

## A National Park Service Technical Bulletin

### "WHAT WE'RE ABOUT"

by  
F. Ross Holland, Jr.

As preservationists, we are living in exciting times, because we are on the ground floor of an emerging discipline and a rapidly evolving philosophy.

Not too many years ago, the principals involved in cultural resource preservation activities were the historian, the archeologist, and the museologist. Today, in addition to these individuals, we have not only the historical architect and craftsman (exhibit specialists we in the Park Service unfortunately call them), but also are beginning to see historical engineers, historical landscape architects, and cultural resource planners.

Five years ago, we did things that we thought were good preservation practices. Today, our eyes would bug out in horror if some of these same actions were proposed. We have refined our thinking and clarified our principles, but much more refinement and clarification will be needed over the next decade or so before we have a reasonably solid philosophy for our profession.

The preservationists within the National Park Service need to keep abreast of changing philosophy, techniques, and technology. We need to broadcast the new information to all concerned with preservation of cultural resources under the care of the National Park Service. One means of dissemination will be this technical bulletin. We hope it will survive, but more importantly, that it will be useful to its recipients.

Director Whalen gave those of us involved in the nitty gritty of preservation our marching orders when he said, in part, at the Superintendent's conference that: "Historic preservation is a rapidly evolving discipline, and we need to

be mindful of new concepts and new scientific methods. Traditional techniques, always expensive, are becoming exorbitant--particularly when we view the magnitude of the recently completed List of Classified Structures. We need to achieve economies so that available funds can be more widely distributed.



F. Ross Holland, Jr.

I would hope that new technologies could be utilized that would enable us both to achieve economies and to improve the quality of our preservation work."

We preservationists are the best ones to be aware of new techniques and how they can be applied to preservation so that the Service can achieve economies. The Director's statement does not mean we are "going on the cheap." Rather, it means that we are going to do what is right by the resource in the most efficient and economical way.

Though the articles in this first issue of our bulletin come primarily from members of the Cul-

See HOLLAND, page 2.

### ENERGY CONSERVATION IN HISTORIC STRUCTURES

by  
Hugh C. Miller, AIA

#### The Basics

Many energy saving procedures and devices available on today's market are actually harmful to the well-being of historic buildings. The basic principle for the preservation of these buildings is to keep materials dry and spaces well ventilated. In many buildings, this can be done without energy consumptive systems. It is only with the demands of new uses and their additive designs of mechanical systems that energy conservation and preservation become a problem.

While almost everyone offers a solution, few understand the problem. "Turn down the heat..." sounds like a good idea. And, while turning down the thermostat to 45°F may not disturb visitors or the museum staff, it may destroy interior furnishings and architectural fabric, especially if the humidity gets high. "Blowing in wall insulation..." will reduce fuel consumption, but it may also cause rot in the wooden framework. "Changing back to wood burning stoves..." may be more historically authentic, but the resultant increased hydrocarbons and drying of the air could damage historic wallpaper, draperies and furnishings. It's all too easy to over react and to forget common sense principles. A building is better off if it can breathe and is kept cool, rather than if it is tight and kept warm.

#### Types of Actions

Energy conservation activity can be broken down into operational and retrofitting actions. Before undertaking any energy conservation actions, an analysis should be made of the entire building and its mechanical system--its planning, design, operation and maintenance.

Continued on page 2.

tural Resources Management Division, such will not be the case in future issues. We want you to send us information on new and successful techniques you have adopted, so that we can spread that information to others in the Service. We also want to hear about any preservation problems that so far have eluded solution, so that we can offer some suggestions on people and data that might be helpful. Perhaps your article will be critical of the way the National Park Service goes about its work. Such criticism is acceptable, because if the Park Service is to reassume its leadership role in cultural resources preservation, then we need to eliminate the rot in our own house. But criticism, to borrow a cliché, should be constructive, not destructive. Moreover, it should not be personal.

I hope, however, that the vast bulk of articles would be on the positive side, proposing innovative actions to better our preservation efforts. We would also like your comments on policies relating to cultural resources that ought to be modified, and your views on the philosophy behind resources management. This bulletin will be your opportunity to contribute.

Doug Caldwell has been the ramrod for this first issue, and will continue to play that role for future editions. So, if you have an article that you want to submit, please address it to him in care of this division.

**WARNING!**

THE HOT AIR BLOWER YOU ARE USING TO REMOVE PAINT MAY BE HARMFUL TO YOUR HEALTH AND THE HEALTH OF YOUR BUILDING!

There have been incidents within the past six months where fires in historic buildings were traced to the use of hot air blowers for removing paint. In these cases, debris or dust within the walls was ignited by the hot air from the blower. While the hot air blower may be a useful tool, it must never be used in a historic building. Its use for paint removal on architectural elements removed from the building may be acceptable, but the same precautions to prevent scorching of the wood will be necessary. And,

DON'T FORGET TO PROPERLY VENTILATE YOUR WORK AREA. THOSE FUMES FROM THE BURNING PAINT CAN BE DANGEROUS!



Photos by Jack E. Boucher

*Awnings, trees, vines, and grass shade and reflect summer heat from Thomas A. Edison's home, "Glenmont." In many cases, a building is energy efficient if it is allowed to function in a historic manner without the addition of modern mechanical equipment.*

Prime consideration should be given to any actions that may be detrimental to the building, its furniture, or collections.

Operational actions would include the development of new standards for heating, cooling, etc., as well as defining the requirements for a stable environment. The latter consideration must be an integral part of the analysis since changes in temperature and humidity affect energy savings. For example, a lowering of the temperature by five degrees saves approximately 17 percent in fuel, while raising the temperature by four degrees for cooling represents a 12 percent savings. Increasing and decreasing humidity with the heating or cooling mode will provide an effective comfortable temperature, but it is important not to go too far. Over 50 percent RH (relative humidity) will cause excessive condensation and possible damage to the structure and its objects. Too little moisture, i.e., less than 25 percent, will result in the drying of objects and the building's interior.

Reduced temperatures and increased humidity with long off cycles for ventilating fans will save energy, but may have an adverse effect on the interior environment and be detrimental to the historic structures and historic objects on display. While seasonal uses and closings made for conserving heating and cooling costs should consider visitor and administration needs, prime concern must be given to maintaining an environment conducive to preserving the resource.

Generally, if a building is well ventilated and dry, it can stand

extremes in temperature. However, fine interior finishes and many types of furnishings and objects cannot tolerate these extreme fluctuations. In short, understand the characteristics and limitations of the total cultural resource before taking operational actions.

Retrofitting actions entail changes to the existing building or mechanical system. Unfortunately, these are often approached piece-meal without understanding the factors involved. Basically, these factors are "how to heat and cool," and "how much heating and cooling is necessary."

The fuel, the system and the equipment are "how" factors and reflect energy consumption and costs. They are measured in the cost efficiency of the system design and operation. For example, wood at 72 dollars per cord is more economical than No. 2 oil at 47.7 cents per gallon, even though the heat conversion systems for wood may not be as efficient or practical to operate. An electric heat pump is 1 1/2 times more efficient than an electric resistant furnace and probably would warrant the cost of conversion from an electric furnace. Needless to say, changes in fuel or systems are expensive and the changes may be impractical. However, the cost of fuel may make auxiliary or dual systems feasible. This may be particularly true of systems for recovering heat from high ceilings or exhibit lights.

"How much" heating or cooling is, by necessity, a function of the weather and the heat load. There is little control over the weather, but the heat load can be modulated. A heat load gain can result from solar radiation, internal lights, equipment and people, while a heat loss can result from ventilation, infiltration, and thermal transmission.



*This wood burning stove was used by Carl Sandburg for auxiliary heat in his studio. Its use today would create problems of excessive hydrocarbons, dry heat, and fire hazard. The stove, itself a historic object, would be "used up" if fired.*

Controlling heat loss includes elimination of infiltration from the outside by caulking and weather stripping doors and windows, and by blocking openings in walls and ceilings such as light fixtures and convenience outlet boxes. (Some air is necessary for a combustion makeup in furnace rooms or where fireplaces are used.) Ventilating systems should be monitored and controlled for optimum intake of fresh air, and the opening and closing of windows and doors should be regulated during the heating and cooling operation. If these changes are done with care, there will probably be little change in the historic appearance or condition of the building.

Increasing the resistance to thermal transmission of the building by the installation of insulation or additional compatible materials, such as double pane glass, is the most common retrofitting action, but it must be carefully selected. The best combination for insulation is in attics and ducts in attics, under floors in crawl spaces and ducts in crawl spaces, and in side walls. However, this should only be done when all insulation materials have a vapor barrier, generally aluminum foil, on the warm side of the structure, and adequate ventilation on the cool side. Storm windows or thermal panes are useful, but they must be custom designed to have a minimal physical and visual impact. If inside storm windows are used, they must be removable so that condensation formed on the historic sashes can be wiped up before they mold, warp, or rot. Storm doors have a major visual impact on one of the most architecturally important aspects of historic structures and are

probably not effective in reducing thermal transmission. Weather stripping and caulking at the door and frame are probably the best that can be done.

Other methods of changing the heat load are the use of shutters, shades, screens, canopies and awnings, if they are historically accurate on the buildings. These appendages have a high maintenance factor. However, their energy savings may offset their maintenance costs. If historically appropriate, changes of colors of exterior walls and roofs may increase the energy efficiency by changing the heat gain. The use of light or dark colors to provide the best overall results will depend on whether the heating or air conditioning loads are the largest energy consumer. Shade trees and vines on trellises may provide additional shading to reduce cooling loads. The use of grass or low-growing ground cover, rather than asphalt or concrete, may reduce the reflection and radiation of heat in the building during the summer. Many materials and processes now used to retrofit the historic structure are not fully tested, and there is not guarantee how long they will last or how they will react with adjacent building materials. Since a historic structure and its contents are irreplaceable, such processes and products should not be used.

#### Insulation Materials

There may not be an ideal insulating material that meets all the criteria of high resistance to heat flow (R factor), and that are light weight, inexpensive, waterproof, fireproof, easy to install, and which don't settle or belly after emplacement. Obviously, historic insulating materials such as sawdust or seaweed do not meet these specifications. The current use of cellulose and foam plastics have potential problems which must be considered if the material is used in a historic house.

Cellulose insulation materials have a tendency to accumulate moisture. This drastically reduces their insulating qualities. These materials are often installed wet, and there may be serious problems in their drying out sufficiently to form a good insulating blanket. They are highly flammable and normally are treated with fire proofing material such as boric acid. Recently, substitute fireproofing materials such as aluminum sulphates have been used, but these chemicals have reacted with the metals of utilities in the structures and have caused arcing at electric boxes and pinholes in the plumbing.

See ENERGY, page 4.

#### CULTURAL RESOURCES MANAGEMENT GUIDELINE COMING

by  
Barry Mackintosh

As its contribution to the Guideline series, this office is now preparing a Cultural Resources Management Guideline. The current draft consists of two chapters, the first containing standards, and the second dealing with Section 106 and Executive Order 11593 compliance.

The standards chapter is a revised and expanded version of the present activity standards for historic resource studies and management issued in 1971. Significant changes include new standards for preservation maintenance, for cultural resource coverage in general management plans, for archaeological field studies, and for research generally; basic revision of the historic structure report standards; retitling of several documents, (e.g., "historic resource study" becomes "cultural resources assessment," and "historic resources management plan" becomes "cultural resources preservation guide"); and greater attention to historic objects is made throughout. Overall, the standards specify minimum conditions that must be met if activities relating to cultural resources management are to be conducted satisfactorily.

The compliance chapter seeks to bridge the gap between procedures issued by the Office of Archeology and Historic Preservation and the Advisory Council on Historic Preservation for governmentwide application and the special needs and circumstances of the National Park Service.

It discusses, for example, the National Register requirements regarding historical units of the System, which are automatically listed in the Register but which must be documented on Register forms for Section 106 compliance purposes. And, it treats considerations important in determinations of effect under the Advisory Council's procedures.

Appended to the Guideline will be copies of Executive Order 11593, the National Register and Advisory Council procedures, minimum qualifications for cultural resources professionals, and other important references.

The draft Guideline will arrive shortly in the regional offices and planning centers for review and comment. Contributions to its improvement will be most welcomed.

Foam insulation is installed wet and may cause warping of wooden lathe or structural elements, sometimes to the point of loosening from the frame. When the foam sets up, it shrinks as much as an inch, resulting in a void next to the studs and plates of the wall. When condensation occurs within the wall cavity, the moisture content within the wooden members will enable rot-forming bacteria to thrive. Urea-formaldehyde, polyurethane, and polystyrene in either foam or sheet material give off highly toxic gases when burned and should not be used in residences or dormitories.

It is not unusual to find rotted wooden members, rusted metals and stained interior finishes on walls or ceilings that have been treated with a blown-in or foam insulation. If insulation has been installed without a vapor barrier, an intensive monitoring system should be established to determine whether moisture levels are reaching a critical state. An interim moisture barrier, such as aluminized paints or vinyl wall coverings, might be considered if these will not disturb the historic finishes. In the end, it may be necessary to open up the wall and remove the wet insulation.

Moisture conditions in walls and ceilings of older houses without vapor barriers are critical. Studies made by the Forest Products Lab of Madison, Wisconsin found that the addition of insulation to walls of older houses with no vapor barrier is a marginal situation, and that moisture problems will vary with the tightness of the house and the habits of the occupants. Even where no visible problems occur, moisture will decrease the thermal efficiency of the insulation. Where mechanical humidification is used to maintain a 35 percent relative humidity or higher, critical levels of moisture condensation in the walls are likely.

Vents installed near the top and the bottom of the stud space in the test house provided little help in keeping the wall cavity dry except for the windward side of the building where the wind forced ventilation through the cavity. Vents seem to keep moisture levels lower at the sheathing side in the inner face and may help prevent peeling paint. The study also found that an increase in depth of ceiling insulation resulted in increased moisture levels near the top of the insulation, a phenomenon that makes good ventilation of the attic space more critical. In short, where the winter temperatures are 35°F or below, there

are serious problems of condensation within insulation that is not ventilated on the cool side of the wall and shielded by a vapor barrier on the warm side.

The traditional analysis of thermal resistance of materials does not take into consideration the ability of dense materials such as plaster, brick, concrete and stone to absorb and hold heat. As a result, costly and disruptive retrofitting of insulation has often been carried out based on an inaccurate assessment of the existing materials. In the worst situation, the furring out of the interior wall not only destroys the architectural integrity of the interior trim, but it allows the stone wall to get wet enough and cold enough to freeze and crack. This is unnecessary. New methods for calculating the "capacity insulation" of masonry consider an "M" factor for converting standard calculations, thereby giving an indication of the true thermal performance for masonry in both the heating and cooling cycle. In the case of the furred out stone wall, there was a long pay out period for energy savings and an immediate loss to the property.

If reduction of heat flow were all that had to be considered in the application of insulation to a building, the whole matter of retrofitting would be the simple matter of economics, i.e., comparing the cost of insulation with the cost and energy saved in heating or cooling. Unfortunately, this is not the case. We must under-

stand the action of water vapor in buildings, the interaction of various components of the mechanical system, the physical and visual impact of any treatment, and most of all, the characteristics and limitations of historic resources of the building and its contents. The problems we face cannot be solved with pat answers and hang-on gadgets!

Reference Reading

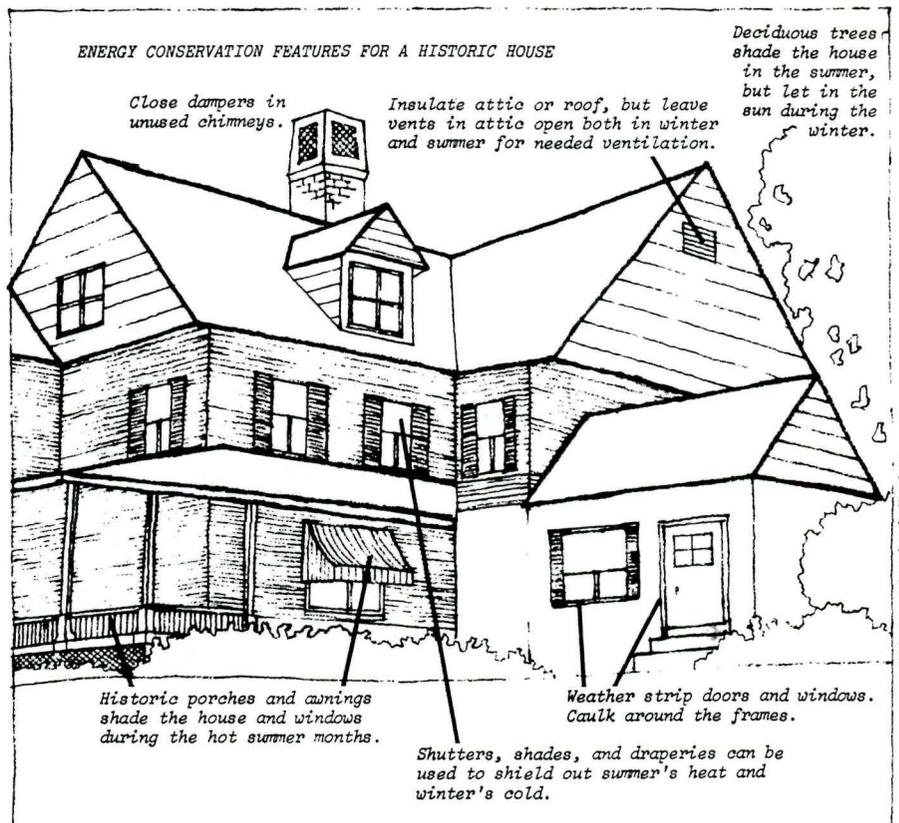
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Susan I. Sherwood

THE  
THE LIST OF CLASSIFIED  
STRUCTURES

by  
S. I. Sherwood

The List of Classified Structures (LCS) is more than a servicewide inventory of our historic structures or resources. As an inventory of structures classified by their state of preservation (condition) and the cost of the treatment necessary to maintain these resources for the use of future generations, the LCS is a tool to be used in planning, programming, and budgeting. The LCS is used to justify future programming to Congress

by putting specific expenditures in a larger perspective.

The LCS supercedes the Inventory of Historic Structures, called for in the 1963 "Historic and Prehistoric Structures Handbook" in that each listing has been expanded to include: 1) more complete descriptive information and photographs; 2) proposed treatment of the resource; 3) cost estimates for both the proposed treatment, and the treatment necessary before preferred treatment is identified in the planning process. The Historic Preservation Act of 1966 and Executive Order 11593 triggered the project and a massive field inventory was undertaken.

The text of the 10,000 plus field reports and accompanying photos are being transcribed and entered in a master file. In addition, these reports have been processed for computer filing with the first draft printout released to the regional offices in April 1977 for revision.

This is the regions' chance to check the accuracy of WASO's conversion of the field reports to data processing shorthand. Five regions have submitted their revisions to the first draft of the LCS. These revisions are now being made to the computer file. When all nine regions have submitted their work, and all revisions can be processed, an initial "official" LCS will be published and distributed to the regions and individual parks. This and future LCS reports will be letter size, suitable for ring binders or standard filing systems.

The LCS will serve as a quick reference to proposed treatments and their estimated costs, as well as an index to the more complete information manually maintained in the master file.

The second phase of the LCS project is the integration of the Cultural Resources Management Division's Bibliography and the LCS computer file. The Bibliography, now dormant, is a computer file of Historic Structures Reports and other historical studies done by NPS personnel and individuals or institutions under NPS contract. As in the case of the LCS, the Cultural Resources Management Bibliography is intended as a tool for the planning, programming, and budgeting of necessary historical investigations. It is available to researchers. We plan to resurrect and update the Bibliography beginning this year. Again, this project will require input from the parks and regions as a check on the accuracy and completeness of our Division's records.

Revision of the LCS and its associated Bibliography is an ongoing process. We would like to underscore here that any change in the condition of a structure, due to acts of God or man should be reported to our Division. We calculate inflationary increases in treatment costs from the date of the cost estimate. Therefore, only changes in treatment costs associated with changes in condition or proposed treatment need to be reported to this office. Our file can only be as accurate as the information we receive from the field, so please keep us informed.

FIRE AND INTRUSION ALARM  
AND FIRE PROTECTION SYSTEMS  
by

F. Ross Holland, Jr.

Every so often, one has to vent his spleen, and I am about to do so here. In our haste to protect our historic properties from fire and intrusion, we in the Park Service are coming near to doing as much damage to the fabric of buildings as would fire or vandals. Perhaps this is somewhat of an overstatement, but do I now have your attention? I might state this problem is endemic to all preservation organizations in the United States, not just the National Park Service.

The problem is that we don't take the necessary time to study the situation and select the best system for the building, nor the time to prepare a design that minimizes visual intrusion, or to carefully install these systems so as not to injure fabric unduly.

To slap a fire detection system into a historic building as one would into a warehouse, and then justify the design on the basis that it is better than nothing, is a disservice to the taxpayer, the person for whom we all work. In the first place, the taxpayer's property has been injured, and secondly, his money has been wasted, because the system will have to be replaced and original fabric repaired to its condition preceding the installation.

We need sensitively designed fire and intrusion alarm systems that will be effective, but at the same time, systems that will not do irreparable damage to the fabric, physically or visually, particularly in those places the visitor sees.

The selection of materials and equipment should be thought through. Black and white wires for an intrusion system running along light woodwork, or a tan smoke detector

placed on a dark ceiling are abhorrent. Placing a smoke detector on the ceiling of a room when it would be just as effective in an air intake illustrates mental laziness. Selecting halon for a room where the windows will be open, or a sprinkler system where objects we are trying to protect would be ruined by water, would be a waste of money.

There are numerous other examples of this type of waste and vandalism on our part. I can think of no better words to describe our actions, and I hope you understand the point I'm trying to make. If you design or install an alarm and protection system for historic structures, please exercise mental inquisitiveness and sensitivity. If you are one who reviews such designs and proposals, be critical and have the guts to reject poor ones. If you are a manager, don't accept poor designs or bad work.

There... I feel better!

## PRESERVING OUR HISTORIC SITES

by  
Henry A. Judd  
Chief Historical Architect

The Fountain of Youth has never been found. We accept the fact that we must grow old and will require continuing maintenance along the way. We are careful to consult a doctor to prescribe the medicines we use, and we avoid overloading our bodies unnecessarily. Historic structures need care somewhat similar to the human structure. Why, then, do we not follow similar practices?

Once a structure has been declared historic, we assume a commitment to preserve it for both present and future generations. All too often, however, we neglect its daily needs--the maintenance required to hold it in a stable condition. The structure deteriorates; original fabric is lost. Once it has run down, the cost of putting it into good condition increases. It increases largely because more and more original materials must be replaced. Besides the cost, there is also a resultant loss of historical integrity.

When we suddenly become aware of the consequences of neglect, we all

too often overact. We want a magic elixir that will eliminate future deterioration. But like the Fountain of Youth, it has not been found. Many salesmen will try to convince you to the contrary. But remember that our historic structures are not testing grounds. Many products being promoted may do irreparable harm to the historic fabric. It may not show up for several years, and in almost all cases, the action is not reversible.

What may seem most logical to a layman may well be exactly the wrong thing to do. As an example, if a masonry building leaks, do not apply a waterproofing coating to the wall before determining the cause for the entry of water. The first concern should be the pointing--the mortar joint between the brick or stone. Also check to see if water can enter from above through a faulty roof or cornice, or by rising dampness from the earth. If repointing is called for, do not use modern masonry mortars. Although correct for new construction, they do irreparable damage to historic fabric. Pointing mortars must be compatible with the original mortars and must not be harder than their surrounding materials. They must be formulated for a minimum of shrinkage, and the color, tooling, and texture must match the original. Once the roof is repaired and the building repointed, the build-

ing should not leak. The waterproofing coating is not only unnecessary, but may be harmful in that it retains moisture behind it which may cause spalling or disintegration of original fabric.

Every building, like every human, is an individual and must receive the appropriate prescription from a specialist. Before using a magic new cure, or before prescribing your own medicine or treatment, check it out with the "doctor"--the historic preservation specialist.

Every regional office now has a historical architect on its professional support staff. He is there to advise the Regional Director and the park superintendents on historic preservation. Consult him. If he doesn't have the answer, he will try to find it for you. If you have a new material, find out what it is and what it will do both for the short range and long range. The Cultural Resources Management Division in the Washington Office is working with the National Bureau of Standards to evaluate such materials, and we are more than willing to pass along any information learned from this testing program.

Preservation of our historic structures is going to take continuous maintenance based on sound professional advice. Let's give them the attention and concern that we would give to ourselves and our families.

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## THOSE PEOPLE BACK IN WASO

by  
Doug Caldwell

It's mid-July, 99°F outside (you haven't learned metric yet), the umteenth visitor has just complained about the broken down comfort station, your chief of maintenance drops by to let you know that it looks like the northeast corner of the "Alfred E. Neumann Memorial Cabin" is about to collapse. Then the high point of your day comes with the park superintendent's announcement that those "lovely and understanding folks" in the Washington office are putting the nix on your proposal to rebuild the "Alfred E. Neumann Memorial Still." Your immediate reaction, of course, is one of warm affection for those people back in Washington..... Right? Wrong!

Well, cool down! There just may have been a good reason for that negative decision, such as a con-

flict with Service Activity Standards, or competition with another project with a higher priority for the same funds. In short, the WASO staff does not operate in a vacuum, as some people believe, but must respond to many demands from many areas of the Service.

We want you to be more aware of what is involved in this business of managing the Park Service's cultural resources. This technical bulletin, we hope, is a step in accomplishing this. We also thought you would like to know who the people on the Cultural Resources Management Division staff are, and what our areas of responsibility are. So, here we go.

F. Ross Holland, Jr. - Chief, Cultural Resources Management Division. Ross has served in a number of parks and service centers across the country as an interpreter and as a research and supervisory historian. Prior

to his present position in WASO, he was an Associate Regional Director for the North Atlantic Region. Ross has overall responsibility for the Service's cultural resources management program, and in this capacity, must champion our cause at the higher levels of the Service and Department. Ross, a native Georgian, also serves as the Division's translator for White House pronouncements made in "southern." His office phone number is 202-343-7550.

Henry A. Judd - Chief Historical Architect. Hank, our irascible Connecticut Yankee in residence, and commonly known around the country as "Old Crusty," has been involved in Park Service restoration and preservation activities since 1954. He is an honorary member of the American Institute of Architects. Prior to entering government service, Hank was in the construction business. Hank has a grasp of the full range of techniques employed in restoration and preservation work. His understanding of the problems encountered in these

endeavors from both the viewpoint of an architect and a builder has been of tremendous value to various Service projects. Hank's office phone number is 202-343-2703.

Douglas H. Scovill - Chief Archeologist. Doug, our token Californian, has served as a park ranger (archeologist), as a member of the Planning Team for the Hashemite Kingdom of Jordan, and Chief of Research Administration and Chief of the Western Archeological Center in Tucson, and has participated in interpretive planning and new area studies before coming to his present job. He is responsible for policy and program issues related to archeology and the culture and traditions of Native American populations. Doug is the key person for program formulation and analysis for this Division. He has special interests in the development and application of non-destructive archeological research techniques to cultural resources management. And, he is very interested in enhancing our currently limited anthropological capacity to more effectively relate Service programs to the growing ethnic identity movement of Native American peoples. Doug's phone number is 202-343-6975.

Harry W. Pfanz - Chief Historian. Harry, an Ohioan and our Division's favorite moving target, is particularly interested in American military history. Harry has field experience as a park historian and superintendent. He was Chief of I&RM, an office in the Eastern Service Center. Before assuming his present position in 1973, he was the Chief, Branch of Park History, WASO. Dr. Pfanz is responsible for matters relating to policy and program implementation for those historical resources under National Park Service care. He can be reached at 202-434-2338.

Douglas L. Caldwell - Editor. Doug is the only native Virginian in the bunch, and one who grew up in the suburban Washington area. We try to ignore his constant boasting about the Old Dominion, but it's a losing battle. Before coming to the Park Service in 1972, he was a military capabilities analyst with the Defense Department at the Pentagon, and before that, worked with the State Department's Passport Office. Doug is responsible for editing our books printed through the U.S Government Printing Office, and our "near-print" publications (reports that are camera ready for copying). In addition, he serves as editor/writer for the CRM Bulletin. Doug can be reached on 202-343-2719.



Henry A. Judd



Douglas H. Scovill



Harry Pfanz

Photos by Clare C. Ralston

Hugh C. Miller - Assistant Chief Historical Architect. Hugh is a member of the Board of Directors of the Association for Preservation Technology. A registered architect and member of the American Institute of Architects, he serves on that body's Historic Resources Committee, a group that seeks to influence the preservation of significant examples of American architecture. Hugh has worked as an architect and planner in the Park Service's Eastern Office of Design and Construction, and was supervisory architect on planning teams in Jordan and Turkey. He was transferred to the Washington office in 1971. In addition to his usual duties (coordinating policy, programming, planning documents, etc.), Hugh has been involved with the Chicago School project, the Pennsylvania Avenue Development Corporation, and the training of NPS personnel in cultural resources management and maintenance. Our "Flying Pennsylvania Dutchman" (he travels a lot) can be reached on 202-343-3454.

Susan I. Sherwood - Technical Information Assistant. Susan is working on her master's degree in historic preservation at Columbia University, thanks to an abbreviated work week in Washington, and the miracle of Amtrak's metroliner between D.C. and the "Big Apple." With undergraduate schooling in classical archaeology, she has done field work at Poggio Civitate, Murlo, Italy, and at Illerup Aadalen, Denmark. She is responsible for maintaining the List of Classified Structures and the Division's archives of historical, architectural, and archeological reports. Her phone number is 202-343-2723.

Jackson W. Moore - Staff Archeologist. A native Oklahoman and noted linguist (he speaks some Japanese, German, Spanish, a great deal of English, but has forgotten much of his native Oklahomese), Smokey began his Park Service career as a seasonal ranger (archeologist) in the magnificent Southwest. Following a tour as an interpreter, he dedicated nearly a decade to field archeological research, specializing in digging up the remains of white people. This heresy was almost totally stopped by assignment to the Midwest Regional Office in Omaha and the Midwest Archeological Center in Lincoln. There, he arranged contract work by universities to conduct archeological research. There too, he became embroiled with the first Bertrand project at De Soto National Wildlife Refuge.

See CRM STAFF, page 8.

His reassignment to Washington did not free him of the Steamboat Bertrand, or several other "bad pennies." He is still keyperson for Service dealings with the Fish and Wildlife Service on matters related to the Bertrand. He is also keyperson for developing Service policy to manage Native American cultural resources in the parks. Smokey's phone number is 202-343-2719.

Diane E. Gelburd - Staff Archeologist. Diane is presently completing her master's degree in anthropology from the George Washington University here in D.C. She has done archeological and ethnographic fieldwork in Botswana among the !Kung Bushmen, and has participated in archeological field work in England and Wyoming. She is responsible for WASO coordination on the joint NPS - National Geographic Society Early Man studies program in Alaska; the NPS' cultural resources studies of the National Petroleum Reserve in Alaska; and, the NPS' ongoing research in remote sensing applications to cultural resources management. Diane's unlisted office phone is 202-343-8931.



Jackson W. Moore

Barry Mackintosh - Staff Historian. Before his assignment to Washington, Barry served in several historical parks. He is concerned with management policies and standards for historic preservation activities, and with procedures for NPS compliance with Section 106 of the National Historic Preservation Act. He handles matters of a general his-



Diane E. Gelburd

torical reference nature, and is adept at fielding questions related to the historical content of NPS nominations to the National Register of Historic Places. Barry is from Maine, but we don't hold that against him. His phone number is 202-343-2871.

Photos by Clare C. Ralston

DOING RESEARCH?  
by  
Doug Caldwell

Doing research of a historical, archeological, or architectural nature for your park, region, or service center? Can't find what you need in local files or library facilities?



Douglas L. Caldwell

Perhaps you should consider using the Interior Department's National Natural Resources Library (NRL).

Your Point of Contact

National Park Service employees can take advantage of the Library's many services by either writing or calling Phillip Haymond or Barbara Bauman in the Field Services Division. Address written requests to the Field Services Division, Natural Resources Library, U.S. Department of the Interior, Washington, D.C. 20240. Phil's phone number is 202-343-2267, and Barbara's is 202-343-2366. Office hours are from 7:45a.m. to 5:00p.m.

What You Will Get

Computer Search Services and Products. To meet your needs and those of other Interior Department employees, the Library uses many computerized data base services--including System Development Corporation, Lockheed, New York Times Information Bank, Informatics, Battelle, OCLC (Ohio College Library Center), and Ballots. With the aid of a terminal and communications network, the NRL staff can search the literature on-line in

such subject areas as agriculture, biology, chemistry, geology, engineering, life sciences, social sciences, physics, petroleum literature and patents, pollution, economics, electronics, business and management, education, statistics, psychology, research in progress, U.S. Government research, congressional information, ecology and the environment. In areas of significant interest (the National Parks, reclamation of surface mined areas, etc.) to the Department, research packages are maintained. These research packages are the products of continuous updating and relevance evaluation of search results from all pertinent data bases. A listing of these packages is also available upon request.

Bibliographies. The NRL publishes bibliographies on topics of importance to the Department that are available to you upon request. Suggestions for additional topics are welcomed by the Library staff.

Trailblazers. Trailblazers, or starter bibliographies, provide systematic listings of information sources and are designed to guide you in the early stages of a literature search. Each trailblazer be-



Barry Mackintosh

Clarence O. Meek - Registrar, List of Classified Structures. Although Clarence is hoping for retirement from federal service in the very near future and was thus reluctant to appear on this "list of classified structures," we insisted his taking some of the blame for whatever it is that makes the field people unhappy with us. Another Ohio native,



Clarence O. Meek

Clarence busies himself not only with the LCS, but is also involved in processing National Register nominations. He drives a big car, smokes cigars, and maintains a condominium at the ocean. The first and last we don't mind. But, oh, Fidel! Why couldn't you sell all those cigars to Moscow instead? Clarence's number is 202-343-2532.

gins with an overview of the topic followed by a listing of source material arranged by sections according to type: bibliographies; abstracts and indexes; handbooks, encyclopedias, and dictionaries; state-of-the-art reviews and conference proceedings; journals; technical reports; and frequently mentioned texts.

Circulation. Any material from the Library's circulating collection is available on request for the normal loan period of four weeks. All periodicals and the Reference and Law collections do not circulate, but photocopies are available in lieu of interlibrary loans. Microfiche copies are also available as are photocopies of articles from other libraries, including the Library of Congress, universities, etc., if they are not in the NRL collection. Copies of Reference items and general periodical articles are available by submission of an interlibrary loan slip, work slip, letter, or phone call.

#### Special Collections and Services

The Law Branch. The Law Branch staff performs legal research for the field libraries, compiling legisla-

tive histories, checking citations and providing copies of decisions and law review articles. Field librarians who wish to become more familiar with legal and legislative materials may arrange to spend up to five days working with the Law Branch staff here in Washington.

Special Catalogs and Listings. Using the cataloging input to OCLC and its own data base, special book catalogs and other listings can be produced by computer, including combined serials listing by author, title, and subject. Computer-produced listings of records cataloged for individual field libraries can be produced on demand.

Abstracting and Indexing Services. The library subscribes to more than 400 indexing and abstracting services. A title and subject listing is maintained by the Library and is available upon request.

Government Research and Development Reports. Selected technical reports from the National Technical Information Services are available on microfiche. The NTIS data base can be searched on-line from the Interior Library.

See RESEARCH, page 10.

### NPS HISTORIC PRESERVATION TECHNOLOGY WILL BE FEATURED IN SPECIAL ISSUE OF THE APT BULLETIN

In celebration of the tenth anniversary of the Association of Preservation Technology, the National Park Service will prepare special articles on technology in cultural resources management for publication in the fall issue of the APT Bulletin. The editor for the Bulletin is H. Lee Nelson, AIA, formerly a NPS historical architect, and now an architect with Interior's new bureau, The Heritage Conservation and Recreation Service.

This special issue will be coordinated by Hugh Miller of our own Cultural Resources Management Division staff. Hugh also bears the distinction of membership on APT's Board of Directors.

APT is an association of people concerned with historic construction methods and materials, and the state-of-the-art application of technology to the preservation of historic structures sites and objects. APT publishes a quarterly journal and a bi-monthly newsletter. It also conducts meetings, tours, and training courses for preservationists in North America.

For information on the NPS project, or programs and membership in APT, contact Hugh Miller at 343-3454.



Hugh C. Miller

RESEARCH, from page 9.

Current Awareness List. A listing of recent acquisitions cataloged by the Library is published twice monthly and is available upon request.

Dissertations. Dissertations in selected subject areas related to natural resources are housed in the NRL. This collection is available on microfilm or microfiche for interlibrary loan.

Water Resources. This collection of articles, documents, and reports cited in the semimonthly "Selected Water Resources Abstracts," is maintained by the library for the Department's Water Resources Scientific Information Center, Office of Water Research and Technology. For access to these materials, designed to serve the water resources community, write or call the Field Services Division.

Translations. Translations of brief foreign language correspondence received by the Department, as well as searches for material in translation, are provided by the Library.

#### Technical Services

The cataloging of monographs, serials, and periodicals is done through the Ohio College Library Center (OCLC, Columbus, Ohio). The Natural Resources Library is one of many federal, university, college, and public libraries that participates in this cooperative system. The NRL uses OCLC's on-line computer cataloging services for data input and for the production of printed catalog cards. Field libraries may join OCLC and access the system directly by applying through the NRL for membership. Libraries benefit in having access to large bibliographic data bases, by reducing the amount of original cataloging, and in increasing the production of catalog cards. High quality cataloging is available at both monetary and manpower savings. The same data base provides a single search location, a high hit rate, immediate file updating and interlibrary loan assistance. Searching is possible by author, title, or Library of Congress catalog card number.

The NRL follows the current Anglo-American Cataloging Rules in both its monograph and serials cataloging. Library of Congress classification and Library of Congress Subject Headings are also used. In certain instances, existing practices are modified to suit special cata-

loging requirements or for special types of materials.

Monographs. Cataloging of books uses the OCLC system. Field and branch libraries may use the cataloging services in one of two ways:

The NRL may handle all cataloging using its staff. The cards are printed by OCLC with all headings typed. Cards are sorted for each catalog in proper order and mailed directly to the field library. They can then be filed directly into the public catalog, shelflist, etc. In many cases, all NRL needs is a brief citation that includes author, title, edition, year and Library of Congress number (if available). If the NRL has cataloged it or can find cataloging by some other library in the system, cards can be produced quickly and at small expense. If cataloging cannot be found, the NRL would need the actual publication for original cataloging.

A field library, through the NRL, can become an OCLC member. This requires access to some type of teletypewriter terminal. NRL will handle the process of getting the profile and paperwork through for membership to OCLC and assist in training. Special assistance in the input and cataloging of materials, especially those of a complicated or complex nature, can be arranged.

Costs for the cataloging services performed by the NRL for field libraries are negotiated individually and depend on the nature of the field library's collection--how unique it is, how much special tailoring is required, and the method chosen to use OCLC on-line services.

Serials. The NRL uses the OCLC system to input all of its cataloging for both serials and periodicals. Data input to OCLC will be used to publish a new Union List of Serials, which will serve as an excellent tool for the bibliographic identification of these materials and also be used as the basis for interlibrary loan requests and for a duplicates exchange system throughout the Interior library network. In order to make this list as comprehensive as possible, NRL will catalog and input the serial and periodical records for any field library.

The Union List will show the history of each title, give information about which libraries in the Interior system hold the title and what each library's holdings are. All field libraries should have their holdings in this list.

#### Technical Services

The NRL is responsible for the procurement of books, periodicals, serials, manuscripts, reports, microtexts, maps, audio discs and tapes, data bases, photographs, etc. for the bureaus and offices of the Department. All bureaus and offices should use the Library's procurement services since this saves money for the federal government. The Library accepts any of several techniques for these acquisitions activities: purchase order, oral orders, blanket purchase arrangements, imprest funds, deposit accounts, or contracts. Audit trail and complete financial control for each transaction are built into the acquisitions system. Detailed financial reports are furnished to the ordering offices.

User benefits of the acquisitions system are: (1) order processing on a seven day cycle; (2) automatic claiming of unfilled orders, cancellation of unavailable publications notification of such action to ordering office; (3) cumulative alphabetical listing of all titles ordered by a particular office; (4) renewal subscription listing indicating expiring periodicals and serials; and, (5) searching for out of print titles. All bureaus and offices throughout the Department may order books and subscriptions through the Library's automated acquisitions system.

Gifts and Exchanges. The Library acquires Departmental publications as provided for in the Departmental Manual (481DM1.3B[3]). It: (1) maintains an active exchange of publications with more than 1,200 libraries and scientific research institutions located throughout the world; (2) serves as a clearinghouse for the utilization and disposal of excess publications acquired by the Department; (3) administers the Department's participation in the Special Foreign Currency Science Information Program and the translation program of the United States-Israel Binational Science Foundation; and (4) procures Soviet scientific and technical publications through the Department of State's Publications Procurement Program.

#### Other Services for Field Personnel

The Field Services Division maintains communication between the field libraries and the NRL and issues a quarterly publication, the NRL Newsletter, as well as an annual Directory of Libraries which lists all field libraries (and their personnel) of the Department of the Interior.

This division also provides training opportunities for field library personnel. The Annual Federal Inter-agency Field Librarians Workshop is specifically designed to help all library workers in the Department perform their duties more efficiently. Field library personnel may also arrange visits to the NRL and receive valuable training either in the Main Library or the Law Branch. Training is conducted in all aspects of li-

brary service. This provides the opportunity to keep current and gain experience with advanced library technology, i.e., computer assisted cataloging, computer literature searching, etc.

#### In Conclusion

In conclusion, we have a tremendous library facility available to aid us in our research activities. All

we have to do is ask for help from its staff. Why not try it for that next project? It may save you many headaches and false starts! That address again is:

Field Library Services Division  
Office of Library and  
Information Services  
U.S. Department of the Interior  
Washington, D.C. 20240.

#### TAKING CARE OF RAPIDLY DETERIORATING OBJECTS\*

by  
Ralph H. Lewis

Occasionally other specimens are acquired that need emergency treatment, those deteriorating too fast to wait their turn in the normal schedule of cleaning, repair or restoration and protective processing. This critical condition occurs most frequently when mold attacks a specimen, or when iron actively rusts. An oil painting which has begun to lose flakes of paint may also need prompt attention.

Mildew growing on a specimen should be killed at once. The mold digests part of the substance on which it grows, leaving the object weakened and often discolored. The spores develop quickly and may spread the infection. In the past, museums have fumigated the specimen with thymol, unless oil paint, varnish or thermoplastics were involved. Thymol fumes tend to soften these substances. Thorough treatment required about two weeks, using a cabinet, box or other container equipped with a 40 watt incandescent lamp. The lamp was mounted on the floor of the container, preferably with the switch outside. A small glass or ceramic dish supported about 2 inches (50mm) above the lamp contained thymol crystals, allowing 6 1/4 ounces (177g) for 100 cubic feet (2.8m<sup>3</sup>) of space (or 1 ounce [28g] for a standard specimen storage cabinet). The specimen was placed on an open rack a foot or so (300mm) above the dish. The container was closed, the lamp turned on for two hours, then turned off. It was turned on again for the same length of time each day for two weeks. The following day, the container was opened and the specimen removed.

Heat from the lamp melted the thymol and filled the container with fungicidal gas. Before returning the specimen to the collection, the remains of the mildew were cleaned off with a soft brush. Thymol sometimes irritates the skin and eyes. so users avoided touching it

or prolonged contact with the fumes. Note that thymol should be registered as a fungicide for specimens with the Environmental Protection Agency before museums apply it for this purpose.

If a molding specimen cannot be fumigated, take it outdoors to minimize contaminating the collection space. Remove as much of the fungus as possible with a soft brush. Then use a combination of mild heat and moving air to dry the specimen. A hair dryer, or an electric lamp and a fan may serve this purpose. When excess moisture that permitted the mildew to grow has been driven off, be sure to keep the specimen at a relative humidity below 55 percent. At a higher relative humidity, mold is likely to recur. Most organic materials should be kept in air always at 50 to 55 percent relative humidity. As an alternative to drying and brushing in some cases clean with a fungicide. A quaternary ammonium compound such as benzethonium chloride (for example, Hyamine 1622) in a 1 percent solution has a mild fungicidal effect. Like thymol, this chemical should have an EPA registration before museums use it. To treat painted or varnished wood that has molded, wipe it with a sponge or cloth dampened in the solution. Wipe shelves and other surfaces in the study collection room or exhibit room where the mold developed. This treatment may apply to some other specimens for which thymol fumigation is impractical. Record the use of benzethonium chloride on any specimen, because it may affect subsequent conservation measures. This chemical is very poisonous if swallowed.

When a specimen made of iron or steel is acquired with its finish in good condition, take prompt action to protect it. Do the same for silver, brass, and other metals. Fingerprints where you or others have touched the metal start corroding it at once and cannot be removed without damaging the surface. Therefore, always wear clean cotton gloves when handling clean metal. Moisture and pollutants from the air may induce rusting or tarnishing where you have not touched the specimen.

As soon as such an object is accessioned, wipe it thoroughly with a cloth to remove any finger marks and surface moisture. Then, rub on a temporary protective coating of neutral paste wax, e.g. Simoniz or Butcher's. This should keep the metal finish in its present condition until you are ready to have it cleaned and treated for study or exhibition. If you need to wash an iron object at this stage in order to remove surface dirt, give it a final rinse in a 2 percent aqueous solution of a complexing reagent such as sodium dihydroxyethyglycine (e.g. Versene Fe-3 Specific) and let it dry in air. This inhibits rusting. Keep the cotton gloves ready to put on whenever you must touch a metal specimen.

Oil paintings, like most specimens, deteriorate slowly. They reach a critical state when, through age or accident, flakes of paint begin to come loose. A well trained and skillful conservator can do wonders in re-attaching loose paint as long as it is still in its original position. Once it flakes off, however, you cannot put it back like pieces of a jigsaw puzzle. The problem is to hold the loose paint in place until the conservator can undertake the restoration of the painting. When an oil painting is accessioned, examine it carefully for evidence of flaking. If there are any signs of it, handle the picture with extra care to avoid loosening or losing any flakes. Lay the painting face up on a table or shelf so gravity will help hold the paint. Then consult a qualified painting conservator. One who is a Fellow of the International Institute for Conservation of Historic and Artistic Works (IIC) has estab-

*See DETERIORATING, page 12.*

\*This article is a reprint of pages 3841 of Ralph H. Lewis' book, Manual For Museums, National Park Service, Washington, 1976. This volume can be purchased for \$4.70 (paperback) from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. When ordering, please refer to stock number 024-005-00643-5.

DETERIORATING, from page 11.

lished his or her reputation in the profession and subscribes to its code of ethics. Describe the condition of the painting to the conservator. Park museums phone the central museum staff. If the painting should be faced, the conservator will provide a supply of long fiber tissue paper and dilute starch paste, with the special instructions required.

To face a painting means to cover part or all of the painted surface with a temporary reinforcement. The facing holds the paint firmly in place, but can be removed without damage to the painting at a later stage in restoration. The usual facing process begins

with laying the painting face up on the table. Support the canvas by placing under it within the stretcher a smooth block of wood or stack of cardboard cut to size. Cut a piece of tissue into a rectangle an inch or two larger than the area of loose paint. If the tissue does not exceed 6 inches (c. 150mm), it will be easier to handle. Lay it carefully over the weak area. Hold it gently but firmly in position with one hand. With the other, brush the diluted paste over the tissue. Use a good quality, clean paint brush about an inch wide (25mm). Start each stroke from the center and work out in opposite directions--left, right, up and down, in successive strokes. The wet tissue

becomes very fragile, so try to avoid tearing it. See that the tissue is in contact with the paint at every point leaving no bubbles.

Do not try to straighten out any wrinkles by lifting the tissue, because the paint would come away with it. If the condition of the painting requires it, you can cover the entire face with rectangles of tissue, overlapping the successive pieces a little at their edges. When the paste dries, the tissue forms a strong support for the loosened paint. Then, you are ready to ship a properly faced painting to the conservator for treatment.

#### CRM Division's Latest Book Releases

Mountain Home, The Walker Family Farmstead, Great Smoky Mountains National Park, Robert R. Madden, and T. Russell Jones. National Park Service, Washington, D.C., 1977. Government Printing Office stock number 024-005-00671-1. Cost: \$1.90 (paperback).

This booklet is based on research into the history of the Walker family and their home in the Great Smoky Mountains National Park. This research, conducted by Service personnel, provides the reader with a greater appreciation of the Appalachian Mountain people and their ways. It is offered as a tribute to those people who met the challenge of the mountains and who took delight in the life that those mountains gave.

The Walkers were resilient people who believed that dependence on any strength other than God's or their own was less than wholesome.

Close family ties and a strong pioneer faith were practically inherent. They were resourceful, strongwilled, self-reliant, and had an abiding love for the land and their home.

This booklet is good reading about the "good old days!" Try it, you'll like it!

Remote Sensing, A Handbook for Archeologists and Cultural Resource Managers, Thomas R. Lyons and Thomas Eugene Avery. National Park Service, Washington, 1977. 109 pages, 64 illus., 8 color pls. Government Printing Office stock number 024-005-00688-5. Cost: \$3.00 (paperback).

A major responsibility of the National Park Service is the study, analysis, inventorying and monitoring of the historic and prehistoric record that men have left behind. Such cultural resources are found in virtually every environmental setting in our country. The task is enormous.

Modern tools are required to help the managers and interpreters of these resources do the job of protecting and preserving them for posterity and making them available to the interested visitor of today. Remote sensing technology provides one such tool, and this Handbook and planned subsequent supplements provide managers and archeologists alike with basic information needed to apply the techniques to their needs.

The project is based upon six years of applications research in the Chaco Canyon National Monument region of northwestern New Mexico and in other Park Service areas across the country. There will be updates in the form of supplements on the regional application of remote sensing techniques.

This is must reading for the serious cultural resources manager interested in the non-destructive research tools available through today's technology.

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## CRM BULLETIN

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