

Society for the Preservation of Natural History Collections

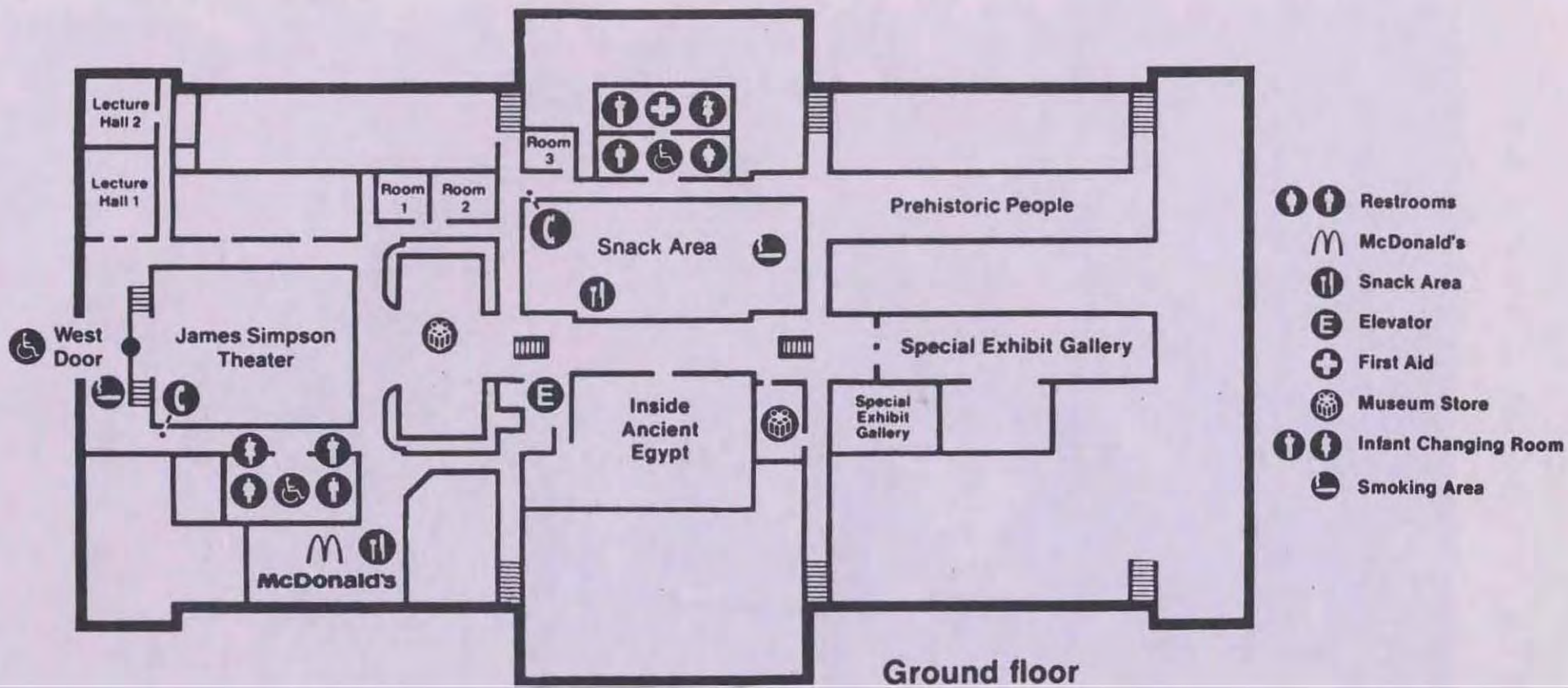
Fifth Annual Meeting, 7-11 May 1990

Program and Abstracts



Hosted by

Field Museum of Natural History
Chicago, Illinois



- Restrooms
- McDonald's
- Snack Area
- Elevator
- First Aid
- Museum Store
- Infant Changing Room
- Smoking Area

PROGRAM SUMMARY

Monday, 7 May 1990

- 9:00-6:00 pm Registration at Blackstone Hotel
- 9:00-12:00 Business Meeting of Council and Committee Representatives (FMNH)
- 1:00-5:00 pm Business Meeting of Council (FMNH)
- 1:00-5:00 pm Poster Set-up (FMNH)
- 1:00, 2:00 pm Tours
- 7:00-9:00 pm Registration at FMNH
- 7:00-9:00 pm Icebreaker Social (FMNH)

Tuesday, 8 May 1990

- 8:00-9:00 am Registration at FMNH
- 7:30-8:45 am Poster Set-up (FMNH)
- 8:45-4:45 pm Poster and Vendor Exhibits
- 8:45 am Welcome to Field Museum of Natural History; Information
- 9:00-2:45 pm Contributed Papers
- 3:15-4:45 pm Special Session: Issues in Collection Management
- *** Evening Open

Wednesday, 9 May 1990

- 7:30-8:30 am Registration at FMNH
- 8:30-5:30 pm Poster and Vendor Exhibits
- 8:30-9:45 am Contributed Papers
- 10:15-12:15 General Business Session
- 1:30-4:00 pm Workshop Session I:
 - Archival Materials
 - Museum Problem Solving
 - Computerization I: General
- 4:00-5:30 pm Poster Session (with authors)
 - Mini-Workshop:
 - Assessing the Condition of a Fluid-preserved Collection
- 7:00-9:00 pm Reception at Shedd Aquarium

Thursday, 10 May 1990

- 8:00-9:00 am Registration at FMNH
- 9:00-4:30 pm Poster and Vendor Exhibits
- 9:00-12:00 Workshop Session II:
 - Computerization II: PC's, DBase III+
 - Exhibit in Progress
 - Basic Book Repair
 - Worker Right-to-Know Regulations
- 1:30-4:30 pm Special Session: Disaster Planning--Apocalypse No!
- 6:30-9:30 pm Annual Banquet, Stanley Field Hall, FMNH

Friday, 11 May 1990

- 7:00-8:00 am Registration at FMNH
- 8:00-5:30 pm Exhibiting Natural History Materials: A Special Conservation Symposium
- 8:00-10:00 am Tours

PROGRAM

Monday, 7 May 1990

- | | |
|---------------|--|
| 9:00-6:00 pm | Registration at Blackstone Hotel |
| 9:00 am-12:00 | Business Meeting of Council and Committee Representatives (FMNH, Room 1) |
| 1:00-5:00 pm | Business Meeting of Council (FMNH, Room 1) |
| 1:00-5:00 pm | Poster Set-up (FMNH, Room 2) |
| 1:00 pm | Tour: McCrone Associates (meet in Blackstone lobby) |
| 2:00 pm | Tour: FMNH Collections Facilities (meet at FMNH, West Door) |
| 2:00 pm | Tour: Chicago Academy of Sciences (meet in Blackstone lobby) |
| 7:00-9:00 pm | Registration at FMNH (FMNH, Dinosaur Hall; enter North Door) |
| 7:00-9:00 pm | Icebreaker Social, Dinosaur Hall, FMNH (enter North Door)
Sponsored by The Interior Steel Equipment Co. |

Tuesday, 8 May 1990

- 8:00-9:00 am** **Registration at FMNH (West Door Foyer)**
- 7:30-8:45 am** **Poster Set-up (FMNH, Room 2)**
- 8:45 am** **Welcome to Field Museum of Natural History; Information (FMNH, Simpson Theater)**
- 9:00** **Natural History Museum Maintenance: Results From A Global Survey** by William L. Gannon and Roberto U. Gutierrez (Museum of Southwestern Biology, University of New Mexico, Albuquerque, New Mexico; Museum of Comparative Zoology, Cambridge, Massachusetts)
- 9:15** **Life After A Conservation Survey** by E. Benamy (Academy of Natural Sciences of Philadelphia, Philadelphia, Pennsylvania)
- 9:30** **Collection Management: Four Basic Factors** by Grant W. Hughes (Royal British Columbia Museum, Victoria, British Columbia)
- 9:45** **Curating the Paleozoic: Curation and Computerization of Invertebrate Fossil Specimens** by Paula M. Sumpter (Milwaukee Public Museum, Milwaukee, Wisconsin)
- 10:00** **Private Collections: An Overlooked Resource for Museums** by Donald F. Phillips (Rare Mineral Exchange, Chicago, Illinois)
- 10:15** **Coffee Break/Posters/Vendor Exhibits**
- 10:45** **Preserving the Geological Heritage: An Overview** by Frank M.P. Howie (Natural History Museum, London)
- 11:00** **Biological Recording as a Vital Museum Activity: Some Canadian Examples** by Ingrid Birker (Redpath Museum, McGill University, Montreal, Quebec)
- 11:15** **An Accession Database: Tracking Specimen Location and Increasing Processing Efficiency in a Recent Mammal Collection** by Susan M. Woodward (Royal Ontario Museum, Toronto, Ontario)
- 11:30** **The Large Collecting Campaigns: Problems and Strategies to Adopt by Museum Collections** by J. Bedoya, Y. Bernat, O. Soriano and J.E. Gonzalez (Museo Nacional de Ciencias Naturales, Madrid, Spain)
Now a poster
- 11:45** **What Happens after the Field Work is Done? 25 Years Later: Salvage of a Distressed Collection of Fossil Vertebrate Remains from the Clovis Type Site, Blackwater Draw, Locality 1, New Mexico** by Julianne Snider (Illinois State Museum, Springfield, Illinois)
- 12:00 pm** **Lunch Break/Posters/Vendor Exhibits**
- 1:30** **Pyrite Oxidation at 25°C and 10 to 90 Percent Relative Humidity** by R. Robert Waller (Canadian Museum of Nature, Ottawa, Ontario)

- 1:45 **Mechanisms of Tooth Deterioration in Specimens of Recent Mammals** by Stephen L. Williams (The Museum, Texas Tech University, Lubbock, Texas)
- 2:00 **Mercury in Bioscience Collections: Experiments on the Blackening of Mammalian Skin** by D.W. von Endt and C.A. Hawks (Smithsonian Institution, Washington, D.C.)
- 2:15 **The Shell Game: A Review of Mollusk Shell Deterioration and its Prevention** by Jane E. Deisler-Seno and Sally Y. Shelton (Corpus Christi Museum of Science and History, Corpus Christi, Texas; Texas Memorial Museum, Austin, Texas)
- 2:30 **The Effects on Penetration Rate vs Fixation Quality of Varying Concentrations of Buffered and Unbuffered Formalin** by G. Wayne Lyons (Queen's University, Kingston, Ontario)
- 2:45 **Coffee Break/Posters/Vendor Exhibits**
- 3:15-4:45 pm **Issues in Collection Management**
Moderators: Julia Golden and Elizabeth E. Merritt
- Accepting Donations** by Julia Golden (Department of Geology, University of Iowa, Iowa City, Iowa)
- Valuation of Natural History Collections** by Janice B. Klein (Field Museum of Natural History, Chicago, Illinois)
- Appraisals and the Impact of Commercial Collecting** by Fred Collier (Smithsonian Institution, Washington, D.C.)
- Deaccessioning: The Final Frontier** by Sally Y. Shelton (Texas Memorial Museum, Austin, Texas)
- Trust or Verify? Conditions on Outgoing Loans** by Elizabeth E. Merritt (Cincinnati Museum of Natural History, Cincinnati, Ohio)
- Collections Management Meets Collections Conservation** by John E. Simmons (Museum of Natural History, The University of Kansas, Lawrence, Kansas)
- Rotten Raptors Render Research Results** by David Willard and Scott M. Lanyon (Field Museum of Natural History, Chicago, Illinois)
- Documentation Guidelines** by Kimball L. Garrett (Natural History Museum of Los Angeles County, Los Angeles, California)
- *** **Evening Open**

Wednesday, 9 May 1990

- 7:30-8:30 am** **Registration at FMNH (West Door Foyer)**
- 8:30 am** **Insecure Security** by Karen Kreycik Messenger (Lentz Center for Asian Culture, University of Nebraska, Lincoln, Nebraska)
- 8:45** **Mobile Storage: Inception to Implementation** by Paul F. Beelitz (American Museum of Natural History, New York, New York)
- 9:00** **Impact of New Occupational Safety Legislation in UK Museums** by Frank M.P. Howie (Natural History Museum, London)
- 9:15** **Evaluation of Container Types in the Paleontological Collection from Museo Nacional de Ciencias Naturales CSIC, Madrid (Spain)** by Angel Montero and Carmen Dieguez (Museo Nacional de Ciencias Naturales CSIC, Madrid, Spain)
- 9:30** **Salvaging Oxidized Microscope Slides** by Charles Messenger (University of Nebraska State Museum, Lincoln, Nebraska)
- 9:45** **Coffee Break/Posters/Vendor Exhibits**
- 10:15** **General Business Session (Full Membership)**
- 12:15 pm** **Lunch Break/Posters/Vendor Exhibits**
- 1:30-4:00 pm** **Workshop Session I:**
 Archival Materials (Lecture Hall 1)
 Coordinator: William L. Gannon
 Museum Problem Solving (Room 1)
 Coordinators: Jean F. DeMouthe and Charles L. Cecil
 Computerization I: General (Zoology Classroom)
 Coordinator: Peter Lowther
- 4:00-5:30 pm** **Poster Session (Authors attending their posters, Room 2)**
 Mini-Workshop:
 Defining Standard Procedures for Assessing the Condition of a Fluid-preserved Collection (Room 1)
 Coordinators: John Simmons, Arnold Y. Suzumoto and R. Robert Waller
- 7:00-9:00 pm** **Reception at Shedd Aquarium**

POSTERS*

A Training in Geological Conservation by Katherine J. Andrew (The Horniman Museum, London)

The Effects of Freezing on Artifact Materials: A Study Using Scanning Electron Microscopy by Julie Baker (Field Museum of Natural History, Chicago, Illinois)

Strategy for Preservation of Cellulose Nitrate Negatives by Nina Cummings (Field Museum of Natural History, Chicago, Illinois)

DBMS: LANS, BITNET, INTERNET, and Other CompuSpeak Abbreviations by William L. Gannon (Museum of Southwestern Biology, University of New Mexico, Albuquerque, New Mexico)

A Simple Security Jar for Valuable Fluid-preserved Specimens by J. Gisbert (Museo Nacional de Ciencias Naturales, Madrid, Spain)

Maintenance of Major Earth Science Collections by Iris A. Hardy (Geological Survey of Canada, Bedford Institute of Oceanography, Dartmouth, Nova Scotia)

Which Computer Printers Produce High Quality Output Suitable for Use in Museum Collections? by Suzanne B. McLaren (The Carnegie Museum of Natural History ANNEX, Pittsburgh, Pennsylvania)

Renovating a Collections and Research Facility by Elizabeth E. Merritt (Cincinnati Museum of Natural History, Cincinnati, Ohio)

Reproducing Biological Specimens in Neoprene Latex by Thomas L. Steller, Jeffery T. Wilcox and Ronald E. Cole (The Oakland Museum, Oakland, California; Carnegie Museum of Natural History, Pittsburgh, Pennsylvania; Museum of Wildlife & Fisheries Biology, University of California, Davis, California)

Measuring pH of Preservative Fluids: Ethanol-Water Mixtures by Tom Strang (Canadian Conservation Institute, Ottawa, Ontario)

SDS-PAGE Analysis of Collagen in Alcohol and Formalin Treated Skins by Michael D. Stroz and Duane A. Schlitter (The Carnegie Museum of Natural History, Pittsburgh, Pennsylvania)

Disaster Recovery Planning: A Plan in Progress at the Milwaukee Public Museum by Paula M. Sumpter (Milwaukee Public Museum, Milwaukee, Wisconsin)

* Authors will be present with their posters 4:00-5:30 pm, Wednesday, 9 May, Room 2

Thursday, 10 May 1990

8:00-9:00 am Registration at FMNH (West Door Foyer)

9:00-12:00 Workshop Session II:

Computerization II: PC's, DBase III+ (Zoology Classroom)
Coordinator: Susan M. Woodward

Exhibit in Progress (Lecture Hall 1)

Coordinators: Paul Baker and Robert J. Izor

Basic Book Repair (Library)

Coordinator: Ken Grabowski

Worker Right-to-Know Regulations (Room 1)

Coordinator: Alice Blount

12:00 pm Lunch Break/Posters/Vendor Exhibits

1:30-4:30 pm Disaster Planning--Apocalypse No! (Simpson Theater)
Moderator: William Stanley

Earthquake Safety in Museums by Jean F. DeMouthe (California Academy of Sciences, San Francisco, California)

When Disaster Strikes: the Flood at the Chicago Historical Society by Carol Turchan (Chicago Historical Society, Chicago, Illinois)

Museum Fire Protection by J. Andrew Wilson (Fire Protection Division, Smithsonian Institution, Washington, D.C.)

The Effects of Hurricane Hugo on Museums in South Carolina by Janet Hudson (South Carolina State Museum, Columbia, South Carolina)

6:30-9:30 pm Annual Banquet, Stanley Field Hall, FMNH (enter North Door)
Sponsored by Spacesaver Corporation
and Bradford Systems Corporation

Friday, 11 May 1990

- 7:00-8:00 am Registration at FMNH (West Door Foyer)
- 8:00-5:30 pm Exhibiting Natural History Materials: A Special Conservation Symposium
(Simpson Theater, FMNH; separate registration required)
- 8:00-2:00 pm Tour: Geological Tour of Chicago (meet in Blackstone lobby)
- 10:00 am Tour: FMNH Collections Facilities (meet at FMNH West Door)
- 9:00 am Tour: Chicago Academy of Sciences (meet in Blackstone lobby)
- *** End of Program

ABSTRACTS

A Training in Geological Conservation

Andrew, Katherine J.

The Horniman Museum, London Road, Forest Hill, London, SE23 3PQ, UK

This training, at the Horniman Museum, London, U.K., is a one year internship in the Conservation Laboratory under the Senior Conservator, Miss Louise Bacon. Funding is by grants from The Conservation Unit of The Museums and Galleries Commission and the Curry Fund of the Geologists' Association.

Specialized training placements have been undertaken with Adrian Doyle, at The Natural History Museum Palaeontology Laboratories, Chris Collins, the Geological Conservator at Leicester Museum, and Fiona Talbot, the Keeper of Geology at the Passmore Edwards Museum, London. Visits have been made to other laboratories and meetings attended.

Conservation work is being carried out on geology specimens from the Horniman Museum collections and on specimens from five other museums within the Area Museum Service for South East England, (AMSSEE). These AMSSEE museums form a pilot scheme to assess the true cost of geological conservation.

Other projects include a conservation survey of the geology displays and collections at the Horniman Museum, the compilation of a bibliography of geological conservation and a program of testing and examination of materials. The time spent in North America for this meeting is being extended by a study tour of geology conservation laboratories in Ottawa and visits to Canadian museums.

The Effects of Freezing on Artifact Materials: A Study Using Scanning Electron Microscopy

Baker, Julie

Department of Anthropology, Field Museum of Natural History, Roosevelt Rd. at Lake Shore Dr., Chicago, Illinois, USA 60605

One of the major considerations in evaluating freezing as a means of pest control is its effects on the artifacts themselves. While it is agreed that there is no danger of ice crystal formation in dry organic material and that changes in physical properties are reversible, it will be interesting to explore whether structural alterations occur on a microscopic level. This study is utilizing the SEM to examine substances of botanical and zoological origin which are commonly found in ethnographic objects. Samples from a variety of artifacts will be compared for changes produced by one or more cycles of freezing, and alternative methods of preparation are being tested in an attempt to obtain SEM photos of the same specimens before and after freezing.

The Large Collecting Campaigns: Problems and Strategies to Adopt by Museum Collections

Bedoya, J., Y. Bernat, O. Soriano and J.E. Gonzalez

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

Nowadays, the collections of the Museo Nacional de Ciencias Naturales of Madrid, C.S.I.C. (Spain), are running up against the difficulty to absorb and manage a sizeable number of specimens coming from a large-scale project (Fauna Iberica) whose objective is to fulfill the gaps in the knowledge of the fauna of the Iberian Peninsula and Balearic Islands. This is a long term project (twenty years, approximately), which is currently in the first stage of its development (1989-90) where 50 researchers will carry out their study on approximately 15% of the species that are thought to constitute the Iberian-Balearic Fauna.

The specimens collected during the project will form part of the collections of the Museum, providing it with a collection as much representative as possible of the fauna living in the country, so that the biodiversity of these collections will be increased.

All things considered and taking into account the number of specimens obtained just in a one-month oceanographic campaign that took place last summer, we analyze the incidence of this project on the collections of the Museum by extrapolating these results to the length of the project. According to the data obtained from these analyses, a series of steps are suggested in order to better manage these collections.

Mobile Storage: Inception to Implementation

Beelitz, Paul F.

Department of Anthropology, American Museum of Natural History, 79th Street and Central Park West, New York, New York, USA 10024

Since 1869, the American Museum's Department of Anthropology has assembled one of the largest and most comprehensive collections of ethnological, archaeological, and somatological specimens. In the 1970's, the department realized that more of its efforts should go towards properly caring for its collections.

The department is in the middle of a 20-year program to upgrade its antiquated collections management facilities. Storage environments are being improved with the modernization of old storerooms, some of which are 10,000 square feet in size. By building mezzanines and installing mobile storage, the department will be able to properly store its collections within spaces it already occupies.

A successful mobile storage system is the result of constant (and time-consuming) interaction with the company chosen to design, fabricate, and install the system. The many hours invested in closely examining blueprints and inspecting prototypes pays off, however, with a highly flexible system that addresses the vast majority of the collection's needs. Storage design will continue to evolve, and the few problems encountered at the American Museum will be corrected in the next mobile storage installation.

Life After A Conservation Survey

Benamy, E.

Academy of Natural Sciences of Philadelphia, 19th and the Parkway, Philadelphia, Pennsylvania, USA 19103

In response both to specific recommendations of a conservator and a general increase in understanding of the needs of our collections, the Invertebrate Paleontology and Vertebrate Paleontology/Mammalogy Departments at the Academy of Natural Sciences of Philadelphia have instituted both physical and procedural changes in the way collections are stored and handled.

In Vertebrate Paleontology/Mammalogy, where the biggest problems relate to overcrowded and inadequate storage, major improvements have been made through the creative use of various foams. In Invertebrate Paleontology, problems relate to improper handling and mysterious chemical breakdown of specimens. Attempts to address these are being made through letters instructing borrowers about what may or may not be done with specimens under their care and letters seeking information about specific specimens and collections in general.

Finally, our department is submitting a proposal to the National Science Foundation for collection support which has as one of its major projects a total overhaul of the type collection, including documenting, rehousing, photographing and computerizing (both traditional collection data and conservation data) all type lots.

Biological Recording as a Vital Museum Activity: Some Canadian Examples

Birker, Ingrid

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

Biological recording, a uniquely British museum activity, is the practice of collecting species and habitat information on site rather than strictly collecting specimens. Due to biological recording, British natural history museums have become a valuable resource for decisions related to strategic land planning, development and the conservation of species and sites.

However, very few natural history museums in Canada collect and curate faunal and floral records although environmental planning and protective legislation stresses the need for accurate biological data. According to a 1989 survey, only 7 out of 29 biological recording projects in Canada are specifically linked to museums. Provincial museums are active in some form of natural history species recording whereas the National Museum (Natural Sciences) is actively involved with recording the Canadian Flora and Terrestrial Arthropods and publishing Keys, Atlases and Reports.

If the challenges faced by Canadian natural history museums today are to "keep abreast of developments in science and develop the collections to translate this information into an appropriate variety of public programmes" (Communications Canada, 1988) then we must focus our efforts on world environmental concerns such as survival of species and regions and develop our collecting, curating and management policies accordingly.

Appraisals and the Impact of Commercial Collecting

Collier, Fred

Department of Paleobiology, Museum of Natural History, Smithsonian Institution, Washington, D.C., USA 20560

Who should make appraisals? In dealing with natural history specimens, what are the current ethical questions within the museum world and can honesty be found outside? The recent impact of commercial collectors throughout the world offering natural history objects has increased in many areas of the natural sciences. Is this good for science or bad? Is this good for museums or bad?

Strategy for Preservation of Cellulose Nitrate Negatives

Cummings, Nina

Department of Photography, Field Museum of Natural History, Roosevelt Rd. at Lake Shore Dr., Chicago, Illinois, USA 60605

Photographs and negatives from museum collections are often used in all areas of a museum: research, publication, exhibits, and fundraising. By nature of the medium, photographic material is not permanent. Especially, cellulose nitrate negatives, used during the early 1900s through the early 1950s. Many museum collections have contained or still contain nitrate negatives.

This poster session will examine some of the options for preserving large collections of nitrate negatives that are often found in museums, archives, and other repositories of photographic material. It will also discuss the "before" work necessary; the delicate issue of weeding, and whether to undertake the copy project using in-house resources or an outside photographic preservation company.

The poster session will be a visual presentation with several examples of photographs drawn from the Field Museum's collection of photographs of past scientific expeditions, and research projects from the early twentieth century to the 1950s.

The Shell Game: A Review of Mollusk Shell Deterioration and its Prevention

Deisler-Seno, Jane E. and Sally Y. Shelton

Corpus Christi Museum of Science and History, 1900 N. Chaparral, Corpus Christi, Texas, USA 78413; Materials Conservation Lab, Texas Memorial Museum, 2400 Trinity, Austin, Texas, USA 78705

The deterioration of mollusk shell collections has been described since 1839, when Thomas Brown of Scotland published A Conchologist's Text-Book. Since that time, the diverse problems associated with collections of dry shells have been analyzed by chemists, conservators, and amateur and professional malacologists. The significant involvement of amateur collectors in malacology has kept attention focused on specific collection-based problems. In a few cases, however, it has also served as a forum for the dissemination of untested preparation or storage methods, some of which are deleterious to the integrity of shells.

Many museum collections of mollusk shells are based partially or wholly on

donations from amateur collectors, and their preparation and storage histories, which may be important in identifying the causes of deterioration, may be inadequately documented or unavailable. This presentation provides a synopsis of common problems in malacological collections, suggests possible causes and preventive approaches for each, and gives recommendations for working with amateur collectors.

Earthquake Safety in Museums

DeMouthe, Jean F.

California Academy of Sciences, Golden Gate Park, San Francisco, California, USA 94118

Earthquakes are a fact of life in many parts of the world. Institutions located in seismically active areas must be prepared for the possible effects of moderate to major ground shaking.

Earthquake shaking is caused by the transmission of seismic waves through the earth and along the surface. There are many factors that determine how a structure and its contents will behave during an earthquake. These include the nature of the earth materials underlying the area, the magnitude and location of the earthquake, and the nature of the building itself.

There are simple and inexpensive methods available for the mitigation of the possible effects of earthquake shaking. Collections can be protected by such devices as bars or lips on the front of shelves, non-slip pads in drawers and shelves and the use of reinforced storage units that are attached to floor and walls. Heavy objects should be secured to something solid, and loose, heavy items should be stored on or near the floor. Personal and office items should be stored with the same care as the specimens in the collections.

It is vital that each institution have an emergency plan. This document should address procedures for during and after an earthquake, and should describe the responsibilities of each staff member. Earthquake drills are also a good idea, allowing everyone to learn exactly what they are supposed to do.

Workshop: Museum Problem Solving

DeMouthe, Jean F. and Charles L. Cecil

California Academy of Sciences, Golden Gate Park, San Francisco, California, USA 94118

Each museum, gallery and library has its own unique set of problems. When those problems are compared to those of other institutions, certain similarities and patterns emerge.

This workshop will allow individuals to present problems to a diverse group of museum professionals who will offer their advice and share similar experiences. The goal of the workshop is to provide those with problems with a support group of interested and experienced people. Hopefully, the group will be able to suggest multiple solutions to each problem presented.

Everyone who attends this workshop should be prepared to participate, either by sharing their experiences and expertise, or by just listening and absorbing the problems and solutions for future reference.

We may not be able to solve everyone's problems, but we will offer everyone a broader forum for discussion than is usually available to any one institution. And it always

helps to hear about somebody else's problems (particularly if they are worse than yours!)

Each presenter will be given 5 minutes to make a formal presentation of a problem, following which the group will discuss it and possible solutions.

Natural History Museum Maintenance: Results From A Global Survey

Gannon, William L. and Roberto U. Gutierrez

Museum of Southwestern Biology, University of New Mexico, Albuquerque, New Mexico, USA 87131; Museum of Comparative Zoology - Mammals, Cambridge, Massachusetts, USA 02138

Results from a worldwide survey are reported. After receiving 62 responses to questionnaires from 23 countries in seven ecological zones, we found that a variety of problems and management concerns exist. As with most collections in North America, global opinion ranked fumigation and regular inspection of collection facilities among the most important museum practices. Indoor control of light, humidity, and temperature are major environmental concerns that lower incidence of pests and reduce special maintenance needs. Tropical areas have moisture related problems with an increased incidence of molds and insect pests than those collections located in temperate areas. Other interesting details and trends are reported. Recommendations are made with particular focus on collections and fledgling natural history facilities in tropical third world and developing nations.

DBMS: LANS, BITNET, INTERNET, and Other CompuSpeak Abbreviations

Gannon, William L.

Museum of Southwestern Biology, University of New Mexico, Albuquerque, New Mexico, USA 87131

The advances in computer technology have given birth to a plethora of jargon and grammatical shortcuts for referring to both soft- and hardware. This paper lists some of the commonly used abbreviations of natural history collections' "CompuSpeak" in hopes of standardizing these terms for the museum community. Origins of terms, definitions, common usage, and synonyms are presented. A summary of the overall utility and future direction of some of the major museum soft- and hardware technologies is also presented.

Documentation Guidelines

Garrett, Kimball L.

Section of Ornithology, Natural History Museum of Los Angeles County, 900 Exposition Blvd., Los Angeles, California, USA 90007

Documentation guidelines for the preparation and conservation of natural science specimens have been developed by the SPNHC Documentation Sub-Committee and published in Collection Forum; it remains to be seen how widely and successfully these guidelines will be implemented. This discussion will focus on attempts to apply these guidelines and the impediments encountered. The question of whether such guidelines are more applicable to some collections than others will be addressed. Comments on the published guidelines are solicited for the discussion period.

A Simple Security Jar for Valuable Fluid-preserved Specimens

Gisbert, J.

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

Care of fluid-preserved specimens basically consists of the maintenance of preservative level within the jar containing them. The most frequently used preservative for Natural History collections is ethyl alcohol. This product is highly volatile, degrading by evaporation and losing its properties.

We have conceived a system to reduce alcohol evaporation from jars containing valuable specimens. This system is based on the utilization of a double jar and three polyethylene disks, providing three security levels.

Accepting Donations

Golden, Julia

Department of Geology, University of Iowa, Iowa City, Iowa, USA 52242

"Would you be interested in my collection? After I retire, the University will discard it."

"Well..." (it meets our acquisition criteria) "Well, yes."

However, in between that first positive response and the acquisition, lurk potential legal and ethical pitfalls for the curator and the institution as well as the donor.

What steps should the curator follow to insure that all parties, curator, institution and donor, act responsibly? Some suggestions concerning questions of propriety, evaluation and tax deductions will be presented.

Maintenance of Major Earth Science Collections

Hardy, Iris A.

Geological Survey of Canada, Bedford Institute of Oceanography, P.O. Box 1006, Dartmouth, Nova Scotia, Canada B2Y 4A2

Each climatic era leaves evidence of its former presence through sedimentary and fossil clues within unconsolidated marine sedimentary core collections. To maintain these collections at the Atlantic Geoscience Centre (AGC), on behalf of the Geological Survey of Canada, from further deterioration upon acquisition from the sea floor, they are kept at 4 °C and 98% relative humidity. These earth science collections represent the only baseline reference (groundtruthing) for the hundreds of maps and scientific publications published since 1966 on surficial marine sediments in Eastern Canada and parts of the Arctic Ocean. Warehouse space constraints have made it necessary to reconsider former curation policies and procedures while maintaining high quality storage capability, as well as the mandate of the GSC to maintain collections for future geoscientific research. A review of this process will be presented.

Impact of New Occupational Safety Legislation in UK Museums

Howie, Frank M.P.

Natural History Museum, Cromwell Road, London SW7 5BD, UK

Comprehensive codes of practice, generated by the Control of Substances Hazardous to Health Regulations (1989), are having a significant effect on the modus operandi of conservators, researchers and preparators throughout the UK. For the first time a comprehensive set of guidance, based on sound occupational hygiene and health principles, applies to the majority of workplace activities. Detailed assessment of risks to health of exposure to substances coupled with effective control measures, exposure monitoring and health surveillance are becoming accepted prerequisites in laboratories and studios. Where a balanced approach to the new legislation is adopted improvements in working conditions and improved treatment methods benefit staff and specimen alike.

Preserving the Geological Heritage: An Overview

Howie, Frank M.P.

Natural History Museum, Cromwell Road, London SW7 5BD, UK

Recent attention has focussed worldwide on the preservation of natural resources. In the earth sciences, conservancy boards, trusts, institutions and private enterprise have responded by protecting important geological sites from over-collection, erosion and general abuse. At a more fundamental level an understanding of the principles governing the stability of minerals is essential to considering the conservation of earth science material whether in situ, in palaeobiological or petrological collections. Data on physical and chemical stability parameters of oxides, sulphides, silicates and hydrated minerals etc. at normal temperatures, and pressures, and in the presence of atmospheric gases is remarkably scarce. The paucity of data has led to loss and damage of material in collections, misidentification of mineral phases and environmental pollution problems. This paper outlines how recent findings are improving preservation techniques.

Collection Management: Four Basic Factors

Hughes, Grant W.

Royal British Columbia Museum, 675 Belleville Street, Victoria, British Columbia, Canada V8V 1X4

Management of biological collections may be characterized by activities that can be reduced to four orthogonal components. Concentration on improving the collections in these four areas enables managers to focus on relatively few projects while maximizing collection improvement. In addition, the objectives of Collection Management Departments may be easily presented under these four headings. Public understanding of the role of collection managers can be increased. The components are: safety, security, documentation, preservation.

This paper will develop the idea of characterizing activities as orthogonal components and show how a simple index along principal factors may be used to characterize how well a collection is being managed.

Valuation of Natural History Collections

Klein, Janice B.

Department of Anthropology, Field Museum of Natural History, Roosevelt Rd. at Lake Shore Dr., Chicago, Illinois, USA 60605

Museums and museum professionals have traditionally considered most natural history collections to be of scientific importance, but not to have any identifiable monetary value. There are now several reasons why it may be necessary to provide monetary valuations:

1. For donors to report to the IRS for tax deductions
2. For insurance purposes
3. For museum compliance with new FASB regulations

Financial Accounting Standards Board

Some suggested standards exist for valuing botanical and entomological collections based on processing cost (i.e., mounting, cataloguing, etc.), but it is, at present, difficult to identify the value of such a collection at the time it is received by a museum.

The standard appraisal practice in setting such a valuation is to compare the collection with known sales results of similar collections. Because the market for most natural history collections is fairly small and not well-known, appraisers are unable to find enough comparative sales results on which to base their valuations. These collections are, however, bought and sold and there may be some value to gathering this information together in the form of a national database, which would then be available for general use.

There are, of course, a number of potential problems with such a system. Not least of these is the effect that the formalization of natural history collection valuation may have on the "market" and the possible loss of resources.

The Effects on Penetration Rate vs. Fixation Quality of Varying Concentrations of Buffered and Unbuffered Formalin

Lyons, G. Wayne

Department of Anatomy, Queen's University, Kingston, Ontario, Canada K7L 3N6

Using standard histological procedures, canine dog thigh muscle tissues, fixed in 5, 10 and 15% buffered and unbuffered formalin for 2, 4, 8, 12 and 24 hours, were prepared for light microscopical evaluation.

Difficulties were encountered during the cutting and staining procedures resulting in shredding and stain colour loss within some tissues. These problems may have been a result of poor penetration or poor fixation property of the fixative formula used.

Factors limiting the clear-cut analysis of the tissues were (1) actual penetration rate of different percentages of fixatives, (2) staining procedures used and the factors influencing their results, (3) postfixation of tissues in ethyl alcohol, and (4) lack of definition of seemingly fixed and unfixed areas.

Even though the results obtained have not established a direct correlation between fixation quality and penetration rate, the problem has proven to be most challenging. This suggests that further investigation and the use of other analytical procedures might be more favorable and conclusive.

Which Computer Printers Produce High Quality Output Suitable for Use in Museum Collections?

McLaren, Suzanne B.

The Carnegie Museum of Natural History ANNEX, 5800 Baum Blvd., Pittsburgh, Pennsylvania, USA 15206-3706

For decades, caretakers of museum collections have sought to use only the best, archival quality paper and permanent inks for labels, tags, and other long term carriers of specimen data. Translating this diligence to use in the latest computer printers is a matter which has been addressed infrequently when collection computerization is discussed. Unfortunately, the production of specimen labels represents such a small fraction of potential printer uses that many people may overlook certain considerations prior to purchase.

Obtaining archival quality paper which can be used with the latest hardware may not be difficult. However, ink composition, operating mechanisms, and even the technology utilized by some types of printers may render the printed output unsuitable for archival purposes. This poster will present preliminary findings from available literature, manufacturers' information, and the results of short-term tests performed on labels generated by several commonly used types of computer printers.

Renovating a Collections and Research Facility

Merritt, Elizabeth E.

Cincinnati Museum of Natural History, 1720 Gilbert Avenue, Cincinnati, Ohio, USA 45202

The Cincinnati Museum of Natural History is planning to renovate its current 56,000 sq. ft. building into a facility devoted entirely to collections and research, when the non-science staff move to the new Museum Center at Cincinnati's Union Terminal. This poster outlines the history of this project to date, gives a summary of the current building's problems and shows the blueprints in progress for the renovated facility. The poster focuses on problems and decisions that other institutions might face in planning similar projects.

Trust or Verify? Conditions on Outgoing Loans

Merritt, Elizabeth E.

Cincinnati Museum of Natural History, 1720 Gilbert Avenue, Cincinnati, Ohio, USA 45202

Current practices regarding the conditions imposed on outgoing loans vary widely depending on the type of material involved, its insurance value, and the area of study of the department handling the loan. Loans of scientific specimens for research purposes frequently establish no conditions or guidelines for treatment of the specimen.

This talk addresses the issue of whether specimen conservation can, or should, be left as a matter of trust between professionals, and reviews what conditions are being placed on loans at various institutions.

Salvaging Oxidized Microscope Slides

Messenger, Charles

University of Nebraska State Museum, W436 Nebraska Hall, Lincoln, Nebraska, USA
68588-0514

A number of the synthetic microscope slide mounting media seem to have a useful life expectancy of about 20 years. For this reason, the last few years have shown a large increase in the number of slides showing opaqueness due to the oxidization of some of these media.

Procedures have been developed at the Manter Laboratory of Parasitology to salvage these slides, using several different methods. The technique used will depend on the condition of the slide and of the specimen. Our approach to some of these remounting techniques will be presented.

These methods have been in use in our laboratory for over 10 years, and have produced very satisfactory results.

Insecure Security

Messenger, Karen Kreycik

Lentz Center for Asian Culture, 329 Morrill Hall, University of Nebraska-Lincoln, Lincoln, Nebraska, USA 68588-0372

Security has become a major consideration for museums of all sizes and types. With the tremendous increase in valuation of cultural items during the past few years, the decision was made to increase security in the display and storage areas of the Lentz Center for Asian Culture. Motion sensors were already in place in the display area and it was decided to add security to the permanent display cases and storage areas.

A local firm that specializes in security systems was called in to make recommendations and provide the equipment. Two types of security devices were selected and a University workman did the installation. Problems surfaced immediately with one of the two new installations and construction activity during remodeling of the entire building contributed its share of reasons for the system in general to malfunction.

The educational process and debugging continues as everyone learns the capabilities and limitations of trying a new product in an untested situation.

Evaluation of Container Types in the Paleontological Collection from Museo Nacional de Ciencias Naturales CSIC, Madrid (Spain)

Montero, Angel and Carmen Dieguez

Museo Nacional de Ciencias Naturales CSIC, Jose Gutierrez Abascal No. 2, 28006 Madrid, Spain

The different types of containers have been evaluated, after seeing their behavior in different parameters (temperature, humidity degree, light and dust). The storage zones in the Museum are two closed basements with a compact storage system and with a reasonably stable temperature and humidity degree, but with an accumulation of dust. Hermetic, plastic and translucent boxes have been chosen in twelve sizes. The specimens, which due to their height can not be included in these, are disposed in polyethylene bags inside

cardboard boxes.

The validity of the containers has been proven, after four years of use by:

- a) Better security in loans and enquiries.
- b) Absolute absence of dust and protection of specimens and labels.
- c) Absolute protection against fluctuations in temperature and humidity, as demonstrated by a partial flood of the basement due to alterations in another section: water fell over compacter units and the cardboard boxes were left useless and, in many cases destroyed, but the plastic boxes did not allow the water through and the specimens remained in a perfect state for their removal.

Private Collections: An Overlooked Resource for Museums

Phillips, Donald F.

Rare Mineral Exchange, Post Office Box 11414, Chicago, Illinois, USA 60611

As unfavorable economic conditions play havoc with museum budgets, fewer dollars become available for new acquisitions. Conversely, the number of natural history objects in the hands of private collectors is increasing, and their collections represent considerable value, both in terms of financial investment and scientific importance.

Many of these private collectors consider themselves as amateur scientists in that they have attained a high degree of knowledge and expertise regarding the objects they collect. They take pride in their collections and are eager to share their interests with others. Museums would do well to encourage the development of closer and more active relations with these knowledgeable amateurs as a means of eventually increasing the amount of material donated to museum collections for safe keeping.

Suggestions will be offered on the types of activities museums could undertake to enhance the involvement of the amateur community, with mutual benefit to both collector and the museum. It will be argued that these activities should extend beyond a mere public relations scope, and involve curators, collection managers, and exhibit designers as well.

Deaccessioning: The Final Frontier

Shelton, Sally Y.

Materials Conservation Laboratory, Texas Memorial Museum, 2400 Trinity, Austin, Texas, USA 78705

Deaccessioning is "the formal process used to remove permanently an object from the collections" (Malaro, 1985). The conditions under which this is appropriate and the procedures which should be used vary widely. Recent articles have stressed the ethical pitfalls of selling or disposing of collections objects. However, the market value of all collections may be mandated by recent proposals which would require the capitalization (in dollar value) of museum collections. This talk will briefly review the conditions under which deaccessioning is appropriate, the restrictions on deaccessioning, and the inappropriateness of deaccessioning based on marketability of collections objects.

Collections Management Meets Collections Conservation

Simmons, John E.

Division of Herpetology, Museum of Natural History, The University of Kansas, Lawrence, Kansas, USA 66045

The concept of specimen conservation and the goals of collection management often seem diametrically opposed, but it is possible to incorporate conservation methods while actually strengthening the collections management program. The application of appropriate conservation materials and procedures will improve the condition of the collections and eliminate many detrimental collections management practices. The needs and goals of collections management often indicate where conservation research is most needed, such as in procedures for the preparation of fluid preserved specimens.

What Happens after the Field Work is Done? 25 Years Later: Salvage of a Distressed Collection of Fossil Vertebrate Remains from the Clovis Type Site, Blackwater Draw, Locality 1, New Mexico.

Snider, Julianne

Illinois State Museum, Research and Collections Center, 1920 South 10 1/2 Street, Springfield, Illinois, USA 62703

Field work was completed in 1963 but the excavated vertebrate material remained encased in field jackets and stored in a barn until 1984 when it was brought to the Illinois State Museum for conservation and study. Since then, other material from the assemblage has been retrieved and subsequently prepared in the Museum's paleontology laboratory. This paper will address the methods developed and materials used during preparation of over 125 specimens of mammoth and extinct bison; the history of the site and the resulting impact on the fossil remains; and why laboratory work should be included in the training of field workers.

The data gathered as a result of this project has aided in the upgrade of the preparation laboratory and geology collections area, the establishment of computerized preparation records, and the compilation of an annotated paleo-preparation bibliography.

Disaster Planning-Apocalypse No!

Stanley, William T.

Division of Mammals, Field Museum of Natural History, Roosevelt Rd. at Lake Shore Dr., Chicago, Illinois, USA 60605

Disasters can strike a museum at any time with devastating consequences. While some may come with at least a little warning, such as Hurricane Hugo, others will strike unannounced, as the earthquake did in San Francisco in 1989. Some museums and natural history collections are quite well prepared for many different possible disasters, while other institutions are only in the beginning stages of preparing a disaster plan. The purpose of this workshop is to draw from the experiences of institutions that have experienced major disasters to address what is needed for a comprehensive disaster plan. Disasters including earthquake, flood, fire, and storm will be discussed in a format that will describe what occurred before, during, and after the disaster so that first hand accounts may help to form the plans that may minimize, if not prevent damage that different disasters might cause.

Reproducing Biological Specimens in Neoprene Latex

Steller, Thomas L., Jeffery T. Wilcox and Ronald E. Cole

Department of Natural Sciences, The Oakland Museum, Oakland, California, USA 94607; Section of Mammals, Carnegie Museum of Natural History, Pittsburgh, Pennsylvania, USA 15205; Museum of Wildlife & Fisheries Biology, University of California, Davis, California, USA 95616

Laboratory classes in fisheries biology have traditionally relied on wet-preserved materials for classroom study. That is, fishes are fixed in formaldehyde, preserved in alcohol, and then offered to students as a study aid. While fluid preserved specimens are an important component in archive museum collections, they are not ideally suited for teaching collections because of their caustic nature and their unrealistic brown color. The authors have modified and adopted casting and modelling techniques to produce accurate, long-lasting, resilient representatives of fishes, as well as reptiles, amphibians, and plants. The products are used in the classroom, in lectures and demonstrations, and with slight modification of technique, are placed on exhibit where detail and accuracy are essential.

This presentation will discuss materials, methods, results, and recommendations for producing neoprene latex models of plants and animals for teaching and exhibit.

Measuring pH of Preservative Fluids: Ethanol-Water Mixtures

Strang, Tom

Canadian Conservation Institute, 1030 Innes Road, Ottawa, Ontario, Canada K1A 0C8

The measurement of hydrogen ion activity (pH) is an important part of assessing the condition of a fluid-preserved-collection. The criteria for an acceptable methodology are standardized procedure, repeatability and convenience. Colorimetric pH test strips and pH meters were examined for their reliability in measuring pH in simple buffered ethanol-water solutions. No single pH paper or series of papers proved accurate over the range tested (pH 3 to 10) when compared with readings from a pH meter using glass-membrane electrodes. The pH meter gave reproducible results within a reasonable stabilization time and without irreversibility affecting the electrodes. The reproducibility of measurement provided by the glass-membrane electrode could be used to establish a standard methodology for pH determination of fluid-preserved-collections. The procedure would emphasize careful documentation of equipment and calibration to standard aqueous buffers to allow comparison between sets of data.

SDS-PAGE Analysis of Collagen in Alcohol and Formalin Treated Skins

Stroz, Michael D. and Duane A. Schlitter

The Carnegie Museum of Natural History, 5800 Baum Blvd., Pittsburgh, Pennsylvania, USA 15206-3706

Storage of wet specimens in 70% ethyl alcohol is a practice common to most natural history collections. This paper will examine the efficiency of fluid preservation techniques as they relate to the collagen in the specimen. The integrity of the collagen is an indicator of the preservation of the skin. We will also compare the preservative qualities of methyl and isopropyl alcohols, various concentrations (95%, 75% and 55%) of the three alcohols,

and formalin treatments of the samples before storage in the alcohol.

Sodium dodecyl sulfate polyacrylamide gel electrophoresis (SDS-PAGE) is a technique by which a current is passed through a gel medium causing the migrating proteins to be separated according to molecular weight and charge of the molecule. Treated skin samples were digested with collagenase and the integrity of the collagen was compared. Electrophoretic results will be densitometrically analyzed and determination of preservative quality will be suggested. Specimens preserved in 10% formalin and stored immediately in either methyl or ethyl alcohol show less degradation of collagen.

Curating the Paleozoic: Curation and Computerization of Invertebrate Fossil Specimens

Sumpter, Paula M.

Department of Geology, Milwaukee Public Museum, 800 W. Wells St., Milwaukee, Wisconsin, USA 53233

The curation of the Paleozoic invertebrates and computerization of the associated documentation at the Milwaukee Public Museum is a project now entering the sixth year of grant support from the Biological Research Resources Program of the National Science Foundation. The Paleozoic faunas of Wisconsin are the centerpiece of the invertebrate fossil collection. Prior to the initiation of this project the specimens were organized in various stages of confusion, documentation was scarce and wildly scattered, and research using the collection was virtually impossible.

The Paleozoic curation is now nearly complete. The collection has been reunited with its documentation literally one specimen at a time. This newly acquired knowledge was immediately entered into a SAS data base. Specimens are arranged and cataloged by locality, with separate data sets for type specimens, taxonomic and statistical data, and necessary loan, accessions, and other housekeeping information. There are a total of five data sets which can be combined by means of the assigned locality number found on every record. Specimens are indelibly marked with the assigned number so they will never again be separated from their data.

This is a success story born of a curatorial nightmare. Scientific research on the newly curated collections has already begun.

Disaster Recovery Planning: A Plan in Progress at the Milwaukee Public Museum

Sumpter, Paula M.

Department of Geology, Milwaukee Public Museum, 800 W. Wells St., Milwaukee, Wisconsin, USA 53233

In September of 1989 the staff and administration of the Milwaukee Public Museum came to the conclusion that formulation of a comprehensive disaster recovery plan was long past due. A task force, consisting of about a dozen museum staff and various Milwaukee County disaster experts, was created and charged with producing the plan. The task force was then divided into five smaller working groups, each directed to a specific recovery area. These five groups: Vital records and documents on paper; Biological and Geological collections; Historical and Ethnological collections; Photographic, audiovisual, and computer media; Books and composite works on paper; are each preparing a report to the full task force.

The working group reports are progressing very well and the pieces of this enormous

puzzle have begun to come together. With the occasional minor disaster to spur us along, we have been able to maintain our momentum. We hope to complete the plan sometime in 1990.

Mercury in Bioscience Collections: Experiments on the Blackening of Mammalian Skin

von Endt, D.W. and C.A. Hawks

CAL/MSC, Smithsonian Institution, Washington, D.C., USA 20560; Division of Mammals, Smithsonian Institution, Washington, D.C., USA 20560

Compounds of mercury have been used as preservatives, killing agents and fixatives for natural history specimens for the last 300 years. The use of these chemicals on mammalian skins often is associated with blackening and embrittlement of the skin. Our initial attempts to detect mercury on the exterior and interior of microtomed thin sections and hand-cut thick sections were unsuccessful using SEM-EDS. However, we were able to detect the presence of alum, and using XRD analysis, the presence of arsenic trioxide in many samples. We determined that mercury was present in our samples in the range of 0.4-0.9% using colorimetry. To simulate the darkening reaction we exposed mercury chloride treated rawhide to a number of different atmospheres. Those which contained carbon disulfide or hydrogen sulfide produced black and stiff skins; hydrogen sulfide reacted most rapidly and produced the most blackening. We will discuss these data and possible mechanisms for the darkening. In addition, we report current results from developing a colorimetric spot test to detect mercury in collections, and compare it to several standard techniques.

Pyrite Oxidation at 25°C and 10 to 90 Percent Relative Humidity

Waller, R. Robert

Mineral Sciences Division, Canadian Museum of Nature, Box 3443, Station "D", Ottawa, Canada K1P 6P4

The oxidation of freshly ground samples of pyrite has been studied at 25°C and 10 to 90% relative humidity (RH). Oxidation rate measurements were performed using modified manometric techniques. These experiments were supplemented by microscopic, scanning electron microscopic, energy dispersive X-ray spectrographic, gas chromatographic, X-ray diffraction, infrared spectroscopic, and X-ray photoelectron spectroscopic analyses of reactants and/or products.

Results that pertain to the primary focus of the study relate the oxidative behavior of pyrite to its storage environment. In particular, the near-initial oxidation rates, expressed as micrograms oxygen consumed per gram pyrite per hour, of freshly ground crystalline pyrite increase exponentially as RH increases from 10% to about 60%. Above about 60% RH the increase in oxidation rate with increasing RH is less drastic and appears to approach a limiting value. Also significant, is the finding that oxidation rates decline more rapidly at low RH than they do at high RH. It appears that at lower than 30% RH oxidation rates may approach zero as time goes on. In contrast, above 50% RH it appears that oxidation rates would not decline to zero until all the pyrite has been consumed. These facts suggest the possibility that specimens, after treatment to remove oxidation products, might be safely stored in air at low RH.

Several results not directly related to the primary focus of the study are also of

interest. Sulphur dioxide was shown to be a major product of pyrite oxidation at low RH, a significant product at intermediate RH and to become insignificant only at RH greater than about 90%. This finding suggests that sulphur dioxide is a significant internal pollutant in geological collections. Also, the oxidation rate for a mixed sample of pyrite and graphite was significantly higher than the rate measured for the same materials not mixed. This indicates that pyrite oxidation under the conditions investigated proceeds through an electrochemical mechanism and is rate limited by the cathodic reduction of oxygen. This can help explain the extremely rapid oxidation that occurs in pyritic, carbonaceous specimens.

Rotten Raptors Render Research Results

Willard, David and Scott M. Lanyon

Bird Division, Field Museum of Natural History, Roosevelt Rd. at Lake Shore Dr., Chicago, Illinois, USA 60605

With the growing use of biochemical techniques in studies of systematics, there is also a growing pressure on collections to allow destructive sampling of specimens to provide the material for analysis. Specimens without data, frequently the first to be sent to education and exhibit programs, have taken on new importance as potential sources of genetic material. Requests to sample destructively open new worm cans of policy questions related to who, what, where, why and how.

Mechanisms of Tooth Deterioration in Specimens of Recent Mammals

Williams, Stephen L.

Natural Science Research Laboratory, The Museum - Texas Tech University, P.O. Box 4499, Lubbock, Texas, USA 79409-3191

This contribution is a continuation of previously reported work involving tooth deterioration in specimens of the bat species, Artibeus jamaicensis. Skulls were maintained in controlled microenvironments that simulated temperature and relative humidity in permanent storage areas of many research collections. By monitoring the incidence of tooth cracking, particularly in canines and second premolars, it was determined that moisture content and moisture changes were important factors in tooth stability. Teeth subjected to relative humidities below 50% tended to be more fragile and susceptible to damage; below 45%, deterioration increased substantially presumably because of desiccation.

An Accession Database: Tracking Specimen Location and Increasing Processing Efficiency in a Recent Mammal Collection

Woodward, Susan M.

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A microcomputer database using dBase III plus has been designed to house accession or acquisition information for single specimens and collections of specimens of Recent mammals. Location and status fields in the accession database permit the tracking

of physical location, and stages of preparation and curation of specimens. After every update specialized print-outs of relevant data are produced for each major stage in the processing of specimens. The system tries to optimize the efficiency with which departmental staff perform their functions related to specimen processing.

Single specimen data from the accession database can be directly uploaded to the departmental collection database. With a minimal amount of editing, specimen cards and labels can be produced in-house. Specimen data for collections of specimens is input from field catalogues.

* * * * *

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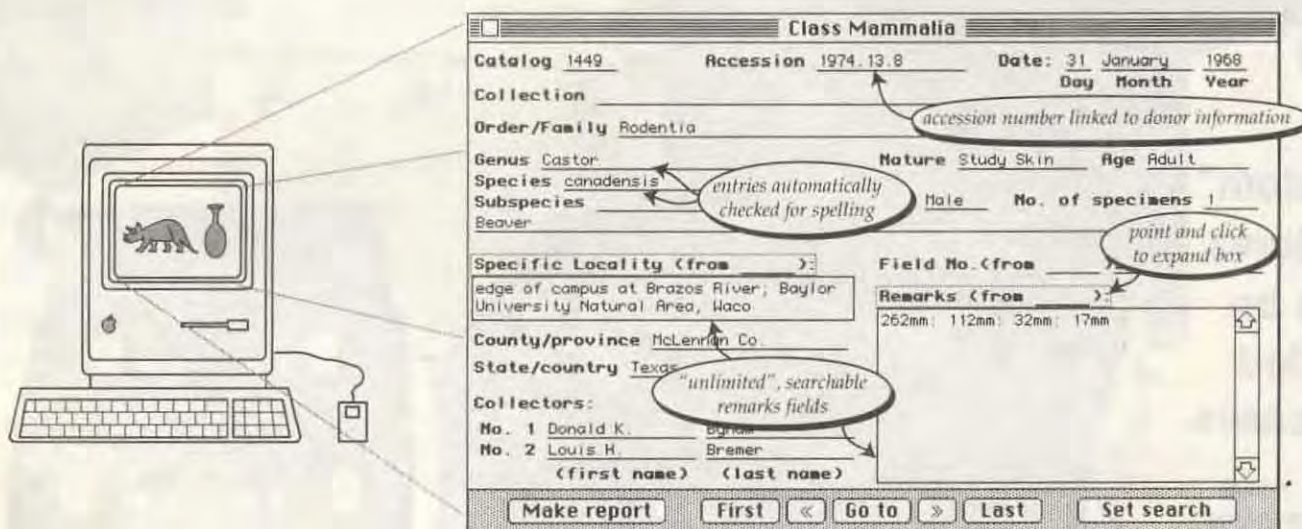
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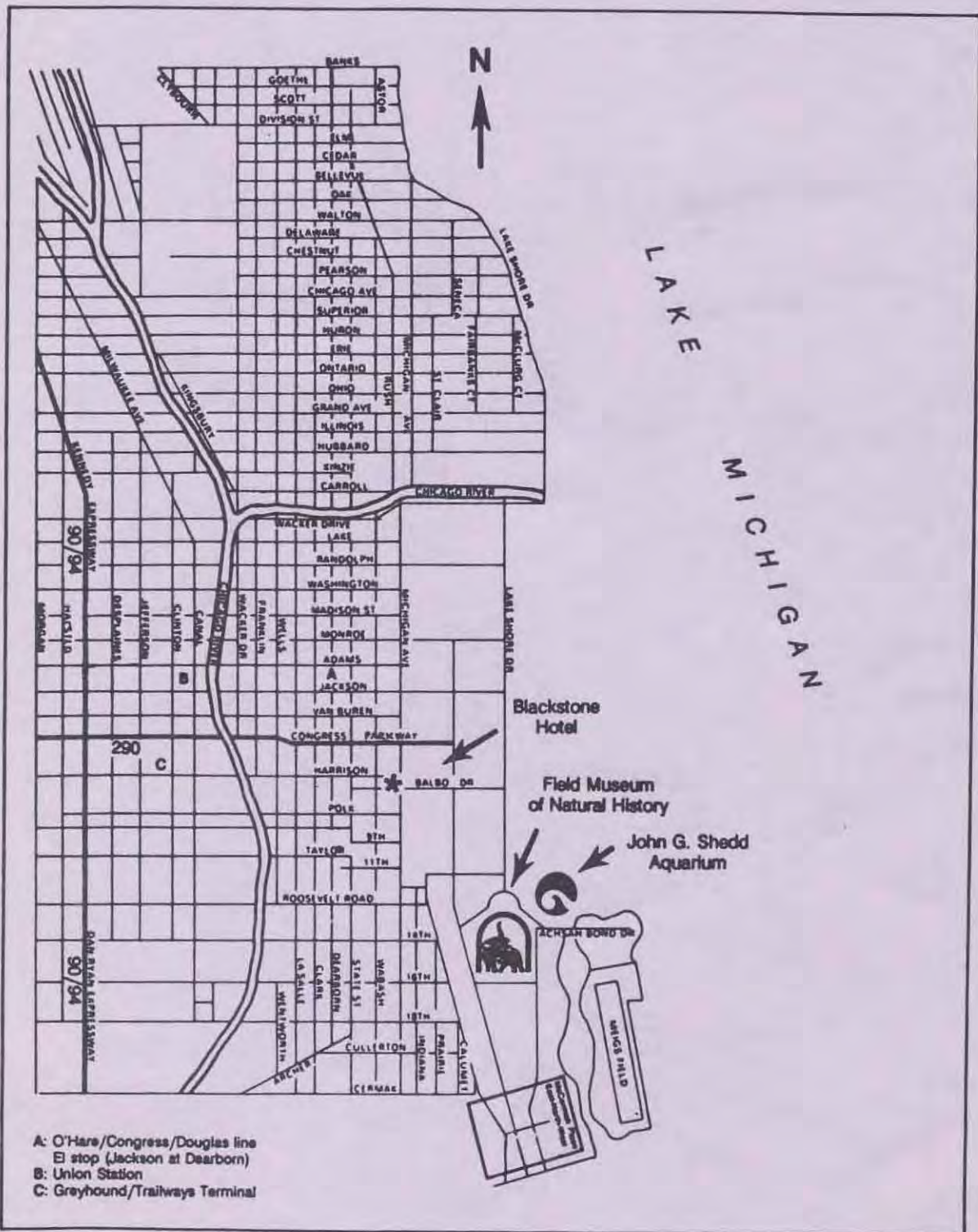
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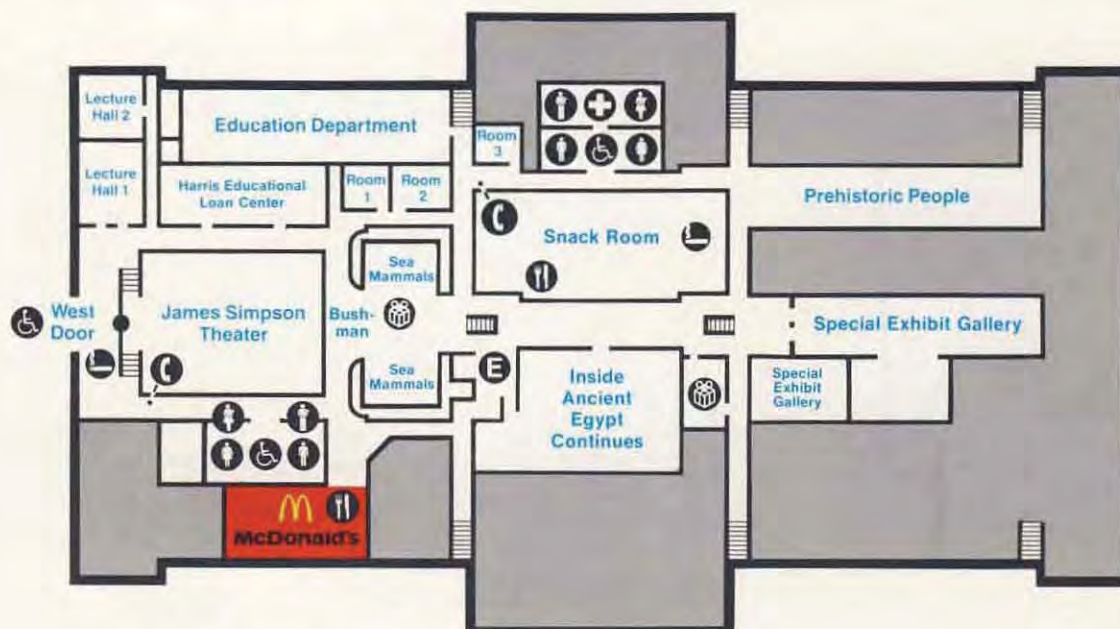
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Exhibit Highlights

Inside Ancient Egypt Continues

Explore the burial chambers of 23 mummies, investigate a living Nile marsh and wander through an ancient marketplace. We suggest you begin your visit at the Egyptian tomb on the first floor, unless the tomb is too crowded.

Bushman

A long-time resident of Lincoln Park Zoo, Bushman stood 6'2" tall and weighed 550 pounds. He was donated to the Museum after his death in 1951.

Prehistoric People

Witness the evolution of the earliest human cultures, from the creation of increasingly complex tools to the development of agriculture, art and religion.

Special Exhibition Halls

From dinosaurs to Native American art, from Saudi Arabia to our own Chicago neighborhoods, the Field Museum's special exhibits offer a wide range of new experiences every time you visit. Look for special exhibits on the ground floor, and in the South Gallery and the Webber Hall Gallery on the first floor.

Museum Services



This is a Barrier-Free Building

Specialty designated parking spaces are available at the North and West Doors. Wheelchairs are available for loan at all entrances.



Restrooms



McDonald's

Open 9:00am-4:30pm daily.



Snack Room

Vending machines
Open 9:00am-5:00pm daily.



Elevator



First Aid

Contact the nearest Visitor Services officer for first aid and other emergencies.



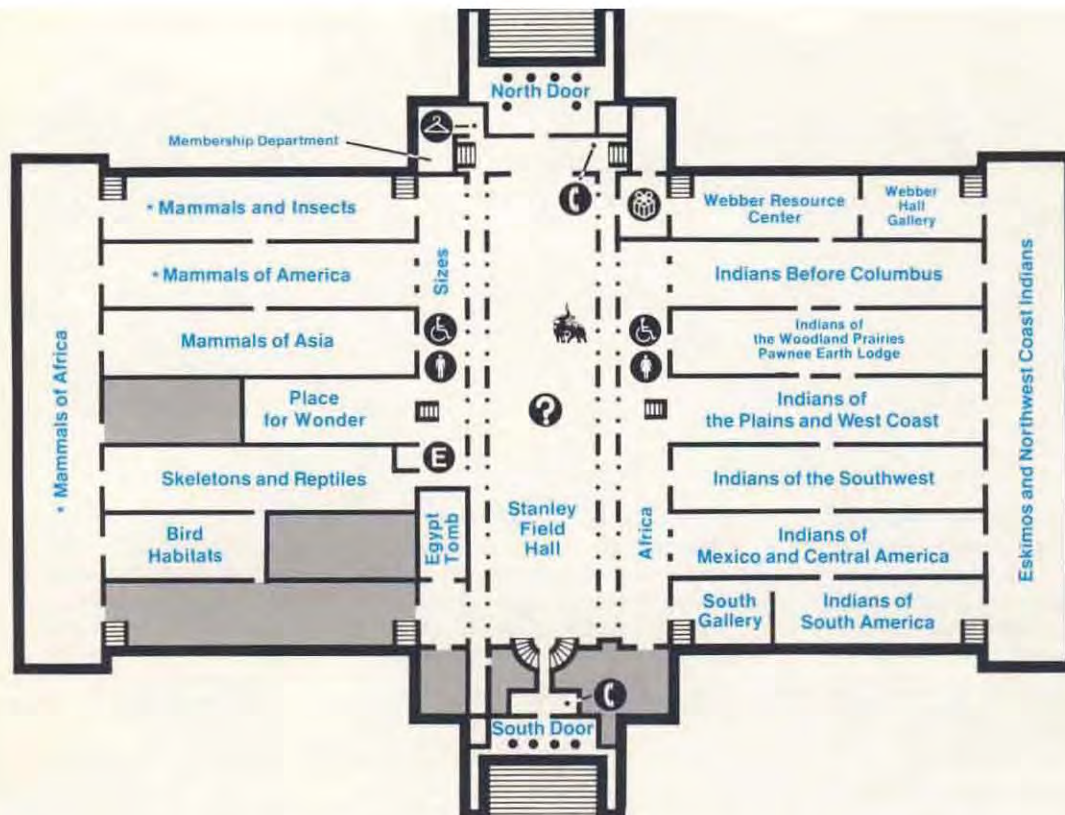
Egypt Store and Children's Store

Open 10:00am-4:00pm on weekdays,
10:00am-4:30pm on weekends.



Baby Changing Room

Baby Changing Room
Area for feeding and changing babies.



First Floor

Exhibit Highlights

Inside Ancient Egypt--The Tomb

Outside of Egypt itself, this is your only chance to enter and explore a full-size reconstruction of an Old Kingdom tomb. Tour the upper level of the tomb, then descend the 35-foot shaft to the burial chambers below. If the tomb is too crowded, you may wish to enter Inside Ancient Egypt from the ground floor.

Place for Wonder

Children of all ages can touch the tooth of a woolly mammoth, hold a chocolate chip starfish or try on a costume from another land. Open weekdays 12:30pm-4:30pm; weekends 10:00am-4:30pm.

Webber Resource Center

Do you have questions about the native peoples of South, Central or North America? Browse through videotapes, maps, artifacts, books, periodicals and special exhibits, ask questions of our staff--or just relax. Open weekdays noon-5:00pm; weekends 10:00am-5:00pm.

Eskimos and Northwest Coast Indians

Spanning 5,000 miles of the Northwest and Arctic coasts of North America, this world-renowned collection provides a view of two cultures whose lifeways showed invention, self-reliance and adaptation.

* Over the next few months some of your favorite Animal Halls will be closed for renovation. Watch for the New Animal Kingdom, to open in 1992.

Museum Services



Information Booth



Restrooms



Elevator



Checking

Free to members; 25¢ charge per article to nonmembers.

Strollers

Available for a nominal fee at the Checkroom.

Wheelchairs

Available for \$1.00 deposit refundable at the Checkroom.



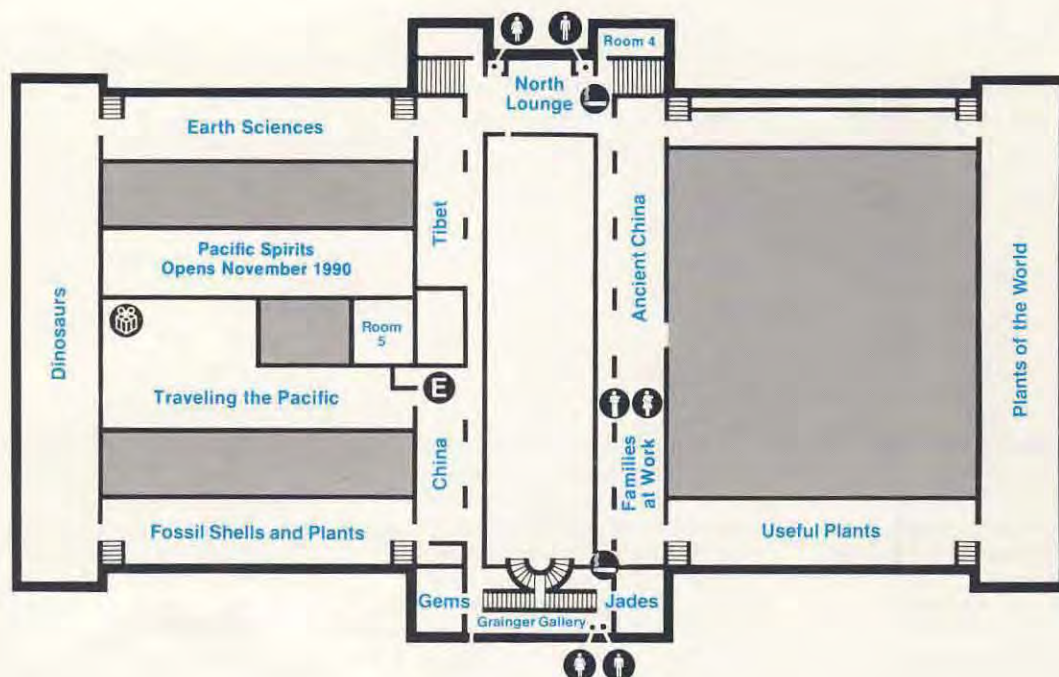
Museum Store

Open 10:00am-4:45pm every day.



Lost and Found

Inquire at the Checkroom.



Second Floor

Exhibit Highlights

Traveling the Pacific

Journey among remote Pacific islands in our newest exhibit. Watch a glowing lava flow and walk on a windswept beach; explore life in a traditional village and browse through a modern market.

We hope you'll plan a return visit in November 1990 for the opening of the final part of this exhibit, a study of art and ritual among Pacific peoples.

Plants of the World

This unique display of exquisitely crafted lifelike models of plants from around the world includes a lounge overlooking Lake Michigan.

Dinosaurs

Filled with fossil remains of prehistoric mammals, reptiles, birds and fishes, this space is dominated by imposing skeletal reconstructions of a mastodon, a mammoth and a 72-foot-long *Apatosaurus*.

Families At Work: Strategies for Rearing Young

Explore how different animals and people of many cultures raise their offspring. Parents and preschoolers alike will enjoy the special play area within the exhibit.

Gems

Enter the glittering world of gemstones and discover their stories, from their formation in the depths of the earth to their transformation into sparkling jewels.

Museum Services



Restrooms



Elevator



Smoking Areas

Smoking is permitted only in designated areas.



Baby Changing Area



Tahitian Market Store

Open Daily

Welcome to one of
the world's great museums

Ours is a wondrous and
vast museum...as you will
soon discover!

Through the generosity of Marshall Field I, who made an initial donation of \$1 million, the Field Museum of Natural History was founded in 1893 at the close of the World's Columbian Exposition. On May 2, 1921, the Field Museum opened at its present location.

We are concerned with all life on Earth, past and present, human and non-human; with the evolution of life; and with the composition and evolution of this planet and its near neighbors. Our permanent and special exhibitions are designed to help our visitors discover the diversity and beauty of other cultures and of the natural world. Through the fields of anthropology, botany, geology and zoology, Field Museum visitors can explore and better understand the world.

Our more than 19 million artifacts and specimens have been gathered through our own expeditions, exchange with other museums, purchase and gifts from private collections. Through ongoing fieldwork and basic research, the Field Museum becomes not just a treasure house of specimens drawn from all corners of the globe, but also a dynamic, scholarly community resource that appeals to people with a sense of curiosity about the world in which they live.

The Field Museum of Natural History is a private, nonprofit institution, dependent on support from its members, other interested individuals, corporations, foundations and government funding.

We would like you to make the most of your visit to the Field Museum. If you are a first-time visitor or have only a short time to spend with us, we call your attention to several tools especially useful in maximizing your enjoyment of the Museum: the Information Booth in Stanley Field Hall; color TV monitors located throughout the Museum; Field Notes, which are posted at the North and South doors; and the maps in this Visitor Guide. All of these are designed to aid you in moving about the building with ease.

We suggest you take a few minutes to relax, study the maps and plan your tour. The Field Museum has more than nine acres of exhibition and public areas occupying three floors, so it is virtually impossible to see it all in one day. We encourage you to come back often.

Please Pardon Our Dust

You may find some exhibit halls closed to the public. Thanks to the success of our recent Capital Campaign and the generous support of the Chicago community, the Field Museum has launched a very exciting exhibition program. In coming years, look for a new exhibit on the evolution of life on Earth, a new resource center devoted to the animal kingdom, new informal exhibits and much more. All this activity means ongoing construction, but the good news is that there will always be something new to see when you return to the Field Museum. Thank you for your patience.

Field Museum of Natural History
Roosevelt Road at Lake Shore Drive
Chicago, Illinois 60605-2496
Telephone: (312) 922-9410

General Information

Emergencies

Ask for assistance from any of our Visitor Services officers, or go to the Security Office on the ground floor.

Information

Please see our staff at the Information Booth in Stanley Field Hall, ask our Visitor Services officers or call (312) 922-9410.

Comments

We welcome your comments and suggestions. Comment sheets are available at the Information Booth.

Hours

We are open from 9:00am-5:00pm daily; the Museum is closed only on New Year's, Thanksgiving and Christmas Days.

Admission

We charge admission every day except Thursday, when admission is free for everyone. Admission is always free for:

- Museum members
(with Membership Card)
- Members' families
(with Family Membership Card)
- U.S. military personnel
(with ID)
- Individual teachers (with ID)
- Children under age two
- Eligible pre-registered groups of ten or more

Cover photo by William Burlingham.

Food Service

Food and beverages are available at McDonald's, open daily from 9:00am-4:30pm, and in the Snack Room open 9:00am-5:00pm. Both are located on the ground floor.

To make everyone's visit more enjoyable, food, drink and smoking are permitted in designated areas only.

Membership

Become a member of the Field Museum and enjoy: free Museum admission, Special Members Publication, discounts on purchases at our stores and on registration for classes and field trips; invitations to special events and previews; use of the Museum's library; exclusive travel opportunities -- and much more. Apply up to \$10 of the admission you paid today to the membership fee. Pick up an application from the Information Booth.

Photography

You are welcome to use your camera in the Museum, except where otherwise posted. Visitors with tripods must receive a tripod pass and sign a copyright waiver at the North Door Security Desk.

Special Programs

Films, lectures, courses, field trips and tours, demonstrations and programs for school groups are among the many educational opportunities available through the Field Museum's Education Department. Current brochures are available at the Information Booth.

Something special is always happening at the Field Museum. Check the TV monitors or the Field Notes, posted at each door, for program times and locations.

Harris Educational Loan Center

Chicago-area educators may borrow small exhibits, audiovisual and hands-on material free of charge. For information on the loan program and for Center hours, please call 922-9410, extension 352.

For the safety of our visitors, staff and collections, the Museum is equipped with closed circuit TV and electronic security systems.