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NCPTT NOTES

National Center for Preservation Technology and Training
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Bronze Corrosion and Outdoor Pollution

Detail of the New Jersey monument at Valley Forge National Historic Park, Pennsylvania

More often than not we encounter bronze sculpture or monuments whose surfaces are streaked and covered with green and black corrosion. We are accustomed to bronze corrosion as a sign of "natural" aging of sculptures. We may not be aware that before the industrial revolution sculptures did not readily take on this appearance and the damage observed is caused by the effects of air pollution.

Combined effects of air pollutants and moisture are the most pervasive dangers to outdoor bronze. Prime corrosive agents are gaseous sulfur dioxide, sulfates found in particulate matter, and sulfur and nitrogen oxides—which, when combined with moisture in the atmosphere, can form "acid" rain. Once in contact with the metal surface, these corrosive agents can react chemically or electrochemically leading to corrosion and metal loss observed as pitting or streaking of the surface[1].

Regular maintenance by cleaning and coating with a protective material is the most common approach used to preserve outdoor bronze and prevent corrosion[2, 3, 4]. Coatings provide a barrier that prevents pollutants from interacting with the bronze surface of the monument. Important properties of coating systems include durability, adhesion, ease of maintenance and surface appearance. Waxes, such as beeswax, microcrystalline wax, polyethylene wax, or carnauba wax, are the most commonly used coatings for bronzes. The most frequently used lacquer is Incralac, a proprietary acrylic lacquer containing a corrosion inhibitor, benzotriazole. Wax usually is applied over the Incralac coating as a sacrificial topcoat.

NCPTT's Materials Research Program supports research in three main areas: 1) understanding cultural resources decay caused by air pollution, 2) developing new mitigation strategies to prevent damage, and 3) investigating new treatments and technologies to minimize the deterioration of cultural resources by pollutants. Although the majority of MRP research has focused on stone deterioration, pollutant effects on ornamental and sculptural bronze also have been investigated. Four MRP research projects on bronze are highlighted in this article.

Among early MRP efforts were two bronze research projects based on in-situ measurements of environmental exposure and resulting corrosion for selected bronze monuments[5]. The first project considered aerodynamic processes that

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Comments and items of interest for the next newsletter send to NCPTT's publications manager, Sarah B. Luster

1999 PTTGrants Call for Proposals

The National Center for Preservation Technology and Training has issued its 1999 call for proposals for NCPTT's Preservation Technology and Training Grants program. The PTTGrants program has awarded over $500,000 each year since 1994 for innovative work in research, training and information management on technical issues in historic architecture, archeology, historic landscapes, objects and materials conservation, and interpretation. Grants are available in eight categories —

- Information management
- Training and education
- Applied/fundamental research
- Environmental effects of outdoor pollutants
- Technology transfer
- Analytical facility support
- Conference support
- Publications support.

Application deadlines are mid-December 1998, as specified in the call for proposals. The *1999 PTTGrants Call for Proposals* is available via —

E-mail Send a blank message to <pttgrants@ncptt.nps.gov> and the call for proposals will return antomatically.

Fax-on-demand Call 318/357-3214 and follow the recorded instructions to receive a catalog of documents that includes the call for proposals.

Web Visit <www.ncptt.nps.gov> and click on "Preservation Technology and Training Grants."

Brochure Request a printed call for proposals by sending an e-mail message to <ncptt@ncptt.nps.gov>, telephoning 318/357-6464, or writing NCPTT, NSU Box 5682, Natchitoches, LA 71497.

PTTGrants are funded by Federal appropriation; awards are subject to availability of funds.

Historic Landscapes Research — Special Topics for the 1999 PTTGrants Program

As part of the 1999 PTTGrants program, NCPTT encourages submissions of proposals that address issues in historic landscapes research, including —

- Database development
- Interface of natural and cultural resources in historic landscapes
- Interpreting landscape processes
- Landscape Construction Technology and Techniques
- Effects of historic advances in technology on landscapes
- Vegetation management
- Impact of modern standards on historic landscapes
- Technology transfer

In *NCPTT Notes* 26, these issues are described further (page 3), and the issues are incorporated into the 1999 PTTGrants Call for Proposals as described in the addendum (page 2).

For more information on the historic landscapes research special topics, contact NCPTT Research Coordinator Mark Gilberg.

Corrosion and Pollution

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influence the delivery of gases and particles to outdoor monuments. The second evaluated specific forms of bronze corrosion on a series of replicate statues called the "Hiker" by T.A.R. Kitson. Two current bronze research projects study the effects of marine environments on bronze corrosion, and investigate new coating systems for potential use on outdoor bronze sculpture and ornamentation.

Dry Deposition Field Study

A series of experiments was designed as a first step to understanding the role of object shape and air turbulence in the delivery of pollutant gases and particles to monuments and buildings. The project sought insights into transport mechanisms by which pollutants are deposited on bronze objects.

The General Meade Monument at Gettysburg National Military Park, Pennsylvania was the study site. The Meade monument research team included Cliff Davidson, Yee-Lin Wu, Robert Gandley and Armistead Russell from Carnegie Mellon University and Donald Dolske from the Atmospheric Chemistry Section, Illinois State Water Survey[6,7]. Additional deposition experiments were conducted in Claremont, California by Ray Hosker and Randy White from the Atmospheric Turbulence and Diffusion Division of the National Atmospheric and Oceanic Administration, and by Edward Smith from the National Park Service.

The deposition process can be considered the sum of three steps. In the first step, pollutants are carried from the atmosphere to a sublayer of air surrounding the object. Next, the pollutant must cross this boundary layer, and finally a physical or chemical interaction occurs between the pollutant and the surface. The Meade monument study considered the dry deposition of sulfur dioxide gas, sulfate particles, nitrate particles, calcium and lead. Aerodynamically designed surrogate surfaces in the shape of symmetrical airfoils were placed at various locations on the monument. Surrogate surfaces were used to control boundary layer characteristics so that the various steps in the deposition process could be quantified.

Study results suggest that the relative importance of aerodynamic, boundary layer and surface resistances can vary greatly for surfaces exposed to the ambient atmosphere. Deposition varied greatly

Antoni Popeil (sculptor), Koscinszko Monument, 1910, Washington, DC

both by sampling location on the statue and day to day, with some locations receiving more deposition than other locations. Sulfate particles showed preferential deposition while sulfur dioxide gas was evenly distributed on the statue. A highly variable surface resistance may often be the rate-limiting factor in determining the overall dry deposition.

The Kitson "Hiker" Study

The goal of this study was to correlate the severity of corrosion observed on a series of "Hiker" bronze statues with their exposure history. The Hiker statue was created by T.A.R. Kitson to commemorate the Spanish-American War. Between 1921 to 1965, the Gorham Company of Providence, Rhode Island, cast 50 replicas of the statue, and in 1965 the original metal masters from which all Hikers were made were assembled and erected near Arlington Cemetery in Washington, DC, as the final copy of the Hiker series. The study has involved a team of researchers at the University of Delaware led by John Meakin, Michael Panhorst and David Ames.

Initially, both the pollutant and exposure environment data — winds, temperature and rainfall precipitation — were compiled. The Environmental Protection Agency's Aerometric Information Retrieval System database provided air pollution data for major urban areas, and regional acid rain data came from the National Acid Deposition Program coordinated by Colorado State University. The National Atmospheric and Oceanic Administration's National Climate Data Center keeps long-term weather records and provided information on the exposure environment for each statue.

Secondly, John Meakin and his group documented the geography of each statue, paying particular attention to the statue's proximity to trees, shrubs and roads, and accessibility to people and animals. The history of maintenance treatments was obtained from the statue owners — in most cases the local parks departments.

Thirdly, the nature and severity of corrosion observed on many of the exposed statues included streaking, pitting and uniformity effects. Before 1987, the study focused on photographically documenting the corrosion on the statues. The photographic enlargements were mapped for corrosion using computer-aided design software. Analysis of the patterns and chemistry of Hiker corrosion posed significant problems in theoretical interpretation and field sampling. In 1989 the research became more quantified and the topography of the corroded surface was replicated with a vinyl polysiloxane material, which is widely used to make dental molds.

The dental mold technique is a non-invasive way to record surface conditions and provide an archival record of an easily locatable region of statue. Stored molds could be compared with molds taken after conservation treatment, to see if treatment helped to slow the corrosion process. Pit depth was found to increase with the age of the statue, and statues which were known or suspected to have been conserved tended to show shallower pit depth than non-conserved statues of similar age. For example, conserved statues

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showed pit depths of 0.1 mm compared with 0.4 mm pit depth for non-conserved statues of the same age.

The dental mold technique could be useful in monitoring corrosion and developing information on the effects of conservation treatments for other outdoor sculpture collections. A book by John Meakin and Susan Sherwood detailing various aspects of the Hiker study is forthcoming.

Marine Environments Study

The goal of the initial phase of this work is to document the unusually thick, well-adhered black corrosion observed by conservators working in tropical and subtropical climates. Field documentation at sites in Hawaii, California, Florida and Cuba was carried out with Urban Art, Inc., by Rosa Lowinger and her team of conservators at the Sculpture Conservation Studio in Los Angeles. Analyses of corrosion samples were performed at Altrans Corporation in Cambridge, Massachusetts.

The study focuses on the role of chlorides in the development of cuprite corrosion on bronze sculpture and ornamentation located in marine environments very near the ocean. Initial efforts focused on characterizing corrosion products. Initial observations show that cuprite corrosion forms on bronze sculptures independent of alloy composition, appearing on silicon bronze as well as copper-nickel and lead-tin bronze. There is an absence of copper carbonates and sulfates on the bronze sculptures, which one might expect in an urban environment such as the Los Angeles area where some of the sculptures are located. While the marine environment and chlorides are suspected to play a role, copper chlorides were conspicuously absent from the corrosion crusts.

Further work on the project may explain the roles that air pollution and chlorides play in the formation of the cuprite layers. A greater understanding of the environmental conditions that lead to this type of corrosion should enable us to minimize the problem and to develop better conservation treatments.

New Coating Systems

This multi-phase research project addresses the need for new coating strategies to protect outdoor bronzes from the effects of polluted environments. The project focuses on identifying new coating systems and testing them for potential use in the conservation field. The research team at the National Gallery of Art, led by Lynn Brostoff and René de la Rie, wants to determine how experimental bronze coatings succeed or fail in polluted urban environments. The ultimate goal of this research is reliable prediction of coating performance on different types of bronze.

The first phase of the project identified potential new coatings for bronze and tested their physical properties on two types of bronze — a mirror finished cast architectural bronze, and naturally patinated, 50-year-old copper roof panels — representing the two extremes of surfaces encountered in outdoor bronze. Physical properties, including adhesion, tensile strength, permeability and other inherent mechanical properties of films were tested using standard procedures established by the American Society for Testing and Materials, the Society of Automotive Engineering, and an automotive-type accelerated weathering program.

In the second phase of the research, the best performing coatings from the first phase were applied on a wider range of substrates for evaluation by more sensitive tests. Sample sets were prepared for accelerated and natural outdoor weathering, as well as for reference without weathering. Five coating systems currently are being tested: 1) Incralac with wax topcoat. 2) Nikolas acrylic coating topcoated with Nikolas acrylic urethane and wax, 3) benzotriazole (BTA) pretreatment and BASF acrylic urethane with wax topcoat. 4) BTA pretreatment with wax coat, and 5) uncoated. Each coating was sprayed on the following substrates: 1) cast, water-polished monu-

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What is bronze?

Bronze is a metal alloy of tin and copper, with lead added to improve the fluidity of the alloy. In recent years, other elements such as silicon may be added to a bronze alloy to alter its properties. Bronzes first came into use around the beginning of the third millennium BC. The specialized properties of bronze — good castability, fine appearance, and resistance to corrosion compared to other metals — made it suitable for sculptures since Greek and Roman times, and various alloys of bronze continue the same uses today[8].

... and why does bronze corrode?

Copper, which is the base metal in bronze alloys, is thermodynamically unstable and reacts with other elements to form more stable compounds. The most common reaction of copper is with oxygen in the air to form copper oxides. Copper can react with carbonic acid, a product of carbon dioxide dissolved in rain, dew or moist soil, to form mixed salts such as green malachite or blue azurite. These corrosion products often are seen on buried or archeological bronze. The presence of sulfur dioxides in the air can result in the conversion of copper oxides to basic copper sulfates like brochantite and antlerite, green corrosion products frequently found on outdoor bronze sculpture[9]. Also, copper found within bronze alloys can react with hydrogen sulfide or carbonyl sulfide to form copper sulfides[10], commonly found in black corrosion products seen on outdoor sculpture in urban environments[11].

Changes/Exchanges: A Symposium for the Training Community

Highlights from the University of Victoria Symposium June 23 – 26 Victoria, Vancouver Island, British Columbia

> "There's only one corner of the universe you can be certain of improving, and that's your own self ... So you have to begin there, not outside, not on other people. That comes afterward, when you've worked on your own corner."
>
> —Aldous Huxley, *Time Must Have a Stop*, 1945

While professional development specialists create stimulating learning opportunities for others in the preservation and conservation community, they rarely take time to reflect on their own professional development needs. A symposium, organized by the Cultural Resource Management Program at the University of Victoria, provided an opportunity for preservation educators to do so.

The symposium brought together a number of important partners including Canada's Cultural Human Resources Council — which provided core funding —, the International Committee for the Training of Personnel of the International Council of Museums, and the National Park Service.

Symposium participants included professional development program directors, coordinators and facilitators working with museum and cultural resource agencies, organizations and professional development programs in Canada, the United States and Scotland. During the symposium, participants explored changes in their roles and responsibilities and in the expectations that shape their jobs. Most importantly, the symposium was an opportunity to exchange experience, insights and issues with others involved in the diverse, often isolated, field of preservation education.

Drawing on the wealth of participant experience, the symposium addressed a broad range of topics during the four-day gathering.

The symposium began with defining the role of the professional development specialist who must meet the learning needs of a community with diverse skills, knowledge, interests, and cultural and educational backgrounds. Challenges common to those serving the preservation and conservation community include accurately determining training needs, speaking the language of each discipline, accommodating diverse learning styles, utilizing new media in delivering training, and sustaining the impact of training. In addition to addressing needs of a general audience, the agenda of the training specialist is shaped by individuals, their institutions, government agencies and professional associations.

Another common concern is adequate funding to support training. Today's training specialists must deal with the impacts and implications of tightened budgets and changing work environments on traditional face-to-face training. New systems for delivering training, including computer-based training as well as television and video, may offer solutions to these issues. Developing relevant curricula, planning training modules, orienting participants to the learning process, and evaluating the effectiveness of training activities are critical components in using new media effectively.

Symposium follow-up

The University of Victoria's Cultural Resource Management Program has established a Changes/Exchanges managed Web site to facilitate continued communication following the symposium. The site provides good resources on approaches, programs and strategies for planning, marketing and delivering training — Associations Concerned with Professional Development, Professional Development Programming, Teaching and Learning Resources, Instructional Development Planning Resources, and "Outside the Box" which includes sites that describe continuing professional

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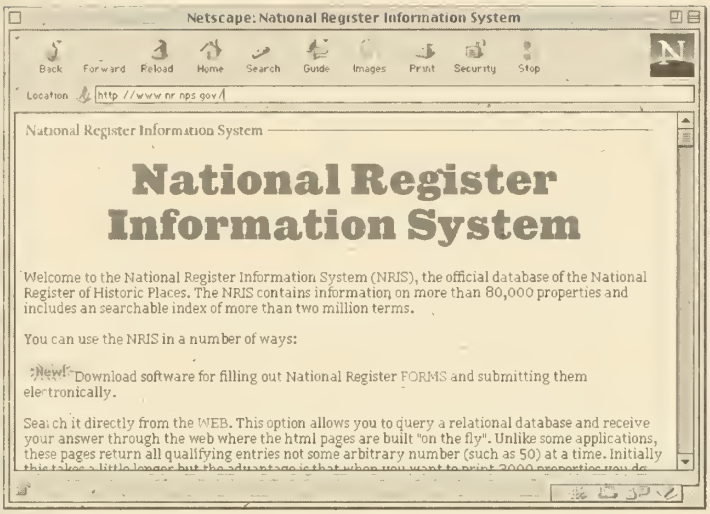
Dorothy Hunt of the First People's Cultural Foundation, Diana Thompson of the Canadian Museums Association, and Joyce Gilbert, a Winston Churchill Scholar from Scotland, at the Changes/Exchanges symposium



An NRIS Primer

This article continues an on-going intermittent series about preservation-related databases on the Internet.

The National Register of Historic Places, administered by the National Park Service, was authorized under the National Historic Preservation Act of 1966 as part of a national program to identify, evaluate and protect historic and archeological resources. The National Register currently includes more than 68,000 properties, and detailed information about listed properties is available via the Internet from the National Register Information System <www.nr.nps.gov>.

General information about NRIS and how to access the information is available at the NRIS Web site. Sample searches, database pointers and a "Frequently Asked Questions" section are provided. The information is thorough and helpful and users should review the general information before attempting to access the database.

NRIS data are retrievable three ways — using a Web-based search form, via telnet or via ftp — all of which access the same database but use different interfaces. Each will be described briefly.

World Wide Web search

To use the Web-based form, click on the word WEB at the NRIS Web site. The database is searchable by state or state and county using this method. Click on the appropriate search type for pull-down lists of states and counties. Although this is a simple means of accessing some National Register data, information available beyond the state/county lists is limited to information in the state, county, name, address, city, listed date, multiple and reference number fields. Searching for a specific property or to get more detailed information is not possible via this interface, but plans are underway to expand Web-based search capabilities that will allow users to construct their own reports in a point-and-click environment. Implementation of this feature is scheduled for 1999.

Telnet

In order to connect with NRIS using telnet, your PC must have telnet software that allows you to connect to a remote computer system. A telnet connection is available through the NRIS Web site — click on the word TELNET; the telnet client will be invoked and the connection made —, or users can connect directly to <telnet://165.83.212.245>. In both cases, type natreg at the initial prompt to enter the system.

Accessing NRIS by telnet provides the most complete and up-to-date information. Via telnet, the database is searchable by name, location, person and status. Detailed information includes significance; owner; number of contributing and non-contributing buildings, structures, sites and objects; significant year and person; UTMs; and historic and current functions — and more information is available by selecting "More" at various levels. Help is available at nearly every screen.

FTP

The NRIS database is available via ftp, but access to the database itself is not online. The database must be downloaded and installed on the user's PC. It is intended for the advanced user who is interested in manipulating the data on a local computer system. The database is in dBASE III Plus format, and a schema and coding information are provided in separate files.

The National Register Information System is a valuable resource for the preservation community. Its accessibility over the Internet makes this information available to everyone with an Internet connection. And for those without Internet access, the database is still available via modem. Telnet access is by far the most productive, though smooth use and flexibility are not telnet characteristics. It is encouraging that work is underway to develop and expand access via the World Wide Web, an interface already familiar to most in the preservation community.

The National Register currently includes more than 68,000 properties, and detailed information about listed properties is available via the Internet from the National Register Information System.

Electronic Marker Systems — A New Tool for Protecting Archeological Sites

Cultural resource management specialists face multiple challenges in protecting archeological sites — and maintaining accurate and reliable site location data is among the difficult tasks. Maps, Global Positioning System readings, and above-ground markers are commonly used, but all have drawbacks and sometimes are ineffective. Cartographic errors and skewed GPS readings intermittently cause problems; above-ground markers often disappear or, worse, tag a site as a vandal target. Moreover, the lack of an effective system for long-term monitoring of archeological sites traditionally has undermined protection efforts. Cultural resource management specialists have become increasingly aware in recent years of the need for accurate means of monitoring changes caused by soil erosion, vegetation growth and human impacts.

A recent NCPTT-sponsored project undertaken by the Washington State Office of Archaeology and Historic Preservation contributed significantly towards developing a more effective system for monitoring archeological sites. Having faced site management difficulties in his work as Washington State Archaeologist, Robert G. Whitlam recognized that a relatively new technology, Electronic Marker Systems, held strong potential for use in cultural resource management.

EMS and EMS components

EMS originally was developed for utility companies to quickly and accurately locate buried features — such as power, water, gas, and fiber optic lines — not unlike the needs of cultural resource managers.

EMS is comprised essentially of markers and transmitters — small buried markers that can later be located with a portable transmitter unit. Each marker is a passive antenna set to respond to a single frequency and housed in a polyethylene shell for protection from its environment. Markers come in a variety of types and sizes but all function in the same manner. Portable transmitter units use standard C-cell batteries and are attached to a device that looks like a common metal detector. The transmitter pulses at a frequency that corresponds to the markers' setting. Depending on the type of marker used and the depth of burial, the transmitter's detection range is between one and two meters.

Test applications

To examine the applicability of EMS for long-term monitoring of archeological sites, Whitlam organized a field testing program in cooperation with Federal, state, local and tribal government agencies. Participating archeologists included representatives of the Bureau of Land Management, the Yakama Indian Nation, US Fish and Wildlife Service and the National Park Service. Of the several commercially available brands of EMS, Whitlam chose ScotchMark Electronic Marker System manufactured by 3M Corporation because of its availability. The 3M Corporation also supported the project by supplying a transmitter, markers and technical assistance.

Washington State Parks archeologist Dan Meatt shown implanting an EMS marker. The device resting on the ground at left is an EMS transmitter.

Between Winter 1996 and Summer 1997, archeologists implanted EMS markers at sites throughout the state of Washington. Sites were selected to test EMS under varied environmental conditions, including a coastal shell midden at the salt waters of Puget Sound, an historic village site on the Columbia River, a rockshelter in the Cascade Mountains, and open lithic sites in the arid sagebrush of eastern Washington. Throughout the project, EMS markers were placed at more than fifty sites.

Two types of EMS markers were used — the near-surface marker and the ball marker. The former is roughly the size of an index finger and the latter is approximately the size of a softball. Project archeologists easily carried a sufficient quantity of either type in a field pack to even remote archeological sites. Markers of both types were installed in small, shallow holes made with a hand anger. Once buried, no trace of the markers remained at ground level.

Following marker installation, a planned waiting period allowed markers to be exposed to underground conditions for several months and for vegetation to grow. In Summer and Fall 1997, Whitlam began to relocate marked sites using information typically found in archeological site files — maps, GPS readings, or written descriptions —, then conducted a systematic scan of

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NCPTT Supports International Internships

The National Park Service has a long-standing and strong commitment to the International Summer Intern Program of the United States Committee of the International Council on Monuments and Sites — and NCPTT is among NPS cultural resource programs that support that commitment.

In 1998, NCPTT provided internship funding for three preservation professionals, partial support for 13 additional interns, and partial support for developing and administering US/ICOMOS' intern program. NCPTT-supported interns in 1998 include James Banta, Julie Eklund and Divay Gupta.

James Banta is a graduate of English Heritage's masonry conservation program and University of Pennsylvania's graduate program in historic preservation, and has worked most recently as technical program assistant at New York Landmarks Conservancy. Mr. Banta's internship in Fall 1998 will focus on the conservation of Rani Ka Mahal in Jaisalmer, India — a project under the direction of the Indian National Trust for Arts and Cultural Heritage, which also is providing support for this internship. Mr. Banta will assist in developing a site interpretation and heritage management plan for the Jaisalmer site.

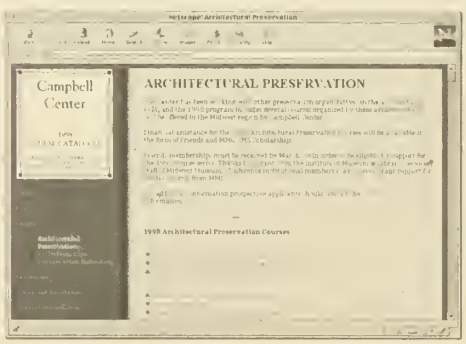
Julie Eklund trained in anthropology at University of Montana's Davidson Honors College, and in archeology at The American University of Cairo. Ms. Eklund's internship focused on cultural resources conservation at Levoca in the Spis region of the Slovak Republic — a project under the direction of the Academia Istropolitana Nova and the regional office of the national Institute for Monuments. The Institute for Monuments also is providing support for this internship. Ms Eklund's conservation training will continue at the Cortauld Institute in London in Fall 1998.

Divay Gupta is a graduate architect with specialized training in architectural conservation, currently working with the Indian National Trust for Art and Cultural Heritage as a conservation architect. Mr. Gupta's internship included documentation of twentieth century ranch structures at the National Park Service's Pecos National Historical Park in New Mexico, which also provided support for this internship.

For information on US/ICOMOS' International Summer Intern Program, contact Program Director Ellen Delage, US/ICOMOS, 401 F Street NW, Room 331, Washington, DC 20001; telephone 202/842-1866, facsimile 202/842-1861, e-mail <cdelage@erols.com>. For information on the 1998 intern program, visit US/ICOMOS' Web site <www.icomos.org/usicomos/1998internships.html>.

Campbell Center Training Catalog Online

Information about the Campbell Center for Historic Preservation Studies — including the current course catalog — is available online <www.campbellcenter.org>. The Campbell Center offers training appropriate for museum, library, archive and historic preservation professionals. Courses are organized in three categories: architectural preservation, collections care and conservation refresh-



ers. Visit the Campbell Center's Web site for more information about the Campbell Center and its courses.

Grants-Writing Online

For assistance in developing proposals to non-profit and government grants programs, online help is available at several sites.

<www.epa.gov/seahome/grants>

This site is maintained by the US Environmental Protection Agency and Purdue University "to make it easier for applicants to produce more competitive grant applications." Some sections of the site focus on EPA-specific details; others sections — "Enhancing a Proposal" or "Mock Grant Writing Activity" — provide generally useful grants-writing information and exercises.

<www.lrr.net/grant1.htm>

This site provides a general review of grants-writing principles, without emphasis on a particular grant type or funding source.

<www.mco.edu/research/prebasic.html>

Although this site focuses on proposals to the National Institutes of Health, the "Helpful Hints, etc. for Proposals to Any Agency" section includes grants-writing information applicable in all disciplines. Journal articles posted to this section — such as "Fundamentals of Grantsmanship," "Following Instructions is Critical to Success of a Grant Application" and "Getting Funded: It Takes More Than Just a Good Idea" — may particularly interest *Notes* readers and PTTGrants applicants.

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education for other occupational groups.

The site's threaded discussion software provides an opportunity for colleagues to continue discussion of training community issues. New users may visit the site as guests by going to the Reflections page. The electronic discussion group provides a mechanism for training specialists to share information and exchange ideas. A listserv also has been established to promote exchanges among professional continuing educators. You can join by contacting Joy Davis, <joydavis@uvcs.uvic.ca>.

Other efforts

Several preservation and conservation organizations address training issues. In the US, organizations such as the American Institute for Conservation of Historic and Artistic Works and the Society for American Archaeology have training and education committees. In Canada, both the Canadian Museums Association and most provincial museums associations support continuing professional education through funding and programs. At the international level, the International Council on Museums and Sites founded the International Committee for the Training of Personnel in 1967, to "encourage and promote relevant training to appropriate standards for all people working in museums, throughout their careers, including students on museum-related pre-entry training programmes."

— Frances Gale
— Joy Davis

Ms. Davis has worked as Program Director of the Cultural Resource Management Program, University of Victoria, since its inception in 1983 and serves as Director for diploma programs in Intercultural Education and Training, Indigenous Fine Arts, and Fine Arts.

Contact NCPTT Publications Manager Sarah Luster for copies of ICOMOS Guidelines for Education and Training in the Conservation of Monuments, Ensembles and Sites *and* ICTOP Standards and Ethics for Museum Training Programs.

Electronic Marker Systems

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the areas to locate the markers. His ability to relocate each marker improved as he became increasingly familiar with the transmitter readings.

Test evaluation

Whitlam found the system highly reliable and was able to relocate markers at all but two sites. In one instance, he received a weak signal and surmised that heavy flooding early in the year had deposited sediment in the area of the marker, placing it beyond the transmitter's range. At another site, he encountered a marker that did not respond to the transmitter signal while buried but upon excavation seemed to be functioning properly. After discussing the problem with the manufacturer's representatives, Whitlam concluded that the marker probably had been buried at an angle that prevented its internal antenna from reflecting the transmitter signal.

Based on project results, Whitlam regards EMS as an important addition to standard site documentation techniques such as maps, GPS and photographs. He also believes that EMS' unique capabilities make it particularly suitable for several specialized site management applications. EMS is a useful alternative, for example, to standard above-ground markers that can be lost or vandalized. At sites threatened by soil erosion or human impacts, EMS markers provide archeologists with fixed reference points for assessing long-term damage. And several EMS markers can establish a boundary or a "no entry" zone around the perimeter of an archeological site near or within a construction site. Most excavation contractors already are familiar with EMS used to identify underground utility lines and can instruct work crews to locate markers and avoid archeological sites.

Whitlam warns that considerable planning is necessary for effective field deployment of EMS. First, he urges cultural resource management specialists to develop firm goals before implanting EMS markers on-site. Is the purpose to establish a stable photo monitoring point? ... a datum for measuring erosion or human impacts? Such considerations are likely to affect marker placement. Second, Whitlam recommends implanting more than one marker at each site to protect against possible malfunctions or unforeseen complications. Third, he suggests conducting a trial run with a transmitter immediately after implanting markers to confirm strong signal response. Finally, since Whitlam believes that EMS is most effective as a supplement to standard maps and GPS data, he urges that permanent site file records should include EMS locations.

Overall, the project demonstrated potential uses of EMS in cultural resource management. In conjunction with other advanced technologies, EMS offers archeologists and cultural resource management specialists an important new tool for monitoring archeological sites.

Rome Prize Fellowships in Preservation/ Conservation

Rome Prize fellowships for 1999-2000 will include two six-month fellowships in historic preservation/conservation. Postmark deadline for applications is November 16.

For more information, contact the Programs Department, American Academy in Rome, 7 East 60th Street, New York, NY 10022-1001; telephone 212/751-7200, facsimile 212/751-7220. Web <www.aarome.org/ prize.htm>.

Academic Programs in Cultural Resource Management

University of Victoria, Victoria, British Columbia

The University of Victoria offers accessible, relevant learning opportunities for museum and heritage professionals via both on-campus and distance learning courses. The range of classes offered encompass museum studies, including curatorship, collections management, cultural diversity, museums in historic buildings, and museum information management; heritage conservation studies; community cultural stewardship planning; and financial and human resource management in cultural heritage organizations.

For more information, contact: Joy Davis, Program Director, Cultural Resource Management, Division of Continuing Studies, University of Victoria, POB 3030 STN CSC, Victoria, BC V8W 3N6; telephone 250/721-8462, facsimile 250/721-8774, e-mail <joydavis@uvcs.uvic.ca>, Web <http://www.uvcs.uvic.ca/crmp>.

Columbia University, New York, New York

Columbia University's Graduate Program in Historic Preservation is offering Certificates in the Conservation of Historic Buildings and Archaeological Sites to individuals holding Masters Degrees in Historic Preservation or related fields who seek a multi-disciplinary approach to building and site conservation. Students may pursue one of two tracks on conserving individual buildings or archeological sites.

For more information, contact Shirley Driks, Graduate School of Architecture, Planning and Preservation, 400 Avery Hall, Columbia University, New York, New York 10027; telephone 212/854-3518.

Vernacular Architecture Forum

Call For Buchanan Award Nominations

VAF requests nominations for the Paul E. Buchanan Award, recognizing excellence in fieldwork, interpretation and public service. Eligible categories include architectural recording projects, historic structure reports, preservation plans, exhibitions, restorations, cultural resource surveys, historic designations, computer or technologies applications, film or video presentations, and educational and interpretive programs.

Projects completed during 1997 and 1998 are eligible. The winning entry will be announced at the 1999 VAF Conference. Deadline for submission is January 30, 1999. For more information, contact Travis McDonald, Thomas Jefferson's Poplar Forest, POB 419, Forest, VA 24551; telephone 804/525-1806.

1999 Conservation Assessment Program Grants

CAP provides matching grants for general conservation assessments of small- to medium-sized collections that can be surveyed in two days. Up to two assessors per institution may be funded by CAP — objects conservator for museum collections; zoologist, botanist or horticulturist for living collections; and architectural assessors for historic structures that house museums or are part of museum collections. CAP grants are funded by the Institute of Museum and Library Sciences and administered by Heritage Preservation.

Grants are awarded on a first-come, first-served basis. CAP applications will be mailed October 9 to CAP mail list subscribers. Institutions that are interested in CAP and not subscribed to the CAP mail list should contact CAP, Heritage Preservation, 1730 K Street NW, Suite 566, Washington, DC 20036-3836; telephone 202/634-1422, facsimile 202/634-1435, e-mail <eblackburn@heritagepreservation.org>.

Save Outdoor Sculpture!

Save Outdoor Sculpture! will offer three opportunities to communities to conserve local outdoor sculpture as part of the White House Millenium Council's Save America's Treasures initiative.

SOS! 2000 Treatment Awards, sponsored by Target Stores and the National Endowment for the Arts, will fund conservation treatment of deteriorating sculptures. Applicants may be nonprofit organizations, state or local government agencies and tribes. A minimum of one award will be made in each state and the District of Columbia.

Needy sculptures must first undergo a professional condition assessment to be considered for the treatment awards. SOS! 2000 Assessment Awards are available to fund this first step.

SOS! 2000 Catalogue Raisonné, an illustrated online directory of selected sculptures in need of conservation treatment, was created as a resource to help potential donors select "good citizen" millenium projects. Contact SOS! for a form to nominate up to five needy sculptures. Color photographs must accompany the completed form.

SOS! is a joint project of the Smithsonian's American Art Museum and Heritage Preservation. For SOS! 2000 Conservation Treatment Award guidelines, processing information and deadlines, contact SOS! at 888/SOS-SCULP.

The Savannah Symposium on the City Square

February 25-27
Savannah, Georgia

The Department of Architectural History at the Savannah College of Art and Design announces a symposium on the history of city squares and public urban spaces from the ancient world to the present, and invites proposals for presentations. The symposium has three objectives — to gather recent research on the city square across historical and geographic boundaries and multidisciplinary approaches, to discuss research on the Savannah plan, and to provide a forum for discussing the contemporary role of the city square. Deadline for presentation proposals is November 1.

To submit proposals for presentations or for more information, contact David Gobel or Robin Williams, Department of Architectural History, Savannah College of Art and Design, POB 3146, Savannah, GA 31402-3146; telephone 912/-231-2373, facsimile 912/238-2428, e-mail <dgobel@scad.edu>, or <rwilliam@scad.edu>.

GIS Guide to Good Practice

The Archaeology Data Service in the United Kingdom has posted its GIS Guide to Good Practice to its Web site <http://ads.ahds.ac.uk/project/goodguides/gis/>. The guide is useful for individuals and organizations involved in the creation, maintenance, use and long-term preservation of GIS-based digital resources. The GIS guide was prepared for specialists, students, and those in between by a dedicated team of archeologists, digital archivists, and GIS practitioners.

A print version of the GIS Guide to Good Practice will be available in Fall 1998 from Oxbow Books, Park End Place, Oxford, OX1 1HN; email <oxbow@patrol.i-way.co.uk>.

The GIS guide is the first volume in a series of Guides to Good Practice produced by the Arts and Humanities Data Service. AHDS is a digital archiving service in the UK comprised of six distribution services catering to the needs of researchers in archeology, history, performing arts, text studies and visual arts. Information about AHDS' Guide to Good Practice series is available at <http://ahds.ac.uk/public/guides.html>.

Other titles in this series focus on the creating, managing, preserving, and using digital images, texts, etc. Four additional guides in this series cover archiving digital excavation records, data derived from aerial photographs and remotely sensed images, CAD datasets, and archeological geophysics information. For more information about the guides see <http://ads.ahds.ac.uk/project/goodguides/g2gp.html>.

Colors for a New Nation

October 29-30
Washington, DC
Mason Neck, Virginia

Color in the broad context of early American life is the topic of this two-day symposium. Presentations and demonstrations will cover the evolution of color technology and media; twentieth-century perceptions of early American colors: pigment, paint and wallpaper production and use; faux finishes; and eighteenth and early nineteenth century decorative schemes, including furnishings.

The symposium is sponsored by Carlyle House Historic Park, Gunston Hall Plantation and the Octagon Museum. For more information, contact Susan Borchardt, Gunston Hall Plantation, Mason Neck, VA 22079; telephone 703/550-9220.

Corrosion and Pollution

Continued from page 4

ment bronze, 2) cast, artificially patinated monument bronze, 3) 50-year-old copper roofing, and 4) 50-year-old copper roofing blasted with walnut shells.

The final phase of the project will complete chemical and physical testing of all samples generated in previous phases. Correlation of the results may provide a better understanding of the important factors contributing to the success and failure of coatings systems on outdoor bronze and point to new systems appropriate for field trials.

1 P. D. Weil. 1985. *Maintenance Manual for Outdoor Bronze Sculpture*. Third edition. St. Louis, Missouri: Washington University Technology Associates.

2 *Ibid.*

3 V. Naudé and C. Wharton. 1995. *Guide to the Maintenance of Outdoor Sculpture*. Second edition. Washington, DC: American Institute for the Conservation of Historic and Artistic Works.

4 P. V. Kipper. 1996. *The Care of Bronze Sculpture*. Loveland, Colorado: Path Publications.

5 S. I. Sherwood. 1992. The Greening of American Monuments: The role of atmospheric chemistry on the corrosion of outdoor bronzes. In *Dialog/89 The Conservation of Bronze Sculpture in the Outdoor Environment: A Dialog Among Conservators, Environmental Scientists, and Corrosion Engineers*. T. Drayman-Weisser ed., Houston, Texas: National Association of Corrosion Engineers. 33-72.

6 *Ibid.*

7 Y-L. Wu., C. I. Davidson, D. A. Dolske, and S.I. Sherwood. 1992. Dry Deposition of Atmospheric Contaminants: The Relative Importance of Aerodynamic, Boundary Layer, and Surface Resistances. *Aerosol Science and Technology* 16:65-81.

8 R. Walker. 1980. Corrosion and Preservation on Bronze Artifacts. *Journal of Chemical Education* 57, no. 4: 277-80.

9 *Ibid.*

10 T. E. Graedel., J.P. Franey, and G. W. Kammlott. 1983. The Corrosion of Copper by Atmospheric Sulphurous Gases. *Corrosion Science* 23, no. 11: 1141-52.

11 Weil. *op. cit.*

Our Mission

United States Department of the Interior
The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and to honor our trust responsibilities to tribes.

National Park Service
The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education and inspiration of this and future generations. The Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

National Center for Preservation Technology and Training
The National Center for Preservation Technology and Training promotes and enhances the preservation of prehistoric and historic resources in the United States for present and future generations through the advancement and dissemination of preservation technology and training.

NCPTT, created by Congress, is an interdisciplinary effort by the National Park Service to advance the art, craft and science of historic preservation in the fields of archeology, historic architecture, historic landscapes, objects and materials conservation, and interpretation. NCPTT serves public and private practitioners through research, education and information management.

National Center for Preservation Technology and Training
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NCPTT Notes
No. 28

NCPTT NOTES

National Center for Preservation Technology and Training

UNITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

FEBRUARY 1999 NUMBER 29

Training Update

During the past four years, Preservation Technology and Training Grants program funds have supported training projects in a variety of formats. Two recent projects are featured in this issue of Notes. *The first, training in conserving three-dimensional and stained glass, was conducted in a traditional workshop format. The second project, a CD on mechanical systems, demonstrates the use of new technology in preservation training.*

Glass Conservation Workshop

A workshop on preserving three-dimensional and stained glass drew participants to the Nebraska State Historical Society's Gerald R. Ford Conservation Center in Omaha, July 26-31 — including conservators, historic preservation specialists, stained glass artisans, students and practitioners from related specialties. The Ford Center workshop was funded by NCPTT's 1997 PTTGrants program as a unique opportunity in the Midwest to learn about the nature and care of glass.

The five-day workshop began with a presentation on glass chemistry and properties by Dr. Chandra Reedy, a conservation scientist in the Museum Studies Department of the University of Delaware. Dr. Reedy has extensive experience in the analysis of inorganic materials and is an accomplished instructor.

Mary Clerkin Higgins, a well-known stained glass conservator with a studio in New York City, provided an illustrated lecture about the history and technology of stained glass. Ms Higgins has treated stained glass windows dating from the twelfth century to the present, and her clients include major museums, churches and universities throughout the US.

Julie Reilly, Ford Center director, provided participants with training on the determination of refractive indices, using the Ford Center's state-of-the-art research microscope. Refractive index is an optical property that measures the extent to which light is slowed down as it travels through a substance such as glass. Refractive index determinations help determine appropriate repair materials.

Although the workshop's main focus was the treatment of flat glass, there also were oppor-

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NCPTT NOTES

FEBRUARY 1999

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Send comments on *NCPTT Notes* or submit articles or notices for consideration to NCPTT Publications Manager Sarah B. Luster.

Training Update

Continued from page 1

tunities to learn more about repairs to three-dimensional glass objects. Deborah Long, head of the Objects Laboratory at the Ford Center, demonstrated the principles of mold making and the use of silicone rubber molds to produce transparent fills for losses in glass. Many of the techniques demonstrated can be used in a variety of contexts, as participants found during hands-on workshop sessions.

Discussions during the workshop focused on the decision-making that is important to the development of conservation treatments. Some issues under discussion included determining when it is appropriate to repair or re-lead a window, when protective glazing is necessary, and how to provide adequate ventilation without compromising the visual integrity of the window.

One of the highlights of the workshop was the chance to work on historic stained glass, including a twelfth-century European window. Deaccessioned stained glass panels were donated by The Brooklyn Museum of Art to serve as both examples and practice objects for the students. In addition to European glass, the Brooklyn Museum also donated an early American bull's-eye window in a wood frame. The glass samples exhibited a variety of problems, including corroded glass, twisted and broken leading, structural losses and the grime associated with years of outdoor exposure.

Neal Vogel, preservation specialist and project director of a 1994 PTTGrants project on protective glazing for historic stained glass windows, shared some of his experiences with the analysis and repair of stained glass windows in the Midwest. This was one of several opportunities for "cross pollination" among participants with widely varied experiences.

— Contributed by the Gerald R. Ford Conservation Center

Workshop participants in the Ford Center laboratory

Julie A. Reilly is chief conservator and associate director for conservation at the Ford Center and an adjunct professor at the University of Nebraska at Lincoln. Ms Reilly chairs the Objects Specialty Group of the American Institute for Conservation of Historic and Artistic Works.

Products of the Glass and Stained Glass Conservation Workshop include a workbook and a video. For copies, contact NCPTT Publication Manager Sarah B. Luster.

Gerald R. Ford Conservation Center

The Ford Center is a regional conservation center founded in 1995, as a division of the Nebraska State Historical Society. The mission of the Ford Center is to conserve historical, cultural and educational collections in Nebraska and surrounding areas through conservation, preservation and restoration activities, including consultation, collections assessments, education and training workshops, and conservation treatments. A current focus of work is the conservation of paper and three-dimensional object collections.

The Ford Center is committed to training museum professionals, students of all ages and the public to increase our ability to care for our cultural heritage.

Training Update
Continued from page 2

Mechanical Systems CD Course

A course on mechanical systems in historic buildings was Belmont Technical College's pilot project for reaching a wider preservation audience through an innovative medium. The new distance learning course was developed with 1996 PTT Grants program funds and designed by the Building Preservation Technology Program at Belmont Technical College with two goals: to train students with little or no background in mechanical systems, and to integrate preservation theory with basic skills training. The course itself was not designed to train students to become licensed plumbers or electricians, but to provide them enough background knowledge to enable students to talk effectively to tradespeople when preservation issues are a concern. CD format was selected to allow interaction with minimal computer skills.

Gordon Bock, *Old House Journal* editor and a recognized expert in the field of electrical systems in historic houses, provided direction and support during the early stages of course design. Mr. Bock's research helped embellish the CD and upgrade course content. Scanned images from old trade publications and catalogues were used to provide students with information about the appearance and operation of old mechanical systems.

Visits to historic sites such as Colonial Williamsburg, Monticello and Montpelier provided opportunities to photograph examples of unique installations and approaches to preserving historic mechanical systems and integrating new mechanical systems into historic buildings. Staffs at these sites take exceptional pride in the innovative preservation solutions used at their facilities, and the sites serve as case studies in the CD course.

The course is comprised of three units: Electrical, Plumbing, and HVAC and Insulation. The units are divided into specific lessons supplemented by readings from three texts. Students are free to navigate through the program at their own pace. When the lessons for a specific category are completed, students take a test and submit it for grading if they are seeking college credit. Each unit has a section of case studies that show how concepts learned in previous lessons have been applied at historic sites.

Among challenges encountered in developing the CD, an initial problem was selecting appropriate authoring software. Each computer expert consulted suggested a different software package, most too elaborate and complicated for designers with modest computer backgrounds. After testing numerous programs, Corel Presentations 7 was selected for simplicity and effectiveness. The program can be self-taught in a moderate period of time, allows for non-linear navigation, and can be copied without a license for each user. One of the biggest problems with this program, however, is the difficulty in adding or removing pages once the course is drafted. With this software program, navigation through the course is directed by page numbers. Inserting a new page changes all subsequent page numbers and all the "jumps" and "hot buttons" must be reprogrammed for the new page numbers.

Belmont Technical College student viewing Mechanical Systems CD

During a test-run of the CD by a Belmont Technical College student, a number of "bugs" were detected, and the program was retooled. This Fall, the CD was used to supplement the existing mechanical systems course at Belmont. Student response has been positive, as the CD reinforces lecture materials and helps students prioritize information. The CD's case studies also supplement slide-based

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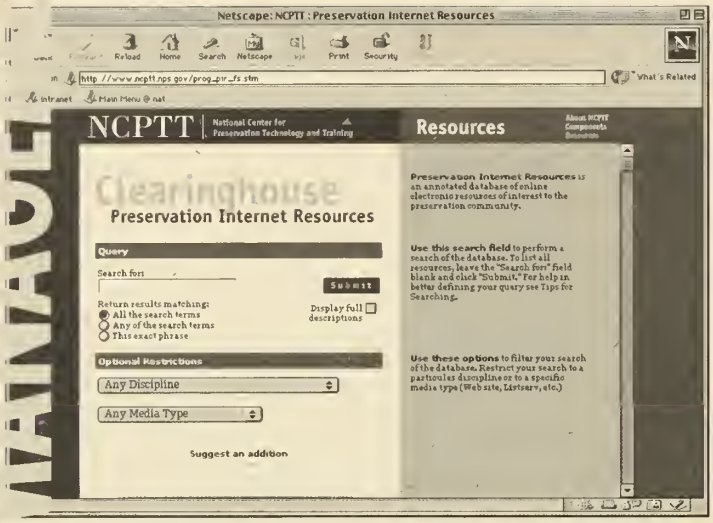
Belmont Technical College

The Building Preservation Technology Program at Belmont Technical College, St. Clairsville, Ohio, was established in 1989. At the outset, its mission was to retrain local mining and steel workers in the preservation building trades and to provide the Ohio Valley and surrounding communities with well-trained craftspeople to aid in revitalizing the Rust Belt. The program has gained national recognition for providing leadership and educational opportunities in building preservation at the associate degree level.

During the past several years, there has been a strong demand for the training provided by the Building Preservation Technology Program. Numerous requests for distance learning courses are received from contractors, homeowners, preservation craftsmen and other students not able to attend classes at the St. Clairsville campus. Recognizing an under-served audience, the Building Preservation Technology Program began developing distance learning courses to complement the existing curriculum, of which the course on mechanical systems is the first.



Preservation Resources on the Internet

Nearly five years ago, preservation consultant Peter Stott created an online directory of preservation-related resources — *Internet Resources for Heritage Conservation, Historic Preservation and Archaeology* — which was available originally through the Clearinghouse of Subject-Oriented Internet Resource Guides, now known as The Argus Clearinghouse, <www.clearinghouse.net>. A few months later the guide also was retrievable via the ICOMOS Web site, <www.icomos.org>. In September 1995, the guide was transferred to NCPTT for maintenance and updating. In time, Stott's project has proven its worth as a valuable source of information for preservation professionals.

Internet Resources began as an annotated list of eleven types of Internet resources: Web sites, gopher sites, electronic journals, listservs, newsgroups, databases, library catalogs, FTP sites, FAQs, subject guides and fee-based services. Items in the "World Wide Web and Gopher Servers" section were further categorized by topic, such as architectural preservation, archeology, and planning and sustainability. The original searching feature was rudimentary by today's standards — users could find words in the text, but only within sections and without much flexibility.

As NCPTT began planning the recent redesign of NCPTT's Web site, NCPTT recognized that *Internet Resources* would be even more useful as a searchable database. As part of Phase 2 of the NCPTT Web site redesign, the document was substantially revised, including functionality, and renamed.

The current *Preservation Internet Resources* is a fully searchable database of preservation-related Internet resources that can be accessed either indirectly through NCPTT's Web site, <www.ncptt.nps.gov>, by selecting Resources, then Internet Resources, or directly at <www.ncptt.nps.gov/pir>. Keyword, discipline, media type (Web, ftp, etc.) or combinations of the three can be used to search the database. Users can leave the search criteria blank and retrieve the entire database to browse. Users also can suggest sites to add to the database. NCPTT is updating PIR with resources collected during the gopher-to-Web transition. When updating is completed, PIR will be maintained regularly.

The four conservation-oriented Web sites described below were found among twenty-six hits returned by entering the word "conservation" in *Preservation Internet Resources*' "Search for:" field. The system searched for that term in the title, organization, abstract, URL and keywords fields.

palimpsest.stanford.edu/aic American Institute for Conservation of Historic and Artistic Works

AIC is the national membership organization for conservation professionals or professionals in other disciplines interested in the conservation of cultural property. Members include conservators, educators, administrators, technicians, students, archivists, curators, architects and art historians.

AIC's Web site contains a wealth of conservation-related information, including information available at most professional organizations' sites, such as background about the organization, conference announcements, membership information and links to other sites. Full text documents on caring for architecture, paintings, photographs and works of art on paper, videotape, textiles, and special objects can be accessed. The site provides help in selecting a conservator and an extensive bibliography of information on conservation topics.

www.nedcc.org Northeast Document Conservation Center

NEDCC is a regional, nonprofit conservation center that specializes in paper-based materials. NEDCC's mission is to "improve the preservation programs of libraries, archives, museums, and other historical and cultural organizations; to provide the highest quality services to institutions that cannot afford in-house conservation facilities or that require specialized expertise; and to provide leadership to the preservation field."

NEDCC's Web site includes information about its history, mission, services and workshops, and links to other preservation and conservation Web sites. The publications section provides information on ordering NEDCC publications. In addition, the full text of some NEDCC Technical Leaflets is available on topics such as preservation planning, emergency management, care of photographs and climate control.

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Communicating Culture

The Getty Information Institute organized an international conference on "the important role of culture in today's evolving information society" – and the important role of information management in culture.

The conference convened at The Getty Center in Los Angeles, California, October 21-23. Executive Director John Robbins represented NCPTT at the conference, and filed this report.

In his opening remarks, John Walsh, J. Paul Getty Museum director and J. Paul Getty Trust vice president, cited the goal of the *Communicating Culture* conference as "investigating the evolving relationship between technology and culture." Towards this goal, the Getty Information Institute invited US and international speakers and participants to share their work and thoughts on the intersection of communications and culture. The conference focused on communications via digital technologies, and the conference presentations and discussions raised information management issues that are pertinent to preservation and conservation.

"Bastions of reality in a fictive age"

On separate tracks, cultural institutions invest in real objects, sites, exhibitions and buildings, while digital technologies allow exhibits and interpretation that separate audience from actual artifacts. Perhaps the tracks merge. Digital technologies may enhance the relationship between artifact and audience with choices and opportunities unique to digital technologies.

While Bill Ivey, chair of the National Endowment for the Arts, urged that cultural institutions "maintain the character of live contact," and that "global digital community should not become a substitute for real experience," Peter Schwartz of the Global Business Network urged institutions to deal with an apparent "fear of homogenization and trivialization of culture by digitization." With "diversity as [a] more powerful force towards evolution" than similarity, Schwartz sees two scenarios for the digital future: "industrialization of culture" and "empowered culture." Industrialization may produce sameness at the lowest cost – "uniformity propelled by greed" – and result in cultural degradation. The counter-scenario to industrialization is universal empowerment of cultures through "cheap" information and the networking of complex cultural ecosystems characterized by huge populations culturally enfranchised. Cultural institutions have distinct roles in how these scenarios play out.

Shifting paradigms

Einar Stefferud is a digital pioneer who sees the Internet as a place beyond geography and sovereignty where the cultural community has a responsibility to contribute and participate freely. In a global "internetworking" environment with "mass reachability", traditional concepts of information ownership are questionable.

The vision of true mass participation in a global Internet "place," however, is tempered by global economic reality. Ismail Serageldin of the World Bank Group ex-

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Preservation Resources

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www.pch.gc.ca/cci-icc
Canadian Conservation Institute

Part of the Department of Canadian Heritage, CCI promotes the proper care and preservation of Canada's movable cultural property and advances the practice, science and technology of conservation. CCI undertakes research projects, provides conservation services, disseminates conservation information, and delivers training to conservators, museologists, archeologists, artists and archivists.

Along with general information about its history and mission, CCI's Web site includes detailed information about its services, publications, internships, training sessions and research program. The full text of four newsletters published between September 1995 and March 1997, and annual reports for 1994 and 1996 are incorporated. One interesting section is "Featured Conservation Treatments" which highlights four projects treating a map, a painting, a cannon, and a robe and petticoat. The CCI library and its resources also are featured. The library's catalog will be online in the near future.

palimpsest.stanford.edu
Conservation OnLine

CoOL is a service of the Preservation Department of Stanford University Libraries for professionals who work with the conservation of library, archive and museum materials. CoOL includes full-text documents on topics ranging among copyright and intellectual property, mold, disaster planning and response, documentation, training, electronic records, health and safety, mass deacidification, pest management, and bibliographies and resource guides. The site also features tools for finding people involved in conservation and preservation, links to conservation organizations whose Web sites are either hosted or mirrored by CoOL, and links to other conservation and preservation organizations. The archives of eight electronic discussion lists are accessible via CoOL, including Conservation DistList.

A Seminar on Economic Impacts of Historic Preservation

October 13
The Brookings Institution
Washington, DC

Although historic preservation has long been recognized as an important stimulus for economic development and community revitalization, recent studies have made significant gains towards a more accurate and comprehensive understanding of preservation's total economic effects. With advanced research methodologies and sophisticated input-output models for data analysis, economists now are able to identify preservation's direct and indirect economic effects and to track the flow of preservation expenditures through local and regional economies with considerable precision.

As the scope and accuracy of economic impact studies have increased, important questions have arisen regarding the manner in which the studies are conducted. What should be counted among the direct and indirect effects of preservation spending? How should data be collected on complex activities such as heritage tourism and commercial uses of rehabilitated downtown historic districts? How should "quality of life" factors such as reduced crime rates in historic neighborhoods and the aesthetic and environmental benefits of preservation be quantified?

These and related questions were the focus of a one-day seminar of thirty experts at the Brookings Institution. Participants represented the World Bank Group and the National Trust for Historic Preservation, research universities, government agencies and private firms. The seminar was sponsored by NCPTT, the Center for Urban Policy Research at Rutgers University, Harvard University's Department of Urban Planning and Design, and the Brookings Institution's Center on Urban and Metropolitan Policy.

Rutgers University professors David Listokin and Michael Lahr organized the seminar. Lisotkin and Lahr are leading experts on the economic impacts of historic preservation. Their recent work includes the 1995 PTTGrants project that resulted in a comprehensive report of preservation's impact in New Jersey, *Economic Impacts of Historic Preservation*, and the booklet entitled *Partners in Prosperity: The Economic Benefits of Historic Preservation in New Jersey*.

Research challenges

The seminar's morning session focused on issues concerning data sources and collection methods. In a brief introduction, Listokin surveyed challenges that economists face in gaining access to useful data. Due to high collection costs, economists are unable to gather data specifically for economic impact studies and must rely on data from a variety of sources. Professional organizations are among the common sources of data, but their records typically are organized in a format designed to suit their institutional needs, not those of research economists. Listokin suggested that economists could improve the types and availability of data by working to ensure that the needs of economists are included in organizations' ongoing information collection programs.

Presentations made at the morning session addressed heritage tourism, property values in historic districts, and the economic impacts of Main Street programs. Catherine Shaw, director of marketing research for the Travel Industry of America, discussed survey data that her organization collects on heritage tourism and how it might be useful to economists. Bill Siegel, president of Longwoods International, spoke about his firm's research on the spending patterns of travelers visiting historic sites. Doug Loeseher of the National Trust gave an overview of the Main Street program and discussed data generated by individual Main Street communities on economic development in historic downtown districts. Donovan Rypkema of the Real Estate Service Group presented the results of his recent work on property values and demographic trends in National Register and local landmark districts. Overall, the presentations of the morning session showed that data from a variety of sources stand ready for use in economic impact studies, provided that economists are willing to consider the data critically and with a sound understanding of the reasons for which the data originally were collected.

Economic models

Input-output models and other methods of data analysis were the primary discussion topics at the first afternoon session. Rutgers University professor Michael Lahr discussed various input-output models and their major differences. William Schaffer, professor of economics at the Georgia Institute of Technology, discussed key features common among input-output models and fundamental assumptions upon which the models are based. Both Lahr and Schaffer observed that, although input-output models are not entirely verifiable, they tend to be sufficiently accurate in practice and are certainly the best available means of conducting regional economic impact analysis studies.

George Treyz of Regional Economic Models, Inc., discussed distinctive features of the input-output model developed by his firm. Treyz refers to the REMI model as an "integrated and dynamic" model for two reasons. First, the REMI model is unusual in that it attempts to quantify "quality of life" factors as well as measurable economic impacts. Second, the REMI model also incorporates equilibrium factors — in essence, the long-term consequences of spending on a given project as opposed to only the initial impacts — and econometric data, which are

generally compiled through surveys. By accounting for such factors, the REMI model attempts to provide more dynamic interpretations of economic activity than comparable input-output models.

Treyz's presentation generated considerable discussion, with particular interest focused on the REMI model's quantification of "quality of life" factors. Many participants agreed that the ability to measure such factors was essential for accurate and comprehensive assessments of preservation's total economic impacts. Clearly, the benefits of preservation activities are not limited to their direct economic effects; also significant are the subtle but important ways that preservation improves the environment of our nation's towns and cities. The REMI model, though in need of further refinement, holds significant promise and eventually may provide economists with a means of assessing the total benefits of preservation, not just the benefits with an obvious dollar value.

Further research

Presentations at the seminar's final session addressed the effects of historic designation on property values. David Clark, professor of economics at Marquette University, discussed his research on property values in historic districts and the methodologies for such studies. Robin Leichenko of the Center for Urban Policy Research at Rutgers University, and Edward Colson, professor of economics at Pennsylvania State University, spoke about their current research on property values in historic districts in a broad survey of Texas cities. Richard Roddewig of Clarion Associates, Inc. discussed key issues involved in appraising historic properties.

The Front Street core of Natchitoches, Louisiana's historic district: Preservation is an important component of community economics throughout the US

A note of optimism characterized each of these three presentations. Although many questions remain unanswered about the relationship between historic designation and property values, data necessary for further research are becoming increasingly accessible, and future studies promise to provide answers that have long seemed elusive.

The seminar concluded with open discussion. David Listokin invited comments on the current understanding of the negative and positive impacts of historic preservation and asked for suggestions for refining the research and analytic methodologies used in economic impact studies. Much of the discussion that followed concerned the importance of accounting for "quality of life" factors in future studies. Several participants noted that while it may prove difficult for economists to agree upon appropriate methods for quantifying "quality of life" factors, such factors figure prominently among the benefits of historic preservation and should be considered in future studies.

In conclusion, several participants noted that the seminar had been most effective in identifying key issues needing additional consideration that might serve as starting points for further research. Clearly, workable solutions to the most significant of the existing methodological problems must be found before more sophisticated studies are undertaken. By outlining promising directions for further work, the seminar laid the groundwork necessary for developing more comprehensive and accurate methods of assessing the economic impacts of historic preservation.

An online version of Partners in Prosperity: The Economic Benefits of Historic Preservation in New Jersey *(PTTPublications No. 1998-25) — as well as a link for requesting a printed copy of the publication — is available at <http://www.state.nj.us/dep/njht/library.htm>. The comprehensive report,* Economic Impacts of Historic Preservation *(PTT Publications No. 1997-05), is available online at <www.state.nj.us/dep/njht/features.htm #impactstudy>. This work was featured* in NCPTT Notes *22, page 9.*

Historic Brick

Conservation of Historic Brick Structures

Edited by Norbert S. Baer, Stephan Fitz and Richard A. Livingston
Illustrated, 506 pp. Shaftesbury (UK): Donhead Publishing Ltd. (1998)

Conservation of Historic Brick Structures is a collection of papers that originated with a North Atlantic Treaty Organization's Committee on the Challenges of Modern Society pilot study. The book provides state-of-the-art information about technical issues associated with conserving brick structures.

Publication of *Conservation of Historic Brick Structures* was supported with NCPTT Materials Research Program funds through NCPTT's 1997 PTTGrants program.

Conservation of Historic Brick Structures, written primarily for conservation and materials scientists and others with a high level of technical understanding, is divided into seven major sections —

- Brick Masonry Technology
- Degradation Mechanisms
- Diagnosis of Damage
- Field Studies, Laboratory Tests and Modeling
- Mortars and Renderings
- Conservation Treatments and Materials; and
- Case Studies.

The NATO-CCMS pilot study entitled "The Conservation of Historic Brick Buildings and Monuments" was a series of eight annual international meetings begun in 1987 and concluded in 1994. For the pilot study and this resulting book, historic brick structures are defined to encompass exposed brick surfaces and those with stucco and plaster. Considered integral to brick structures, stuccos, plasters and mortars — including traditional and modern lime, dolomite, and lime-cement compositions — were studied and methods of technical analysis are described.

Deterioration mechanisms discussed include biodeterioration, salt damage, and the effects of air pollution and moisture on masonry. Also covered are treatment strategies such as desalination, protective coatings and injection. Examples of multidisciplinary approaches to conserving brick structures are found in the book's case studies.

Growing literature

Conservation of Historic Brick Structures complements other books on the subject, such as *Practical Building Conservation: English Heritage Technical Handbook — Volume 2: Brick, Terracotta, and Earth* by John and Nicola Ashurst and published by Gower Technical Press. *Conservation of Brick* by John Wârren, published by Butterworth-Heinemann, soon will be available as well.

Also noteworthy is the recent update of the National Park Service's *Preservation Brief* 2. "Repointing Mortar Joints in Historic Masonry Buildings" by Robert C. Mack and John Speweik. This brief provides general guidance on appropriate materials and methods for repointing historic masonry buildings and is intended for building owners, architects and contractors. Preservation Briefs are available online at <www2.cr.nps.gov/tps/briefs/presbhom.htm>, or visit the HPS Bookstore online at <www2.cr.nps.gov/bookstore.htm> for print copies.

The development of Conservation of Historic Brick Structures *was described in* NCPTT Notes *23, page 5. Conservation of Historic Brick Structures is available from PRG Inc., POB 1768, Rockville, MD 20849: telephone 301/309-2222, facsimile 301/279-7885.*

NCPTT's 4th Anniversary

NCPTT celebrated its fourth anniversary during the Fall meeting of NCPTT's advisory board, November 2-4, in Natchitoches, Louisiana. NCPTT was created by Congress as part of the 1992 amendments to the National Historic Preservation Act. In 1993 and 1994, implementation of NCPTT's legislation was begun, and NCPTT's advisory board members were appointed. The charter NCPTT staff began work in Natchitoches on October 4, 1994.

On the occasion of the fourth anniversary, NCPTT's advisory board joined NCPTT staff, representatives of the local preservation community and local officials to unveil an NCPTT "annual" report. In brochure format, the report summarizes NCPTT's work since 1994. Copies of the brochure were distributed with *NCPTT Notes* 28. (If *Notes* readers did not receive an annual report, contact NCPTT Publications Manager Sarah B. Luster.)

In reflecting on the past four years, advisory board chair Dr. Elizabeth A. Lyon noted that NCPTT's "record of accomplishment and service to the preservation community is truly noteworthy, and NCPTT is commended for deep dedication to realizing its mission."

Communicating Culture

Continued from page 5

plained that with eighty percent of the world population living in developing nations, our common global heritage is significantly at risk. Threats such as poverty, expansion of agriculture, pollution, commercialism and disharmony may overwhelm or preclude possible benefits from electronic networking and access. Widespread social and economic empowerment s the prelude to preserving "physical monuments, and monuments of the mind such as libraries and archives."

Public transportation on the nformation highway

Bill Press of *Crossfire* characterized government's role in the digital environment as "curator" — the one who adds meaning and understanding. Press encouraged government institutions to ensure widespread educational and nonprofit access for providing and using high quality online content by direct intervention and by partnering with private industry. Press proposed that such access begins with training in the best uses of digital technology — and that such training is a distinctly governmental function.

Paul Saffo of the Institute for the Future, characterized "technology as an agent of change" and the "resources that we put online as agents of change" — concurring that government may have a role in stimulating both technology and content for the public good, in the vernacular and professional realms at local, regional and national scales.

"I don't know who discovered water but it wasn't a fish"

This quote or paraphrase of Marshall McLuhan characterized discussions of the relationship between people and digital technology. The nature of the present relationship was described as "bounded chaos" — and the future seems no more clear. While the number of transistors on a chip doubles predictably at 18-month intervals, predictions of digital technologies' uses rarely match reality. Some of the conference participants' predictions remain to be tested — "the World Wide Web is a passing fad," "human interface with computers will gradually disappear," "with digital technology, previously finite resources become infinite, with a possible 24-hour commerce of cultural resources."

In a world where changes in nature are relatively slow and changes in culture are relatively fast, electronic technology is well-suited as an aid or complement to culture. According to Stewart Brand of the Global Business Network, institutions with cultural responsibilities should embrace the concept of an electronic environment that "allows people to create their own institutions."

Communicating Culture was planned as an initial round of open-ended discussions that persists, appropriately, online — discussions that sometimes lead and sometimes follow the developing technology.

Expanding discourse

Many conference participants recognized that the future of some aspects of the digital environment is not yet fully known. Can multi-culturalism and multilingualism be accommodated? How will literacy influence information as a commodity? Is information indeed a commodity when information is no longer scarce? What is ownership and copyright?

Communicating Culture was planned as an initial round of open-ended discussions that persists, appropriately, online — discussions that sometimes lead and sometimes follow the developing technology. The electronic discourse continues at <www.ahip.getty.edu/c98/index2.html>.

Preserving Historic Guastavino Tile Ceilings, Domes and Vaults

February 6
New York, New York

The New York Landmarks Conservancy will hold a day-long conference at Columbia University on the history and preservation of tiled ceilings, domes and vaults constructed with Guastavino materials and techniques.

Technical issues raised in preserving notable examples of Guastavino tile construction—including the Oyster Bar in Grand Central Terminal, St. Thomas Church, and the Queensborough Bridge—will be studied, and participants will take a walking tour of Guastavino buildings.

Found in more than 1,000 buildings in the United States and around the world, Guastavino tiling now requires maintenance and repair. The Guastavino conference will provide practitioners with an opportunity to receive and share information from experts in the fields of architecture, conservation and engineering.

The conference received support under the 1998 PTTGrants program. NCPTT, the New York Chapter of the American Institute of Architects, Columbia University, the National Trust for Historic Preservation's John E. Streb Preservation Services Fund for New York, and the New York Landmarks Conservancy are co-sponsors. For conference information, contact the New York Landmarks Conservancy; telephone 212/995-5260, e-mail <brucohen@pipeline.com>, Web <www.nylandmarks.org>.

Conservation of Modern Architecture

May 27 – June 18
Helsinki and Espoo, Finland

The theory and practice of conserving modern architecture will be addressed in this international course for professionals sponsored by the International Center for the Study of the Preservation and Restoration of Cultural Property/ICCROM. Practical problems encountered in conservation, restoration, rehabilitation and re-use of twentieth-century buildings will be considered.

Professionals with a minimum of three years of experience in architectural conservation may apply. For further information, contact ICCROM Training and Fellowship Program Office, Via di San Michele 13, I-00153 Rome RM, Italy; facsimile (+39-06) 5855 3349; e-mail <training@iccrom.org>. For updated information on this and other ICCROM courses, visit <www.iccrom.org>.

Historic Roofing Conference and Trade Show

March 17-19
Philadelphia, Pennsylvania

For the first time, a national conference and exposition will address the complex issues of maintaining, repairing and replacing roofs on historic buildings. With over two and one-half million historic buildings in the United States and Canada, architects, property managers and owners, contractors, engineers and government officials are confronted with a wide range of problems, solutions and historic preservation considerations.

Over 50 experts from the United States and Canada will participate as conference speakers. An exposition will provide preservationists with opportunities to discuss project needs with manufacturers, suppliers and specialty contractors.

The National Park Service's Heritage Preservation Services, US General Services Administration, Sheet Metal and Air Conditioning Contractors' National Association, Public Works and Government Services Canada, and other leading organizations are conference sponsors. The conference will include a special exhibit on historic roofing, and all participants will receive a copy of the National Park Service's *Roofing Rehabilitation Handbook for Historic Buildings*.

For more information, write Historic Roofing Conference, POB 75207, Washington, DC 20013; telephone 202/343-6008, Web <www.cr.nps.gov/wtnew.htm>.

Museums in Historic Buildings

March 22-27
Williamsburg, Virginia

Colonial Williamsburg will provide a unique setting for examining the conflicts inherent in using historic buildings as museums. Through on-site field visits and in-class discussion, the course will explore ways of balancing the needs of collections, staff and visitors with the goal of maintaining the historical and architectural integrity of the structure.

Topics include philosophies and policies of intervention, preservation standards and guidelines, architectural impact of museum uses, environmental and physical concerns in storing and exhibiting collections, architectural conservation, preventive maintenance, issues of presentation and interpretation, public access and safety, and visitor amenities.

To register, contact the Cultural Resource Management Program at University of Victoria, POB 3030 STN CSC, Victoria, BC, Canada V8W 3N6; telephone 250/721-8462, facsimile 250/721-8774, e-mail <joydavis@uvcs.uvic.ca>, Web <www.uvcs.uvic.ca/crmp>.

May 2-5
Detroit, Michigan, and throughout the US

The President's Council on Sustainable Development and the Global Environment & Technology Foundation are sponsoring a National Town Meeting on sustainability. The event will showcase best practices that promote sustainability throughout the US. Three thousand participants are expected in Detroit; concurrent events throughout the US will be linked to the Detroit event online and via satellite.

The President's Council on Sustainable Development was established in 1993 to advise on a national sustainability policy. The council's initial major statement was published in 1996 — *Sustainable America: A New Consensus for Prosperity, Opportunity, and A Healthy Environment for the Future.* This report, plus subsequent progress and task force reports, set the stage for the 1999 National Town Meeting.

Chapter 1 of the *Sustainable America* report established ten National Goals Toward Sustainable Development, of which goal 6, Sustainable Communities, encourages "... people to work together to create healthy communities where natural and historic resources are preserved ..." Aspects of other goals — clean air, waste reduction, energy efficiency — also are sympathetic to preservation. Historic preservation, however, has yet to become a high-profile sustainability issue, in spite of natural affinities in the areas of resource and energy conservation. The relative status of historic preservation within sustainablity discussions was highlighted in an article on "Sustainability and Historic Preservation" in *NCPTT Notes* 25.

Both the National Park Service's servicewide and cultural resources strategic plans incorporate sustainability as major goals, and commitment to sustainability throughout the National Park Service is strong. *Notes* readers are encouraged to participate in the National Town Meeting and to seek opportunities to include preservation among discussions of national strategy and policy topics.

For more information on the National Town Meeting, including participating in Detroit and throughout the US, visit <www.sustainableamerica.org>. For more information on the President's Council on Sustainable Development — including publications —, visit <www.whitehouse.gov/PCSD>. For more information about the Global Environment & Technology Foundation, visit <www.getf.org>.

Presidential Design Awards 2000 Includes Historic Preservation

The US General Services Administration requests design award nominations in eight categories, including historic preservation. Awards will "recognize Federal design projects that have made a significant contribution to the environment and quality of life of the Nation during this century." Projects sponsored, authorized, commissioned, produced or supported by the Federal government are eligible. Projects completed and in use between January 1, 1989 and January 1, 1999 are eligible. Projects previously awarded a Federal Design Achievement Award are ineligible.

Nomination deadline is April 8, 1999. For more information, contact Thomas Grooms, Presidential Design Awards, US General Services Administration, 1800 F Street NW, Room 3341. Washington, DC 20405; telephone 202/501-1888, e-mail <thomas.grooms@gsa.gov>.

Training Update

Continued from page 3

lectures. Students may use department computers to view the CD or borrow a copy for home use. Since making the CD required reading for the existing mechanical systems course, students' average test scores have improved by over five points.

The Building Preservation Technology Program plans to use digital technology to create a study aid for its History of American Architecture course and eventually to provide access to courses via the Internet. The "lecture" part of the courses will be available via CD or Internet and completed at the student's convenience. A hands-on or laboratory component will be offered as a short course. The department also is exploring the use of video clips and other multi-media components for updating the mechanical systems course.

— Dave Mertz

Mr. Mertz is founder and director of the Building Preservation Technology Program at Belmont Technical College and is chair of the National Council for Preservation Education. Mr. Mertz is a third generation residential contractor with undergraduate and graduate degrees in architecture from Kansas State University.

Contact NCPTT Publications Manager Sarah B. Luster for a copy of the soon-to-be-released Mechanical Systems in Historic Buildings CD (PTTPublications No. 1998-20).

Our Mission

United States Department of the Interior
The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and to honor our trust responsibilities to tribes.

National Park Service
The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education and inspiration of this and future generations. The Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

National Center for Preservation Technology and Training
The National Center for Preservation Technology and Training promotes and enhances the preservation of prehistoric and historic resources in the United States for present and future generations through the advancement and dissemination of preservation technology and training.

NCPTT, created by Congress, is an interdisciplinary effort by the National Park Service to advance the art, craft and science of historic preservation in the fields of archeology, historic architecture, historic landscapes, objects and materials conservation, and interpretation. NCPTT serves public and private practitioners through research, education and information management.

NATIONAL CENTER FOR
PRESERVATION TECHNOLOGY AND TRAINING
NSU Box 5682
NATCHITOCHES, LA 71497

NCPTT NOTES

National Center for Preservation Technology and Training

UNITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

APRIL 1999 NUMBER 30

INTERNET ARCHAEOLOGY

<intarch.ac.uk>

Traditional print publication has become increasingly limiting for archeology due to small and expensive print runs, high distribution costs, declining library subscriptions and small readership. As a consequence, it is necessary to be more selective about publication media. Some publishers choose microfiche as a method of distributing supporting information and specialists' reports, but microfiche has limitations and has proven consistently unpopular. Archeological fieldwork can generate huge quantities of data and much of this data is now captured digitally. Perhaps electronic data distribution can overcome the limitations of other technologies.

Archeological reports are well-suited to multimedia publication which allows access to color images and large data sets and permits several possible journeys through the hypertext.

In the mid-1990s, a consortium of archeological organizations, including the Council for British Archaeology, the British Academy and several UK university archeology departments proposed developing an electronic journal for archeology.[1] A successful bid was made to the UK's Electronic Libraries program, "eLib," of the Joint Information Systems Committee, and *Internet Archaeology*, based at the University of York, was established in August 1995. Funding from eLib continues for six years on a tapering basis — initially allowing free access to the journal for all users, with subscription charges eventually introduced to ensure continuing revenue.

Internet Archaeology aims to become one of the world's foremost archeological journals. The journal presents the results of archeological research in an interesting manner, and at the same time allows readers to explore the data upon which research conclusions are based. *Internet Archaeology* covers all elements of world archeology, is fully refereed and, with no print equivalent, full functionality of the electronic environment can be utilized.

Five issues of the journal have been published. Varied content includes contributions on selected artifact groups and environmental data, and discussions of developments in archeological methodology. As well as text and color graphics, contributions include searchable databases, virtual reality models and interactive maps.

Archeological reports are well-suited to multimedia publication which allows access to color images and large data sets and permits several possible journeys through the hypertext.

Academic concerns

Internet Archaeology seeks to respond to serious concerns that affect the academic community's acceptance of online journals.

Continued on Page 2 ➥

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Send comments on *NCPTT Notes* or submit articles or notices for consideration to NCPTT Publications Manager Sarah B. Luster

Internet Archaeology

Continued from page 1

The first concern is quality. Because of the uncontrolled way the Internet has developed, there is genuine concern that much of the information available is not reputable, and that locating and distinguishing resources of value are difficult. *Internet Archaeology* has followed traditional academic publishing models by adopting peer review of all articles, both for content and for Web-based realization. *Internet Archaeology* also has adopted a traditional citation style modified with the substitution of URL for publisher and place of publication.

The second concern is long-term access. Much Web-disseminated material is transitory and ephemeral. Links may disappear from one week to the next, underscoring the fragility of digital data. Authors may be reluctant to offer substantial research articles for sole publication in a journal that may not be accessible in one hundred years — or even ten years. Electronic publications need to be archived so that their content is protected from change whether by accident or design by anyone, including the author.

Internet Archaeology has adopted the editorial policy that the content of a paper will not be changed once published even if errors are identified, although further editions are possible through the use of version control. In addition, links to other Internet sites are allowed only in the bibliography sections of papers in order to minimize broken links. Finally, it has also sought to ensure the long-term preservation of back issues by depositing them with the Archaeology Data Service.[2]

The third concern is academic respectability and tenure. Promotion in higher education depends on publication, and some academics worry that electronic publications might not count as "real" publications. Many universities in the US now consider electronic publication to be an appropriate means of scholarly communication and will evaluate electronic publications on the same basis as paper publications for purposes of appointment and promotion. Similarly in the UK, the 1996 Research Assessment Exercise was the first in which electronic publications were given the same weight as their paper equivalents.

First impressions

Internet Archaeology's first issue was published on the Web in September 1996 and each subsequent issue covers a six-month period. Papers are published when the refereeing process and consequent revisions are completed and an issue is "closed" at the end of the six-month period.

Access to the journal's papers has been controlled by the use of a registration system. By the end of January 1999, over 13,000 individuals were regis- tered. This information aug- ments data that is recorde automatically by the We server software each time "page" is requested from th server. Combining the two dat sets, the *Internet Archaeolog* audience can be characterize and questions can be answere about the way the journal i used. A detailed analysis of th first issue's usage was cor ducted in 1997 and publishe in *Internet Archaeology*'s thir issue.[3] Further evaluatio work is now underway to gaug reactions to the journal fro both users and contributors t guide the journal's future de velopment.

— Mike Heyworth, Julian Richards, Alan Vince and Judith Winters

For more information abou Internet Archaeology, *contac Dr. Mike Heyworth, Bowe Morrell House, 111 Walmgate York YO1 9WA, United King dom; telephone +(44) 190 671417, facsimile +(44)190 671384, e-mail<m.heyworth@ dial.pipex.com>.*

Drs. Heyworth and Richard are co-directors of Interne Archaeology. *Dr. Vince is th managing editor and Ms. Win ters is assistant editor o* Internet Archaeology.

1. Heyworth, M., S. Ross and J. Richards 1996. "Internet archaeology: a international electronic journal for archaeology," in *Interfacing the pas computer applications and quantitative methods in archaeology CAA95*, H Kamermans and K. Fennema (editors). 517-23. *Analecta Praehistoric Leidensia series, no. 28*. Leiden: University of Leiden.
2. <http://ads.ahds.ac.uk> See *NCPTT Notes* 25, page 3 for a discussion digital data preservation.
3. Vince, A. 1997. "Publishing archaeology on the Web: who reads this stu anyway?," *Internet Archaeology* 3. <http://intarch.ac.uk/journal/issue vince_index.html>.

ePublishing the Past

<www.sscnet.ucla.edu/ioa/labs/digital/imprint/imprint.html>

The importance of publishing research results is recognized by every scientific discipline. But for archeologists, there is the added responsibility of making primary field data — the innumerable photographs, maps, drawings, and notebooks that make up the archeological excavation record — available to the archeological community. The inaccessibility of most of archeology's primary data is a significant problem in a discipline where destruction of the data's context is inherent in the archeological method. Contextual evidence can be encountered only once in its pristine state; if not published or deposited in an archive, contextual evidence is lost forever.

In the past, publishing all field data has been nearly impossible. Publishing an entire collection of maps, field drawings, photographs or datasets from a multi-year project almost always is impractical and expensive. With new technologies such as desktop computing and the World Wide Web, sharing archeological data through digital publications is possible and practical.

While many archeologists have embraced personal computers for data processing and modeling, using digital media to present research findings to both professional colleagues and the public remains largely unexplored. University of California–Los Angeles' Institute of Archaeology has taken up the challenge of encouraging archeologists to adopt digital publishing by establishing the Digital Archaeology Lab, a state-of-the-art production facility for digital media. The lab's charge is to translate the research of the institute's faculty and staff into various digital media including CD-ROMs, K-12 curricular materials, Web sites, and professional monographs published in hybrid portable media and Web formats.

The Digital Archaeology Lab's projects investigate the new territory of digital publication of primary field data and make the transition to digital publishing professional, cross-platform, consistent and easy to use. Many archeologists have been exploring this territory and have created very valuable records of their projects. What has not been available in coordinating digital publication efforts is institutional leadership.

With generous funding from the Ahmanson Foundation, the Digital Archaeology Lab has launched a two-year project to help develop standards, prototypes and templates for digital publication of archeological monographs. This project, called "The Digital Imprint," is exploring new approaches for organizing and presenting primary field data. The goal is to preserve more effectively and economically the years of investment and the great quantity of irreplaceable information associated with archeological excavations. The Digital Imprint project recently convened a meeting of the Working Group on Digital Publishing in Archaeology to evaluate the interest of archeologists in digital publication, differences between archives and monographs, and the forms that data could take in a digital monograph. The group also reviewed a Digital Archaeology Lab prototype publication that will serve as a template for future UCLA Institute of Archaeology publications.

Digital monographs will not look like print monographs simply transferred to the computer. New technologies make it possible to visualize — rather than merely describe — archeological data. While archeologists have always made maps and taken photographs, now archeologists can easily and accurately create computer graphics, three-dimensional models, and searchable visual databases storing thousands of maps, photographs and drawings. Digital publication also makes possible the inclusion of video records, audio comments and explanations, animations, virtual reality simulations, and architectural reconstructions. All of these rich forms of information enhance and verify the interpretations and conclusions that comprise the traditional archeological monograph. A more dynamic and complex consideration of archeological data results, and much of the primary data is returned to the archeological community for further study.

—Louise Krasniewicz

Ms Kransniewicz is the director of the Digital Archaeology Lab at UCLA.

Andrew Ferrell Joins NCPTT

Andrew Ferrell has joined NCPTT as Training Associate. Andrew holds a Bachelor of Arts degree in German Language and Linguistics from Louisiana State University, a Master of Arts degree in International Relations from Boston University-Brussels and a Master of Science degree in Architecture/Historic Preservation from Louisiana State University. Andrew's work at NCPTT will focus on the use of new technologies to deliver training in historic preservation. Additionally, Andrew will help NCPTT develop stronger ties with international organizations that provide training in preservation and conservation.

Prior to joining NCPTT, Andrew worked at Gulf Engineers and Consultants and taught in the Cultural Resource Management Program at Southeastern Louisiana University.

Conserve O Grams

<www.cr.nps.gov/csd/publications/conserveogram/conserv.html>

Conserve O Grams, produced by the National Park Service's Museum Management Program, are short, focused leaflets about caring for museum objects and archival materials. Originally published only in loose-leaf format, these leaflets now are available at the Museum Management Program's Web site.

All existing *Conserve O Grams* have been scanned as pdf files and uploaded to the site. The scanning process creates an exact electronic replica of the publication — an image file — which can be viewed and printed on any computer system, regardless of operating system, where Adobe Acrobat Reader, the pdf viewer, is installed. The viewer can be downloaded free from the Adobe Web site to which a link is provided in the *Conserve O Gram* table of contents. A drawback to the pdf format is that the document is not searchable. Since the file is, in essence, a picture of the printed publication, readers cannot search for keywords or phrases within the text. However, the leaflets are listed by topic on the site for easy access.

New topics are added to *Conserve O Grams* as needed, and out-of-date issues are revised or deleted as semi-annual supplements are issued. In August 1998, the series contained 96 leaflets, all of which are available electronically.

Conserve O Grams are aimed at both experienced and inexperienced museum, historical society, archival and library staff responsible for the care and use of museum and archival collections. The series also may be useful for interested individuals who have fine art, furniture, ceramics and glass, leather, photograph, book and paper collections.

In addition to the new Web version, print versions of *Conserve O Grams* can be ordered through a subscription with the Superintendent of Documents, US Government Printing Office. Use the order form available through the Web site to receive the existing 96 leaflets and the semi-annual updates for three years.

Beyond *Conserv O Grams*

The Museum Management Program Web site, <www.cr.nps.gov/csd>, features NPS museum and archival collections from over 300 NPS units throughout the US. These collections document themes, events, movements, regions, ecosystems, and significant individuals and groups that represent the broad diversity of American culture from prehistory to the present.

Currently, the Museum Management Program site includes the *American Visionaries* series featuring Frederick Douglass and Thomas Moran, thematic exhibits such as *Camp Life: Civil War Collections from Gettysburg*, and the *Treasures of the Nation* exhibit which showcases park collections.

Individual park profiles — including summaries of holdings and scope of collecti statements — and NPS m seum publications are also pr sented. Links to technical i formation, activities and ever — including conference training and volunteer oppo tunities —, a clearinghouse f the acquisition and deaccessi of collections, and pertine laws and regulations also a available at the Web site.

—Joan Bacharacl
—Jessie Johnson

Within the National Par Service's Museum Manag ment Program, Ms Bachara is a museum registrar and tea coordinator of the Access ar Use Team, and Ms Johnson a conservator and team coo dinator of the Preservati and Protection Team.

Federal Cultural Heritage Roster

The Federal Emergency Management Agency and the National Task Force on Emergency Response are recruiting conservation and preservation professionals for post-disaster assistance teams and mitigation research.

FEMA is the Federal agency responsible for reducing loss of life and property and protecting our nation's infrastructure from all types of hazards. The National Task Force on Emergency Response is a public-private partnership that provides expert assistance to cultural institutions and the public in times of disaster. The task force is a collaboration among FEMA, The Getty Conservation Institute, and Heritage Preservation, Inc.

In the event of a major disaster, FEMA can "mission-assign" employees from other Federal agencies to damage assessment and technical assistance teams. FEMA also can contract with private practitioners to assist with mitigation inspection and evaluation projects. Both Federal and private recruits will be selected from a new database: a Federal Cultural Heritage Roster of recruits available for temporary field assignments on short notice.

The Federal Cultural Heritage Roster project is managed by Greenhorne & O'Mara, Inc. To join the Federal Cultural Heritage Roster, request an application from Eric Letvin, Greenhorne & O'Mara, Inc., 9001 Edminston Road, Greenbelt, MD 20770; telephone 301/982-2800 (extension 611), facsimile 301/220-2606, email <eletvin@G-and-O.com>.

Evaluating Historic Masonry with the Pendulum Hammer

Virtually all masonry conservation projects involve pointing to repair damaged masonry. In pointing historic structures, conservators strive to match the original appearance and material properties of the original mortar. But selecting an appropriate pointing mortar often involves considerable guesswork, and the application of a pointing mortar with different properties than the original mortar can have disastrous consequences. Mortars with high Portland cement content, for example, are often incompatible with soft historic mortars in terms of strength and water permeability. Stress concentrations that lead to spalling and cracking can result from using a high-strength pointing mortar. Inappropriate pointing mortar can exacerbate rather than repair existing problems.

Masonry conservators long have needed an accurate means of identifying and evaluating masonry mortars *in situ*. Chemical and petrographic tests currently are used to determine mortar composition; although accurate, these procedures are expensive and time-consuming. A pressing need exists for simple, nondestructive techniques for evaluating mortars in place.

A 1997 Preservation Technology and Training Grants research project[1] took significant steps toward fulfilling this goal. The project was led by Michael P. Schuller of Atkinson-Noland & Associates, a Boulder, Colorado-based engineering firm, Kevin Rens, assistant professor of civil engineering at the University of Colorado at Denver, and Ann Sullivan of the Rocky Mountain Masonry Institute. The project team sought to develop a methodology for using the Schmidt Type PM pendulum hammer to evaluate and characterize in-place mortars. First employed in Europe, the pendulum hammer is a simple device for testing mortar hardness that can be operated with minimal training.

Testing the pendulum hammer technique involved several steps. First, the project team built eight masonry test piers, each 22 by 14 by 48 inches. A range of common modern and historic mortars of different formulations, two types of brick — a circa 1900 molded brick and a modern extruded brick —, and three grades of sand — coarse, medium and fine — were used to construct the test piers. Researchers tooled concave masonry joints on two faces of each pier and struck joints on the remaining two faces.

Researchers then subjected each type of mortar to standard tests to determine material properties such as compressive strength, water vapor transmission rate and plastic properties. Test results supplied data for accurate evaluation of the pendulum hammer data.

To test the pendulum hammer technique, researchers began by establishing 66 grid points on both the concave and struck joints on each pier. At each point, researchers positioned the pendulum hammer to strike the mortar joint and then took a reading from the hammer scale with the impact head resting on the joint. A series of ten or more successive rebounds with the hammer were recorded at each point. Tests on each pier took place at approximately 7, 14, 28, 60, 90 and 120 days after construction.

Pendulum hammer in use at Benjamin Latrobe's Basilica of the Assumption, Baltimore, Maryland

Researchers used two methods to analyze data gathered from the laboratory tests. The first method, suitable for testing soft mortars that might be damaged by a series of impacts, used only the first rebound reading from each location. The alternative method, suitable for harder mortar types, used the average of the last five of a series of ten impacts at a single location, resulting in a more accurate overall reading. Based on compiled test results, researchers created a database of pendulum hammer rebound readings for comparison with previously recorded material properties data from standard tests conducted on each mortar type.

Laboratory tests highlighted that several factors affect rebound hardness measurements taken with the pendulum hammer. Researchers found that rebound hardness measurements varied significantly among soft mortar types with compressive strength from 0 to 1000 psi, but harder mortars with compressive strength greater than 1000 psi consistently produced hardness measurements within a fairly narrow range. Researchers also found that joint tooling affected measurements taken with the pendulum hammer. Struck joints gave readings up to 40 percent less than concave joints on the same pier. On all eight

Continued on Page 8 ➡

1. See item 34, page 17, of *VCPTT Notes* 28 for a description of this PTT Grants project.

Digital Videographic Imaging

Digital Recording, Preservation and Dissemination of Archeological Data

With funding from the 1997 Preservation Technology and Training Grants program, Drs. James Gibb and Al Luckenbach, archeologists with the "Lost Towns of Anne Arundel" project, are using digital video technology to record, preserve, interpret and disseminate archeological data. The project uses a Sony DCR-VX1000 digital video camera and a Pentium II/233 MHz computer to learn more about two colonial town sites on the western shore of the Chesapeake Bay: London Town, circa 1684, and Providence, circa 1649. Sites and objects found during excavation are being carefully recorded to digital videotape in order to produce high quality images for post-excavation analysis, fieldwork documentation and interpretation. Standard textual descriptions and field drawing measurements normally taken at field sites are not replaced by this technology, but instead are enhanced with a detailed visual record.

Before receiving NCPTT funding, the Anne Arundel County Trust for Preservation, Inc., had collaborated with the London Town Foundation, Inc., to encourage public education and participation in the archeological exploration of early colonial town life in Maryland. After five years of excavation however, images recorded on standard VHS videotape were not of sufficient quality for post-excavation analysis. Magnetic videotape is subject to image quality degradation upon copying, a phenomenon known as generational loss. Since digitally recorded images can be copied numerous times without loss of image quality, the team felt that this new technology could greatly enhance their work.

In order to advance the analysis of existing data, the first phase of the project encompassed transferring the contents of the VHS videotapes to digital format. The VHS videotapes were reformatted, catalogued, indexed and archived on CD-ROM disks.

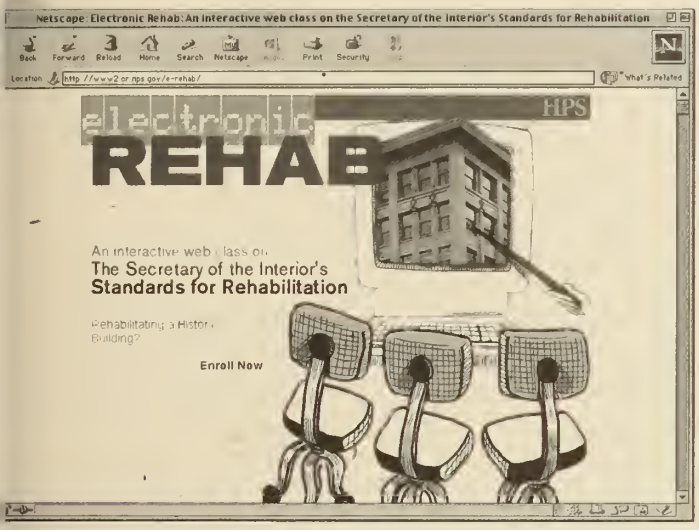
Digital images from excavations were successfully imported into PhotoModeler 3.0 for three-dimensional manipulation. This program allows the computer operator to create three-dimensional wire frame models based on control points in the video images. Accompanying calibration software increases accuracy by accounting for errors in a particular camera model. Practice sessions with a plain cardboard box as the subject made a useful and successful test case for three-dimensional manipulation. However, creating videographic models for manipulating multiple curved or irregular surfaces has proven challenging.

Video data has been recorded on several archeological projects conducted by the "Lost Towns of Anne Arundel" project and incorporated into a digital videographic database. The projects include the Grunwald site, a 17th century earthfast structure located in Galesville, Maryland; Hancock's Resolution, a late 18th century farm complex continuously occupied until 1962; the Edmondo site, an 18th century brick structure associated with the colonial port town of London; the Robert Burle house, 17th century house in the settlement of Providence near present-day Annapolis; and Rumney's Tavern, a 17th century earthfast structure located at historic London Town Park in Edgewater, Maryland.

Work at the Burle house and Rumney's Tavern has pro

Continued on Page 8 ➡

Three-dimensional images based on drawings of reconstructed objects from Rumney's Tavern, Edgewater, Maryland



Electronic Rehab

<www.2.cr.nps.gov/e-rehab>

Preservation training can be available to a national audience through distance learning programs, including correspondence courses, television and video programs, and computer-based training. Electronic Rehab, *an online tutorial, is the National Park Service's first preservation distance learning program. This article describes its development.*

Local historic preservation commissions, design boards, Certified Local Governments, and Main Street programs use the Secretary of the Interior's *Standards for Rehabilitation* for making decisions about rehabilitation work on historic buildings. Newcomers to commissions and design boards who will be actively involved in administering and interpreting local guidelines routinely seek training in applying the Standards appropriately.

Prior to developing *Electronic Rehab* for the Web, training on the Standards had been conducted in classroom settings at workshops and conferences. While effective, costs per trainee were high. As a result, the number of people who could be trained was shrinking due to cutbacks in Federal, state and local funding. Using the World Wide Web provides substantially greater access to training at lower cost — helping to preserve resources in even the most remote areas of the United States by providing electronic access to training and resource materials.

Methodology

Electronic Rehab uses a friendly approach to teach the principles of the *Standards for Rehabilitation*. Although *Electronic Rehab* begins with a textbook definition of rehabilitation and general historic preservation goals, it quickly turns to the more practical steps to take before starting any project — documentation, evaluation and site assessment. Next, the meaning of each of the *Standards for Rehabilitation* is explored and linked to examples of work that met or failed to meet the Standards.

After sufficient preparation, users are invited to take a two-part quiz on what they have learned by applying the Standards to proposed rehabilitation work on commercial and residential buildings. First, users study the building's historical background, especially changes over time. Next, they evaluate a series of work options and, in each instance, select the approach that meets the *Standards for Rehabilitation*.

Throughout the quiz, there are no scores and the exercise is congenial, rather than judgmental. Immediate feedback follows each answer. If the approach selected fails to meet the Standards, the user simply returns to the question and tries again.

At the end of the Web class, congratulations is given for finishing the program, and users get to see what each building looks like after it has been successfully rehabilitated following approaches that meet the Standards.

Results

Developing and implementing *Electronic Rehab* began a year ago, and *Electronic Rehab* was officially posted on January 15 as a feature on the National Park Service's *Links to the Past* home page, where it has the potential to receive 10,000 visitors a day.

The Web course is marketed with a postcard notice to State Historic Preservation Offices, Certified Local Governments and others, with the message —

. "*Electronic Rehab*, the National Park Service's very first historic preservation distance learning program, was designed to introduce the Secretary of the Interior's *Standards for Rehabilitation* to anyone who is thinking about rehabilitating a historic building — property owners, architects, engineers, contractors, developers, members of historic district commissions, and maintenance personnel and other caretakers of historic buildings... *Electronic Rehab* is both informative and fun. Going back to school has never been so easy!"

Electronic Rehab was funded, in part, by the National Park Service's 1997 Cultural Resource Training Initiative. It was developed by Heritage Preservation Services in the National Park Service's National Center for Cultural Resources Stewardship and Partnerships, in partnership with Goucher College Center for Graduate and Continuing Studies. The development team included Kay Weeks and Anne Grimmer of Heritage Preservation Services and Richard Wagner and Larry Bielawski of Goucher College.

— Kay Weeks

Ms Weeks is a technical writer and editor for Heritage Preservation Services. Ms Weeks has authored and produced Preservation Briefs, *standards and guidelines, interpretive bulletins, videos and children's books.*

Evaluating Historic Masonry

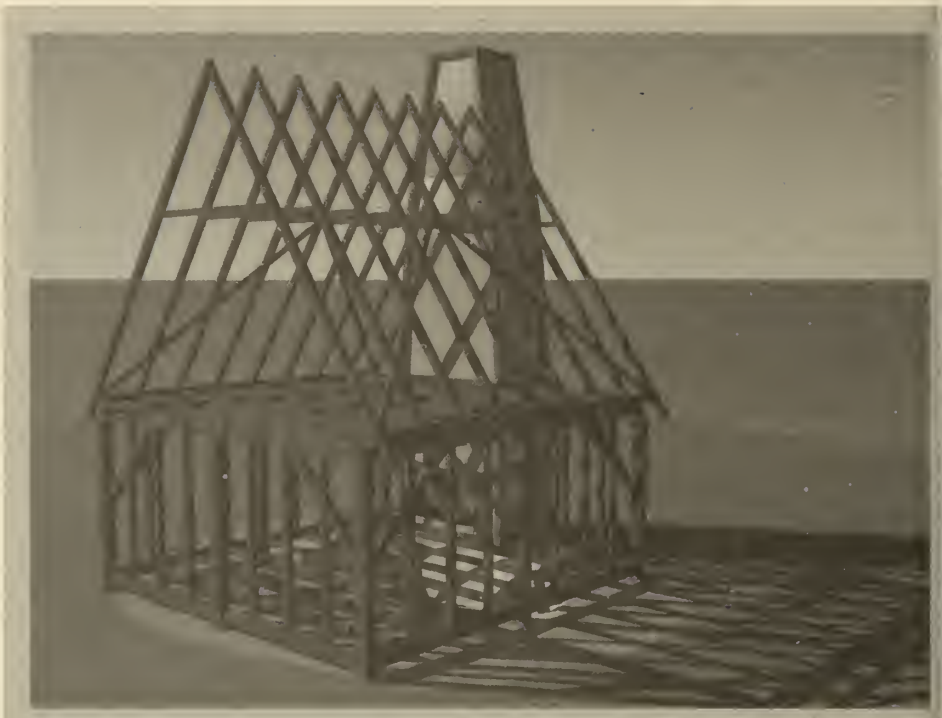
Continued from page 5

test piers, average hardness measurements from struck joints were 10 percent less than on concave joints. Readings from struck joints also showed greater variations than readings from concave joints.

With laboratory tests completed, the project team took the pendulum hammer into the field to obtain readings from existing masonry structures. Researchers took mortar hardness readings at eight late nineteenth-century buildings in the Denver, Colorado area and six historic structures in other states. The field tests showed the pendulum hammer to be generally effective in identifying mortar variations throughout a structure. Researchers found it difficult, however, to obtain accurate readings in some instances, such as rough-faced stone masonry and soft, deteriorated mortar.

The combined results of the laboratory and field tests demonstrate that the pendulum hammer is an excellent tool for undertaking rapid, nondestructive evaluations of in-place mortars. Based on the test results, the project team developed two methods of testing rebound hardness. For hard mortars, the team recommends that readings from a series of ten impacts be taken at each of nine locations in an area of masonry. Measured rebound hardness at each of these nine locations is the average of the last five of each series of ten impacts; overall rebound hardness for the entire area of masonry is the average of the measured rebound hardness at each of the nine locations. For soft mortars, the researchers recommend averaging readings from a single impact at each of twenty-six locations in an area of masonry to quantify an overall mortar rebound hardness. The project team has prepared and submitted detailed summaries of these two testing methods to the American Society for Testing and Materials for adoption as a standard test method.

Overall, the project confirms that conservators will find the pendulum hammer useful for evaluating mortar characteristics. Testing methods developed by the project will be especially useful, for example, in evaluating mortar in buildings partially damaged by fire or water. The testing methods also are sufficiently accurate to determine whether the hardness of new mortar matches the original mortar of a structure. This work has provided a simple and effective means of conductin a basic analytical task in masonry conser vation.



Digital reconstruction of Rumney's Tavern, Edgewater, Maryland

Digital Videographic Imaging:

Continued from page 6

duced the largest collection of three-dimensional images archived so far. Sufficient data has been collected to allow reconstruction of both the Burle house and the tavern using computer-generated graphics. Both appear to have been gable-end, timber-frame structures. Artifacts found in the cellar of the tavern include drinking glasses and decorated bowls and plates.

A demonstration of digital imaging and three-dimensional modeling was presented at the Vernacular Architecture Forum in May 1998 and at the January 1999 annual meeting of the Society for Historical Archaeology. The archival collection of video and still images is growing and serves as a library where staff can retrieve images for report production and 'clips' for television and exhibit videos. Drs. Gibb and Luckenbach will collaborate with staff at the London Town Foundation's museum to produce a computer videographic exhibit that will be viewed by approximately 50,000 visitors over the next five years.

This project allows NCPTT's Materials Research Program to investigate digital imaging use within the conservation and preservation community. It utilizes technology that may eventually be used with computer-aided drawing for documentation and analysis of cultural resource decay.

Further Reading

Brief comments on some recent additions to NCPTT's library and Web resources

Historic Resource Surveys and the Internet

University of Houston Center for Historic Architecture Web site <www.arch.uh.edu/survey> (1999)

Information for experienced practitioners is best packaged as tools — straight-forward and ready to use. A good candidate as a preservationists' tool is this online guide to preparing historic resource surveys, which grew from the Center for Historic Architecture's experiences in surveying Texas towns under the direction of Barry Moore, FAIA. The guide was made possible, in part, with special funding by the National Park Service through its Cultural Resource Training Initiative and through partnership with NCPTT.

This tool would be especially useful in organizing a community to survey its resources. The online resource provides a framework for an undertaking that could be shared among participants, and centrally coordinated and edited by a preservation professional. Anyone who has been involved in a large-scale survey project such as *Save Outdoor Sculpture!* will recognize the potential of online survey techniques. Rather than providing a fixed methodology, this site provides guidance for designing and conducting a survey — recognizing that surveys will include both routine and specialized information, and that survey formats must respond to the resources under study.

Saving Our Architectural Heritage: The Conservation of Historic Stone Structures

Edited by Norbert S. Baer and Rolf Snethlage
Hardcover book, illustrated, 425 pp. West Sussex, UK: John Wiley and Sons, Ltd. (1997)

Saving Our Architectural Heritage is a volume of technical papers and reports from the 79th Dalhem Workshop, held in Berlin, March 3-8, 1996.

Dalhlem workshops initiate and facilitate discussion between interdisciplinary groups of scientists. The goals of these workshops included identifying critical gaps in our knowledge of deterioration mechanisms for treated and untreated stone, suggesting innovative approaches to the study of deterioration mechanisms for treated and untreated stone, and addressing the socio-economic factors that determine preservation actions.

Through papers presented at the workshop and discussion groups, participants addressed such questions as the state of our knowledge of the mechanisms of damage, our estimates of rates of degradation, diagnosing the condition of stone monuments, suitable treatment programs, and responsible and effective use of treatments.

Saving Our Architectural Heritage presents systematic approaches to understanding stone decay, then builds on this understanding to develop new conservation treatments. With a multidisciplinary framework in place, these approaches could lead to better economic analyses based on technical data and sound conservation options. Ultimately these approaches might help establish better public policy for preserving stone structures.

Adobe Architecture Conservation Handbook

Edited by Francisco Uviña Contreras
Softcover book, illustrated, 170 pp. Santa Fe, New Mexico: Cornerstones Community Partnerships (1998)

Cornerstones Community Partnerships has a deservedly excellent reputation as stewards of traditional building types and techniques in the southwestern United States. Information from many projects, experts and other sources comprise this volume that might serve as an encyclopedia of adobe conservation practice or as a reference on caring for adobe buildings.

The publication is arranged in three sections, plus a glossary and bibliography. Of the three main sections, "Introduction and Terminology" covers the adobe building history and types, "All about Adobe ..." covers basics of deterioration, crack repair, wall reconstruction, and mud and lime finishes, and "How to ..." covers specialized tasks such as installing earthen floors, and repairing wooden corbels and vigas.

Unlike many preservation manuals, the focus is nearly exclusively building technology — with no extended discussion of preservation principles or preservation activities beyond on-site treatment. For some preservationists, the book might seem to jump hastily to treatments — sometimes radical treatments — without analyzing the whole building or treatment choices, or discussing maintenance, documentation, or assistance from historic building or other cultural resource professionals. As a reference for encouraging or enhancing the skills of local adobe craftspersons, however, this work should prove valuable if used within a community of shared competence.

April-December 1999

NCPTT welcomes calendar items sent in care of NCPTT's Publications Manager. Only items with minimum two-month lead will be considered for publication. A more extensive listing of conferences, training and other preservation events is available in the Resources section of NCPTT's Web site.

April

1 Call for presentations deadline for Restoration & Renovation trade exhibition and conference in Charleston, South Carolina, November 7-9. For information, contact EGI Exhibitions; telephone 978/664-6455, facsimile 978/664-5822, e-mail <show@egiexhib.com>, Web <www.egiexhib.com>.

8 Nomination deadline for Presidential Design Awards 2000 sponsored by US General Services Administration. For information, see *NCPTT Notes* 29, page 11, or contact Thomas Grooms; telephone 202/501-1888, e-mail <thomas.grooms@gsa.gov>.

16-19 Rebuilding Downtown conference in Detroit, Michigan, sponsored by the American Institute of Architects. For information, contact AIA; telephone 800/242-3837, Web <www.e-architect.com>, go to Professional Interests>> Conferences>> April.

17 If Only We Knew: Landscape Preservation in Context, 1890-1950 conference in Bronx, New York, sponsored by Wave Hill. For information, contact Wave Hill, 675 West 252nd Street, Bronx, NY 10471, attention Chris Panos; telephone 718/549-3200 (extension 204).

25-29 American Association of Museums annual meeting in Cleveland, Ohio. For information, contact AAM; telephone 202/289-1818, Web <www.aam-us.org/program/index.htm>.

30 Application deadline for Museum Assessment Program Institutional Assessment Grants administered by the American Association of Museums. For information, contact Barbara Ballentine; telephone 202/289-9119, facsimile 202/289-

May

2 Sustainable America National Town Meeting in Detroit, Michigan, online and via satellite, co-sponsored by the President's Council on Sustainable Development and the Global Environment & Technology Foundation. For information, see *NCPTT Notes* 29, page 11, or the Web <www.sustainableamerica.org>.

3-7 Preserving the Architecture of Historic Cities and Sacred Places conference in Washington, DC, co-sponsored by the World Bank Group and others. For information, contact Mark Halcrow; telephone 202/473-7811, facsimile 202/473-3112, e-mail <mhalcrow@worldbank.org>, Web <www.worldbank.org/est>.

4-5 Conservation of Architectural Terra Cotta workshop in Chicago, Illinois, co-sponsored by RESTORE and others. For information, contact RESTORE; telephone 212/213-2020; facsimile 212/213-3743.

5-9 Vernacular Architecture Forum annual meeting in Columbus, Georgia. For information, contact Julie Turner, 3039 Star Point Road, Franklin, GA 30217; telephone 770/854-8813, e-mail <jturner648@aol.com>.

6-9 American Institute of Architects Annual Convention and Exposition in Dallas, Texas. For information, contact AIA; telephone 202/626-7395, Web <http://www.aiaconvention99.com >.

NCPTT presents two continuing education programs — Architectural Materials Conservation for Practitioners: Part I–Exteriors and Part II-Interiors — on Thursday, May 6.

7-9 Ground-Penetrating Radar Techniques for Discovering and Mapping Buried Archaeological Sites workshop in Denver, Colorado, sponsored by the University of Denver and NCPTT. For information, contact University of Denver; telephone 303/871-2684, Web <www.du.edu/anthro/GPRCLASS2.html>.

10-12 Preservation Technology and Training Board meeting at Fort Lewis College, Durango, Colorado. For information, contact NCPTT.

The PTTBoard, NCPTT's advisory board, provides leadership, policy advice and professional oversight to NCPTT.

11 Monumental Challenge: Memorials in the Nation's Capital symposium in Washington DC, co-sponsored by The Octagon and the Kreeger Museum. For information, contact the Kreeger Museum (telephone 202/337-3050) or The Octagon (telephone 202/626-7387).

17 Preventive Conservation of Collections training sponsored by Fundación Antorchas, Buenos Aires, Argentina. For information, contact NCPTT.

NCPTT is collaborating with the Smithsonian Institution on conservation training sessions that begin May 17 and continue through June 25. NCPTT's topics include conservation science, pest control, metals, stone and architectural materials.

June

1 Call for presentations deadline for Restoration & Renovation trade exhibition and conference in Boston, Massachusetts, February 27-29, 2000. For information, contact EGI Exhibitions; telephone 978/664-6455, facsimile 978/664-5822, e-mail <show@egiexhib.com>, Web <www.egiexhib.com>.

2-6 The Alliance for Historic Landscape Preservation annual conference in Niagara-on-the-Lake, Guelph, Ontario. For information, contact Nancy Ellwand; telephone 519/824-4120, e-mail <nellwand@la.uoguelph.ca>.

7-13 American Institute for Conservation of Historic and Artistic Works annual meeting in St. Louis, Missouri. For information, contact AIC; telephone 202/452-9545, facsimile 202/452-9328, e-mail <InfoAIC@aol.com >, Web <palimpsest.stanford.edu/aic/>.

NCPTT is sponsoring scholarships to students in preservation and conservation graduate programs to attend the AIC annual meeting and conference. The Foundation for the American Institute for Conservation will award the scholarships. For information, contact Sarah Stout at AIC; e-mail <sarahaic@aol.com>.

5 **Scholarship deadline for National Trust for Historic Preservation's National Preservation Conference**, October 19-24, Washington, DC. For information, contact NTHP's Southern Regional Office; telephone 843/722-8552, facsimile 843/722-8652, facsimile-on-demand 202/588-6444, e-mail <scholarships@nthp.org>.

July

Conservation of Our Cultural Heritage summer program, Los Angeles, California, sponsored by the Univeristy of Southern California, July 19 through August 3. For information, contact Jody Cherry, University of Southern California School of Architecture, Historic Preservation Program; telephone 213/740-2420, e-mail <cherry@usc.edu>.

NCPTT will conduct architectural materials conservation sessions July 27-29.

September

Application deadline for 1999 James Marston Fitch Charitable Foundation Mid-Career Grant Awards sponsored by the James Marston Fitch Charitable Foundation and the Samuel H. Kress Foundation. For information, contact Margaret Evans, Beyer Blinder Belle; telephone 212/777-7800, facsimile 212/475-7424.

Call for presentations deadline for American Association of Museums annual meeting in Baltimore, Maryland, May 14-18, 2000. For information, contact AAM; Web <www.aam-us.org/guidelines.html>.

Call for papers deadline for Society of Architectural Historians annual meeting in Coral Gables, Florida, June 14-18, 2000. For information, contact SAH; Web <www.sah.org/cfpmi.html>.

0 **Redesign: The Conservation and Preservation of America's Resources at Mt. Rainier National Park** conference in Mt. Rainier National Park, Washington, to be held September 30 - October 3, sponsored by the American Institute for Architects-Historic Resources Committee. For information, contact AIA; telephone 800/242-3837, Web <www.e-architect.com/pia/hrc>.

October

3-4 **Preserving the 20th Century Building Envelope** conference in Cambridge, Massachusetts, sponsored by Technology & Conservation and others. For information, contact Technology & Conservation; telephone 617/623-4488, facsimile 617/623-2253.

5-9 **The Broad Spectrum: The Art and Science of Conserving Colored Media on Paper** conference in Chicago, Illinois, sponsored by the Art Institute of Chicago and others. For information, contact Harriet Stratis; telephone 312/857-7662, facsimile 312/443-0085, e-mail <hstratis@artic.edu>, Web <www.artic.edu/aic/collections/dept_prints/prints.html>.

8-10 **Ground-Penetrating Radar Techniques for Discovering and Mapping Buried Archaeological Sites** workshop in Denver, Colorado, sponsored by the University of Denver and NCPTT. For information, contact University of Denver; 303/871-2684, Web <www.du.edu/anthro/GPRCLASS2.html>.

19-24 **National Trust for Historic Preservation's National Preservation Conference** in Washington, DC. For information, contact NTHP; telephone 202/588-6100, facsimile-on-demand 202/588-6444, Web <www.nationaltrust.org>.

NCPTT contributes support to NTHP's Statewides Initiative; the Statewides meeting at the conference is October 19.

20-23 **Association for Preservation Technology** annual meeting in Banff, Alberta. For information, contact Larry Pearson, Alberta Community Development, 8820 112th Street, Edmonton, Alberta. T6G 2P8. Canada; telephone 403/431-2307, e-mail <lpearson@mcd.gov.ab.ca>.

November

7-9 **Restoration & Renovation** trade exhibition and conference in Charleston, South Carolina. For information, contact EGI Exhibitions; telephone 978/664-6455, facsimile 978/664-5822, e-mail <show@egiexhib.com>, Web <www.egiexhib.com>.

December

27-30 **Archaeological Institute of America** annual meeting in Dallas, Texas. For information, contact AIA; telephone 617/353-9361, facsimile 617/353-6550.

Ongoing Opportunities

Campbell Center courses in historic preservation, conservation and care of collections in Mount Carroll, Illinois. For information, contact the Campbell Center; telephone 815/244-1173, Web <www.campbellcenter.org>.

International Center for the Study of the Preservation and Restoration of Cultural Property courses in architectural and fine arts conservation in Rome, Italy; and elsewhere. For information, contact ICCROM, via de San Michele 13, I-00153 Rome RM, Italy; telephone (+39.06)585-531, facsimile (+39-06)5855 3349; e-mail <training@iccrom.org>, Web <www.iccrom.org>.

National Preservation Institute seminars in historic preservation and cultural resource management in various venues. For information, contact NPI, POB 1702, Alexandria, VA 22313; telephone 703/765-0100, e-mail <infor@npi.org>, Web <www.npi.org>.

University of Nevada Heritage Resource Management courses in historic preservation and anthropology. For information, contact University of Nevada, Reno; telephone 775/784-4046 or 800/233-8928, facsimile 775/784-4801, Web <www.dce.unr.edu/hrm>.

University of Victoria Cultural Resource Management Program courses in museum studies, heritage conservation and cultural management, in Victoria, British Columbia, and via distance education. For information, contact Joy Davis, University of Victoria Division of Continuing Studies, POB 3030 STN CSC, Victoria, BC V8W 3N6 Canada; telephone 250/721-8462, facsimile 250/721-8774, e-mail <joydavis@uvic.uvic.ca>, Web <www.uvcs.uvic.ca/crmp>.

Our Mission

United States Department of the Interior
The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and to honor our trust responsibilities to tribes.

National Park Service
The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education and inspiration of this and future generations. The Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

National Center for Preservation Technology and Training
The National Center for Preservation Technology and Training promotes and enhances the preservation of prehistoric and historic resources in the United States for present and future generations through the advancement and dissemination of preservation technology and training.

NCPTT, created by Congress, is an interdisciplinary effort by the National Park Service to advance the art, craft and science of historic preservation in the fields of archeology, historic architecture, historic landscapes, objects and materials conservation, and interpretation. NCPTT serves public and private practitioners through research, education and information management.

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National Trust for Historic Preservation

SPRING SUPPLEMENT 1999 NUMBER 37

NCPTT NOTES

National Center for Preservation Technology and Training
UNITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

Preservation Technology and Training Publications

1994-1999 in review

Tools for Preservationists

Among the products of NCPTT's work since 1994 are the 111 PTTPublications cataloged in this lition of *Notes*. These publica- ons result from projects devel- ped in-house at NCPTT and om Preservation Technology nd Training Grants work un- ertaken by partner organiza- ons and institutions throughout ie United States.

NCPTT's advanced work in esearch, training and informa- on management addresses a road range of issues in historic a chitecture, archeology, historic l ndscapes, objects and materi- als conservation, and history. PTTPublications distribute use- ful information derived from this work in both evolving and tradi- tional media. Readers who have followed NCPTT's work will rec- ognize a trend towards digital publishing, principally on the World Wide Web.

The mid-1980s study by the Office of Technology Assessment that guided NCPTT's develop- ment "cited the critical need to establish [a national clearing- house] as a mechanism to ... dis- seminate information." In re- sponse NCPTT's enabling legis- lation created NCPTT as "a na- tional initiative to coordinate and promote research, distribute in- formation, and provide training about preservation skills and technologies." NCPTT is com- mitted to serving as an impor- tant resource for the national preservation community. PTTPublications contribute substantially towards fulfilling NCPTT's mandates to provide timely and useful tools to our preservation colleagues.

PTTPublications that are not Web-accessible may be ordered through NCPTT's Web site, <www.ncptt.nps.gov>. Click on "Order NCPTT Publications."

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1999

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PTTPublications
No. 1999-09

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Concrete ornament at War Memorial Natatorium, Honolulu, Hawaii

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Send comments on *NCPTT Notes* or submit articles or notices for consideration to NCPTT Publications Manager Sarah B. Luster.

Digital Resources

D-17. Models and Images for Development of Nonlinear Documentation Strategies for Incorporating Computerized Solid Modeling in Historical Building Survey

CD-ROM. Texas A&M University. 1999

PTTPublications No. 1999-05

This CD contains electronic models created using solid modeling techniques to document existing conditions of historic buildings. The CD supplements a report on the same topic; see item P-52 below.

This CD resulted from a 1997 Preservation Technology and Training Grants award.

D-16. The Conservation and Preservation of Tabby

Proceedings on Web site <www.ganet.org/dnr/histpres>. Georgia State Historic Preservation Office. 1998

PTTPublications No. 1998-37

The state of scholarship in the field of tabby and the identification of research needs for preserving tabby resources was the goal of a symposium held at Jekyll Island, Georgia.

This publication resulted from a 1997 PTTGrants award. See page 7 in *NCPTT Notes* 25 for a review of the symposium.

D-15. EDIFIS

CD-ROM. Texas A&M University. 1998

PTTPublications No. 1998-32

This CD contains the methodology and computer database design for documenting large groups of similar historic structures, such as the test-case courthouse documentation used in developing this methodology.

This CD resulted from a 1996 PTTGrants award.

D-14. Partners in Prosperity

Booklet on Web site <www.state.nj.us/dep/njht/features.htm#impactstudy>. New Jersey Historic Trust. 1998

PTTPublications No. 1998-25

This booklet summarizes the findings of a study (see item D-6 below) of historic preservation's impacts on New Jersey's local and statewide economies.

This publication resulted from a 1995 PTTGrants award. See item 20 in *NCPTT Notes* 28 for a project description and other publications that resulted from this project. Also see page 6 in *NCPTT Notes* 29 for further NCPTT work on this topic.

D-13. Computerizing Maryland's Historic Site Records

Web site <www.ari.net/mdshpo/gisncptt.html>. Maryland State Historic Preservation Office. 19

PTTPublications No. 1998-21

This project assisted the conversion of Maryland's Inventory of Historic Properties data to digital format in order to integrate historic properties information into a Geographic Information System.

This database resulted from a 1996 PTTGrants awar

D-12. Mechanical Systems in Historic Buildings

CD-ROM. Belmont Technical College. 1998

PTTPublications No. 1998-20

This CD is the interactive complement to a pilot distance learning course on mechanical systems in historic buildings.

This CD resulted from a 1996 PTTGrants award. S page 3 in *NCPTT Notes* 29 for a review of the project.

D-11. State Historic Preservation Legislation Database

Web site <www.ncsl.org/programs/arts/statehist_intro.htm>. National Conference of State Historic Preservation Officers and National Conference of State Legislatures. 1998.

PTTPublications No. 1998-13

Organized by state, this database contains a comprehensive listing and summaries of all state legislation or state constitutional articles that contain specific references to historic properties, archeological sites or culturally significant unmarked human burials. Also included are citations from legislative codebooks from the fifty states, the District of Columbia, American Samoa, Guam, Puerto Rico, and the Virgin Islands. See item P-39 below for a report on the purpose and development of the database.

This Web site resulted from a 1996 PTTGrants award to the National Conference of State Historic Preservation Officers.

D-10. Providing Public Access to Hawai'i's Preservation Information via World Wide Web

Web site <mano.icsd.hawaii.gov/~ckomoek>. Hawai'i State Historic Preservation Office. 1998

PTTPublications No. 1998-12

This experimental database server allows searches of the Hawai'i SHPO library and provides links to GIS views of selected islands.

This Web site resulted from a 1996 PTTGrants award.

D-9. Standardization in Historical Information and Interpretation System

Web site <www.zone-2.com/name/shiipsInfo.html>. Ohio State Historic Preservation Office and North American Maritime Consortium, Inc. 1998

PTTPublications No. 1998-10

This prototype database is a demonstration project for an expandable, relational and searchable database of Ohio's Lake Erie maritime cultural resources. See item P-37 below for a related user manual and final project report.

This Web site resulted from a 1996 PTTGrants award to the Ohio State Historic Preservation Office.

D-8. Camp Ruston

Web site <www.library.latech.edu/campruston>. Camp Ruston Foundation. 1997

PTTPublications No.1997-28

This project developed an electronic multimedia exhibit on Camp Ruston, one of the largest World War II prisoner of war camps in the United States.

This project was completed under contract between the Camp Ruston Foundation, Inc., and NCPTT. See item 141 in *NCPTT Notes* 28 for other publications that resulted from this project.

D-7. Louisiana Heritage InfoNet

Web site <www.lhin.lsu.edu>. Louisiana State University-Office of Community Preservation. 1997

PTTPublications No. 1997-23

Louisiana Heritage InfoNet is a model Internet resource for gathering, managing and disseminating information on a state's or region's natural and cultural heritage — in this instance, Louisiana. Site components include access to National Register of Historic Places listings, *Save Outdoor Sculpture!* data, Historic American Building Survey documentation, and Louisiana landmarks and disaster response information. A virtual visitor center for the Bayou Teche area also is included.

This Web site resulted from a 1995 PTTGrants award. See item 29 in *NCPTT Notes* 28 for other publications that resulted from this project.

D-6. Economic Impacts of Historic Preservation

Report on Web site <www.state.nj.us/dep/njht/features.htm#impactstudy>. New Jersey Historic Trust. 1997

PTTPublications No. 1997-05

This report summarizes research findings on the economic effects of historic preservation in New Jersey, and discloses the statistical and analytical methodology.

This publication resulted from a 1995 PTTGrants award. See item D-14 above for a related brochure, and see item 20 in *NCPTT Notes* 28 for other publications that resulted from this project. Also see page 6 in *NCPTT Notes* 29 for further NCPTT work on this topic.

D-5. Preserving Georgia's Historical Records

Web site <www.sos.state.ga.us/archives/ps/technical.htm>. Georgia Department of Archives and History. 1997

PTTPublications No. 1997-02

Web-based technical leaflets present basic information on six archival preservation topics: 1) disaster preparedness, 2) reformatting records, 3) selecting an off-site storage facility, 4) proper environmental conditions for records storage, 5) machine readable records, and 6) preserving paper-based records.

This publication resulted from a 1995 PTTGrants award.

D-4, 3 and 2. SHOWPIX 1.0, POREDEMO 1.0 and EDGE 1.0

Downloadable software <caldera.wr.usgs.gov/OF98-248/index.html>. US Geological Survey. 1995

PTTPublications Nos. 1995-05, 04 and 03

Three DOS software programs are available online for use in fractal analysis of scanning electron microscope and electron microprobe images of pore profiles exposed in cross-section. Programs in the set allow image calibration, display and statistical analysis of the computed dimensions for highly complex porous materials. A preview of a MORPH-II program for SEM image analysis for fractal dimensions of exposed surfaces also is available at this Web site.

The software programs were completed under contract between US Geological Survey and NCPTT.

D-1. A Simple Book Repair Manual

Web site <www.dartmouth.edu/~preserve/tofc.html>. Dartmouth College-Baker Library Preservation Committee. 1995

PTTPublications No. 1995-02

This publication is the Web version of Baker Library's book repair training manual. *A Simple Book Repair Manual* explains book conservation procedures such as cleaning, repairing and tightening hinges, binding a single signature, and drying wet books. Also discussed are guiding principles of book repair, essential items for a book repair tool kit and book anatomy.

This Web publication resulted from a 1995 PTTGrants award. See item P-30 below for another PTTPublication on this topic.

Print Resources

P-54. Advancing State Historic Preservation Office Geographic Information Systems in the Western United States

Report (18 pp; appendices). New Mexico State Historic Preservation Office. 1999

PTTPublications No. 1999-08

This report documents implementing Geographic Information Systems technology by State Historic Preservation Offices in large, transaction-heavy Cultural Resource Information Systems in the western United States. The project focused on pooling CRIS resources from several agencies, including Tribal Historic Preservation Offices, historical societies, universities and museums.

This publication resulted from a 1997 PTTGrants award.

P-53. Coördinate Measurement of Ships and Smallcraft

Report (iv, 94 pp; illustrated). Mystic Seaport Museum, Inc. 1999

PTTPublications No. 1999-06

In this manual, the Sokkia total station is adapted from use in land surveying to maritime application, as a tool to collect three-dimensional coordinate measurement data of historic watercraft. The manual presents a systematic process that the non-surveyor operator can follow for successful vessel documentation.

This publication resulted from a 1997 PTTGrants award.

P-52. Development of Nonlinear Documentation Strategies for Incorporating Computerized Solid Modeling in Historical Building Survey

Report (23 pp). Texas A&M University. 1999

PTTPublications No. 1999-04

This report describes solid modeling as an alternative to conventional two-dimensional drawings for documenting historic structures. A related CD-ROM (see item D-17 above) contains electronic models developed during this project.

This publication resulted from a 1997 PTTGrants award.

P-51. An Evaluation of Archaeological Applications of Mapping Grade Global Positioning Systems: Field Tests in Northeastern Colorado's Plains and Mountains

Report (32 pp). University of Northern Colorado Research Corporation. 1999

PTTPublications No. 1999-03

This report describes the use of differentially corrected, submeter Global Positioning Systems in two environmental contexts — northeastern Colorado's high plains and mountains — as an alternative to conventional surveying techniques for rapid, cost-effective collection of archeological data.

This project was completed under contract between the University of Northern Colorado Research Corporation and NCPTT.

P-50. Nondestructive Method for Hardness Evaluation of Mortars Report

(59 pp; appendices). Rocky Mountain Masonry Institute. 1999

PTTPublications No. 1999-02

This study developed two test methods to measure the hardness of mason mortars with a pendulum hammer as a practical device for nondestructi evaluation of in-place mortars.

This publication resulted from a 1997 PTTGrants award. See page 5 NCPTT Notes 30 for a project review.

P-49. Ground-penetrating Radar Techniques and Three-dimensional Computer Mapping in the American Southwest

Reprint from *Journal of Field Archaeology* (volume 25, number 4, pp 417-430). L.B. Conyers and C. M. Cameron, authors. Winter 1998

PTTPublications No. 1998-36

This article explains the successful imaging of buried archeological featur utilizing new techniques of ground-penetrating radar data acquisition ar computer processing tested at sites in the southwestern United States.

This publication resulted from a 1996 PTTGrants award to the Universi of Colorado-Boulder. See item P-32 below for another PTTPublication on th topic, and see item 60 in *NCPTT Notes* 28 for other publications that result from this project. See page 4 in *NCPTT Notes* 26 for a project review.

P-48. Museum Lighting Protocol Project

Report (12 pp; appendices). Rensselaer Polytechnic Institute. 1998

PTTPublications No. 1998-31

This project examines a proposal to reduce the exposure of museum exhibits incident radiant power without diminishing museum visitors' visual satisfactio

This publication resulted from a 1997 PTTGrants award.

P-47. Description and Analysis of NAPAP Briquette Surface Chemistry Files

Report (32 pp). T.J. Reedy, author. 1998

PTTPublications No. 1998-30

In preparation for future statistical analysis, this project organized the data fil from National Acid Precipitation Assessment Program research of limestor and marble briquettes exposed from 1984 to 1995 at several sites. The overa relationship between treatment and anion content is explained in the repor Ready-to-analyze anion and cation files are available on disk.

This project was completed under contract between Terry J. Reedy an NCPTT. See item P-14 below for another PTTPublication on this topic.

P-46. Glass and Stained Glass Conservation Workshop

Notebook (341 pp). Gerald R. Ford Conservation Center. 1998

PTTPublications No. 1998-29

This workshop notebook supplemented the July 1998 seminar on conserving and restoring flat and three-dimensional glass and stained glass objects. References and reprints useful for glass science and production technology are included in the notebook. See item V-9 below for a related video.

This publication resulted from a 1997 PTTGrants award to the Nebraska State Historic Preservation Office. See page 1 in *NCPTT Notes* 29 for a review of the workshop.

P-45. Preservation Week Report: The High School for the Preservation Arts Project

Report (20 pp; appendices). New Jersey Institute of Technology. 1998

PTTPublications No. 1998-23

This report describes and assesses the pilot curriculum development phase of the High School for the Preservation Arts project — an experimental, vocational high school program devoted to teaching the preservation arts.

This project was completed under contract between the New Jersey Institute of Technology and NCPTT. See page 5 in *NCPTT Notes* 26 for a review of the project.

P-44. Effect of Water on Lower Pecos River Rock Paintings in Texas

Reprint from *Rock Art Research* (volume 15, number 1, pp 12-16). E.J. Mawk and M.W. Rowe, authors. 1998

PTTPublications No. 1998-22

This article explains the use of scanning electron microscopy to investigate physico-chemical changes to rock painting surfaces following the application of water.

This publication resulted from a 1996 PTTGrants award to Texas A&M University. See items P-27 and P-26 below for other PTTPublications on this topic, and see item 58 in *NCPTT Notes* 28 for other publications that resulted from this project.

P-43. HIPROTECT at Joshua Tree National Park

Report (11 pp; appendices; illustrated). University of California-Riverside. 1998

PTTPublications No. 1998-18

This report describes the installation and testing of HIPROTECT, a prototype archeological site-monitoring system designed for a desert environment, at Joshua Tree National Park where sites listed on the National Register of Historic Places are subject to trespassing, looting or vandalism.

This publication resulted from a 1995 PTTGrants award.

P-42. Analyzing the Effect of Diethylaminoethanol, an Indoor Air Pollutant, on Traditional Easel Paintings-Phase 2

Report (15 pp). Indiana University Art Museum. 1998

PTTPublications No. 1998-17

This study is based on analytical procedures developed in Phase I of the DEAE analysis project (see item P-41 below). The report presents infrared spectroscopic analysis of varnish and paint samples from paintings for the presence of diethylaminoethanol, an indoor air pollutant, in an effort to analyze the effects of DEAE and conservation treatments on DEAE-contaminated paintings.

This publication resulted from a 1995 PTTGrants award.

P-41. Analyzing the Effect of Diethylaminoethanol, an Indoor Air Pollutant, on Traditional Easel Paintings-Phase 1

Report (22 pp; appendices). Indiana University Art Museum. 1998

PTTPublications No. 1998-16

This report describes analytical procedures for detecting the presence and effects of diethylaminoethanol on paintings. See item P-42 above for research findings.

This publication resulted from a 1995 PTTGrants award.

P-40. Archaeological Site Revegetation, Organochloride Based Pesticides, PCBs and their Relationship to Resource Preservation and Protection

Report (ii, 46 pp). University of Mississippi. 1998

PTTPublications No. 1998-15

This research sought to relate the levels of pesticides and PCBs at archeological sites to the sites' potential for conservation through revegetation and to the safety of field archeologists and laboratory staff. The project also evaluated the relationships between artifacts, their cultural material bearing matrix and introduced man-made chemicals.

This publication resulted from a 1995 PTTGrants award.

P-39. State Historic Preservation Legislation Database

Report (7 pp; appendices). National Conference of State Historic Preservation Officers and National Conference of State Legislatures. 1998

PTTPublications No. 1998-13

This report describes the purpose and development of the State Historic Preservation Legislation Database cited in item D-11 above.

This publication resulted from a 1996 PTTGrants award. See page 1 in *NCPTT Notes* 25 for a review of the project.

P-38. Physical and Chemical Processes of Soiling and Washoff at the Cathedral of Learning

Report (42 pp; appendices). Carnegie Mellon University. 1998

PTTPublications No. 1998-11

This report summarizes a study of air pollution deposition on limestone and related damage mechanisms. The study developed information that conservators can use in determining the treatments for deteriorating limestone buildings. See items P-2 and P-10 below for other PTTPublications on this topic.

This project was completed under a cooperative agreement between Carnegie Mellon University and NCPTT. See item 119 in *NCPTT Notes* 28 for other publications that resulted from this project. See page 1 in *NCPTT Notes* 16 for a review of the project.

P-37. Standardization in Historical Information and Interpretation System Demonstration Project

Report and User Manual (21 pp; appendices; illustrated). Ohio State Historic Preservation Office and North American Maritime Consortium, Inc. 1998

PTTPublications No. 1998-10

This report summarizes the development and implementation of a prototype searchable Internet database, described in item D-9 above, of Ohio's Lake Erie maritime cultural resources. The user manual documents the database structure and includes sample Web pages.

This publication resulted from a 1996 PTTGrants award to the Ohio State Historic Preservation Office.

P-36. Review of the Literature on the Topic of Acidic Deposition on Stone

Report (90 pp). United States Committee/International Council on Monuments and Sites. 1998

PTTPublications No. 1998-09

This report is an overview of the definitive literature on stone deterioration caused by acidic deposition. The material is organized into four topics: dry deposition, wet deposition, deterioration mechanisms and site studies.

This project was completed under contract between US/ICOMOS and NCPTT.

P-35. Development of a Prototypical Historic Fire Risk Index to Evaluate Fire Safety in Historic Buildings

Report (55 pp; includes 3 articles). Fire Safety Institute. 1998

PTTPublications No. 1998-08

This report explains the development of a prototype fire risk index for evaluating fire safety in historic house museums. This fire risk index includes fire prevention, emergency response and historical significance — areas not addressed explicitly by existing building codes.

This publication resulted from a 1996 PTTGrants award. See items P-22 and P-25 below for other PTTPublications on this topic, and see item 56 in *NCPTT Notes* 28 for other publications that resulted from this project.

P-34. Directory of Analytical and Materials Testing Services for Historic Preservation

Directory (40 pp). Frank Preusser and Associates, Inc. 1998

PTTPublications No. 1998-06

Designed to serve the needs of conservation professionals, this directory includes 40 laboratories that offer analytical and materials testing services. Each entry provides contact information, a brief description of equipment available and services offered, and fees charged.

This project was completed under contract between Frank Preusser and Associates, Inc. and NCPTT.

P-33. Technical Field Guide on the Health and Environmental Hazards Inherent in Architectural Restoration Materials and Processes

Manual (28 pp; illustrated). RESTORE. 1998

PTTPublications No. 1998-05

This field guide for workers in the building trades addresses environmental, health and safety issues and regulations, with particular attention to proper safety and handling methods for chemicals commonly used in building preservation.

This publication resulted from a 1996 PTTGrants award.

P-32. Finding and Mapping Buried Archaeological Features in the American Southwest

Report (50 pp; illustrated). University of Colorado. 1998

PTTPublications No. 1998-04

Ground-penetrating radar offers an efficient method of identifying subsurfa archeological features without excavation; recent advances in GPR equipme and computer data processing have revolutionized the method's effectivene This report presents the findings of research that compared different testi methods and data processing techniques.

This publication resulted from a 1996 PTTGrants award. See item P- above for another PTTPublication on this topic, and see item 60 in *NCP Notes* 28 for other publications that resulted from this project. See page 4 *NCPTT Notes* 26 for a review of the project.

P-31. Preservation Resource Guide for Public Works Managers

Manual (vi. 90 pp; illustrated). American Public Works Associatio 1998

PTTPublications No. 1998-01

This comprehensive guide is designed to enhance public works manage understanding of historic preservation issues, philosophy and practice. T guide includes digital and print resources pertinent to preserving historic pub works.

This work resulted from a 1994 PTTGrants award.

P-30. Methodology Report for a Multimedia Approach to Training Staff in Simple Book Repair

Report (9 pp; appendices). Dartmouth College-Baker Library Preservation Committee. 1997

PTTPublications No. 1997-26

This report explains the project background and conversion of the *Simple Bo Repair* training manual to an illustrated repair manual available on the Interr (see item D-1 above).

This publication resulted from a 1995 PTTGrants award.

P-29. NCPTT Internet Communications Survey Report

Report (5 pp; appendices). Louisiana State University-Office of Community Preservation. 1997

PTTPublications No. 1997-25

This report summarizes a survey of digital communications use by State Histo Preservation Office staff and other preservation professionals.

This project was completed under contract between Louisiana State U versity and NCPTT.

P-28. Testing the Energy Performance of Wood Windows in a Cold Climate

Thesis (161 pp). University of Vermont (B. James, author). 1997

PTTPublications No. 1997-16

This report compares the thermal efficiencies of window rehabilitations th retain the original wood sash to the thermal efficiencies of several replaceme window types.

This study continued work initiated with a 1994 PTTGrants award (s item P-9 below). See item 1 in *NCPTT Notes* 28 for other publications th resulted from this project.

P-27. Plasma Extraction and AMS 14C Dating of Rock Paintings

Reprint from *Techne* (number 5, pp 61-70). M. Hyman and M.W. Rowe, authors. 1997

PTTPublications No. 1997-14

The authors describe a promising technique for dating rock paintings using plasma-chemical extraction and accelerator mass spectrometric analysis.

This publication resulted from a 1996 PTTGrants award to Texas A&M University. See items P-44 above and P-26 below for other PTTPublications on this topic, and see item 58 in *NCPTT Notes* 28 for other publications that resulted from this project.

P-26. Rock Art Image in Fern Cave, Lava Beds National Monument, California

Reprint from *Antiquity* (volume 71, number 273, pp 715-720). R.A. Armitage, M. Hyman, J. Southon and M.W. Rowe, authors. 1997

PTTPublications No. 1997-13

A supernova that first appeared in 1054 was chronicled in five contemporary sources. For more than 40 years, researchers have proposed that rock paintings in the western US document the 1054 supernova. The authors tested the attribution of paintings via a plasma-chemical extraction technique. The article describes the technique and the authors' findings that the images studied probably were created several centuries after the 1054 supernova.

This publication resulted from a 1996 PTTGrants award to Texas A&M University. See items P-44 and P-27 above for other PTTPublications on this topic, and see item 58 in *NCPTT Notes* 28 for other publications that resulted from this project.

P-25. Performance-Based Approaches to Protecting Our Heritage

Report (21 pp; appendices). Fire Safety Institute. 1997

PTTPublications No. 1997-12

The authors reviewed existing fire codes and standards, and concluded that historic buildings are in almost all cases inadequately protected from loss by fire. The authors advocate a performance-based fire safety evaluation system that balances effective protective measures with avoiding building modifications that damage historic integrity.

This publication resulted from a 1996 PTTGrants award. See items P-35 above and P-22 below for other PTTPublications on this topic, and see item 56 in *NCPTT Notes* 28 for other publications that resulted from this project.

P-24. Computerizing Arizona's Cultural Resource Files

Report (22 pp; appendices). Arizona State Museum. 1997

PTTPublications No. 1997-11

This report summarizes activities of the AZSITE consortium during initial stages of a multi-year project to build a centralized computer database for Arizona's historic and archeological site files.

This publication resulted from a 1996 PTTGrants award. See page 8 in *NCPTT Notes* 26 for a review of the project.

P-23. Getting It out of the Attic: A Creole Preservation Guide

Report (22 pp; illustrated). St. Augustine Historical Society. 1997

PTTPublications No. 1997-10

This report summarizes the results of St. Augustine Historical Society's survey of Creole cultural resources in institutions such as archival repositories, libraries and museums, and in private collections throughout the US.

This publication resulted from a 1996 PTTGrants award.

P-22. Analysis of the NFPA Fire Safety Evaluation System for Business Occupancies

Reprint from *Fire Technology* (volume 33, number 3, pp 276-282). J.M. Watts, Jr., author. 1997

PTTPublications No. 1997-09

The author examined criteria used by the National Fire Protection Association's Fire Safety Evaluation System for rating new and existing commercial buildings and determined that FSES criteria allow a safety level in existing buildings that is 6 to 10 percent lower than that in new construction.

This publication resulted from a 1996 PTTGrants award to the Fire Safety Institute. See items P-25 and P-35 above for other PTTPublications on this topic, and see item 56 in *NCPTT Notes* 28 for other publications that resulted from this project.

P-21. Focus on 2000: A Heritage Education Perspective

Report (52 pp; illustrated). Middle Tennessee State University-Center for Historic Preservation. 1997

PTTPublications No. 1997-08

This report summarizes a comprehensive review of heritage education in the US based on a broad survey of State Historic Preservation Offices and heritage organizations.

This project was completed under contract between and the MTSU-Center for Historic Preservation and NCPTT.

P-20. A Manual on Conservation Methodology for Historic Buildings and Structures

Manual (128 pp; illustrated). Caribbean Heritage, Inc. 1997

PTTPublications No. 1997-07

This field manual is designed to assist professionals in the building trades in Puerto Rico, US Virgin Islands and other parts of the Caribbean. Topics addressed include research resources, inspection and documentation, materials analysis, and rehabilitation of historic properties.

This publication resulted from a 1995 PTTGrants award. See page 8 in *NCPTT Notes* 25 for a review of the project.

P-19. Research into Protective Coating Systems for Outdoor Bronze Sculpture and Ornamentation

Report (29 pp; illustrated). National Gallery of Art. 1997

PTTPublications No. 1997-03

This report presents initial results from multi-year research on problems associated with using protective coatings for outdoor bronze sculpture and ornamentation. In the study, 29 coatings were tested by exposure to a variety of weathering and environmental conditions. The report includes data on coatings performance and factors to be considered in developing new coatings, and suggestions for further research.

This publication resulted from a 1995 PTTGrants award. See item 26 in *NCPTT Notes* 28 for other publications that resulted from this project. See page 4 in *NCPTT Notes* 27 for a review of the project.

P-18. A Review of the State of the Art of Laser Cleaning in Conservation

Report (55 pp; illustrated). Los Angeles County Museum of Art. 1997

PTTPublications No. 1997-01

This report examines current uses of laser cleaning in art and artifacts conservation and recent technological advances that have increased the potential for using lasers in conservation. The authors determined that research in laser cleaning methods lags behind laser's potential uses in conservation, and propose establishing a laser conservation laboratory in the US as a center for laser research and education.

This project was completed under contract between LACMA and NCPTT.

P-17. Preservation Education Skills for Building Trades Teachers: Resource Directory Section II

Directory (211 pp; appendices; illustrated). University of Vermont-Historic Preservation Summer Institute. 1996

PTTPublications No. 1996-24

P-16. Preservation Education Skills for Building Trades Teachers: Resource Directory

Directory (485 pp; appendices; illustrated). University of Vermont-Historic Preservation Summer Institute. 1996

PTTPublications No. 1996-23

P-15. Preservation Education Skills for Building Trades Instructors: Project Summary Report

Report (130 pp). University of Vermont-Historic Preservation Program. 1996

PTTPublications No. 1996-22

The report (P-15) explains the methodology, development and implementation of the pilot course, "Preservation Skills for Trades Teachers," held as part of the University of Vermont's 1996 summer institute to encourage the development of a specialization for vocational teachers in graduate preservation programs.

Two supplementary directories (P-16 and 17) are compilations of articles on building conservation, preservation education, preservation philosophy and history, and building conservation, plus the National Park Service's *Preservation Briefs* series.

These publications resulted from a 1995 PTTGrants award to the University of Vermont.

P-14. Evaluation of NAPAP Aerometric Data

Report (13 pp). T.J. Reedy, author. 1996

PTTPublications No. 1996-21

This report presents statistical analysis of aerometric data associated with the National Acid Precipitation Assessment Program briquette studies, including the condition, format and completeness of the data. See item P-47 above for another PTTPublication on this topic.

This project was completed under contract between Terry J. Reedy and NCPTT.

P-13. Survey for State Historic Preservation Offices Regarding Introductory Preservation Education of Local Public Officials

Report (22 pp). B.G. Anderson, author. 1996

PTTPublications No. 1996-13

This report presents the results of a survey of State Historic Preservation Offic on preservation education for officials in local government. Based on the surv data, the report recommends developing regional workshops as effective mea of preservation education for community leaders.

This project was completed under contract between Barbara G. Anders LLC and NCPTT.

P-12. Historic Preservation Training By and For Indian Tribes

Report (31 pp). University of Nevada, Reno and Crow Canyon Archaeological Center. 1996

PTTPublications No. 1996-11

This report is the proceedings of a workshop that considered the training nee of Indian tribes in historic preservation. The report recommends trainin opportunities for consideration by training providers, including NCPTT.

This publication resulted from a 1995 PTTGrants award to Crow Canyo Archaeological Center.

P-11. Evaluating Sites With Late Nineteenth or Early Twentieth Century Components for Eligibility in the National Register of Historic Places: Using Turn-of-the-Century Whitewares

Report (31 pp; illustrated). Ohio State Historic Preservation Office 1996

PTTPublications No. 1996-10

This report offers archeologists a tool for establishing historical contexts f sites that include turn-of-the-twentieth-century dinnerware sherds. The au thors established a Mean Ceramic Price Index Model for types of dinnerwar commonly available during the period, and tested the accuracy of the index b examining sherd assemblages from archeological sites.

This publication resulted from a 1995 PTTGrants award.

P-10. Vertical Gradients of Pollutant Concentrations and Deposition Fluxes at the Cathedral of Learning

Report (9 pp; appendices; illustrated). Carnegie Mellon University. 1996

PTTPublications No. 1996-09

This report summarizes the damaging effects of air pollution on a limeston structure where six decades of pollution have resulted in soiling and ston deterioration. The research sought to determine the principal pollutants re sponsible for such damage and whether pollutant concentrations vary with th height of the building. See items P-2 below and P-38 above for othe PTTPublications on this topic.

This publication resulted from work under a cooperative agreemer between Carnegie Mellon University and NCPTT. See item 119 in *NCPTT Note* 28 for other publications that resulted from this project.

9. Testing the Energy Performance of Wood Windows in Cold Climates

port (85 pp; appendices; illustrated). Vermont State Historic eservation Office. 1996

TTPublications No. 1996-08

is report summarizes research undertaken by the Vermont Energy Invest- nt Corporation to determine whether the thermal efficiency of historic dows could be sufficiently improved to match the energy efficiency of lacement windows. See item P-28 above for another PTTPublication on this ic.

This publication resulted from a 1994 PTTGrants award. See item 1 in *PTT Notes* 28 for other pnblications that resulted from this project.

8. Funding Priorities in Materials Conservation

port (10 pp; appendices). American Institute for Conservation of storic and Artistic Works. 1996

TTPnblications No. 1996-07

e preservation community recognizes that establishing research and training orities is essential to stimulating support for scientific research and to moting better analytical and treatment techniques. This report summarizes AIC survey of critical needs for research and training.

This project was completed under contract between AIC and NCPTT.

7. Protective Glazing

port (170 pp; illustrated). Inspired Partnerships. 1996

TTPnblications No. 1996-06

is report summarizes a study of protective glazing for stained glass windows. dings are presented in four sections: history, architectural impact, energy cts and conservation issues. The report's conclusions question the effective- s of protective glazing installed for energy conservation.

This publication resulted from a 1994 PTTGrants award. See item 7 in *PTT Notes* 28 for other publications that resulted from this project.

6. Development and Implementation of a Rapid Low-Cost Photogrammetric Data Archival System for Artifact and Osteological Inventory

port (82 pp; appendices; illustrated). University of Arkansas- nter for Advanced Spatial Technologies. 1996

TTPublications No. 1996-05

e study investigated the feasibility and current technology for gathering tric data from softcopy three-dimensional images at a reasonable cost. The rk demonstrates the potential of photogrammetry and digital processing for hiving images, collecting measnrements, analyzing artifacts and distributing ormation about collections via CD-ROM and the Internet.

This publication resulted from a 1994 PTTGrants award. See item 9 in *PTT Notes* 28 for other publications that resulted from this project.

5. Deterioration and Preservation of Porous Stone

port (19 pp; appendices; illustrated). Historic Preservation mmission, Monterey, California. 1996

TTPnblications No. 1996-04

is report studies the deterioration of porous sandstone in a marine environ- nt utilizing the Royal Presidio Chapel (circa 1790) at Monterey, California, as a case study. The report presents data compiled during investigations, strategies for stabilizing and preserving sandstone, and suggestions for further research.

This publication resulted from a 1994 PTTGrants award.

P-4. Origin of the Whewellite-rich Rock Crust in the Lower Pecos Region of Southwest Texas and its Significance to Paleoclimate Reconstructions

Reprint from *Quaternary Research* 46 (pp 27-36). J. Russ, R.L. Palma, D.H. Loyd, T.W. Boutton and M.A. Coy, authors. 1996

PTTPnblications No. 1996-03

Research indicates that dry limestone rock shelters in the Lower Pecos region of Texas were an ideal niche for the desert lichen *Aspicilia calcarea* which, during dry periods, produces a calcium oxalate — whewellite — residue that can be radiocarbon-dated to establish when the lichen flourished. Based on 14 radiocarbon ages of whewellite and the ubiquity of whewellite crusts, the authors propose a reconstruction technique may be a valuable and widely applicable method for paleoclimate analysis.

This publication resulted from a 1995 PTTGrants award to Newberry College. See item 21 in *NCPTT Notes* 28 for other publications that resulted from this project.

P-3. Readings in Site Discovery and Site Evaluation

Report (196 pp). Society for American Archaeology. 1995

PTTPublications No. 1995-14

This compilation of readings was assembled for workshops on site discovery and site evaluation during SAA's 1995 annual meeting. Articles on archeological survey design, sampling and remote sensing methods are included.

This publication resulted from a 1994 PTTGrants award.

P-2. Influence of Atmospheric Pollutants on Soiling of a Limestone Building Surface

Report (352 pp). Carnegie Mellon University. 1995

PTTPnblications No. 1995-06

This report describes a project to document the soiling patterns and characterize the conditions that led to the soiling of the Cathedral of Learning in Pittsburgh, Pennsylvania. The overall goals of this project are to better understand why and how soiling occurs and to develop models that link soiling to pollution types and concentrations. See items P-10 and P-38 above for other PTTPublications on this topic.

This project was completed under cooperative agreement between Carnegie-Mellon University and NCPTT. See item 119 in *NCPTT Notes* 28 for other publications that resulted from this project.

P-1. Arizona Archaeological Council's Native Americans and Archaeology Workshop

Proceedings (41 pp). Arizona Archaeological Council. 1994

PTTPublications No. 1994-02

These proceedings document a 1994 workshop on the topics of consultation, oral tradition and archeology, and Native American roles in archeology.

This publication resulted from a 1994 PTTGrants award.

Video Resources

V-10. The Root of the Problem — Conservation of the Hominid Footprints at Laetoli, Tanzania

Video. NPS/NCPTT. 1998

PTTPublications No. 1998-33

This video documents a lecture by Dr. Neville Agnew of The Getty Conservation Institute, and NCPTT advisory board member, on the conservation of the Laetoli hominid footprint trail. The conservation strategy for the site is explained in this visual tour of the six-year project.

V-9. Glass and Stained Glass Conservation

Video. Nebraska State Historical Society. 1998

PTTPublications No. 1998-28

This video features a slide lecture by Mary Clerkin Higgins at the Glass and Stained Glass Conservation Workshop conducted by the Gerald R. Ford Conservation Center of the Nebraska State Historical Society. See item P-46 above for the workshop notebook.

This video resulted from a 1997 PTTGrants award. See page 1 in *NCPTT Notes* 29 for a review of the workshop.

V-8. Landscapes and Lives: Preserving the Stories and the Place

Video. NPS/NCPTT. 1997

PTTPublications No. 1997-27

This video documents a lecture by Suzanne Turner, associate dean of the College of Design at Louisiana State University, and author of *The Gardens of Louisiana* (Baton Rouge: LSU Press, 1997). Three Louisiana cultural landscapes illustrate responses to place and the meaning of cultural landscapes.

V-7. The Best of Both Worlds — Lead Hazard Reduction in Historic Buildings

Video. Maryland State Historic Preservation Office. 1997

PTTPublications No. 1997-15

This video examines methods for reducing or eliminating lead paint in historic buildings without adversely affecting their historic character. Among the topics discussed are proper methods for testing and removal, and strategies for conserving architectural details coated with lead paint.

This video resulted from a 1995 PTTGrants award.

V-6. The Application of Advanced Computer Simulation and Visualization Technology to Enhance Cultural Resources Documentation

Video. National Preservation Institute. 1997

PTTPublications No. 1997-06

This video explores potential uses of computer modeling and simulation programs for documenting cultural resources. Advanced Marine Enterprises, Inc. selected the USS Monitor as the subject of a virtual reconstruction. The project demonstrates the potential of simulation technologies to supplement conventional documentation and interpretation, particularly for cultural resources with mechanical systems and moving components.

This video resulted from a 1995 PTTGrants award.

V-5. Historic Preservation/The Next Step

Video. NPS/NCPTT. 1996

PTTPublications No. 1996-12

This video documents a lecture by Dr. James Marston Fitch. Dr. Fitch's remarks include the presentation of a paper titled "The Battle for the Past: Preservation versus Historicism, Postmodernism, and the Theme Park," a reflection on the authentic versus the facsimile as one of the principal dialectics of the American preservation movement.

V-4. Connections: Preserving America's Landscape Legacy

Video. American Society of Landscape Architects and The Garden Conservancy. 1996

PTTPublications No. 1996-02

Produced by ASLA, The Garden Conservancy and the National Park Service this video examines the role of historic landscapes in our nation's cultural heritage. The video demonstrates the irreplaceable value of parks, gardens, battlefields and cemeteries, and explores our deep ties to such places.

This video resulted from a 1994 PTTGrants award to American Society of Landscape Architects.

V-3. Walls of Stone: How to Build Drystone Walls and Rock Fences

Video. Kentucky Heritage Council. 1996

PTTPublications No. 1996-01

This instructional video examines fundamental principals, tools and techniques of drystone masonry and provides a step-by-step guide to the repair and construction of drystone walls.

This video resulted from a 1996 PTTGrants award.

V-2. Why Preserve?

Video. NPS/NCPTT. 1995

PTTPublications No. 1995-07

This video documents a lecture by Dr. James K. Huhta, director of the Center for Historic Preservation at Middle Tennessee State University, member of the Advisory Council for Historic Preservation, and NCPTT advisory board member. Dr. Huhta's remarks focus on the central role of historic preservation in American culture and the increasing importance of heritage education.

V-1. Culture Shock: Fire Protection for Historic and Cultural Property

Video. Boston University. 1995

PTTPublications No. 1995-01

This video examines the vulnerability of historic buildings to fire and provides general descriptions of how fire protection systems and detection devices work. Extensive footage of structures with properly installed systems demonstrates that suppression systems need not adversely affect historic buildings.

This video resulted from a 1995 PTTGrants award.

NCPTT Newsletters

0. NCPTT Notes

rch 1999 (number 30)

TPublications No. 1999-07

edition focuses on information management, with articles on *Internet aeology*, digital publishing and online *Conserve O Grams*. Other articles iss evaluating historic masonry with the pendulum hammer, digital ographic imaging, and NPS's online tutorial, *Electronic Rehab*. Library Web resource reviews include *Historic Resource Surveys and the Internet* o site <www.arch.uh.edu/survey>, Houston, Texas: University of Houston- er for Historic Architecture, 1999), *Saving Our Architectural Heritage: Conservation of Historic Stone Structures* (Baer, Norbert S. and Rolf hlage (ed.), West Sussex (UK): John Wiley and Sons, Ltd., 1997), and the *pe Architecture Conservation Handbook* (Contreras, Francisco Uviña (ed.), a Fe, New Mexico: Cornerstones Community Partnerships, 1998).

9. NCPTT Notes

ruary 1999 (number 29)

TPublications No. 1999-01

edition focuses on training, with articles on traditional workshop training serving three-dimensional and stained glass) and the use of new technology reservation training (distance learning course via CD-ROM on mechanical ems). Other articles discuss preservation resources on the Internet. The y Information Institute's conference on the role of culture in the information ety and the role of information management in culture, and a seminar on omic impacts of historic preservation, plus a book review (N.S. Baer, S. Fitz R. Livingson, *Conservation of Historic Brick Structures*, Shaftesbury]: Donhead Publishing Ltd, 1998).

8. NCPTT Notes

Supplement 1998 (number 28)

TPublications No. 1998-27

edition summarizes PTTProjects and PTTGrants supported in fiscal years -1998.

7. NCPTT Notes

ober 1998 (number 27)

TPublications No. 1998-26

edition focuses on NCPTT's materials research program, with an article on bronze corrosion and outdoor pollution projects. Other articles include a rt on the University of Victoria's symposium on professional development ls for the preservation training community, an installment in the informa- management series on preservation-related databases featuring the Na- al Register Information System, and an article on electronic marker systems tool for protecting archeological sites.

N-26. NCPTT Notes

August 1998 (number 26)

PTTPublications No. 1998-19

This edition focuses on research with articles on historic landscapes preservation and research and a report on new developments in ground-penetrating radar and image processing techniques. Other articles discuss an innovative high school for the preservation arts, the UN/ECE workshop on the effects of air pollution on materials, and the development of a statewide database of Arizona's archeological and historic site data, plus two book reviews (*Historic Lighthouse Preservation Handbook*, Washington: National Park Service, 1997, and M. Fram, *Well-Preserved*, Erin [Ontario]: The Boston Mills Press, 1992).

N-25. NCPTT Notes

June 1998 (number 25)

PTTPublications No. 1998-14

This edition focuses on information management, with an article on an online database of state historic preservation legislation, a report on digital preservation of cultural heritage information, and an article on sustainability and historic preservation featuring web resources. Other articles discuss models for parking and pedestrian access in downtown historic districts, a symposium on the conservation and preservation of tabby, and an award-winning conservation manual for historic architecture in the Caribbean.

N-24. NCPTT Notes

Spring Supplement 1998 (number 24)

PTTPublications No. 1998-07

This edition reviews NCPTT's PTTPublications, including digital, print and video resources, from 1994 through 1998.

N-1 through N-23. NCPTT Notes (numbers 1 – 23)

PTTPublications Nos. 1993-01, 1994-01, 1995-08 through 13, 1996-14 through 20, 1997-17 through 22, 1998-02 and 03

These NCPTT newsletters from July 1993 through February 1998 are abstracted in *NCPTT Notes* 24, items 40 – 62.

Our Mission

United States Department of the Interior
The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and to honor our trust responsibilities to tribes.

National Park Service
The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education and inspiration of this and future generations. The Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

National Center for Preservation Technology and Training
The National Center for Preservation Technology and Training promotes and enhances the preservation of prehistoric and historic resources in the United States for present and future generations through the advancement and dissemination of preservation technology and training.

NCPTT, created by Congress, is an interdisciplinary effort by the National Park Service to advance the art, craft and science of historic preservation in the fields of archeology, historic architecture, historic landscapes, objects and materials conservation, and interpretation. NCPTT serves public and private practitioners through research, education and information management.

National Center for Preservation Technology and Training
NSU Box 5682
Natchitoches, LA 71497

NCPTT NOTES

National Center for Preservation Technology and Training

United States Department of the Interior • National Park Service

JULY 1999 NUMBER 17

NCPTT's Museum Lighting Research

Several recent projects supported by NCPTT's Research component focus on the effects of light on museum objects.

Exhibit lighting is a core issue in museum environments. Galleries need sufficient light for visitors to view exhibits but, at the same time, works of art on display must be protected from image caused by excessive light exposure. Museum lighting specialists traditionally have dealt with this problem by working to strike an appropriate balance between the two concerns. Recent studies, however, have shown the issue of museum lighting to be significantly more complicated, and curators, conservators and exhibit designers have begun to consider factors such as visual perception, color temperature and different types of artificial illumination as part of the overall lighting equation. Consequently, lighting has emerged as a research priority for museum professionals, and NCPTT has responded by supporting innovative work on museum lighting.

Past and current projects

"Beyond Edison: Lighting for the Next Century," a 1996 conference organized by the National Park Service and the Washington Conservation Guild, was the first NCPTT-supported project to address museum lighting issues. Topics examined at the conference included practical issues in museum lighting, the relationship between lighting and visual perception, and new lighting technologies. Presenters included conservators from the National Gallery of Art, the Canadian Conservation Institute, Yale University and the National Air and Space Museum. The conference was particularly successful in establishing an agenda for research on museum lighting issues by identifying areas that need further study.

NCPTT first supported applied and fundamental research on museum lighting with a 1997 Preservation Technology and Training Grants award to the Lighting Research Center at Rensselaer Polytechnic Institute in Watervliet, New York. NCPTT support allowed Research Associate Professor of Architecture Christopher Cuttle to examine a promising method for reducing the exposure of museum exhibits to damaging inci-

Continued on Page 2 ➡

NCPTT Notes

July 1999
Number 32

PTTPublications
No. 1999-13

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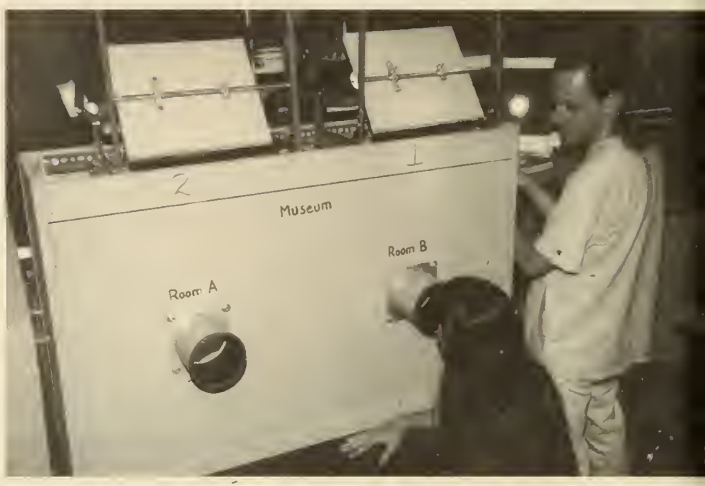
Send comments on *NCPTT Notes* or submit articles or notices for consideration to NCPTT Publications Manager Sarah B. Luster.

NCPTT's Museum Lighting Research

Continued from page 1

dent radiant power without compromising visitor viewing satisfaction. Cuttle's work proved successful and is described further on page 3 of this edition of *NCPTT Notes*.

NCPTT's research on museum lighting continues with two current projects.



Graduate students in the Applied Vision Institute at Brooklyn College/CUNY compare the appearance of the same picture in two "museum rooms" illuminated by different light sources

Colored pencils

The first is a study of organic pigments in colored pencils being conducted by the Institute for Standards Research of the American Society for Testing and Materials with financial support from NCPTT and the Samuel H. Kress Foundation. The principle investigator for this project is James Martin, Director of Analytical Services and Research at the Williamstown Art Conservation Center in Williamstown, Massachusetts, with assistance from Mark Gottsegen of the University of North Carolina at Greensboro, and Joy Turner Luke of Studio 231 in Sperryville, Virginia, as well as the Colored Pencil Society of America in Washington, DC. The goal of this project is to determine the lightfastness of pigments in colored pencils for the benefit of artists and conservators.

Colored pencils traditionally have been used in preparing architectural, city planning and fine arts drawings. The permanency of colored pencil drawings depends largely on the lightfastness of the pigments in the pencils used to create it. The research team's work began with developing an analytical method for identifying organic pigments in colored pencils. When satisfied with the accuracy of the testing method, Martin and his colleagues will continue with analyzing pigments found in more than 300 colored pencils obtained from major pencil manufacturers. The final project report will describe the testing method and pigments identified in each pencil tested. The list of pigments will provide art conservators with an invaluable resource as they work to preserve historic drawings from fading and other forms of damage caused by excessive light exposure. It also will serve artists in making informed choices about pencil selection with the long-term stability of their drawings in mind. The research team expects to complete the project by November 1999.

Color temperature and illumination

The second current NCPTT museum lighting project is supported by a two-year PTTGrant award to City University of New York for a systematic study of color temperature and illumination intensity in museum environments and their effects on visitor viewing satisfaction. The project is a collaborative effort among CUNY Professors Israel Abramov and James Gordon and Steven Weintraub, a private conservator with Art Preservation Services of New York New York.

In most museums, gallery illumination levels are set by curators whose judgment is guided largely by experience and intuition. This project seeks to provide guidance on museum lighting design through innovative research that addresses psychological aspects of human perception in viewing museum exhibits.

Preliminary investigations suggest that modest increases in color temperature improve viewing satisfaction without increasing harm to museum objects. To test this hypothesis, researchers will focus on color vision and color appearance through the use of a controlled testing method that permits direct evaluation of hue, saturation and brightness. Then, in simulated museum env-

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luseum Lighting Protocol

n the last decade, conservation scientists have given increased attention wide range of museum light- issues, particularly the naging effects of light on mu- m objects. Research has own that two processes cause it damage: photochemical ion, which causes fading, alking and loss of strength, l radiant heating, which ises surface cracking and brittlement. To slow degra- ion rates, museums typi- ly use filters to eliminate rmful non-visible short velength ultraviolet energy l long wavelength infrared ergy. Curators also limit il- ination levels and exposure ration for exhibits contain- materials susceptible to nage. Such measures how- r, may afford only modest otection to artworks and ifacts, and dim gallery light- ing often compromises viewing satisfaction for museum visitors. As a resnlt, museum staff continue to face challenges of caring for collections with appropriate conservation practices while providing visitors with quality viewing experiences.

A 1997 PTTGrants project made significant progress towards reaching a workable solution to this long-standing problem. Christopher Cuttle of Rensselaer Polytechnic Institute examined an innovative lighting technique that promises to reduce rates of light-induced damage without affecting viewing satisfaction. Cuttle's research was in part inspired by recent studies on the relationship between light and human color discrimination. A pilot study conducted in the early 1990s suggested that light concentrated in three spectral bands — with center wavelengths of 450, 530 and 610 nanometers — could provide levels of illumination equal to standard broad-spectrum museum lighting with substantially reduced levels of damaging incident radiant energy. Based on these findings, Cuttle sought to evaluate three-band lighting under actual museum conditions and to develop recommendations for a three-band lighting protocol.

Cuttle conducted laboratory tests at the Lighting Research Center at Rensselaer's Watervliet Facility in Watervliet, New York. In Cuttle's experiment, sixteen persons were to give subjective evaluations of three artworks displayed in two identical galleries. One gallery, serving as the control for the experiment, was illuminated to 50 lux by a tungsten halogen MR spotlight commonly used in museum environments. In the other gallery, each of the sixteen subjects adjusted illumination — alternately provided by an MR spotlight and the experimental three-band light source — to match the appearance of the first gallery. In evaluating differences in appearance between the two galleries, subjects considered five factors: brightness, clarity, acceptability of overall color appearance, brightness or colorfulness of individual colors, and naturalness of individual colors.

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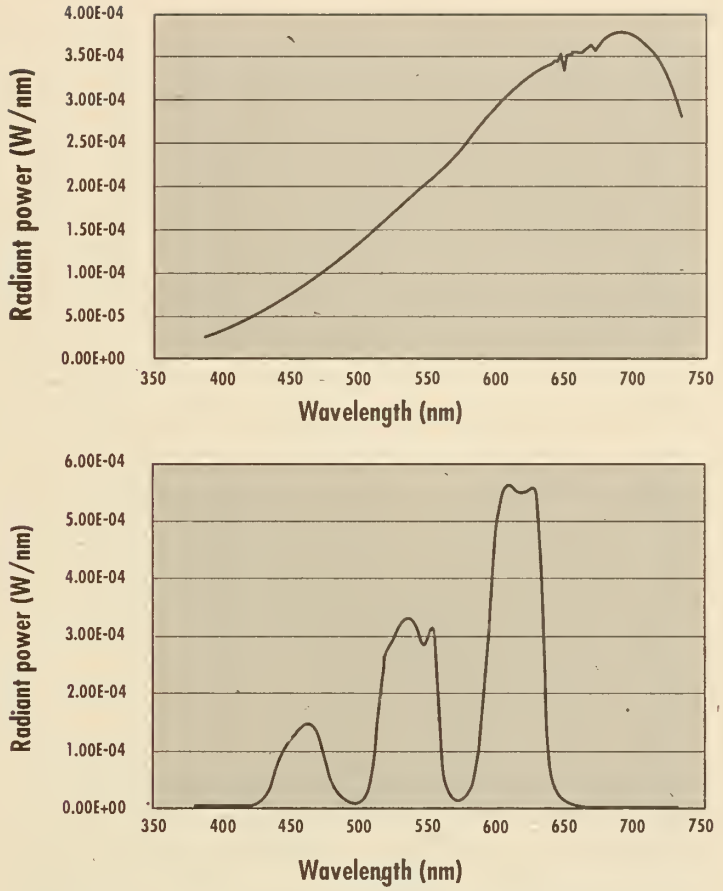


An MR lamp (top) and an experimental three-band source (bottom), both at 2850K

CPTT's Museum Lighting Research

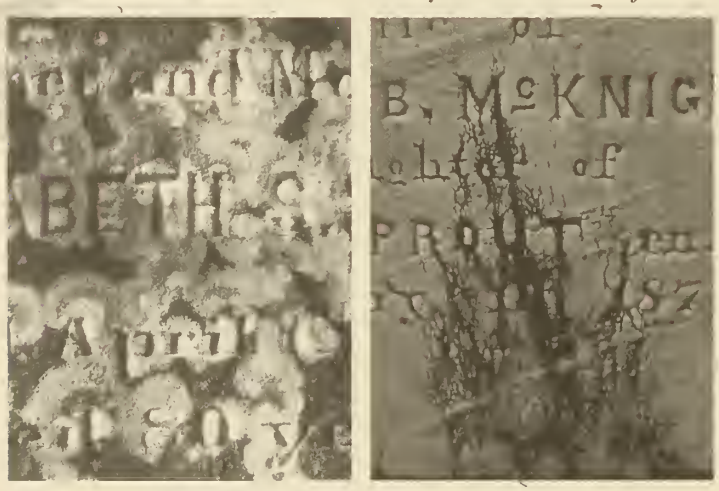
tinued from page 2

nments, expert and untrained observers will evaluate the pearance of artworks displayed under varying color temratures and levels of illumination. From the results of these ts, the research team will develop criteria for optimal mum lighting specifications that allow quality viewing experices without causing significant light-induced damage to disayed artworks and artifacts. The research team expects to mplete the project in 2000.

Lighting promises to remain at the forefront of research in useum conservation studies. As part of a broad commitment support work in conservation, NCPTT's Research compont expects to continue its involvement in museum lighting search. The successes of NCPTT's past and current projects monstrate the potential for work on museum lighting issues to eld significant research advances.

Microorganisms and Stone Degradation

Scientists recently have recognized that microorganisms such as bacteria, fungi and lichens act in conjunction with atmospheric pollutants to cause damage to stone. Studies have shown that in some instances, bacteria on stone surfaces produce corrosive organic acids when exposed to pollutants, resulting in significant stone degradation. But the scientific understanding of these processes remains limited and, because of the many variables involved,



Bacterial and fungal decay of marble headstones

it is difficult to assess the relative importance of microbial processes in pollution-induced stone degradation.

Exposure of historic buildings and monuments to extremely high concentrations of atmospheric pollutants in recent decades has heightened concern about these issues. Researchers now are working to reach a better understanding of stone decomposition — including the roles played by microorganisms — in an effort to ensure the success of stone conservation programs worldwide.

Recent advances

An NCPTT-sponsored project now nearing completion has made significant contributions to understanding of the effects of microorganisms on stone. In 1997, Ralph Mitchell, Gordon McKay Professor of Applied Biology at Harvard University, began a long-term study with three major research goals. Mitchell's first priority was to accurately determine the response of microflora on limestone to atmospheric pollutants such as sulfur and hydrocarbons. Second, he sought to evaluate the interaction of microorganisms and air pollutants and the resulting process of stone deterioration. Third, Mitchell plans to determine the effect of protective measures, specifically the use of polymeric consolidants and environmentally acceptable biocides, on pollutant degraded limestone. Mitchell considers each of these goals essential for a thorough understanding of the roles of microorganisms in the stone degradation process.

During the project's first year, Mitchell undertook a comparative analysis of the effects of sulfur and hydrocarbons on microflora found on eighteenth-century limestone grave markers in relatively polluted and unpolluted areas of Massachusetts. His work determined that the total populations of bacteria and fungi on limestone in the polluted area were significantly smaller and considerably less diverse. At the same time, however, populations of several types of bacteria capable of using sulfur compounds and hydrocarbons were much larger in polluted areas, presumably because they are able to thrive in an environment with a plentiful supply of pollutants. Mitchell found that these bacteria use small quantities of pollutants to produce sizeable quantities of acid.

In the second year of research, Mitchell investigated corrosive processes involved in limestone degradation. His work isolated and identified the predominant microorganisms growing on stone in the polluted area. Bacteria belonged to the genera *Bacillus*, *Vibrio* and *Xanthomonas*, and major fungi groups included *Aureobasidium* and *Cladosporium*. Mitchell inoculated these microorganisms onto sterilized limestone samples, which he then exposed to sulfur and hydrocarbons in an environmental chamber. During exposure to low concentrations of sulfur and hydrocarbons, large populations of these microorganisms developed and produced significant quantities of corrosive acids in less than one month.

By studying the growth of these microorganisms with an electron microscope, Mitchell determined that limestone degradation results from a complex interaction of fungi and bacteria. Fungi initially grow into exposed pores on the surface of stone, which in turn allow large populations of bacteria to reach the interior where they produce substantial damage. This finding alone represents a major advance in understanding limestone deterioration by microorganisms.

Mitchell also made a surprising discovery during the second year of the project. Using electron micrographs, Mitchell found populations of an unusual striated bacterium less than one micrometer in size on some limestone samples. The bacterium had gone unnoticed in previous studies, and Mitchell theorizes that it may have an important effect on the stone degradation process. Mitchell is currently attempting to identify the bacterium in an effort to accurately assess its significance.

Future studies

Mitchell's plans for further research include extensive study of the kinetics of calcium dissolution from limestone caused by microflora. In particular, he intends to compare calcium loss by microorganisms on stone samples from polluted and unpolluted areas. Because previous efforts to measure calcium loss from limestone failed to produce

Continued on Page 9 ➡

Documenting Complex Curved Surfaces

Total station in use at Mystic Seaport Museum

The maritime preservation community is faced with the daunting task of recording what remains of our floating maritime past. Challenges in documenting maritime resources are quite different from challenges in documenting architectural or engineering resources. The primary difference is the shape of the objects themselves. Most buildings respect construction principles such as plumb, level and square — concepts easily applicated on the drawing board. Builders of watercraft, however, often considered these principles an affront to good design, and the shipboard recorder can seldom work with a straightedge.

Historic vessels, from large ships to small boats, are composed of compound curvilinear surfaces. Methods used to record these shapes have existed for as long as these vessels have been built and have remained largely unchanged to the present. To record these difficult shapes successfully by traditional methods, a fair amount of skill and knowledge must be brought to the job at hand. Often the person documenting watercraft has training in naval architecture, as the drawing component of the task often requires that level of sophistication.

Traditional methods

Traditional methods of measuring a vessel begin with establishing a grid system exterior to the boat from which measurements are made. The next step involves blocking the boat or ship to be measured into a plumb and level position within the grid system. While easy with a 200- or 300-pound boat, the task is much more difficult for a vessel that weighs 200 or 300 tons. The measurement team then divides the length of the ship into equal units called stations and begins the measurement process.

Distances are measured out from the centerline of the keel and up to the hull, and recorded on paper as X and Y coordinates, with the Z coordinate being the distance of the station from the forward end of the ship. These measurements are taken with plumb-bobs and tape measures. Again, this procedure is fairly straightforward on a small boat inside a shop, but more complicated on a four-story, 300-foot long ship in dry-dock.

Once the measurements have been gathered, along with measurements that describe the shapes of the ends of the vessel, the process is reversed on paper: a grid is drawn at a convenient scale, and the X,Y and Z coordinates are transformed into a two-dimensional drawing. Three views are traditionally drawn to represent the shape of the hull measured — a sectional view, a plan view and a profile view.

The hand-measuring and drawing process is time consuming. By adapting electronics to measure and draw the vessel, costs can be reduced and documentation accuracy increased.

Electronic methods

With speed and accuracy in mind, Mystic Seaport Museum turned to electronic equipment commonly used in land surveying — the coordinate measuring machines surveyors called "total stations." These machines are capable of returning accurate measurements of objects both near and far, typically by recording a horizontal angle, a vertical angle and a distance to a target. From this information, X, Y and Z coordinate data for the point measured can be deduced. The digital data then can be interpreted with yacht-design software, and the original surface measured can be modeled electronically. With funding from NCPTT's Preservation Technology and Training Grants program, a Sokkia PowerSet 3000 Total Station was purchased, and a method was developed to measure watercraft.

The total station approach changes the traditional documentation process dramatically — chiefly by freeing the measurement team from leveling the vessel, setting up a careful grid system, dividing the hull into sections, recording the measurements and transfering the data to paper. To measure a vessel electronically, the total station is set on its tripod in one or more locations where everything to be measured can be seen. The operator shoots the location of a 10-mm-square reflective target held by an assistant on the surface of the ship. The machine records the angles and the distance to the target and converts that information into X, Y and Z coordinates at the push of a button.

After all measurements are captured digitally, the total station is plugged directly into a

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NCPTT Projects in Partnership

Although NCPTT's Preservation Technology and Training Grants program is the most visible of NCPTT's activities, equal in importance in advancing preservation practice are projects that NCPTT develops in-house and directly with partners.

Among NCPTT's long-term partners are the National Park Service itself and the National Trust for Historic Preservation. Since NCPTT began operations in 1994, collaborative projects by NCPTT and its NPS and National Trust partners have produced substantial results useful to the preservation community. These collaborations continue to expand as discussed in this projects update.

National Park Service

Since 1994, NCPTT has collaborated with NPS archeological centers throughout the United States and NPS' conservation center at Harpers Ferry, West Virginia, on projects that mutually benefit the centers, NCPTT and cultural resources preservation throughout the US. This year, NCPTT has expanded its range of NPS projects to include four projects at national parks and NPS regional offices.

Tabby

In collaboration with NPS' Southeast Regional Office in Atlanta, Georgia, NCPTT is supporting an historic structures preservation guide for buildings constructed of tabby.

Tabby is a lime-and-shell concrete indigenous to coastal areas of the southeastern US. Issues in conserving tabby structures were addressed at a 1998 symposium organized by the Georgia State Historic Preservation Office and supported by NCPTT through the 1997 PTTGrants program. A summary of the symposium was featured in *NCPTT Notes* 25, page 7, and symposium proceedings are posted at the Georgia SHPO Web site, <www.gashpo.org/dnr/histpres/tabby>. The Southeast Regional office's new tabby project will build on symposium findings and provide a practical guide for managing historic tabby resources in national parks.

Earthworks preservation

Also in association with NPS' Southeast Regional Office, NCPTT is supporting a study of appropriate conservation and maintenance techniques for earthworks at historic military sites.

The historic landscapes initiative of NCPTT's 1999 PTTGrants program sparked NCPTT's interest in the Southeast Regional Office's earthworks preservation project. The integrity of landscape features depends on proper management strategies and maintenance techniques. This project will address these important landscape preservation issues which affect resources in Federal, state and local stewardship.

E-publishing

In collaboration with Chaco Culture National Historical Park in New Mexico, NCPTT is supporting a substantial digitizing and electronic publishing project that will enhance researchers' access to the park archives and preserve historic documents.

Chaco Canyon was declared a national monument in 1907 as one of the most important archeological sites in the US. Decades of research at the park have produced large collections of documents and artifacts. This project focuses on digitizing the park's historic map collection with the two goals of publishing the digitized images online for widespread use and increasing the preservation of the historic maps by decreasing the necessity for using the collection on-site.

Remote sensing field school

In collaboration with Klondike Gold Rush National Historical Park in Alaska NCPTT is supporting the development of a field school for remote sensing techniques.

Dyea, Alaska, at the head of the historic Chilkoot Trail, was a major transportation hub during the Klondike Gold Rush of 1897-98. In a brief period, Dyea both reached an estimated peak population of 8,000-10,000 and was abandoned. Today, erosion, visitation and the encroaching forest threaten this important archeological site.

Remote sensing has proven to be a cost-effective tool for discovering and interpreting archeological features. The development and testing of remote sensing techniques has received considerable NCPTT support previously, as summarized in *NCPTT Notes* and other preservation publications. The Dyea project widens NCPTT's work in remote sensing to include training. The project will increase knowledge about the Dyea townsite and encourage, through training, the use of current technologies in cultural resources preservation.

In these projects, NPS resources serve as laboratories for advanced work in preservation research, training and information distribution — work that can benefit cultural resources throughout the US.

National Trust for Historic Preservation

NCPTT contributes support to the National Trust's Statewides program, the goal of which is to foster the development of private non-profit organizations that in collaboration with State Historic Preservation Offices, serve statewide constituencies in each US state. Within NCPTT's commitment to serving preservationists at the Federal, state and local levels, partnerships with the National Trust and statewides assist NCPTT in serving preservation colleagues whom NCPTT might not reach alone.

As part of the statewides project NCPTT is encouraging statewides to develop their capacity for technical issues

rough incubator grants. The statewides ants are modeled on NCPTT's larger TTGrants program, and are available statewide organizations through the tional Trust.

In 1998, NCPTT and the National rust awarded four incubator grants --

Louisiana Preservation Alliance and *Preservation Alliance of West Virginia* received support for statewide heritage education projects.

Preservation New Jersey received support for Internet training for nine statewides in the northeastern US.

Montana Preservation Alliance created a Montana Community Preservation Team to conduct workshops and compile a workbook to assist small rural communities identify, evalnate and preserve their historic resources.

the 1999 round of incubator grants, CPTT and the National Trust recently nded five projects —

- *Preservation Trust of Vermont* will develop strategies for wireless telecommunications installations in historic structures, which will provide revenue for maintaining historic structures and perhaps decrease the visual impact of "cell" installations on historic scenes.
- *Georgia Trust for Historic Preservation* will bring the success of Preservation New Jersey's 1998 Internet training to statewide colleagues throughout the southeastern US.
- *New Hampshire Preservation Alliance*, *New Mexico Heritage Preservation Alliance* and *Maine Preservation* will enhance public access to preservation information in each of their states via databases and the Internet.

Each project represents work initiated by statewides in response to their audiences' needs. Each project contributes to the knowledge that sustains interest in cultural resources, and to their long-term preservation. Each project represents information or skills useful to the national network of preservation organizations — and builds technical competence in appropriate increments.

— John Robbins
— Carol Wyant

Ms Wyant is Director of Statewide Partnerships at the National Trust for Historic Preservation.

For further information on NCPTT collaborations with parks and regional offices, including the projects described above, contact NCPTT. For information on the National Trust's statewides initiative, contact Ms Wyant; telephone 202/588-6216, facsimile 202/588-6223, e-mail <carol_wyant@nthp.org>.

Museum Lighting Protocol

Continued from page 3

Cuttle recorded each subject's illumination settings and evaluations.

Experiment results showed that subjects had no difficulty adjusting illumination levels — whether provided by the MR spotlight or the three-band light source — to match the lighting effect in the control gallery. The illumination settings selected by all sixteen subjects fell within a narrow range, demonstrating that the three-band light source provided illumination comparable to common museum lighting systems. In addition, subjects gave generally similar evaluations of the artworks displayed in the galleries, indicating that their viewing satisfaction was not compromised by the three-band lighting system.

The three-band light source provided acceptable levels of illumination, substantially reduced irradiance and potential conservation benefits. Three-band lighting could allow museums to display artifacts and artworks vulnerable to light damage for longer periods than possible with traditional illumination sources. Museums commonly assess light exposure in terms of lux hours per year. An object subjected to lighting of 50 lux and displayed for 3,000 hours a year, for example, is exposed to 150,000 lux hours per year. This measure, however, assumes use of standard MR spotlights. If the illumination source were changed to three-band lighting, the effective exposure might be reduced to 89,000 lux hours per year.

Cuttle proposes two possibilities for developing three-band lighting systems for widespread use. The simplest approach would involve a new type of filter capable of converting the continuous spectrum of a regular MR lamp into a three-band spectrum. The drawback of such a filter, however, is its inefficiency. Increased power costs and heat gain would result from the boost in lamp wattage needed to compensate for illuminance reduced by filtering. An alternate and more efficient approach would involve developing a three-band lamp designed specifically for museum applications. Cuttle is confident that lighting engineers could produce a lamp that would

Continued on Page 11 ►

Further Reading

Brief comments on some recent additions to NCPTT's library

History in Urban Places — The Historic Districts of the United States

David Hamer
Softcover book, illustrated, 277 pp. Columbus, Ohio: Ohio State University Press (1998)

"Historic districts usually become historicized districts." From that premise, Mr. Hamer begins his discussion of the nature of the history preserved in districts across the nation.

"A phrase that I heard repeatedly when I explained to historians and preservationists the nature of the inquiry on which I have been engaged is, 'But history has very little to do with it!'" This reaction prompts Mr. Hamer to take his readers on a time-tour through the evolution of historic districts and to consider the future of historic districts as a preservation strategy.

Mr. Hamer is a professor of history in New Zealand, and his approach to the topic is a "history-based mode of analysis." He proposes that historic districts from the mid-1940s to the present represent four stages of history: "original" history, the history of a district's survival beyond its period of original significance, the role of a district in the history of historic preservation, and the history of a district subsequent to designation. Mr. Hamer then looks beyond current practice towards aspects of history that perhaps are not represented in districts, and the uses and impacts of district designation.

Mr. Hamer concludes with the chapter "Thirty Years On: Do Historic Districts Have a Future?" — a good discussion on confronting and interpreting racial, ethnic, economic, contemporary and other histories. Preserving local history comprehensively requires intelligence and subtlety — qualities that Mr. Hamer endorses for creating and managing historic districts.

Disaster Management Programs for Historic Sites

Edited by Dirk H.R. Spennemann and David W. Look
Softcover book, illustrated, 195 pp. San Francisco: National Park Service and the Western Chapter of the Association for Preservation Technology; Albury, Australia: Charles Sturt University-The Johnstone Centre (1998)

This book is a compilation of papers presented at a June 1997 conference in San Francisco titled "Management of disaster mitigation and response programs for historic sites." The conference brought together preservationists and others from throughout the US and Pacific nations.

The book addresses contemporary practice in disaster management, with a look forward to improving resources and response. Particularly interesting are chapters on training in disaster mitigation for cultural resources, and developing an online network of training, information and experience in hazard mitigation for cultural resources.

Disaster Management Programs for Historic Sites *is available from David Look at the National Park Service's Pacific Great Basin Support Office; telephone 415/427-1401, facsimile 415/427-1484, e-mail <David_W_Look@nps.gov>.*

The History of Forgetting — Los Angeles and the Erasure of Memory

Norman M. Klein
Softcover book, illustrated, 330 pp. New York: Verso (1997)

The Least Remembered City

Paul Forrer
Video, 30 minutes (1998)

These studies of urban change and how a city is — or is not — a record of its past have great depth and will appeal to those interested in questions of why we preserve and the futility of preservation.

Although Mr. Klein's book proposes to be "merely a story about how one person decide to forget — voluntarily or in voluntarily," experience preservation practitioners ma find that Mr. Klein's thinkin resonates with their own.

Los Angeles — "the mo photographed and least r membered city in the world — is the book's gigantic cas study, which provides amp material for those concerne with time, what remains of t past and what's missing. Pa ticularly compelling is t chapter "Where is Forgettin Located?," which discusses t structure of memory in wes ern European culture, memor lapses and reconstructions.

The Least Remembere City is a video interpretatio of *The History of Forgetting* largest theme — erasing t past. The videos's main cha acter is the removal of histor Los Angeles as planned in t 1930s and 1940s and execute in the 1960s and 1970s, wi Mr. Klein as narrator. Th video is an intriguing visu discussion of what destructio and loss can mean, touchin on the too-common predic ment that what remains of place's past persists not b cause someone cared, h rather because someone forg to tear it down.

WWWeb

me recent additions to Web resources it might interest Notes *readers —*

vww.cr.nps.gov/nr/twhp>

aching with Historic Places is a heri-ge education program within the Na-nal Park Service's National Register of storic Places. Teaching with Historic aces has published over fifty classroom-ady lesson plans, many of which are sed on sites within the National Park stem. Lesson plans and other materials e now Web-accessible, with more to me in the near future.

vww.gsa.gov/pbs/hptp>

public steward of many historic Fed-al properties, the General Services Ad-nistration has developed technical pro-dures for evaluating, maintaining and pairing historic properties — much of hich is now available online.

<www.openstudio.org/Lessons>

Open Studio: The Arts Online is a partnership project of the Benton Foundation and the National Endowment for the Arts with the goal of stimulating digital publishing in the arts through Internet skills training. The lessons apply to digital publishing in preservation as well. Tutorials on Internet use and Web site development will be useful to organizations considering creating or enhancing their online presence.

<memory.loc.gov/ammem/hhhtml/hhhome.html>

The Library of Congress National Digital Library Project's new Web site is dedicated to the Historic American Buildings Survey/Historic American Engineering Record. The site features documentation of architecture, engineering and design throughout the United States and its territories. Beginning with an online catalog of the National Park Service's HABS/HAER catalogs, the site continues to grow with the addition of drawings, photographs and written histories for over 35,000 historic properties documented by HABS/HAER.

Documenting Complex Curved Surfaces

Continued from page 5

computer for downloading into advanced surface modeling software. The software handles all data in three dimensions and allows the operator to produce any required two- or three-dimensional view of the object. With total station digital documentation, Mystic Seaport Museum has reduced the time required to measure and draw vessels by over 75 percent.

For more information and a manual on using the total station system, visit Mystic Seaport's Web site <www.mysticseaport.org/public/collections/shipyard/sokkia.total.station.html>. Copies of the final report (PTTPublications No. 1999-06) are available from NCPTT's Publications Manager.

— Mark Starr

Mr. Starr heads the documentation division at Mystic Seaport Museum's H.B. duPont Preservation Shipyard.

icroorganisms and Stone Degradation

ntinued from page 4

curate data, Mitchell is currently working with more sophisticated tools — including aser GC-Mass Spectrometer recently acquired by Harvard University — to analyze is problem. Use of mass spectrometry also will allow Mitchell to study sulfur mpounds and hydrocarbons involved in calcium loss.

As research continues, Mitchell has begun to publicize the results of work mpleted to date. He is scheduled give presentations at the "Microbiology and Art" nference in Italy in June 1999 and at the International Biodeteriation Symposium in ashington, DC in August 1999. Mitchell also is writing a conservation journal article at will describe his laboratory tests, analytical methods and research findings in tail. In uncovering important information about the role played by microorganisms the stone degradation process, Mitchell's work has broken new ground in the study the effects of pollutants on stone buildings and monuments and has contributed bstantially to the work of NCPTT's Materials Research Program.

This article continues an NCPTT Notes *series on pollutant effects on cultural sources — the focus of NCPTT's Materials Research Program. Recent prior ticles, "Bronze Corrosion and Outdoor Pollution" and "Studies in Biodeterioration Cultural Resources," appeared in* NCPTT Notes *21 and 22.*

June 1999 - March 2000

NCPTT welcomes calendar items sent in care of NCPTT's Publications Manager. Only items with minimum two-month lead will be considered for publication. A more extensive listing of conferences, training and other preservation events is available in the Resources section of NCPTT's Web site <www.ncptt.nps.gov>.

June

1 **Preventive Conservation of Collections training sponsored by Fundacion Antorchas, Buenos Aires, Argentina. For information, contact NCPTT.**

■ *NCPTT is collaborating with the Smithsonian Institution on conservation training sessions that begin May 17 and continue through June 25. NCPTT's topics include conservation science, pest control, metals, stone and architectural materials.*

7-13 **American Institute for Conservation of Historic and Artistic Works annual meeting in St. Louis, Missouri. For information, contact AIC; telephone 202/452-9545, facsimile 202/452-9328, e-mail <InfoAIC@aol.com>, Web <palimpsest.stanford.edu/aic/>.**

■ *NCPTT is sponsoring scholarships for students in preservation and conservation graduate programs to attend the AIC annual meeting and conference. The Foundation for the American Institute for Conservation will award the scholarships. For information, contact Sarah Stout at AIC; e-mail <sarahaic@aol.com>.*

■ *NCPTT is sponsoring the new Electronic Media Specialty Group sessions and the Digital Roundtable at the AIC annual meeting and conference. For information, contact AIC.*

July

19 **Conservation of Our Cultural Heritage summer program sponsored by the University of Southern California in Los Angeles, California, July 19 through August 3. For information, contact Jody Cherry, USC School of Architecture-Historic Preservation Program; telephone 213/740-2420, e-mail <cherry@usc.edu>, Web <www.usc.edu/architecture/preservation>.**

■ *NCPTT will conduct architectural materials conservation sessions on July 27 and 29.*

September

1 **Application deadline for 1999 James Marston Fitch Charitable Foundation Mid-Career Grant Awards sponsored by the James Marston Fitch Charitable Foundation and the Samuel H. Kress Foundation. For information, contact Margaret Evans, Beyer Blinder Belle; telephone 212/777-7800, facsimile 212/475-7424.**

1 **Call for presentations deadline for American Association of Museums annual meeting in Baltimore, Maryland, May 14-18, 2000. For information, contact AAM; Web <www.aam-us.org/guidelines.html>.**

1 **Call for papers deadline for Society of Architectural Historians annual meeting in Coral Gables, Florida, June 14-18, 2000. For information, contact SAH; Web <www.sah.org/cfpmi.html>.**

21-23 **Preservation Options in a Digital World: To Film or Scan workshop in Omaha, Nebraska, sponsored by the Northeast Document Conservation Center. For information contact NEDCC; telephone 978/470-1010, e-mail Sona Naroian <sona@nedcc.org>, Web <www.nedcc.org>. For other locations and dates, see October 26-29, 1999 and March 30-April 1, 2000.**

30 **Redesign: The Conservation and Preservation of America's Resources at Mt. Rainier National Park conference September 30-October 3 in Mt. Rainier National Park, Washington, sponsored by the American Institute for Architects-Historic Resources Committee. For information, contact AIA; telephone 800/242-3837, Web <www.e-architect.com/pia/hrc>.**

October

3-4 **Preserving the 20th Century Building Envelope conference in Cambridge, Massachusetts, sponsored by Technology & Conservation and others. For information, contact Technology & Conservation; telephone 617/623-4488, facsimile 617/623-2253.**

5-9 **The Broad Spectrum: The Art and Science of Conserving Colored Media on Paper conference in Chicago, Illinois, sponsored by the Art Institute of Chicago and others. For information, contact Harriet Stratis telephone 312/857-7662, facsimile 312/443-0085, e-mail <hstratis@artic.edu>, Web <www.artic.edu/aic/collections/dept_prints/prints.html>.**

8-10 **Ground-Penetrating Radar Techniques for Discovering and Mapping Buried Archaeological Sites workshop in Denver, Colorado, sponsored by the University of Denver and NCPTT. For information, contact University of Denver; telephone 303/871-2684, Web <www.du.edu/anthro/GPRCLASS2.html>.**

■ *This workshop developed from research work supported by NCPTT's 1996 Preservation Technology and Training Grants program. The research project on new data and image processing techniques was summarized in* NCPTT Notes *26, page 4.*

17-23 **XII General Assembly of ICOMOS and World Congress of Conservation of Monumental Heritage in Mexico City, Guanajuato, Morelia and Guadalajara, Mexico. For information, contact ICOMOS e-mail <icomosmex99@compuserve.com.mx>, Web <www.icomos.org>.**

19-24 **National Trust for Historic Preservation's National Preservation Conference in Washington, DC. For information, contact NTHP, telephone 202/588-6100, facsimile-on-demand 202/588-6444, Web <www.nationaltrust.org>.**

■ *NCPTT contributes support to NTHP's Statewides Initiative; the Statewides meeting at the conference is October 19.*

20-23 **Association for Preservation Technology annual meeting in Banff, Alberta. For information, contact Larry Pearson, Alberta Community Development, 8820 112th Street, Edmonton, Alberta, T6G 2P8, Canada; telephone 403/431-2307, e-mail <lpearson@mcd.gov.ab.ca>.**

■ *NCPTT will participate in an Information Technology and Heritage Conservation training course October 24-26. For information, contact David Whiting; telephone 403/247-8711, e-mail <dwhiting@icomos.org>.*

21-23 **Historic Bridges Conference in Wheeling West Virginia. For information contact the Institute for the History of Technology and Industrial Archaeology, West Virginia University, 1535 Mileground, Morgantown, WV 26505; telephone 304/293-7169, facsimile 304/293-2449, e-mail <Lsypolt@wvu.edu>.**

29 **Preservation Options in a Digital World: To Film or Scan** workshop in Omaha, Nebraska, sponsored by the Northeast Document Conservation Center. For information contact NEDCC: telephone 978/470-1010, e-mail Sona Naroian <sona@nedcc.org>, Web <www.nedcc.org>. For other locations and dates, see September 21-23, 1999 and March 30-April 1, 2000.

November

One of two annual postmark deadlines (the other is March 15) for grants under the **American Association of Museum's Museum Assessment Program**, including MAP I, II and III. For information, contact MAP: telephone 202/289-9118, facsimile 202/289-6578, e-mail <map@aam-us.org>.

Restoration & Renovation trade exhibition and conference in Charleston, South Carolina. For information, contact EGI Exhibitions: telephone 978/664-6455, facsimile 978/664-5822, e-mail <show@egiexhib.com>, Web <www.egiexhib.com>.

December

Application postmark deadline for NCPTT's **FY2000 Preservation Technology and Training Grants**. The PTTGrants brochure will be mailed soon to *NCPTT Notes* subscribers, FY2000 PTTGrants information also will be posted soon to NCPTT's Web site.

30 **Archaeological Institute of America** annual meeting in Dallas, Texas. For information, contact AIA: telephone 617/353-9361, facsimile 617/353-6550.

March

One of two annual postmark deadlines (the other is November 1) for grants under the **American Association of Museum's Museum Assessment Program**, including MAP I, II and III. For information, contact MAP: telephone 202/289-9118, facsimile 202/289-6578, e-mail <map@aam-us.org>.

Preservation Options in a Digital World: To Film or Scan workshop, March 30-April 1 in Omaha, Nebraska, sponsored by the Northeast Document Conservation Center. For information contact NEDCC: telephone 978/470-1010, e-mail Sona Naroian <sona@nedcc.org>, Web <www.nedcc.org>. For other locations on other dates, see September 21-23, 1999 and October 26-28, 1999.

Ongoing Opportunities

Building Conservation Masterclasses at West Dean College offer materials conservation training in partnership with English Heritage and Weald & Downland Open Air Museum. For information, contact West Dean College, West Dean, Chichester PO18 0QZ, United Kingdom: telephone (+44-0) 1243-811301; facsimile (+44-0)1243-811343, e-mail <westdean@pavilion.co.uk>, Web <www.westdean.org.uk>.

Campbell Center courses in historic preservation, conservation and care of collections in Mount Carroll, Illinois. For information, contact the Campbell Center; telephone 815/244-1173, Web <www.campbellcenter.org>.

International Academic Projects at University College London-Institute of Archaeology promotes education, training and research in conservation, archeology, anthropology and related preservation fields. IAP offerings include distance learning courses. For information, contact IAP, 6 Fitzroy Square, London W1P 6DX, United Kingdom: telephone (+44-171)380-0800, facsimile (+44-171)380-0500, e-mail <IAP@archetype.co.uk>, Web <www.ucl.ac.uk/~tcfa313>.

International Center for the Study of the Preservation and Restoration of Cultural Property courses in architectural and fine arts conservation in Rome, Italy, and elsewhere. For information, contact ICCROM, via de San Michele 13, I-00153 Rome RM, Italy; telephone (+39-06) 585-531, facsimile (+39-06) 5855 3349; e-mail <training@iccrom.org>, Web <www.iccrom.org>.

National Preservation Institute seminars in historic preservation and cultural resource management in various venues. For information, contact NPI, POB 1702, Alexandria, VA 22313; telephone 703/765-0100, e-mail <infor@npi.org>, Web <www.npi.org>.

Passport in Time (PIT) Traveler volunteer opportunities at US Forest Service archeological and historic sites. Project list, project descriptions and application forms are available on the Web <www.swanet.org/jobs99>.

University of Nevada Heritage Resource Management courses in historic preservation and anthropology. For information, contact University of Nevada, Reno; telephone 775/784-4046 or 800/233-8928, facsimile 775/784-4801, Web <www.dce.unr.edu/hrm>.

University of Victoria Cultural Resource Management Program courses in museum studies, heritage conservation and cultural management, in Victoria, British Columbia, and via distance learning. For information, contact Joy Davis, University of Victoria Division of Continuing Studies, POB 3030 STN CSC, Victoria, BC V8W 3N6 Canada: telephone 250/721-8462, facsimile 250/721-8774, e-mail <joydavis@uvic.uvic.ca>, Web <www.uvcs.uvic.ca/crmp>.

Volunteers in Parks opportunities at National Park Service sites — including archeological and historic sites — are described on the Web <www.nps.gov/volunteer/jobs>.

Museum Lighting Protocol

Continued from page 7

convert electrical power directly into a three-band spectrum. While a lamp would be superior to filters, lamp development costs are likely to be substantial — although the costs perhaps could be limited by collaboration among lighting manufacturers, conservation scientists and others interested in this improvement.

Despite the success of his research, Cuttle admits that the potential conservation benefits of three-band lighting may have a limited audience. Many art museum specialists, for example, insist that natural light is the only acceptable means of illuminating some types of artworks, and others may be skeptical since no visible differences exist between three-band and conventional lighting. Cuttle nonetheless believes that most museum lighting specialists will regard three-band lighting as a significant innovation that offers another tool for reducing light-induced degradation of museum collections. Further tests in actual museum environments and critical study by conservation scientists and other museum professionals will reinforce Cuttle's work — which, to date, represents an important step towards improving museum lighting systems.

Copies of the final report for this project (PTTPublications No. 1998-31) are available from NCPTT's Publications Manager.

Our Mission

United States Department of the Interior
The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and to honor our trust responsibilities to tribes.

National Park Service
The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education and inspiration of this and future generations. The Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

National Center for Preservation Technology and Training
The National Center for Preservation Technology and Training promotes and enhances the preservation of prehistoric and historic resources in the United States for present and future generations through the advancement and dissemination of preservation technology and training.

NCPTT, created by Congress, is an interdisciplinary effort by the National Park Service to advance the art, craft and science of historic preservation in the fields of archeology, historic architecture, historic landscapes, objects and materials conservation, and interpretation. NCPTT serves public and private practitioners through research, education and information management.

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NCPTT NOTES

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NITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

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Acid Rain and Beyond

NCPTT's Materials Research Program on CD-ROM

Within the National Center for Preservation Technology and Training, the Materials Research Program continually seeks ways to disseminate research results to the public in an easily accessible form. NCPTT recently developed a multimedia CD-ROM, *Explore the Materials Research Program - Acid Rain and Beyond*. The CD summarizes more than sixteen years of scientific research on the effects of acid deposition on cultural resources decay.

In the early 1980s, the National Acid Precipitation Assessment Program began a series of concurrent investigations into the effects of acidic pollutants on human health, ecological systems and materials in the United States, including cultural resources. NAPAP's ultimate goal was to determine pollutant damage functions and to assess the costs and benefits of cleaning the air. NAPAP's current goal is to monitor the costs and benefits of air pollution reduction.

The National Park Service contributes to the NAPAP effort with funds, resources and staffing by establishing the NPS Acid Rain Program, which later became NCPTT's Materials Research Program. MRP's work includes investigating air pollution effects on cultural resources decay, postulating new mitigation strategies and developing new preservation treatment methodologies. Research is undertaken through cooperative efforts with universities, Federal laboratories, government agencies and non-profit organizations. Since 1997, NCPTT has continued funding innovative research on environmental effects of air pollutants on cultural resources through various arrangements, including its Preservation Technology and Training Grants program.

The multimedia CD-ROM, *Explore the Materials Research Program - Acid Rain and Beyond*, allows the viewer quick access to MRP's goals and accomplishments. The audience can review text, photographs, video images, computer animation, author biographies, bibliographies and Internet links for over 25 projects.

The main menu of the CD allows the viewer to watch video

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Send comments on *NCPTT Notes* or submit articles or notices for consideration to NCPTT Publications Manager Sarah B. Luster.

FY2000 PTTGrants Call for Proposals

The National Center for Preservation Technology and Training has issued the FY2000 call for proposals for NCPTT's Preservation Technology and Training Grants program. The PTTGrants program has awarded over $500,000 each year since 1994 for innovative work in research, training and information management on technical issues in history, architecture, archeology, historic landscape, objects and materials conservation, and interpretation. Grants are available in eight categories –

- Information management
- Training and education
- Applied/fundamental research
- Environmental effects
- Technology transfer
- Analytical facility support
- Conference support
- Publications support

Application deadlines are mid-December 1999, as specified in the call for proposals. *FY2000 PTTGrants Call for Proposals* is available via —

E-mail Send a blank message to <pttgrants@ncptt.nps.gov> and the call for proposals will return automatically.

Fax-on-demand Call 318/357-3214 and follow the recorded instructions to receive a catalog of documents that includes the call for proposals.

Web Visit <www.ncptt.nps.gov> and click on "Preservation Technology and Training Grants."

Brochure The printed brochure for the FY2000 PTTGrants program has been mailed to *NCPTT Notes* subscribers. Request a printed call for proposals by e-mail <ncptt@ncptt.nps.gov>, telephone (318/357-6464), or US mail (NCPTT, NSU Box 5682, Natchitoches, LA 71497).

Exhibit Conservation Guidelines CD

The National Park Service-Division of Conservation recently issued guidelines in CD-ROM format to assist in preparing preservation-responsible exhibits.

Exhibit Conservation Guidelines addresses the important role of conservation in exhibit planning, design and fabrication through technical notes and illustrations. NCPTT assisted the Division of Conservation in publishing the CD. The CD contains 370 pages (35MB) of narrative guidelines, technical notes and illustrations.

The CD is available, upon request, free-of-charge to NPS offices and sites; for others, the CD is available from the Harpers Ferry Historical Association: telephone 800/821-5206. e-mail <hfha@intrepid.net>. Web <www.nps.gov/hafe/bookshop/catalogue.htm>

PTTBoard Member Heads Municipal Art Society

Frank Emile Sanchis, III recently was appointed as executive director of the Municipal Art Society of New York. Mr. Sanchis is a charter member of NCPTT's advisory board, and previously served as vice-president for stewardship of historic properties in the National Trust for Historic Preservation.

The Municipal Art Society was founded over a century ago to promote excellence in planning and designing New York's built environment and to preserve the best of the New York's past. The Society's prominent advocacy efforts have been responsible for New York City's most important zoning and preservation laws, many of which have served as models for historic preservation efforts throughout the United States.

lew Applications for dvanced Technologies in rcheological Research

In recent years, advanced technologies have revolutionized the theory and ractice of archeological research. Two emerging technologies, Global Positioning ystems and Geographic Information Systems, promise to ntinue this trend.

GIS and GPS have potenal for widespread application archeology. Their combined ower stands to change how rcheologists approach basic sks in fieldwork — such as e collecting and analyzing rcheological site data —, and ow archeologists approach eoretical research issues, rticularly sophisticated ethods for modeling and anazing cultural landscapes. Alough further research is necsary to realize the full potenal of GPS and GIS, archeolosts already have made extenve use of these technologies, ith impressive results in many ses.

CPTT-sponsored research UNC

recent NCPTT-sponsored roject successfully explored he useful application of GIS nd GPS in archeological reearch. Dr. Robert H. runswig, Jr. of the Departent of Anthropology at the niversity of Northern Colodo undertook a field testing rogram to assess the utility of apping-grade GPS instruments that record locational information with a margin of error of less than one meter. Brunswig's research sought to determine the effects of several factors on the quality of GPS data. His fieldwork, conducted at five archeological sites in northeastern Colorado, was designed to test GPS under a variety of environmental conditions. Four sites were located in the Indian Caves research area, which lies within the Pawnee National Grassland and has topographical features typical of Colorado's high plains region. The fifth, a high-altitude game drive site, was located in mountainous, sub-Alpine terrain on the eastern side of the continental divide in Rocky Mountain National Park. In addition, Brunswig used several methods of data collection and analysis to determine which were most effective under various conditions.

Data collection and analysis

Brunswig faced a significant challenge at the outset of the project: the inherent inaccuracy of raw GPS data. The primary GPS device selected for use during fieldwork was a Trimble ProXR, which receives a relatively low resolution satellite data signal known as "C/A code." By contrast, the higher resolution P-code signal used by military and governmental GPS instruments is significantly more accurate. With C/A code instruments, positional errors ranging from 10 to 100 meters are common, which is far below the level of precision needed for most archeological applications. But in recent years, civilian engineers have developed a system of differential correction that modifies raw C/A code data to produce locational information accurate to within one meter — in many cases, more accurate than data supplied by governmental P-code GPS. Brunswig used two methods of differential correction — post-fieldwork computer processing of GPS data, and real-time data correction using a satellite antenna in the field — and found that each achieved an acceptable level of accuracy for archeological research.

In the field, Brunswig logged GPS point data at the four Indian Caves sites after each had been surveyed by University of Northern Colorado field crews using standard archeological recording methods. Field crew members walked each site at three-meter intervals and marked all visible artifacts and features with pin flags. Brunswig then followed, using GPS to record two classes of data points. The first included archeological artifacts, features and test units. The second was comprised of topographic points, which would later be needed to provide an accurate representation of the physical terrain at the site when the data was entered into a GIS.

One configuration of a field GPS system includes a notebook computer for on-site mapping

Each of the Indian Caves sites presented a different combination of archeological and landscape features. The first, located on a bluff, had a horizon-to-horizon view of the surrounding landscape and afforded Brunswig's GPS receiver excellent exposure to signals from orbiting GPS satellites. Exposed bedrock on the surface of the site revealed dozens of artifacts and nine stone rings that represented the foundations of prehistoric tipi shelters. At the second site, situated in a small, partially enclosed canyon, an exposed foundation from an early

Continued on Page 8 ➡

Correcting improper storage is part of preservation plannin

Internet Training for Paper Preservation

The Internet's remarkable growth during the past five years has led to the development of the World Wide Web as a training and learning medium. With Web-based training, an instructor can deliver course materials and conduct interactive bulletin boards and chat rooms with remote audiences. "Preservation 101," a new example of Web-based training, was developed by the Northeast Document Conservation Center with support from a 1998 Preservation Technology and Training Grants award.

In June 1999, Northeast Document Conservation Center offered a free four-week program entitled "Preservation 101: An Internet Course on Paper Preservation." The course was developed as a pilot project designed to assist museums, archives, libraries and historical societies to better understand the nature of paper collections and causes of deterioration. "Preservation 101" focused on preventive preservation, provided practical information to improve storage, care and handling, and addressed environmental issues in paper preservation.

Few institutions have enough time, money, staff and other resources to sustain all necessary activities. Although preservation or conservation activities often are neglected, preservation is an essential function that curators, archivists and librarians must learn to integrate into the daily life of an institution. Preservation practices can begin with systematic planning and simple procedures, such as formalizing handling procedures for fragile materials, providing adequate security, or by improving the quality of enclosures. Good, continuous care is a far cry from the more traditional view of "conservation," where periodic treatments were more remedial in nature. Good collections care seeks to prevent premature deterioration or physical harm, rather than to respond with treatment after damage has occurred. "Preservation 101" encouraged managers to embrace "preventive preservation" by emphasizing activities that benefit collections as a whole, such as modifying the storage environment or writing a disaster plan.

Methodology

Announced via the World Wide Web on a first-come, first-served basis, "Preservation 101" registered sixty students who represented historical organizations, libraries, public record offices and collectors.

"Preservation 101" was delivered electronically using WebCT, an instructional software program developed b Simon Fraser in British Co lumbia, and e-mail. To supple ment course materials, stu dents were directed to onlin bibliographies and readings Each Friday during the course the students had access to new lesson in which terms wer defined and the basics of in herent and external vice wer explained. Each lesson serve as a prerequisite to subsequen lessons. The first lesson, "Wha is Paper Preservation?," wa followed by "Environmenta Damage to Collections" an "Solutions to Collection Care." The final lesson, "Pres ervation Planning," integrate various course topics by intro ducing the concept of manag ing preservation by surveyin needs and prioritizing correc tive actions. To further assis participants in understandin the essentials, a glossary wa developed for the course. I addition, numerous image were used to highlight various problems and solutions in pre serving paper objects.

Collections owners ca and should protect their hold ings, but access to current in formation and high quality educational opportunities ca

Northeast Document Conservation Center

The Northeast Document Conservation Center is the largest nonprofit, regional conservation center in the United States. Its mission is to improve the preservation programs of libraries, archives, museums, and other historical and cultural organizations; to provide the highest quality conservation services to institutions that cannot afford in-house conservation facilities or that require specialized expertise; and to provide leadership to the preservation field. NEDCC also has become a national and international resource for conservation treatment and preservation education.

NEDCC was founded in 1973 in response to growing alarm about the monumental scope of paper deterioration problems facing collections-holding institutions in New England. In 1980, NEDCC was incorporated as a private, nonprofit organization serving New York, New Jersey and the New England states.

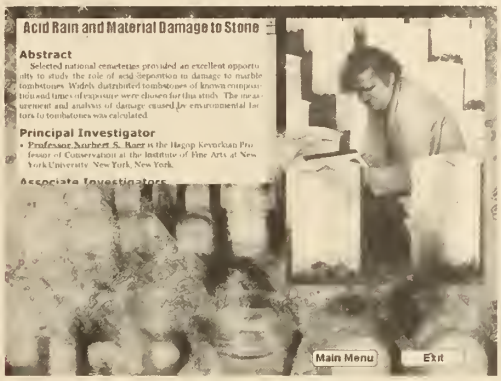
challenge for many smaller
anizations — especially
se in communities remote
m conservation expertise.
Internet can be an inex-
sive delivery medium that
ovides flexible, distant,
nchronous learning from
location — indeed, the ini-
"Preservation 101" class
luded participants from
uisiana, California, and
uth Africa.

The course has enhanced
ognition of collections care
llenges. As the demand for
ic preservation information
grown, NEDCC has been a
der in providing low- or no-
t general preservation edu-
ion to cultural institutions
the northeastern United
tes and beyond.

ation and evaluation

"Preservation 101" was
veloped by two members of
DCC's staff. Karen Brown,
d service representative,
ed as instructor while Kim
Leary, Webmaster/events
rdinator, solved the prob-
s of posting a course online.
planning the course, sev-
l other online courses, in-
ding some in unrelated
lds, were examined and
luated. NEDCC staff felt it
s important to keep the
rse content clear, complete
l adaptable to print for fu-
e use. Unlike online courses
college credit, students were
required to interact ac-
ely. The challenge for this
rse was to ensure that par-
pants would continue to be
olved throughout the pro-
m. This was accomplished
scheduled weekly postings,
offering an interactive "bul-
n board," and by inviting

ontinued on Page 9 ➡



Acid Rain and Beyond

Continued from page 1

interviews of NCPTT staff and principal investigators, select projects directly by title, or select projects indirectly by principal investigators. The viewer can read brief abstracts of selected projects on the menu screen, or click a "Show Details" button to see the full articles, images, etc.

Through video clips, viewers can learn about the mission and work of NCPTT and its Materials Research Program. Video clips include interviews with NCPTT Research Coordinator Mark Gilberg and NCPTT Materials Research Program Manager Mary F. Striegel, who provide perspectives on the NCPTT research program. Other choices include interviews with principal investigators such as ElizaBeth Bede, a doctoral candidate at the University of Delaware, who discusses current research on the effects of stone surface texture on pollutant deposition, Victor Mossotti, a geologist with the Minerals Research Survey Team at the US Geological Survey, who discusses long-term approaches to understanding stone deterioration mechanisms, and Kevin Ammons, MRP associate, who discusses MRP efforts to organize and disseminate research results through electronic media.

Each article on the CD includes information about project goals and approaches, principal investigators, significant findings and applications, and a selected bibliography. The main source for these articles is the MRP archives, which include NAPAP and NPS Acid Rain Program/MRP research, literature, reports, photographs and slides.

Explore the Materials Research Program - Acid Rain and Beyond *was produced under contract with M&M Communications Concepts, <www.mmcc.com>, a technology utilization group specializing in multimedia production. The project team for the NCPTT CD included Marion Marks, Joel Rea, John Lomax and Scott Griffin. Dr. Gillian Rudd authored the text for each project article on the CD.*

Contact Dr. Mary F. Striegel for information on CD production techniques used in this project.

The multimedia CD-ROM, *Explore the Materials Research Program - Acid Rain and Beyond* (PTTPublications No. 1999-15), is available upon request after September 10 from NCPTT's Publications Manager.

The minimum requirements to run the CD include —

- Intel 486 or better (Pentium MMX recommended) or fully compatible CPU
- 16MB of system RAM for Win95, 24 MB for Win98, or at least 32MB for WinNT.
- 10MB of free hard drive space for possible installations of system features such as QuickTime 3.0
- 8x or faster CD-ROM drive
- Video display adapter and monitor capable of displaying 800x600 resolution, at 256 colors (High Color/32,768/65,536 colors and a display adapter with at least Windows acceleration and "multimedia" or "video" acceleration features are strongly recommended for playing the videos.)
- Sound card capable of digitized audio playback and speakers/headphones are required for the video interviews.

Spatial Data Management in SHPO Information Systems

Location is central to the management of cultural resources. If the location of a building, district, site or object is unknown, no action can be taken to manage, preserve or protect the resource. In spite of the importance of location, spatial information technologies such as GIS rarely are integrated with everyday State Historic Preservation Office decision-making. Database management technologies are well-established, but the transition to GIS technology is slow in spite of high user demand for geospatial data on cultural resources. A collaborative effort to advance GIS technology for SHPO information systems in the western United States is the subject of recent work completed as part of a 1997 Preservation Technology and Training Grants project.

An interesting exchange appeared a few years ago in the *Society for American Archeology Bulletin* concerning the "best" organizational basis for State Historic Preservation Offices' cultural resource databases[1]. Discussion focused on a serious problem for all cultural resource management information systems. The argument pitted Geographic Information Systems against Relational Database Management Systems as the most appropriate foundation for SHPO information systems. One side argued that the spatial dimension is so crucial to SHPO operations that GIS is the logical technical solution. The other side countered that GIS is a poor technical foundation for basic data management, and that GIS applications are best indirectly linked to a RDBMS foundation.

The interchange was particularly relevant to our situation in New Mexico. The New Mexico Cultural Resource Information System had been upgraded recently to the Oracle RDBMS. We were in the process of integrating GIS technology using ESRI ArcInfo and had just completed our pilot data entry effort. We seemed well-positioned to meet our users' needs, but our experiences suggested that we were far from a long-term solution.

During our pilot GIS project, we found the process of spatial data collection so procedurally complex and labor-intensive that we began questioning the efficiency of GIS. We found that GIS tends to intensify, rather than resolve, problems related to three fundamental information system objectives of data capture, data management and data delivery.

Technology and SHPO collaboration

As our pilot project was nearing completion, the RDBMS industry began to introduce "multidimensional" database products capable of managing spatial and other non-text data types. Simultaneously, the GIS industry was working to overcome some of the operational problems that traditional spatial models created for many users, and started finding ways to integrate RDBMS technology in a more seamless fashion. GIS and RDBMS technologies were converging to provide potential benefits for cultural resource management.

Representatives from the Wyoming, Colorado, Arizona and New Mexico SHPOs met with ESRI engineers in Boulder, Colorado, to discuss the feasibility of using Spatial Database Engine in our cultural resource databases. The complexity and cost of SDE presented major roadblocks, however, so the group decided to look for additional resources.

In 1997, the New Mexico and Wyoming SHPOs received a Preservation Technology and Training Grants award to evaluate the effectiveness of SDE and other similar technologies for SHPO GIS. Two major objectives of the PTTGrants project were to develop a common logical spatial model for cultural resources among New Mexico, Wyoming and other western states, and, based on that model, to develop a spatial database prototype using SDE in New Mexico.

The common data model

At the same time, the Wyoming SHPO was awarded a US Geological Survey-Federal Geographic Data Committee grant to develop cultural resource metadata – data that describ the content, quality, conditio and other characteristics data – and data content sta dards for the western Unit States. Since the objectives the two grants overlapped, e pecially in the areas of da modeling and metadata trai ing, most of the initial dat modeling tasks for t PTTGrants project were co ducted as part of worksho sponsored by the USGS gran

Representatives from mo western states and Federal lar management agencies partic pated in the USGS-sponsor workshops. The worksho focused on identifying bas cultural resource data typ and specifying key descripti — non-spatial — data. Wor shop participants developed spatial data model for the maj cultural resource data types a identified key metadata item Owing to a widespread need accommodate large amounts highly variable data in existi cultural resource informati systems, this task represents "best practices" guide rath than a data standard.

The USGS grant provid an opportunity to involve mar more states and generated co siderable interest and suppo from Federal land managemen agencies. Although the proce of creating a formal data sta dard will involve addition levels of review and will tak several years, a solid found tion for current cultural r source GIS efforts at the Ne Mexico and Wyoming SHPO was initiated.

1. "Point-Counterpoint: Site File Databases and GIS Systems." *SAA Bulle* 13(4). 1995.
2. The preliminary report on the first Federal Geographic Data Commit workshop is available online at <http://colby.uwyo.edu/fgdcdoc report1.html>. A revised report based on the second FGDC workshop February 1999 will be posted at this site soon.

e spatial database ototype

he NMCRIS spatial database ototype consists of three mponents:

The Archaeological Records Management Section server: A UNIX-based computer running the Oracle relational database management system and the ESRI Spatial Database Engine. The server is the main data repository where all information pertaining to cultural resources—spatial and non-spatial—is stored, managed and manipulated.

Multiple client PCs running GIS applications that interact with the ARMS server over a local area network. These applications communicate with the ARMS server to insert, modify and query spatial data.

Remote client PCs running GIS software: The clients communicate with the ARMS server over the Internet. These applications are limited to query and download functions only.

Installation of Spatial Data ngine was trouble-free. The gical data model was trans- ted to a physical database ructure in Oracle, and exist- g spatial data were trans- rred from ArcInfo to SDE. s applications were developed r data capture, the New exico SHPO staff was able to e SDE immediately for query d analysis tasks using ESRI cView as the GIS interface.

The main design goal for e data capture application as to provide a means for on-technical staff to capture ospatial data quickly with inimal training and disrup- tion of work flow. The application accomplishes this goal by allowing users to digitize cultural resources against a familiar background of USGS topographic map images. ARMS staff are able to process and complete documents as received, resulting in significant productivity gains.

With the help of ESRI consultants, New Mexico SHPO technical staff then created a spatial extension to our existing text-based query tool. Accessed by users via Internet and modem connections since 1993, this aging program has been given a new lease on life by linking the program to SDE. Users now can retrieve complex cultural resource data in a familiar format — easily interpreted maps —, ensuring that comprehensive pre-fieldwork record checks of the geographic area to be investigated are completed.

Evaluation

For GIS technology to improve SHPO operations, GIS technology must be integrated into SHPOs' daily work routines —something that has remained out of reach for most states.

SDE and similar database technologies provide an environment in which spatial data can be collected, managed and distributed in much the same way as non-spatial data. SDE allows an uncomplicated, transactional approach to spatial data capture. With SDE, cultural resources — rather than space — are the central organizing principle, which allows a more logical and efficient workflow.

Spatial data management is handled by the underlying RDBMS — a mature and robust technology. Spatial and non-spatial records are inserted, modified, indexed and deleted in the same database environment allowing, for example, automatic recovery of digitized site boundaries following a system crash. Administrative costs for spatial data management are rolled into our overall RDBMS administration, resulting in significant savings. Moreover, the integrity and security of spatial data are greatly increased in the RDBMS environment.

No serious technical obstacles in using this technology are known, but cost and complexity are significant factors. For a small agency like the New Mexico SHPO, SDE is a considerable investment. Annual maintenance and staff recruiting, retaining and training are expensive. Implementing SDE and REBMS technology requires skilled technical staff or consultants, and training is essential to retain staff and technical competence. Consultants and partnerships with technically advanced agencies also should be considered.

An ArcView client application displays archeological inventory areas around Santa Fe, New Mexico, with topography displayed in the background.

The practical benefits of applied technology are significant. In New Mexico, we plan to use SDE as the foundation for an Internet-based "call-before-you-dig" information service capable of displaying — to qualified individuals — the location of districts, buildings and sites as easily interpreted maps. With a single, easily accessed data source, we expect fewer conflicts between preservation and development, more informed short- and long-range planning at all levels of government, more efficient SHPO consultations and, most important, enhanced preservation of prehistoric and historic properties.

— Tim Seaman

Mr. Seaman is the Archeological Records Management Section program manager at the New Mexico State Historic Preservation Office.

Copies of the final project report (PTTPublications No. 1999-08) are available from NCPTT's Publications Manager.

New Applications for Advanced Technologies in Archeological Research

Continued from page 3

twentieth-century homestead and several prehistoric stone tools were evident. The third site occupied an eroding terrace knoll along Cedar Creek. Field crews excavated three test pits and conducted three shovel tests, revealing artifacts, animal bone, charcoal and fire-cracked rocks that showed that the site had been occupied for several centuries by a series of short-term camps. The fourth site, located on a gently sloping hillside, included an extensive scatter of hundreds of historic and prehistoric artifacts. In all, the Indian Caves sites allowed Brunswig to record GPS data in several different archeological and environmental contexts.

Brunswig encountered entirely different conditions at the fifth site included in the project. Located in the rugged terrain of Rocky Mountain National Park, the Trail Ridge Game Drive site recently was documented as part of a study of high altitude game drive sites in the Front Range mountains of north-central Colorado. Elevations at the site range from 3465 to 3500 meters. Major features include three masonry rock walls and five rock-lined pits designed to channel game from sub-Alpine woods up a steep saddle situated between two mountain knolls. Radiocarbon dating of charcoal, granite weathering studies, and recovered artifacts indicate that the site dates to at least 3000 BC and may have been used as late as 1000 AD. In recording the site, Brunswig sought to assess the utility of GPS for precisely mapping topographic and archeological features in mountainous terrain.

After completing his fieldwork, Brunswig used Pathfinder GPS software to manipulate the data recorded at each of the five sites. Pathfinder is capable of performing several essential functions with data transferred from the GPS field logger into computer files. Chief among these functions is data correction processing, which increases the locational accuracy of raw data recorded in the field. Pathfinder also has the capacity to combine multiple files and data sets to create larger, more complex multi-site files. All data can be saved in a variety of GIS spreadsheet or text formats, including several that give access to information on individual data points recorded during fieldwork. Corrected files can be exported into an external GIS or computer mapping program.

From the statistical information generated by Pathfinder, Brunswig determined that a total of 74.16 acres, or 301,118 square meters, was surveyed at the five test sites. The number of total data points recorded at individual sites ranged from 58 to 193, with an average of 111 per site. The time needed to record each site varied between 388 and 57 minutes. Recording times per point were as high as two minutes at one site and as low as 50 seconds at another. In part, the range of variation was affected by travel time between individual data points — rough terrain, of course, increases travel time. Brunswig found, however, that under most conditions logging times can average less than a minute per point, depending on the size and topographic complexity of the site being surveyed.

Spatial data collection typically takes less than one minute per site per point and several thousand points can be recorded in the GPS data logger.

GPS versus conventional surveying techniques

On the basis of his fieldwork, Brunswig concluded that GPS offers several important advantages over standard archeological survey methods. The efficiency of GPS is especially significant. With average data logging times of less than a minute per point, GPS compares favorably with conventional surveying techniques — and in rough terrain or heavily vegetated areas, it offers substantial advantages. Conventional surveying instruments, which require a clear line-of-sight, must be repositioned frequently under such conditions, increasing field time. By contrast, a GPS operator is able to move quickly over the landscape as necessary to record topographic and archeological features. A GPS survey also requires less manpower. A single person can operate a GPS receiver; two or more persons are needed for a standard survey.

Another advantage of GPS is its accuracy. For each of the five sites surveyed, Brunswig compared raw and corrected data to determine the increase in accuracy possible with post-fieldwork data processing. At the Trail Ridge Game Drive site, for example, the average accuracy of uncorrected data points was ± 3.817 meters. Differential correction improved this figure to ± .21817 meters — an accuracy of under half a meter. Data correction resulted in even greater increases in accuracy for two of the high plains sites. The site located beside Cedar Creek, for instance, had an average uncorrected standard deviation of ± 3.2621 meters, which data correction processing improved to ± .0844 meters — less than 17 centimeters. Brunswig's research demonstrates that GPS can achieve a sufficient level of locational precision for virtually all archeological survey applications.

As an additional assessment of GPS in archeological research, Brunswig exported the differentially corrected data files for each of the five sites into GIS and the SURFER computer mapping software program. For each site, Brunswig constructed two types of data files: one containing all differentially corrected points

X, Y and Z data set) and another
prised of three-dimensional point data
o an X, Y and Z data set) on specific
heological and environmental features.
SURFER program then used these
s to generate contour and three-di-
sional surface maps of each site. Since
nswig's differentially corrected data
accurate to within one meter, the
s were extremely precise. Maps gen-
ed by the SURFER program also can
raphically enhanced with symbols and
ls for archeological and topographi-
features. For the Trail Ridge Game
ve site map, for instance, Brunswig
ted identifying labels for the rock
ls, game pits and the drive corridor
provide useful information for ana-
ng and interpreting the site. Labels
environmental features such as water
inage routes and seasonal wind flow
terns, which are critically important
understanding some sites, also can be
ed.

ity for practitioners

project was successful on several lev-
nd clearly demonstrates the utility of
S in archeological research. First, the
cess used by Brunswig proved effec-
in recording large volumes of GPS
a with precision acceptable for most
heological applications. Second, the
antages of using GPS to record sites
ted in difficult terrain became evident
ing Brunswig's fieldwork. GPS is at
t as easy to use and efficient as conven-
al surveying methods, which rely
vily on compass readings, measuring
es and sketch maps. In addition, GPS
a can be transferred into a variety of
puter software formats and used in
puter mapping programs — a tre-
adous benefit that facilitates post-field-
k analysis of recorded sites.

The larger implications of Brunswig's
k point to the ways archeologists may
GPS and GIS in the future. In prac-
l terms, GPS stands to expedite and
uce the costs of archeological field-
k. GPS offers archeologists a tool for
ecting precise data on the location of
heological sites, features and artifacts
t can be used to create computer-gen-erated maps and for statistical analysis. In broader terms, GPS and GIS technology offers archeologists a means of exploring a wide range of theoretical research issues. The ability of GIS to manipulate multiple classes of archeological and environmental data makes sophisticated modeling of past cultural and physical landscapes possible. GPS and GIS ultimately may allow more comprehensive analysis of the archeological record — and the relationships among human activity, physical landscapes and natural ecosystems revealed in the archeological record — than ever before possible.

WWWeb T.H.E.N.

www.mtsu.edu/~then

The Heritage Education Network is designed for K-12 teachers, personnel at historic sites, museums, historical societies, State Historic Preservation Offices and other groups interested in heritage education. A valuable aspect of THEN is the links to related Web sites. The Heritage Education Network is a project of the Center for Historic Preservation at Middle Tennessee State University and NCPTT.

www.ncptt.nps.gov

"All in all, [NCPTT's] website was beautifully and intelligently designed to provide simple access to a wealth of preservation technology information."

"Web Watch." *Discovering Archaeology*. May/June 1999, p. 30.

"Preservation 101"

Continued from page 5

personal e-mail among students, the Webmaster and the instructor. These dynamic features provided students with further means of gathering details that complemented the more general course content.

Several observers were invited to critique the structure, feel, look, activity and usefulness of the course. Their comments before, during and after the course — as well as responses submitted by students using an online evaluation form — direct the program's future improvements. NEDCC expects to present this program again early in 2000, to be announced via the World Wide Web and in *NCPTT Notes*' Preservation Calendar. NEDCC plans to increase the number of students who may be registered at one time, and hopes to offer two additional lessons, "Disaster Planning," and "Care of Photographs." For future sessions, NEDCC is considering a partnership with an academic institution that would offer courses for academic credit. NEDCC intends to continue offering "Preservation 101" at no charge and plans to explore unique Internet capabilities for expanding access to preservation education.

— Karen E. K. Brown

As NEDCC's field service representative, Ms Brown organizes and conducts preservation surveys and workshops, provides technical advice to libraries, museums and archives, and advises on disaster planning and recovery.

September 1999 - May 2000

NCPTT welcomes calendar items sent in care of NCPTT's Publications Manager. Items with minimum two-month lead will be considered for publication. A more extensive listing of conferences, training and other preservation events is available in the Resources section of NCPTT's Web site, <www.ncptt.nps.gov>.

September

22-26 **International Cultural Heritage Informatics Meeting** in Washington DC, sponsored by Archives & Museum Informatics. The meeting includes half day, one day and two-day workshops, and a conference. For information, contact Archives & Museum Informatics; telephone 412/422-8530, Web <www.archimuse.com/ichim99>.

29 **Annual meeting of the American Association for State and Local History and the Mid-Atlantic Association of Museums**, September 29-October 2, in Baltimore, Maryland. The meeting topic is "Caring for our Treasures at the Millennium." For information, contact AASLH; telephone 615/320-3203, e-mail <history@aaslh.org>. Web <www.aaslh.org>.

30 **Preserving the Walls and the Wilderness of America's Western National Parks** conference in Mt. Rainier National Park, Washington, September 30-October 3, sponsored by the American Institute for Architects-Historic Resources Committee. For information, contact AIA; facsimile-on-demand 800/242-3837 (option 8, document 142), Web <www.e-architect.com/pia/hrcmora/intro.asp>.

30 **Call for papers deadline for Preserving the Recent Past II** conference, sponsored by the National Park Service-Heritage Preservation Services and others in Philadelphia, Pennsylvania, October 11-13, 2000. For information about the call for papers, telephone 202/343-6011; for information about the conference, visit <www2.cr.nps.gov/tps/recentpast2>.

October

1-2 **Interpreting Aalto: Baker House and MIT** conference in Cambridge, Massachusetts, sponsored by Massachusetts Institute of Technology. For information, contact MIT; telephone 617/253-1412, facsimile 617/253-8993, Web <http://architecture.mit.edu/events/aac>.

3-4 **Preserving the 20th Century Building Envelope** conference in Cambridge, Massachusetts, sponsored by Technology & Conservation and others. For information, contact Technology & Conservation; telephone 617/623-4488, facsimile 617/623-2253.

5-9 **The Broad Spectrum: The Art and Science of Conserving Colored Media on Paper** conference in Chicago, Illinois, sponsored by the Art Institute of Chicago and others. For information, contact Harriet Stratis; telephone 312/857-7662, facsimile 312/443-0085, e-mail <hstratis@artic.edu>, Web <www.artic.edu/aic/collections/dept_prints/prints.html>.

8-10 **Ground-Penetrating Radar Techniques for Discovering and Mapping Buried Archaeological Sites** workshop in Denver, Colorado, sponsored by the University of Denver and NCPTT. For information, contact University of Denver; telephone 303/871-2684, Web <www.du.edu/anthro/GPRCLASS2.html>.

■ *This workshop developed from research work supported by NCPTT's 1996 Preservation Technology and Training Grants program. The research project on new data and image processing techniques was summarized in* NCPTT Notes *26, page 1.*

12-16 **National Lighthouse** conference in Key West, Florida, sponsored by US Lighthouse Society and others. For information, contact National Lighthouse Conference 1999, 3501 South Roosevelt Boulevard, Key West, Florida 33040; telephone 305/296-1702, facsimile 305/296-6202, e-mail <maine1898@aol.com>. Web <www.keywest.com/lighthouse>.

13-15 **Fundamentals of Preservation** workshop in Andover, Massachusetts, sponsored by the Northeast Document Conservation Center; first in a series of five "Managing Preservation" workshops that continue January 10-12, April 5-7, June 1-2 and September 21-22. For information, contact Steve Dalton or Karen E.K. Brown at NEDCC; telephone 978/470-1010, Web <www.nedcc.org/coord.htm>.

15 **Call for abstracts** (100-150 words) deadline for *CRM* issue on disasters' impacts on cultural resources, with high priority given to articles on planning, mitigation and response. For information, contact David Look; telephone 415/427-1401, facsimile 415/427-1484, e-mail <David_W_Look@nps.gov>.

17-23 **XII General Assembly of ICOMOS and World Congress of Conservation of Monumental Heritage** in Mexico City, Guanajuato, Morelia and Guadalajara, Mexico. For information, contact ICOMOS; e-mail <icomosmex9@compuserve.com.mx>, Web <www.icomos.org>

19-24 **National Trust for Historic Preservation's National Preservation Conference** in Washington, DC. For information, contact NTHP; telephone 202/588-6100, facsimile-on-demand 202/588-6444, Web <www.nationaltrust.org>

■ *NCPTT contributes support to NTHP's Statewides Initiative; the Statewides meeting at the conference are October 19 and 20.*

20-21 **Structural Condition Assessment for Existing Structures** seminar in Honolulu, Hawaii sponsored by the American Society of Civil Engineers. For information, contact ASCE; telephone 703/295-6300, Web <www.asce.org/conted/index.html>. For other locations and dates, see October 28-29, December 2-3, January 20-21 and March 23-24.

20-23 **Association for Preservation Technology International** annual meeting in Banff, Alberta. For information, contact APT; e-mail <infor@apti99.ab.ca>.

21-23 **Historic Bridges Conference** in Wheeling, West Virginia. For information, contact the Institute for the History of Technology and Industrial Archeology, West Virginia University, 1535 Milegrond, Morgantown, WV 26505; telephone 304/293-7169, facsimile 304/293-2449, e-mail <Lsypolt@wvu.edu>.

24-26 **Association for Preservation Technology International** training sessions in Banff, Alberta, including Information Technology and Heritage Conservation, Cultural Landscapes and Conservation and Protection of Exterior Wood. For information, contact Pat Buchik at Canadian Heritage-Parks Canada; telephone 403/292-4703, facsimile 403/292-4886, e-mail <pat-buchik@phc.gc.ca>.

■ *NCPTT will participate in the Information Technology and Heritage Conservation training session. For information, contact David Whiting; telephone 403/247-8711, e-mail <dwhiting@icomos.org>.*

26-29 **Preservation Options in a Digital World: To Film or To Scan** workshop in Austin, Texas sponsored by the Northeast Document Conservation Center. For information, contact NEDCC; telephone 978/470-1010, e-mail Gay Tracy <tracy@nedcc.org>, Web <www.nedcc.org>. For another location on other dates, see March 30-April 1, 2000.

28-29 **Structural Condition Assessment for Existing Structures** seminar in Pittsburgh, Pennsylvania, sponsored by the American Society of Civil Engineers. For information, contact ASCE; telephone 703/295-6300, Web <www.asce.org/conted/index.html>. For other

locations and dates, see October 20-21, December 2-3, January 20-21 and March 23-24.

November

One of two annual postmark deadlines (the other is March 15) for grants under the **American Association of Museum's Museum Assessment Program**, including MAP I, II and III. For information, contact MAP; telephone 202/289-9118, facsimile 202/289-6578, e-mail <map@aam-us.org>.

Restoration & Renovation trade exhibition and conference in Charleston, South Carolina. For information, contact EGI Exhibitions; telephone 978/664-6455, facsimile 978/664-5822, e-mail <show@egiexhib.com>, Web <www.egiexhib.com>.

Call for presentations deadline for *Africanisms in America: Places of Cultural Memory* conference in New Orleans, Louisiana, September 26-30, 2000, sponsored by the National Park Service and others. For information on the conference, telephone 888/358-8388. For information about the call for presentations, contact Toni Lee, National Park Service, Heritage Preservation Services, 1849 C Street NW-NC300, Washington, DC 20240; facsimile 202/343-3921, e-mail <Toni_Lee@ nps.gov>.

December

Structural Condition Assessment for Existing Structures seminar in Nashville, Tennessee, sponsored by the American Society of Civil Engineers. For information, contact ASCE; telephone 703/295-6300, Web <www.asce.org/conted/index.html>. For other locations and dates, see October 20-21, October 28-29, January 20-21 and March 23-24.

Conserving the Painted Past conference on wall painting conservation, sponsored by English Heritage in London. For information, contact Amanda Holgate, English Heritage, 23 Savile Row-Room 227, London W1X 1AB, United Kingdom; telephone 0171/973-3000, facsimile 0171/973-3001, Web <www.english-heritage.org.uk>.

Application postmark deadline for NCPTT's FY2000 Preservation Technology and Training Grants. See page 2 in this edition of *NCPTT Notes* for Call for Proposals information.

0 Archaeological Institute of America annual meeting in Dallas, Texas. For information, contact AIA; telephone 617/353-9361, facsimile 617/353-6550.

January

10-12 Emergency Preparedness workshop in Andover, Massachusetts, sponsored by the Northeast Document Conservation Center; second of a series of five "Managing Preservation" workshops that continue April 5-7, June 1-2 and September 21-22. For information, contact Steve Dalton or Karen E.K. Brown at NEDCC; telephone 978/470-1010, Web <www.nedcc.org/coord.htm>.

20-21 Structural Condition Assessment for Existing Structures seminar in San Diego, California, sponsored by the American Society of Civil Engineers. For information, contact ASCE; telephone 703/295-6300, Web <www.asce.org/conted/index.html>. For other locations and dates, see October 20-21, October 28-29, December 2-3 and March 23-24.

March

15 One of two annual postmark deadlines (the other is November 1) for grants under the **American Association of Museum's Museum Assessment Program**, including MAP I, II and III. For information, contact MAP; telephone 202/289-9118, facsimile 202/289-6578, e-mail <map@aam-us.org>.

23-24 Structural Condition Assessment for Existing Structures seminar in Orlando, Florida, sponsored by the American Society of Civil Engineers. For information, contact ASCE; telephone 703/295-6300, Web <www.asce.org/conted/index.html>. For other locations and dates, see October 20-21, October 28-29, December 2-3 and January 20-21.

30 Preservation Options in a Digital World: To Film or Scan workshop. March 30-April 1 in Providence, Rhode Island, sponsored by the Northeast Document Conservation Center. For information, contact NEDCC; telephone 978/470-1010, e-mail Sona Naroian <sona@nedcc.org>, Web <www.nedcc.org>. For another location on other dates, see October 26-29, 1999.

April

5-7 Collections Maintenance workshop in Andover, Massachusetts, sponsored by the Northeast Document Conservation Center; third in a series of five "Managing Preservation" workshops that continue June 1-2 and September 21-22. For information, contact Steve Dalton or Karen E.K. Brown at NEDCC; telephone 978/470-1010, Web <www.nedcc.org/coord.htm>.

5-9 Society for American Archaeology annual meeting in Philadelphia, Pennsylvania. For information, contact Winifred Creamer, Society for American Archaeology, 900 Second Street NE #12, Washington, DC 20002-3557; telephone 202/789-8200, facsimile 202/789-0284, e-mail <meetings@saa.org>, Web <www.saa.org>.

■ *NCPTT will participate in a poster session on digital access.*

6-9 Preserving the Historic Road in America conference in Morristown, New Jersey, sponsored by the National Trust for Historic Preservation and others. For information, contact Dan Marriott at NTHP; telephone 202/588-6279, e-mail <dan_marriott@nthp.org>.

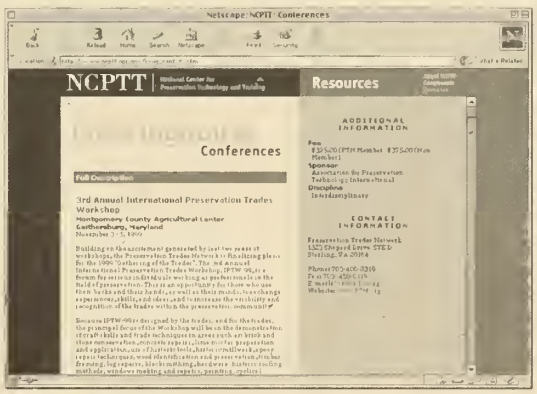
May

11-13 Terra 2000-8th international conference on the study and conservation of earthen architecture, sponsored by English Heritage and others. For information, contact the Centre for Earthen Architecture, University of Plymouth-Faculty of Technology, Drake Circus, Plymouth PL4 8AA, United Kingdom; e-mail <terra2000@plymouth.ac.uk>.

Search for Conferences at the NCPTT Web Site

A database of preservation-related conferences is available at NCPTT's Web site. Users can search by keyword, location, discipline or date — individually or in combination.

Access the database in the Resources section of the Web site or directly at <www.ncptt.nps.gov/conferences>. A training and education opportunities database and a jobs database will be online soon.



Our Mission

United States Department of the Interior
The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and to honor our trust responsibilities to tribes.

National Park Service
The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education and inspiration of this and future generations. The Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

National Center for Preservation Technology and Training
The National Center for Preservation Technology and Training promotes and enhances the preservation of prehistoric and historic resources in the United States for present and future generations through the advancement and dissemination of preservation technology and training.

NCPTT, created by Congress, is an interdisciplinary effort by the National Park Service to advance the art, craft and science of historic preservation in the fields of archeology, historic architecture, historic landscapes, objects and materials conservation, and interpretation. NCPTT serves public and private practitioners through research, education and information management.

National Center for Preservation Technology and Training
NSU Box 5682
Natchitoches, LA 71497

NCPTT NOTES

National Center for Preservation Technology and Training
United States Department of the Interior • National Park Service

FALL SUPPLEMENT 1999 NUMBER 34

Preservation Technology and Training Grants and Projects— 1994-1999 summary catalog

NCPTT prepares comprehensive reviews of its work as supplements to NCPTT Notes *twice annually — a Spring Supplement review of Preservation Technology and Training Publications, and a Fall Supplement review of Preservation Technology and Training Grants and Preservation Technology and Training Projects.*

This year's Fall Supplement complements NCPTT's Annual Report, which will be sent to Notes *subscribers soon.*

The National Park Service, the Preservation Technology and Training Board and NCPTT are pleased to present the fifth annual summary of work undertaken by NCPTT.

NCPTT's Preservation Technology and Training Grants Program is NCPTT's most prominent means of encouraging and supporting new ideas in preservation and conservation technologies. But NCPTT recognizes that rigorous competitive program such as PTTGrants may not address all of the preservation community's current needs nor allow important projects begun under the PTTGrants program to continue or expand. As a complement to the PTTGrants program, NCPTT's Preservation Technology and Training Projects program builds on the individual professional strengths of NCPTT's staff and takes a long-range view towards developing the preservation community's technical capabilities and resources.

The value of PTTProjects and PTTGrants in fiscal years 1994-1999 totals over $6 million — with an approximately even split overall between projects and grants.

In fiscal year 1999, the value of PTTProjects totaled approximately $900,000.

In fiscal year 1999, the PTTGrants program received approximately 180 proposals, requesting approximately $6.4 million. Twenty-seven PTTGrants were awarded, totaling over $900,000.

A notice on page 2 of this edition of *Notes* announces the fiscal year 2000 PTTGrants program.

Partnerships with the preservation community and the tangible results of the PTTProjects and PTTGrants programs are important accomplishments for NCPTT. NCPTT invites participation in its work, and welcomes readers' review and comments on the direction of its PTTProjects and PTTGrants programs.

— **Katherine H. Stevenson**
Associate Director, Cultural Resource Stewardship and Partnerships

— **Dr. Elizabeth A. Lyon**
Chair, Preservation Technology and Training Board

— **John Robbins**
Executive Director, NCPTT

FY2000 PTTGrants

For information about the FY2000 PTTGrants Call for Proposals, see page 2.

NCPTT Notes

Fall Supplement
1999

PTTPublications
No. 1999-30

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Sculpture at decorative arts museum, Buenos Aires, Argentina
(see entry 159)

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Send comments on *NCPTT Notes* or submit articles or notices for consideration to NCPTT Publications Manager.

FY2000 PTTGrants Call for Proposals

The National Center for Preservation Technology and Training has issued the fiscal year 2000 call for proposals for NCPTT's Preservation Technology and Training Grants program. The PTTGrants program has awarded over $500,000 each year since 1994 for innovative work in research, training and information management on technical issues in historic architecture, archeology, historic landscapes, objects and materials conservation, and interpretation. Grants are available in eight categories –

- Information management
- Training and education
- Applied/fundamental research
- Environmental effects
- Technology transfer
- Analytical facility support
- Conference support
- Publications support

Application deadlines are mid-December 1999, as specified in the call for proposals. *FY2000 PTTGrants Call for Proposals* is available via —

E-mail Send a blank message to <pttgrants@ncptt.nps.gov> and the call for proposals will return automatically.

Fax-on-demand Call 318/357-3214 and follow the recorded instructions to receive a catalog of documents that includes the call for proposals.

Web Visit <www.ncptt.nps.gov> and click on "Preservation Technology and Training Grants."

Brochure The printed brochure for the FY2000 PTTGrants program has been mailed to *NCPTT Notes* subscribers. Request a printed call for proposals by e-mail <ncptt@ncptt.nps.gov>, telephone (318/357-6464), or US mail (NCPTT, NSU Box 5682, Natchitoches, LA 71497).

Information Management

NCPTT Information Management Coordinator Mary Carroll is responsible for these projects.

207. Hawaii Traditional Cultural Places Inventory Database

Hawaii State Historic Preservation Office, Kapolei, Hawaii

$24,206

Project abstract: The Hawaii SHPO maintains a computerized database of approximately 20,000 historic properties. Underrepresented in this inventory are traditional cultural properties or places significant for their association with native Hawaiian traditions, beliefs and customs. The Hawaii SHPO will develop and test a database for traditional cultural properties that accommodates information extracted from diverse historical and ethnographic sources, uses traditional place names to link this information, and allows information to be retrieved despite uncertainties in the location of many traditional places.

Project significance: A thorough and effective database of traditional cultural properties or places will enhance both the understanding and the protection of these important Hawaiian resources. This project will address the need for readily retrievable information on traditional cultural properties and places so that they can be considered earlier and more effectively in the planning process.

206. JAIC Online

Foundation of the American Institute for Conservation, Washington, DC

$37,016

Project abstract: The *Journal of the American Institute for Conservation* is a prominent international medium for disseminating peer-reviewed information in the conservation of prehistoric, historic and cultural works. This project will dramatically increase public access to this material by placing the *JAIC* online. Back issues (1977-1997) will be translated into XML, mounted on Conservation OnLine (CoOL), <palimpsest.stanford.edu>, and indexed with a search engine. HTML output will be browsable by issue, table of contents, abstracts and keywords.

Project significance: *JAIC* articles are an excellent resource of core knowledge in conservation research and practice. Online access to *JAIC* will benefit conservators interested in advanced technical issues in preservation and conservation, and the cultural resources in their care.

205. National Register District GIS Project

Ohio State Historic Preservation Office, Columbus, Ohio

$39,083

Project abstract: The National Register District Geographic Information Systems project will create a digital data layer of National Register districts and contributing properties within the state of Ohio. This data layer, accessible online, will allow users to query, present and analyze information on historic districts efficiently and comprehensively.

Project significance: Ready and widespread access to accurate information about historic districts and their resources will greatly assist practitioners at federal, state and local levels in research and planning projects — including compliance, "tax act" and certified local government activities —, and greatly assist the preservation of historic districts throughout Ohio.

204. North American Database and Website of Archeological Geophysics (Phase 1 of three phases)

University of Arkansas, Fayetteville, Arkansas

$34,501 (Phase 1)

Project abstract: The technology of archeological geophysics has advanced tremendously in the past decade, but developments and levels of use in North America have lagged far behind practices in Europe and Japan. The University of Arkansas will develop a database and Website to educate the professional community and the public in the utility and need for this technology, and will maintain a database archive of results. The centralized Website and database will include project data, imagery, annotated bibliographic citations, project reports, instrumentation data, links to practitioners, manufacturers and other geophysics sites, upcoming events links, and educational tutorials. Phase 1 will focus on basic Website development.

Project significance: With the large potential for geophysical prospecting methods in archeology, their growing importance in the discipline, and the increasing number of applications and practitioners, a central Website and database of North American results is vitally important. This project will promote education, awareness and the use geophysical survey methods in North American archeology.

203. Olmsted Research Guide Online (Phase 1 of three phases)

National Park Service-Frederick Law Olmsted National Historic Site, Brookline, Massachusetts

$35,523 (Phase 1)

Project abstract: The Frederick Law Olmsted National Historic Site will create an Internet-accessible database of information about the landscape designs of Frederick Law Olmsted Sr. and successor firms. Information about collections at various repositories — including over 750,000 project-related records in the Olmsted Archives and 375,000 records at the Library of Congress — will be available online. Phase 1 focuses on database design and data conversion.

This project was considered under the 1999 PTTGrants Special Topics in Historic Landscapes Research.

Project significance: Olmsted designs shaped major urban landscapes across the United States. Interest in the study of these landscapes has accelerated over the past several years resulting in a significant increase in research requests. The Olmsted research guide will assist researchers with advance searches of Olmsted collection information, which will streamline the overall research process and help researchers to make more informed requests for information.

Training and Education

NCPTT Training Coordinator Frances Gale is responsible for these projects.

202. Distance Learning: Artifactual Conservation Treatment

The New York Public Library, Astor, Tilden and Lenox Foundations, New York, New York

$40,000

Project abstract: NYPL's Conservation Laboratory will develop, produce and distribute computer-based training modules on the conservation of books and paper. This distance learning project will include training in basic and advanced techniques for examining and treating paper-based materials.

Project significance: Well-designed computer-based training provides cost-effective, high quality instruction that is available when and where it is needed. Incorporating interactivity in computer-based training permits the user to replay, enlarge and access additional information at an individual rate. The proposed training will combine the treatment expertise developed by conservators and professionals in associated fields with the diverse treatment problems posed by NYPL collections.

201. Distance Learning: Conserving Historic Buildings

Washington State Historic Preservation Office, Olympia, Washington

$29,469

Project abstract: The Washington SHPO will develop a distance education course on principles and techniques of conserving historic building systems and materials. Instructional materials for the course will include print, CD-ROM and a Web site, and the course will be available through the University of Victoria's Cultural Resource Management Program for academic credit, for transfer credit to other academic programs throughout North America, and for non-credit continuing professional education.

Project significance: Preservation practitioners need accessible technical training as part of continuing professional education. The Conserving Historic Buildings course will serve mid-career practitioners who manage and preserve historic buildings throughout North America. Because the course will be offered online, this project addresses potential difficulties in finding appropriate courses that are affordable and do not require extended periods away from the workplace.

200. Distance Learning: Paper Conservation (Phase 2 of two phases)

Northeast Document Conservation Center, Andover, Massachusetts

$39,000 (Phase 2)

Project abstract: The 1998 PTTGrants program supported NEDCC's development of *Preservation 101*, an online course on paper conservation for staff of small historical organizations and private collectors. Project results for Phase 1 —

Northeast Document Conservation Center (K. Brown and K. O'Leary, authors). *Preservation 101* <www.nedcc.org/course.htm>. Andover, Massachusetts: Northeast Document Conservation Center. 1999. [PTT Publications No. 1999-27]

During the second year of support, NEDCC will refine the course, adding two additional conservation modules. A six-week online training course for 150 participants will be offered in Summer 2000.

See *NCPTT Notes* 33, page 4 for further discussion of this project.

Project significance: NEDCC's 1998 training course responded to a growing demand for information in electronic format. The second year this Internet course will include modules on disaster preparation and care of photographs, which will help to raise public awareness of threats to collections and to preserve collections through improved storage, handling and environment.

199. Distance Learning: Preserving Thin-Shell Concrete Structures (Phase 1 of two phases)

The Pennsylvania State University, University Park, Pennsylvania

$40,000 (Phase 1)

Project abstract: The Pennsylvania State University will develop computer-based training on preserving thin-shell concrete structures. Three cohort-based, interactive distance learning modules for an audience of architects, engineers and other preservation professionals will address technical issues such as repairing and rehabilitating these structures. The modules will be offered as non-credit distance learning instruction through the university's World Campus.

Project significance: Thin-shell concrete structures represent an important contribution to building technology and design in the 1930s through the 1970s. This project addresses a national need for understanding the issues in preserving thin-shelled concrete structures and other historic buildings of the recent past.

198. Workshop: Recent Advances in Conserving Silver

Nebraska State Historic Preservation Office-Gerald R. Ford Conservation Center, Omaha, Nebraska

$28,644

Project abstract: Working with the University of Delaware's Museum Studies Program, the Ford Center will offer a five-day workshop on conserving silver objects. Designed for objects conservators and scholars, the workshop will cover materials and techniques used in silver conservation, focusing on the results of recent research in silver conservation funded by NCPTT through the PTTGrants program (see entry 90).

Project significance: Found in art, cultural, historical, ethnographic, historic house and archeological collections in the US and throughout the world, silver is extremely sensitive to environmental pollutants. This workshop will tackle the care and protection of silver in collections and will address the national need for continuing education for practicing conservators.

Applied/Fundamental Research

NCPTT Research Coordinator Mark Gilberg is responsible for these projects.

197. Effects of Color Temperature and Intensity (Phase 2 of two phases)

City University of New York-Brooklyn College, Brooklyn, New York

$39,968 (Phase 2)

Project abstract: The effects of color temperature and intensity on human perception of color discrimination, color appearance and aesthetic quality of illuminated museum objects are being investigated. This research seeks to determine how visual function — in particular, color appearance — is affected by the color temperature of background illumination within the range typically used in museum displays. Psychophysical testing will be conducted to determine how observers perceive color appearance, particularly the magnitude of hue and saturation.

See *NCPTT Notes* 32, page 2 for further discussion of this project.

Project significance: The illumination of museum objects must balance the need to minimize the amount of light-induced damage with the desire to optimize viewing conditions. Conventional museum standards for lighting, which are based principally on light intensity and duration, do not consider the color temperature of the light source, which has an enormous impact on the quality and brightness of a light source. By understanding the relationship between color temperature and light intensity and how they affect perception of illuminated museum objects, more objective lighting specifications can be developed that provide observers with an pleasing viewing experience without subjecting artwork to light-induced damage.

196. Exploring the Interface of Nature and Culture

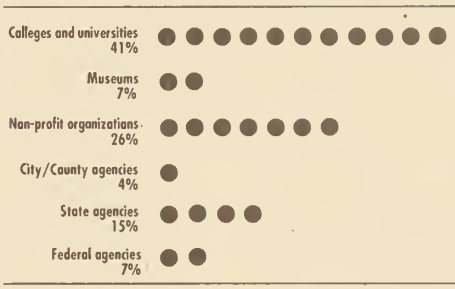
Atlantic Center for the Environment, Ipswich, Massachusetts

$40,000

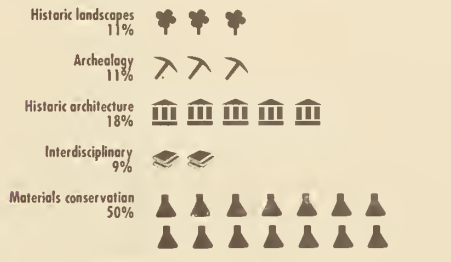
Project abstract: Cultural landscapes present new challenges to managers faced with the need to integrate historic, cultural and natural resources. Existing guidelines do not adequately address all of these resources, while much emerging local-level experience is undocumented or generally inaccessible. This research project will identify and evaluate innovations in multidisciplinary cultural landscape programs and describe methodologies that successfully integrate natural resource and cultural landscape management. Case studies will provide the foundation for a resource manual that addresses technical issues as well as techniques for decision-making.

National Distribution of 1999 PTTGrants

1999 PTTGrants by organization



1999 PTTGrants by discipline



This project was considered under the 1999 PTTGrants Special Topics in Historic Landscapes Research.

Project significance: Many current challenges in cultural landscape management derive from the relatively recent recognition of the need to integrate cultural and natural resources when evaluating a property's integrity and significance. Although managers of historic landscapes are faced with the challenge of developing new strategies for integrating these resources into site management programs, limited guidance and very few models are readily accessible. This study will enhance communication among managers and provide advice, based on preservation philosophy, drawn directly from practical experience.

195. Luminescence Dating of Prehistoric Human Landscapes

University of Washington, Seattle, Washington

$32,517

Project abstract: This pilot project will assess the feasibility of using luminescence measurements to date prehistoric earthen mounds in the US. Twelve sediment samples from four mounds in northern Louisiana will be analyzed. Samples will be collected by coring to minimize damage to the archeological record.

Project significance: Although earthen mounds are a very visible aspect of prehistoric landscapes in eastern North America, the age of mounds often is in question. Comprehensive interpretation of prehistoric landscapes requires accurate assessment of the age of mounds and other site components. The principle means of dating mounds by diagnostic artifacts and radiocarbon dating requires destructive excavation to secure the necessary samples — a technique that may not be reliable because of association problems. Luminescence dating provides a means of dating mounds directly, with minimal destruction to the archeological record.

194. Micro-Fading Tester for Lightfastness Evaluation of Art and Artifacts

Carnegie Mellon University, Pittsburgh, Pennsylvania

$39,993

Project abstract: Carnegie Mellon University's Research Center on the Materials of the Artist and Conservator will further modify the design and operation of a scientific instrument, previously developed by the research center, that is capable of conducting nondestructive fading tests on works of art in-situ in order to determine their color stability when exposed to visible light. In the development of the next generation of this instrument, the light source and illumination optics will be modified to increase ease of operation and reliability as well as versatility and portability.

Project significance: Fading and degradation of paints and other artist materials due to natural or artificial light is an important concern for museums and galleries where works of art are on display. The development of a rapid, nondestructive means of predicting the impact of lighting on works of art will be an important tool in determining the lighting and exhibition requirements of individual objects. This instrument also may allow rapid assessments of the stability of materials intended for use in conserving works of art, without the need for lengthy and expensive testing by conventional methods.

193. Spectral Analysis of Soils Associated with Historic Trails of the Great Plains

University of Nebraska, Lincoln, Nebraska

$40,000

Project abstract: This project will identify the reflectance spectra of vegetated and non-vegetated, compacted soils associated with various trails across the Great Plains region of the US including the California, Pony Express, Mormon Pioneer and Oregon National Historic Trails.

The reflectance spectra of compacted soils varies from that of non-compacted soils. This difference can be measured and used to identify historic trails and migratory routes using remote sensing techniques. Reflectance spectra will be collected using a high speed, array-based hyperspectral spectroradiometer. Digital image processing of Landsat Thematic Mapper satellite imagery will be used to identify and classify hyperspectral signatures.

This project was considered under the 1999 PTTGrants Special Topics in Historic Landscapes Research.

Project significance: Natural migratory routes and historic trails across the US are rapidly disappearing due to erosion, agriculture and development. Remote sensing techniques such as hyperspectral imaging will greatly enhance our ability to identify and locate these important cultural resources.

Environmental Effects

NCPTT Materials Research Program Manager Mary Striegel is responsible for these projects.

192. Building Stones of America (Phase 2 of three phases)

National Institute of Standards and Technology, Gaithersburg, Maryland

$25,000 (Phase 2)

Project abstract: The NIST stone test wall was constructed in 1948 to study the performance of stone subjected to weathering. The wall contains 2,352 samples of stone — 2,032 domestic stones from 47 states and 320 imported stones. Unexposed specimens have been stored indoors for comparison with weathered samples.

Phase 1 of the project focused on photographic and descriptive documentation of the archived and exposed stone samples. In Phase 2, detailed petrologic studies of archival specimens and selected micro-core specimens will characterize their micro-texture and mineralogy.

Project significance: The project is a unique opportunity to study and compare the long-term performance of a wide range of building stones. Project results will be useful to preservation architects, architectural materials conservators, and design and construction professionals who study stone deterioration, and select stone for rehabilitating historic structures and for new construction.

191. Improved Sol-Gel Consolidants for Stone (Phase 1 of three phases)

Princeton University, Princeton, New Jersey

$48,663 (Phase 1)

Project abstract: This project will develop new consolidants to correct two deficiencies of currently available consolidants: cracking of the consolidant from shrinkage, and poor match between properties — particularly modulus of elasticity and thermal expansion coefficient — of the consolidant and the stone. Both goals will be achieved by using sol-gel processing to incorporate a concentrated suspension of colloidal oxide particles into a gelling matrix. The particles will reduce shrinkage and cracking during drying, and their mechanical properties will be chosen to closely match the host stone. Resulting materials are expected to provide better protection against deterioration by environmental effects.

Project significance: The project will yield a family of consolidants with mechanical properties that match the properties of stones commonly encountered by the conservator. The new consolidants will circumvent problems of shrinkage and cracking associated with widely used consolidants such as alkoxysilanes.

190. A New Protocol for the Analysis of Deteriorated Historic Mortars and Plasters (Phase 2 of two phases)

University of Delaware, Newark, Delaware

$32,250 (Phase 2)

Project abstract: This project concludes work begun with a 1998 PTTGrants award.

In Phase 1, an annotated bibliography was prepared of pertinent information from the cement chemistry and industrial literature. A standard protocol for analyzing historic mortars was developed based on the results of research. The tests include thin section analysis, SEM-EDS analysis, XRD analysis and others. Laboratory samples of 18 traditional mortar recipes were prepared for validating the protocol. Results of this work were presented at an international conference, "Characterization of Old Mortars with Respect to their Repair," held at the University of Paisley, Scotland in May 1999.

Phase 2 addresses the validation of the analysis protocol developed in Phase 1. Validation studies will include testing the effectiveness of the Phase 1 protocol on laboratory-prepared specimens that have undergone accelerated aging, and analyzing naturally-deteriorated mortars with the Phase 1 protocol — to ensure that deterioration products from accelerated aging accurately represent natural aging effects. The protocol will be refined to ensure accurate characterization of the original laboratory-prepared mortars.

Project significance: With a reliable protocol for studying historic mortars and plasters, preservation practitioners could consistently evaluate these materials for a variety of purposes. In addition to use in developing preservation treatments, standardized mortar and plaster analysis will be useful in comparing and dating materials, and studying the development of building technologies.

189. Organic Coatings for Protecting Outdoor Bronze Sculpture (Phase 1 of three phases)

North Dakota State University, Fargo, North Dakota

$50,000 (Phase 1)

Project abstract: Phase 1 of the project will use electrochemical characterization methods to evaluate coatings' corrosion protective performance under conditions that directly emulate exposure to polluted atmospheres. Coatings over bronze, copper and other substrates will be evaluated. The research builds on earlier work by the National Gallery of Art (see entry 141). The current project will incorporate cyclic exposure test protocols currently used in industrial and academic laboratories as well as new test protocols under development at NDSU.

Phase 2 research will examine advances in topcoat technologies within the automotive and aerospace industries for potential improvement of protective coatings for outdoor sculpture and ornament. Phase 3 research will interpret test results, and develop a test protocol for analyzing new coatings for conservation treatments.

Project significance: This research will transfer technologies for assessing, designing and testing coatings for the protection of metals from academic and industrial uses to the field of conservation. The work will result in improved coatings for use on outdoor metal sculptures.

188. The Role of Microorganisms in Deterioration by Atmospheric Pollutants (Phase 3 of three phases)

Harvard University, Cambridge, Massachusetts

$50,000 (Phase 3)

Project abstract: This project concludes work supported with PTTGrant awards in 1997 and 1998.

Microorganisms have been implicated in the degradation of stone by pollutants but neither the mechanisms nor the importance of microbial processes in pollutant damage has been elucidated.

Phase 1 research identified the effects of sulfur dioxide, nitrogen oxides and hydrocarbons on microflora naturally occurring in and on limestone.

Phase 2 research evaluated the interaction of these pollutants and microflora for its deteriorating effects on limestone. Research results were presented at the International Biodeterioration Symposium, Washington, DC in July 1999.

Phase 3 research will study the responses of natural limestone microflora to atmospheric pollutants and identify the most corrosive organisms. Corrosion mechanisms and the effects of environmental conditions on the action of microorganisms on stone also will be investigated.

Project significance: Biological causes of stone deterioration may be a critical component of cultural resource decay, particularly in tropical and subtropical environments. While studies of biological decay have been undertaken, few researchers have looked at the effects of air pollution on microorganisms. This study will enhance our understanding of the role of microorganisms and their interaction with pollutants in the processes of stone deterioration. By better understanding the processes we can develop more effective remedial treatments to preserve stone exposed to air pollutants.

Technology Transfer

NCPTT Materials Research Program Manager Mary Striegel is responsible for this project.

187. Examination of Gilded Bronze Using Nondestructive Eddy Current Techniques

Freer Gallery of Art and Arthur M. Sackler Gallery, Washington, DC

$17,200

Project abstract: This research will use eddy current analysis — used in the automotive, power and aerospace industries, among others — to determine techniques used to gild bronze objects from different cultures and time periods. In eddy current analysis, the interactions of metal and a probe form an electronic signal that is measured and correlated to properties of the metal. Applied to the field of conservation, the resulting information is vital to research on ancient metalworking and can answer questions of authentication. This nondestructive technique overcomes the limitations of current analytical techniques that require sampling.

Project significance: Eddy current analysis is convenient and inexpensive — and may provide a rapid and effective method for classifying, comparing and authenticating a large number of gilded bronze objects.

Analytical Facility Support

NCPTT Research Coordinator Mark Gilberg is responsible for these projects.

86. Facility Support for Enhanced Analytical Services (Phase 3 of three phases)

Williamstown Art Conservation Center, Williamstown, Massachusetts

$49,308 (Phase 3)

Project abstract: NCPTT support will allow Williamstown Art Conservation Center to increase the range of analytical services that are not commonly available to practitioners. The services will be available at reduced cost to conservators and nonprofit institutions.

In Phases 1 and 2, WACC upgraded its existing light microscope and FT-IR microscope and added a video microscopy/image analysis system and a new workstation for sample preparation. These new upgrades and new equipment substantially decreased the time and cost of analysis resulting in a reduced hourly rate charged to conservators and non-profit institutions. The number of conservators and non-profit institutions served also increased significantly.

In Phase 3, additional upgrades will be made to increase WACC capacity to provide a higher level of analytical service at a reduced cost through gains in efficiency.

Project results published —

Rust, C., "How to Heal a Masterpiece," *Discover* April 1999, 72-79.

Project significance: Light microscopy and FT-IR microscopy are two of the most widely used techniques for analyzing works of art and, moreover, are the principal techniques used for visual examination of layered samples and identification of organic and inorganic materials found in pigments, fibers, dyes, binders and coatings. Few conservation centers or conservators, however, are technically capable of undertaking such analyses. PTTGrants support will enhance the Williamstown Art Conservation Center's ability to provide timely and reliable chemical analysis at reasonable cost to the preservation and conservation community.

185. Upgrade X-Ray Diffraction Facilities

The Detroit Institute of Arts, Detroit, Michigan

$23,085

Project abstract: The Detroit Institute of Arts will upgrade the Conservation Services Laboratory's X-ray diffraction system to allow computer-assisted analysis of digitized diffraction patterns, and will upgrade the existing photomicrography system to improve sample preparation, handling and examination.

Project significance: Laboratory equipment upgrades will allow unambiguous identification of pigments, corrosion products and other materials — analysis that is essential to developing treatment protocols as well as establishing provenance and authenticity. With improved equipment, the Conservation Services Laboratory can provide enhanced conservation services to the more than 30 museums and cultural institutions throughout Michigan and the US currently assisted by the laboratory.

Conference Support

NCPTT Training Coordinator Frances Gale is responsible for these projects.

184. Symposium: Conservation and Preservation of Coquina

Florida State Historic Preservation Office, Tallahassee, Florida

$7,856

Project abstract: Named for the shells of the small mollusks that it contains, coquina is a limestone conglomerate found in deposits along the Atlantic coast from South Carolina to Florida. Historic coquina structures gradually are deteriorating, and little is known about the effectiveness or long-term effects of conservation techniques. This symposium will bring together preservation professionals to discuss current scholarship, share field experience and determine the research needed to develop appropriate preservation treatments. Proceedings will be published and accessible online.

Project significance: The symposium will help to clarify current thought on appropriate preservation treatments for historic coquina structures, identify research needs and provide guidance for managing the preservation of these fragile cultural resources.

183. Symposium: Protective Shelter Needs for Archeological Sites in the Southwest

United States Committee/International Council on Monuments and Sites, Washington, DC

$14,974

Project abstract: This symposium will focus on protective shelters as a means of preserving archeological sites. Conservators, architects and site managers will present case studies and consider both positive and negative aspects of protective shelters. Site visits at Tumacacori National Monument will provide an opportunity for participants to inspect shelter installations.

Project significance: Stabilization of archeological sites presents a formidable challenge. Once exposed to the elements, excavated structures often deteriorate rapidly. This conference will bring together experts to consider questions related to designing and installing shelters to protect vulnerable archeological features.

Publications Support

NCPTT Information Management Coordinator Mary Carroll is responsible for these projects.

182. A Graphic Guide to Historic American Timber Joinery

Timber Framers Guild of North America, Washington, Massachusetts

$18,370

Project abstract: The Timber Framers Guild of North America will catalog joint types traditionally found in the US by historical period and use, and prepare the information for publication.

Project significance: Preservation practitioners may irreparably damage timber framed buildings because they do not understand traditional wooden joinery techniques. This publication will provide a valuable reference for preserving and replicating historic American timber frame details. Also, accurate identification of joints in an existing frame will help investigators date structures and trace the history of the buildings and their builders.

181. The Interplay of Drawings and On-Site Decisions in Outdoor Theater Designs of the New Deal

University of California, Berkeley, California

$19,979

Project abstract: The Civilian Conservation Corps and the Works Progress Administration constructed hundreds of outdoor theaters in parks and cities throughout the US. Although many of these historic theaters are rehabilitated to meet contemporary codes and uses, rehabilitation design usually relies on period drawings rather than evidence of on-site design. Contemporary rehabilitation often is not as successful as original construction in accommodating sites' unique landscape features. More subtle documentation and understanding of the role of on-site design is needed towards enhanced preservation of these significant historic landscape projects. UC-Berkeley will review and analyze the construction of outdoor theaters by the CCC and WPA, and prepare project findings as a publication.

Project significance: This publication will highlight how 1930s-era outdoor theaters were designed and constructed, and how these theaters are rehabilitated today. Disseminating information about on-site construction techniques that varied from design drawings in response to field conditions will assist today's preservation professionals to incorporate similar techniques into rehabilitation work.

Information Management

NCPTT Information Management Coordinator Mary Carroll is responsible for these projects.

180. Digitize Chaco Map Collection

Partner — National Park Service-Chaco Culture National Historical Park, New Mexico

Project initiated 1999; anticipated completion Fall 2000

Chaco Culture National Historical Park is digitizing an estimated 1,200 maps in its collection — many of which are original field maps produced by National Park Service projects over the past seven decades — in order to allow users to access the maps without damaging the originals. Information about available digital maps will be disseminated to resource managers, researchers and public, and policies and procedures for maintaining and distributing the dig maps will be developed.

179. National Trust Library

Partner — University of Maryland, College Park, Maryland

Project initiated 1994, additional funding 1995 through 1999

NCPTT has contributed to supporting the National Trust Library — a spe collection at the University of Maryland devoted to historic preservation materi The National Trust Library acquires, accessions, catalogs and abstra preservation publications, curates materials donated by the US Navy's Leg program, and curates collections donated by prominent preservationists.

See the National Trust Library's Web site, <www.itd.umd.edu/UMS/UM NTL/ntl.html>, for further information about National Trust Library resour and services.

178. NCPTT's Preservation Technology and Training Internet Services

Project initiated 1994, continued funding 1995 through 1999

This project has evolved from a gopher-based system inaugurated in 1994 today's advanced World Wide Web–based technology.

The current PTTInternet services project will enhance NCPTT's leadership electronic dissemination of preservation information. A major focus PTTInternet is the continuing development of NCPTT's Website to deli preservation information and NCPTT project results to the preservat community. The project is proceeding in four phases —

Phase 1 — designing the graphical user interface and development of static s content, including descriptions of NCPTT, its mission, components, progra and advisory board — is completed.

Phase 2 — designing the databases that will replace the gopher-based Resour section and implementing one prototype database — is completed.

Phase 3 — implementing other databases in the system — is underway. Fo databases — training and education opportunities, conferences, jobs a funding opportunities — are completed.

Phase 4 will add features to the Website and target a focused audience — PTTCommunity.

177. Symposium: Delivering Archeological Information Electronically

Partners — Society for American Archaeology, Washington, DC
Center for Study of Architecture-Archaeological Data Archive Project, Bryn Mawr, Pennsylvania

Project initiated 1999

This symposium — co-chaired by NCPTT and ADAP and co-sponsored NCPTT, ADAP and SAA's Publications Committee — took place in March 19 at SAA's annual meeting in Chicago. Eleven panelists discussed informati types and access systems towards assessing the utility of various electronic mea for disseminating and using archeological data. Most of the papers presented w be included in a publication in preparation by NCPTT, SAA and ADAP.

176. Upgrade Chaco Project Electronic Databases and Publish Online

Partner — National Park Service-Chaco Culture National Historical Park, New Mexico

Project initiated 1999; anticipated completion Fall 2000

Chaco Culture National Historical Park is preserving and distributing electron databases from National Park Service archeological research projects that to place at the park from 1970 to 1985. Data from these excavation and surv projects is either inaccessible or in danger of becoming inaccessible due

obsolete technology. Information about the upgraded data files will be available via the park's Website so that resource managers and researchers can determine which information may be useful and how to obtain copies. Policy recommendations will be developed to address long-term preservation issues for the resulting data files.

Materials Research

NCPTT's Materials Research Program Manager Mary Striegel is responsible for these projects.

175. Deposition Studies on Textured Stone

Partner University of Delaware, Newark, Delaware

Project initiated 1997, additional funding 1998 and 1999

This research seeks to understand how changes in surface texture affect the way sulfur dioxide is deposited on calcareous stone. Research results will be useful in evaluating cleaning methods used in conserving calcareous stone monuments, sculpture and buildings. Research design and an annotated bibliography are completed. Currently, laboratory results are being generated and analyzed.

174. Materials Characterization of Carbonate Stone

Partner University of Houston, Houston, Texas

Project initiated 1997, additional funding 1998 and 1999

NCPTT's Materials Research Program has a continuing need for materials characterization for a variety of research projects. University of Houston's Materials Characterization Facility will assist MRP with advanced analytical techniques that complement MRP's study of the effects of surface texture on the deposition of pollutants to calcareous stone. In addition, an MRP research fellowship position has been established at the University of Houston under this project.

173. Materials Research Program Archives

Project initiated 1997, continued funding 1998 and 1999; results published —

National Center for Preservation Technology and Training. *Explore the Materials Research Program – Acid Rain and Beyond* (CD-ROM). Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1999. [PTTPublications No. 1999-15]

In the transfer of the National Park Service's Acid Rain Program to NCPTT, the Materials Research Program inherited over ten years of files, photographs, slides, data, stone samples and other materials. For this information to be useful, a systematic approach to storage and retrieval is needed. Current archives work includes developing a slide image database and cataloging the MRP photographic resources.

See *NCPTT Notes* 33, page 1 for further discussion of this project.

172. Materials Research Program Literature Project

Project initiated 1996, continued funding 1997 through 1999

This project addresses the need to organize over 1,400 literature offprints collected by the National Park Service's Acid Rain Program and its successor Materials Research Program over a 13-year period. A completed HTML version is ready for installation on NCPTT's Website, and a network version of bibliographic software will allow in-house and off-site database updates.

171. NCPTT Laboratories

Project initiated 1996, continued funding 1997 through 1999

NCPTT includes two laboratories — an Environmental Exposure Facility and a Digital Research Laboratory — established and managed by NCPTT's Materials Research Program.

NCPTT's Environmental Exposure Facility was created in 1996 when laboratory equipment designed for Materials Research Program projects at US Geological Survey offices in Reston, Virginia was moved to NCPTT. The facility began with a custom-built recirculating exposure chamber capable of precise control of temperature, wind speed, relative humidity and pollutant concentration. The facility has expanded with the addition of new computers and software, a Dionex Ion Chromatograph, and equipment for preparing metallographic and petrographic samples for optical microscopy.

NCPTT's Digital Research Laboratory is designed to capture, manipulate and publish still and motion digital images. The laboratory includes a graphics workstation, a digital workstation, a stereo zoom microscope and a polarized light research microscope. In collaboration with NCPTT's Training component, MRP has assisted in the development of a digital microscopy/videography system comprised of a digital workstation, professional digital video equipment and SPOT digital camera.

170. Preservation Treatment Guide on Tabby

Partner National Park Service-Southeast Regional Office, Atlanta, Georgia

Project initiated 1999

This project will produce a preservation treatment guide on tabby for use by preservation practitioners. Tabby is an historic building material made of shell, sand and lime found mainly along the southeastern US coast. The guide will provide technical assistance to resource management and maintenance personnel in making critical decisions concerning the stabilization, protection and preservation of tabby historic resources.

169. Soiling of Limestone Buildings

Partner Carnegie-Mellon University, Pittsburgh, Pennsylvania

Project initiated 1991, NCPTT assumed responsibility 1995; additional funding 1996 through 1999; results published —

Davidson, C.I., W. Tang, S. Finger, V. Etyemezian, M.F. Striegel, and S.I. Sherwood. "Soiling Patterns on a Tall Limestone Building: Changes over Sixty Years." *Environmental Science and Technology*. 1999 (submitted for publication)

——. "Vertical Gradients of Pollutant Concentrations and Deposition Fluxes on a Tall Limestone Building." *Journal of the American Institute for Conservation*. v. 37, No. 2, 1998, pp. 187-210.

Tang, W., C.I. Davidson, S. Finger, V. Etyemezian, M.F. Striegel, and S.I. Sherwood. "Changes of Soiling Patterns over Time on the Cathedral of Learning" (P. Brimblecombe, ed.). 1999. (submitted for publication)

NCPTT-wide

168. Developing Statewide Preservation Organizations

Partner National Trust for Historic Preservation, Washington, DC

Project initiated 1996, additional funding 1997 through 1999

NCPTT contributes to the National Trust's Statewide Partnerships program that encourages the creation and growth of capable nonprofit preservation organizations in each state.

NCPTT has two chief goals for this project — developing an important audience for NCPTT's work, and developing statewide organizations' understanding and capabilities in technical aspects of preservation.

In 1999, NCPTT funds supported five technical projects proposed by statewide organizations —

- *Preservation Trust of Vermont*: Strategies for wireless telecommunications installations in historic structures
- *Georgia Trust for Historic Preservation*: Internet training for statewide organizations throughout the southeastern US
- *New Hampshire Preservation Alliance*, *New Mexico Heritage Preservation Alliance* and *Maine Preservation*: Enhance public access to preservation information in each state.

In 1998, NCPTT funds supported four technical projects proposed by statewide organizations —

- *Montana Preservation Alliance*: Montana Community Team Project
- *Preservation New Jersey*: Internet training for statewide organizations throughout the northeastern US
- *Preservation Alliance of West Virginia*: Demonstration heritage education project
- *Louisiana Preservation Alliance*: Survey and evalnation of Louisiana's heritage education programs.

Research

NCPTT Research Coordinator Mark Gilberg is responsible for these projects.

167. Controlling Formosan Termites Using Toxic Baits

Partner City of New Orleans Mosquito and Termite Control Board, New Orleans, Louisiaua

Project initiated 1997, additional funding 1998 and 1999; anticipated completion Fall 2000; results published —

"Insidious Insects Wage War on New Orleans," *National Geographic* 193, No. 2 (February 1998).

Vivian, D., "More Than a Mere Past: Saving New Orleans from Formosan Termites." *Historic Preservation Forum* 12, No. 1 (1998) 34-40.

Su, N-Y, E. Freytag, E.S. Bordes, and R. Dycus. "Control of Formosan Subterranean Termite Infestations in Historic Presbytere and the Cabildo Using Baits Containing an Insect Growth Regulator." *Studies in Conservation* 44 (1999) 1-9.

In cooperation with the University of Florida-Ft. Lauderdale Research Center and DowElanco, the City of New Orleans Mosquito and Termite Control Board is testing a new baiting system for controlling subterranean termites. Field trials in New Orleans began in 1997 with a city block of buildings bordering Jackson Square in the historic Vieux Carré. All publicly-owned buildings have been baited and are being monitored.

See entries 54 and 160 for other NCPTT work on this topic.

166. Cultural Landscape Field Techniques for Sustainable Earthworks Management

Partner National Park Service-Southeast Regional Office, Atlanta, Georgia

Project initiated 1999; anticipated completion Fall 2000

Earthworks management is a major resource concern in almost all historic military parks. Often the only visible remains of military occupation, these now fragile resources are subject to degradation. Field techniques for preserving earthworks will be tested and evaluated at National Park Service sites in the southeastern US.

165. Exhibit Conservation Guidelines

Partner National Park Service-Harpers Ferry Center-Division of Conservation, Harpers Ferry, West Virginia

Project initiated 1999; project completed

With NCPTT support, Harpers Ferry Center's Division of Conservati published a CD-ROM manual for incorporating conservation into muse exhibit planning, design and production —

National Park Service-Harpers Ferry Center-Division Conservation. *Exhibit Conservation Guidelines Incorporating Conservati into Exhibit Planning, Design and Fabrication*. (CD-ROM). 1999.

164. Laser Cleaning Research Facility at LACMA

Partner Los Angeles County Museum of Art, Los Angeles, California

Project initiated 1999; anticipated completion Fall 2001

In collaboration with the Los Angeles County Museum of Art, NCPTT developing a scientific facility to study the use of lasers to clean works of ar NCPTT's Research component and Materials Research Program a collaborating on this project.

This project continues NCPTT work initiated in 1996 (entry 68).

163. Protective Glazing on Stained Glass Windows

Partner Enermodal Engineering, Inc., Denver, Colorado

Project initiated 1997, continued funding 1998 and 1999; anticipated completion Winter 1999-2000

NCPTT and Enermodal Engineering, Inc. are studying the effects of protecti glazing on the long-term preservation of stained glass windows. In 199 Enermodal developed a compnter model to calenlate temperature distributio across externally-ventilated glazing systems of the type commonly found stained glass window installations throughout the US. Data previously collecte by Inspired Partnerships (see entry 15) was used to verify the model, which presently undergoing further refinement to include compnter analysis internally-vented protective glazing. Additional data were collected by NCPT during Summer 1999 for both internally—and externally—vented protecti glazing systems.

162. Software for Calculating the Economic Impacts of Historic Preservation

Partner Rutgers University-Center for Urban Policy Research, New Brunswick, New Jersey

Project initiated 1999; anticipated completion Winter 1999-2000

Rutgers University's Center for Urban Policy Research is developing compute software that will calenlate the total economic impact of four critical componen of historic preservation: rehabilitation, tourism, Main Street investment and th operation of historic sites. Target users of this software include State Histor Preservation Offices, local historical commissions, state and local preservatio advocacy groups, developers who rehabilitate historic buildings, and state an local tourist agencies.

This project continues NCPTT work described in entries 61 and 128.

161. Symposium: New Surveillance Technologies for Protecting Archeological Resources Against Looting and Vandalism

Partners University of West Florida, Pensacola, Florida

US Navy-Naval Surface Warfare Center-Coastal Systems Station, Panama City, Florida

Project initiated 1999; project completed

A two-day symposium to discuss new technologies for protecting remot archeological resources against vandalism and intrusion was held in Panam City, Florida in July 1999. The symposium brought together experts on ne

surveillance technologies for protecting remote cultural resources on land and under water against vandalism and intrusion. A summary of discussions and findings will be published in an upcoming issue of *NCPTT Notes*. (NCPTT's Training and Research components collaborated on this project.)

160. Workshop: Control of Subterranean and Drywood Termites

Partner City of New Orleans Mosquito and Termite Control Board, New Orleans, Louisiana

Project initiated 1999

A workshop to discuss new technologies for controlling subterranean and drywood termite infestations in historic buildings and landscapes was held in New Orleans, Louisiana in September 1999. The workshop emphasized new baiting techniques and their effectiveness in suppressing or eliminating subterranean termite colonies without causing significant damage to the environment or historic fabric. Baiting systems installed in the Vieux Carré and Louis Armstrong Park served as case studies. Discussions included community-base strategies for integrating new termite control technologies into historic district management. (NCPTT's Training and Research components collaborated on this project.)

For other NCPTT work on this topic, see entries 54 and 167.

Training and Education

NCPTT Training Coordinator Frances Gale is responsible for these projects.

159. Collaborative Conservation Training

Partner Smithsonian Institution, Washington, DC

Project initiated 1999; project completed

During May and June 1999, NCPTT senior staff served as faculty in a training program for conservators working at museums in Argentina, Brazil and Chile. Sponsored by Fundacion Antorchas in Buenos Aires, Argentina, with assistance by the Smithsonian Institution, the training program focused on preventive conservation of artistic, historic, archeological, architectural and ethnographic collections. NCPTT's training sessions included conservation science, pest control, stone conservation, metals conservation and architectural conservation.

158. Conference: Architectural Terra Cotta

Partner New York Landmarks Conservancy, New York, New York

Project initiated 1999

New York Landmarks Conservancy will develop and present a conference on preserving architectural terra cotta, currently scheduled in Spring 2000.

157. Developing a Preservation Arts High School

Partner New Jersey Institute of Technology, Newark, New Jersey

Project initiated 1998, additional funding 1999

Project in progress; results published —

Ottavino, K.B., and E. Ehrenkrantz. *Preservation Week Report: The High School for the Preservation Arts Project*. Natchitoches, Louisiana: NCPTT. 1998. [PTTPublications No. 1998-23]

In 1998, towards developing a preservation curriculum for high school students, NCPTT supported Preservation Week events at the High School of Arts and Business in Queens, New York. Working with the New York City Board of Education, the New Jersey Institute of Technology-Center for Architecture and Building Science Research documented the pilot project. Following Preservation Week, the project continued with students and selected teachers participating in a summer internship that included hands-on training.

In 1999, the New Jersey Institute of Technology will create model historic preservation lesson plans for grades 9 through 12 at the High School of Arts and Business in New York, New York.

156. Distance Learning: Building Preservation Technology

Partner Texas A&M University, College Station, Texas

Project initiated 1999

A Web site on masonry materials conservation is Texas A&M University-Historic Resources Imaging Laboratory's first module of an online version of the course, *Building Preservation Technology*.

155. Dyea Townsite Remote Sensing Project

Partner National Park Service-Klondike Gold Rush National Historical Park, Dyea, Alaska

Project initiated 1999; project completed

Towards assisting the park in planning an archeological field school at the Dyea townsite in Summer 2000, a remote sensing project was conducted Summer 1999. This feasibility study included the use of ground-penetrating radar and metal detectors to complete an initial site survey.

154. Heritage Education Website

Partner Middle Tennessee State University-Center for Historic Preservation, Murfreesboro, Tennessee

Project initiated 1999; project completed

As follow-up to the report *Focus on 2000: A Heritage Education Perspective* (see entry 65), MTSU's Center for Historic Preservation developed *THEN*, a heritage education Website —

Middle Tennessee State University-Center for Historic Preservation. *The Heritage Education Network (THEN)* <www.mtsu.edu/~then>. Murfreesboro, Tennessee: Middle Tennessee State University. 1999. [PTTPublications No. 1999-25]

See *NCPTT Notes* 33, page 9 for further discussion of this project.

153. International Internships

Partner United States Committee/International Council on Monuments and Sites, Washington, DC

Project initiated 1995, additional funding 1996 through 1999

US/ICOMOS' International Summer Intern Program provides training for preservation professionals in exchanges among 16 nations. NCPTT has contributed support for interns and program administration, and has assisted US/ICOMOS in program and project documentation —

United States Committee/International Council on Monuments and Sites. *1995 & 1996 US/ICOMOS International Summer Intern Program Final Report*. Natchitoches, Louisiana: NCPTT. 1997. [PTTPublications No. 1997-24]

——. *1997 US/ICOMOS International Summer Intern Program Final Report*. Natchitoches, Louisiana: NCPTT. 1998. [PTTPublications No. 1998-24.

152. NCPTT's Training Database

Project initiated 1995, with continued funding 1996 through 1999; results published —

National Center for Preservation Technology and Training. <www.ncptt.nps.gov/teo>. Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1999.

Information Management

NCPTT Information Management Coordinator Mary Carroll is responsible for these projects.

151. Albumen WebSite: Science, Technology and Treatment of Albumen Photographs

Monterey Museum of Art, Monterey, California

$40,000

Project in progress; anticipated completion Winter 1999-2000

The Monterey Museum of Art is developing the Albumen WebSite on the technology, science and treatment of albumen photographs. The site will include existing literature, pictorial information — including video — and hyperlinks to historic texts and information on conservation science and treatments.

150. Conservation Materials Database

Museum of Fine Arts, Boston, Massachusetts

$37,300

Project in progress; anticipated completion Winter 1999-2000

The Museum of Fine Arts is creating a digitized database of information on materials and processes used in making, treating and testing artistic and historic objects.

149. Online Information for Preserving Religious Properties

Partners for Sacred Places, Philadelphia, Pennsylvania

$40,000

Project in progress; final stages of Web site in development; results published —

Partners for Sacred Places. *On-line Information for Preserving Religious Properties*. Philadelphia, Pennsylvania: Partners for Sacred Places. 1999. [PTTPublications No. 1999-29]

Partners for Sacred Places is preparing its Information Clearinghouse database and a selected set of documents — articles, how-to fact sheets and other technical materials — for Internet access by congregations and preservationists.

Training and Education

NCPTT Training Coordinator Frances Gale is responsible for these projects.

148. Distance Learning: NEPA for Preservationists

National Preservation Institute, Alexandria, Virginia

$39,300

Project in progress; anticipated completion Spring 2000

The National Preservation Institute will produce an interactive CD-ROM on the National Environmental Policy Act, a law requiring Federal agencies to consider the effects of their proposed actions on the environment. This project will create an inexpensive learning and reference tool that will lead the user through t NEPA review process, and assist the user in analyzing preservation issues terms of NEPA.

147. Workshops: Ground Penetrating Radar

University of Denver, Denver, Colorado

$40,000

Project in progress; anticipated completion Spring 2000

The University of Denver's Department of Anthropology will conduct a series workshops on using three-dimensional ground penetrating radar to locate a identify buried archeological features. The workshops will teach cultural resour professionals new techniques for evaluating buried sites using three-dimension analysis of GPR data. With these techniques, sites can be intelligently manag and appropriately treated or avoided during construction and developme projects. This workshop series developed from a successful 1996 PTTGra research project (entry 84).

146. Workshops: Harlem – Preserving an Historic Neighborhood

Abyssinian Development Corporation, New York, New York

$36,750

Project in progress; anticipated completion Spring 2000

Abyssinian Development Corporation will present a series of preservati workshops for Harlem's residential and commercial property owners a managers and construction professionals. The series provides an opportuni for Harlem residents and professionals to learn about current preservati strategies and technologies.

• Distance Learning: Paper Conservation (Phase 1 of two phases)

Northeast Document Conservation Center, Andover, Massachusetts

$39,000 (Phase 1)

Project in progress; see entry 200 for project summary.

Applied/Fundamental Research

NCPTT Research Coordinator Mark Gilberg is responsible for these projects

145. Draft Historic Building Code

Association for Preservation Technology International, Williamsburg, Virginia

$40,000

Project in progress; anticipated completion Winter 1999-2000

An Historic Building Code will be prepared as the first national code for histor buildings. The new code will be drafted by a team of building code a preservation experts, and will incorporate existing approaches to rehabilitati and recent advances in technology. The new code will be submitted for adopti by the International Code Council, which currently is preparing the *Internation Building Code* and the *International Existing Buildings Code*.

144. Modeling Simulated Archeological Features Using Advanced Geophysical Techniques

US Army Construction Engineering Research Laboratories, Champaign, Illinois

$40,000

Project in progress; anticipated completion Winter 1999-2000

Through innovative data and image processing techniques — particularly inversion filtering — USACERL is developing methods of generating images from geophysical data that accurately depict the size and shape of buried archeological features. USACERL will conduct field trials at its Controlled Archaeological Test Site (see entries 59 and 113), which replicates a wide range of archeological features commonly encountered in North America. As a corollary study, new approaches to resistivity surveys also will be conducted at CATS.

143. Nondestructive Methods for the Structural Evaluation of Wood Floor Systems in Historic Buildings (Phase 2 of two phases)

Purdue University, West Lafayette, Indiana

$40,000 (Phase 2)

Project in progress; anticipated completion Winter 1999-2000

This project continues work begun with a 1997 PTTGrants award.

The research investigates the potential for nondestructive techniques — including transverse vibration, ultrasonic and stress wave transmission — to assess and predict the residual performance of in-place, load bearing wood floors. Data sets of mechanical and physical properties of 17 in-place floor joists have been created.

In Phase 1 data sets for 15 green floor joists were created to analyze floor sections of similar in-place floor joists. Creating a first-approximation model of sections of the floor using the finite element method was attempted. Static modeling of floor sections has been accomplished but vibrational modeling has proven difficult.

Phase 2 will further investigate nondestructive techniques for evaluating wood floor systems in historic buildings, with emphasis on developing test procedures for assessing in-place floor systems.

• Effects of Color Temperature and Intensity (Phase 1 of two phases)

City University of New York-Brooklyn College, Brooklyn, New York

$39,982 (Phase 1)

Project in progress; see entry 197 for project summary.

Environmental Effects

NCPTT Materials Research Program Manager Mary Striegel is responsible for these projects.

142. Masonry – 160 years of Indexed Bibliography

The Masonry Society, Boulder, Colorado

$6,500

Project in progress; anticipated completion Fall 2000

This project is creating an indexed bibliography of nearly 6,000 trade and academic references to be distributed via The Masonry Society's Website. The bibliography will include manufacturing, testing and use of brick, stone, terra cotta and lime-based mortars.

141. Protective Coating Systems for Outdoor Bronze Sculpture and Ornamentation (Phase 3 of three phases)

National Gallery of Art, Washington, DC

$50,000 (Phase 3)

Project in progress; results published —

Brostoff, L.B., and E.R. de la Rie, "Chemical Characterization of Metal/Coating Interfaces from Model Samples for Outdoor Bronzes by Reflection-Absorption Infrared Spectroscopy and Attenuated Total Reflection Spectroscopy (ATR)," in W. Mourey, et al., ed. *ICOM CC Metals Working Group*, May 26-29, 1998, Draguigan, France (James & James, London), pp 320-328.

——, "Research into Protective Coatings Systems for Outdoor Bronze Sculpture and Ornamentation," in MacLeod, I., et al., ed., *Metal 95 Proceedings of the International Conference on Metals Conservation*, ICOM CC metals Working Group, September 1997, Semur-en-Auxois, France, (James & James, London), pp 242-244.

National Gallery of Art. *Research into Protective Coating Systems for Outdoor Bronze Sculpture and Ornamentation. Phase II*. Natchitoches, Louisiana: National Center for Preservation Technology and Training, 1999. [PTTPublications No. 1999-23]

This research addresses the need for new coating strategies to protect outdoor bronzes from the effects of polluted environments. The research goal is to form general hypotheses concerning how protective coatings work and fail on bronze surfaces when exposed to polluted urban environments. Phase 3 of this project continues characterization of physical properties of coating systems before and after weathering initiated in Phases 1 and 2. Results will lead to recommendations concerning protective coating options and practices for conserving outdoor bronze sculpture and ornamentation.

140. Removing Gypsum Crusts from Carbonate Rocks

Art2Facts, New York, New York

$29,900

Project in progress

Water misting removes gypsum from calcareous stones due to the relative solubility of gypsum versus calcite – but not without risks. Deterioration — such as dislodging grains as calcite dissolves during continuous flow cleaning — and water conservation are serious considerations. Laboratory research continues to assess the damage by calcite dissolution and grain dislodgment on marble and limestone tiles using coarse and fine sprays and continuous and intermittent water flows. On-site testing has been initiated to study the cleaning efficiency of different spray protocols.

• Building Stones of America (Phase 1 of three phases)

National Institute of Standards and Technology, Gaithersburg, Maryland

$25,000 (Phase 1)

Project in progress; see entry 192 for project summary.

• A New Protocol for the Analysis of Deteriorated Historic Mortars and Plasters (Phase 1 of two phases)

University of Delaware, Newark, Delaware

$35,250 (Phase 1)

Project in progress; see entry 190 for project summary.

- **The Role of Microorganisms in Deterioration by Atmospheric Pollutants (Phase 2 of three phases)**

Harvard University, Cambridge, Massachusetts

$50,000 (Phase 2)

Project in progress; see entry 188 for project summary.

Technology Transfer

NCPTT Research Coordinator Mark Gilberg is responsible for this project.

139. Exploring Archeological Sites Using a Modified Magnetic Susceptibility Probe

Southern Illinois University, Edwardsville, Illinois

$14,525

Project in progress; anticipated completion Winter 1999-2000

Soil magnetic studies — including magnetic susceptibility measurements — can be used to identify archeological sites and features and to understand soil stratigraphy in relation to the archeological record. In this project, a commercial magnetic susceptibility probe will be modified to allow measuring magnetic susceptibility at varying depths in bore holes. The magnetic susceptibility probe then will be calibrated to calculate absolute susceptibility values and tested at a section of exposed soil at the Cahokia Mounds site in Illinois.

Analytical Facility Support

NCPTT Research Coordinator Mark Gilberg is responsible for this project.

- **Facility Support for Enhanced Analytical Services (Phase 2 of three phases)**

Williamstown Art Conservation Center, Williamstown, Massachusetts

$49,936 (Phase 2)

See entry 186 for project summary.

Conference Support

138. Conference: National Archeological Collections Management

Society for Historical Archaeology, Tucson, Arizona

$9,993

Project in progress; anticipated completion Winter 1999-2000

The National Archeological Collections Management Conference convened leaders in the fields of collections management, conservation and archives management to address issues that are central to the long-term care of archeological materials. Conference proceedings are being prepared.

NCPTT Information Management Coordinator Mary Carroll is responsible for this project.

137. Conference: Preserving Historic Guastavino Tile Ceilings, Domes and Vaults

New York Landmarks Conservancy, New York, New York

$10,000

Project completed

The New York Landmarks Conservancy conducted a one-day conference on preserving Guastavino tile construction. Conference papers will be published in a special edition of *APT Bulletin* (in press).

NCPTT Training Coordinator Frances Gale is responsible for this project.

136. Proceedings of the 11th Conference on Restoring Southern Gardens and Landscapes

Old Salem, Inc., Winston-Salem, North Carolina

$6,500

Project completed; results published —

Old Salem, Inc., *Breaking Ground: Examining the Vision and Practice of Historic Landscape Restoration*. Proceedings of the 11th Conference on Restoring Southern Gardens and Landscapes was held in Old Salem, Winston-Salem, North Carolina in October 1997. Winston-Salem, North Carolina: Old Salem, Inc. 1999. [PTTPublications No. 1999-28]

NCPTT Training Coordinator Frances Gale is responsible for this project.

Publications Support

135. Research Priorities for Natural History Collections Conservation

Society for the Preservation of Natural History Collections, Washington, DC

$9,950

Project in progress; anticipated completion Winter 1999-2000

SPNHC is reviewing current priorities for research in the conservation of natural history specimens for a publication that will complement the American Institute for Conservation of Historic and Artistic Works' project, *Research Priorities in Arts and Architectural Conservation* (see entry 23).

NCPTT Information Management Coordinator Mary Carroll is responsible for this project.

134. Salt Decay of Porous Materials – A Literature Review

United States Committee/International Council on Monuments and Sites, Washington, DC

$10,000

Project completed; manuscript submitted for publication

NCPTT Materials Research Program Manager Mary Striegel is responsible for this project.

Information Management

NCPTT Information Management Coordinator Mary Carroll is responsible for these projects.

- **National Trust Library**

Partner University of Maryland, College Park, Maryland

Project initiated 1994, additional funding 1995 through 1999

See entry 179 for project summary.

- **NCPTT's Preservation Technology and Training Internet Services**

Project initiated 1994, continued funding 1995 through 1999

See entry 178 for project summary.

Materials Research

NCPTT Materials Research Program Manager Mary Striegel is responsible for these projects.

133. Carbonate Stone Decay Model and Materials Research Program Synthesis

Partner US Geological Survey, Menlo Park, California

Project initiated 1995, additional funding 1996 and 1998

This project reviews the work of NCPTT's Materials Research Program since its inception, and synthesizes essential data into a framework that describes stone deterioration caused by acid deposition. The framework attempts to define dominant processes contributing to stone deterioration, integrate research results, and identify topics that need further study.

132. Deposition Studies on Consolidated Stone

Project initiated 1996, continued funding 1997 and 1998

The project compares the effects of four consolidants — Conservare-H, Conservare-OH, an epoxy and an acrylic — on sulfur dioxide deposition on limestone and marble surfaces. A key research issue is the latent sulfate within the stone samples before exposure. If large quantities of sulfate are already present, the amount resulting from deposition cannot be determined. In initial work, a leaching program was developed to reduce existing sulfate to a baseline level. Additional stages in the project will determine sulfur dioxide deposition on untreated limestone and marble samples, treated samples, and treated and artificially aged samples.

131. Hiker Bronze Monograph

Partner University of Delaware, Newark, Delaware

Project initiated 1983; NCPTT assumed responsibility 1995; additional NCPTT funding 1996 through 1998; project completed 1998; results publication delayed

130. Using UV Photography to Document Water Flow Patterns

Partner Vernon Miller and Associates, Santa Barbara, California

Project initiated 1997, with additional funding in 1998

Project completed; results will be archived

This short-term study investigated photographic techniques to document water flow patterns over calcareous stone surfaces. The flow of water over surfaces is thought to be a key variable in the deterioration of stone and serves an important role in the integrated deterioration model being developed by the Materials Research Program. At present, the role of water flow is poorly documented and understood.

The research used fluorescent dyes and ultraviolet illumination to visualize the flow of water over surfaces. Tests of the fluorescent dye system in real rain events showed that the methodology was inadequate to provide the insights needed.

- **Deposition Studies on Textured Stone**

Partner University of Delaware, Newark, Delaware

Project initiated 1997, additional funding 1998 and 1999

See entry 175 for project summary.

- **Materials Characterization of Carbonate Stone**

Partner University of Houston, Houston, Texas

Project initiated 1997, additional funding 1998 and 1999

See entry 174 for project summary.

- **Materials Research Program Archives**

Project initiated 1997, continued funding 1998 and 1999

See entry 173 for project summary.

- **Materials Research Program Literature Project**

Project initiated 1996, continued funding 1997 through 1999

See entry 172 for project summary.

- **NCPTT Laboratories**

Project initiated 1996, continued funding 1997 through 1999

See entry 171 for project summary.

- **Soiling of Limestone Buildings**

Partner Carnegie Mellon University, Pittsburgh, Pennsylvania

Project initiated 1991; NCPTT assumed responsibility 1995; additional funding 1996 through 1999

See entry 169 for project results.

NCPTT-wide

- **Statewide Preservation Organizations**

Partner National Trust for Historic Preservation, Washington, DC

Project initiated 1996, additional funding 1997 through 1999

See entry 168 for project summary.

Research

NCPTT Research Coordinator Mark Gilberg is responsible for these projects.

129. Identifying Pigments in Colored Pencils

Partners Kress Foundation, New York, New York
American Society for Testing and Materials-Institute for Standards Research, West Conshohocken, Pennsylvania
Colored Pencil Society of America, Washington, DC
The University of North Carolina at Greensboro, Greensboro, North Carolina

Project initiated 1998; project in progress; anticipated completion Winter 1999-2000

The Kress Foundation and NCPTT are sharing the cost of a research project on identifying pigments in colored pencils. The research goal is to improve light-fastness of fine art drawings made with colored pencils and to develop an ASTM standard on the light-fastness of these widely used products. The research will be undertaken by ASTM subcommittee D01.57 on Artist's Paints and Related Materials in collaboration with the Colored Pencil Society of America.

See *NCPTT Notes* 32, page 2 for further discussion of this and related projects.

128. Symposium: Conducting Economic Impact Studies in Historic Preservation

Partner Rutgers University-Center for Urban Policy Research, New Brunswick, New Jersey

Project initiated 1998; project completed 1998

In partnership with Rutgers University's Center for Urban Policy Research, NCPTT sponsored a symposium on appropriate methodologies for conducting studies on the economic impacts of historic preservation and interpreting study results. Symposium collaborators include Harvard University's Department of Urban Planning and Design and the Brookings Institution's Center on Urban and Metropolitan Policy. The symposium was held at The Brookings Institution, Washington, DC in October 1998; a symposium report is in preparation.

See entries 61 and 162 for other NCPTT work on this topic; see *NCPTT Notes* 29, page 6 for further discussion of this project.

127. Symposium: Research Priorities in Historic Landscapes

Partner University of Oregon, Eugene Oregon

Project initiated 1998; project completed 1998

In partnership with the University of Oregon's College of Architecture and Allied Arts-Department of Landscape Architecture, NCPTT sponsored a one-day symposium to identify research priorities in the field of historic landscapes. The seminar was held in Chicago, Illinois in June 1998, with leading landscape scholars and practitioners as participants. Symposium findings and recommendations were summarized in *NCPTT Notes* 26, pages 1 and 3.

• Controlling Formosan Termites Using Toxic Baits

Partner City of New Orleans Mosquito and Termite Control Board, New Orleans, Louisiana

Project initiated 1997, additional funding 1998 and 1999

See entry 167 for project summary.

• Protective Glazing on Stained Glass Windows

Partner Enermodal Engineering, Inc., Denver, Colorado

Project initiated 1997, continued funding in 1998 and 1999; anticipated completion Winter 1999-2000

See entry 163 for project summary.

Training and Education

NCPTT Training Coordinator Frances Gale is responsible for these projects.

• Developing a Preservation Arts High School

Partner New Jersey Institute of Technology, Newark, New Jersey

Project initiated 1998, additional funding 1999

See entry 157 for project summary.

• International Internships

Partner United States Committee/International Council on Monuments and Sites, Washington, DC

Project initiated 1995, additional funding 1996 through 1999

See entry 153 for project summary.

• NCPTT's Training Database

Project initiated 1995, continued funding 1996 through 1999

See entry 152 for project summary.

Information Management

NCPTT Information Management Coordinator Mary Carroll is responsible for these projects.

126. Advancing SHPO Geographic Information Systems in the Western United States

New Mexico State Historic Preservation Office, Santa Fe, New Mexico
Wyoming State Historic Preservation Office, Cheyenne, Wyoming
$36,243
Project completed; results published —

New Mexico State Historic Preservation Office (T. J. Seaman, author). *Advancing State Historic Preservation Office Geographic Information Systems in the Western United States.* Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1999. [PTTPublications No. 1999-08]

See *NCPTT Notes* 33 page 6 for further discussion of this project.

125. Digitization of Primary Documents Pertaining to Archeological Collections from California and Nevada in the Phoebe Hearst Museum of Anthropology

University of California-Phoebe Hearst Museum of Anthropology, Berkeley, California
$23,001
Project completed; results published —

The finding aid is available through the Phoebe Hearst Museum of Anthropology <www.qal.berkeley.edu/~hearst/archmanu.htm> and the Online Archive of California <sunsite2.berkeley.edu/oac>. [PTTPublications No. 1999-19]

124. Michigan Historic Sites Database Online

Michigan State Historic Preservation Office, Lansing, Michigan
$32,977
Project completed; results published —

Michigan State Historic Preservation Office. *Michigan's Historic Sites Online*, <www.sos.state.mi.us/history/preserve>. 1999. [PTTPublications No. 1999-24]

Training and Education

NCPTT Training Coordinator Frances Gale is responsible for these projects.

123. Distance Learning: Preservation TrainNet

Goucher College, Towson, Maryland
$38,350
Project completed; results published —

Goucher College-Center for Graduate and Continuing Education. *Preservation TrainNet.* Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1999. [PTTPublications No. 1999-22]

122. Video: Applying the Secretary of the Interior's Standards to Historic Districts

Oregon State Historic Preservation Office, Salem, Oregon
$23,640
Project delayed

The Oregon State Historic Preservation Office will prepare a video to educate local decision-makers about applying The Secretary of the Interior's Standards for the Treatment of Historic Properties to historic districts. The video will highlight context issues and groupings of "background" properties — the classification category for a significant percentage of historic district properties.

121. Workshops: Lead Paint and Historic Preservation

Illinois State Historic Preservation Office, Springfield, Illinois
$40,000
Project in progress; final report in preparation

Two two-day workshops on lead paint and historic buildings were conducted by the Illinois State Historic Preservation Office in Springfield, Illinois in July 1998. Two additional two-day workshops were held in Chicago, Illinois in November 1998. Topics included regulations and design procedures for making historic buildings lead safe and field techniques for safe and cost effective work.

120. Workshop: Techniques for Restoring and Conserving Three-Dimensional and Stained Glass Objects

Nebraska State Historic Preservation Office-Gerald R. Ford Conservation Center, Omaha, Nebraska
$17,563
Project completed; results published —

Gerald R. Ford Conservation Center. *Glass and Stained Glass Conservation Workshop* (workbook). July 27-31, 1998. Omaha, Nebraska: Gerald R. Ford Conservation Center. 1998. [PTTPublications No. 1998-29]

Higgins, Mary Clerkin. *Glass & Stained Glass Conservation Workshop*, Gerald R. Ford Conservation Center, Omaha, Nebraska, July 1998. (video). Omaha, Nebraska: Nebraska State Historical Society. 1998. [PTTPublications No. 1998-28]

See *NCPTT Notes* 29, page 1 for further discussion of this project.

Applied/Fundamental Research

NCPTT Research Coordinator Mark Gilberg is responsible for these projects.

119. Museum Lighting Protocol

Rensselaer Polytechnic Institute, Troy, New York
$35,359
Project completed; results published —

Rensselaer Polytechnic Institute. *Museum Lighting Protocol Project*. Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1998. [PTTPublications No. 1998-31]

See *NCPTT Notes* 32, page 3 for further discussion of this project.

118. Nondestructive Method for Evaluating the Hardness of Pointing Mortars

Rocky Mountain Masonry Institute, Denver, Colorado

$39,765

Project in progress; results published —

Rocky Mountain Masonry Institute. *Nondestructive Method for Hardness Evaluation of Mortars*. Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1999. [PTTPublications No. 1999-02]

See *NCPTT Notes* 30, page 5 for further discussion of this project.

- **Nondestructive Methods for the Structural Evaluation of Wood Floor Systems in Historic Buildings (Phase 1 of two phases)**

Purdue University, West Lafayette, Indiana

$40,000 (Phase 1)

See entry 113 for project summary.

Environmental Effects

NCPTT Materials Research Program Manager Mary Striegel is responsible for these projects.

- **Protective Coating Systems for Outdoor Bronze Sculpture and Ornamentation (Phase 2 of three phases)**

National Gallery of Art, Washington, DC

$50,000 (Phase 2)

See entry 141 for project summary.

- **The Role of Microorganisms in the Deterioration by Atmospheric Pollutants (Phase 1 of three phases)**

Harvard University, Cambridge, Massachusetts

$48,631 (Phase 1)

See entry 188 for project summary.

Technology Transfer

117. Coordinate Measurement of Ships and Smallcraft

Mystic Seaport Museum, Inc., Mystic, Connecticut

$15,000

Project completed: results published —

Mystic Seaport Museum, Inc. *Ships and Smallcraft Measuremer Project*. <mysticseaport.org/public/collections/shipyard/sokkia.web.page sokkia.total.station.html>. 1999.

Mystic Seaport Museum, Inc. *Coordinate Measurement of Ships an Smallcraft*. Natchitoches, Louisiana: National Center for Preservatio Technology and Training. 1999. [PTTPublications No. 1999-06]

See *NCPTT Notes* 32, page 5 for further discussion of this project.

NCPTT Training Coordinator Frances Gale is responsible for this project.

116. Digital Image Enhancements and Compositing of Plan View Geophysical Data Sets

Boston University, Boston, Massachusetts

$11,499

Project in progress; anticipated completion Winter 1999-2000

Boston University is exploring the use of computer processing and imagin techniques for analyzing data collected from a single archeological site usin three complementary remote sensing methods: conductivity, electrical resistivity and magnetic gradiometry. Survey work at Whistling Elk, South Dakota, an 11 acre Plains village, is completed. The densely sampled geophysical data i presently undergoing intensive processing and analysis to increase the potentia for discovering cultural features in the subsurface record.

NCPTT Research Coordinator Mark Gilberg is responsible for this project.

115. Digital Videographic Imaging of Archeological Data

Anne Arundel County Trust for Preservation, Inc., Annapolis, Maryland

$15,000

Project completed: results published —

Anne Arundel County Trust for Preservation, Inc. (J. D. Moser, J.G Gibb, and T. Corder, authors) and Anne Arundel County Department o Planning and Zoning. *Digital Videography: Recording, Preserving, an Disseminating Archaeological Data*. Natchitoches, Louisiana: National Cente for Preservation Technology and Training. 1999. [PTTPublications No. 199 18]

See *NCPTT Notes* 30, page 6 for further discussion of this project.

NCPTT Materials Research Program Manager Mary Striegel is responsible fo this project.

114. Non-Linear Documentation Strategies for Incorporating Computerized Solid Modeling in Historic Building Surveys

Texas A&M University, College Station, Texas

$15,000

Project completed: results published —

Texas A&M University (R.B. Warden, author). *Development o Nonlinear Documentation Strategies for Incorporating Computerized Soli Modeling in Historical Building Survey*. Natchitoches, Louisiana: Nationa Center for Preservation Technology and Training. 1999. [PTTPublications No 1999-04]

——. Models and Images for "Development of Nonlinea Documentation Strategies for Incorporating Computerized Solid Modeling i Historical Building Survey." (CD-ROM). Natchitoches, Louisiana: Nationa Center for Preservation Technology and Training. 1999. [PTTPublications No 1999-05]

NCPTT Information Management Coordinator Mary Carroll is responsible fo this project.

113. Subsurface Acoustical Imaging Technology – Ground Penetrating Sonar

Scripps Institution of Oceanography, San Diego, California

$14,901

Project in progress; anticipated completion Winter 2000

Scripps Institution of Oceanography is testing an improved technology for geophysical prospecting using an acoustic transmitting and receiving transducer that can rapidly collect data along the ground surface in a manner analogous to ground penetrating radar. To date, laboratory trials have yielded promising results indicating that Rayleigh or surface waves are the optimal mode of propagation for seismo-acoustic energy for imaging in shallow soil. Field trials presently are underway at the Controlled Archeological Test Site in Champaign, Illinois (see entries 59 and 144), where known features will be mapped using ground penetrating radar. The use of acoustic and radar imaging technologies for identifying buried cultural resources will be compared and evaluated in light of field trial results.

NCPTT Research Coordinator Mark Gilberg is responsible for this project.

Analytical Facility Support

NCPTT Research Coordinator Mark Gilberg is responsible for this project.

- **Facility Support for Enhanced Analytical Services (Phase 1 of three phases)**

Williamstown Art Conservation Center, Williamstown, Massachusetts

$49,942

See entry 186 for project summary.

Conference Support

112. Symposium: Care and Preservation of Historic Vehicles

The Museums at Stony Brook, Stony Brook, New York

$12,591

Project completed; results published —

The Museums at Stony Brook. *Carriage Care and Preservation* (3 videos). [Proceedings of 1998 Carriage Care and Preservation symposium, September 7-8, 1998, Stony Brook, New York] Stony Brook, New York: The Museums at Stony Brook. 1999. [PTTPublications No. 1999-26]

NCPTT Training Coordinator Frances Gale is responsible for this project.

111. Symposium: Conservation and Preservation of Tabby

Georgia State Historic Preservation Office, Atlanta, Georgia

$10,580

Project completed; results published —

Georgia State Historic Preservation Office. *The Conservation and Preservation of Tabby*. <www.ganet.org/dnr/histpres>. Atlanta, Georgia: Georgia Department of Natural Resources-Historic Preservation Division. 1998. [PTTPublications No. 1998-37]

See *NCPTT Notes* 32, page 6 and *NCPTT Notes* 25, page 7 for further discussion of this and related projects.

NCPTT Materials Research Program Manager Mary Striegel is responsible for this project.

110. Symposium: *Teaching with Historic Places*

National Park Service-National Register of Historic Places, Washington, DC

$11,460

Project in progess; final report in preparation

The *Teaching with Historic Places* symposium was held in Washington, DC in July 1998. A summary of recommendations will be available.

NCPTT Training Coordinator Frances Gale is responsible for this project.

Publications Support

109. Conservation of Historic Brick Structures

New York University-Institute of Fine Arts, New York, New York

$15,000

Project completed; results published —

Baer, N.S., S. Fitz, and R.A. Livingston, editors. *Conservation of Historic Brick Structures: Case Studies and Reports of Research*. Dorset, United Kingdom: Donhead Publishing, Ltd., 1998.

See *NCPTT Notes* 29, page 8 and *NCPTT Notes* 23, page 5 for further discussion of this project.

NCPTT Materials Research Program Manager Mary Striegel was responsible for this project.

108. Recent Advances in GIS Applications for Archeology

University of Chicago, Chicago, Illinois

$15,000

Project completed; manuscripts submitted for publication

NCPTT Information Management Coordinator Mary Carroll is responsible for this project.

107. Rock Art Conservation – Theory and Practice

American Rock Art Research Association, Tucson, Arizona

$8,700

Project in progress; anticipated completion Winter 1999-2000

NCPTT Information Management Coordinator Mary Carroll is responsible for this project.

106. US Policy for Protecting Submerged Cultural Resources Beyond the Three-Mile Limit

Boston University, Boston, Massachusetts

$14,935

Project completed; manuscripts submitted for publication

NCPTT Information Management Coordinator Mary Carroll is responsible for this project.

Information Management

NCPTT Information Management Coordinator Mary Carroll is responsible for these projects.

105. Creating, Maintaining and Sharing Historic Resource Surveys on the Internet

Partner University of Houston, Houston, Texas

Project initiated 1997

Project completed; results published —

University of Houston-Gerald D. Hines College of Architecture-Center for Historic Architecture. *Historic Resource Surveys and the Internet* <www.arch.uh.edu/research/chpar/survey>. 1999. [PTTPublications No. 1999-10]

• National Trust Library

Partner University of Maryland, College Park, Maryland

Project initiated 1994, additional funding 1995 through 1999

See entry 179 for project summary.

• NCPTT's Preservation Technology and Training Internet Services

Project initiated 1994, continued funding 1995 through 1999

See entry 178 for project summary.

Materials Research

NCPTT Materials Research Manager Mary Striegel is responsible for these projects.

104. Image Analysis Software

Partners A. Raouf Eldeeb, San Jose, California

US Geological Survey, Menlo Park, California

Project initiated 1997; project delayed; results published —

US Geological Survey. *EDGE 1.0* (computer software). Natchitoches, Louisiana: NCPTT. 1995. [PTTPublications No. 1995-03]

——. *POREDEMO 1.0* (computer software). Natchitoches, Louisiana: NCPTT. 1995. [PTTPublications No. 1995-04]

——. *SHOWPIX 1.0* (computer software). Natchitoches, Louisiana: NCPTT. 1995. [PTTPublications No. 1995-05]

A series of computer software programs, collectively titled *MORPH*, is being developed as analytical tools for characterizing the surfaces of stone. These programs calculate a fractal dimension of a surface as documented in a digitized electron micrograph image. The software initially was designed to operate on an OS/2 computer operating system; this project modified the software for PCs with MS DOS operating systems. Additional software modifications allow the program to recognize GIF-formatted images and files in other digital formats.

103. Statistical Analysis of NAPAP Chemical/Physical Data

Partner Terry J. Reedy, Newark, Delaware

Project initiated 1997; project in progress; results published —

Reedy, T. J. *Description and Analysis of NAPAP Briquette Surface Chemistry Files*. Natchitoches, Louisiana: NCPTT. 1998. [PTTPublications No. 1998-30]

Analytical tests — including color and recession measurements, weight change and chemical analyses — were performed on limestone and marble samples at field test sites over a decade. This project inventories existing data from those tests and evaluates data quality. Data will be documented and placed in a standardized format. Correlations between chemical/physical data and validated aerometric data will be attempted.

102. Statistical Analysis of NAPAP Meterological Data

Partner Terry J. Reedy, Newark, Delaware

Project initiated 1996, additional funding 1997; project completed; results published —

Reedy, T. J. *Evaluation of NAPAP Aerometric Data*. Natchitoches, Louisiana: NCPTT. 1996. [PTTPublications No. 1996-21]

• Deposition Studies on Consolidated Stone

Project initiated 1996, additional funding 1997 and 1998

See entry 132 for project summary.

• Deposition Studies on Textured Stone

Partner University of Delaware, Newark, Delaware

Project initiated 1997, additional funding 1998 and 1999

See entry 175 for project summary.

• Hiker Bronze Monograph

Partner University of Delaware, Newark, Delaware

Project initiated 1983; NCPTT assumed responsibility 1995; additional NCPTT funding 1996 through 1998

See entry 131 for project summary.

• Materials Characterization of Carbonate Stone

Partner University of Houston, Houston, Texas

Project initiated 1997, additional funding 1998 and 1999

Project in progress

See entry 174 for project summary.

• Materials Research Program Archives

Project initiated 1997, continued funding 1998 and 1999

See entry 173 for project summary.

• Materials Research Program Literature Project

Project initiated 1996, continued funding 1997 through 1999

See entry 172 for project summary.

• NCPTT Laboratories

Project initiated 1996, continued funding 1997 through 1999

See entry 171 for project summary.

• Soiling of Limestone Buildings

Partner Carnegie Mellon University, Pittsburgh, Pennsylvania

Project initiated 1991; NCPTT assumed responsibility 1995; additional NCPTT funding 1996 through 1999

See entry 169 for project summary.

• Using UV Photography to Document Water Flow Patterns

Partner Vernon Miller and Associates, Santa Barbara, California

Project initiated 1997, additional funding in 1998

See entry 130 for project summary.

NCPTT-wide

• Statewide Preservation Organizations

Partner National Trust for Historic Preservation, Washington, DC

Project initiated 1996, additional funding 1997 through 1999

See entry 168 for project summary.

Research

NCPTT Research Coordinator Mark Gilberg is responsible for these projects.

101. Historic Dirt Surfaces

Partner Los Alamitos Foundation, Long Beach, California

Project initiated 1997; anticipated completion Winter 1999-2000

Los Alamitos Foundation is evaluating existing methods and materials used to simulate historic dirt surfaces such as roads, paths and parking areas associated with historic sites. Performance standards and test procedures for proposed surface treatments also will be evalnated.

100. Preserving Cultural Landscapes along Historic Trails

Partner National Park Service-Denver Service Center, Denver, Colorado

Project initiated 1997; anticipated completion Winter 1999-2000

The National Park Service's Denver Service Center is testing a new ecosystem approach to identifying, evalnating and preserving cultural landscapes along historic trails. This approach incorporates models for ecosystem management such as the ecoregion concept, a process of delineating and classifying ecologically distinctive areas of the earth's surface. To date, the model has been applied to historic trails in the Wyoming basin and to portions of the Oregon Trail.

99. Using Submeter GPS to Survey Archeological Sites

Partner University of Northern Colorado Research Corporation, Greely, Colorado

Project initiated 1997; project completed; results published —

Brunswig, Jr., R.H. *An Evaluation of Archaeological Applications of Mapping Grade Global Positioning Systems: Field Tests in Northeastern Colorado's Plains and Mountains*. Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1999. [PTTPublications No. 1999-03]

See *NCPTT Notes* 33, page 3 for further discussion of this project.

• Controlling Formosan Termites Using Toxic Baits

Partner City of New Orleans Mosquito and Termite Control Board, New Orleans, Louisiana

Project initiated 1997, additional funding 1998 and 1999

See entry 167 for project summary.

• Protective Glazing on Stained Glass Windows

Partner Enermodal Engineering, Inc., Denver, Colorado

Project initiated 1997, continued funding 1998 and 1999

See entry 163 for project summary.

Training and Education

NCPTT Training Coordinator Frances Gale is responsible for these projects.

98. Symposium: The Conservation of Outdoor and Indoor Sculpture and Monuments

Partners Brookgreen Gardens, Murrells Inlet, South Carolina
Save Outdoor Sculpture!, Washington, DC
Southeastern Museums Conference, Baton Rouge, Louisiana
North Carolina Museums Council, Raleigh, North Carolina
South Carolina Federation of Museums, Columbia, South Carolina
Association for the Preservation of Historic Natchitoches, Natchitoches, Louisiana

Project initiated 1997; project completed; results published —

Brostoff, L., and R. de la Rie. "Conservation Treatments: Methods, Options and Research, paper presented to *The Conservation of Outdoor and Indoor Sculpture and Monuments-Through a Conservator's Eye* workshop, Brookgreen Gardens, Murrells Inlet, South Carolina, August 21-23, 1997.

• International Internships

Partner United States Committee/International Council on Monuments and Sites, Washington, DC

Project initiated 1995, additional funding 1996 through 1999

See entry 153 for project summary.

• NCPTT's Training Database

Project initiated 1995, continued funding 1996 through 1999

See entry 152 for project summary.

Information Management

NCPTT Information Management Coordinator Mary Carroll is responsible for these projects.

97. Arizona's Cultural Resource Database – Developing a Master Plan

Arizona State Museum, Tucson, Arizona

$34,547

Project completed; results published —

Grindell, B. and R. Karl. *Computerizing Arizona's Cultural Resource Files: Implementation Plan*. Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1997. [PTTPublications No. 1997-11] (For information about the overall AZSITE project, of which this PTTGrants project is a part, see <archaeology.la.asu.edu/azsite>.)

96. Computerizing Maryland's Historic Site Records

Maryland State Historic Preservation Office, Crownsville, Maryland

$39,820

Project completed; results published —

Maryland Historical Trust. <www.ari.net/mdshpo/gisncptt.html> 1998. [PTTPublications No. 1998-21]

95. A Creole Heritage Preservation Guide

St. Augustine Historical Society, Natchitoches, Louisiana

$30,040

Project completed; results published —

Colson, J. *"Getting it Out of the Attic" — A Creole Preservation Guide*. Natchitoches, Louisiana: NCPTT. 1997. [PTTPublications No. 1997-10]

94. Internet Access to State-by-State Preservation Law

National Council of State Historic Preservation Officers, Washington, DC

National Conference of State Legislatures, Denver, Colorado

$40,000

Project completed; results published —

National Conference of State Historic Preservation Officers and National Conference of State Legislatures. <www.ncsl.org/programs/arts/statehist_intro.htm>. 1998. [PTTPublications No. 1998-13]

Shrimpton, J. *State Historic Preservation Legislation Database*. Natchitoches, Louisiana: NCPTT. 1998. [PTTPublications No. 1998-13]

93. Maritime Cultural Resources – Developing and Sharing an Expandable Online Database

Ohio State Historic Preservation Office, Columbus, Ohio

$40,000

Project completed; results published —

Ohio Historical Society and North American Maritime Consortium, Inc. *Standardization in Historical Information and Interpretation System*. <www.zone-2.com/name/shiipsInfo.html>. 1998. [PTTPublications No. 1998-10]

Martin, J.C. *Standardization in Historical Information an Interpretation System Demonstration Project*. Natchitoches, Louisiana: NCPTT 1998. [PTTPublications No. 1998-10]

92. Providing Public Access to Hawaii's Preservation Information via World Wide Web

Hawaii State Historic Preservation Office, Honolulu, Hawaii

$9,500

Project completed; results published —

Komori, E. <mano.icsd.hawaii.gov/~ekomoek> 1998. [PTTPublications No. 1998-12]

91. UVa Law Library Collection – Developing an Internet Database for Preservation Law

University of Virginia Law School Foundation, Charlottesville, Virginia

$27,937

Project in progress

An additional partner — University of Georgia — has joined the project.

Research

NCPTT Research Coordinator Mark Gilberg is responsible for these projects

90. Developing Comprehensive Testing Protocols for Protective Coatings for Silver Objects in Museum Collections

Corrosion and Materials Research Institute, Newark, Delaware

$39,844

Project completed; results published —

Reedy, C., R.A. Corbett, and M. Burke, "Electrochemical Tests a Alternatives to Current Methods for Assessing Effects of Exhibition Materials o Metal Artifacts," *Studies in Conservation* 43 (1998) 183-196.

See entry 198 for other NCPTT work on this topic.

89. Developing Models for Parking and Pedestrian Circulation Design in Historic Downtowns

University of Kentucky, Lexington, Kentucky

$14,301

Project completed

88. Developing a Prototypical Historic Fire Risk Index to Evaluate Fire Safety in Historic Buildings

Fire Safety Institute, Middlebury, Vermont

$38,496

Project completed; results published —

Kaplan, M.E. and J.M. Watts. "A Prototypical Historic Fire Ris Index to Evaluate Fire Safety in Historic Buildings," *APT Bulletin*. Vol. XXX No. 2-3 (1999) 49-55.

Watts, J.M. "Analysis of the NFPA fire safety evaluation system for business occupancies," *Fire Technology* 33 (1997). [PTTPublications No. 1997-09]

——. "Fire Risk Index for Heritage Buildings," *Fire Technology* 33, No.3 (1997) 276-282.

——, and M.E. Kaplan. *Performance-based Approaches to Protecting Our Heritage*. Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1997. [PTTPublications No. 1997-12]

——. *Development of a Prototypical Historic Fire Risk Index to Evaluate Fire Safety in Historic Buildings*. Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1998. [PTTPublications No. 1998-08]

87. Developing Standards and Procedures for Recording Courthouses Using Customized Digital Technologies

University of Texas, San Antonio, Texas

$39,754

Project completed; results published —

Texas A&M University (T.W. Komas, M. Valentine and T. Gardner, developers). *EDIFIS. The Building Essential DATA and IMAGE Flexible Information System. Historic Building Documentation Process and Database* (CD-ROM). Natchitoches, Louisiana: National Center for Preservation Technology and Training. 1998. [PTTPublications No. 1998-32]

86. A New Technique for Accurately Dating Prehistoric Rock Paintings

Texas A&M University, College Station, Texas

$39,954

Project completed; results published —

Armitage, R.A., M. Hyman, J. Southon, and M.W. Rowe. "Rock art image in Fern Cave, Lava Beds National Monument, California: not the A.D. 1054 (Crab Nebula) supernova." *Antiquity* 71 (1997) 715-720. [PTTPublications No. 1997-13]

Armitage, R.A., B. David, M. Hyman, M.W. Rowe, C. Tuniz, E. Lawson, G. Jacobsen and Q. Hua. "Radiocarbon determinations on Chillagoe rock paintings: Small sample accelerator mass spectrometry," *Records of the Australian Museum* 50 (1998) 285-292.

Evans, M. "How Old are those Paintings, Anyway? Ask a Chemist...", *Advance/Quality of Life-Research at Texas A&M University* (1998) 13.

Hyman, M., and M.W. Rowe. "Plasma extraction and AMS 14C dating of rock paintings," *Techne* 1997 (1997) 61-70. [PTTPublications No. 1997-14]

——, "Plasma-chemical extraction and AMS radiocarbon dating of rock paintings," *American Indian Rock Art* 23 (1997) 1-9.

Mawk, E.J., and M.W. Rowe. "Effect of Water on Lower Pecos River Rock Paintings in Texas," *Rock Art Research* 1998 15, No.1 (1998) 12-16. [PTTPublications No. 1998-22]

Pace, M.F.N., M. Hyman, M.W. Rowe, and J.R. Southon, "Chemical Pretreatment on Plasma Extraction for C14 Dating of Pecos River Genre Rock Paintings," *American Indian Rock Art* 28 (1999) (in press).

35. Using Aerial Photography to Document and Monitor the Condition of Prehistoric Earthen Structures

Society for American Archaeology, Washington, DC

$40,000

Project in progress; anticipated completion Winter 1999-2000

This project explores using aerial photography as a quick, inexpensive means of recording changes over time in prehistoric earthen structures. Existing vertical and oblique aerial photographs are being used to document the state of preservation of known prehistoric earthen structures in the lower Mississippi River valley. As a consequence of intensive agriculture, however, most of the earthen structures examined do not possess sufficient topographical expression to yield useful results. Alternative analytical techniques are being explored.

84. Using Three-Dimensional Ground Penetrating Radar to Locate and Identify Buried Archeological Features

University of Colorado, Boulder, Colorado

$39,860

Project completed; results published —

Conyers, L.B. "Acquisition, Processing and Interpretation Techniques for Ground Penetrating Radar Mapping of Buried Archaeological Sites," paper presented at *Seventh International Conference on Ground-Penetrating Radar*, University of Kansas, Lawrence, Kansas, May 27-30, 1998.

——. "GPR testing the American Southwest," paper presented at *Annual Meeting of Colorado Council of Professional Archaeologists*, Pueblo, Colorado, April 1998.

——, and C. M. Cameron. *Finding and Mapping Buried Archaeological Features in the American Southwest: New Ground-Penetrating Radar Techniques and Three-dimensional Computer Mapping*. Natchitoches, Louisiana: NCPTT. 1998. [PTTPublications No. 1998-04]

——. "Ground-penetrating Radar Techniques and Three-dimensional Computer Mapping in the American Southwest." *Journal of Field Archaeology* 25, No. 4 (Winter 1998) 417-430. [PTTPublications No. 1998-36]

Conyers, L. B. and D. Goodman, "Archaeology Looks to New Depths," *Discovering Archaeology* Jan/Feb 1999, 70-77.

Hall, A. "Slices of the past," Scientific American Exhibit: Radar Archaeology, June 22, 1998. (Also available at <www.sciam.com/exhibit/062298radar/index.html>)

See entry 147 for further NCPTT work on this topic.

Training and Education

NCPTT Training Coordinator Frances Gale is responsible for these projects.

83. Building Code Issues in Rehabilitation – Solutions and Precedents

California Preservation Foundation, Oakland, California

$38,178

Project in progress; anticipated completion Winter 1999-2000

California Preservation Foundation is compiling case studies that illustrate alternative building regulations and standards to facilitate restoration and rehabilitation of historic buildings, for online dissemination.

82. Distance Learning: Preserving Mechanical Systems

Belmont Technical College, St. Clairsville, Ohio

$37,920

Project completed; results published —

Belmont Technical College. *Mechanical Systems in Historic Buildings* (CD-ROM). St. Clairsville, Ohio: Belmont Technical College. 1998. [PTTPublications No. 1998-20]

See *NCPTT Notes* 29, page 3 for further discussion of this project.

81. Video: *Restoring Dry-Stone Walls and Fences*

Kentucky Heritage Council, Frankfort, Kentucky

$24,082

Project completed; results published —

Kentucky Heritage Council (R. Tufnell, producer). *Walls of Stone: How to Build Drystone Walls and Rock Fences* (video). Lexington, Kentucky: The Drystone Masonry Institute of America, Inc. 1996. [PTTPublications No. 1996-01]

80. Workshop: Cultural Resources Protection for Northern Nevada Tribes

Washoe Tribe of Nevada and California, Gardnerville, Nevada

$40,000

Project in progress; final report in preparation

Protection and preservation of Native American cultural heritage were the subjects of a workshop conducted by the Washoe Tribe in Carson City, Nevada in May 1998. A follow-up seminar was held in Carson City in September 1998.

79. Workshop: Historic Landscapes

The Alliance for Historic Landscape Preservation, New York, New York

$37,100

Project completed; a compilation of workshop proceedings is in press

78. Workshop: Historic Preservation Short Course for Planning and Preservation Commissioners

University of Georgia, Athens, Georgia

$28,270

Project completed

University of Georgia's Office of Preservation Services and the National Alliance of Preservation Commissions developed a model Historic Preservation Short Course for historic preservation and planning commissions, which was presented in Lafayette, Louisiana in September 1997.

77. Workshop and Technical Field Guide – Hazards in Conservation Materials and Processes

RESTORE, New York, New York

$40,000

Project completed; results published —

Rossol, M. *RESTORE Technical Field Guide on the Health and Environmental Hazards Inherent in Architectural Restoration Materials and Processes*. New York, New York: RESTORE. 1998. [PTTPublications No. 1998-05]

1996 PTT Project

The following 1996 PTTProjects are completed or ongoing. S NCPTT Notes 28 for project summaries; recent information abo these projects is noted below.

Information Management

NCPTT Training Coordinator Mary Carroll is responsible for these project

76. Internet Communications Survey

Partner Louisiana State University, Baton Rouge, Louisiana

Project completed

• National Trust Library

Partner University of Maryland, College Park, Maryland

Project initiated 1994, additional funding 1995 through 1999

See entry 179 for project summary.

• NCPTT's Preservation Technology and Training Internet Services

Project initiated 1994, continued funding 1995 through 1999

See entry 178 for project summary.

Materials Research

NCPTT Materials Research Program Manager Mary Striegel is responsible for these projects.

75. Chamber Study of Pollutant Deposition to Stone Surfaces

Partner US Geological Survey, Reston, Virginia

Project initiated 1984; project and equipment transferred to NCPTT 1996; s entries 171 and 175 for summaries of current projects.

74. Electrochemical Materials Testing

Partner National Park Service-Harpers Ferry Center-Division of Conservation, Harpers Ferry, West Virginia

Project completed

This project funded acquisition of electrochemical testing equipment as part a technology transfer study.

73. Researching Bronze Corrosion in Marine Environments

Partner Urban Art, Inc., Los Angeles, California

Anticipated completion Summer 2000

This project investigates the role of chlorides in the development of cupri

corrosion on bronze sculpture and ornaments in marine environments. Initial research will document unusually thick, well-adhered black corrosion observed by conservators working in tropical and subtropical climates. To date, samples have been collected, an analytical procedure has been established and a literature review of cuprite corrosion and chlorides is underway.

72. State-of-the-Art Literature Review on Acid Deposition and Stone Deterioration

Partner United States Committee/International Council on Monuments and Sites, Washington, DC

Project in progress; results published —

Charola, A.E. *Review of the Literature on the Topic of Acidic Deposition on Stone*. Natchitoches, Louisiana: NCPTT. 1998. [PTTPublications No. 1998-09]

71. Stone Field Test Site Exposure

Partner Argonne National Laboratory, Argonne, Illinois

Project initiated 1983; NCPTT assumed responsibility 1995; additional funding 1996; project completed 1996; results will be archived

• Carbonate Stone Decay Model and Materials Research Program Synthesis

Partner US Geological Survey, Menlo Park, California

Project initiated 1995, additional funding 1996 and 1998

See entry 133 for project summary.

• Deposition Studies on Consolidated Stone

Project initiated 1996, continued funding 1997 and 1998

See entry 132 for project summary.

• Hiker Bronze Monograph

Partner University of Delaware, Newark, Delaware

Project initiated 1983; NCPTT assumed responsibility 1995; additional NCPTT funding 1996 through 1998

See entry 131 for project summary.

• Materials Research Program Literature Project

Project initiated 1996, continued funding 1997 through 1999

See entry 172 for project summary.

• NCPTT Laboratories

Project initiated 1996, continued funding 1997 through 1999

See entry 171 for project summary.

• Soiling of Limestone Buildings

Partner Carnegie Mellon University, Pittsburgh, Pennsylvania

Project initiated 1991; NCPTT assumed responsibility 1995; additional NCPTT funding 1996 through 1999

See entry 169 for project summary.

• Statistical Analysis of NAPAP Meteorological Data

Partner Terry J. Reedy, Newark, Delaware

Project initiated 1996, additional funding 1997

See entry 102 for project summary.

NCPTT-Wide

• Statewide Preservation Organizations

Partner National Trust for Historic Preservation, Washington, DC

Project initiated 1996, additional funding 1997 through 1999

See entry 168 for project summary.

Research

NCPTT Research Coordinator Mark Gilberg was responsible for these projects.

70. Camp Ruston Oral History Project

Partner The Camp Ruston Foundation, Inc., Ruston, Louisiana

Project completed

69. Electronic Marker Systems for Locating Re-Buried Archeological Sites

Partner Washington State Historic Preservation Office, Olympia, Washington

Project completed

68. Investigating the Use of Lasers for the Preservation of Cultural Materials

Partner Los Angeles County Museum of Art, Los Angeles, California

Project completed

See entry 164 for further NCPTT work on this topic.

67. Second International Conference on Wood Protection with Diffusible Preservatives

Partner Forest Products Society, Madison, Wisconsin

Project completed

Training and Education

NCPTT Training Coordinator Frances Gale was responsible for these projects.

66. Conference: Preserving the Past and Building the Future

Partners American Institute of Architects-Historic Resources Committee and American Institute for Conservation of Historic and Artistic Works-Architecture Specialty Group, Washington, DC

Project completed

65. Heritage Education Survey

Partner: Middle Tennessee State University-The Center for Historic Preservation, Murfreesboro, Tennessee

Project completed

See entry 154 for further NCPTT work on this topic.

64. Preservation Leadership Training

Partners: National Trust for Historic Preservation, Washington, DC

Association for the Preservation of Historic Natchitoches, Natchitoches Historic Foundation, and Main Street Natchitoches, Natchitoches, Louisiana

Project completed

63. Preservation Weekends

Partners: Texas Historical Foundation, Texas State Historic Preservation Office and University of Texas, Austin, Texas

Colorado Preservation, Inc., Denver, Colorado

Project completed

62. Workshop: Saving Historic Architecture and Antiques

Partners: National Park Service-Natchez National Historical Park, Natchez, Mississippi

Association for the Preservation of Historic Natchitoches, Natchitoches, Louisiana

Project completed

• International Internships

Partner: United States Committee/International Council on Monuments and Sites, Washington, DC

Project initiated 1995, additional funding 1996 through 1999

See entry 153 for project summary.

• NCPTT's Training Database

Project initiated 1995, additional funding 1996 through 1999

See entry 152 for project summary.

1995 Preservation Technology and Training Grants and Project

The following 1995 PTTGrants and PTTProjects are completed or ongoing. See NCPTT Notes *28 for project summaries; recent information about these projects is noted below.*

Research

1995 PTTGrants

NCPTT Research Coordinator Mark Gilberg was responsible for these projects.

61. Analyzing the Economic Impact of Historic Preservation in Our Nation's Most Densely Populated State

New Jersey Historic Trust, Trenton, New Jersey

See entries 128 and 162 for other NCPTT work on this topic.

60. Analyzing the Effect of an Indoor Pollutant on Traditional Easel Paintings

Indiana University Art Museum, Bloomington, Indiana

59. Designing a Controlled Archeological Test Site for Evaluating Non-Invasive Technologies for Archeological Site Assessment

US Army Construction Engineering Research Laboratories, Champaign, Illinois

See entries 113 and 144 for other NCPTT work on this topic.

58. Developing a Conservation Inventory of Frank Lloyd Wright Structures

Frank Lloyd Wright Building Conservancy, River Forest, Illinois

57. Developing Agent-Based Computer Simulations for Identifying and Interpreting Archeological Sites

Washington State University, Pullman, Washington

Results published in addition to publications cited in *NCPTT Notes* 28 —

Kohler, T.A., and Eric Carr. "Swarm-based Modeling of Prehistor Settlement Systems in Southwestern North America." In *Proceedings Colloquium H, UISPP, XIIIth Congress, Forli, Italy, September 1996* (edited I I. Johnson and M. North). Sydney University Archaeological Methods Series Sydney, Australia: Archaeology (P & H) 1997.

Kohler, T.A., J. Kresl, C. Van West, E. Carr, and R. Wilshusen. "I There Then: A Modeling Approach to Settlement Determinants and Spati Efficiency Among Late Ancestral Pueblo Populations of the Mesa Verde Regio U.S. Southwest," in *Dynamics in Human and Primate Societies: Agent-Bas Modeling of Social and Spatial Processes* (edited by T. Kohler and G. Gumerma Santa Fe Institute and Oxford University Press (1999) 145-178.

Kohler, T.A., C. R. Van West, E. P. Carr, and C.G. Langton. "Ager Based Modeling of Prehistoric Settlement Systems in the Northern Americ Southwest," Proceedings of the Third International Conference Integrating G and Environmental Modeling, Santa Fe, New Mexico, January 1996. San Barbara: National Center for Geographic Information and Analysis. W <www.ncgia.ucsb.edu/conf/SANTA_FE_CD-ROM/sf_papers/kohler_ti kohler.html>. 1996.

56. Documenting the Movement of Historic Objects Using Advanced Computer Simulation Technologies

National Preservation Institute, Washington, DC

55. Evaluating the Impact of Revegetation on the Preservation of Archeological Sites

University of Mississippi, University, Mississippi

54. **Field Testing a Non-Invasive, Non-Toxic Baiting System for Protecting Historic Structures from Subterranean Termites**

University of Florida, Fort Lauderdale, Florida

Results published in addition to publications cited in *NCPTT Notes* 28 —

Su, N.-Y., J.D. Thomas and R. H. Scheffrahn. "Elimination of Subterranean Termite Populations from the Statue of Liberty National Monument using a Bait Matrix Containing an Insect Growth Regulator, Hexaflumuron," *Journal of the American Institute for Conservation* 37 (1998) 282-292.

See entries 160 and 167 for other NCPTT work on this topic.

53. **Field Testing Remote Sensing Systems for the Protection of Historic and Prehistoric Sites and Monuments from Vandalism**

University of California, Riverside, California

52. **Investigating Relationships between Heritage Preservation and Economic Development in Rural Areas Using the Bayou Teche Heritage Corridor as a Model**

Louisiana State University, Baton Rouge, Louisiana

51. **Investigating the Biogeochemical Relationship between Prehistoric Rock Paints and Natural Rock Accretions**

Newberry College, Newberry, South Carolina

Results published in addition to publications cited in *NCPTT Notes* 28 —

Edwards, H.G.M., L. Drummond and J. Russ. "Fourier Transform Raman Spectroscopic Study of Prehistoric Rock Paintings from the Big Bend Region, Texas," *Journal of Raman Spectroscopy* 30 (1999) 421-428. [PTTPublications No. 1999-14]

Russ, J., W.D. Kaluarachchi, L. Drummond, and H.G.M. Edwards, "The Nature of Whewellite-Rich Rock Crust Associated with Pictographs in Southern Texas," *Studies in Conservation* 44 (1999) 91-103. [PTTPublications No. 1999-17]

50. **Investigating the Use of Silicones for the Treatment of Wet or Waterlogged Organic Materials**

Texas A&M University, College Station, Texas

Results published in addition to publications cited in *NCPTT Notes* 28 —

N.P. and R.L. "Chaining Treasures, New Chemistry Saves and Preserves Artifacts," *Discovering Archaeology* March/April (1999) 7.

49. **Investigating the Use of Turn-of-the-Century Whitewares as Economic Indicators for Evaluating Sites for National Register Eligibility**

Ohio State Historic Preservation Office, Columbus, Ohio

48. **Preparing a Directory of Chemical Spot Tests for Materials Characterization**

University of Arizona, Tucson, Arizona

47. **Researching the Use of Oral Histories to Interpret African-American Theaters in the South**

[illegible] y of Macon, Macon, Georgia

[illegible] oject completed 1998

- **Protective Coating Systems for Outdoor Bronze Sculpture and Ornamentation (Phase 1 of three phases)**

National Gallery of Art, Washington, DC

See Phases 2 and 3 under Environmental Effects in 1997 and 1998; see entry 141 for project summary.

Training and Education

NCPTT Training Coordinator Frances Gale was responsible for these projects.

46. **Construction Technology Manual for Historic Buildings in Puerto Rico and the Caribbean**

Caribbean Heritage, Guaynabo, Puerto Rico

45. **Distance Learning: A Multimedia Approach to Training Staff in Simple Book Repair**

Dartmouth College, Hanover, New Hampshire

44. **Heritage Education Teacher's Manual Using Historic Landscapes**

Morgan County Landmarks Society, Madison, Georgia

Project completed; results published –

Morgan County Landmarks Society, *A Heritage of Fine Gardens* (videotape). Natchitoches, Louisiana: National Center for Preservation Technology and Training, 1999. [PTTPublications No. 1999-21]

Morgan County Landmarks Society and Georgia Trust for Historic Preservation, Inc., *Amendment to Teacher's Heritage Resource Guide, Morgan County, Vol. II*. Natchitoches, Louisiana: National Center for Preservation Technology and Training, 1999. [PTTPublications No. 1999-20]

43. **Seminar: Landscaping for Historic Properties**

Southern Cultural Heritage Foundation, Vicksburg, Mississippi

42. **Training for Instructor's Certificate in the Building Trades**

University of Vermont, Burlington, Vermont

41. **Video: *Culture Shock: Fire Protection for Historic and Cultural Property***

Boston University, Boston, Massachusetts

40. **Video: *Lead-Based Paint Abatement in Historic Structures***

Maryland State Historic Preservation Office, Crownsville, Maryland

39. **Workshop: American Indian Voices in Preservation**

Crow Canyon Archaeological Center, Cortez, Colorado

38. **Workshop: Diagnosing Moisture in Historic Buildings**
The Friends of Meridian Hill, Washington, DC

37. **Workshop: Investing in the Past – Informed Decision Making for Historic Preservation in the Private Sector**
Wilkinson County Museum, Woodville, Mississippi

36. **Workshops: Preservation Skills Training**
Historic Windsor, Inc., Windsor, Vermont

35. **Workshops: Preservation Training for Local Governments**
Georgia Department of Archives and History, Atlanta, Georgia

34. **Workshops: Preserving Our Endangered Past**
Slater Mill Historic Site, Pawtucket, Rhode Island

33. **Workshop and Training Manual: Three-Dimensional Coordinate Measurement of Historic Artifacts**
Mystic Seaport Museum Inc., Mystic, Connecticut

32. **Youth Training in Vernacular Earthen Architecture and Associated Cultural Traditions**
Cornerstones Community Partnerships, Santa Fe, New Mexico

Information Management

NCPTT Information Management Coordinator Mary Carroll is responsible for these projects.

- **National Trust Library**

Partner University of Maryland, College Park, Maryland
Project initiated 1994, additional funding 1995 through 1999
See entry 179 for project summary.

- **NCPTT's Preservation Technology and Training Internet Services**

Project initiated 1994, continued funding 1995 through 1999
See entry 178 for project summary.

Materials Research

NCPTT Materials Program Manager Mary Striegel is responsible for these projects.

31. **Characterization of the Decay Found on Marble an Limestone Buildings**

Partner US Geological Survey, Reston, Virginia
Project initiated 1984; NCPTT assumed responsibility 1995; project ended 1996.

30. **Cost Benefit Analysis of Bridge Degradation**

Partner Carnegie Mellon University, Pittsburgh, Pennsylvania
Project initiated 1993; NCPTT assumed responsibility 1995; project completed 1995; results published –
McNeil, S. *Cost Benefit Analysis of Bridge Degradation*. Natchitoch Louisiana: NCPTT, 1995. [PTTPublications No. 1995-15]

29. **Field Studies of Carbonate Stone Dissolution**

Partner US Geological Survey, Denver, Colorado
Project initiated 1983; NCPTT assumed responsibility 1995; project ended 1995.

28. **In-Situ Monitoring of Cultural Resources**

Partner Illinois State Water Survey, Champaign, Illinois
Project initiated 1986; NCPTT assumed responsibility 1995; project ended 1995.

- **Carbonate Stone Decay Model and Materials Research Program Synthesis**

Partner US Geological Survey, Menlo Park, California
Project initiated 1995, additional funding 1996 and 1998
See entry 133 for project summary.

- **Chamber Study of Pollutant Deposition to Stone Surfaces**

Partner US Geological Survey, Reston, Virginia
Project initiated 1984; NCPTT assumed responsibility 1995; project a equipment transferred to NCPTT 1996
See entry 75 for further NCPTT work on this topic.

- **Hiker Bronze Monograph**

Partner University of Delaware, Newark, Delaware
Project initiated 1983; NCPTT assumed responsibility 1995; additional NCP funding 1996 through 1998; project completed 1998; results publication dela
See entry 131 for project summary.

- **Soiling of Limestone Buildings**

Partner Carnegie Mellon University, Pittsburgh, Pennsylvania
Project initiated 1991; NCPTT assumed responsibility 1995; additional NCP funding 1996 through 1999
See entry 169 for project summary.

• **Stone Field Test Site Exposure**

Partner Argonne National Laboratory, Argonne, Illinois

Project initiated 1983; NCPTT assumed responsibility 1995; additional NCPTT funding 1996

See entry 71 for project summary.

NCPTT-wide

27. **Save Outdoor Sculpture! – Louisiana Survey**

Partner Louisiana State University, Baton Rouge, Louisiana

Project initiated 1994, additional funding 1995; project completed; results published –

Louisiana State University. <www.sos.lsu.edu>. Baton Rouge, Louisiana: Louisiana State University. 1995.

Smithsonian Institution. *Inventory of American Sculpture*. <www.siris.si.edu>. Washington, DC: Smithsonian Institution.

Research

NCPTT Research Coordinator Mark Gilberg was responsible for these projects.

26. **Analytical Services in Support of Historic Preservation**

Partner Frank Preusser and Associates, Los Angeles, California

25. **Conservation Design for an Independence Hall Exhibit**

Partner National Park Service–Harpers Ferry Center, Harpers Ferry, West Virginia

24. **Investigating Low-Altitude Remote Sensing**

Partner National Park Service–Denver Service Center, Denver, Colorado

23. **Research Priorities in Art and Architectural Conservation**

Partner American Institute for Conservation of Historic and Artistic Works, Washington, DC

22. **Workshop: Museum Exhibit Lighting – Conservation Lighting Design and Current Technology**

Partners Washington Conservation Guild, Freer Gallery of Art and Arthur M. Sackler Gallery Washington, DC

National Park Service-Harpers Ferry Center Division of Conservation, Harpers Ferry, West Virginia

See *NCPTT Notes* 32, page 1 for further discussion of this and related NCPTT projects.

Training and Education

NCPTT Training Coordinator Frances Gale was responsible for these projects.

21. **Workshop: Archeology for Managers**

Partner National Park Service-Archeology and Ethnography, Washington, DC

20. **Workshop: Heritage Areas**

Partner Northwestern State University of Louisiana, Natchitoches, Louisiana

19. **Workshop: NAGPRA**

Partner National Park Service-Archeology and Ethnography, Washington, DC

18. **Workshop: Soils and Archeology**

Partner Northeast Louisiana University, Monroe, Louisiana

17. **Workshop: Timber Framing**

Partners Timber Framers Guild of North America, Bellingham, Washington

Texas Department of Parks and Wildlife, Austin, Texas

• **International Internships**

Partner United States Committee/International Council on Monuments and Sites, Washington, DC

Project initiated 1995, additional funding 1996 through 1999

See entry 153 for project summary.

• **NCPTT's Training Database**

Project initiated 1995, continued funding 1996 through 1999

See entry 152 for project summary.

1994 Preservation Technology and Training Grants and Projec

The following 1994 PTTGrants and PTTProjects are completed or ongoing. See NCPTT Notes *28 for project summaries; recent information about these projects is noted below.*

Research

NCPTT Research Coordinator Mark Gilberg was responsible for these projects.

16. **A Database for the Study of 20th Century Building Materials**

National Council for Preservation Education, Ithaca, New York

15. **Effectiveness of Protective Glazing for Historic Stained Glass Windows**

Inspired Partnerships, Chicago, Illinois

See entry 163 for further NCPTT work on this topic.

14. **Efficient Techniques for Analyzing Blood Residues on Tools from Archeological Sites**

Smithsonian Institution-Conservation Analytical Laboratory, Washington, DC

13. **Guidelines for Allowable Temperature Fluctuations in Museums and Historic Properties**

Smithsonian Institution-Conservation Analytical Laboratory, Washington, DC

12. **Improvements of Existing Heating and Air Conditioning Systems in Historic Structures**

New York State Historic Preservation Office, Waterford, New York

11. **Low-Cost Photogrammetric Data Archival System**

University of Arkansas, Fayetteville, Arkansas

10. **Methods and Technologies for Preserving Woody Plants in Historic Landscapes**

Harvard University-Arnold Arboretum, Cambridge, Massachusetts

9. **Preserving Historic Carved Sandstone Buildings in Marine Environments**

Historic Preservation Commission, Monterey, California

8. **Testing the Energy Performance of Historic Windows in Cold Climates**

Vermont State Historic Preservation Office, Montpelier, Vermont

Training and Education

NCPTT Training Coordinator Franc Gale was responsible for these projec

7. **Interactive Multimedia Training for Advanced Mapping Technologies**

Bureau of Land Management, Phoenix, Arizona

Project completion is delayed

6. **Preservation Resource Guide for Public Works Managers**

American Public Works Association, Kansas City, Missouri

5. **Proceedings of *The Techniques and Uses of Garde Archaeology* Conference**

United States Committee/International Council on Monuments and Si Washington, DC

4. **Video: *Connections: Preserving America's Landscape Legacy***

American Society of Landscape Architects, Washington, DC

3. **Workshop: Methods of Archeological Site Discover and Evaluation**

Society for American Archaeology, Washington, DC

National Park Service-Archeology and Ethnography, Washington, DC

2. **Workshop: Native Americans and Archeology**

Arizona Archaeological Council, Kykotsmovi, Arizona

NCPTT-wide

1. NCPTT Headquarters Rehabilitation

Partner Northwestern State University of Louisiana, Natchitoches, Louisiana

Project initiated 1994; project delayed

Under a $3.35 million contract between the National Park Service and NSU – with Federal funds appropriated in 1994 —, NSU shall renovate a circa 1926 gymnasium listed on the National Register of Historic Places as NCPTT headquarters. Groundbreaking for the project was in August 1997. A major fire in November 1997 destroyed the gymnasium interior and roof. The project currently is scheduled for completion in January 2001.

• Save Ontdoor Sculpture! – Louisiana Survey

Partner Louisiana State University, Baton Rouge, Louisiana

Project initiated 1994; additional funding 1995

See entry 27 for project summary.

Information Management

NCPTT Information Management Coordinator Mary Carroll is responsible for these projects.

• National Trust Library

Partner University of Maryland, College Park, Maryland

Project initiated 1994, additional funding 1995 through 1999

See entry 179 for project summary.

• NCPTT's Preservation Technology and Training Internet Services

Project initiated 1994, continued funding 1995 through 1999

See entry 178 for project summary.

Our Mission

United States Department of the Interior
The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and to honor our trust responsibilities to tribes.

National Park Service
The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education and inspiration of this and future generations. The Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

National Center for Preservation Technology and Training
The National Center for Preservation Technology and Training promotes and enhances the preservation of prehistoric and historic resources in the United States for present and future generations through the advancement and dissemination of preservation technology and training.

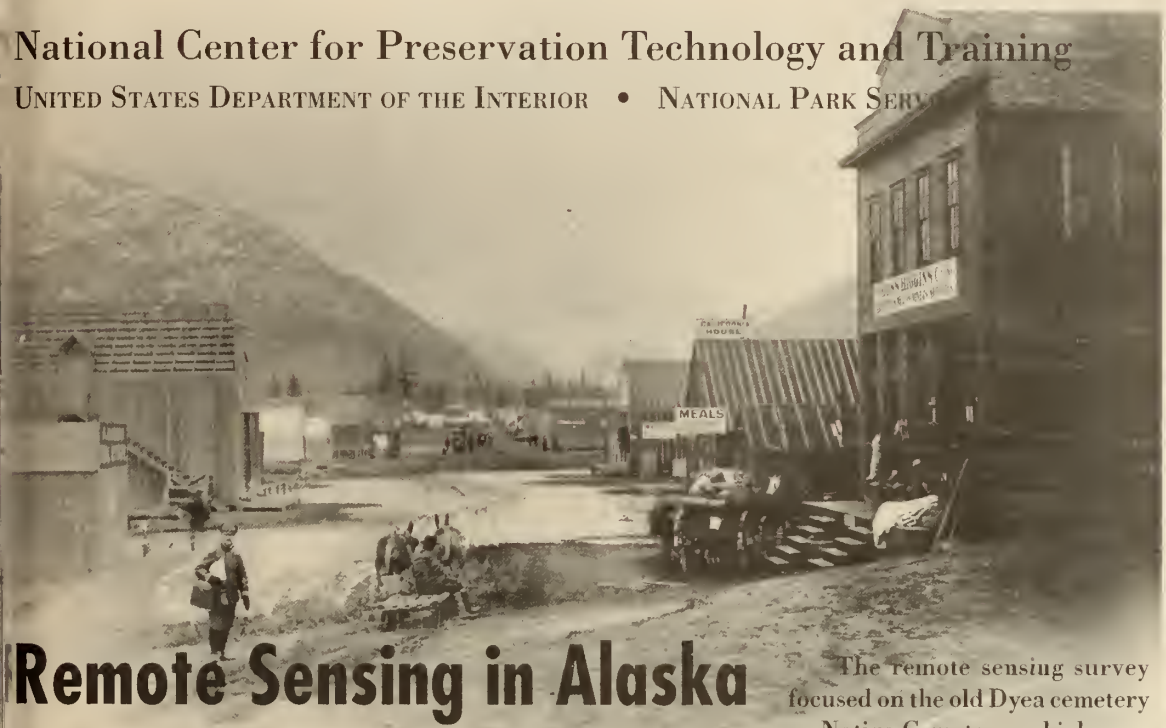
NCPTT, created by Congress, is an interdisciplinary effort by the National Park Service to advance the art, craft and science of historic preservation in the fields of archeology, historic architecture, historic landscapes, objects and materials conservation, and interpretation. NCPTT serves public and private practitioners through research, education and information management.

NATIONAL CENTER FOR PRESERVATION TECHNOLOGY AND TRAINING
NSU Box 5682
NATCHITOCHES, LA 71497

NCPTT NOTES

National Center for Preservation Technology and Training
UNITED STATES DEPARTMENT OF THE INTERIOR • NATIONAL PARK SERVICE

MARCH 2000 NUMBER 35



Remote Sensing in Alaska

In collaboration with Klondike Gold Rush National Historical Park in Alaska, NCPTT is supporting the development of a field school for remote sensing techniques. The development and testing of remote sensing techniques have received considerable NCPTT support, and the Dyea project widens NCPTT's work in remote sensing to include training. The project will increase knowledge about the Dyea town site and a portion of Skagway and encourage, through training, the use of current technologies in cultural resources preservation.

In 1897, the discovery of gold in Canada's Yukon brought thousands of fortune hunters to the towns of Skagway and Dyea, Alaska. The White Pass Trail from Skagway and the Chilkoot Trail from Dyea were the most popular overland routes to the gold fields. By 1903, Skagway was nearly deserted. Dyea reached an estimated peak population of 8,000-10,000 then became a ghost town shortly thereafter. Erosion, visitation and the encroaching forest now threaten this important archeological site. Remote sensing has proven to be a cost-effective tool for discovering and interpreting archeological features of both sites.

In July 1999 Dr. David Brauner of the Department of Anthropology, Oregon State University, and James Bell of Pacific Geophysical Surveys Inc. conducted a remote sensing survey in the Dyea town site and on a portion of the Moore block in Skagway. Funded by NCPTT and administered through the Klondike Gold Rush National Historical Park, this work was conducted in preparation for a field school scheduled for summer 2000.

The remote sensing survey focused on the old Dyea cemetery or Native Cemetery, which once separated the lower Dyea town site from the northern or upper town site, the false-front area (roughly 5th and Main Street) of the lower Dyea town site, and the Slide Cemetery in north Dyea. A portion of the Moore block bordering 5th Avenue in Skagway was also investigated.

Two types of remote sensors were employed for the surveys: a White's Electronics "Spectrum XLT" digital discriminating metal detector and a Model SIR-10 Ground Penetrating Radar (GPR) unit. The portable SIR-10 can detect the position and depth of objects buried in dielectric materials; this model is manufactured by Geophysical Survey Systems Inc. It can be adjusted to scan depths to 80 feet. The GPR is powered by a standard car battery of 12 volts and has an instantaneous readout on a liquid-crystal color monitor.

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Dr. David Brauner, GPR scan, Native Cemetery, Dyea, Alaska

Remote Sensing in Alaska

Continued from page 1

The remote sensors are designed to map subsurface cultural features such as foundations, roadbeds, privies, basements, burials and near-surface concentrations of cultural debris.

The principle behind subsurface radar surveys is that lower-frequency microwaves (radar) are able to penetrate most soil types. The GPR units direct their beams downward into the ground, and subsurface features and/or objects then reflect that radar beam back to the surface. The radar provides a profile view of what is under the antenna.

For optimum performance at Dyea and Skagway, a 500-MHz antenna was used. This frequency is considered best for the detection of small, buried features at shallow depths. The settings for the radar controller were modified for soil conditions at the Dyea site, i.e., a mixture of sand and silt soil strata that were well drained. Most of the radar transects conducted at Dyea were with time interval settings of 50 nanoseconds, with some transects repeated at slightly higher and lower settings. The soil types were determined from previous excavations and modern shovel probes.

Numerous subsurface anomalies were detected by the radar in the Native Cemetery and false front portions of the Dyea site. At the Slide Cemetery, the GPR was not able to detect subsurface features or anomalies, probably because of the high content of boulders and cobbles in the soils. These rocks were large enough to backscatter radar to the antenna, blocking soil penetration below them. No radar anomalies were noted adjacent to 5th Avenue on the Moore block in Skagway.

Only a small portion of the western edge of the Native Cemetery remains, as the Taiya River is relentlessly eroding the upper Dyea town site. The radar survey detected what are interpreted as three remaining graves along the western margins of the old cemetery and a large anomaly, which is the site of a relocated burial.

Two GPR and metal dete tor transects were establish in an east/west direction acr the false front lot, continui across Main Street, and acr a lot occupied by a gener mercantile store on the ea side of the street. Defining electronic and radar-bas street signature will assist f ture investigators in relocati the poorly understood stre network in Dyea. Anomali that could be interpreted cellars, privies, foundati features, sidewalk featur and refuse disposal areas w be "ground truthed" throu subsurface testing during t year 2000 field season.

In this project, NPS r sources serve as laboratori for work in preservation r search and training. Conta Karl Gurcke at Klondike Go Rush National Historical Pa for information about the u coming field school.

— David Braune
James Bell

After receiving his docto ate in anthropology at Was ington State University 1976, David Brauner joine the Department of Anthropo ogy at Oregon State Unive sity. His major research em phasis over the last 15 yea has been in historical arch ology of the Pacific Northwe and Alaska.

James Bell received h master degree in anthropolog from Oregon State Universit in 1981. After graduate stu ies in geoscience and militar training in remote sensing, h founded a remote sensing co sulting firm and has co ducted remote sensing survey throughout the Pacific North west, Hawaii and Alaska.

Termite Control Workshop in New Orleans

A joint effort of the Research and Training components of NCPTT resulted in a workshop examining termite damage at historic sites. This workshop represents a first effort to provide training on termite control techniques developed through collaborative research initiatives begun in 1995 as a PTTGrant to University of Florida.

NCPTT partnered with the New Orleans Mosquito and Termite Control Board (NOMTCB) to host a workshop in New Orleans in September to examine new technologies for controlling subterranean and drywood termite infestations in historic buildings and landscapes. NCPTT has been working with NOMTCB since 1995 and has funded a number of new research initiatives.

For three days, workshop participants learned about the nature and extent of the termite problem, recent and emerging technologies for controlling termites and the future of termite control. Particular emphasis was given to new baiting techniques and their effectiveness in controlling subterranean termite colonies without damaging historic buildings or the environment. Participants represented the National Park Service, the Department of Agriculture, the Army, Air Force, and Navy, national preservation organizations, universities from as far as Hawaii, and the termiticide industry. Three representatives came from Brazil.

The New Orleans French Quarter is currently being used as the test site for a new national campaign against the Formosan subterranean termite, a voracious species that now infests several states, including Texas, Louisiana, Mississippi, Alabama, Tennessee, Georgia, Florida, South Carolina, North Carolina, Virginia and California.

NCPTT's partner NOMTCB is working in collaboration with the Department of Agriculture's Agricultural Research Service and the Louisiana State University Agricultural Center in Operation Full Stop. Operation Full Stop is a multi-agency program that aims to reduce the population of Formosan termites and dramatically lower the yearly cost of property damage, repairs and control measures.

A relatively recent and promising approach to control termites relies on baiting termites with a slow-acting termiticide. Baiting systems utilize in-ground stations equipped with monitors (pieces of softwood) to detect termite activity. When termites are found in a station, the monitoring device is replaced with a tube containing a toxic substance, such as an insect growth regulator that prevents termites from molting. Termites eat or move through the bait and they transfer the growth regulator to the rest of the colony. Entire colonies can be eliminated in a matter of months. Monitoring is continued to determine whether areas remain clear of infestation or become reinfested.

Termite damage at Perseverance Hall, New Orleans

Thousands of these monitoring stations are in place in the French Quarter. The design of the original stations has been adapted so that it can be employed above ground in walls, ceilings and floors. Although bait systems can be more expensive than traditional chemical treatments, they limit exposure of people and pets to chemicals. As the monitoring stations are placed outside of buildings, there is very little risk to their historic integrity.

NOMTCB led workshop participants on walking tours of the French Quarter and Louis Armstrong Park to demonstrate the bait system and other emerging termite control technologies, such as acoustic emissions detectors and tree boring equipment equipped with video. With the help of NCPTT, termite infestations are being treated in many of the buildings bordering Jackson Square in New Orleans, including the Cabildo, the Pontalba Apartments, the Presbytere, the Arsenal and

Continued on Page 4 ➡

Termite Control Workshop in New Orleans

Continued from page 3

Madame John's Legacy House. Perseverance Hall in Louis Armstrong Park also is being treated by the same method.

Other termite treatment options include good home maintenance, termite barriers, fumigation, and a variety of compartmental and local treatments. Home maintenance entails making repairs to prevent water damage and eliminating wood that is in direct contact with soil. Termite barriers refer to chemical or physical techniques that create a wall around a structure through which subterranean termites cannot pass. Fumigation involves surrounding the structure with a gas-tight tarpaulin, releasing a termiticidal gas inside the enclosure and aerating the fumigant after a set exposure time. Compartmental treatments include the use of hot air or liquid nitrogen in small areas to either raise or lower the air temperature to a lethal level for termites. The injection of termiticide into wood, surface application of termiticide, application of microwave energy, electrocution, and wood replacement are examples of local treatments.

These methods and ongoing research will help investigators develop safer and more effective treatments for termite control. NCPTT will continue to collaborate with leading researchers and organizations to research, develop and distribute technologies that will lead to the preservation and conservation of cultural heritage resources in the United States.

For additional information on this workshop see "Enemies in the Earth," Old House Journal, February 2000, 54-57.

Termites

Formosan termites

Experts estimate that the yearly cost of controlling termites in the United States is about $1.5 billion. This figure would increase drastically if costs for repairing termite damage were included. The key termite pests in this country are three subterranean species and one less common drywood species.

The eastern subterranean termite, *Reticulitermes flavipes* (Kollar), and the western subterranean termite, *Reticulitermes hesperus* (Banks), are native to the United States and are important structural pests. The Formosan subterranean termite, *Coptotermes formosanus* (Shiraki), is an introduced species. Relative newcomers, Formosans arrived with military ships returning from the Pacific after WWII. Unlike native species, Formosan colonies are large and may contain millions of termites capable of foraging over great distances. For this reason they are a significant threat to wood structures. Unless controlled, the Formosan termite will likely spread to cities throughout the temperate zone.

Unlike subterranean termites, drywood termites live entirely within the wood members they infest and obtain water from wood fibers. *Cryptotermes brevis*, the most widespread drywood termite in the tropics worldwide, also infest furniture such as headboards, cabinets and picture frames.

NCPTT Web

The NCPTT Web site project is nearly complete with databases accessible via the Resources page at NCPTT's Web site <www.ncptt.nps.gov> or via the URLs listed below. Each database can be queried by a simple keyword search. Users also can suggest additions to each database or notify NCPTT of changes to current listings by completing a form available at each query screen. Suggestions and revisions are encouraged.

The final elements of the project include an online searchable database of PTTGrants and PTTProjects, an online bibliography from NCPTT's Materials Research Program and a searchable database of *Directory of Analytical and Materials Testing Services for Historic Preservation.*

Preservation Internet Resources

www.ncptt.nps.gov/pir

Includes Web sites, ftp sites, telnet sites, listservs and usenet groups

Training and education opportunities

www.ncptt.nps.gov/teo

Includes degree programs, workshops, internships, fellowships and field schools

Job openings

www.ncptt.nps.gov/jobs

Conferences/calls for papers

www.ncptt.nps.gov/conferences

Funding opportunities

www.ncptt.nps.gov/fundingopps

NCPTT Supports AIC's Electronic Media Group Session

NCPTT provided critical support for the June inaugural meeting of the Electronic Media Group, which was part of the 27th Annual Meeting of the American Institute for Conservation of Historic and Artistic Works (AIC) in St. Louis. NCPTT's support provided an opportunity for discussion concerning new technologies in digital photography, digital video, and development of digital film.

Formally recognized by the AIC board in the fall of 1998, the Electronic Media Group joins nine other specialty groups devoted to the preservation of broad categories of artistic and historic media such as paintings, architecture, photographs, works on paper and wooden artifacts. Through the Electronic Media Group, the membership of AIC intends to demonstrate its continued commitment to the preservation of the broad spectrum of material culture.

An increasingly important manifestation of this commitment is the preservation of electronic media held by cultural organizations such as museums, archives and libraries. Part of the challenge lies in maintaining continuity with past technologies in the face of constant technological innovation. An artistic work made today may be inaccessible or substantially altered in a matter of years due to a host of problems, including media deterioration and obsolescence of the file format or hardware.

In addition to preserving electronic art and cultural material, the Electronic Media Group is a forum for conservators and related professionals to develop and maintain knowledge of relevant new media and emerging technologies. The NCPTT-supported EMG meeting in St. Louis made for a promising start by reaching a diverse group of conservators gathered from across the country and from other nations.

The Electronic Media Group sessions in St. Louis consisted of two major components. First, there was a full day of 20- to 30-minute talks, primarily given by conservators and related professionals on topics ranging from the documentation and preservation of installation art to the potential of digital photography as an artistic medium. This session included the following topics and speakers:

- Cleaning Techniques Used in Videotape Restoration: A Preliminary Study by Mary T. Baker, Ph.D., and Sarah D. Stauderman;
- Technological Challenges in the Museum: Installation and Maintenance of the Multi-Media Work of Tony Oursler at the Williams College Museum of Art by Monica DiLisio Berry;
- Photography Conservation Training Via Videoconference: A Project Report by Irene Bruckle and Paul Messier;
- The Development of a Paint Cross Section Database by Bradford Epley;
- Using Radio Telemetry For Light, UV Temperature and Humidity Monitoring by Martin Hancock, Ph.D.;
- Digital Techniques for Image Recovery Applied to Gelatin Glass Plate Negatives by Jill Koelling;
- Image Permanence and Care of Digitally-Produced Prints by Mark McCormick-Goodhart and Henry Wilhelm;
- Planning for and Costs of Digital Imaging Products by Steven Puglia;
- Conservation Lessons Learned from the National Digital Library, Library of Congress: Preservation Implications of Large Digitization Projects by Ann Seibert, Mary Wootton, Alan Haley, Yasmeen Khan and Andrew Robb; and
- Light Levels Used in Modern Flatbed Scanners by Timothy Vitale.

Full abstracts for these talks are available from the Electronic Media Group Website at <http://aic.stanford.edu/emg/st_louis_meeting.html>.

The following day, the Electronic Media Group's Digital Discussion Group held a half-day of talks and demonstrations on the special interest topics of digital imaging for conservation documentation and the technical history of video. Acknowledged leaders in the field of video production, digital photography, color management, digital printing and printing ink manufacture led this session. A founding premise of the Electronic Media Group is that conservators cannot approach issues relating to new technology in isolation and that conservators must continually engage prominent members from various fields to present their insights on the inherent problems and potential solutions for the preservation of electronic culture.

Through the support of the National Center for Preservation Technology and Training, Tim Vitale, session chair for the discussion group, invited experts including:

- Stephen Johnson of Stephen Johnson Photography said that digital photography has crossed a quality threshold and is now a far better photographic imaging medium than film. He demonstrated the Calumet BetterLight 6000 X 8000 pixel scanning digital back with a 4x5 camera and showed that the results were better than the resolution and dynamic range of film. (The scanning digital back replaces the conventional film holder.)
- Jeff Ball of Lyson Specialty Fluids covered the formulations for light-stable inkjet inks for making inkjet prints, including IRIS prints, and discussed ink formulation specifics and the technical history and challenges inherent in making permanent digital hardcopy.

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New Surveillance Technologies

Looting and vandalism of archeological sites pose significant difficulties for park rangers and law enforcement agencies who must protect thousands of sites spread over vast areas as well as underwater archeological sites previously inaccessible to most thieves. Recognizing the need for dissemination of information of new surveillance technologies, the Research and Training components at NCPTT joined to sponsor a forum for discussion and debate on the subject.

NCPTT joined the Coastal Systems Station (CSS) of the US Naval Surface Warfare Center and the University of West Florida to host a roundtable discussion of new technologies for the protection of remote archeological sites. Representatives from the National Park Service, CSS, US Forest Service, NASA, several universities, and the surveillance industry, met July 21-22 at the CSS in Panama City, Florida. Topics included transferring existing surveillance technologies to the preservation of cultural resources, reducing the cost of these technologies, training in the use of these technologies, and coordinating future research. Several issues are described below.

Coastal Systems Station, Naval Surface Warfare Center

The Coastal Systems Station, the Navy's primary organization responsible for mission support on the coasts, works with industry to provide research, development, testing, acquisition and in-service engineering support to Navy Program Sponsors and Fleet Units. CSS's expertise in developing technology for detecting mines and debris and for autonomous surveillance is of particular interest to archeologists.

Surveillance cameras at Joshua Tree National Park

An example of technology that has obvious application for archeologists is the Mobile Underwater Debris Survey System (MUDSS). Originally designed for surveying abandoned underwater defense sites for ordnance and explosive waste, MUDSS holds promise for the detection and surveying of underwater archeological sites. It consists of a non-magnetic catamaran equipped with a super-conducting magnetometer, sonar, synthetic aperture sensors, an electro-optical imager, and a gradiometer (magnetometer that gives range and distance as well as magnetic force). MUDSS is especially useful for conducting surveys as it tracks location. It is a sophisticated system, and this is reflected in its multimillion-dollar price tag.

Recently, CSS has developed a new system that has potential application for both underwater and terrestrial archeologists for site security and monitoring. COBRA relies on an airborne remote controlled vehicle and sensors. A marine application of this system was demonstrated to workshop participants. For the demonstration, a hydrophone buoy was placed in Panama City Bay. The hydr phone transmitted audio si nals to a receiver in the clas room, where an operator li tened for suspicious sound When the operator heard boat approach and stop ne the buoy, he sent a remote co trolled helicopter with a vid camera and a transmitter to i vestigate. In this way, the o erator and participants we able to assess the activity at t remote site without ever lea ing the classroom.

State of the Art

To date, only a handful of u derwater archeological sit have employed surveillan systems to protect against loo ing and salvage. For the mo part they have relied upon t expertise and goodwill of t US Navy and Coast Guard f operational support and mai tenance of the surveillan equipment. The CSS Hunle and USS Monitor shipwreck are two places where securit measures have been imple mented. Unfortunately, t surveillance systems deploye are expensive and not comme cially available.

A range of seismic, mag netic and passive infrared sen sors has been used in recen years to detect and monito activity at several terrestria sites at various national park and monuments. Waputki Na tional Monument, for ex ample, uses sensors connecte to electronic alarms that aler rangers when a site is dis turbed. These surveillanc systems are readily availabl and user-friendly and requir minimal training. When prop erly deployed, these surveil lance systems have signifi cantly decreased vandalism and looting. However, they ar

too expensive to be deployed at all archeological sites. These systems also require maintenance and at present lack real-time video capability that would allow rangers to view activity at the site when an alarm is triggered. This is critical to reducing false alarms and to bringing successful prosecutions.

Future research and development

Final discussions centered on steps NCPTT should take to further develop issues introduced by the participants, and a strategy was developed to advance the protection of archeological resources:

- Identify existing surveillance technologies
- Identify key stakeholders
- Identify requirements and specifications for archeological applications
- Coordinate and facilitate field trials to evaluate surveillance technologies
- Develop new surveillance technologies for archeological application
- Act as a clearinghouse to share information about and promote the use of surveillance technology to protect archeological resources

Looting and vandalism of archeological sites is a significant problem in the United States today. Whether for profit or recreation, stealing from archeological sites is particularly senseless and robs all Americans of their cultural heritage. The difficulties facing those who protect and manage our cultural heritage are enormous. Park rangers and law enforcement agencies in the western United States must protect thousands of archeological sites spread over vast areas. With the rapid growth of deep-water technology, underwater archeological sites are at greater risk than ever. Shipwrecks, such as the USS Monitor, that were once thought safe from looting due to their remoteness (16 miles offshore and 240 feet underwater) are now vulnerable.

If technology is going to play a greater role in protecting archeological resources against looting and vandalism, the historic preservation community must work more closely with the surveillance industry and individual companies to adapt their products for use in archeology and to integrate new components into their existing products. They must also work together to create a market for these products. Costs can be reduced only if products can be purchased off the shelf. Initially, these research and development costs may have to be borne by the historic preservation community.

For further information about this workshop, contact NCPTT Research Coordinator Mark Gilberg.

NCPTT Supports AIC's Electronic Media Group Session

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- Andrew Rodney, digital prepress and Photoshop consultant, addressed color management issues, suggesting strategies by which color fidelity for digital images can be maintained over time and over a range of monitors and printers. A mastery of color management issues will emerge as critical to preserve the integrity of digital images over the long term.
- Luke Hones, correspondent for DV Magazine and director of Artist Television Access, discussed the evolution of digital video formats with special emphasis on the technical history of video.

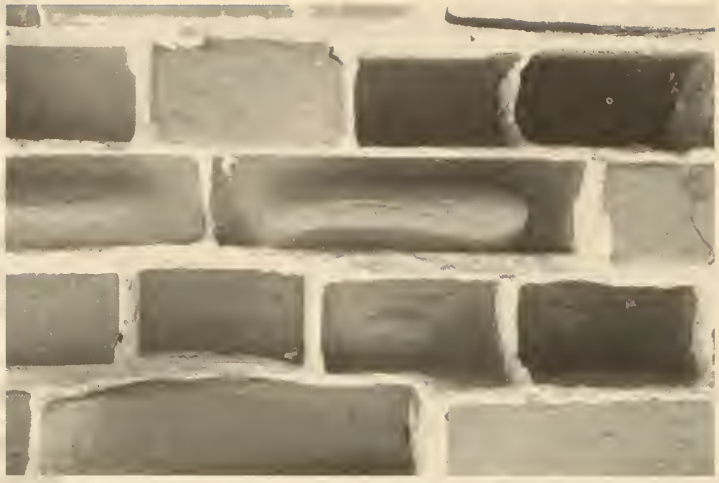
Additional details about this session can be found on the Electronic Media Group Website at <http://aic.stanford.edu/emg/scanning.html>.

The 28th AIC Annual Meeting will take place in Philadelphia June 7-13, 2000, and the general session will focus on the preservation issues relating to electronic media. The meeting will also explore the impact of new technology on the way conservators perform fundamental tasks.

For more information about the Electronic Media Specialty Group or AIC, contact AIC, 1717 K Street NW, Suite 200, Washington, DC 20006, 202-452-9545, fax 202-452-9328, <http://aic.stanford.edu>.

— Elizabeth F. "Penny" Jones
Paul Messier

Ms. Jones is executive director of AIC. Mr. Messier is chair of Electronic Media Group of AIC.



An example of how an inappropriate replacement mortar can accelerate brick deterioration.

A Standard Method for the Analysis of Historic Cementitious Materials

Two University of Delaware researchers, Elizabeth Goins and Chandra Reedy, are developing a standard protocol for the analysis of historic mortars through 1998 and 1999 PTTGrants. The project, in its second year, is nearing completion. Test procedures for the protocol include thin section analysis, SEM-EDS analysis, and XRD analysis, among others. Currently, validation of the protocol is under way using laboratory samples of 18 traditional mortar recipes. This article describes the need for a new protocol for historic mortar analysis.

Historic mortar, cement and plaster (collectively referred to as historic cementitious materials) are analyzed by a number of wet chemical and instrumental techniques. These materials can range from ancient Roman aqueduct linings made of lime and crushed brick to Portland cement bridges constructed in the early years of the 20th century. The wide variety of materials, construction techniques and degree of deterioration peculiar to historic, as opposed to modern, cementitious materials call for standard methods of analyses tailored for conservation and preservation needs.

In the past, mortar and cement analyses depended on wet chemical methods to determine bulk oxide components. Basically, these analyses consist of determining the amounts of silicon and calcium oxides soluble in acid. The problem with the bulk oxide analyses is that they are indireet. Stewart and Moore (1981) carried out a thorough study of three chemical techniques on laboratory prepared mortar samples. They found that all three methods failed to accurately determine the original composition. The main problem was that the techniques could not distinguish between different sources of soluble silica. They also are invalid if calcareous aggregate is present. This fault was recognized by practitioners, and ASTM C 1324-96 notes the problem: "Some historic mortars may contain non-resolvable constituents that may interfere. However, significant information may be obtained by petrographic examinations."[1]

An informal Internet survey was conducted by the author (Goins 1999), focusing on the materials and the techniques used in the analysis of historic cementitious materials. Thirty-three professionals, ranging from engineers to conservation scientists, responded. An important point of this survey is that the only standard method for examination and analysis of hardened mortar, ASTM C 1324, is not used. In fact, a number of different approaches are used, but the most commonly employed is based on the method developed by Jedrzejewska (1960). Protocols developed by the Portland cement industry, like ASTM C 1324, do not consider issues that are important in the analysis of historic cemen-titious materials. In fact, their usage can contribute to misinterpretation, confusion and misuse of the analytical results. As an examp chemical analyses are oft relied on to determine the pr portions of the original m (that is, volume proportions sand, lime etc.). Determini the original mix ratios is n academic since replaceme mortars are often specified match the original mortar.

This is contrary to t conservation and preservati teaching, which clearly state "While historic mortar mix may be established by mode analyses it is often academ and even inadvisable to u such mixes in repointing repairing masonry which h survived the ravages of tin and the environment in weakened or deteriorated co dition. The original mixes ma simply be too strong for the o masonry units.... As a gener principal the mortar shoul always be slightly weaker tha the masonry...."[2]

The methodology for t determination of replaceme mortars instead should b based on the testing of certai physical and structural pa rameters like mechanica strength and porosity. Th analysis of historic cemer titious materials clearly cal for the development of a ne protocol that considers th parameters important to cor servation and preservation Ideally, this protocol woul consider the practical needs c restoration as well as the some what different requirements o the academically focused re search project. Publication such as ASTM STP 1258 an

[1] ASTM C 1324-96, "Standard Test Method for Examination and Analysis Hardened Masonry Mortar" (Philadelphia: American Society fo Testing and Materials, 1996).

[2] Weaver, M.E., and F.G. Matero. Chapter 7, "Cementitious Materials," i *Conserving Buildings* (New York, John Wiley & Sons, 1993).

conferences, such as *International Workshop Historic Mortars*, that include collected papers of state-of-the-art analytical techniques have attempted to address the need for a standard protocol. However, a standard method that is based solidly on conservation guidelines and ethics and considers the unique aspects of these materials has not been published to date.

A protocol is typically described as a set of procedures, agreed upon by the professional field at large, that includes the methods that best characterize a material and allow for its interpretation within that field. An ideal protocol would be tailored to the needs of that field to standardize the quality of the analyses and to clearly define common analytical objectives. In order to accomplish this, there must be a clear understanding of the problems at hand. While there has been a tremendous amount of research in the development of modern cement, there has been surprisingly little basic research on traditional and historic cementitious materials. Historic preservation, conservation and archeology have goals very different from those of the construction industry.

Analytical project goals can be broken into two major classes. The first is the practical side — conservation or restoration. Here the expense of the analysis is typically of major concern. The priority may lie in preserving the structure, not in detailed analysis of the materials. Typically, the analytical focus is on finding compatible mortars (best carried out by determining the physical characteristics of the structural units, as described previously) and perhaps matching the aggregate. The second class is the detailed research project. Important structures and archeological sites often call for extensive research. The analytical goals might be to study the technology, date the structure or otherwise assist in answering more academic questions.

The study of the petrographic section (St. John et al. 1998), both by reflected and transmitted light, provides information on the mineral phases, interactions and microstructure that are responsible for imparting characteristic properties to cement. These techniques have been increasingly used to describe and characterize historic cementitious materials. Survey (Goins 1999) results show that petrographic analytical techniques play an important role in the study of historic cementitious material. However, the success of a thin section analysis is critically dependent on the selection of appropriate samples, sample size and number, and the petrographer's skill. However, 60 percent of the respondents said that they only *sometimes* followed a sample-taking procedure. The reason is that those most knowledgeable about the procedure, the person(s) conducting the analysis, are often not involved in sample determination or retrieval.

A new protocol for the analyses of historic cementitious materials, designed to meet the needs of historic preservation and conservation, is needed. A combined strategy incorporating the best methods of sampling and analyses

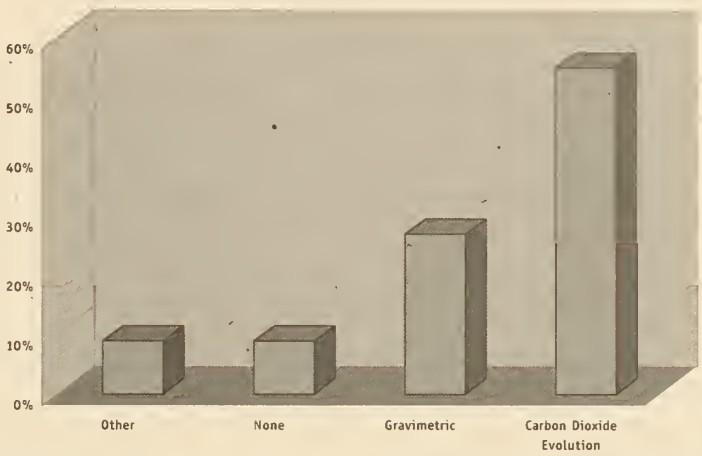


Chart of Internet survey results showing relative use of protocols for chemical analysis of historic cementitious materials.

is vital for valid interpretation of the raw data. Perhaps then mortar analysis will move from being an expensive luxury to an important tool.

—Elizabeth Goins

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Goins, Elizabeth S. Internet Survey of Historic Mortar Analysis, posted on <www.b72.com>, 1999. Survey was created and developed by Elizabeth Goins. Participants were invited during the International Workshop Historic Mortars: Characteristics and Tests, Paisley, Scotland, UK, April 1999.

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Stewart, John, and James Moore. "Chemical Techniques of Historic Mortar Analysis," in *Mortars, Cements and Grouts Used in the Conservation of Historic Buildings*. Nov 3-1981 Nov 6; (ICCROM, Rome, 1981) 297-310.

April - August 2000

NCPTT welcomes calendar items, but only items with a minimum two-month lead will be considered for publication. A more extensive listing of conferences, training and other preservation events is available in the Resources section of NCPTT's Web site <www.ncptt.nps.gov>.

April

3-8 **Caring for Collections** workshop in Victoria, Canada, sponsored by University of Victoria. For information, contact Cultural Resource Management Programs, University of Victoria, PO Box 3030 STN CSC, Victoria, British Columbia V8W 3N6, Canada; telephone 250/721-8462, facsimile 250/721-8774, e-mail <bweatherston@uvcs.uvic.ca>. Web <www.uvcs.uvic.ca>.

5-7 **Collections Maintenance** workshop in Andover, Massachusetts, sponsored by the Northeast Document Conservation Center, third of a series of five "Managing Preservation" workshops that continue June 1-2 and September 21-22. For information, contact Steve Dalton or Karen E. K. Brown at NEDCC, 100 Brickstone Square, Andover, MA 01810-1494; telephone 978/470-1010, facsimile 978/475-6021, e-mail <dalton@nedcc.org>, Web <www.nedcc.org/coord.htm>.

5-9 **Society for American Archaeology** conference in Philadelphia, Pennsylvania. For information, contact Winifred Creamer, Society for American Archaeology, 900 Second Street NE #12, Washington, D.C. 20002-3557; telephone 202/789-8200, facsimile 202/789-0284, e-mail <meetings@saa.org>, Web <www.saa.org>.

6-9 **US/ICOMOS 2000** symposium in Indianapolis, Indiana, sponsored by International Council on Monuments and Sites. For information, contact International Council on Monuments and Sites; telephone 202/842-1866; Web <www.icomos.org/usicomos>.

8 **Preservation of Architectural Terra Cotta** workshop in New York, New York, sponsored by New York Landmarks Conservancy and National Center for Preservation Technology and Training. For information, contact New York Landmarks Conservancy, 141 Fifth Avenue, New York, NY 10010; telephone 212/995-5260, facsimile 212/995-5268, e-mail <nylandmarks@nylandmarks.org>, Web <www.nylandmarks.org>.

9-11 **Introduction to Section 106 Review** workshop in Philadelphia, Pennsylvania, sponsored by University of Nevada-Reno. For information, contact Division of Continuing Education, University of Nevada-Reno, Reno, NV 89557; telephone 800/233-8928, e-mail <crystalm@unr.edu>, Web <www.dce.unr.edu/hrm/hrmnew.htm>.

10 **An Introduction to Historic Building Materials** workshop in St. Louis, Missouri, sponsored by National Preservation Institute. For information, contact Jere Gibber, National Preservation Institute, PO Box 1702, Alexandria, Virginia 22313; telephone 703/765-0100, e-mail <info@npi.org>. Web <www.npi.org/sem-hbmtl.html>.

11 **Historic Structures Reports & Computer-Aided Facilities Management Programs** workshop in St. Louis, Missouri, sponsored by National Preservation Institute. For information, contact Web <www.npi.org/sem-hsr.html>, or see April 10 entry.

11-12 **Accessibility and Historic Integrity** workshop in Madison, Wisconsin, sponsored by National Preservation Institute. For information, contact Web <www.npi.org/sem-access.html>, or see April 10 entry.

12-13 **Integrated Cultural Resource Management Plans: Preparation and Implementation** workshop in St. Louis, Missouri, sponsored by National Preservation Institute. For information, contact Web <www.npi.org/sem-icrmp.html>, or see April 10 entry.

14 **Practical Application of the Secretary of the Interior's Standards for the Treatment of Historic Properties** workshop in St. Louis, Missouri, sponsored by National Preservation Institute. For information, contact Web <www.npi.org/sem-stand.html>, or see April 10 entry.

16-19 **Museums and the Web 2000** conference in Minneapolis, Minnesota, sponsored by Archives and Museums Informatics. For information, contact Archives and Museums Informatics, 2008 Murray Avenue Suite D, Pittsburgh, PA 15217; telephone 412/422-8530, facsimile 412/422-8594, e-mail <mw2000@archimuse.com>, Web <www.archimuse.com/mw2000/>.

17 **Field Conservation for Archaeologists** workshop in Mount Vernon, Virginia, sponsored by National Preservation Institute. For information, contact Web <www.npi.org/sem-field.html>, or see April 10 entry.

18-19 **Consultation with Indian Tribes on Cult Resource Issues** workshop in Riverside, C fornia, sponsored by National Preserva Institute. For information, contact W <www.npi.org/sem-tribe.html>, or see Apr entry.

25-26 **Section 106: Working with the Revised Re lations** workshop in Honolulu, Hawaii, sp sored by National Preservation Institute. information, contact Web <www.npi.org/s 106rr.html>, or see April 10 entry.

May

1-5 **African Americans, Hispanic Americans Resources in National Parks** workshop Harpers Ferry, West Virginia, sponsored National Park Service. For information, c tact Stephen T. Mather Training Center; tional Park Service, PO Box 77, Harp Ferry, WV 25425-0077; telephone 304/5 6178.

3-5 **Architectural Records - Preserving and M aging the Documentation of our Built En ronment** conference in Philadelphia, Penns vania, sponsored by Conservation Center Art and Historic Artifacts. For informatio contact Conservation Center for Art and H toric Artifacts, 264 South 23rd Street, Phi delphia, PA 19103; telephone 215/545-06 facsimile 215/735-9313, e-m <CCAHA@ccaha.org>, Web <www.ccaha.or

5 **Nondestructive Evaluation Methods** wor shop, sponsored by American Institute of A chitects Continuing Education and Nation Center for Preservation Technology a Training. For information, contact AIA Co tinuing Education Department, 1735 New Yo Avenue, NW, Washington, DC 20006-52 telephone 202/626-7353, facsimile 202/62 7425, e-mail <Colec@aiamail.aia.org>.

5 **Safeguarding Our Heritage** workshop Philadelphia, Pennsylvania, sponsored by A Continuing Education and National Center f Preservation Technology and Training. F information, contact AIA Continuing Edu tion Department, 1735 New York Avenue N Washington, DC 20006-5292; telephone 20 626-7353, facsimile 202/626-7425, e-ma <Colec@aiamail.aia.org>.

12-13 **A Balancing Act: Management of the H toric House Museum and Its Collectio** workshop in Baltimore, Maryland, sponsor by National Preservation Institute. For info mation, contact Web <www.npi.org/se musm.html>, or see April 10 entry.

14-17 **Canadian Association for Conservation Cultural Property** conference in Ottaw Canada. For information, contact Canadi Association for Conservation of Cultural Pro erty; telephone 613/998-3721, facsimile 61

998-4721, e-mail <jane_sirois@pch.gc.ca>, Web <www.cac-accr.ca/econcall.html>.

15-19 **Introduction to Managing NPS Legacy Information** workshop in Austin, Texas, sponsored by National Park Service. For information, see May 1-5 entry.

17-20 **Symposium 2000—Conservation of Heritage Interiors**, in Ottawa, Canada, sponsored by the Department of Canadian Heritage. For information, contact Department of Canadian Heritage, Canadian Conservation Institute, 1030 Innes Road, Ottawa, Ontario, Canada; telephone 613/998-3721, facsimile 613/998-4721, e-mail <james_bourdean@pch.gc.ca>, Web <www.pch.gc.ca/cci-icc/>.

17-20 **Traditional Historic Masonry Preservation** workshop in Mount Carroll, Illinois, sponsored by Campbell Center for Historic Preservation Studies. For information, contact Campbell Center for Historic Preservation Studies, 203 East Seminary, Mount Carroll, Ill 61053; telephone 815/244-1173, facsimile 815/244-1619, e-mail <campbellcenter@internetni.com>, Web <www.campbellcenter.org>.

22-26 **Cultural Resources 2000: Managing for the Future** conference in Santa Fe, New Mexico, sponsored by National Park Service. For information, contact National Park Service, 1849 C St. NW, Washington, DC 20240; Web <www.nps.gov>.

24-29 **Focus on the Learner** conference in Victoria, British Columbia, sponsored by International Committee for Training of Personnel (ICTOP) - International Council of Museums (ICOM). For information, contact Web <www.city.ac.uk/ictop//ictop-victoria.html>.

June

1-2 **Selection for Preservation** workshop in Andover, Massachusetts, sponsored by Northeast Document Conservation Center. For information, see April 5-7 entry.

9-10 **AIC 28th Annual Meeting** in Philadelphia, Pennsylvania, sponsored by American Institute for Conservation of Historic and Artistic Works. For information, contact American Institute for Conservation of Historic and Artistic Works, 1717 K Street NW, Suite 301, Washington, DC 20006; telephone 202/452-9545, facsimile 202/452-9328, e-mail <InfoAIC@aol.com>, Web <http://palimpsest.stanford.edu/aic/>.

23-24 **Accessibility and Historic Integrity** workshop in Mount Carroll, Illinois, sponsored by National Preservation Institute. For information, contact Web <www.npi.org/sem-access.html>, or see April 10 entry.

26-28 **Ornamental Plaster** workshop in Mount Carroll, Illinois, sponsored by Campbell Center for Historic Preservation Studies. For information, see May 17-20 entry.

July

10-14 **Society for the Preservation of Natural History Collections** meeting in Halifax, Nova Scotia, sponsored by Society for the Preservation of Natural History Collections. For information, contact Suzanne B. McLaren, Society for the Preservation of Natural History Collections, PO Box 797, Washington, DC 20044-0797; Web <www.uni.edu/museum/spnhc/>.

12-15 **Care of Works of Art on Paper** workshop in Mount Carroll, Illinois, sponsored by Campbell Center for Historic Preservation Studies. For information, see May 17-20 entry.

25-29 **Stabilization & Maintenance of Historic Structures** workshop in Mount Carroll, Illinois, sponsored by Campbell Center for Historic Preservation Studies. For information, see May 17-20 entry.

August

9-12 **Researching Historic Building Interiors** workshop in Mount Carroll, Illinois, sponsored by Campbell Center for Historic Preservation Studies. For information, see May 17-20 entry.

10-12 **Care of Photographic Collections** workshop in Mount Carroll, Illinois, sponsored by Campbell Center for Historic Preservation. For information, see May 17-20 entry.

12-17 **Preserving Photographs in a Digital World** workshop in Rochester, New York, sponsored by Rochester Institute of Technology. For information, contact Technical and Education Center, Rochester Institute of Technology, 66 Lomb Memorial Drive, Rochester, NY 14623-5604; telephone 800/724-2536, facsimile 714/475-7000, e-mail <webmail@rit.edu>, Web <http://yellowstone.cims.rit.edu/T&E/index02.html>.

21-25 **Recent Advances in the Conservation of Silver** workshop in Omaha, Nebraska, sponsored by Ford Conservation Center and National Center for Preservation Technology and Training. For information, contact Lisa Metzger Grotrian, Ford Conservation Center, 1326 South 32nd Street, Omaha, NE 68102; telephone 102/595-1180, facsimile 402/595-1178.

21-25 **Protecting Archeological Resources Through Sensitive Landscape Management** workshop in Boston, Massachusetts, sponsored by National Park Service. For information, see May 1-5 entry.

23-24 **Preservation of Archival Collections** workshop in Mount Carroll, Illinois, sponsored by Campbell Center for Historic Preservation Studies. For information, see May 17-20 entry.

24-26 **Photographic Documentation of Collections** workshop in Mount Carroll, Illinois, sponsored by Campbell Center for Historic Preservation Studies. For information, see May 17-20 entry.

Autumn Grant joins NCPTT

Autumn Grant recently joined NCPTT as Training Assistant and helps maintain the Training and Education Opportunities database at the NCPTT website. This project involves research and input of both long-term and short-term programs related to preservation issues. Grant holds a BA in History from Louisiana Tech and is working on an MA in History/Cultural Resource Management at Northwestern State University.

Prior to her work at NCPTT, Grant participated in a number of CRM projects. She was part of a Louisiana Tech crew to locate specific sites at Camp Ruston, a WWII German POW camp. She participated in the Louisiana Tech Rome Study Abroad program, studying history and archeology in Italy. Recently, Grant worked on an archeological survey of Camp Beauregard in Pineville, Louisiana, sponsored by the NSU Conservation Lab.

Our Mission

United States Department of the Interior
The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and to honor our trust responsibilities to tribes.

National Park Service
The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education and inspiration of this and future generations. The Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

National Center for Preservation Technology and Training
The National Center for Preservation Technology and Training promotes and enhances the preservation of prehistoric and historic resources in the United States for present and future generations through the advancement and dissemination of preservation technology and training.

NCPTT, created by Congress, is an interdisciplinary effort by the National Park Service to advance the art, craft and science of historic preservation in the fields of archeology, historic architecture, historic landscapes, objects and materials conservation, and interpretation. NCPTT serves public and private practitioners through research, education and information management.

National Center for Preservation Technology and Training
NSU Box 5682
Natchitoches, LA 71497

The following publication was never received by the
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NCPTT Notes
No. 36

NCPTT NOTES

National Center for Preservation Technology and Training
United States Department of the Interior • National Park Service

FALL SUPPLEMENT 2000 NUMBER 37

The National Park Service, the Preservation Technology and Training Board and NCPTT are pleased to present the recipients of NCPTT's grants program awards for Fiscal Year 2000.

NCPTT's Preservation Technology and Training Grants program remains our most prominent means of stimulating new ideas in preservation and conservation technologies. The value of PTTGrants in Fiscal Years 1994-2000 totals over $4 million in support of over 150 projects. In Fiscal Year 2000, the PTTGrants program received 110 proposals; from these, 12 PTTGrants were awarded, totaling approximately $420,000. In Fiscal Year 2000, the PTTGrants program supported work in the eight project types first described in 1997. Readers should see page 2 of this edition of Notes for information about the Call for Proposals for the 2001 PTTGrants program.

Partnerships with the preservation community and the tangible results of the PTTGrants program are particularly important accomplishments for NCPTT. We invite participation in this work and welcome readers' reviews and comments on the direction of the PTTGrants program.

— **Katherine H. Stevenson**
Associate Director,
Cultural Resource
Stewardship and Partnerships

— **Dr. Elizabeth A. Lyon**
Chair, Preservation
Technology and Training
Board

— **Dr. Robert D. Stearns**
Executive Director,
NCPTT

2001 PTTGrants

For information about the 2001 PTTGrants Call for Proposals, see page 2.

NCPTT NOTES
FALL SUPPLEMENT
2000

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No. 2000-06

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Cover Image

James Moss, clock conservator and participant, Recent Advances in Silver Conservation Workshop, Gerald R. Ford Conservation Center, Omaha, NE (Image courtesy Mary F. Striegel)

NCPTT Notes is published by the National Park Service's National Center for Preservation Technology and Training. The mail list for *NCPTT Notes* is subject to request under the Freedom of Information Act. Persons or organizations not wanting to have mail list information disclosed should unsubscribe.

Send comments on *NCPTT Notes* or submit articles or notices for consideration to <ncptt@ncptt.nps.gov>.

PTTGrants Call for Proposals 2001

The National Center for Preservation Technology and Training soon will issue the fiscal year 2001 call for proposals for NCPTT's Preservation Technology and Training Grants program. The PTTGrants program has awarded over $4 million since 1994 for promoting innovative work in research, training and information management on technical issues in historic architecture, archeology, historic landscapes, objects and materials conservation, and interpretation. Grants are available in four categories — Information Management, Training and Education, Research, and Environmental Effects.

Information Management

Information management projects promote development of public and professional access to and dissemination of preservation-related data. In the FY2001 PTTGrants program, special consideration will be given to proposals that focus on one or more of the following: delivering substantive preservation-related information via the World Wide Web, applying innovative computer technologies to the management and dissemination of preservation-related information, and strategies for enabling long-term preservation of and access to digital data.

Training and Education

Proposals for support in the training and education category shall include workshops, courses and other training events for preservation and conservation practitioners; instructional materials including workbooks, videos and CD projects that explore the use of the Internet delivering training to adult learners or to elementary and secondary school students; and conferences and symposia that seek to share recent research findings or promote technology transfer from other disciplines.

Research

Research proposals shall focus on the application and transfer of technology to the preservation of cultural resources including archeological sites and monuments, historic architecture, historic landscapes, and museum objects. Technology refers broadly to any equipment, method or technique that can be applied to the discovery, analysis, interpretation, conservation, protection, and management of an historic object or collection of objects, site, structure or landscape.

Environmental Effects

Proposals for funding in the environmental effects category shall include research activities that focus on developing our understanding of how cultural resources deteriorate as a result of exposure to air pollution and on enhancing our ability to protect them from air pollution through development of new management strategies and conservation treatments. This category includes publication activities that focus on collating, synthesizing, reviewing or interpreting existing knowledge about cultural resource decay for development of book-length, monograph, or article-length manuscripts.

Application deadline is February 1, 2001. The PTTGrants Call for Proposals *for FY2001 will be available on November 1, 2000 via —*

E-mail Send a blank message to <pttgrants@ncptt.nps.gov> and the call for proposals will return automatically.

Web Visit <www.ncptt.nps.gov> and click on "FY2001 PTTGrants Call for Proposals."

Brochure Request a printed call for proposals by e-mail <ncptt@ncptt.nps.gov>, telephone (318/357-6464), or US Mail (NCPTT, NSU Box 5682, Natchitoches, LA 71497).

Information Management

NCPTT Information Management Director Mary Carroll is responsible for these projects.

I-Sites: An Interactive Web-Enabled GIS and Database

University of Iowa, Office of the State Archaeologist, Iowa City, Iowa

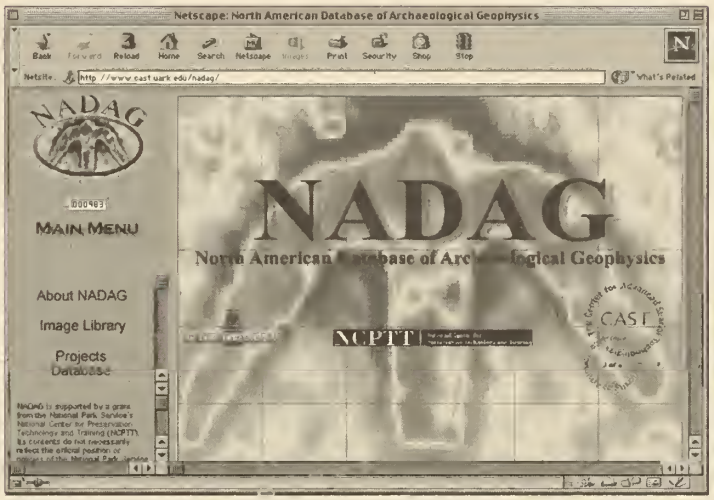
$39,988

Project Abstract:

The Office of the State Archaeologist will work with the Iowa Office of Information Technology Services and the Center for Agriculture, Resources, and Environment Systems at the University of Missouri, Columbia to develop I-Sites. This Web-based interface will allow users to query a statewide database of archeological sites and interact with a Geographic Information System to create maps of site locations. Innovative editing tools will allow users with only a Web browser to map new site locations on-line and submit them to the system in a standard GIS file format. I-Sites will contribute significantly to nationwide preservation efforts by providing an example of a technology that agencies can employ to provide users with rapid access to current data, while empowering them to contribute to the currency of the available data by on-line submission.

Project Significance:

The major long-term information management issue addressed by I-Sites is the essential, but often overlooked, need to keep preservation-related databases current with existing knowledge. The I-Sites interface will empower users to record new archeological data, giving those who most urgently need the data an active role in keeping it up-to-date. The innovative map editing tools provided with I-Sites will extend this capability to the online submission of geospatial data, a nearly unprecedented achievement for Internet Map Server technology. These tools will open the potential of GIS as an archeological site recording tool to a broader spectrum of individuals than those relatively few with GIS software.



North American Database of Archaeological Geophysics Web site <www.cast.uark.edu/nadag/>

North American Database and Website of Archeological Geophysics (Phase 2 of three phases)

University of Arkansas

Fayetteville, Arkansas

$26,157 (Phase 2)

Project abstract:

The University of Arkansas will continue the development of the North American Database and Website of Archeological Geophysics (NADAG). With the basic structure of the database established in phase 1 of this project, the goals of phase 2 are to populate the NADAG databases with project information, annotate the bibliographic materials, create educational offerings, and expand links to NADAG worldwide.

Project significance:

There is great potential for geophysical prospecting methods in archeology. Given their growing importance in the discipline and the increasing number of applications and practitioners, a central Website and database of North American results is vitally important. This project will promote education, awareness and the use of geophysical survey methods in North American archeology.

Olmsted Research Guide Online (Phase 2 of three phases)

National Park Service-Frederick Law Olmsted National Historic Site

Brookline, Massachusetts

$32,920 (Phase 2)

Project abstract:

The Frederick Law Olmsted National Historic Site will continue work on an Internet-accessible database of information about the landscape designs of Frederick Law Olmsted Sr. and successor firms. Work performed during phase 2 of the project will be a critical step in providing public access to the information. Project tasks will expand the current database to include additional priority collections such as those at the Library of Congress and make this information available through the World Wide Web.

Project significance:

Olmsted's designs shaped major urban landscapes across the United States. Interest in the study of these landscapes has accelerated over the past several years resulting in a significant increase in research requests. For the first time, researchers will have access to information about project-related records in the Olmsted Archives, including 150,000 landscape design plans, 60,000 photographs, 70,000 planting lists and 375,000 correspondence records.

From Restoring Dry-stone Walls and Fences, *1996 PTTGrants Project, Lexington, KY.*

Training and Education

NCPTT Training and Education Director Frances Gale is responsible for these projects.

Pesticide Contamination of Native American and Natural History Collections

Society for the Preservation of Natural History Collections. Washington, DC

$22,170

Project Abstract:

As a result of earlier preservation practices, many institutions hold collections of Native American and natural history artifacts that were treated with hazardous chemicals designed to eradicate or prevent insect infestation. These institutions now face difficult issues related to preservation and repatriation of objects contaminated with hazardous pesticide residues. The Society for the Preservation of Natural History Collections will convene a symposium of conservators, Native Americans, scientists, attorneys, public health and safety officials and other preservation professionals to discuss these complex issues. Symposium proceedings will be available via the Internet and in print. Cosponsors are the American Institute for Conservation, National Park Service's Harpers Ferry Center and Museum Management Program.

Project Significance:

As a result of the Native American Graves Protection and Repatriation Act, pesticide contamination of organic objects in ethnographic and historic natural history collections has become an important issue in materials conservation. Pesticide literature is relatively inaccessible to professionals who deal with contaminated collections. This symposium will provide a forum for the discussion of treatment of contaminated objects and of future action related to preservation and repatriation.

Repairing Dry-Stone Retaining Walls

Dry Stone Conservancy, Lexington, KY

$35,692

Project abstract:

The Dry Stone Conservancy will produce a video on preserving historic dry-stone retaining walls and terraces. The video will provide graphic instruction on how to build, relocate, repair and preserve these historic resources. This project comple-

ments *Walls of Stone*, a training video on preserving free-standing stone walls funded by the PTTGrants program in 1996.

Project Significance:

Although dry-stone retaining walls are an important cultural resource, many are in need of preservation due to deferred maintenance, problems with original construction techniques, and inappropriate repair work. Unfortunately, technical information that might guide preservation personnel in maintaining and repairing them is scarce. The Dry Stone Conservancy's instructional video will be a training resource for craftsmen, engineers, architects, archeologists and other preservation professionals who are responsible for preserving dry-stone retaining walls.

America's Underwater Cultural Heritage

Montana Public Television and Montana State University, Bozeman, MT

$40,000

Project Abstract:

Montana State University, Montana Public Television, the MSU-based National Park Service Cooperative Program, and the NPS's Submerged Cultural Resources Unit will produce three half-hour videos on America's underwater heritage for broadcast on national public television. Building on 20 years of national and international underwater research conducted by the National Park Service, this project will provide up-to-date technical information about underwater resources and promote stewardship under the Archeological Resources Protection Act. The videos will be a resource for State Historic Preservation Offices and land-managing state and local coastal agencies as well as the archeologists. In addition to enhancing protection and preservation of America's underwater cultural resources, this project also will preserve existing underwater video graphic footage for future researchers, land managers and the American public.

Project Significance:

The National Park Service's investigation of America's underwater heritage has yielded a wealth of data to the preservation and conservation community. Except for audiences who have the opportunity for first-hand underwater viewing, this heritage is largely inaccessible. Underwater resources are vulnerable to looting and require innovative methods of site protection, including the education of the public. By promoting enhanced understanding and appreciation of the value of America's underwater cultural heritage, this project will contribute to its long-term preservation.

Research

2000 PTTGrants

NCPTT Research Director Mark Gilberg is responsible for these projects.

Computer-Based Methodologies for Investigating the History of Significant Cultural Landscapes (Phase 1 of two phases)

University of Vermont, Burlington, Vermont

$35,538

Project abstract:

This project will assess the value of computer-based technologies such as digital image processing, geographic information systems and global positioning systems for reconstructing the history of cultural landscapes. These technologies will be used to identify extant landscape features and land use patterns from different time periods based on historical aerial photography, maps, surveys and recent satellite data. The utility of these technologies as critical research tools applicable to historically significant landscapes with natural areas and vernacular traditions will be assessed. Field studies will be conducted at the 550-acre historic forest associated with the Marsh-Billings-Rockefeller National Historic Park, one of the oldest continually managed forests in the United States. The site is a significant cultural and natural resource, representative of many other historic landscapes, and is an ideal setting for evaluating the utility of computer-based methodologies for historic landscape reconstruction.

Project significance:

In recent years the definition of historic landscapes has broadened to include significant vernacular landscapes. These landscapes often encompass relatively large geographical areas and include natural resources as contributing features. Because only limited archival sources are available for historic proper-

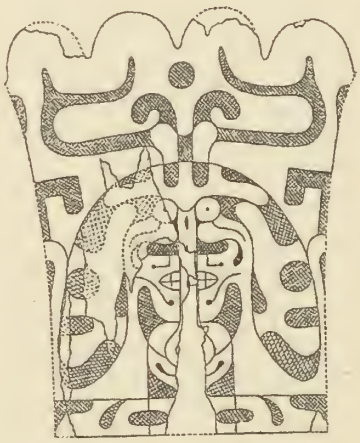
tics at these scales, the traditional approach of reconstructing the evolution of a landscape is often not effective. Since the understanding of landscape change is critical to assessing significance and to the development of management programs, additional tools for understanding land use over time are needed. With increasing interest in larger vernacular landscapes, GIS and GPS technologies are potentially more relevant and useful.

Development of High Resolution Photographic Methods for Preserving Imagery on Hopewellian Artifacts

Arizona State University, Tempe, AZ
$40,000

Project abstract:

Prehistoric Hopewellian peoples of the eastern United States (ca 150 BC – AD 400) are well known for their artworks of copper, which were buried with their dead or in caches within earthen mounds. A systematic, in-depth survey of a number of ceremonial plaques, headdresses and celts from southern Ohio and Indiana yielded evidence of artistic design elements prepared from mineral pigments, modified plant and animal residues and other substances that had previously gone undetected. This imagery is similar in style to that found in Hopewellian and earlier Adena art in other media. While it is clear that certain copper objects bear artistic imagery, many images are extremely difficult to detect and resolve with the naked eye. This study will develop a systematic, integrated set of digital photographic techniques for documenting these images. Digital color and infrared photography coupled with various data processing and image enhancement techniques will be undertaken along with mineralogical and metallurgical analysis to gain a better understanding of these images. This study will provide a proper basis upon which to undertake the conservation of these, and similar objects, while greatly improving our ability to interpret these objects within the context of Hopewellian society.



Engraving from a Hopewell site.

Project significance:

The procedures for image enhancement and for display that will be developed in this work will be a widely applicable model for preservation of artwork, texts, and other historic image records. This work will also clarify the need for digital image photography and enhancement of Eastern Woodlands copper artifact surfaces, and the surfaces of ceremonial artifacts generally, prior to conservation efforts, to prevent the loss of any subtle artwork that might be present. The archeological and anthropological communities also will benefit from a significant increase in the corpus of Hopewellian artwork, and the information it provides on Hopewellian society, ritual dress and lifeways. Documentation and preservation of Hopewellian artworks on copper is imperative, given both the possibilities of repatriation and the need to inform Native Americans of the nature of curated archeological collections under NAGPRA legislation.

Upgrade of Analytical Services and Research Laboratory, Division of Conservation, Harpers Ferry Center

National Park Service, Harpers Ferry Center, Division of Conservation, Harpers Ferry, WV
$50,000

Project abstract:

The Division of Conservation, Harpers Ferry Center, will upgrade its Analytical Services and Research Laboratory through the purchase of a Rigaku Miniflex X-ray Diffractometer . This instrument will be used to provide state-of-the-art analytical services for the identification of inorganic compounds such as mineral pigments, salts and metal corrosion products that are associated with cultural materials. With the purchase of this X-ray Diffractometer, the Division of Conservation will significantly increase its current capacity to provide analytical services in support of conservation treatments, scholarly research and graduate training.

Project significance:

The Division of Conservation, Harpers Ferry Center, is the largest conservation science laboratory in the National Park Service. The Division is a national center that provides technical advice and treatment services for the approximately 330 parks in the National Park System and 140 universities that hold collections from the National Park Service. With the purchase of this X-ray Diffractometer, the Division of Conservation will significantly increase its current capacity to provide analytical services in support of conservation treatments, scholarly research, and graduate training.

Materials Research

NCPTT Materials Research Program Director Mary Striegel is responsible for these projects.

Protection of Metallic Monuments from Biodeterioration (Phase 1 of two phases)

Harvard University, Cambridge, Massachusetts
$40,000 (Phase 1)

Project Abstract:

Many of the coatings that have been used to prevent corrosion of metallic monuments are susceptible to microbial attack. Microorganisms degrade protective coatings by producing organic acids and by excreting enzymes. They also consume coating additives, reducing the overall protective read "qualities of coatings and facilitating degradation of metallic monuments. This project tests commercial coatings for their ability to withstand microbial attack and investigates the use of biocides as preventative ingredients in coatings.

Bronze monument detail, New York, NY

Project Significance:

The results of this research will lead to a better understanding of the performance of coatings for the protection of outdoor metal sculpture with regard to biodeterioration.

Building Stones of America (Phase 3 of three phases)

National Institute of Standards and Technology, Gaithersburg, Maryland
$25,000 (Phase 3)

Project abstract:

The NIST stone test wall was constructed in 1948 to study the performance of building stone subjected to weathering. The wall contains 2,352 samples of stone – 2,032 domestic stones from 47 states and 320 imported stones. Unexposed specimens have been stored indoors for comparison with now-weathered samples. Phase 1 of the project focused on photographic and descriptive documentation of the archived and exposed stone samples. Phase 2 included detailed petrologic studies of archival specimens and selected micro-core specimens for characterization of their micro-texture and mineralogy. In Phase 3, mineralogical and microstructural features will be correlated to stone performance, and compared to performance of similar stones from the same producer that have been used in building construction.

Project significance:

The project provides a unique opportunity to study and compare the long-term performance of a wide range of building stones. Project results will be useful to preservation architects, architectural materials conservators, and design and construction professionals who study stone deterioration and select stone for rehabilitating historic structures and for new construction.

Improved Sol-Gel Consolidants for Stone (Phase 2 of three phases)

Princeton University, Princeton, New Jersey
$48,663 (Phase 2)

Project abstract:

This project will develop new consolidants to correct two deficiencies of many currently available consolidants: cracking of the consolidant from shrinkage and poor match between properties — particularly modulus of elasticity and thermal expansion coefficient — of the consolidant and the stone. Both goals will be achieved by using sol-gel processing to incorporate a concentrated suspension of colloidal oxide particles into a gelling matrix. The particles will reduce shrinkage and cracking during drying, and their mechanical properties will be chosen to match the host stone closely. Resulting materials are expected to provide better protection against deterioration by environmental effects.

Project significance:

Consolidants have been used to treat deteriorating stonework of historic buildings and monuments. This project will yield a family of consolidants with mechanical properties that match the properties of stones commonly encountered by the conservator. The new consolidants will circumvent problems of shrinkage and cracking associated with widely used consolidants such as alkoxysilanes.

Organic Coatings for Protecting Outdoor Bronze Sculpture (Phase 2 of three phases)

North Dakota State University, Fargo, North Dakota
$50,000 (Phase 2)

Project abstract:

Phase 1 of the project used electrochemical characterization methods to evaluate the performance of coatings in providing corrosion protection under conditions that directly emulated exposure to polluted atmospheres. Coatings for bronze, copper and other substrates will be evaluated. The research builds on earlier work by the National Gallery of Art supported with 1995 PTT Grants funding. Phase 1 incorporated cyclic exposure test protocols currently in use in industrial and academic laboratories as well as new test protocols under development at NDSU. Phase 2 research will examine advances in topcoat technologies within the automotive and aerospace industries for potential improvement of protective coatings for outdoor sculpture and ornament.

Project significance:

This research will transfer technologies for assessing, designing, and testing coatings for the protection of metals from academic and industrial uses to the field of conservation. The work will result in improved coatings for use on outdoor metal sculptures.

Non-Destructive Imaging of Worn-Off Hallmarks and Engraving from Metal Objects of Art Using Scanning Electron Microscopy

The Nelson-Atkins Museum of Art, Kansas City, Missouri
$18,379

Project Abstract:

This project will use C-mode scanning acoustic microscopy (C-SAM) to recover images of worn-off hallmarks, stampings, and engravings from precious metal art objects. Scanning acoustic microscopy is a non-destructive and non-contact method which potentially may be used for recovery of worn images from metals. Acoustic images are formed by quantifying the differences in elastic properties between compressed (stamped or punched) metal and the surrounding unstamped metal. This non-destructive technique should offer hard evidence to aid in studies of authenticity, dating, provenance, and punched decorative schemes on silver and other metallic objects.

Project Significance:

The use of scanning acoustic microscopy for the recovery of hallmarks can directly and positively allow curators, scholars, collectors, educators and dealers to answer historical questions so that the object can retain its own and the maker's rightful place in history.

National Distribution FY2000 Grants

National Park Service Grants to Help Preserve the Past

The National Park Service administers a number of very successful federally funded programs for historic preservation. Visit the Links to the Past website to find all you need to know about the wide variety of grants to preserve cultural resources nationwide <http://www.cr. nps.gov/helpyou.htm>. Grant information is summarized below.

Battlefield Partnership Grants

Once a year as part of its grants program, the American Battlefield Protection Program (ABPP) invites proposals for battlefield preservation projects. Most partners con-

1st Wisconsin Cavalry Monument at Chickamauga. American Battlefield Protection Program photo by Eric Long

tribute matching funds or in-kind services to these projects. For information, contact <ginger_carter@nps.gov> or <http://www2.cr.nps.gov/abpp/funding.htm>.

Certified Local Government Program

NPS and state governments, through their State Historic Preservation Offices (SHPOs), provide valuable technical assistance and small matching grants to hundreds of diverse communities whose local governments are endeavoring to keep what is significant from their community's past for future generations. Jointly administered by NPS in partnership with SHPOs, the CLG program is a model and cost-effective local, state, and Federal partnership that promotes historic preservation at the grassroots level across the nation. For information, contact <http://www2.cr.nps.gov/clg/clg_fu.htm>.

Historic Preservation Fund

State Historic Preservation Offices (SHPOs) can find information and requirements regarding the distribution of federal monies for carrying out preservation activities in their state as directed under the National Historic Preservation Act by contacting <http://www2.cr.nps.gov/hpf/hpf-fund.htm>.

Challenge Cost-Share Program

The Challenge Cost-Share Program was established in 1993 so that the National Park Service could increase participation by neighboring communities, volunteer groups, historic property owners, universities, and others to preserve natural, recreational, and cultural resources for which NPS is responsible. Projects are jointly developed by the partner and the Park, Trail, or Program office using a simple project application and budget format. For information, contact 202/343-9575, <Laura_Mahoney@nps.gov>, or <http://www2.cr.nps.gov/ccs_p.htm>.

Historic Preservation Fund to Tribes

The National Historic Preservation Act of 1966 authorizes grants to Indian tribes for cultural and historic preservation projects. Grant information and application material is available to tribal organizations and Native American groups for carrying out cultural projects and programs as directed under the Act. For information, contact 202/343-9572, <Bob_Ruff@ nps.gov>, or <http://www2. crp.nps.gov/tribal/grants.html>.

Native American Graves Protection and Repatriation Act (NAGPRA) Grants

NPS provides grants to assist qualified museums, Indian tribes, Native Hawaiian organizations, and Alaska Native villages and corporations with implementation of the Native American Graves Protection and Repatriation Act (NAGPRA). Applications and instructions for NAGPRA grants are available for the current year. For information, contact 202/343-8161, <dca@nps.gov>, or <http://www.cr.nps.gov/nagpra/grants/index.htm>.

National Maritime Heritage Grants Program

The National Maritime Heritage Grants Program is a Federal assistance program authorized by the National Maritime Heritage Act. The Grants Program is established to help state and local governments and private nonprofit organizations carry out their maritime heritage activities. It is a national, competitive matching grants program which provides funds for Maritime Heritage Education Projects and Maritime Heritage Preservation Projects designed to reach a broad audience and enhance public awareness and appreciation for the maritime heritage of the United States. For information, contact <http://www.cr.nps.gov/maritime/grants.htm>.

Other Funding Opportunities

Visit the Preservation Technology and Training Clearinghouse to find out about other funding opportunities in historic preservation <www.ncptt.nps.gov/fundingopps>.

The Funding Opportunities database contains basic information about programs that provide financial support for preservation-related projects. The goal is to provide information about each program and a source of more details. Data recorded include program title; sponsoring organization; brief description; type of program (recurring or one-time); submission deadline for one-time opportunities; preservation discipline (archeology, historic architecture, historic landscapes, materials and objects conservation, history, or interdisciplinary); and contact information (name, address, phone, fax, e-mail, URL).

The database is searchable by keyword, discipline, or a combination of the two. The simple keyword query will search multiple fields in the database including program title, sponsoring organization and program description.

The Funding Opportunities Clearinghouse is compiled and maintained by NCPTT from a variety of sources. NCPTT encourages users with knowledge of granting programs to suggest additions to the funding opportunities database or notify NCPTT of changes to current listings. Simply click on the *Suggest an addition or revision* link available at the query screen, complete the form and click on *Submit Suggestion*. NCPTT welcomes your comments about the Funding Opportunities database.

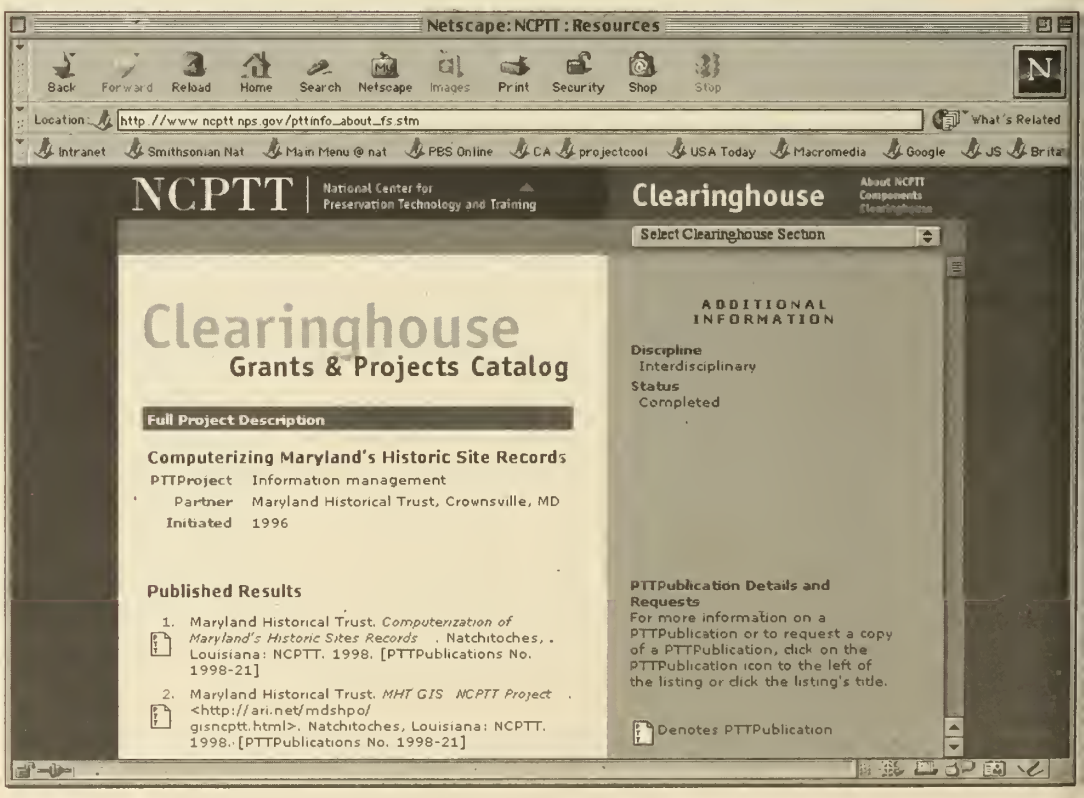
PTTGrants and Projects Catalog

Information about PTTGrants program projects from previous years is available online at NCPTT's website. The Grants and Projects Catalog, a feature of the Preservation Technology and Training Clearinghouse, is a searchable database that contains information about 142 PTTGrants program projects <www.ncptt.nps.gov/catalog>. The PTT Clearinghouse <www.ncptt.nps.gov/clearinghouse> furthers NCPTT's goal to serve as a clearinghouse for historic preservation information.

A searchable database of all PTTGrants and PTT Projects initiated since 1994 is available via the PTTClearinghouse.

Basic information about the grant or project – such as title, grantee and partners, description, and status (in progress, completed, etc.) – as well as a listing of products (reports, journal publications, CDs, videos, Web sites, etc.) is included in the database. Copies of products may be ordered online and access to electronic versions of publications is planned for the near future. Information about related publications such as articles appearing in *NCPTT Notes* or other journals also is available.

The database is searchable by keyword, discipline, grant type, project type, fiscal year, PTTPublication number, or any combination of the above. The simple keyword query will search multiple fields in the database including grant/project title, grant/project description, keywords, organization(s), publication title, publication description, and publication citation. NCPTT welcomes your comments about the Grants and Projects Catalog.



NCPTT Welcomes Robert D. Stearns

In early October 2000, Robert D. Stearns began work as NCPTT's new Executive Director. Bob is an enrolled Alent from Alaska with extensive background in the development of training programs and the application of technology in the Federal workplace. In addition, he has directed distance learning projects that have incorporated supercom-puters, electronic networking, and other new technologies for the goal of improving the instructional effectiveness of teachers and the college readiness of their Native American and Hispanic students. A gradnate of the University of California at Berkeley in environmental design - architecture, he holds three master's degrees from the University of Arizona and from Stanford University, from which he also received his doctorate in anthropology and education with a minor in international communications in 1983.

Before accepting the NCPTT position, he was the Special Assistant to the Assistant Secretary of the Department of Housing and Urban Development where he handled sensitive issues related to Indian housing. Prior to that, he worked for the Bureau of Indian Affairs, Department of the Interior, in Washington, DC where he was responsible for collecting/analyzing labor force and budget data from the nation's 558 tribes. Bob began his Bureau tenure in 1984 serving as the Alaska Regional Office's first director of its training, evalnation, and technical assistance program.

Bob has also directed Department of Education funded Upward Bound and math/science regional centers in the Southwest and has developed postsecondary programs for students in Alaska. Additionally, he has been a Fulbright Fellow to Russia, a Fulbright Scholar to Mexico, a Mellon Faculty Fellow, and a National Science Foundation Fellow.

Call for Manuscripts

The University of Delaware Press welcomes manuscripts in the fields of preservation and conservation technology. This initiative, undertaken in cooperation with NCPTT, is to disseminate state-of-the-art technology on documentation, characterization, treatment, and preventative maintenance of the material fabric of cultural resources. Manuscripts to be considered include 1) book-length drafts, greater than 100 pages, that provide sound scientific basis for transferring technology into preservation practice and 2) collections of unpublished papers. Authors wishing to submit a manuscript to the University of Delaware Press are advised to send first a cover letter and abstract, prospectus, table of contents, and curriculum vitae to Professor Donald C. Mell. For further information, see the University of Delaware Press website <www.udpress.udel.edu/nd>.

Professor Donald C. Mell, Chair
Board of Editors
326 Hullihen Hall
University of Delaware
Newark, DE 19716

Cultural Resources 2000: Managing for the Future

Scheduled for December 4-8, 2000 in Santa Fe, New Mexico, Cultural Resources 2000 is a forum for discussing how to increase awareness of the value of cultural resources, for strengthening communications among NPS cultural resources staff and NPS partners, and for discussing the best practices and recent developments in cultural resources management.

Within the overall context of the National Park Service's Cultural Resources Strategic Plan (1977) — especially the plan's four major goals of research, planning, education and use, and organization and partnerships — the conference will address five topics: Education and awareness, Back to basics, Innovations, Growth, and Interdisciplinary approaches.

For more information about Cultural Resources 2000, contact Emily Dekker-Fiala (efiala@georgewright.org) or Dave Harmon (dharmon@georgewright.org) at:

George Wright Society
PO Box 65
Hancock, MI 49930-0065
906/487-9722
906/487-9405 fax
www.cr.nps.gov/cr2000/

Our Mission

United States Department of the Interior
The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and to honor our trust responsibilities to tribes.

National Park Service
The National Park Service preserves unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education and inspiration of this and future generations. The Service cooperates with partners to extend the benefits of natural and cultural resource conservation and outdoor recreation throughout this country and the world.

National Center for Preservation Technology and Training
The National Center for Preservation Technology and Training promotes and enhances the preservation of prehistoric and historic resources in the United States for present and future generations through the advancement and dissemination of preservation technology and training.

NCPTT, created by Congress, is an interdisciplinary effort by the National Park Service to advance the art, craft and science of historic preservation in the fields of archeology, historic architecture, historic landscapes, objects and materials conservation, and interpretation. NCPTT serves public and private practitioners through research, education and information management.

National Center for Preservation Technology and Training
NSU Box 5682
Natchitoches, LA 71497