directors, its growth and development over the last 150 years, and a numerical summary of various plant groups currently in its holdings. Outlines of current Herbarium projects, such as the *Atlas of the Vascular Flora of Wisconsin* and the developing specimen and type databases will also be presented. In view of ominous worldwide environmental crises, the utilization of this herbarium, as of all other museum collections, as an archival resource for biodiversity documentation has taken on increased importance.

Poster

The Catalogue of Vascular Plants Types of Carlos Spegazzini: A Project in the Herbarium of Museo de la Plata (LP), Argentina.

KATINAS, LILIANA

Departamento Científico de Plantas Vasculares, Museo de La Plata, Paseo del Bosque, 1900 La Plata, Argentina

Carlos Luis Spegazzini (1858-1926) was a leading figure in Argentinian natural history, mainly recognized as a mycologist and botanist. He was one of the first explorers of Patagonia, travelling and collecting also in almost all the other regions of Argentina. Spegazzini collected ca. 100.000 specimens of vascular plants, describing approximately 32 new genera, 750 new species, and numerous infraspecific taxa. The main taxa collected and described by Spegazzini includes the families Asteraceae, Brassicaceae, Cactaceae, Fabaceae, Poaceae, and Solanaceae. His private herbarium of vascular plants (LPS) constitutes an important part of this collection, now deposited in herbarium of Museo de La Plata (LP), Argentina. It includes also type specimens and photographs taken by Spegazzini itself. The herbarium LP is carrying on a project to catalogue and publish the type specimens of vascular plants (a number estimated in ca. 900) belonging to the personal herbarium of Carlos Spegazzini. This presentation includes a summary of the main aspects of Spegazzini's biography, and example of the projected presentation of the catalogue of types that is developing in herbarium LP.

Poster

The Modern Herbarium: NOT an Oxymoron!

LEWIS, DEBORAH Q.

Ada Hayden Herbarium, Department of Botany, 341A Bessey, Iowa State University, Ames, IA 50011

The herbarium is often considered a relic of the past glory of descriptive taxonomy and obsolete in comparison with today's methodologies and high-tech facilities. The traditional uses of the herbarium include taxonomic research, plant identification, documentation and botanical teaching. Additionally, herbarium-derived materials are utilized in analyses in anatomy and ultrastructure, biochemistry, molecular systematics and other "modern" fields. The balance between specimen use in destructive sampling and preserving the plant material highlights the need for explicit policies regarding specimen use.

Collection growth, pest management and associated health risks, and past use of nonarchival supplies and techniques provide examples of physical challenges in modern herbarium management. Outdated collection arrangement and changes in plant names present problems in accessing the desired materials and data. A lack of understanding of the roles of herbaria frequently leads to a lack of support and sufficient funding. Yet an active, growing herbarium remains a uniquely important resource for deposition of voucher specimens, for biodiversity information, preparation of modern monographic works and Floras, introducing students to locally or seasonally unavailable plant groups, and for maintaining the storehouse of information for the future.

Thursday, 10 July, 9:15am

Pests at the Idaho Museum of Natural History.

MACKNIGHT, JANE C.

Idaho Museum of Natural History

In 1995, the Idaho Museum of Natural History (IMNH) received a Conservation Support grant from the Institute of Museum and Library Services to monitor environmental conditions and insects at the museum. IMNH began a year-long monitoring program in February 1996. Results of the pest monitoring indicate that odd beetles (*Thylodrias contractus*), carpet beetles (*Anthrenus* spp.) and booklouse (*Liposcelis* spp.) are prevalent. Most incidents of insects were found in the vertebrate paleontology collection and an historic collection of mounted large mammals. An integrated pest management program is in development and should be in place by the fall. Improved housekeeping, lower temperatures and regular monitoring have already lowered occurrences of insects in the collections. In general, insect pests are minimal at the IMNH.

Thursday, 10 July, 9:00am

The Role of the National Collection of Freshwater Invertebrates of South Africa in Research and Management of the Sub-continent's Water Resources.

MANGOLD, STUART J.

Albany Museum, Somerset Street, Grahamstown, 6139, South Africa

The National Collection of Freshwater Invertebrates, housed at the Albany Museum, comprises approximately 1,5 million specimens collected over the past 100 years. Coverage is of the whole Afrotropical region, but mostly South African represented by long and short-term research surveys, commissioned surveys, ad-hoc collections and donations. Specimens are stored in 80% ethanol, dry pinned or on slides. An established Type specimen collection is also maintained within the National Collection.

The ongoing computerization of the catalogued information associated with this ever-expanding collection, currently the largest of its kind in Africa, has made this comprehensive database more readily accessible to researchers and management organizations alike. Depending on the researcher's requirements, a wide variety of selected baseline data can be extracted and synthesized with relative ease, such as biogeographical and phylogenetic information. As invertebrate records offer some insight into the state of health of aquatic ecosystems, accessing the database has proved invaluable to biomonitoring, Environmental Impact Assessments and long-term Integrated Environmental Management projects.

Another potential research tool made available by the computerization process is the interfacing of the database to Geographical Information System (GIS) programs. This process expedites distributional mapping of a selected species or community with respect to environmental variables such as altitude, rainfall, temperature and geology. Statistical analysis can then be used to test for significant correlation between distribution and any key restricting abiotic factors. This type of GIS application lends itself to predictive modelling of invertebrate communities in response to man-induced environmental alterations or the identification of potential conservation areas.

Thursday, 10 July, 9:45am

The CMN Aylmer Building Project - Part III. The Human Element : One Conservator's Perspective.

MARCIL, SYLVIE

Canadian Museum of Nature, P. O. Box 3443, Station D, Ottawa, K1P 6P4

Although new building projects are exciting for some, we should not forget that for others they can be very stressful, almost traumatising events, particularly when the project is fast-track and involves moving the whole collection. Even if everyone agrees that the advantages of moving to a purpose-built facility far outweigh the disadvantages in the long run, it is a major project involving numerous changes to which everyone has to adapt. It is not only boxes and objects we are moving, we are also disrupting the lives and habits of people who may have called their previous building home for 10-20 years and who may feel they are having to leave an important part of their life behind. This human element, although recognised, is often not accounted for on the planning charts is a very important one and overlooking that fact can make the changes more difficult to adapt to. Moving at the CMN has meant a number of changes accompanied by a long transition period. All of these changes, perceived and real losses made it more difficult for some to commit to the project and adapt throughout the process. In order to facilitate the transition and help understand and anticipate the issues of this mega-merge various initiatives were undertaken. Needless to say the opportunity to learn about the institution, ourselves and colleagues has been tremendous.

At this point in time, our adaptation is still a work in progress we are just attempting to share our experience. It is difficult to evaluate what has worked better for us, so much is dependent on the individual. Preparing and facilitating the change is critical to accelerate the passage from the preparation phase to the acceptance and commitment phases. The more committed people you have, the more involved they will be and obviously the more successful your project will be. The key element is this human element which, when properly managed, makes the difference between a good and a great project.

Friday, 11 July, 2:45pm

Discovering the Discovery Room: Divided Loyalties and Impacts on the Museum.

MCCARTNEY, NANCY GLOVER

The Museum, 202 MUSE, University of Arkansas, Fayetteville, AR 72701, USA

Launching a new 3000 square foot Discovery Room in a medium-sized university museum is no small undertaking: extensive planning, fund raising, volunteer training, and integration into the existing structure of the museum experience has resulted in continual readjustments for the entire museum staff. The Discovery Room Coordinator, who is also the Curator of Zoology, in particular has had to deal with conflicting loyalties in the use of her time and energies as the "public" and "private" aspects of the museum collide. Although the impact of the Discovery Room is yet to be fully appreciated, preliminary results in the form of teacher evaluations and staff comments indicate the public and the staff express different views of its success and usefulness within the museum.

Thursday, 10 July, 2:30pm

Balancing Resources and Collections Needs: Acquisitions and Accessions.

MERRITT, ELIZABETH

Cincinnati Museum Center, 1301 Western Avenue, Cincinnati Ohio 45203

All museums have limited resources, and all acquisitions use some of these resources, whether they be space, money, staff time or materials. Museums must make decisions that match existing resources to the collections it chooses to accept and retain. These choices may be made before or after material has been accepted into the collection. If these decisions are made after material has been accepted and processed, the museum expends resources on material it will ultimately not retain. The alternative is to screen as carefully as possible during the acquisition process. Such screening can be facilitated by the development of acquisition criteria and detailed statements of scope of collection. It can also make use of systems for analyzing and ranking the relative values of different portions of the proposed acquisition, and estimating the costs both of acquisition and continued maintenance. This information can then be used in a formal decision-making process that may involve curatorial and non-curatorial staff, administrators, board members and users of the collections. Such structured methods of assessing and approving acquisitions are not currently typical for natural history institutions. However they may result in better decisions about how best to allocate our resources to serve our users.

Thursday, 10 July, 10:45am

Radiographic Assessment of Mummies for Museum Exhibit, Conservation, and Research: A Case Study.

MEIER, DEBRA, KARL REINHARD, AND JOSEPH STAVAS

University of Nebraska State Museum, 307 Morrill Hall, Lincoln, NE, 68588-0332

Department of Anthropology, University of Nebraska, Lincoln, NE, 68588-0332

Lincoln General Hospital, Lincoln, NE, 68588-0332

Radiography has long been recognized as a useful, non-destructive method of obtaining biological information from mummies for conservation and research goals. Such information can be useful in making decisions concerning whether or not destructive analyses are warranted. It can also have an important role in the determination of the state of preservation for exhibition potential of mummies in museum exhibits. This is a case study of the CT-scanning of a mummy from Arica, Chile.

Poster

Computer Wizardry in Illustrations.

MESSENGER, CHARLES AND PAULINE TANDEN

University of Nebraska State Museum, Collection Manager, Lincoln, Nebraska 68508 (CM); University of Nebraska Information Services, Instructional Technology Specialist, Lincoln, Nebraska 68508 (PT)

New technology in computer scientific illustration is requiring many ethical decisions to be made. We are beginning to examine various computer processes in view of these considerations. While no one would want to condemn the minimal use of computer enhancement, one wonders where this technology may lead us. We believe that this new technology will end up being an area where individual censorship needs to be carefully employed. —Is that illustration really what you think it is?

Friday, 11 July, 2:15pm

Bar Code Uses in the Mammal Collection at Texas Tech University.

MONK, RICHARD, R., CURATOR OF COLLECTIONS

Museum of Texas Tech University, Box 43191, Lubbock, TX 79409-3191

The use of bar codes for specimen identification is being implemented in the mammal collection at Texas Tech University. Unique bar codes are now assigned to all incoming specimens and tissue samples. In addition, bar codes will be retroactively assigned to all specimens currently in the collection. Bar code usage is being combined with the development of a new database management system in order to more efficiently track specimens in day-to-day collection management operations.

Poster

The Conservation Assessment Survey as a Long-range Planning Tool: A Case Study at the Peabody Museum of Natural History.

MOORE, BARBARA P.

Peabody Museum of Natural History, Yale University,, P.O. Box 208118, New Haven, CT 06520-8118

Natural History museums are increasingly committed to comprehensive collections care programs to ensure the long-term preservation of their holdings. The Peabody Museum of Natural History provides a useful model of long-range conservation planning based on a conservation assessment survey. The conservation assessment, which evaluated the condition of the collections and the conditions under which they were housed and exhibited, helped the Museum to clarify and redefine its mission and goals to include a strong commitment to the preservation of its holdings. The conservation assessment then became the central planning tool through which the Museum developed a long-range and far-reaching conservation strategy which is now in its seventh year.

Thursday, 10 July, 11:15am

Moving Collections at the Canadian Museum of Nature: Planning and Execution.

NJIE, BARBARA

Canadian Museum of Nature, P.O. Box 3443, Station D, Ottawa, K1P 6P4, Canada

The move of the museum collections to a new facility provides both challenges and opportunities. Planning far enough in advance can assure that collection are well prepared for any number of challenges that may arise during the course of the move. A planning framework provides a tool for identifying opportunities to incorporate innovations and improvements in collection storage. When the design and construction of a new facility is involved, it is important to identify these innovations well in advance, so that the building can be built to accommodate them.

CMN began to develop move plans for each of its five major collections two years in advance of the move. Initial plans were provided by staff members, then each plan was assessed against a set of criteria representing corporate priorities. Staff were encouraged to modify their plans whenever it was possible to meet more of these criteria. Final plans were presented as sets of discrete, prioritized projects, each showing details of packing methods and materials, personnel and time requirements.

Conservation Section identified and located materials to be used in the move. New products were also developed and manufactured for CMN. These product development initiatives ranged from being nearly individual to being highly collaborative efforts. In all cases, flexibility was a key to success.

Friday, 11 July, 9:00am

A Custom Box for Holding the Wet Collections at the Canadian Museum of Nature.

NJIE, BARBARA

Canadian Museum of Nature, P.O. Box 3443, Station D, Ottawa, K1P 6P4, Canada

The Canadian Museum of Nature needed a new supply of wooden boxes to hold its fluid preserved collections. The boxes were no longer in production and the cost of new wooden boxes was prohibitive. Work was begun to define the function of the boxes in use and to prioritize the features that were most important for the safety and use of the collection.

A variety of commercial products was tested and rated. In the end, a custom Coroplast® bin box was produced in three widths ranging from 16.5cm to 28cm (6.5 to 11 inches) to best fit the requirements. Because these boxes are constructed of material generally accepted to be safe for museum and archives applications, they have found applications in the collections beyond their original use.

Poster

New Museum Storage Boxes and Trays designed for the Canadian Museum of Nature.

NJIE, BARBARA

Canadian Museum of Nature, P.O. Box 3443 Station D, Ottawa, K1A 6P4, Canada

The Canadian Museum of Nature began planning for the move of its collections to its new storage facility two years before the commencement of the move. Part of this planning involved a review of current storage systems. Storage hardware and supplies were assessed to determine how changes to these items would be advantageous for the future care of the collections material, as well as make the move of the collections easier, safer and less costly.

One of the changes recommended was replacing low-walled, open, acidic cardboard trays with clear, lidded boxes. Commercial supplies of this kind of box did not offer the dimensions typically required for natural history collections, while with the museum/archival suppliers, the relatively high cost made it difficult to purchase the large volumes needed for the whole project. At the same time, the mammal and bird skins collections needed supplies of low-walled, open trays to replace the current acidic cardboard stock.

In order to acquire the type of boxes and trays needed, the Canadian Museum of Nature worked with Unisource Canada, Inc., and Plastichange International, Inc. to design and produce a set of clear polyethylene terephthalate (PET) boxes, and a set of white PET trays, safe for museum applications. The clear boxes are modular to one another and are designed to fit the standard specimen tray drawer 60.5cm x 75.3cm (23 1/4" x 28 5/8") in a variety of configurations. Collection care is enhanced by the transparent material which protects the specimens while allowing full viewing of labels and contents. The low-walled, open trays are modular to one another, to clear boxes and to the standard specimen tray drawer. Trays made of white PET allow for easy detection of pest activity. These boxes and trays have found applications in many collections.

Poster

Natural History Collections in the Dominican Republic: The Museo Nacional de Historia Natural and the Herbarium at the Jardín Botánico Nacional.

PALMER, LISA; CELESTE MIR; AND DAISY CASTILLO

Smithsonian Institution, National Museum of Natural History, Division of Fishes, MRC 159, Washington, D.C. 20560 USA; Museo Nacional de Historia Natural, Plaza de la Cultura, Calle Cesar Nicolas Pension, Santo Domingo, Dominican Republic; Jardín Botánico Nacional Dr. Rafael M. Moscoso, Herbario, Apdo, Postal 21-9, Santo Domingo, Dominican Republic

The Dominican Republic is a tropical country on the island of Hispaniola rich in biodiversity and natural history. An extraordinarily high amount of endemic plants and animals exists, with many new species, particularly insects and marine invertebrates, undescribed. As the variety of life in this country continues to gain international attention, the Dominican Republic's natural history collections grow in scientific importance.

As part of public and privately funded efforts to study and preserve Caribbean basin biodiversity, two natural history repositories of the Dominican Republic, the Museo Nacional de Historia Natural and the Herbarium at the Jardín Botánico Nacional, were the focus of recent conservation assessments. The Museo Nacional de Historia Natural, located in the heart of Santo Domingo, was created in 1974 as a component of the federal museum complex in the Plaza de Cultura. The Museum's holdings include over 100,000 specimens of vertebrates, invertebrates, fossils, rocks and minerals that were collected in the country. The Herbarium, established in 1976 as a part of the Jardín Botánico Nacional, lies just northeast of Santo Domingo. The Herbarium contains more than 85,000 specimens, including 164 types, for the study and research of the island's flora.

In the past, both facilities have had problems that adversely affected their collections, but current governmental administration is providing opportunities to improve collections care. Because maintenance of these collections is integral to the scientific study of the area's biota and is central to the country's biological heritage, plans have been devised to improve in-country preservation of these collections.

Thursday, 10 July, 9:30am

Charles Darwin's Home - Collections Conservation Strategy.

ROWE, AMBER

English Heritage, 23 Savile Row, London, England W1X 1AB

In Spring 1996 English Heritage supported by The Wellcome Trust and the Heritage Lottery Fund purchased Down House, Darwin's Home, where he lived and worked for 40 years (1842 - 1882).

From June 1996 until the opening in September 1997 an intensive building restoration and collections conservation programme was undertaken by English Heritage. The project was managed by "Major Projects" a department within English Heritage using the PRINCE project management methodology. The author was involved early on to coordinate the conservation of the collections reporting to the project manager.

The collection comprises 5000 objects, including paintings, furniture, books, documents, ephemera and specimens. The conservation recording and packing stages prove crucial in saving time and providing vital information for conservation and exhibition planning.

Specific information about each object was gathered on a Microsoft Access' database. This ensured efficient conservation budgeting and programming. Key information fields included an importance rating and a condition rating, which together allowed the conservation programme to be prioritized.

The collection was moved into storage during building works. Small objects were housed in custom made trays with various support methods. The packing approach although initially time consuming allowed the objects to remain physically accessible and will also reduce installation time.

A good working relationship with the project manager and a shared collection management approach between the Conservator and Curator encouraged an effective response to a tight work programme.

Thursday, 10 July, 11:30am

Down House - Brief History and Re-display Philosophy.

Poster

ROWE, AMBER

Down House - Collections Conservation Data Base.

Poster

ROWE, AMBER

The Whites of Their Eyes: Criteria for Selection of Fluid Stored Fish for Molecular Studies.

RUSS, JILL L., CONNIE J. KOLMAN, SUSAN L. JEWETT AND NOREEN TUROSS

Smithsonian Institution, Conservation Analytical Laboratory, 4210 Silver Hill Road, Suitland, MD

The fascination with which the Victorians first viewed and studied natural history collections has not diminished with time, as these collections have grown and evolved into valuable morphological research libraries. The increasing interest in molecular studies combined with the decline of many organisms may transform natural history collections again. However, no criteria exist to guide both the curator and scientist in making informed choices in specimen selection for molecular studies. The inherent fragility of biomolecules coupled with the destructive nature of the preservation process makes the generation of predictive models for the molecular utility for museum specimens a difficult task. Fixation of whole fish in 70% ethanol is generally more permissive of subsequent molecular analyses as compared to 10% formalin fixation. Not unexpectedly, fish fixed in ethanol retained significantly more extractable DNA than those fixed with formalin. The ethanol fixed fish also retained tyrosine, an amino acid implicated in formaldehyde induced crosslinking. In addition, ethanol fixed fish had white opaque eye lenses. This white eye anomaly remained even if the fish was re-fixed in 10% formalin, although the amount of amplifiable DNA decreased and tyrosine was lost. Based on the supposition that ethanol fixed fish offer a unique repository of genetic information, museum fish with the morphological characteristic of "white eyes" were chosen for study. Amplifiable DNA was present in only one white eyed specimen, which also retained tyrosine. The other specimens were missing tyrosine, suggesting that they had been re-fixed in formalin subsequent to initial alcohol fixation. Therefore, the presence of white eyes in museum specimens may provide an initial screen for identifying candidates for molecular analyses. However, testing for tyrosine should also be considered to determine if these specimens are suitable for DNA studies using currently available techniques.

Poster

Time in a Bottle: The Effects of Fluid Fixation on Biomolecules.

RUSS, JILL L., CONNIE J. KOLMAN, AND NOREEN TUROSS

Conservation Analytical Laboratory, Smithsonian Institution, 4210 Silver Hill Road, Suitland, MD

Specimens of extinct and endangered species currently reside in many natural history collections, and are a potential invaluable source of molecular information. However, the preservation and integrity of molecular information may be compromised by the processes used when preparing and storing specimens, particularly for fluid stored specimens. After fixation of whole fish in 10% formalin for 2 weeks, DNA isolated from the specimens could still be amplified via the polymerase chain reaction (PCR), although a decline in PCR target size was noted as a function of time in formalin. The extractability of high molecular weight proteins was severely reduced after 4 hours of formalin fixation, and the amino acid tyrosine was lost after one hour of formalin fixation. In contrast, high molecular weight proteins, tyrosine and amplifiable DNA were robustly preserved in fish fixed in 70% ethanol. Delaying the fixation procedure up to 24 hours after the fish had expired produced minimal effects on the molecular integrity of muscle tissue. Refixing 70% ethanol fixed fish with 10% formalin caused a substantial loss of proteins, PCR products, and the amino acid tyrosine. The striking differences seen on biomolecules as the result of changing fixation and re-fixation processes calls for more documentation of these conditions and processes. New challenges will soon be faced for fluid preservation, curators of wet collections, and molecular scientists wishing to utilize these collections.

Thursday, 10 July, 4:45pm

Design and Construction of a Fluid Collection Facility. Part II. Shelving.

SHAW, KATE AND JOHN E. SIMMONS

Natural History Museum, University of Kansas, Lawrence, Kansas 66045-2454

The fluid collection facility houses 625,000 specimens of birds, fish, reptiles, amphibians, invertebrates, and mammals in 47,000 jars and 282 tanks on 5,250 shelves. The use of a mixture of mobile and fixed shelving increased shelving capacity by 63%. Shelves are stainless steel with a perforated 18-ga galvanized mat to allow penetration of water from overhead sprinklers. Each shelf has a lip and a restraining bar. Capacity is 300 lb/shelf with a maximum deflection of 1/8 inch at center when fully loaded. Shelves are of three sizes (36 x 18, 42 x 18, and 42 x 12 inches), set with 12-inch centers. A fully operational unit was installed for testing. We load tested the carriage and shelving, and tested the carriage and shelf finishes for reaction with formaldehyde and ethyl alcohol. Amount of shelving needed was calculated based on jar footprint and an actual inventory of jars. Testing demonstrated that the ideal storage density per shelf is 30%. Beyond 50% density, inspection or removal of jars becomes inefficient. We used 30% density as the move-in target and 50% density as the projected 20-year growth maximum. Each floor has a spill kit for clean up. The spill kit is a 5-gal. high-density polyethylene bucket that contains safety glasses, Tyvek suit, absorbent padding and booms, formaldehyde-resistant gloves, and plastic bags for broken glass and contaminated absorbents. A full-face respirator is also available.

Friday, 11 July, 9:30am

Federal and International Scientific Permits: A Summary.

SHELTON, SALLY Y.

San Diego Natural History Museum, P. O. Box 1390, San Diego, CA 92112

Confusion and controversy often surround the process of applying for and maintaining valid collecting permits. In many cases, the process is not well understood, new laws and regulations are not well publicized, or there is confusion about different agencies and responsibilities. In January 1997, the San Diego Natural History Museum sponsored a bilingual workshop to address these problems by bringing together scientists, agency representatives and collectors from several countries to examine the problems and provide clarification.

The key issues and problem areas discussed at the San Diego meeting will be summarized in this presentation as a prelude to establishing a working group. This group will provide scientific and collections expertise to Federal agency officials working to standardize and streamline permits applications and procedures.

Thursday, 10 July, 11:45am

The Design Methodology for the New Canadian Museum of Natures Facility: A Pragmatic Approach.

SHEPHERD, KIERAN M.

Canadian Museum of Nature, Earth Sciences, Collections, P.O. Box 3443, Station D, Ottawa, Canada K1P6P4

The Canadian Museum of Nature has recently completed a new facility to house its Collections holdings, Science Labs, Workshops and administrative support. This process involved the consolidation of collections that had been scattered in leased facilities throughout the National Capital Region. Many of these facilities had been recently closed by Labor Canada as being unsafe working environments. Due to time and resource constraints, the new facility had to be completed in less than two years, on budget and with no new capital funding. A Fast Track approach, along with a pragmatic approach to design was required and the methodology used to design this facility could act as a model for future projects.

Friday, 11 July, 8:45am

Design and Construction of a Fluid Collection Facility. Part I. Physical Plant.

SIMMONS, JOHN E. AND KATE SHAW

Natural History Museum, University of Kansas, Lawrence, Kansas 66045-2454

A new facility for the storage of fluid preserved collections was designed and built to meet federal, state, and local building and fire codes. The building construction committee included architects, a fire expert, local and state fire and architectural officials, construction company representatives, and members of the museum staff. The facility reduces hazards to collections, collection use, and adjacent buildings, and improves the organization, care, storage environment, and accessibility of the collections. The facility provides space for 20 years of growth. The Uniform Fire Code covers bulk storage of alcohol in large barrels and storage of beverage alcohol, but not scientific specimens in 70% ethanol. A compromise interpretation was reached with fire officials. The facility is separated from the museum by a 4-hour fire wall. Code considerations prohibited wooden shelving, required overhead sprinklers, limited shelving to less than eight feet above the floor, required 36-inch wide aisles, and required rooms to be 1,000 sq.ft. or less. There is a minimum 24-inch clearance between the top of the jars on the highest shelf and the overhead sprinklers. Quick-response sprinklers can provide 0.3 gallons of water/min./sq.ft. There are floor drains at all exit doorways. Code restrictions prohibited offices or daily use laboratories in the facility. All electrical equipment and switches are non-sparking. Continuous low-level exhaust ventilation at floor level of 1 cu.ft./min./sq.ft. outside air, with no re-circulation, prevents the accumulation of alcohol vapors. Both heat and smoke detectors are provided.

Friday, 11 July, 9:15am

A Guide to the Identification of Common Clear Plastic Films.

TARTER, ALLISON L., REBECCA L. HEINRICH, AND STEPHEN L. WILLIAMS

Department of Museum Studies, Baylor University, P. O. Box 97154, Waco, Texas 76798; The Museum, Texas Tech University, Box 43191, Lubbock, Texas 79409; Department of Museum Studies, Baylor University, P. O. Box 97154, Waco, Texas 76798

Six techniques were used to assist in the identification of 12 common clear plastic films that may be used in collections. The techniques include the dyphenylamine spot test, Beilstein Test, density test, solubility test, burn test, and stretch-tear test. The plastic films examined include polyethylene, polyethylene terephthalate, polypropylene, polystyrene, polyvinyl chloride, polyvinylidene chloride, polyvinylidene fluoride, polyvinyl acetate, polycarbonate, polyamide, cellulose nitrate, and cellulose triacetate. Information from the literature and tests conducted as part of the project, resulted in the development of a dichotomous key and a summarization of basic characteristics of the identification of plastics.

Poster

Conservation of Fluid Preserved Specimens: The Warping and Cracking of Plexiglas Jars.

VAN DAM, A.J. ¹*, J.P.M. VAN DER PLOEG², G.J.M. KOPER², D. BEDEAUX²

¹Museum of Anatomy, Box 9602, 2300 RC Leiden-NL and ²Dept. of Physical Chemistry, Box 9502, 2300 RA Leiden-NL, Leiden University, The Netherlands

In the 1960s Plexiglas specimen jars were introduced in the anatomical collection of the Leiden Medical Faculty and in time replaced the cast rectangular glass jars. It was supposed that they would be less fragile and therefore better suited for demonstration in medical teaching.

Recently, we noticed that Plexiglas jars, after having being filled and sealed, gradually warp to the inside and finally crack at the glued joints.

By the study of four experimental models, this presentation outlines the causes for the warping and cracking of Plexiglas jars and discusses several methods to solve these problems.

Thursday, 10 July, 3:45pm

Spirit Collections: Rates of Change in the Amounts and Stereochemistry of the Amino Acids in Hair at Elevated Temperatures.

VON ENDT, D.W. AND P.E. HARE

Smithsonian Institution, Washington, DC. 20056; Geophysical Laboratory, Carnegie Institution of Washington, 5251 Broad Branch Road, N.W., Washington, DC 20015

Keratin, a class of proteins noted for its molecular bonding involving sulfur, is found in the epidermal appendages of vertebrates, and functions as a structural protein. There are many specimens of scientific and cultural significance which contain keratin that are stored in natural history collections, under both dry and wet conditions. We present here differences in the rates of deterioration of the individual amino acids composing hair preserved in fluids, under simulated aging conditions. Samples of hair were heated in 70% ethanol, 70% ethanol plus 1% formaldehyde, and 50% 2-propanol at 120 C, 140 C and 160 C for one-half hour, 1 hour, 2 hours, 4 hours, and 8 hours. Initial results indicate that stereochemical changes (change from L to D; termed racemization) in the amino acids of keratin occur before compositional changes, with the most rapid racemization taking place in aspartic acid. This change was most severe in the ethanol plus formalin solution. The composition of the amino acids in hair also changed through time: serine and threonine decreased in amounts, most severely in ethanol plus formalin solution. These data indicate that free formalin in alcohol solutions poses some danger to the stability of even a stable protein such as keratin. The racemization data also indicate that this type of reaction may be useful as an indicator of the state of keratin preservation; and if keratins are stored under the same conditions, racemization may be used as an indicator of the age of the sample.

Thursday, 10 July, 4:00pm

Spirit Collections: Rates of Change in the Amino Acids of Bone at Elevated Temperatures.

VON ENDT, D.W., AND P.E. HARE

Smithsonian Institution, Washington, DC. 20056; Geophysical Laboratory, Carnegie Institution of Washington, 5251 Broad Branch Road N.W., Washington, DC 20015

Many specimens containing bone are stored in fluids in natural history museum collections. As part of a study to determine the deterioration reactions prevalent in bone stored in fluids, we present here differences in the rates of deterioration of the individual amino acids composing bone proteins (primarily collagen) under simulated aging conditions. Samples of bone were heated in 70% ethanol, 70% ethanol plus 1% formaldehyde, and 50% 2-propanol, at 120 C, 140 C and 160 C for one-half hour, 1 hour, 2 hours, 4 hours, and 8 hours. Changes in the stereochemistry (change from L to D; termed racemization) of the amino acids occurred first, especially in aspartic acid. This change was most pronounced in the ethanol plus formalin solution. The composition of the amino acids in bone also changed through time: serine and threonine decreased in amounts, aspartic acid decreased in concentration, and ammonia increased. These changes were most severe in ethanol plus formalin solution. The racemization and compositional data indicate that free formaldehyde in alcohol solutions can destroy the proteins of bone. These data are connected to the longevity of bone by projecting the experimental conditions to room temperature "museum" conditions. The racemization data also indicate that these reactions may be useful as an indicator of the state of bone preservation in museums, and if bones are stored under the same conditions, may be useful as an indicator of the age of the sample.

Thursday, 10 July, 4:30pm

Establishing Some Guidelines: NSF-sponsored Workshop and Publication on Invertebrate Paleontology Collections.

WORKSHOP PARTICIPANTS, AUTHORS

In June 1996, thirty people, representing most of the major invertebrate paleontological collections in the U.S. and Canada, met in Washington, D.C. The purpose of this workshop, which was sponsored by the National Science Foundation, was to develop standards and guidelines for curation and computerization of invertebrate fossil collections. The volume of resulting papers will be published this year by the Paleontological Society. Subjects addressed in this work will include collection management, acquisition, accession and deaccession, specimen conservation, computerization, and orphaned and endangered collections.

This work in progress will be presented by workshop participants who are also members of SPNHC.

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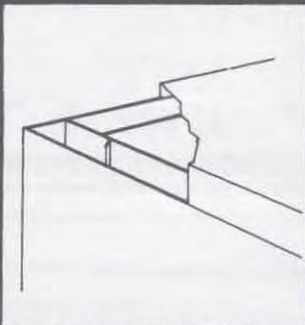
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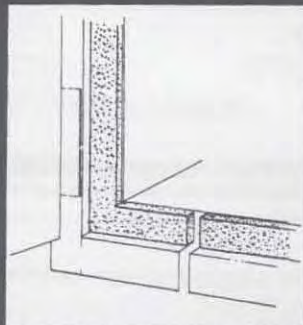
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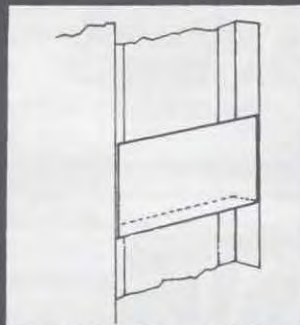
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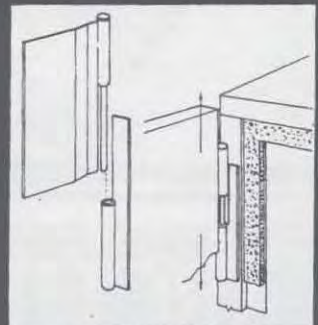
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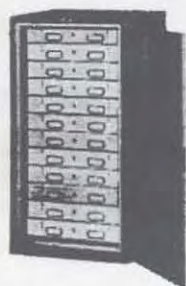
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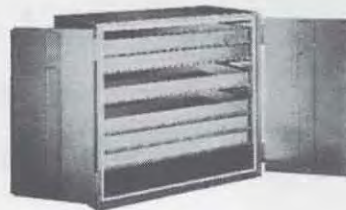
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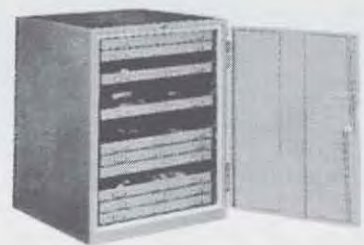
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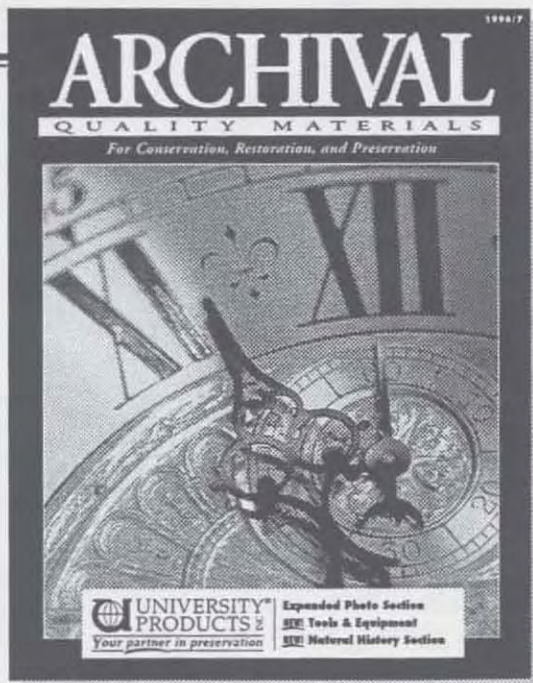


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