

conservation issues for wooden artifacts in cemeteries. This project is intended to fill that void.

• *Evaluation of Conservation and Presentation Practices in a Southwest Pottery Collection, University of Arizona.* The Arizona State Museum proposes to examine, record and analyze the performance of past treatments on the museum's collection. Previous grant funds enabled conditions assessment of 20,000 southwest vessels and a modern storage facility. NCPTT funds will be used to monitor and evaluate previous preservation treatments. This research will enable researchers to identify patterns in archaeological methods, museum management and conservation.

### New Technologies for Preservation and Access to Recorded Sound History

Sound was first reproduced from a recording on tin foil by Thomas Edison in 1877. From that time until about 1950 when magnetic tape came into broad use, mechanical media such as foil, wax, plastic, shellac, and lacquer were the predominate materials that held recorded sound. Today, vast collections of recorded sound reside in the major archives and in collections at museums, libraries, and academic institutions worldwide. In many cases, the sound carriers are physically compromised due to wear and age or are considered too delicate to play with normal means (contact with a phonograph stylus).

The preservation challenge for mechanical recording media revolves around its fragility and pre-existing wear or damage. The access challenge is to find an efficient way to massively transfer hundreds of thousands of discs or other media to digital form. Both these challenges are being addressed through a unique research collaboration between the Library of Congress (LOC) and the Department of Energy's Lawrence Berkeley National Lab (LBNL). This research project explores the application of non-contact optical technologies and data analysis methods to the digitization and restoration of historical recordings. Optical methods protect the samples from further damage and can circumvent many aspects of pre-existing damage, such as noise sources, scratches, skips, and ringing. These methods are readily automated and allow the offloading of many aspects of the transfer process to software. This represents a viable mass

digitization strategy.

Research has focused on the ability to create a high resolution digital map of the surface of the sound carrier (disc record, wax cylinder, etc.). Image processing methods can then be applied to overcome the effects of wear or damage, and stylus motion can be digitally emulated. By calculating the motion of a virtual stylus moving through the map the audio content can be reproduced.

The advantages of this approach are:

- Effects of damage and debris (noise sources) can be reduced through image processing since they can be objectively recognized as not matching the known shape of the groove.
- Scratched regions can be interpolated.
- Classic distortions (wow, flutter, tracing and tracking errors, pinch effects, etc.) are absent or removed as geometrical corrections.
- Certain broken samples can re-assembled and played back.
- The acquired image data can be used to analyze the physical condition and characteristics of the sample, such as groove width, defect rate, and other statistical quantities.
- Optically scanned data can be analyzed and archived as digital sound files (.wav, for example) just as in any audio transfer process. In addition the high resolution digital images can be archived as standard image data for future re-analysis.

Two specific types of capture are under development: the high speed capture of disc media with lateral grooves, and higher resolution capture of cylinders with vertical groove cuts as well as certain discs.

In 2005 the National Endowment for Humanities (NEH) funded the "IRENE" (Image, Reconstruct, Erase Noise, Etc.) project to develop a system for high-speed disc capture for use at the LOC. Built in Berkeley and installed at the LOC in August of 2006, this system is currently under evaluation. Imaging is based upon high-speed digital micro-photography and captures a two-dimensional (2D) representation of the disc surface. Plans are underway to install this system at the Library's new National Audio-Visual Conservation Center, located in Culpeper, Virginia.

To measure media with vertical groove modulation (such as cylinders), a

full three-dimensional (3D) surface profile is required. With support from the LOC, the National Archives and Records Administration (NARA) and the Mellon Foundation, research to address this problem has been ongoing since 2004 using confocal microscopy to obtain surface profiles. New innovations in surface profiling technology, driven by commercial needs, promise to dramatically accelerate this approach.

In September 2007 the project received a major grant from the Institute of Museum and Library Services (IMLS). The IMLS grant will support the development and evaluation of a full 3D scanning system for discs and cylinders. In addition, the LOC will support the technical evaluation of the 3D scanner, as in the case of "IRENE." This year, the University of California at Berkeley also granted the project support to perform a small pilot digitization study on Native American ethnographic cylinders from the Phoebe Hearst Museum of Anthropology. The results of this study may lead to a non-invasive digitization project which could significantly improve restoration of, and access to, these materials. These early recordings of Native American languages are of immense interest to multiple stakeholders because much of what was recorded 100 years ago is no longer in active use or clearly remembered, and in some cases these recordings are the only audio record of entire languages that have become extinct.

The project is described further at the website <http://irene.lbl.gov/>.

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## Health and Safety

### Respirator Fit Testing

Whether you are using hazardous chemicals or working with mold-infested artifacts, be sure you are protected by the right equipment. Attend the free lecture on the evening of Monday, April 21 at the Annual Meeting and get fit tested the next day by signing up for the workshop. Attendance at the lecture meets the annual training requirement mandated by OSHA, and the fit testing meets the

Be sure to visit the Exhibit Hall at the AIC Annual Meeting, where the AIC Health and Safety Committee is teaming up with the Emergency Preparedness, Response and Recovery Committee to offer loads of great information on emergency response and personal safety.

annual testing requirement. Registrants for fit testing appointments must bring a completed and signed OSHA Medical Evaluation form with the signature of their health professional and the dates for which the evaluation is valid. The form and signature sheet are available on the AIC website Health & Safety page at <http://aic.stanford.edu/library/health.html>.

## New Publications

### Samuel H. Kress Conservation Publication Fellowship: Forthcoming Publications

Over the next year and a half, the conservation community can look forward to the release of eight more titles as an outcome of the Samuel H. Kress Conservation Publication Fellowships. Like the ten previously published works (see *AIC News* January 2008, Vol. 33, No. 1, 5-7), these publications will also cover diverse topics, some of which have received limited attention in the conservation literature to date.

Most of the eight forthcoming books will be available through the listed publishers, while two authors are still negotiating with publishers. Purchasing information, as available, and brief abstracts are provided below, based on those supplied by the authors or publishers.

Once more, congratulations to the authors and ongoing gratitude to the Samuel H. Kress Foundation for enduring support of professional conservation publications. The Publication Fellowship continues to be available. It is not too soon to review your unpublished work for the next application submission deadline on November 1, 2008. For more information, see <http://aic.stanford.edu/faic/grants/index.html>.

*Protein Facts: Fibrous Proteins in Cultural and Natural History Artifacts.* by

Mary-Lou E. Florian, follows the author's *Fungal Facts* and is designed to help collections managers, conservators, curators, and students to understand the properties of fibrous proteins. The content includes an introduction to the nature and issues of proteinaceous materials in collections, followed by chapters on: the structure of skin, its derivatives, and other collagenous tissues used in heritage objects; amino acids, the building blocks of fibrous proteins; agents of protein deterioration; water in fibrous protein materials; collagen structure; tanning processes, deterioration, and interaction with collagen; deterioration of collagen; keratin; silk; and striated muscle and elastin in fluid-preserved natural history specimens. 160 pages. \$55.00. Published by Archetype Publications, 2007. Available at <http://www.archetype.co.uk/>.

The working title of *Nineteenth-century American Papers and Mediums: Technologies, Materials, Characteristics, and Conservation*, by Cathleen Baker, will cover various paper types and mediums for art on paper, books, and archival materials. The papers section will discuss the history of 19th century paper, including hand and machine-made. The various technologies will be described along with the materials, both of which changed significantly during that era. Decorative papers for books – marbling and paste papers – will also be included. The mediums section will examine traditional ones practiced at the turn of the century – relief and intaglio – as well as new technologies introduced during the century – lithography and photomechanical reproductive processes. Also described will be the common drawing and watercolor mediums. The last part will focus on the problems often encountered when conserving these papers and mediums. Legacy Press, forthcoming 2008.

In fourteen chapters, *Paper and Water: A Guide for Conservators*, by Irene Brückle and Gerhard Banik, will explain scientific principles that govern the interaction between paper and water. Topics will include: structure and properties of dry and wet paper; structure and properties of water; paper production steps relevant to the interaction between paper and water; influence of humid climate conditions on the deterioration of paper; principles of aqueous deacidifica-

tion; preparation and use of aqueous solutions; methods of treating paper with water, as well as factors influencing their effectiveness; mechanisms of drying paper during its production; methods of drying paper in conservation; and general considerations concerning aqueous treatment in paper conservation. Selected chapters are contributed by other authors. Elsevier, forthcoming 2008.

Bringing together a wealth of technical information in one accessible volume, *Conserving Collections: Environmental Principles and Methods*, by Ellen Pearlstein, will act as a key “primer” on the theory and practice of preventive conservation, focusing in particular on the issues of pollution, lighting, temperature, and relative humidity. Having introduced the main concepts and terminology, the author outlines the characteristics and rationale for current methodologies, identifies deteriorating effects and mitigation measures, and summarizes recent research within each discipline. Case studies included will demonstrate applications of preventive theory to actual practice. Each section has been reviewed by technical experts and practicing conservators. This will be a valuable text for conservation students and a resource for practitioners who cannot accept practical recommendations without understanding their scientific and historical basis. Looking for publisher.

*Line, Shade and Shadow: The Fabrication and Preservation of Architectural Drawings*, by Lois Olcott Price, will explore the materials and techniques used in the fabrication of architectural drawings and will illustrate their evolution from the 18th through the 20th century. In addition to documenting the drafting process, it will also contribute to an understanding of the development of architectural design, the architectural profession and the manufacture that served its drafting and reprographic needs. Because architectural drawings survive in large numbers and often unstable formats, preservation and access issues present major challenges for institutions that hold research collections. This book will provide a comprehensive look at both the problems and the solutions, and will include illustrations of examples from major collections as well as extensive source citations. Oak Knoll Press, forthcoming 2008.

*Thin-Section Petrography of Stone and*