

THE GEORGE WRIGHT

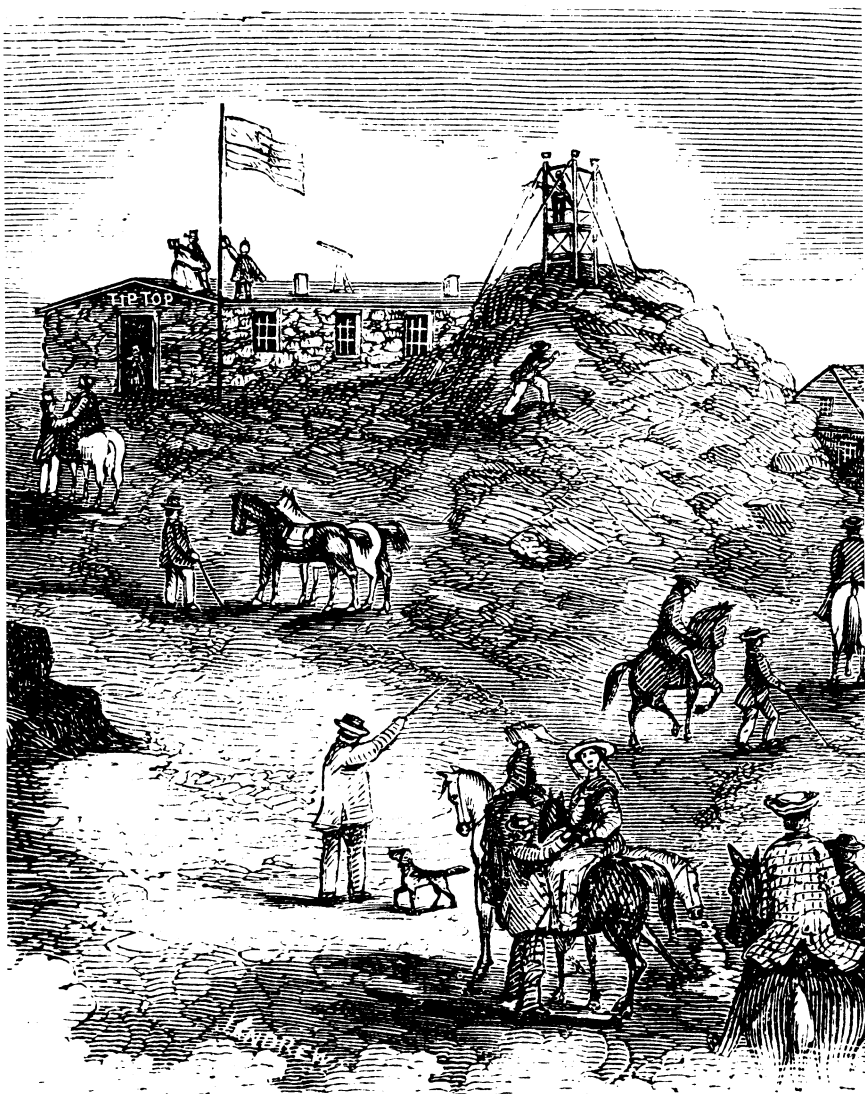
FORUM

A JOURNAL OF CULTURAL AND NATURAL PARKS AND RESERVES

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Number 2



THE JOURNAL OF THE GEORGE WRIGHT SOCIETY

Dedicated to the Protection, Preservation and Management
of Cultural and Natural Parks and Reserves
Through Research and Education

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Cover Illustration: Tip Top House and the top of Mount Washington. From a late nineteenth-century wood engraving by J. Andrew. Photo courtesy of the New Hampshire Historical Society. Article begins on page 42.

Letter from Gustavus

Back to the Big Bang

May 6, 1994

Historic preservation is a broad subject. As we usually think of this subject, it concerns the recent artifacts of humankind—over the last several millennia. But history, in its broadest sense, goes back much further. For the cosmologist, it begins with the Big Bang, some 10 to 20 billion years ago, at least for this phase of the history of the universe. For the earth-bound geologist it goes back 4.5 billion years. For the biologist, 3.5 billion years. For the anthropologist, perhaps 5 million years.

Our particular history today—as individuals, as a species—is interlocked with all of that that went before. Parks around the world preserve elements of that long before. They trace the evolution of earth and of life thereon, and of hundreds of cultural experiments by which our ancestors organized their lives to meet the world and survive in it—or to fail and be superceded.

Until very recently, most of those cultural arrangements—however varied in plumage—were heavier on adaptation to the world than they were on modification of it. (That does not mean that the world was not altered by earlier people; culture-group failings and supercedings were in part caused by such alterations—megafauna kill-offs, hydro-agriculture, deforestation, etc. But most of them were localized, in today's terms.)

Just yesterday the tables turned, or so it seemed. The world became our oyster. And we pried it open for what it contained. We, the last few generations, have been the beneficiaries of what economic historians call “the free lunch”—that is, the material abundance (however ill-distributed) that followed the shift from muscle power to fossil-fueled industrial power. The machine bred further inventions, R&D labs, and, in the last 50 years, the full onslaught of applied science and technology in every field—chemical, electronic, genetic, nuclear, optical, you name it.

We know now that that lunch was and is not free. We look around at a world despoiled of resources, piled and awash in de-

bris—much of it glowing in the dark. Our children and all future generations inherit that world.

How did this happen? What are the turning points of the human adventure? Where did we go right and where did we go wrong?

What are the benchmarks—in human and natural history—that we can use to conceptually reconstitute the world as it was, before these most recent degradations? Such benchmarks are our guidons for reclamation. They are the reliquaries of the world before.

History isn't bunk anymore. Nor is it a pleasant antiquarian pursuit. It is a belay for we who dangle from the precipice. If we learn to use it well.

Learning to use effectively the history in the world's national parks hinges on a vastly expanded understanding of the scope and value of that history.

Historic preservation—even in the narrow, conventional sense—must comprehend more than bricks-and-mortar and memorial landscapes. It must provide, by design, the setting for understanding the ideas and assumptions underlying the structures and events commemorated. It must provoke hard analysis of the results of those ideas and assumptions.

Preservation of the broader history that preceded buildings and battles—that is, preservation of the evolutionary stage from which we and our supporting cast sprang, and which, despite our abuses, still sustains us—becomes a sacred trust. For that stage, the less-degraded fragments of it that we save, is the map back home.

These different scales and scopes of history combined—what we did to get here; the homeland that we left—just might help us cook a new synthesis, one that works.

Preserved places—environments natural and built—should function as new-age laboratories to help us in that task.

Keep the faith,

Bill Brown

Gustavus, Alaska

Planning Continues for 1995 Conference

Well over 100 abstracts for proposed papers, and about 20 session proposals have been received for the 1995 conference in Portland, Oregon. These have been sent to the Program Coordinators. By about August 1st the conference agenda should be fairly well set. We still plan to send out registration packets in September to those who have requested one—if you haven't and you want one, let us know.



Announcing

International Conference on Northern Wilderness Areas “Ecology, Sustainability, Values”

This conference will be held jointly with the 2nd Arctic Week, in Rovaniemi, Finland, 7–9 December 1994. The conference is organized by The Arctic Centre, University of Lapland, Rovaniemi; The Finnish Forest Research Institute—Rovaniemi Research Station; and sponsored by The Academy of Finland.

Major conference themes are 1) Nature and ecology of northern wilderness areas; 2) Use, culture and values of wilderness areas; and 3) Management of wilderness areas. The conference language is English.

For further information, contact

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Nominees Sought for GWS Awards

Every two years at our conference, the GWS bestows one or more awards on people who have made valuable contributions towards our goal of improving protected area research, management, and education. The awards are:

- ◆ **The George Melendez Wright Award for Excellence**, the Society's highest award. It is given in recognition of senior-level contributions on behalf of the Society or in furtherance of its purposes.
- ◆ **The GWS Cultural Resource Management Award**, given in recognition of excellence and achievement in managing the cultural resources of parks, reserves, and other protected areas.
- ◆ **The GWS Natural Resource Management Award**, given in recognition of excellence and achievement in managing the natural resources of parks, reserves, and other protected areas (given in memory of Francis Jacot).
- ◆ **The GWS Communication Award**, given in recognition of excellence in communication, interpretation, or related areas pertaining to the purposes of the Society.
- ◆ **The GWS New Scholar Award**, given in recognition of excellence in published research in any field applicable to furtherance of the purposes of the Society. It will be given to recipients early in their professional career (age is *not* a criterion).

Recognition for all awards will include a travel stipend to the GWS conference, a waiver of the conference registration fee, a framed certificate, and a year's complimentary membership.

All GWS members are invited to submit nominations to the Awards Committee of the GWS Board, which will make the final decisions. Nominees do not have to be members of the Society; however, only members may make nominations, which should include the name, address, telephone, and fax number of the candidate, as well as those of the member making the nomination. The nomination should be in the form of a one page summary of the candidate's specific accomplishments as appropriate to the award being sought. Recommendations for the New Scholar Award should further include a copy of the published work for which the nominee is being considered.

Nominations should be sent by October 1, 1994, to The George Wright Society, Attention: Awards Committee, P.O. Box 65, Hancock, Michigan 49930-0065 USA.



6th National Wilderness Conference

Santa Fe

November 14th – 18th
1994

Registration packets are expected to be in the mail shortly for this conference. See The George Wright FORUM –Volume 11, Number 1, Page 10 for our previous announcement.

Guest Editor: William H. Mulligan, Jr.

Department of History, Murray State University, Murray, Kentucky

Introduction to this Issue

For many years, beginning at least with Alexis de Tocqueville's observations on democracy and on Americans, Americans were remarkable for their lack of concern for their past, either individually or collectively. We lived, as a nation, in the present, or, more accurately, for the future. Newer was necessarily better; there was never a question in the minds of most Americans. This characterized our society and set us apart from much of the rest of the world for most of our history. The landscape of our society shows the results of this approach to our heritage.

Remarkably, within the last thirty years there has been a sea change in the United States and popular interest in history has emerged on a large scale and blossomed. This is not an academic interest but a broadly based, popular concern with two main components: a desire to connect with the places where events, both great and small, happened; and an interest—in some cases nearly an obsession—with genealogy, the most personal form of history. One of the most important factors in this change was the television mini-series *Roots*. Other important influences include the bicentennial of the Revolution and another television series, Ken Burns' *The Civil War*. Interest in historic structures, historic sites, and historic areas is growing. The tourism industry is dealing with an increased interest

in all of these things and with a generalized desire to connect with the specific character and history of a place. Among other things this drives the proliferation of bed and breakfasts in "historic" houses. It also stretches resources needed to preserve and interpret these newly discovered national and local assets.

This discovery of the special qualities of historic places comes at a time when the generation that came of age during the Depression, fought the Second World War, and rebuilt the world and America in its aftermath has the leisure and the resources to travel in numbers unprecedented in our history. The return to Normandy and to the scenes of the decisive events in the Second World War—in the lives of their generation—is only part of this effort to connect with values and a sense of pur-

pose that seem to have been lost. Their children, who grew up in the reconstituted post-war America, also seek a sense of purpose and direction that history can provide. Perhaps we are concerned now with our past as a nation and as individuals because, for the first time in our history, we are unsure about our future?

This concern for our past, and the structures, sites, and landscapes that connect us to it, presents many opportunities and many challenges if we are to preserve them and make them accessible. The papers in this volume are not theoretical discourses on what should be done, but more like reports from the front on what is being done, complete with the sometimes unfinished nature of such reports. We don't know how the battles to preserve our heritage turned out, because it is not yet over. The many fronts the battles rages on and the early reports are encouraging, but the end is not in sight.

Whether Mickey Mouse and Donald Duck are allies in the struggle or portents of failure beyond redemption remains to be seen. (Goofy does seem ideal for casting as a Union general during the early days of "the late unpleasantness" though, doesn't he?) The interest of their masters in our history and its sacred grounds shows just how powerful the past, and the ability to connect to an authentic piece of that past, has become as an attraction for Americans and suggests that a new stage in the battle to save our

cultural resources has begun. The bad guys may no longer ride bulldozers and hold blueprints for steel and glass boxes to replace or fill in historic places. They may seek to "enhance the experience" or "complement the resources," but as we learn more about the fragility of historic and cultural resources and look back at the devastation wrought on scenic and natural areas under the same rubric, we have reason to be concerned. How much enhancement can a historic site absorb before it becomes something quite different?

I want to thank the contributors to this issue who took time from their work to share reports on what they have been doing and how they see the battle from their corner of the field. Each has taken his or her own approach, and I think the diversity of these essays is a fair approximation of the diversity of the work that goes on. I gave them few guidelines beyond the theme of the issue and a request to share their ideas and their experience. As pleased as I am with the results, I do regret that no one working outside the United States responded to our call, made in person in several cases, for contributions. The focus on the U.S. was not by design and is unfortunate because there is not only a great deal of activity in these areas in other countries, but a lengthier track record to observe. I also want to thank Bob Linn and Dave Harmon for this opportunity and for their good work.

I have long viewed the struggle to save our cultural heritage as very similar to a war with, as in any war, many battles. Few, if any, of these battles will go according to plan, no matter how hard and how well we plan them. So it is critically important to have a clear vision of how the past can serve the future and common agree-

ment on our goals, and to see the importance of even the most localized battle. I hope these reports on the work that is being done help clarify the importance of the past to the future and highlight the value of each and every battle that seeks to save part of the past.

..... William H. Mulligan, Jr.

About the Authors

Harry A. Butowsky is a research historian with the National Park Service in Washington, D.C. He is the author of five National Historic Landmark Theme Studies, including *Man in Space* (1983), *Warships Associated with World War II in the Pacific* (1985), *The U.S. Constitution Theme Study* (1986), *Astronomy and Astrophysics* (1989), and *Geology Theme Study* (1994-draft). He is the author of more than 50 articles concerning the history of the American space program and American constitutional, social, military, and labor history. He received his B.A. degree in history from Pennsylvania State University and his M.A. and Ph.D. degrees from the University of Illinois.

Craig Drone was educated at Texas Tech University in Lubbock, where he earned a Bachelor of Architecture degree in 1988 and a Master of Architecture degree in 1990, with a specialization in historic preservation. Upon graduation, he worked as a summer intern for the Historic American Buildings Survey in Charleston, South Carolina. Since that time, he has worked as a historic architect with Fischer-Wisnosky Architects, Inc., of Springfield, Illinois. In this position, he has worked on preservation projects that include the Dixon Historical Center in Dixon, Illinois, and several historic structures within the Lincoln Home National Historic Site, a few blocks from his office.

Susan Deaver Olberding lives near Flagstaff, Arizona. She has a Master's degree in history from Northern Arizona University and works as an independent historian, focusing primarily on Southwest topics. Her book on the history of the USFS Fort Valley Experiment Station is in progress.

Parker B. Potter, Jr., is the administrator of planning and registration and the director of publications for the Division of Historical Resources, which is New Hampshire's state historic preservation office. Prior to his employment with the state, which began in 1987, Potter spent four years in Annapolis, Maryland, as the assistant director of "Archaeology in Public in Annapolis." While in Annapolis, he researched his Ph.D. dissertation (Brown University, 1989), which is being published this summer by the Smithsonian Institution Press as *Public Archaeology in Annapolis: A Critical Approach to History in Maryland's Ancient City*.

Nancy Jo Chabot is the assistant registrar at the New Hampshire Historical Society in Concord. Prior to that, she worked as a consultant in public archaeology (with the Public Archaeology Facility in Binghamton, New York) and in historical interpretation (with Chabot & Clark of Concord and Manchester, New Hampshire). Trained as an archaeologist, she holds an M.A. in anthropology (State University of New York at Binghamton, 1992) and has done a wide variety of historical and prehistoric survey and excavation in Virginia, Maryland, New York, and New Hampshire, as well as in Israel and Honduras.

Susan Stevens has an M.A. in creative writing from Northern Arizona University in Flagstaff, and has taught high-school English on the Navajo reservation. She recently retired from the U.S. Forest Service, her last assignment having been on the Prescott National Forest. She now pursues freelance writing and will soon become an English instructor at Yavapai College.

Dana B. Supernowicz is a Zone Historian with the U.S. Forest Service, based on the El Dorado National Forest in Placerville, California. He received his M.A. in history from California State University-Sacramento, and has been employed with the federal government for 15 years in the fields of history, archaeology, and historic preservation. He is active in several local history and preservation groups. He is currently working on numerous nominations of vernacular properties in the Sierra Nevada to the National Register of Historic Places.

E. Steve McNiel is on the faculty of the Landscape Architecture Program at the University of California-Davis. He has taught at three major universities over a 20-year period and conducts courses and lectures nationally and internationally on the use of computer technology in land planning and cultural preservation. He currently serves as principal investigator for GIS-based research for the USFS, the Department of the Navy, the Yosemite Rail Road Company, and the California Coastal Conservancy, and as a consultant to several agencies and firms.

Rebecca Yamin is a principal archaeologist and project manager with John Milner Associates in Philadelphia. She did her undergraduate work at the University of Pennsylvania and received a Ph.D. in anthropology from New York University in 1988. Her dissertation is a historical archaeological study of local trade in pre-Revolutionary New Jersey using data from the Raritan Landing excavation in Middlesex County and comparative data from sites in lower Manhattan. She directed the interpretive program for the Morven landscape archaeology project in Princeton and has taught two Rutgers University field schools on the Walnford site in Monmouth County, New Jersey. She is presently the principal investigator for the Five Points site in New York City.

William H. Mulligan, Jr., is Visiting Assistant Professor of History at Murray State University, Murray, Kentucky, where he teaches courses in U.S. history and public history.



Rethinking Labor History

The West Virginia/Virginia Coal Mining Industry

Harry A. Butowsky

U.S. National Park Service, Washington, D.C.

After several years of planning the National Park Service has now begun the Labor History National Historic Landmark Theme Study. This study will combine the highest standards of historical scholarship with the practices of the historic preservation community to preserve and interpret for the American people the rich and culturally diverse heritage of labor in America. The Labor History Theme Study is intended to serve as a vehicle through which government, the private sector, organized labor, the academic community, and other interested parties can cooperate to recover, interpret, and preserve the key sites in American labor history in its fullest variety. This history encompasses the entire life span of the nation since the founding of America and provides a window on America's past that is largely unacknowledged by the historic preservation community.

There are many facets to this history that are now under study by the National Park Service. These facets touch all areas of our history and impact every region and state. The Labor History Theme Study has the ability to provide links between seemingly disconnected parts of American history and to bring into focus subjects that have been overlooked by the more traditional studies. Sites associated with the Labor History Theme Study may not have the individual and immediate recognition of national significance associated with properties such as the USS Arizona Memorial, Independence National Historical Park, Women's Rights National Historical Park, or the Brown v. Board of Education National Historic Site, but they are

the glue of American history and have the capability to bring into focus important parts of our history associated with the working men and women of this nation.

The West Virginia/Virginia Coal Mining Industry

Recent issues raised concerning the preservation of the historic resources associated with the coal mining industry in West Virginia and Virginia illustrate these issues. While the most immediate question now faced by the historic preservation community in West Virginia and Virginia involves reaching an agreement concerning the best methods and techniques to preserve these resources, other issues regarding the proper role of federal, state and local governments, private preservation orga-

nizations, the coal mining industry, the coal miners, the United Mine Workers of America (UMWA), and other interest parties must also be addressed.

The way these questions are resolved will determine what we as Americans believe is important about our history and culture and how much time and resources we are willing to commit to preserve this heritage. Hopefully the resolution of this question will provide a positive course of action that will generate jobs, protect the environment and preserve the traditions of local pride and independence associated with the coal mining industry.

The Present Condition

The glory days of coal are now gone. At one time, prosperous coal company towns dotted the landscape of Virginia and West Virginia. These coal company towns now exist on the edge of extinction. The economic base (coal) has diminished and no one industry has replaced it. Announcements concerning the closing of additional mines continue to make local headlines. The economic repercussions associated with the continued slide in the coal mining industry seem to go unnoticed by the nation at large while the people suffer and endure. The history of the men and women who worked in the coal mines and supporting industries is in danger of being lost to the national memory.

The Labor History Theme Study will assist in the documentation of this proud history that re-

flects the record of the Industrial Revolution that brought America to the heights as the world's pre-eminent industrial power of the 20th century. The efficient mining of coal and the cheap power this resource provided for American industry formed the foundation of America's climb to greatness as a world industrial power. This story is important and needs to be told. Through the preservation of selected sites the wide and diverse themes of this story can be interpreted to the American people. These interpretive themes can be summarized as follows.

Industrial History. Paramount in the region's economic history, the coal industry has been of critical importance in the development of the national industrial economy. Historically, West Virginia and Virginia coal has been widely considered as unsurpassed in quality. Some of its seams are the best in the world. West Virginia coal fed the boilers of the nation's trains, factories, fleets, and power plants. As a processed fuel (coke) it helped satisfy the enormous appetites of the nation's iron furnaces. West Virginia coal was the basis for the tremendous growth of the American economy in the 20th century, and played a critical role in sustaining America's "arsenal of democracy" in wartime.

Union History. The West Virginia and Virginia coal fields also illustrate the struggle of American workers to secure the right to be represented in a union and to have some control over their working conditions.

The historic role of the United Mine Workers of America for example, has been to unite the miners into one body with a common set of goals and beliefs. This, however, took years of struggle, since the introduction of the union was adamantly opposed by the coal operators. The low wage structure was their competitive advantage in the dog-eat-dog regional competition in the 1910s and 1920s. They fought the UMWA with all the weapons they could garner. The UMWA, with its base of strength in the northern fields, realized that it was threatened with extinction if the nonunion mines of West Virginia continued to out-produce and steal the markets of the union mines. Therefore, the UMWA concentrated all its energies on organizing West Virginia. It is no surprise that West Virginia became a battlefield in the early years of this century. Throughout the mine wars, there were many bastions of nonunion strength which remained unorganized until 1933 with the passage of the National Recovery Act. Labor contracts signed by the mine owners and the UMWA established a standard for fair wages and decent working conditions that impacted industries far beyond the coal fields of West Virginia and Virginia.

Ethnic History. In many ways the ethnic history of the coal mining fields of southern West Virginia/Virginia is a microcosm of the ethnic history of the United States. These coal fields were

scarcely populated before the coming of coal. The small population was inadequate to serve the needs of the labor-hungry coal industry. Coal operators were forced to recruit labor from three sources: white Americans from older coal regions, black Americans from the south, especially Virginia and North Carolina, and immigrants from Southern and Southeastern Europe. Many coal companies became and remained active in recruiting labor, sending agents to New York City to attract the rapidly growing influx of European immigrants including Italians, Hungarians, Poles, Russians, Slavs and Rumanians.

Social History—The Company Town. The company town was the most important institution in the coal fields of southern West Virginia. Since most mines were opened in virtually unsettled areas, there was little existing housing for the influx of laborers. Housing was a necessity, and the coal operators were the only parties in the region with the wherewithal to build it. The location of the company town was determined, not by considerations of health or community life, but by the proximity to the mine outcrop. The facilities for mining, the mine opening and tippie, were built first. Next, consideration was given to the location of railroad siding. Finally, in the remaining space, whether it was valley floor or hillside, the town was laid-out and constructed.

The social history of the typical coal company town is illustrative

of the status of American race relations of the time. The different racial groups were segregated, with the native whites occupying the choicest dwellings near the tipple, the foreigners in those on the fringes of the settlement, and the blacks in houses that were often separated from the main cluster. Although segregation did not apply inside the mine, there was a hierarchy of occupations. The majority of native whites held the higher paying and more authoritarian positions, such as superintendent, foreman, fire boss; they most often operated the machinery. Some whites were also coal loaders, the lowest occupational category. The foreign born were on the second echelon of the occupational ladder, holding some machine jobs and machine helper jobs and being loaders. Blacks were the lowest on the occupational ladder, rarely having machine or machine helper jobs, and almost always being coal loaders.

Technology. Another important theme that is illustrated by these resources concerns the role of technology in the industrial revolution. When the first coal mines in southern West Virginia were started in the 1880s it took only modest capital investment of a few thousand dollars. Nearly all of the early mines were drift mines, so expensive excavation equipment or hoists were not required. The operator had to provide little more than housing and a store for miners, a simple wooden tipple, mules and some light track. No power machinery

was used, and the miners supplied their own picks, shovels, and tamping bars. The small capital outlay necessary for opening made it easy for the small operator to enter the industry: a situation which created a highly competitive industry with a large number of firms, and because it encouraged production, ultimately led to the overexpansion of the industry.

The evolution of the mining industry in this century was marked by the disappearance of the small-time and indigenous operators. Large corporations soon dominated the industry and introduced technological innovations, such as loading machines, necessary to increase output per worker and changed the industry forever. While technology helped to make the industry more cost effective the loss of good paying union jobs was severe.

Local History. When the coal industry began its "boom" in the southern coal fields, the number of mining jobs increased dramatically. However, with the exception of the coke industry, it generated very few manufacturing jobs. Most of these manufacturing jobs were in the coke industry. This meant that the economy of the southern West Virginia and Virginia coal fields was built on a narrow base of resource extraction, rather than manufacturing. Because the coal lands and major coal companies were absentee owned, there was little in the way of profits from mining that could be re-invested in other industries. This dependence

upon coal placed the region at the mercy of the national coal market, a situation which had harmful consequences not only for the coal industry, itself, but also for the development of housing and infrastructure in the region. The decline of coal after World War II illustrates the dangers of depending on the extraction of only one resource as the basis for a regional economy. As the industry of America matured, the towns and communities in the coal fields failed to change. This inability to change led to the loss of jobs and the devastation of the population and economic infrastructure of the West Virginia and Virginia coal fields. The lesson is clear. The economic health and preeminence of any community is not assured for all time. Change and evolution are necessary for economic survival.

Summary

The history of coal and of the men and women who worked in the mines is a consequential story that should generate self-esteem in these communities and pride for the nation. Coal was central to the development of the industrial might of the United States. The struggle of the coal miners for union recognition, decent wages and safe working conditions was reflective of the desire of the American worker for social justice, equality and economic opportunity. The men and women who came to the coal fields of West Virginia and Virginia were seeking a part of the American dream. They wanted high paying jobs and

the opportunity to work and support their families. The coal mines gave them this opportunity. In the struggle to unionize they changed the industry and re-defined the American dream.

The history of coal also illustrates an important ecological lesson. Coal, an important resource that once fueled the Industrial Revolution in America, is now used primarily as the underpinning of the American chemical industry. Coal is a natural resource of incomparable worth. Coal and the people who worked in the mines are resources that are now being recycled to support the continuing evolution of the American Industrial Revolution. We may no longer burn large amounts of coal for fuel, but we do utilize coal as a chemical resource that forms the basis for many of our present day industrial activities. Coal is part of our future. This story needs to be told to this generation of Americans.

Through the implementation of the Labor History National Historic Landmark Theme Study, Congress intended that concerned interested groups working with the National Park Service should begin discussions with leaders from local communities to develop planning strategies to assist these communities in the preservation and interpretation of their locally based but nationally significant labor history resources. It is the intention of the National Park Service to see that this is done in a manner that will acknowledge the national signifi-

cance of the labor history inherent in these sites and respect other issues involving local pride, and the nature of our federal and state form of government. The resources associated with the coal mining industry in West Virginia

and Virginia offer an insight as to what is possible. The challenges are great but rewards resulting from the preservation and interpretation of the coal mining heritage sites in West Virginia and Virginia are worth the effort.



The Opana Radar Site

Harry A. Butowsky

U.S. National Park Service, Washington, D.C.

The events leading to the Japanese attack on Pearl Harbor on the morning of December 7, 1941, have been examined and reexamined by legions of scholars. Questions relating to why and how the attack took place have tended to obscure other facets of the Pearl Harbor story including the significant roles played by the ordinary servicemen and women and the new technologies of war in the circumstances leading up to and issuing from the events of December 7, 1941.

Even before the Japanese attack on Pearl Harbor the gravity of the situation in the Pacific was not lost on the American public. Japan's attack on Manchuria in 1931, her assault on Shanghai in 1932, and her invasion of China in 1937 turned the United States from a traditional friend of Japan into a potential enemy. Japanese actions during the 1930s posed an intolerable threat to American holdings in the Western Pacific and to the security of the United States. As the United States Government began to clarify its policy in Asia and the Pacific and to oppose Japanese expansion, relations between the two powers deteriorated.

While the diplomats argued, scientists in the laboratory were experimenting with a new technology that would change the face of warfare. This was radar (radio detecting and ranging), a system that had the ability to detect long-range objects. Radar could determine the positions of distant objects through the measurement of the time taken for the radio waves

to travel to an object, be deflected and return. Starting in 1935, Britain installed a series of radar stations on the southern coast of England. These stations proved to be a major factor in winning the Battle of Britain. Beginning in 1940, England and the United States collaborated in the further development and refinement of this new technology of war.

The United States Army closely examined the potential use of radar during these years. As early as December 1939, the Army, under the direction of the Secretary of War, established an Aircraft Warning Service (AWS), using radar for the defense of American territory including the Hawaiian Islands. Colonel Wilfred H. Tetley USAF (Ret.), was given command of the newly created AWS. Under Col. Tetley's direction mobile radar detector sets were installed at Kawaihoa, Wainae, Kaawa, Kokohead, Schofield Barracks, and Fort Schafter on Oahu. SCR-270 radar equipment, the latest in the Army inventory, and newly developed by the U.S. Army Signal

Corps at Fort Monmouth, New Jersey, was installed.

These newly installed radars appeared to hold great promise when in September 1941 the radars at Waianae and Koko Head, detected planes at a range of 85 miles. On Thanksgiving day in 1941, the same day the Japanese fleet sailed on the Pearl Harbor mission, the Schofield Barracks training set was relocated to the Opana site, on a knoll in the foothills of the Koolau Range near Kahuku Point on the Island of Oahu. By early December 1941, there were six operating radars on the Island of Oahu, including Opana.

The radar sets on Oahu were intended to be but one component of an integrated air defense system. The AWS with its six mobile long-range radar installations, the Aircraft Warning Communications net and the Aircraft Information Center were all to be tied together as one operating unit. The Army Air Corps was changing its pursuit squadrons into interceptor squadrons for a planned Interceptor Command. The Army Anti-Aircraft Artillery batteries were undergoing modernization to employ their new SCR-268 radar. The integration of these commands and missions into one smoothly functioning unit was planned to occur automatically at the onset of hostilities. By December 1941, although the pieces were in place, the integration had not yet occurred.

The SR-270B mobile radar set operating at the Opana site was a

complicated and heavy affair. Each unit consisted of four trucks.

One truck contained a van with a motor-generator set and a rectifier and another truck housed a van containing the transmitter and receiving equipment. The antenna was a folded frame that was towed behind another truck and the last truck contained equipment mounted on the antenna. The men who manned the radar installations were mostly volunteers with a technical background in electronics. At the Opana site, Private Joseph L. Lockhard from Harrisburg, Pennsylvania and Private George Elliot from Chicago, Illinois, were typical volunteers.

In the early hours of the morning of December 7, 1941, the roles of the ordinary servicemen stationed at Pearl Harbor and the use of this new technology came together when at 7:02 A.M., George Elliot, who was practicing with the radar set, detected the approaching aircraft. Elliot and Joseph Lockhard reported their findings to the temporary information center at Fort Schafter. Since this report came in after the designated watch time (4-7 A.M.), the information center staff had already gone to breakfast. On duty that morning was Lt. Kermit Tyler, a pilot with the 78th Pursuit Squadron, stationed at Wheeler Field, Hawaii and a telephone operator. Lt. Tyler had been on duty since 4 AM and this was only his second time at the Information Center. After receiving Private Lockhard's report. Lt. Tyler reasoned that the radar blip was a

flight of Army B-17 bombers due in that morning. Lt. Tyler instructed the Opana Radar operations to disregard the information and "not to worry about it."

Elliot and Lockhard continued to plot the incoming Japanese planes until 7:40 AM when the contact was lost in the background interference as the planes approached Oahu. Both men then secured the Opana radar shortly before 8 AM and headed down to Kawaihoa for breakfast. On the way down the road they passed a truck speeding back the other way to Opana. It was only after they arrived at Kawaihoa that they realized Pearl Harbor was under attack. Elliot and Lockhard immediately returned to Opana and helped to operate the radar around the clock. More soldiers arrived armed and ready to repel the expected Japanese invasion that never occurred.

The story of the Opana radar and the men who operated the site is world famous and has entered the mythology of World War II history. For most observers, the most immediate lesson of this history is the story of the first operational use of radar by the United States in wartime. In spite of this achievement, the Japanese were still able to carry out their attack. The failure to warn the Army command in Hawaii on the morning of December 7, 1941, was not a failure of the technology as much as it was a failure of organization. The use of radar was not fully integrated into an air defense system. While the

technology of radar functioned, as intended, and detected the incoming planes, there was no way to accurately assess the information and communicate this knowledge to those in command. The army planes remained on the ground and Army high command did not learn about the Opana radar sightings until after the attack.

In spite of this, the significance of the sighting and the important role of radar in wartime was immediately recognized by both the Army and Navy. Privates Elliot and Lockhard had detected the incoming flight of Japanese planes and had reported this fact to their superiors. Ordinary men, placed in extraordinary circumstances, they performed their duty as expected.

An even more significant aspect of the Opana radar story was the fact that the potential military implications of radar was now obvious for all to see. The use of radar gave the United States the important technological edge that was needed to redress the balance of power with Japan in the Pacific in 1942. In the months after Pearl Harbor the United States Army and Navy were to use this technology again and again to scoop Japanese ships and planes out of the fog of war and to mount an early defense against future attacks.

The implications of the events that occurred on the morning of December 7, 1941, at the Opana Radar Station were long-lasting and far-reaching. After the lessons of Pearl Harbor were assimilated, the United States embraced the

concept of large scale government-funded research to develop the weapons needed to win a modern war. Radar was quickly followed by electronic countermeasures for air and sea combat, infrared bomb-sights, the bazooka, the proximity fuse for artillery, jet engines, missiles, the first electronic computers and eventually the atomic bomb.

The large sums of money invested in this research and development by the United States would forever change the modern world and the role of Government in the direction of the Nation's scientific and educated elite.

What happened at the Opana Radar Site on the morning of December 7, 1941, illustrated not only the immediate value of technology in modern warfare, but also served to hasten the embrace between technology and the modern state. This embrace provided the advanced weaponry that would give the United States the edge necessary to secure victory in the war. In the years after 1941, this union would evolve into what President Eisenhower called the "Military-Industrial Complex."



Almost half a century after the end of World War II and two years after the end of the Cold War we are still grappling with the implications of state funded and directed research of science and technology, that had its origins, in part, in the events at the Opana Radar Site on the morning of December 7, 1941.

Final Note

Since the Opana radar was a mobile unit there is no physical evidence of the original radar installation today. The unit was never permanently anchored to the site. No monument or marker can be found on the site to identify its historic role in the history of the Pearl Harbor attack. A modern telecommunications station operated by the Navy occupies the top of Opana Hill which still provides an unobstructed view to the sea. The telecommunications installation is adjacent to the original Opana radar site and is surrounded by a high security fence. In 1991 the Opana Radar Site was listed in the National Register of Historic Places. The Opana Radar Site is now under consideration for designation as a National Historic Landmark.

Mr. Lincoln's Neighbors

Historic Preservation/Restoration at the Lincoln Home National Historic Site

Craig Alan Drone

Fischer-Wisnosky Architects, Inc., Springfield, Illinois

Lincoln Home National Historic Site was created and authorized by Congress in 1971. The site includes the only house Abraham Lincoln ever owned and the four-block middle-class neighborhood surrounding it in Springfield, Illinois. Most of these homes were single-family residences built during the boom periods of the 1840s and 1850s following the city's selection as the new state capitol in 1837.

Lincoln's twenty-five years of personal and political contacts in Springfield, many with his civically and politically minded neighbors, undoubtedly contributed to the development of the man and the president. With this in mind, the National Park Service established the year 1860, Lincoln's last full one in Springfield before heading for Washington, as the target date for interpretation of the neighborhood and preservation/restoration of the historic structures at the Site.

Preservation/restoration activities at the Site have been undertaken and completed at several homes in the neighborhood. The primary project, of course, has been the Lincoln Home itself, which has been completely restored, both inside and out, for full interpretation to visitors. The other structures, intended to set the character of the neighborhood in 1860, have been, or will be, restored and preserved on the exterior. The interiors are sensi-

tively adapted to fit the needs of the Site's staff, to act as display space, or for office space for other governmental agencies leasing the houses.

Preservation/restoration at the Site has been guided by the typical historical sources and physical evidence used in this field of work. However, with the exception of Lincoln's Home, the Site is dogged by a lack of pictorial evidence of the neighborhood prior to Lincoln's departure. Existing Lincoln-era photographs of structures in the park are limited to Lincoln's Home or partial views of neighboring houses and outbuildings seen in the background of these photographs. Further, there is an eleven-year gap in the cartographic evidence (a 26-year gap in what is considered dependable evidence—the first Sanborn map dated to 1884) corresponding to an era which saw significant improvements to many homes in the neighborhood. This gap also includes the 1860 preservation tar-

get date. By the time dependable sources record these structures, the Lincoln-era house has often been altered by later additions changing the character of these houses. The alterations continued until very near the present time, following more than a century of metamorphosis of the houses to meet the needs of growing families, increased affluence, changing ownership, and altered occupancies (including office, museum, and multi-family dwellings).

Today, the structures are often unrecognizable as Lincoln-era buildings. The loss of fabric makes preservation/restoration to the target date a formidable, if not impossible, task. Each house must be individually studied to address the basic question, "Can the house be restored to the 1860 target date?" If not, what is an appropriate plan of action to provide for an accurate restoration of the house while providing the visitors with an experience befitting the mandate of the Site? Three current projects best exemplify the problems and possibilities on the Site in attempting to restore and preserve the structures to the mandated 1860 target date.

The Harriet Dean House (HS-13) was built as a simple one-room gable-roofed cottage (Figure 1). An increase in the value of the lot suggests an initial construction date of 1849. An 1854 map, and a similar 1858 map, of Springfield (by city engineers) clearly indicates that a small, squarish structure sat on the lot. Physical evidence indicates the limits of the cottage and

provides an indication of the structure's massing and roof configuration. Further, window and door locations are clearly seen in the skeleton frame. The existing windows in this part of the house are undoubtedly in original locations and are likely original fabrics themselves. Archival research suggests that no additions were made to the house until 1867, when a large mortgage appears in the chain of title. The additions apparently enlarged the house more than five times its original size. At the time of the field investigation, this seemed like an unbelievably large undertaking for this neighborhood; however, additional evidence uncovered during construction confirmed the scale of these additions. The next available cartographic evidence, panoramic views of the city dating to 1867, 1870, and 1873, indicate a significantly larger house than that seen on the earlier maps. Past experience at this park has cast a wary eye on the accuracy of these panoramas since the artists apparently took many liberties producing these drawings. However, in this case, these drawings fairly accurately depict what was seen in the house during the investigative work. The first available Sanborn map, in 1884, generally confirms the house depicted in the panoramic views. Later maps indicate only very minor changes to the house with no significant changes being made to the 1867 house. This is borne out in the intact fabric of the standing structure.

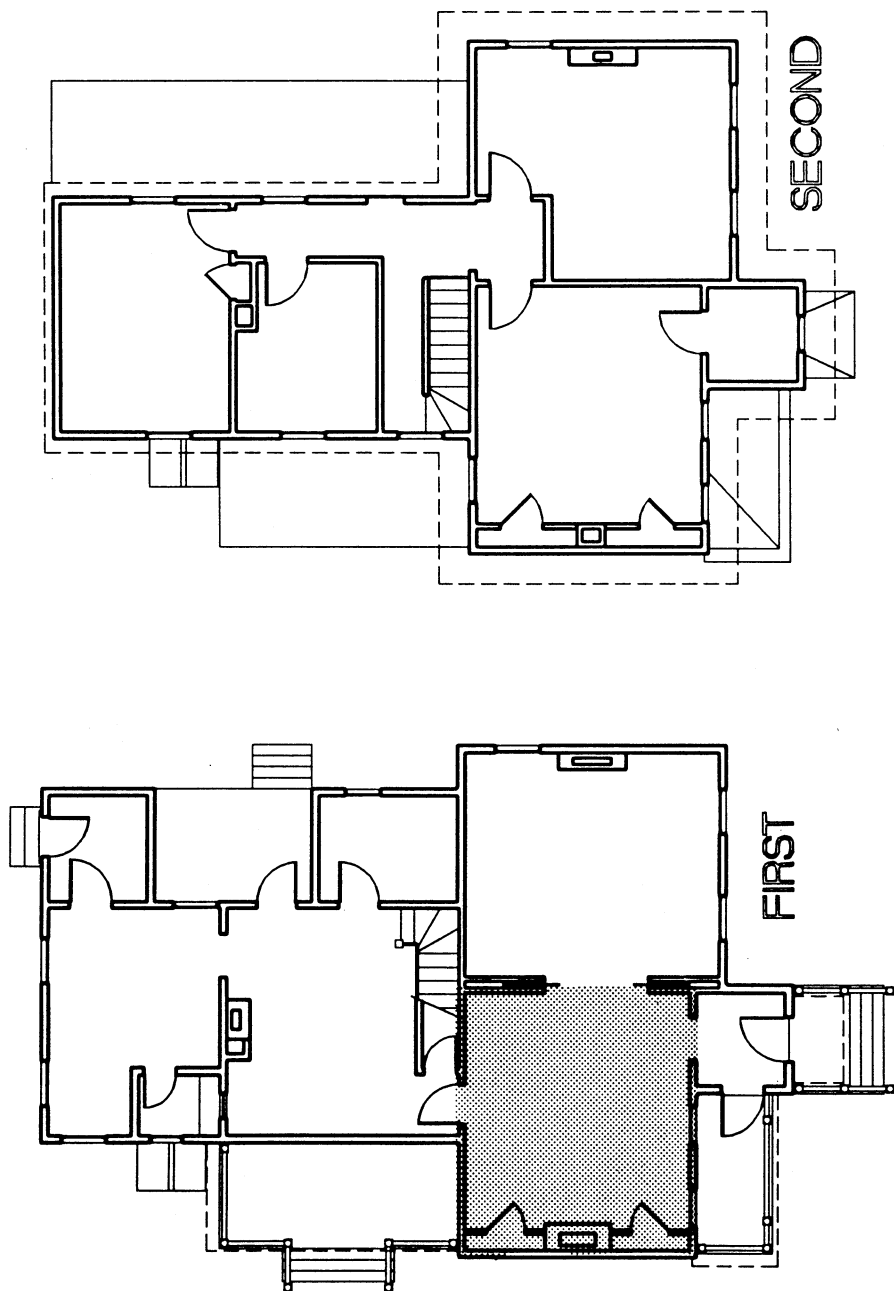


Figure 1. Dean House, 1867. The first- and second-story plans. The shaded area marks the limits of the original 1849 one-room cottage. (Fischer-Wisnosky Architects, Inc., *Historic Structure Report—Dean House*.)

Based on all the physical evidence gathered during the historic structure report, the recommended treatment of the house was preservation/restoration to the 1867 appearance. Although it is not to the Site's target date, it is believed that any attempt to return the house to its 1860 appearance is not possible due to a lack of evidence and a loss of fabric. Despite the house's restoration to a time after the target date, the fabric which remains is largely being preserved rather than restored, and the resultant house is one which "fits" into the Site and provides the visitor with a feel for the neighborhood Lincoln knew 130 years ago.

The Charles Arnold House (HS-20) located directly across the street south of the Lincoln Home, began as a small two-room cottage with a sleeping loft above (Figure 2). An increase in the value of the lot suggests an initial construction date of 1840. The following year, a one-story addition was made to the back of this cottage, doubling the size of the first floor. There may also have been some site improvements at this time. Following this date, there is no indication of changes in the property value to suggest any significant work on the house. The 1854 and 1858 city maps indicate a long, narrow structure with a J-shaped plan located near the front of the lot directly on the long street-side property line. There is a small square outbuilding seen at the alley. Three panoramic views of the city consistently indicate a house

similar to that seen on these maps except that there is only a straight-line plan with no apparent J-shape. The house shown has a taller gable-roofed addition at the end. The only door indicated is on the long face of the taller portion of the house. There is a gable-roofed outbuilding shown at the alley.

The 1884 Sanborn map indicates a structure with a J-shaped plan; however, the shape is obscured by extensive infill construction which nearly doubled the size of the house. There is photographic evidence available for this house, all of it seen beyond in photos of the Lincoln Home. Photographic evidence of the outbuildings (likely a barn and privy) exist as early as 1860. Photographic evidence of the house itself is available only as early as 1885 (Figure 3). However, these photographs indicate only about two-thirds of one elevation of the house. This photograph confirms what has been seen in the cartographic and physical evidence. The Sanborn maps, archival evidence, and photographs indicate little apparent change until circa 1900, when portions of the house were demolished and the remaining structure was rotated 90 degrees and relocated to the rear of the site. By circa 1902, the owner built a much larger house at the front of the lot. Over the next 70 years, the Arnold House was added onto and renovated until all that remains of the original house today is the original one-room cottage with the sleeping loft. In 1978,

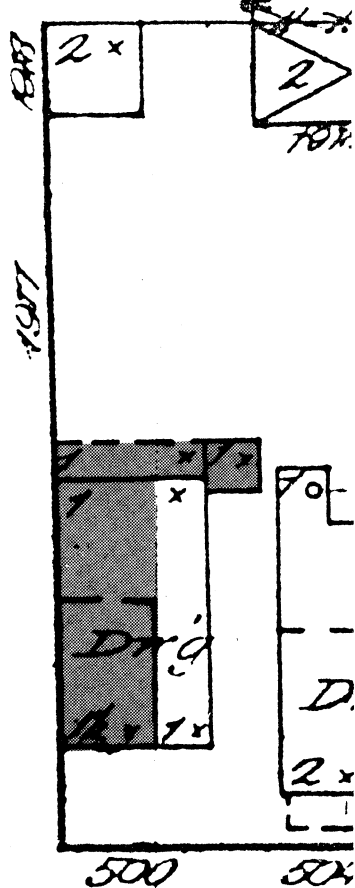
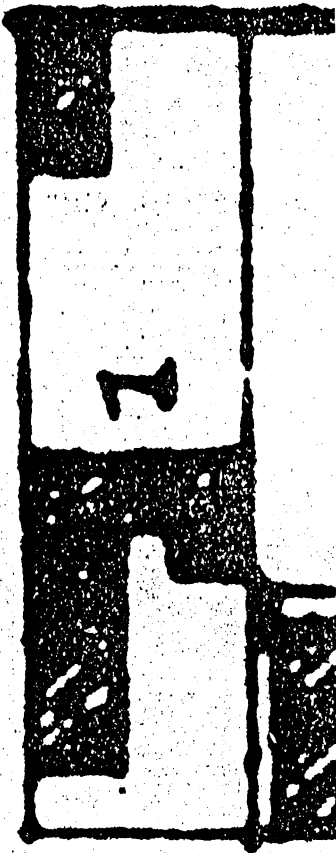


Figure 2. Arnold House, 1854 & 1884. On the left is a portion of an 1854 city map indicating a J-shaped plan. The drawing on the right is from the 1884 Sanborn map. The shaded area indicates the "J" shape still in evidence, although infilled with later construction. (Left drawing from *City of Springfield, Sangamon County, Illinois*. Drawn by M. McManus. New York: Hart and Mopather, 1854. Courtesy of Illinois State Historical Library, Springfield. Right drawing from "Springfield, Illinois." New York: Sanborn Map & Publishing Co., February 1884. Courtesy of Lincoln Library, Sangamon Valley Collection, Springfield.)

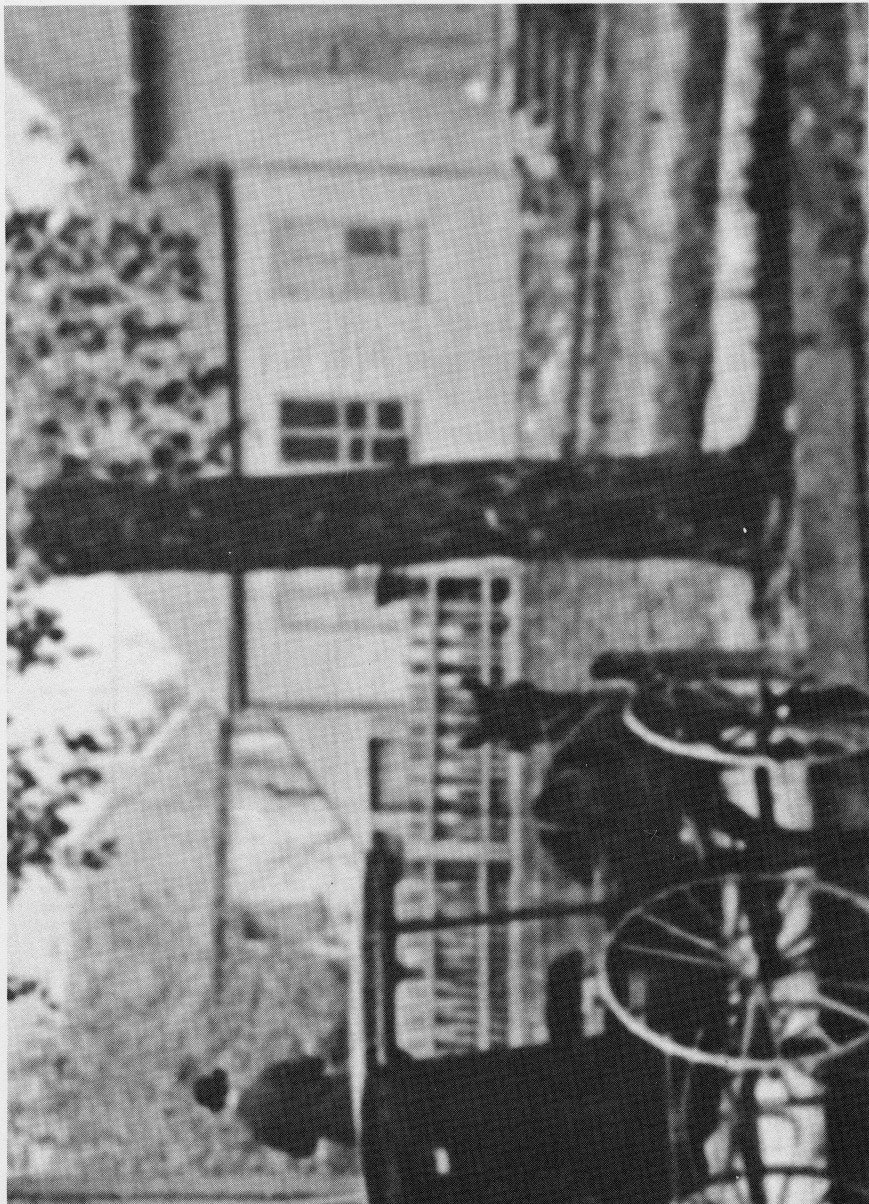


Figure 3. Arnold House, ca. 1885. This a view of the house seen in the lower right-hand corner of a photograph of the Lincoln Home. This photograph and others like it provide a view of the north façade of the house as it appeared in 1860. (Courtesy of the Illinois State Historical Library, Springfield.)

the 1905 house at the front of the lot was demolished by a Site contractor. The demolition contract called for complete removal of all foundations. Archeological investigations on the lot have determined that it is unlikely that any original Arnold House foundation survived the demolition work of the larger house; however, some archeological evidence of the outbuilding at the alley and two privy locations have been unearthed.

Based on the available evidence, and the credibility of that evidence, the recommended treatment for the Arnold House is to preserve, restore, and reconstruct the house to its 1860 appearance, relocated to its original siting on the lot. The barn and the privy will also be reconstructed. The interior will be adapted for use as a display space, interpreting preservation/restoration activities at the Site—a very compatible use since, with the exception of the Lincoln Home, this is the most completely period-documented structure at the Site (Figure 4).

The Julia Sprigg House (HS-11) was originally built in 1851 as a small rectangular gable-roofed cottage (Figure 5). The 1854 and 1858 city maps indicate a rectangular structure with a porch in one of the rear corners. The house is seen situated toward the middle of the lot. The three panoramic views of the city consistently indicate a structure of similar size; however, these views are not always clear or consistent with the location of the structure on the

lot. The house remained virtually unchanged until circa 1873, when the owner (no longer Julia Sprigg) built a two-story balloon-framed addition with a porch at the front of the house. This plan configuration is indicated on the 1884 Sanborn map. This map further indicates some non-extant outbuildings, one at the alley and one near the immediate rear of the house. This basic configuration remains unchanged until approximately 1922 when a new owner undertook substantial renovations to change the house into a “stacked” duplex. This owner, and another who followed a year later, added a second floor to the rear (or original) portion of the house, lowered by 24 inches the height of the existing second floor, installed all-new Craftsman-style windows and doors, demolished the fireplace, re-sided the original one-story cottage portion of the house (to match the new second floor), and rebuilt the front porch into a two-story brick-columned porch. Some twenty years later, the house was again renovated into apartments and remained that way until the mid-1970s.

The treatment of the Sprigg House has indeed presented a preservation/restoration dilemma. Although the mass and form of the building throughout its history is basically understood, evidence of the character of the original windows and doors, the circa-1873 front porch, and the chimney profile is not available. Three different treatment alternatives have been considered.

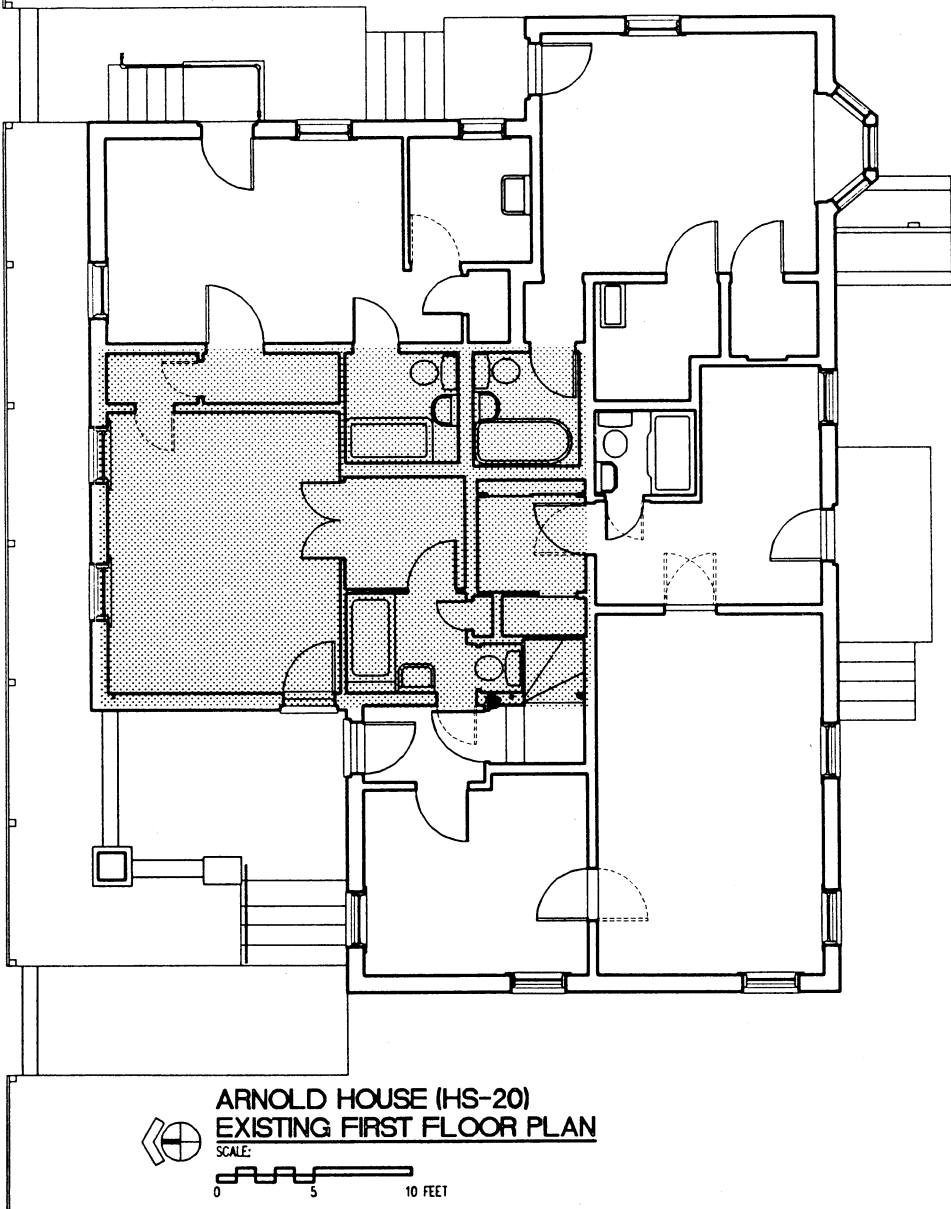


Figure 4. Arnold House, 1994. The current first-floor plan. The shaded area shows the limits of the original 1840 cottage which was relocated to the rear of the property at the turn of the century. (From Fischer-Wisnosky Architects, Inc., *Historic Structure Report—Charles E. Arnold House.*)

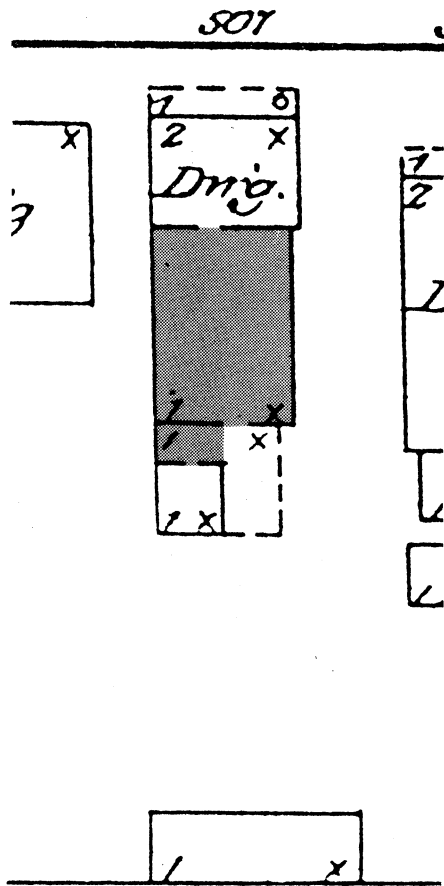
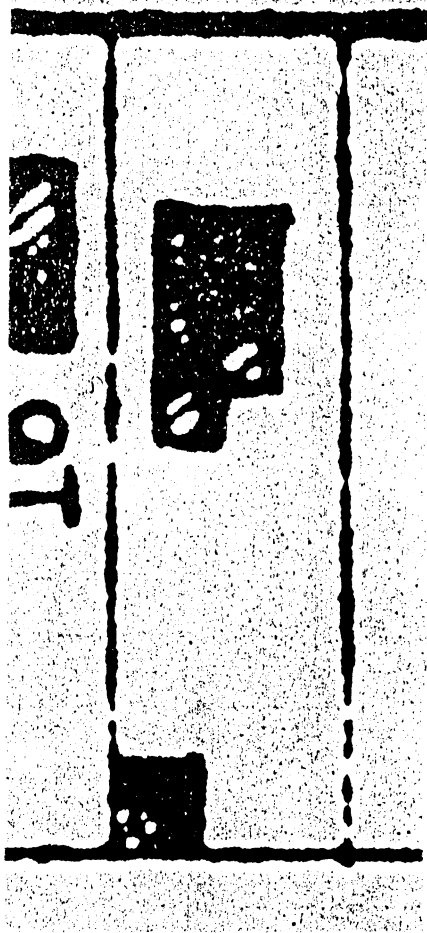


Figure 5. Sprigg House, 1854 & 1884. On the left is a portion of an 1854 city map indicating the simple rectangular plan of the original cottage. The drawing on the right is from the 1884 Sanborn map. The shaded area shows the limits of the original cottage. (Left drawing from *City of Springfield, Sangamon County, Illinois*. Drawn by M. McManus. New York: Hart and Mopather, 1854. Courtesy of Illinois State Historical Library, Springfield. Right drawing from "Springfield, Illinois." New York: Sanborn Map & Publishing Co., February 1884. Courtesy of Lincoln Library, Sangamon Valley Collection, Springfield.)

The first alternative is to preserve and interpret the house in its 1922 form, basically as it now stands, with only minimal restoration work. This alternative is logical since it does provide for the accurate restoration of one point in time of the house's history. However, this alternative fails to restore or preserve the house to anything vaguely resembling the house as Lincoln knew it in his day. Thus, it falls short of the Site's stated restoration goal.

The second alternative is to restore the house to its circa-1873 appearance. This option would require some speculation concerning the front-porch configuration, the lite patterns of the windows, the appearance of the doors, and the profile of the chimneys. The original locations and rough opening sizes of the windows at the second floor of the circa-1873 portion of the house were documented during the physical investigations. The original first-floor windows at the front portion of the house are assumed to have aligned with those at the second floor; however, this has not been confirmed due to the present first-floor occupancy of the house. Only some window locations for the 1851 cottage have been discovered, since much of the evidence was apparently destroyed during later renovations. It has been suggested that the character of the missing elements could be patterned after period examples elsewhere in the park or other similar neighborhoods. This alternative is logical insofar as it

does provide for the restoration of the structure to a period soon after Lincoln's departure from the neighborhood. Further, this alternative restores the house as close to the historic period as is possible while remaining grounded in evidence of some of the character-giving elements of the house. It is likely that further removal of non-original finishes would uncover additional physical evidence; however, this alternative still requires speculation on numerous key features while failing to restore the house to meet the Site's stated goals.

The third option is to restore the house to its 1851 appearance, which is most likely one and the same as the 1860 appearance. This option would require speculation to restore the location of the chimney; the location, size, and character of most of the windows; the location and size of the front door; and the appearance of the street façade of the house. This alternative is logical since it returns the house to its appearance in 1860; however, it is a flawed solution due to its dependence upon speculation that cannot be based on solid evidence.

As can be seen from the examples of these three very different projects, completely accurate preservation/restoration of structures at the Site to the target date is often a difficult, if not impossible, task. It requires careful consideration of several factors to achieve acceptable solutions. The acceptable solution does not, and cannot, always return the historic

structure to its 1860 appearance. As has been noted, the primary factor hampering preservation/restoration to the Site's target date of 1860 is a lack of documentary evidence of the four-block neighborhood during the Lincoln era. Each structure, and the associated available evidence, should be considered on a case-by-case basis for each building. Not only must the target date be considered, but also the closest restoration date which is realistically possible to achieve based on what is known about the property. In other words, the parts are as important as the whole.

This undocumented period, coupled with the loss of some of the character-giving fabric at several of the houses, will continue to make difficult the accurate rest-

oration to the mandated target date. Nonetheless, through extensive physical research, careful consideration of available documentary evidence, and a continuous exchange of ideas between the parties involved in the work, acceptable solutions can and will be developed that will bridge the gap between the Site's target date and the available evidence for individual structures.

AUTHOR'S NOTE: Since this essay was written, the first floor of the Julia Sprigg House (previously occupied) has been vacated, allowing for further physical investigation to discover additional evidence of the features of the 1851 cottage. This investigative work will begin sometime in the spring of 1994.



The Fort Valley Experiment Station and Its Preservation

Susan Deaver Olberding

Prescott, Arizona

The first U.S. Forest Service (USFS) forest experiment station was established in August 1908 in Fort Valley, Arizona, for the purposes of research into silviculture (the management of trees). The station began in a two-room forest ranger cabin with one employee. Over eighty years later, it has grown to include several residences, an office, greenhouses, meeting rooms, and outbuildings. Silviculture is no longer the main emphasis of USFS research and the Fort Valley site has become outmoded and given way to new facilities located in Flagstaff. As the Fort Valley station ends its first century of existence, it stands as the location for innovative programs in forestry research, interpretation, and preservation administered by a collaborative effort.

A Forest Service forester, Raphael Zon, encouraged USFS Chief Gifford Pinchot to establish experiment stations that were solely devoted to scientific research on the national forests. Recognizing the need for research, the USFS actively sought permanent investigative sites which brought Forest Service men to Flagstaff—the home of the largest ponderosa pine stand in the United States. Zon and two fellow foresters, Willard M. Drake and Gustaf Adolph Pearson, rode horses through the Coconino National Forest in August 1908. Their trip was delayed while they sat out a brief midsummer monsoon that produced torrents of water and created streams where there had been none before—an

indication of the extreme weather conditions in the area. Afterward, they traveled one more mile and climbed the knoll where the Fort Valley ranger station was located and Zon proclaimed, "Here we shall plant the tree of research" (Pearson 1936). Hence, on January 1, 1909, the official opening of the first USFS experiment station would fulfill the mandate to provide technical bases for national forest management. The site was known originally as the Coconino Experiment Station, but changed to the Fort Valley Experiment Station in 1911.

The location is in the northwest corner of Fort Valley, a large open meadow at the base of the San Francisco Peaks that sits at an elevation of about 7,000 feet. Pon-

derosa pine surrounds the valley and two year-round springs (Big and Little Leroux) supply water to the area. Fort Valley was chosen because of the virgin stand of timber (access to Fort Valley was difficult and expensive, so loggers had generally stayed away), the existing ranger's cabin, and the accessibility of water. Also, if trees could regenerate at Fort Valley, where sixty-degree diurnal temperature changes are common, then they could regenerate elsewhere much easier.

At the time of the foresters' visit, the Flagstaff region was extensively involved in lumbering and the forest surrounding the town was in danger of being clearcut and left a barren wasteland. (The idea of selective cutting and leaving seed trees was unknown, or, at least, not practiced.) Pinchot, who several years previously had gained personal knowledge of the Coconino National Forest from a mule-chasing escapade, agreed when the forest's supervisor, Frank C. W. Pooler, suggested the territory as the site for the agency's first research location (Pearson 1936; Pinchot 1947). Silviculture was the top priority of forest research, and where better to study tree regeneration than in a forest that was fast falling to the loggers?

Life at the Station

Pearson, one year out of college, remained at Fort Valley as the director and spent the winter of 1908-09 alone in the ranger cabin. One of his winter chores

was to convert the cabin into a combination office and residence. Pearson gave much of the credit for his survival that first winter to his two mules, Pat and Mike. The mules brought supplies, equipment, and men to the station between 1908 and 1918. They could travel nine miles into Flagstaff in one hour and forty minutes—when encouraged with a whip. Later, when more staff was on site, the mules escorted the young men into town for Saturday-night entertainment and made sure they returned home safely (Pearson 1936).

A young silviculturalist, Emanuel Fritz, was assigned to the experiment station and arrived in August 1916. He was awestruck by the beauty of the forest with the San Francisco Peaks overshadowing all, and felt blessed that he could enjoy the solitude of Fort Valley. Fritz joined the Pearson family (he had married in 1910), the maintenance ranger and his wife, and other assistants. By this time, the station's structures consisted of the original ranger's cabin, which served as Pearson's residence; an office/laboratory; a barn (for the mules and a milk cow); and possibly two small residences. During the cold weather, duties included building an all-night fire under the storage tank to keep the station's water system from freezing. Bachelor Fritz and his co-workers never figured out a way to keep their quarters warm so they retired early in the evening. The station's isolation forced the workers to be self-suf-

ficient, since the roads to town were sometimes impassable and supplies were not always promptly replenished. A small greenhouse built for research purposes undoubtedly also served as a vegetable garden for the staff's use. The wintry days usually warmed up sufficiently to set chairs outside in the sun and read or play cribbage, or explore the forest on snowshoe. Fritz also well remembered the sub-zero days and shoveling snow after a thirty-inch snowfall in April 1917. Pearson was delighted to learn that Fritz was handy with tools, because the single-wire telephone line between the experiment station and Flagstaff was always needing repair (Fritz 1964).

Funding was slight from the very beginning, probably because research had low priority from the administration and also lacked exposure to the general public, which, in turn, meant less congressional lobbying for funds. But the staff, sometimes under difficult circumstances, continued to gather data necessary for making forest management decisions. Fritz was convinced that "if we can work out regeneration here, under such adverse conditions, it can be done anywhere else more easily" (Fritz 1964). He did not specify if he was referring to living accommodations or forest problems.

For the field (or summer) season, several permanent technicians and sometimes ten to twelve temporary workers were assigned to Fort Valley. A cook/janitor has

hired at \$60 per month plus board, since Pearson felt that scientists were hired to do research, not cook. The cook/janitor was paid by both the Forest Service and the workers (prorated to about \$1/day/man). The grounds were neatly kept: Pearson emphasized the housekeeping part of the job along with the scientific work since he believed that experiment stations had to be presentable to the public and "should in years to come represent the highest scientific talent in the Forest Service" (Pearson 1914).

The Fort Valley Experiment Station triumphs as the site of the first bathroom in USFS Region 3, built in 1918. It was actually a bath house, built inches away from the ranger cabin since there were cost limitations on buildings. Pearson later advised experiment stations to construct their buildings during the first year of operation so that scientific research could be the primary function, although Fort Valley structures were not constructed right away. By 1927, after nineteen years of research activity, Fort Valley contained the structures mentioned above, plus two more residences (Pearson 1936).

At that time, the Fort Valley staff included several technicians and sometimes a clerk. Depression-era governmental work project funding and the expansion of station research duties to include range experiments allowed for more construction to occur between 1930 and 1935 than had been done during the prior 22 years. In 1935, the original water

system was replaced by a two-and-a-half-mile underground pipeline that connected Little Leroux Spring to the station at a cost of \$10,000. Electricity replaced gas lights in 1936 (USFS 1935-52; Pearson 1936). Since its inception, the facility had grown from one structure and one staff member to a campus with several residences, a barn, dormitory, office building, schoolhouse/recreation hall, laboratory, root cellar, and as many as twelve technicians.

Until 1953, the Fort Valley Experiment Station was part of the Southwestern Forest and Range Experiment Station whose territory included Arizona, New Mexico, the western half of Texas, and the Oklahoma Panhandle, with headquarters in Tucson, Arizona. After 1953, research funding cuts caused the Southwestern Station to merge with the Rocky Mountain Forest and Range Experiment Station headquartered in Fort Collins, Colorado, with new boundaries of Arizona, New Mexico, Colorado, Kansas, Nebraska, South Dakota, and eastern Wyoming.

The station always worked cooperatively with the Coconino National Forest and its regional supervisors in Albuquerque, New Mexico. Research was conducted upon lands around the Southwest forests, and the station served as the site for ranger schools to train incoming regional rangers. The first school (1909) included rangers from across the country, but later schools were primarily for employees of the USFS's

Southwest Region. The earliest schools were held under tent coverings; later, funds were allocated to build several structures on the station grounds that were used for the school. During these schools, students were taught about silviculture, camp maintenance, law, grazing, field work, horse care, and office work. Scientists assigned to Fort Valley often served as instructors to the school attendees.

Foresters involved with the initial years of the USFS spent time at Fort Valley since the station was the first of its kind and the main field station and laboratory for forest management investigations in Region 3. Pearson trained and worked with many men considered "founding fathers" of forest research: Raphael Zon, Samuel T. Dana, Theodore S. Woolsey, Jr., Enoch W. Nelson, Clarence F. Korstian, Bert Lexen, E. M. Hornibrook, Edward C. Martin, and Charles K. Cooperrider are among those who worked at Fort Valley (Gaines n.d.). An impressive number of publications by these and other scientists evolved from research performed at Fort Valley.

During the 1950s, the Arizona State Teachers College (now Northern Arizona University) in Flagstaff began a forestry school and USFS personnel based at Fort Valley participated by lecturing and offering laboratory opportunities to students. USFS built a Forestry Sciences Laboratory on campus next to the School of Forestry and commencement of these two new programs coincided

with the fiftieth anniversary of the Fort Valley Experiment Station. Celebrations emphasized the newer facilities that would henceforth perform much of the work the experiment station previously did. After this, scientists' presence at Fort Valley diminished except for research work done in the forest.

Research at the Station

Long-term objectives of Fort Valley ponderosa pine research include natural and artificial regeneration, stand improvement methods, and mensurational (measuring) studies. Research was primarily conducted in the Coconino National Forest within walking or riding distance of the station. Pearson and his staff established sample plots throughout cutover and virgin forest lands varying in size from 12 to 400 acres. Most of the trees in each plot were assigned and tagged with a number, so scientists could measure and observe the tree's growth over time. Usually a tree was measured every five years, sometimes more often, and checked for disease infestation, damage from rodents, or other factors that affected growth.

In January 1909, Pearson initiated a project to determine the effect of climate on ponderosa pine seed regeneration. He began keeping weather records by establishing six meteorological observation stations in a chain across the open park of Fort Valley, of which three were checked daily and the others weekly. The stations moni-

tored temperature, precipitation, relative humidity, and wind movement within the park area. This assignment was to determine weather's role in reseeding, and it accompanied other experiments such as the creation of plots for a seed-tree method of regeneration (1910).

Effectiveness of the seed-tree project was complicated by the disturbance from wildlife and livestock grazing, and Pearson studied Fort Valley-area forest and forage types that had been grazed by sheep. His 1910 recommendation was that logged lands should be protected from sheep and cattle grazing until the seedlings were well established. Further examination over the next several years corroborated his earlier findings. Later, when the Fort Valley station became headquarters for a range experiment station in addition to forest work, extensive research on grazing effects continued.

Between 1916 and 1920, research at Fort Valley included a study of forest types to find out physical conditions prevailing in specific forests. Instruments placed at various locations and altitudes recorded the conditions of air, soil, precipitation, and wind. Fritz was involved in this project as he and his partner placed weather stations at altitudes of 8,500 and 10,500 feet. The higher station was installed in mid-November when the ground was already frozen solid; the workers chipped out the earth to bury support poles. They then gathered data weekly from

the stations, no matter what the weather. It was an all-day event: they left the station at 5 AM with snowshoes strapped on and lunches packed (Fritz 1964).

Before 1931, the lands used for research by the experiment station were not designated study forests, except through agreements between Coconino National Forest and Fort Valley that withdrew certain forest lands from entry. In 1931, a Forester's Order officially established the Fort Valley Experimental Forest on Coconino National Forest lands. This further protected study plots from logging, hunting, fuelwood cutting, homesteading, and other uses. The original order listed 2,420 acres near the station as experimental forest lands. All research analyses of the forest were to be conducted at the experiment station. In 1935, amendments added 1,600 acres, including Little Leroux Springs and some Kaibab National Forest lands. Another amendment in 1941 added more forest lands, making a total of 4,950 acres on the experimental forest (USFS 1931; Pearson 1942).

The station's research lands were not limited to the Fort Valley Experimental Forest, and for years the scientists studied forest territories around the Southwest. This practice included range studies when the station's scope expanded to include forage research; hence, its name change to the Southwestern Forest and Range Experiment Station. During the 1930s, research was conducted at Fort Valley and elsewhere on

seed spot experiments, ponderosa pine, piñon tree nut production, nursery observation, range monitoring, fence post durability, and logging and timber-sale monitoring. Beginning in 1936, thirty Civilian Conservation Corps (CCC) laborers worked at Fort Valley for five months on reservoirs, erosion control, forest planting and seeding, forest stand improvement, range revegetation, eradication of poisonous plants and weeds, and experimental plots. Ten miles of utilization roads were also built during the Corps' tenure of several years (USFS 1935-52).

In the 1940s, the Fort Valley Experiment Station staff who were not called into World War II military service involved the public in the station's ongoing work by giving radio interviews on forest topics that promoted the value of research on national resources during wartime. Pearson encouraged more use of forest trees to support national defense. The station remained open during World War II since research dollars were plentiful for silviculture, forest insect study, and disease work. In 1942, after a five-year analysis, a study of current Forest Service timber harvesting methods was thought to be misdirected, and station scientists recommended that a new approach called improvement selection be initiated. This technique sought to cut the less-desirable trees first to allow the higher-quality trees more room to grow. Early logging practices had always cut the straight trees first and left the crooked

ones (USFS 1935-52).

In September 1944, a seminar honoring Pearson was held at the Fort Valley Experiment Station, as Pearson's research career had earned him a national reputation as the expert in ponderosa pine management. Twenty-five representatives of timber management and research from five western regions met at Fort Valley for three days of discussions and fieldwork on ponderosa pine research and paid tribute to Pearson and his thirty years of work before his retirement in December 1944. Pearson and his staff had measured and nurtured over 40,000 trees in the Fort Valley Experiment Station and surrounding forest. Pearson's pioneering work in tree regeneration enabled later foresters to consider all the influential factors and decide on the best approach to a given situation. For his retirement project, Pearson wrote an encyclopedia on ponderosa pine management that eventually became the handbook used by all foresters.

Fort Valley research continued with inquiries into management after forest fires. In 1948, a human-caused fire burned 1,800 acres on the southern boundary of Fort Valley, and 1,500 acres were burned in 1950 near A-1 Mountain, also near the southern boundary of Fort Valley. With the proximity of the experiment station to the fires, forest-fire research provided an opportunity for an experimental effort in re-planting. The methods used following the 1948 fire proved suc-

cessful, and allowed the burned area to recover more efficiently (USFS 1953-80). These techniques have since been employed by other foresters across the nation.

Research emphasis changed in the 1950s and 1960s from regeneration to forest management utilizing procedures garnered from initial studies. With the opening of the Northern Arizona University research facility, workers no longer lived at Fort Valley, and, except for an on-site caretaker, the station was generally vacated after working hours. The scientists continued with earlier projects by publishing a post-forest-fire study which became standard policy for foresters to follow in marking scorched trees. New experiments with wheatgrass and aspen fuel cutting (in conjunction with the Coconino National Forest) began. Fort Valley cuttings from a mistletoe study area were used at a Flagstaff pulp mill that opened in 1953 (USFS 1953-80). In 1966, eighteen forestry students were offered a silviculture summer camp course taught by Professor Martin B. Applequist. Each day, the students were in the experimental forest measuring, observing, and learning techniques that would benefit them in their careers, following the steps of several generations of earlier Fort Valley foresters.

Study projects in the 1970s included tests of herbicides on perennial grasses, analysis of Little Leroux Springs water-flow variations, and research on Arizona fescue and mountain muhly

plant growth. Research focus changed in the 1980s to stress physiology, and a greenhouse was constructed specifically to study seedling growth in a monitored atmosphere and an entomology lab opened to examine the effect of stress on trees from insect attacks.

During the mid-1970s, the USFS entered into a memorandum of understanding with the U.S. Geological Survey (USGS) for rental of some of the Fort Valley buildings. Several USGS employees set up office and research space at Fort Valley. This cooperative arrangement has benefited both USFS and USGS and continues today with the USGS occupying two Fort Valley buildings. USGS presence has helped discourage structure deterioration since the buildings have been kept heated and maintained.

Preservation Efforts

In 1972, the director of the Museum of Northern Arizona, Edward B. Dansen, asked the USFS to consider designating the Fort Valley Experimental Station as a National Historical Landmark when he read an announcement in the *Arizona Daily Sun* newspaper that several Fort Valley buildings were to be declared surplus and sold. This was the first preservation interest shown in the site. Dansen urged the site and buildings be retained for their historical value. The USFS responded by saying available funds went to research first and what was left over went to building maintenance,

which meant the buildings were not being properly preserved. The U.S. National Park Service indicated that a National Historic Landmark classification was possible when theme subjects included conservation. The result of all this was that some of the buildings were sold and moved and others remained at the station, but no historical designation was assigned (Schubert 1972).

Preservation efforts were begun by the author about 1988 as part of Master's thesis research on Fort Valley history. The station was in danger of being completely vacated with the construction of a multi-million-dollar forestry sciences complex at Northern Arizona University in 1991. The station was in limbo, an albatross to the USFS's research division, which received funding for research but not for building maintenance at an outdated historic site. To promote preservation, the author began writing articles, giving presentations, cataloguing historic documents, and working with USFS personnel to initiate use of the station in ways not limited solely to research. This is a slow, but forward-steeping, process. Plans for 1994 involve several interpretive tours and the inclusion of the station in the 1994 Flagstaff Festival of Science.

A top priority for 1994 is to complete the nomination of the station to the National Register of Historic Places. Approximately twelve structures and buildings qualify for listing. All of the buildings require interior maintenance

that includes adequate heating, insulation, painting, and other general upkeep. The exteriors of the buildings have been well-kept and contribute to the station's attractive, rustic appearance. Once rehabilitation is complete, the structures can be used as residences, offices, or meeting rooms.

Archival documents, photographs, and field records that date to the station's opening in 1909 are extant and can assist historians' and researchers' work on the station and forest lands. A recent USFS visitor to Fort Valley expressed surprise to see photographs of a site he was currently working on and was anxious to review the accompanying historical data. The collection is now being catalogued with the guidance of the USFS Historian with the intention that the materials will be accessible to forestry researchers and students.

This essay summarizes the history of Fort Valley and recent preservation endeavors. Collaborative administrative efforts to de-

termine the future use of the 86-year-old site are now underway. The potential exists for a dynamic facility at the station. Its rural setting amidst the pines, spruce, and fir present an appealing ambiance with aids in imagining an instructive and enjoyable interpretive center. Riding or walking through the area today easily invokes visions of scientists measuring trees, planting seedlings, monitoring wildlife and livestock damage to trees, recording temperatures and precipitation, or a myriad of other activities. But most of all, a visitor senses the quiet. Even though the station is within an eighth of a mile of a major highway, its secluded setting atop a small knoll shields it from modern-day intrusions. The Fort Valley Experiment Station is a unique place because of its rank as the nation's original forest experiment station. Its pioneering and consistent research findings help dictate forest management decisions made today. It warrants preservation.

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Go Learn it on the Mountain

An Interpretive Agenda for New Hampshire's Tallest Peak

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Introduction

Over the years, the state of New Hampshire has developed a mild fixation on superlatives. We pride ourselves on having the lowest state taxes in the country and a 400-member House of Representatives that is larger than any other state-level legislative body in the country.¹ New Hampshire law requires our presidential primary election to be the first in the nation.² Hugh Gregg, a former governor of New Hampshire, is leading an effort to have Exeter, New Hampshire, declared the birthplace of the Republican Party. New Hampshire claims preeminence among the original thirteen colonies for being the ninth and therefore deciding state to ratify the U.S. Constitution (Rosal 1988:226-234). Given the Granite State's preoccupation with superlatives, which may come from living in the shadow of Massachusetts (Potter 1991; 1993:126-131), it is fortunate that New Hampshire can claim a geographic feature that casts an impressive shadow of its own: Mount Washington, "the highest peak east of the Rockies and north of the Carolinas" (State Planning and Development Commission 1955). In the following article, we propose an interpretive program for the cultural resources that share the top of Mount Washington. Our proposal goes against the grain of most interpretations of Mount Washington: instead of focusing on the considerable singularity of the place, we have chosen to explore several aspects of Mount Washington that make the summit of this great peak similar to, rather than different from, every other piece of real estate in New Hampshire. The interpretation we propose has the virtue of giving visitors something to think about (other than a brake job or a foot massage) once they've made their way back down the mountain.

¹ In point of fact, we refer to our House of Representatives as the "fourth-largest democratically elected legislative body in the English-speaking world, trailing only the U.S. House of Representatives, England's House of Commons, and India's House of People.

² This requirement is codified in the laws of New Hampshire as RSA 653:9 which states, in part: "The presidential primary election shall be held on the second Tuesday in March or on the Tuesday immediately preceding the date on which any other state shall hold a similar election, whichever is earlier...."



The Mount Washington Auto Road. From Samuel Valentine Hunt's 1872 steel engraving (after Henry Fenn). Photo courtesy of the New Hampshire Historical Society, Concord.

There is no question that Mount Washington is an impressive chunk of topography. It draws hikers from all over the country, among them a high-school friend from Cleveland whose summer-long preparations for a Mount Washington ascent introduced us to this mighty peak ten years before we ever moved to New Hampshire. Once we did move here, we learned that one key feature of any local television weather map is a temperature figure, usually twenty to thirty degrees cooler than all the rest—and often in a different color—attributed to the rarefied air “high atop Mount Washington.” Much of what interpreters from a variety of agencies have to say about Mount Washington centers on the peak’s superlatives. At 6,288 feet, it is the highest peak in the Northeast. It is the location of the greatest wind velocity ever recorded on Earth—231 miles per hour on April 12, 1934 (Johnson 1961:48). It has the Tip-Top House, which was built in 1853 and is the “oldest existing building at the top of a major North American peak” (Belcher 1981). In addition, Tip-Top House was home to *Among the Clouds*, “America’s first [and probably only] mountain-top newspaper” (Belcher 1981), published at the summit between 1877 and 1908 (Anderson 1980). Finally, Mount Washington has been served continuously since 1869 by the “first mountain-climbing railroad in the world” (Price 1965), the Mount Washing-

The problem with information such as this is that once you’ve learned it, there’s not much you can do with it. You’ll be set for cocktail-party chit-chat, and you might win a few extra appliances the next time you find yourself on a television game show. But outside of helping you settle a few bar bets and giving you a conversational trump card if someone should happen to bore you with stories about the high place or the cold place or the windy place from which they have just returned, information from the “Mount Washington Superlatives Tour”³ has very few explicit practical applications.

Critical Interpretation

For some, presenting the public with a short list of “whiz-bang” facts about a natural, cultural, or historic site may be considered an acceptable or even an exemplary interpretation, but we come from a different school of thought. Following the tenets of critical theory (Leone, Potter, and Shackel 1987; Potter 1994) we would argue that no interpretation—even one that appears completely flat, objective, or harmless—lacks a point of view

3 While we use this term at several points in this article, there is no specific, official “Mount Washington Superlatives Tour.” Rather, we use this term for rhetorical purposes, as a handy way of referring to several dozen bits of formal and informal interpretation based on Mount Washington’s list of “biggests” and “oldests.”

or a social/political agenda. There is no such thing as value-free knowledge; all knowledge is knowledge for a purpose.

Any public interpretation is a conversation in which one person tries to persuade another person or a group of people to think something or do something. That "something" can be large or small, general or specific, but it is always there, if not *on* then *under* the surface of *any* public interpretation. In the case of trivial or seemingly meaningless interpretations, ones that are too "Mickey Mouse" or mostly glitz without much message, all that the interpreter may be attempting to do is hold the attention of the visitor, but even this modest goal may be considered a point of view in that it guides decisions about the inclusion, exclusion, and ordering of information presented to the public.

This shaping of interpretive content is sometimes deliberate and sometimes unconscious. Furthermore, it is not inherently evil; it is inevitable (Wallace 1986:137). Thus, according to critical theory, the job of any scholar/interpreter is not to eliminate bias, interests, or points of view—which is impossible—but rather, to recognize these things, acknowledge them, and put them on display alongside interpretive content, as a way of empowering the people who consume our interpretations. We need to explore existing interpretations to determine the interests they serve, and we need to investigate our own authority and agency

in the interpretations we produce (Chappell 1989).

Up with ITI

Armed with the theoretical perspective outlined above, we first visited Mount Washington in June 1991. We made our climb along with a group of experienced interpreters who were attending the Interpretive Training Institute, an annual gathering sponsored by the Appalachian Mountain Club, the Massachusetts Department of Environmental Management, the Metropolitan District Commission, New Hampshire State Parks, the U.S. Forest Service, and the National Park Service. Our trip up Mount Washington followed a day of classroom workshops and was intended to give participants the chance to use the cultural resources on Mount Washington as a case study in developing an interpretive plan. In particular, the group was to focus on the Tip-Top House, a 140-year-old, National Register-listed former hotel which is now a historic site in the New Hampshire State Parks system.

Along with the ITI participants, we took in the full range of interpretation available at the summit of Mount Washington. This included a tour of the Tip-Top House plus information on display in the visitor center at the state-run Sherman Adams building and at the Mount Washington Observatory. After ingesting these various interpretations, we noticed two trends.

On the surface, each of these interpretations stressed, in a predictable manner, one or more of the superlatives noted above. The Tip-Top House interpreter talked about his site's status as the oldest standing building on top of a major North American mountain. At the observatory we learned about the highest wind velocity ever recorded. And so on.

Far more interesting than these run-of-the-mill Mount Washington factoids was an almost unacknowledged interpretive undercurrent. Shortly after we began our walk around the summit, in what amounted to a series of asides, we learned that the top of Mount Washington may be thought of both spatially and temporally as a crazy quilt of ownership and other rights. The top of New England's tallest mountain is currently shared in one way or another by the state of New Hampshire, Dartmouth College, the privately run Mount Washington Observatory (which leases space from the state), two private transportation services (the Mount Washington Auto Road and the Mount Washington Cog Railway), a radio transmitter, a television transmitter, and one or more federal intelligence agencies. Most of Mount Washington, specifically the parts below the immediate summit and outside the rail and road rights-of-way, is part of the White Mountain National Forest. Without going into undue detail, it is fair to say that the history of the summit's ownership is every bit as complicated as

today's tangle of ownership, rights, and rights-of-way (Anderson 1980).

But What Does This Mean?

As we have said, a critical approach to historical interpretation is a two-step process which entails an examination of existing interpretations to identify the interests they serve and the creation of new interpretations that openly acknowledge contemporary needs and interests. Thus we must begin by asking just what is the meaning and the use of the seemingly meaningless and seemingly useless interpretations that fill the thin air high atop Mount Washington. Here's our best guess.

It is not easy to get up Mount Washington. One may hike up, but a climb up Mount Washington is a legitimately dangerous undertaking, especially when the weather is questionable and even when it looks safe.⁴ There are three other options: a \$32 ride on the Mount Washington Cog Railway, a less-expensive ride in a van operated by the Mount Washington Auto Road (first opened in 1861 as the Mount Washington Carriage Road), or a drive in your own car along the Auto Road which will cost you some money and perhaps a white knuckle or

⁴ As of the writing of a 1960 press release from the New Hampshire State Planning and Development Commission, 43 people had died as a result of climbing Mount Washington, most of them victims of exhaustion and exposure.

two. One way or another, you have to pay a price to get up Mount Washington, but when the reward is being able to see 150 miles in any direction, the trip up seems well worth the cost.

The rub is that the top of Mount Washington is socked in by fog 300 days each year. That means that on any given day, a visitor to Mount Washington rolls the dice, trading hard-earned vacation dollars (and time) for a one-in-six chance of viewing a view that is second to none, at least in the East. The list of Mount Washington climbers who have crapped out, peaking without peeking, is long and distinguished. Daniel Webster, disappointed after his 1831 conquest of the summit, reportedly said, "Mount Washington, I have come a long distance, and now you seem to give me a cold reception, for which I am extremely sorry, as I shall not have time enough to view this grand prospect which now lies before me, and nothing prevents but the uncomfortable atmosphere in which you reside!" (Monahan 1951).

Today, even if clouds do their worst, nobody has to leave Mount Washington unfulfilled or empty-handed. On the chance that you don't get to see the Berkshires of Massachusetts, the Green Mountains of Vermont, the Adirondacks of New York, Maine's Atlantic Coast, or Canada (Johnson 1961:7) from the top, an enterprising postcard maker did, and you can buy what he or she saw. And if you choose to drive the Auto

Road, your bumper can proudly proclaim that "This Car Climbed Mount Washington." Better yet, without spending a dime on souvenirs, you can take a "Mount Washington Superlatives Tour" and be firmly reminded that your trip was successful even if (or perhaps because) all you could see was the mother of all fog banks. View or no view, you've stood on the bull's-eye once targeted by the fiercest gust of wind ever recorded, and you've ridden on the world's first mountain-climbing railroad or driven on the world's first mountain toll road (Johnson 1961:1), also thought to be "the oldest man-made recreational facility still in operation in the entire country" (Seaver 1979). In short, we suspect that the pitter-patter of superlatives raining down on visitors to the "roof of New England" (Atkinson 1961) serves to reinforce the message that is delivered only sporadically by the unreliable view: Mount Washington is an amazing place, and we see no reason to argue with John Meck's (1963) claim that "the summit of Mt. Washington is undoubtedly the most unique piece of real estate in the entire State of New Hampshire." The various commercial concerns that make money from getting people to the top of Mount Washington depend on a steady stream of visitors sharing Meck's opinion; satisfied customers, convinced that their experience was extraordinary, will convince others to follow in their footsteps, or tire tracks.

Thus there are two sets on in

terests served by a Mount Washington summit tour based on the mountain's impressive list of superlatives. When visitors are satisfied with what they have seen, heard, or read on top of Mount Washington, they win, and so do the entrepreneurs who sell access to the summit. Given the high ranking of tourism among New Hampshire's "industries," attracting and satisfying tourists is an important mission. We do not fault the authors of interpretive materials that either explicitly or implicitly encourage visitors to value their visits to the Granite State (and we certainly do not mean to discourage potential Mount Washington visitors by citing the statistics on cloudy days). Even so, we think there is something more important than attracting visitors that may be done with the interpretive raw materials at the top of Mount Washington.

Down to the Sub-text

We have previously noted a sub-text to the "Mount Washington Superlatives Tour" that deals with the issues of multiple ownership and multiple use at the summit. Interestingly, this mountain-top sub-text is somewhat more prominent at lower elevations. In the thick, but not exhaustive, Pinkham's Grant correspondence and clipping file at the New Hampshire Division of Historical Resources, articles quoting P. T. Barnum (who called the view from Mount Washington "the second greatest show on earth") share folder space with articles such as:

- "Mt. Washington / Col. Teague Will Admitted to Probate in Coos Court / Cog Railway and Other Holdings Go to College in Residuary Legacy; Use of Income Left Unrestricted" (*Manchester Union Leader*, 26 October 1951);
- "'Mount Washington Committee' Represents Several Interests" (*Manchester Union Leader*, 24 November 1953);
- "Notable Pioneer Work / Mount Washington Observatory Great Aid to U.S. Armed Forces" (*Manchester Union Leader*, 25 November 1953);
- "New Hampshire Once Owned Summit of Mt. Washington" (*Littleton Courier*, 5 December 1963);
- "Summit Improvements Required / Senate Views Funds for Mt. Washington" (*Manchester Union Leader*, 22 March 1974);
- "Mindful of Public Interest / Dartmouth Will Retain Mountain Summit Title" (*Berlin Reporter*, undated); and
- "Discuss Greater Cooperation on Mt. Washington" (unattributed, undated).

Shortly after the death of Colonel Henry N. Teague, the last individual to own the summit of Mount Washington, Reg Abbott (1953) wrote about a meeting of "all—or most all—the special interests on Mount Washington," later referred to as "the people who own various parts of the peak." The purpose of Abbott's article was to introduce Governor Hugh Gregg's newly formed "Mount

Washington committee" whose members represented Dartmouth College (which was willed the peak by Colonel Teague in 1951 and which sold it to the state of New Hampshire in 1964), the Mount Washington Observatory, the White Mountain Region Association, the Appalachian Mountain Club, the Glen House, the Summit Road Company, and state's Forestry and Recreation Commission, and the White Mountain National Forest. Also invited were the U.S. Army, Navy, and Air Force. One of the committee's first tasks was the drafting of "a comprehensive map of the summit area, showing who owns what and who leases what areas" (Abbott 1953). Abbott concluded his article by saying, "With the Army, Navy, the Air Force, the Signal Corps, the Quartermaster Corps, the cog railway, the carriage road, the observatory, Mt. Washington TV, Yankee Network, the Appalachian Mountain Club and the general public all having use for, and access to, the summit, is it any wonder there are problems."

In 1963, Meck observed that "over the years there have been a number of leases of the real estate at the summit to various persons and corporations and also conveyances from time to time of certain easements and rights of way in this real estate.... After World War II the federal government became vitally interested in Mt. Washington as an outdoor laboratory ... subsequently this area was condemned for short periods of time by agencies of the federal

government." This pattern of multiple interests, rights, and uses was largely unchanged a decade later when it was noted that, "except for the privately owned buildings of WMTW-TV (Channel 8), the summit plateau of Mount Washington is a New Hampshire State Park, and it is completely surrounded by the White Mountain National Forest. The structures on the top, all designed to serve the public one way or another, make up what has been called 'a city in the clouds.'" (*Concord Monitor* 1976). A year or so after we made our visit to Mount Washington, this theme was identified yet again by Gary Ghioto in an article subtitled "Interests vie atop Washington." Reports Ghioto (1992), "The politics of Mount Washington are complicated. While the U.S. Forest Service controls much of the mountain, the owners of the Cog Railway and the auto road have deeded rights of way to the summit. The state owns 60 acres on the summit as part of Mount Washington State Park. Dartmouth College owns nine acres and has a lease with the owner of a Maine television station until 2010.... Other interested parties include the Mount Washington Observatory ... and the Appalachian Mountain Club."

There are at least two ways to respond, interpretively, to the kaleidoscope of interests shifting in and out of view at the top of Mount Washington. The initial impulse of most participants in the Interpretive Training Institute

was to head for coherence; they wanted to see and hear fewer messages, delivered in fewer voices, with fewer seams showing. From the standpoint of interpretive theory, such an interpretation of the summit would be a decided improvement over what is available now. Most experts agree that when you confuse your visitors, their responses to your interpretation will range from apathy to antagonism, which are probably *not* the reactions you had in mind when you wrote your tour, printed your guidebook, or hung your exhibit panels. Despite the good work of the ITI crew, we found ourselves heading in another direction.

Rather than trying to produce interpretive coherence by hiding all the stitching that holds the top of Mount Washington together, our idea is to put the fragmentation of the summit to use by putting it on display, inside an interpretation that served to frame it. On our way home from Mount Washington, we came up with the following text which could be used in a variety of different interpretive media.

A Tip-Top Tour

"As you walk around the summit of Mount Washington, you will notice buildings and structures that are occupied and used by many different agencies and organizations. Dartmouth College owns and leases a part of the summit. The state of New Hampshire owns and operates Tip-Top House and the Sherman Adams

building. The observatory is run by a private, non-profit organization. Television and radio stations based in Maine and New Hampshire broadcast their signals from this mountaintop, and several different public and private agencies—including the Federal Bureau of Investigation—have communications equipment here. Finally, as you probably know, public access to the summit is managed by two different private companies. In short, many different organizations have planted their flags in this small piece of New Hampshire. Given the value and the uniqueness of this particular spot, it is tempting to wonder how and why so many different interests can co-exist in such a small place. Why hasn't someone decided to play 'King of the Hill' on Mount Washington?

"We think the answer has to do with what you already knew about this mountain *before* you hiked, rode, or drove up here to the top. Mount Washington has been described by a mountain of superlatives. It is the *highest* peak in the Northeast. It has the world's *worst* weather, and has felt the world's *fastest* recorded winds. We think Tip-Top House is the *oldest* mountaintop hotel in the United States. You may know other superlatives for this place. The point is that, for many different reasons, we have come to think of the summit of Mount Washington as special, unique, distinctive, in a class by itself. There is no other. We think that almost everyone who has an interest in Mount Washington

recognizes its specialness. Not only do people see this place as special, we think that most people would find it inappropriate for a single individual or organization to own or control a place as special as this.

"So many different interests co-exist on this mountaintop *not* because of something intrinsic to the mountain itself, but because people have *decided* that this place should be shared and they have worked hard to make that sharing a reality.

"However, the top of Mount Washington is not the only place in New Hampshire where there are multiple interests that need to be considered, and we hope that after you go back down the mountain you will spend some time thinking about the idea of ownership. Somewhere along the line—either consciously or by default—people decided that the summit of Mount Washington should be held in common. Back in the flatlands there are all kinds of rights and interests that make up the concept of property ownership. There are water rights, mineral rights, air rights, hunting rights, and development rights, to name just a few. Various 'packages' of these rights can be conveyed through easements and other legal tools. When you come down to it, *no* individual owns and absolutely controls all of the various rights that adhere to any particular piece of property. In *every* case, a greater or lesser number of these rights are managed publicly for the common good.

"Here on Mount Washington we can see a rather extreme example of cooperation based on a clear idea of rights that cannot or should not be subject to narrow ownership. When you get back down from the mountain, we hope you will remember the Tip-Top House and the breathtaking view, but we also hope you will spend some time thinking about just where, and how, to draw the line between resources and rights that should be owned privately and those that are so valuable to us that they should be used and managed with the long-term common good in mind, rather than short-term private gain.

"By suggesting this line of thought, we do not mean to advocate any particular position, or any specific changes in local or regional land-use regulations. All we are suggesting is that the history of cooperative management at Mount Washington can help all of us think more productively about the rights and responsibilities of property ownership wherever we come from. Mount Washington may well be a singular resource, but there is no place in New Hampshire that doesn't deserve the same kind of thoughtful attention given to this place for so many years."

Property Rights

New Hampshire's automobile license plates carry the motto "Live Free or Die," and we live free in a variety of ways. In what is almost an annual ritual, our state legislature routinely defeats three

bills: a "bottle bill" requiring the use of returnable beverage containers, a bill requiring adults to wear seat belts, and a bill requiring hunters to wear orange. Here in New Hampshire, nobody tells us what to do, and this is especially true with regard to private property rights.

New Hampshire is fertile ground for the "Wise Use" Movement, which argues that almost any private land-use decision is better than almost any government-based land-management proposal. As of 1988, the last year for which we have statistics, 11% of New Hampshire's 234 cities and towns lacked a building permit system, 15% had no zoning ordinance, and 36% had no building code (Office of State Planning 1988). Many New Hampshire property owners are reluctant to have their properties listed in the National Register of Historic Places, despite assurances that the listing imposes *no* obligations or constraints on the private use of private properties. And finally, a recent attempt to have the Pemigewasset River included in the National Wild and Scenic Rivers System was killed when several towns along the river voted against the proposal, based on fears of creeping federal control. In short, the basic New Hampshire attitude toward private property sounds something like "it's my land; I'll do whatever I want with it, and it's nobody's business but mine." This is the New Hampshire into which people descend after they visit the top of

Mount Washington.

Unfortunately, this particular New Hampshire is more fantasy than reality. No matter how loudly one might talk the talk, there is no place—even in New Hampshire—where one can walk the walk. Every single square inch of the Granite State is subject to at least some infringement on the sovereignty of private property rights—and we have a longer and richer history of public land-use planning than many people might suspect. By focusing on the complexity of interlocking and overlapping property rights on the summit of Mount Washington, which mirrors the complexity of property rights throughout the rest of the state, we hope to encourage public discussions of property rights that move beyond the dead-end rhetoric of name-calling and sloganeering and that rely instead on reasoned examinations of particular cases.

The value of Mount Washington as a place for initiating such discussions is twofold. Mount Washington is an exceptional place that can lead us to think more clearly about common places, and it is a public place that can help us better understand private places. The particular lesson we hope to teach with Mount Washington is that it is more productive to think about "public" and "private" not as a black-and-white dichotomy, but rather as a continuum that colors every piece of New Hampshire some shade of gray. Giving visitors the chance to begin learning the words for en-

tering into sophisticated discussions of property rights seems somewhat more important to us than teaching them the date on which the wind blew 231 miles per hour high atop Mount Washington.

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With Ridiculous Caution

On southeast Georgia farmland, on a road that runs
to mire in March rains, near no thing
human, abruptly a stranded graveyard. There is no church
for miles. This is a cemetery for travellers,
where manifest destiny brought some of them to lie down
and sleep out the rest of their crossing.

Once I found this hushed community I returned often, walking
the ground so many times I memorized their names. Diphtheria moved
through their young like gossip among tattlers,
like fatal slander. Wives outlived their men by ten years,
at least; husbands followed wives within only two.

The crude stones, some blank, featured names and dates
imprecisely scrawled by makeshift tool: Bennett, Thornburgh,
Strom, Taylor, Booker, Sims, Johnson, Albright. But some stones
only seemed blank; their indented surfaces could be revealed
by a process known to the art's cognoscenti as "rubblings."
People have travelled cemeteries all over a country, gathering
anthropological scraps from the process.

My presence in this burial place is the old maid's foolish
anticipation: Those lying about are at a loss for words, and getting
to know them is like listening for the cat with no bell.
Al, the savvy southern boy, has dared me to find
the Parkerville Cemetery; I have spent the day to win
this dare. Since then, the dead ones and I have exchanged
theories on meaning. This small wood has escaped
the insidious secret of Spanish moss: the decadent drape
on trees holding "chiggers" in swarms, loathsome charm for the unwary.

Absurdly careful, I begin to gentle the letters on stones onto rice paper with a charcoal stick, remembering those back at the office worrying, "It's funny that she's so keen on finding that cemetery." It *is* funny, that finding some of the dates on stones, I had to find them all, since *not knowing* means I would have to lie down here forever to unriddle these truncated lives.

How do we call death? – "passing," as these souls were when their bodies became as useless as destinations: *motus animi continuus*.

Sun slants through trees, layering my face;
the wind rubs across it, yielding nothing,
nothing but texture. I struggle to lift a toppled
half-stone of graveness: infant mortality.
Some children's graves are diagonal bricks in circles
of leaves, nothing more.

I must write a book on those buried here,
because they will be dead for a long time;
because there is a texture here beyond mere indentations
in stone. Because all of what inheres in this place
steals loveliness from every living thing
and flies like a mynah in the face of caution.

– Susan Stevens

Computers and Preservation

Meeting the Challenges of the 1990s

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Fundamental changes are occurring in the field of historic preservation. These changes are a product of shifts in the structure of communities, urban growth patterns, preservation law, the demand for more public-oriented interpretation, multicultural awareness, and the focus of this paper—advancements in technology. While the field of historic preservation continues to expand, the appropriate technology, resource base, and issues have become more complex. While this paper describes the use of appropriate technology for studying and managing historic properties and landscapes in California, its application and use are equally appropriate in other regions where similar resource management issues exist.

For the past two decades historic preservation professionals in California have struggled with the state's expanding economy and urbanization, which until recent years has gone unabated. During this period challenges to the state's historic resources have presented increasingly complex is-

sues for the public sector, as well as local, state, and federal agencies. As public agency budgets decrease, campgrounds, public parks, and interpretive sites are being pushed to not only remain open, but to further preservation efforts for endangered buildings and sites. These financial, legal,

and environmental challenges to historic preservation should send a clear signal to the preservation community that the old ways of doing business are in need of change.

Awareness of these challenges and some possible solutions were already being articulated at the federal level in the mid-1980s. Between December 1985 and April 1986 the Federal Office of Technology Assessment, better known as OTA, met in a series of workshops where a wide variety of technological issues were discussed. Several of the major findings presented at the workshops spelled out basic issues and directions for research.

1. Preservationists in all the associated disciplines share problems of obtaining access to information about technologies, training, and coordinating research.
2. New technologies can extend the scope of our understanding and care of the U.S. cultural heritage by improving the quality, quantity, type, and usefulness of data gathered.
3. A variety of educational, institutional, managerial, and cost barriers inhibit the broad application of new methods, techniques, and equipment to preservation.
4. If advanced technologies are to assume a greater role in preservation, it is important to find more effective means of transferring technology devel-

oped in other fields to prehistoric and historic preservation.

5. Documentary research conducted at the outset of a project helps define the approach and focus of preservation efforts.
6. The vast amount of information available suggests preservation professionals need to gain intellectual and technological control over the knowledge base.

These findings articulated the importance of technology transfer, its importance in the understanding of cultural resources, and barriers to obtaining and adapting technologies to preservation problems and projects. However, despite this and other evidence of awareness, until recently the federal government has only modestly fostered the implementation of new preservation technologies. As OTA remarked, "the greatest single need is to improve the transfer and adaptation of technologies from other disciplines into preservation" (OTA page 135). The work presented here illustrates this principle by adapting tools used by landscape architects to address preservation issues.

The California Experience

For over a century, California's urban growth has spread throughout rural areas of the state, introducing issues that affect the social, economic, and physical structure of communities and their natural and cultural resources. Because of the dispersed nature of the changing landscape,

potential historic resources are widely separated in space, quality, and significance. In addition, recent natural disasters have required immediate assessment of large numbers of historic resources under strained circumstances. Of critical importance in meeting these challenges are the methods used by professionals and lay people to document, evaluate, and manage. Traditional methods that considered sites and structures individually or in small clusters can no longer keep up with the breadth and speed of change.

During the late 1980s and early 90s, computer technology made good on the promise of general tools appropriate for inventory, analysis, and evaluation applications. However, during this period, the process of technology transfer and adoption remained linked to policy and pragmatic considerations and far too much time was spent haggling over mundane issues, such as which technologies to adopt and when. Time was spent arguing about the relative number of high end capabilities promised in a particular computer platform or software application rather than in developing methods and techniques for inventories and interpretation. The truth is that almost any off-the-shelf application, running on any platform can provide significant advantages over doing the job by hand and often it is more important to change fundamental working habits and develop new methods than to procure or de-

velop the "killer" computer system. In addition, standards for data transfer have evolved to a point where we can be confident that what is developed on one system will be extensively compatible with all other systems. Certainly this has been true for the major desktop computer systems (DOS/Windows and MAC) for several years.

The following case studies reflect the application of advancements in technology, historical research, and communication to preservation issues faced in California. One of the goals of these studies has been to integrate historic preservation concepts and techniques from other disciplines. Each of the case studies described in the body of this paper have been undertaken in the spirit of researching appropriate methods and redefining the nature of specific analyses that lead to intelligent decision making about the management of cultural resources.

Over the past seven years the United States Forest Service and the University of California, Davis, have engaged in a series of joint research projects, testing the viability of emerging computer applications. During this period our approach changed from using computers to improve upon traditional preservation methods to the development of more advanced inventory and analytic techniques using some of the newest computer software available on the market (Figure 1).

Projects	Inventory and Measurement		Graphic Format	
	Hand measure	Computer measure	Line drawings	Scanned photos
87 • Gold Country Commercial Architecture				
88 • Gold Lakes Recreation Areas				
89 • Northfork Administrative Compound				
90 • Glen Alpine-Bernard Maybeck Site				
90 • Jesse Blakely Ross Log Cabin				
91 • Recreational Housing Studies				
91 • Vahalla Modification Analysis				
93 • Cleveland Wildfire Visual Data Base				

Figure 1. Matrix illustrating the shift in methodology from hand measurement to computer measurement and from using line drawings to using only scanned photographs as documentation.

Several early studies focused on recording historic buildings to Historic American Building Survey (HABS) standards. Traditional drawings were created with on-screen digitization using a Computer Aided Design (CAD) system to create line drawings from digital, parallax corrected photographs. However, the time spent to develop these drawings, although much improved over doing it with pen and ink, was too much for the amount of information represented in the final product. Because of this awareness we completely modified our approach and all case studies subsequent to 1990 utilized digital photography as the primary documentation media, improving accuracy, speed and expanding the amount of information available. It no longer made sense to produce a line drawing of a building when a digitized photograph, costing much less to produce and

store, could communicate a full range of materials, textures, and colors, as well as the information about form and size available from line drawings.

In a similar example, field measurement of building features no longer required several people to spend up to a day in intensive hands-on activity. The newly adopted techniques utilized scanned photographs that were scaled using two field measurements, typically the height of a door and the overall width of a building, and then used a CAD system to make all subsequent measurements. This system proved so efficient that for Victorian storefronts, twenty-five measurements could be made in eight minutes with an accuracy of $\pm 3\%$. The same work done in the field took two people four to six hours, with only slightly improved accuracy.

A wide range of software applications were tested to develop the methods described. They generally fall into three categories, graphic production, data storage and analysis systems, and documentation/communication systems. Graphics, in the form of maps, drawings, and digital photographs were developed and manipulated using scanning, raster image processing and computer aided design (CAD) software. The second category related to information storage and analysis and included GIS, statistics, and charting applications. The third class of applications was used to produce documentation and included slide presentations, word processing, and page layout applications. The majority of current computer users are familiar with graphic, word processing and page layout applications; however, many are just beginning to understand GIS. Because of this, there has been more focus on GIS in this paper.

Geographic information systems (GIS) were used in the case studies to combine historical documentation, field evaluation, and measurements with visual information in a computer data base linked by common symbols and terms. In essence, a GIS is a computer based application that has three characteristics. The first is that it will store many kinds of information including text, numbers, and images. The second characteristic is an ability to maintain linkages between the stored information and a graphic, usually a map, where each object on the

graphic or map acts as a virtual button that, when pushed, retrieves the information attached to it. For example, the map for North Fork, a Forest Service administrative compound near Yosemite Valley had 46 buildings on it. When the on-screen cursor is placed on any of these buildings and the mouse button is pressed, a form holding information about that building, called a record, fills the screen. In reverse order, if we consulted the data in the records for all of the buildings on the map and asked for those evaluated as contributing to a National Register district, the GIS would print a customized map of just those parcels, or it could shade those parcels a particular color. The third characteristic of a GIS is an ability to store and work with topology, or spatial measurement. Topological structures allow one to measure areas, distances and to locate features according to Cartesian coordinates such as latitude and longitude.

Early discussion between the university team and the Forest Service historian outlined the requirements for a data base system. (Figs. 2 and 3.) Two software applications were tested, FileVision IV™, a flat file intelligent mapping system and GeoNavigator™, a more complex relational GIS. Neither computer application was specifically designed for preservation, but were easily adapted and customized to assist in land use and preservation planning studies. While FileVision IV™ is an inexpensive, user

friendly software package, Geo- Navigator™ is a more sophisti-

cated, fully relational data base.

**Requirements for a
Computer Inventory and Analysis System**
(Geographic Information System)

- Accuracy in measurement
- Flexibility to add and update information
- Ease of use for non-technical users
- Ability to perform summaries and print reports
- Ability to use existing inventory formats
- Ability to customize formats for each resource type
- Low cost per resource
- Ability to exchange data with other systems
- Ability to publish results in a variety of formats

Figure 2. Criteria established by USDA Forest Service and the University of California, Davis, team for choosing a GIS

**Dimensions of Data Storage
and Analysis System**
(Geographic Information System)

- | | |
|---|--|
| <ul style="list-style-type: none">• TEXT<ul style="list-style-type: none">a. Inventory formsb. National Register formc. Bibliographyd. Narrative History• GRAPHICS<ul style="list-style-type: none">a. Maps (Thematic maps)b. Drawings (vector graphics)c. Photographs (raster images)d. Archival images & documents (scanned raster images) | <ul style="list-style-type: none">• NUMBERS<ul style="list-style-type: none">a. Inventory formsb. Tablesc. Calculated fieldsd. Statistical summaries• DATA STRUCTURE<ul style="list-style-type: none">a. Heirarchialb. Thematicc. Linked files |
|---|--|

Figure 3. Structure and data types accommodated in the GIS systems used in case studies.

Case Studies

Four case studies are presented in this paper: A Gold Country Regional Data Base; Rural Farmland Preservation in Ventura County; A Visual Information

Data Base for the Cleveland Wild-fire; and a Model for Inventorying and Evaluating Historic Properties within the National Forests of California. They range in scale from regional analysis to historic dis-

tracts and individual sites. In each case the computer is used as both an organizational and an analytical tool.

Live demonstrations of several of the case studies have been presented at the following conferences: the West Coast Conference on Land-use Planning sponsored by the Local Government Commission, San Francisco (1994); University of Calgary Rural Preservation Conference in Edmonton, Canada (1993); National Trust Annual Conference, San Francisco (1991); National Main Street Town Meeting, National Trust for Historic Preservation, San Francisco, (1991); The Third Global Congress of Heritage Interpretation International, Honolulu, Hawaii (1991); Association for Preservation Technology International (APTG) Meeting, New Orleans (1991); the Association for Preservation Technology International (APT Meeting in Chicago, Illinois (1989); and The Arizona State University Conference on Built Form and Culture Research, Tempe (1989).

A Gold Country Regional Data Base

During the past four decades the loss of rural farmland and historic landscapes has affected the fundamental social and economic framework of American society. This has been especially evident in California which has experienced extreme and uncontrolled growth. Expanding suburbs, wildfires, and a lack of cultural awareness, all contribute to the demise of both natural and cultural resources.

Urban sprawl and rural development are compromising both the physical setting and surrounding landscape of historic sites and buildings. When debating the effects of urban sprawl on this nation's historic properties, National Trust for Historic Preservation President Richard Moe remarked that "forces beyond the control of designers and developers—especially those that influenced retail centers—have to be anticipated" (Moe December 1993-January 1994 Preservation News; page 36). Moe's proactive stance is well taken, particularly in rural areas that are undergoing the greatest urban sprawl.

The development of a regional data base for the California's gold country was to serve as a repository for those doing research in the region, provide local planning agencies with a mechanism to analyze the effect on historic properties, assist in long-range planning efforts, and serve as a catalyst for the preservation of the historic rural landscape. It was generated in response to a 1986 demographic projection conducted by McNiel and his students which showed growth rates of over 1000% in the next forty years.

The data base encompasses seven years of study in a geographical area that extends from Mariposa County on the south to Nevada County on the north. The study focuses on communities that developed following the discovery of gold at Coloma in January of 1848. The vast majority of the communities in the seven county

area were built alongside streams or rivers where rich deposits of gold were once plentiful. The historic environment of the gold country includes commercial and residential buildings, widely scattered homesteads and ranches, hardrock and placer mining landscapes and sites, and hundreds of miles of stacked rock walls, earthen ditches, and old emigrant, freight, and stage roads.

Many of the buildings and features within the gold country region have been neglected and are in need of repair. In other cases development has encroached on the boundaries of historic properties, impacting the visual setting of the historic landscape. Virtually all of the important historic resources directly associated with the Gold Rush Era are privately owned and there are few strong public or private preservation efforts underway that provide incentives or even education as to the importance of individual structures and landscapes. Moreover, many of the local residents fail to acknowledge the positive economic impact created by tourism.

In order to address these issues, a geographic information system (GIS) was developed as a repository for a wide variety of information collected during individual research projects, each of which has been aimed at a particular problem or opportunity. The GIS in this case acts as an organizational tool, ensuring that all data is correlated with maps that can be printed at a common scale. The GIS system also facilitates

comparisons that often reveal correlations that might otherwise go unnoticed. For example, when the 1900 census was entered into the data base from its hand written form, it became possible to understand the ethnic affiliations of various builders and helped to identify the differences in masonry styles that, in turn, helped to identify areas within the community associated with various immigrant groups such as the Italians and the Chinese.

The GIS data base currently contains detailed information on two communities, including architectural drawings and measurements of all the commercial buildings. Another block of studies contributed information on the morphological expansion and physical growth patterns of six additional communities. These data bases include the development of circulation networks and land use over time, starting in the 1850s. Other studies have contributed information about current visual quality along a major tourism highway, and the identification of cultural resources throughout the entire region.

All of these individual studies have developed digital documentation that was entered directly into the data base. The GIS currently being used is the topologically based application GeoNavigator™, which differs from the flat file intelligent mapping product used in the majority of the other case studies. GeoNavigator™ is a relational data base, with mapping in real world coordinates. For a

project as large and as varied as the gold country study, it was felt that a true GIS would serve the project best because of the sheer volume of information and its relational qualities. Unfortunately, the benefit of more power is tempered by increased cost and difficulty of use. Although GeoNavigator™ is relatively inexpensive and easy to learn compared to GIS products like ArcInfo™, it requires a firm knowledge of data base structures in order to get the most out of its capabilities. In addition, the software currently costs approximately 18 times more than FileVision IV™, the flat file mapping system described below. It is also important to note that more powerful software requires a more efficient and upgraded computer system.

Rural Farmland Preservation in Ventura County

A project undertaken in 1992 illustrates the use of intelligent mapping in the planning and preservation of large tracts of threatened agricultural lands in Ventura County. The project also lays the foundation for examining rural historic landscapes or and agricultural landscapes for their importance to social and economic change.

Ventura County, located northwest of Los Angeles in Southern California, is blessed with a thriving agricultural economy, influenced by a Mediterranean climate, rich fertile soils, and the county's close proximity to urban markets. However, the area's close prox-

imity to Los Angeles has encouraged major population growth and urbanization in the past few decades. In an attempt to track the rate of farmland loss and to predict where threatened farmlands exist, a trial geographic information system was developed jointly between the University of California, Davis, the California Coastal Conservancy and Ventura County. The Geographical Information System model was implemented at two levels. The first level illustrates large scale planning information in juxtaposition to agricultural resources, natural landscapes, and historic urbanization patterns. The second level of mapping includes each parcel over ten acres, as well as detailed information on the legal and economic characteristics of each parcel. This second level also has environmental information included for those systems important to farmland preservation or urbanization, such as the location of greenbelts, wetlands, biodiversity corridors and flood zones.

The intent of the trial data base was to develop and test an information system that would facilitate the detection of conditions under which farmland will have a high probability of being converted to other uses and to direct the purchase of development rights, easements or other proactive mechanisms designed to preserve threatened parcels. Historic farmsteads, barns and structures associated with agriculture are key to this process of preservation,

and are often the most threatened elements. The data base is currently being tested by Michael Moore, a consulting economist from Northern California. Moore hopes that the model will help predict potential conversion, and with the assistance of Peter Brand of the California Coastal Conservancy, policy proposals will be developed that may affect all coastal agricultural counties in California.

By using two levels of mapping, the loss of rural farmscapes can be viewed in two contexts, from the standpoint of the county as a whole (macro-level) and from the scale of individual parcels (micro-level), where ownership and specific site characteristics are important. While the data base does not include a topological component, area specific modeling is possible because exact parcel acreages have been entered into the data base along with other information from the County Assessor's records.

One of the initial analyses revealed a distinct zone of conversion associated with the Sphere of Influence boundaries of several communities. By plotting individual parcels that have terminated their inclusion in the Williamson Act, an agricultural tax benefit program, it was possible to predict the extent of development that will occur ten years from now when the liability for converting will no longer be applicable. By plotting individual parcels with similar indicators of imminent conversion, isobars are being constructed on maps to illustrate crit-

ical zones that in turn can be used to develop and calibrate county planning policies.

In the case of the Ventura GIS, base maps were converted via DXF files from the county's existing CAD maps and assembled into searchable polygons. Data from federal, state, and local maps were scanned and traced to provide information on geographical characteristics and planning designations. Finally, information from the Ventura County Assessor's Office was entered into records attached to each parcel at the detailed mapping level to provide ownership value, land use, taxation rate, and zoning information. New data was developed in response to suspected economic indicators such as proximity to roads or types of crops planted, and this information was added to each parcel record.

The prototype was very successful in terms of cost and time to completion and many things were learned about the potential loss of farmlands, rural landscapes, and the availability and quality of data required to adequately predict and act to preserve threatened lands. A planned second phase will extend detailed, parcel-level mapping and analysis to the entire south county area. To accommodate this increase in scope, the prototype developed using FileVision IVTM will be transferred to GeoNavigatorTM and eventually to the county's own GIS, which is in early stages of development. Working in this way allowed a quick and economic prototype to

be developed without fear of losing valuable time in redundancy. It provided an opportunity to move forward during the two years it took for the county to choose, fund and begin to implement their own GIS system. Working in this way can counteract the common administrative argument that prefers deferment until a unit of government thoroughly evaluates GIS and assembles the funds for the purchase and development of a complete system. Our experience in this case leads to a conclusion that it is advantageous to start small and expect immediate returns in real, though limited, analysis capabilities, and large returns in experience and institutional education and acceptance.

A Visual Information Data Base for the Cleveland Wildfire

Using FileVision IV™ software, a visual information data base prototype was developed for the Cleveland Wildfire which swept through the western edge of the Eldorado National Forest during October 1993, destroying over 24,580 acres of timber and range land. During the conflagration, over 5,312 firefighters were dispatched to the wildfire, 71 of whom received some injury and two of whom lost their lives in a plane crash. The total fire suppression costs amounted to a staggering \$16,427,000.

Not only did the fire consume thousands of acres of mature and young timber, but it destroyed 41 privately owned dwellings, a wide variety of Forest Service improve-

ments, including a steel fire lookout tower, and resulted in damage to numerous historic and prehistoric archaeological sites. Many of the private homes consumed by the fire were historic, built between 1910 and 1940.

FileVision IV™ was chosen for its ease of use, low cost, and versatility in integrating visual images consisting of photographs, maps, and text, into a data base linked by custom-designed buttons. While the model focused on the Cleveland Fire, its implications are much greater and may eventually result in the creation of a land use model for the entire forest. In order to store the data a Bernoulli Drive was purchased, with a maximum storage capacity of up to 90 megabytes of memory per disk. Storage was, in fact, the greatest challenge since each photograph and map could absorb over 1 Mb. of memory. The data storage obstacle may be overcome in the future by purchase of a CD ROM drive using Kodak CD™ technology, dedicated hard drive, or a magnetic-optical drive.

FileVision IV™ had a number of advantages when compared to expensive and sophisticated GIS software in this application. The advantages include a cost under \$300 and its ease of use. The program has been designed so even a novice with limited or no computer skills can quickly master the system. The software's drawback is its flat file structure and limitation of only running on the Macintosh™. However, in reality this poses little problem since data

and graphics can be freely imported and exported from other PC systems.

While the Cleveland Fire was initially viewed as a natural disaster for the forest, for many the fire's aftermath provided an excellent testing ground for "ecosystems management," today a primary focus of the United States Forest Service. Ecosystem management, however, remains more of a philosophical concept for many resource agencies, with hope for practical application dependent on good research and planning.

Viewing the fire area as an integrated ecosystem with natural and human attributes, suggests that past land use was in part responsible for the behavior of the wild-fire. Land use history clearly has implications for management of the remaining natural and cultural resources within the burn area. While standard GIS applications were applied to the fire area, File-Vision IV™ provided a user-friendly visual model linking data to photographs. The system offers an efficient tool for time series studies, monitoring land use changes, and linking information from a wide variety of sources. As monitoring occurs during the area's recovery, the visual data base provides a structured receptacle for new information and will facilitate easy recall of before and after conditions.

A Model for Inventorying and Evaluating Historic Properties within the National Forests of California

The final case study represents a series of projects that involved both inventory and evaluation of Forest Service administrative buildings and recreational residences under special use permit. Because the Forest Service is required by law to consider the effects of its actions on historical properties, both administrative buildings and recreation residences are subject to Section 106 of the National Historic Preservation Act (1966 as amended).

The Pacific Southwest Region 5 of the Forest Service is unique in that the region contains the majority of both pre-1950 administrative buildings and the largest numbers of summer homes, over 6,000 across the entire state. The sheer volume of older properties presents a challenge, not to mention the complexity of the resource and its context within local, state, and national history.

Another concern was the similarities between individual historic properties in both context and design. Between 1933 and 1937 the United States Forest Service took a bold step and with Emergency Conservation Work (ECW) funding, hired the San Francisco architectural firm of Blanchard and Maher to design virtually all its new administrative buildings. Well over half the standing administrative buildings in California today were built from designs cre-

ated by Blanchard and Maher. Many of these buildings have been dramatically altered, while others remain intact. Clearly, many of the buildings are in need of maintenance, as well as structural rehabilitation.

The need for a complete inventory of its properties, an evaluation of historical significance, and a management plan, was required for the old supervisor's headquarters of the Sierra National Forest at Northfork, California. Northfork is located on the western slopes of the Sierra Nevada Mountains in Madera County northeast of Fresno. Using FileVision IV™, a team of students recorded each building, structure, and object at the Northfork compound and entered that data into the computer, which generated an accurate data base of each property and a current typology of site and building characteristic that serve as a guide for preservation activities within the compound.

As with other graphic models, the compound buildings and landscape features were linked through a schematic map to data sheets. Therefore, facility managers had the ability to immediately access data through visual mapping and determine the status of a particular building or landscape, its significant fabric, and the management objectives necessary to meet the needs of the property.

The same approach was applied to recreation residences in California, although in the case of

these summer homes, qualitative as well as quantitative rating schemes were developed to determine the relative significance of an individual building, its integrity, and potential for listing as an individually eligible property or as a contributing property within an historic district.

Again, FileVision IV™ was utilized and a data base developed for each tract. Analyses of building elements led to the development of graphic typologies of architectural characteristics as was done for Northfork. A quantitative approach proved useful in determining the uniqueness or representativeness of a wide variety of architectural styles and features. Because virtually all summer homes fall into the category of vernacular architecture, each building has unique characteristics, yet shares certain similarities in massing, fenestration, roof pitch, color, location of porch, and roof cladding. These architectural similarities appear to be based upon climatic considerations, popular architecture styles of the day, the modest capital outlay to build the home, and most importantly, beginning in 1915, guidelines established by the Forest Service.

The data base developed for summer homes serves several purposes. First, it serves as a repository for current and past inventory information. Second, it has facilitated detailed qualitative and quantitative analyses of historic integrity and significance. Third, and possibly the most im-

portant function, is as an on-going monitoring and management system, providing instant access to historical information and providing a means by which continued deterioration or rehabilitation and restoration of the resource can be monitored and controlled.

Conclusion

In each case study we have found that simple GIS applications have given us an ability to inventory, analyze and manage large amounts of data for relatively little outlay in time or money. Familiar applications for working with text, graphics and digital photography work in tandem to provide a set of tools available for solving preservation problems. In most cases these tools offer new methods for working with data sources and provides a level of consistency and integration unavailable before. For those just setting out on the path to computerization we highly recommend starting small and moving up only when currently used applications run out of room or power. Being able to

reap instant and visible returns on initial efforts has proved invaluable for us in both analytical power and for conveying the message to a wide audience. Clearly, there is a need for more computer training the schools offering degrees in both history and historic preservation and other disciplines have e much to offer in this regard.

Although computers do provide some of the tools, there is still a need for preservationists to maintain and develop the traditional skills necessary to carry out diverse preservation projects. However, clinging slavishly to these methods will not address the needs of scale and numbers that are beginning to characterize preservation. In another ten years we will be evaluating the hundreds of thousands of resources developed in the boom period following the Second World War and as preservationists, we must begin to adjust our methods now or the challenges of the future will not be met.



Woman's Work

Finding Significance on the Local Level

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Introduction

There is no question that many more historic sites celebrate great men than great women (Miller 1992), but that is only part of the problem. Historic sites traditionally have tended to focus on the elite: the rich, the powerful, the famous. Carefully chosen to correct past imbalances, even such recently recognized sites as the Alice Paul house in Moorestown, New Jersey, which honors a leader in the women's suffrage movement, and the Haley House Museum in Memphis, Tennessee (a tribute to the author of *Roots*), tend to honor exceptional individuals. It is the exceptional who inspire us, who make us proud, who reindulge the ideals of the American dream. Nevertheless, there has also been some acknowledgment, in recent times, that famous folks don't do it alone (Miller 1992:5). They have their slaves (the reconstructed slave quarter at Carter's Grove, a component of Colonial Williamsburg), their Irish servant girls (recognized at the Martin Van Buren House in Kinderhook, New York), and even their lady architects (some attention is paid to Julia Morgan, the architect who designed Hearst's San Simeon in California). They, too, get credit for contributing to greatness. While all heroes and heroines need not have attained national stature for their accomplishments (the National Register criteria, after all, also allow for sites "that have yielded, or may be likely to yield, information important in prehistory or history"), they do need to be legendary. More often than not, local sites derive their significance from an individual or individuals who are seen as somehow extraordinary (or at the very least, eccentric), be it only on the local level: the house of the earliest settler, the house of the richest resident, the birthplace of someone who ultimately attained national prominence.

The search for significance, or even eccentricity, in specific individuals associated with a historic site may mask the site's even greater importance as a representation of wider phenomena. In other words, the model of the great man/great woman site transposed to the local level may obscure our ability to discern a

site's more general significance, a significance with which more people can identify, and one that might stimulate our thinking about the past (and its relation to the present) in new ways. Walnford, a historic house site in Monmouth County, New Jersey, will serve as an example.

The Site

Walnford consists of a house, built in 1772 by a Quaker family from Philadelphia, a complex of barns dating to the nineteenth century, and a beautifully preserved grist mill perched on the banks of a sparkling creek. It is owned by the Monmouth County Parks System, which, in the midst of a period of unprecedented residential development, has forged an aggressive program to preserve "greenways" and restore representative historic properties. Walnford, considered the gem among the Park System's 27 historic sites, was acquired in 1984. That restoration will not actively begin until this year reflects the careful planning that is going into the process.

In 1991, the Park System received a million-dollar grant from the New Jersey Historic Trust to complete a master plan for the site's development. With funds from the grant, a historic structures report was completed in 1991 (Watson and Henry) and a cultural landscape plan was outlined in 1992 (Andropogon). While a small amount of the budget was dedicated to archaeological investigations (in association with restoration of the grist mill, for instance), it was not sufficient to provide for an intensive survey of the property including the thorough excavation of resources identified. To do this more general work, the Monmouth County Park System entered into a cooperative agreement with Rutgers University under which three field

schools in historical archaeology, to be directed by the author, would be held at Walnford. Discussed here are the results of the first of those field schools, held in the summer of 1992, and their implications for interpretation of the site. Also considered is the role of archaeology as a catalyst for seeing a site's significance in a new way.

According to Park System personnel, Walnford's significance lies in its association with the Waln family, originally part of Philadelphia's eighteenth-century elite merchant class. This is in spite of the fact that the site was first developed by Samuel Rodgers, a merchant from nearby Allentown, who acquired the property in about 1730 and by 1744 had built a two-family brick house, a grist mill with two wheels and two sets of stones, a fulling mill, a cooper's shop, a barn, a stable, and a storehouse for wheat (McCabe 1987:13). The next owner to make major improvements to the property, Richard Brown, added a saw mill, a blacksmith shop, four tenant houses, and several farm and storage buildings (McCabe 1987:16). It was Brown who transformed Walnford from a mill and accompanying houses into the small commercial and milling village that Richard Waln acquired in 1772.

Waln was a merchant trader dealing in a variety of commodities including flour, lumber, dry goods, sugar, and manufactured goods (McCabe 1987:17). The move to Walnford gave him con-

trol of the means of production for many of these goods and also allowed him to take his family out of the city before pending hostilities turned into war. The Walns were Quakers; they sympathized with the British on whom their trade in great part depended, but they were also pacifists. The Georgian manor house that Richard built, which still stands in basically unaltered form (Figure 1), also may have served another need. A country estate was a sign of success among the Philadelphia merchant class and although Richard and Elizabeth Waln lived there full-time, they continued to be involved in Philadelphia society.

Richard Waln was succeeded by his eldest son, Nicholas, who took over from his father in 1799. He expanded the property considerably, acquiring five neighboring farms totaling 1,300 acres. Nicholas was more interested in agricultural production than foreign trade; he emphasized the grist mill to the exclusion of the saw and fulling mills, and expanded livestock holdings. At his death in 1848, his wife, Sarah, and their adult daughter, Sarah Jr. (known fondly as Sally), assumed responsibility for Walnford. The operation that these two women ran included the main house, a grist mill and a saw mill, a store that was attached to the west end of the house, about six tenant houses, a carpenter's shop, a blacksmith's shop, and a 170-acre farm (the rest of the land had been subdivided among Nicholas' other children). The household

consisted of up to seven people including, in addition to the two Sarahs, two or three servants and farm laborers, and two or three children who were taken in as wards. The elder Sarah was apparently in charge until shortly before she died in 1872 at the age of 93. By 1880 Sarah Jr.'s household had shrunk somewhat, including only a widowed Irish servant, the widow's two young nieces, and John Wilson, a 26-year-old black farm laborer. It was to Wilson that Sally left the estate at her death in 1907. The Philadelphia *Inquirer* ran a front page headline reading "Waln Mansion Deeded by Aged Woman to Negro." The deed was later nullified when another branch of the family claimed that Sally had been mentally incompetent during its execution and they were eventually successful in buying the property back from Wilson for one dollar (McCabe 1987:67). In 1907, Richard Waln Meirs and Anne W. Meirs became the new owners of Walnford.

Anne Meirs was a Colonial Revival enthusiast. She de-emphasized the commercial parts of Walnford's history and restored it as a country estate in the Colonial Revival style. The grist mill, still standing, became a decorative element in a pastoral landscape. The other mills were dismantled, the store was taken off the west end of the house, and a string of small structures was added behind the kitchen to serve as caretakers' quarters. Anne Meirs was a passionate gardener. She filled the two-acre field west of the house

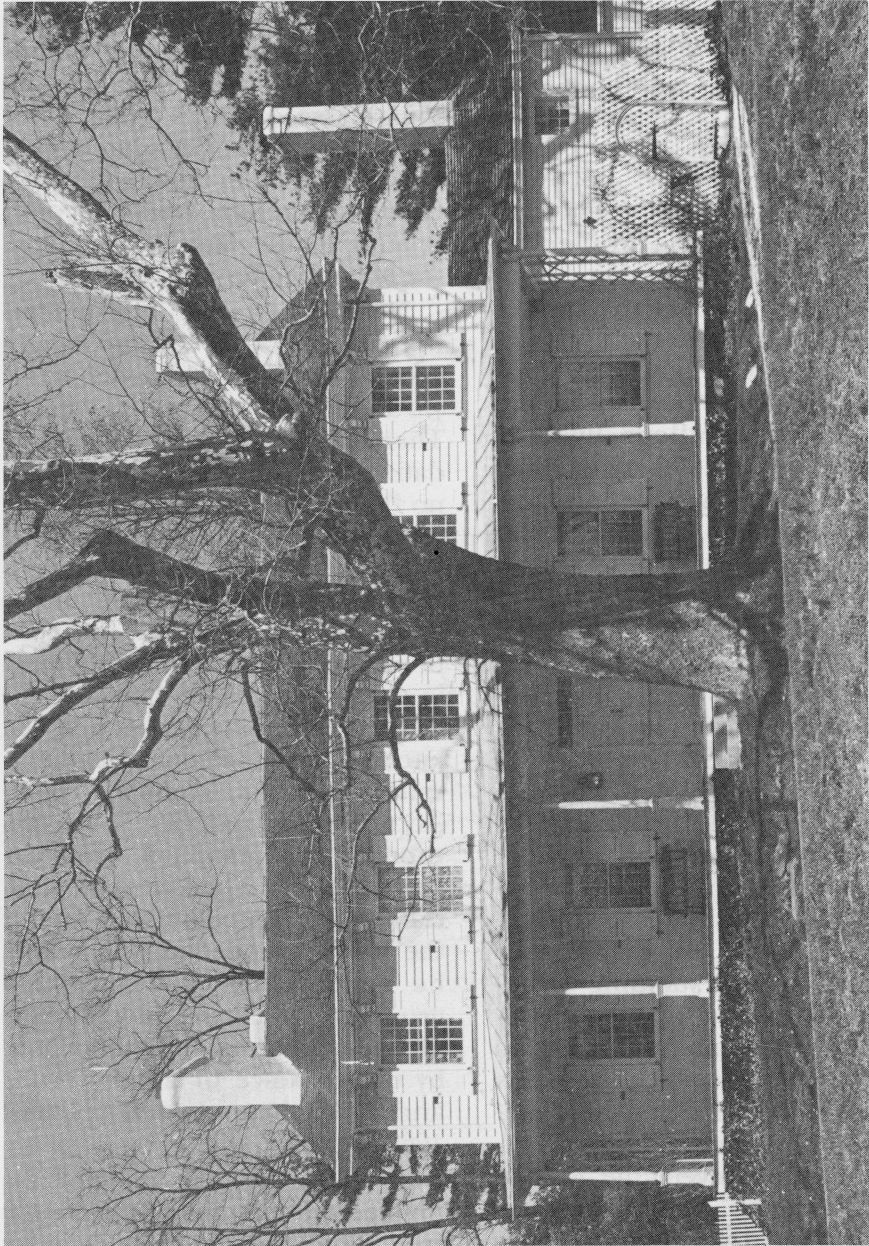


Figure 1. The Walnford house, built in 1772.

with vegetable gardens and created a terraced landscape going down to the creek in front of the main house. In the creek she installed a system of large, splint, open-work baskets with lilies flowing out of them (McCabe 1987:72). When Anne Meirs died in 1958 she left Walnford to her son, William, who eventually sold it to Edward and Joanne Mullen in 1973. During William Meirs' ownership, the two tenant houses (including the two-family brick house thought to be the original on the property) burned to the ground. The Mullens lived at Walnford until 1979 when they gave it to the New Jersey Conservation Foundation; it was transferred to the Monmouth Conservation Foundation which held it in trust for the Monmouth County Park System.

Archaeological Investigations, 1992

While the Park System's project manager for Walnford's master plan, Gail Hunton, had made it clear that the site would be interpreted to the Colonial Revival period (the period most accurately reflected by the standing structures), she was also open to incorporating elements dating to other periods for which there was physical evidence. The whole reason for doing archaeology at Walnford was to prevent the loss of any information on the site's history that might be "locked" in the ground. The first season of work—the first field school—focused on the landscape behind the main

block of the house, a flat open space, and the area immediately west of the main block which was the site of a store wing that abutted the house. A total of 40 5-by-5-foot excavation units (1,000 square feet) and 18 2.5-by-5-foot excavation units (225 square feet) were excavated in these two areas. Only those results from the units relating to the landscape behind the house will be discussed here.

No evidence was found behind the main block for an eighteenth-century ornamental garden. The yard had never been terraced. There was no pattern of pathways dating to this period; there were no flower beds or hedge rows or fence lines. Richard and Elizabeth Waln apparently did not have a garden behind their house unless it was very close to the foundations, an area that was bulldozed in the 1950s. More likely, there was a kitchen garden outside the kitchen door (personal communication, Elizabeth McLean, 1992). According to Frederick Tolles, author of the standard work on Philadelphia's Quaker merchant class, the "unpretentious villas of the less opulent merchants" (and he includes the Walns in this group) stood "in the midst of natural surroundings modified only by the presence of a few shrubs and a kitchen garden" (Tolles 1963:134).

By the middle decades of the nineteenth century, however, the landscape behind the main block had been transformed. A parterre in the shape of a figure-eight and two triangles was found in the

middle of the yard about 40 feet back from the house (Figure 2). The parterre appeared to be connected to additional planting beds closer to the house which were edged in at least one area with upright roof slates (a practice described in an article in *The Gardener's Monthly*, published in 1861) and separated from the house by a paved area, also characteristic of the period (Highstone 1982:5). The parterre had other features of a Victorian garden—sand surrounding a centerpiece of some kind, probably a wooden tub (represented archaeologically by a decayed wooden ring), and a number of dibbers, an implement used to dig a planting hole and possibly used subsequently as a garden stake (Figure 3). Wooden tubs were commonly used as focal points in nineteenth-century parterres and it was also common to surround such features with sand (Scott 1870). The dibbers found at Walnford resemble the ones described and illustrated by Bailey in his 1899 publication, *Garden Making*: "...in the transplanting of young plants, some kind of dibber should be used to make the hole. Dibbers make holes without removing any of the earth" (Bailey 1899:42).

Although only six inches beneath the present yard surface, the parterre was indisputably Victorian in style and probably dates to the 1860s and 1870s. It represents a style, called "bedding out," that arrived from abroad in the middle of the nineteenth century, becoming widespread after the

Civil War (Leighton 1987:242). Anne Leighton credits Peter Henderson of Jersey Heights, New Jersey, with the promotion of "bedding out" in the United States (1987:241). It called for ribbon bedding (a succession of solid colors in bands) and islands of carefully choreographed plants in geometric patterns. With its combination of circles and triangles, the central parterre at Walnford is reminiscent of this approach and the artifacts found within its soils confirm a mid-nineteenth-century date of construction.

The shallow depth of the remnant parterre was a complete surprise. In fact, the first thing noticed in this area was a wooden ring, which was initially interpreted as the remains of a central tree in Anne Meirs' Colonial Revival garden. It was known that there had been a large tree in the middle of the backyard which fell on the house in the 1950s or 1960s. It was the combination of the wood ring with another ring of organic soil, the sand, the dibbers, and the triangles that led to the more correct interpretation. It also required the letting-go of what was expected to appreciate what was actually present.

We had expected a Colonial Revival garden. We had expected it because we knew that Mrs. Meirs, who used Walnford as her summer estate from 1907 through the 1950s, had gardened extensively and was interested in the Colonial Revival movement. We also knew that other Colonial Revival enthusiasts in New Jersey had

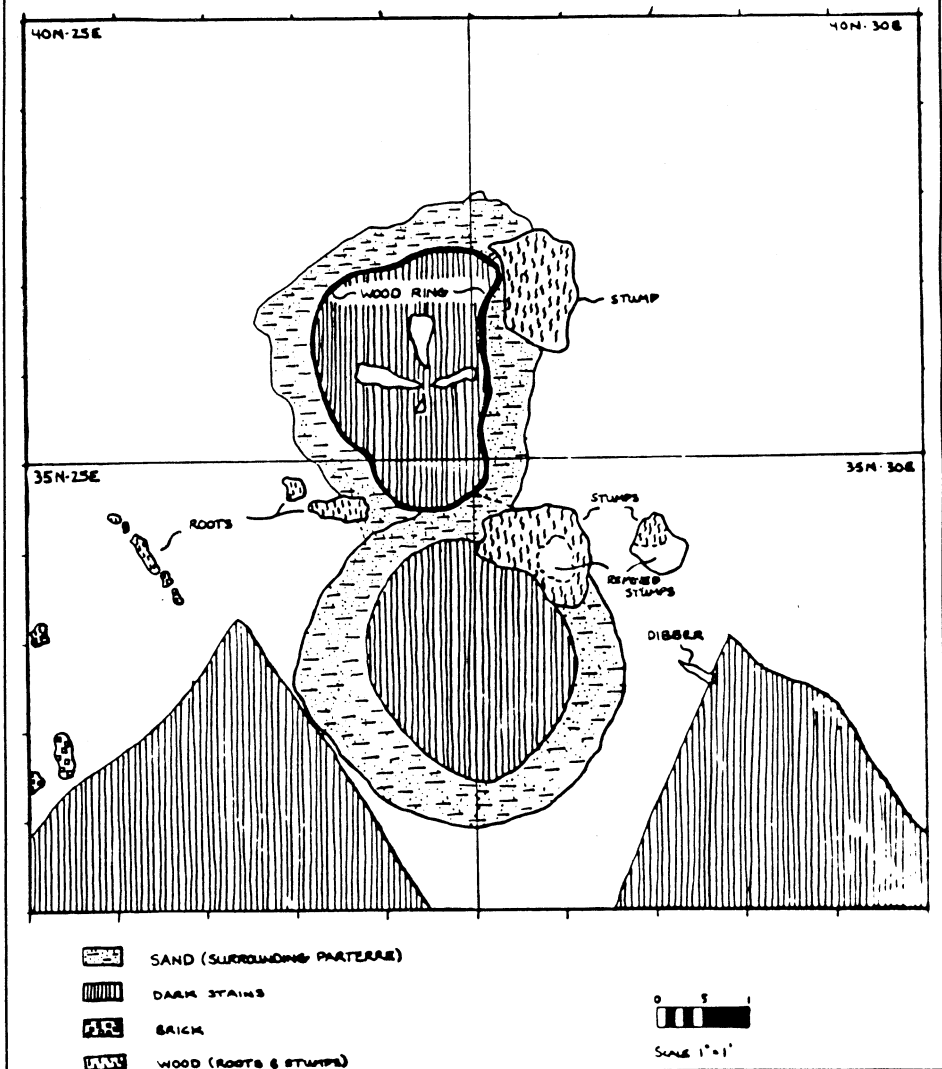


Figure 2. Archaeologically uncovered garden parterre consisting of a figure-eight and two triangles.



Figure 3. Dibbers recovered in the context of the garden parterre. Photograph by Doville Nelson.

used their yards to recreate what they believed to have been colonial landscapes (Helen Hamilton Shields Stockton at Morven in Princeton, for instance). In contrast to our expectations for Mrs. Meirs, we did not expect to find a garden in the backyard associated with either Sarah Waln Sr. or Sarah Jr. We knew there were flowers—roses, in particular—in the years that Sally headed the household, but her transcribed letters portrayed her as too hard-working, too consumed with the work of managing the farm and the mill and the tenants, to have conceived, let alone maintained, a fashionable parterre just the right distance from the parlor window (for sight and smell) with just the right component parts. We had assumed things about Sally that the reality of the garden remains forced us to reconsider.

Sally Waln Hendrickson

As so aptly put by Walnford's curator, Phyllis Mount, "No other personality associated with Walnford has captured the interest of those involved with the site as much as Sarah Waln, Jr., usually referred to as Sally Waln. She was rumored to have been a great character, an individualist and even at the end, a bit off her rocker" (Mount, introduction to "Letters from Sarah Waln Jr. to Elisa Smith" 1991). Seen through twentieth-century sensibilities, the mostly unmarried Sally (her husband, Jacob Hendrickson, 11 years her junior, died after only two years of marriage) appears rather

extraordinary for a woman of her era. Her portrait, believed to date to the time of her marriage (when she would have been 40 years old) is interpreted as rather stern (Figure 4) and the death of her husband, reportedly of blood poisoning, as somewhat suspect. Letters, written to her distant cousin over a 40-year period, (transcribed from copies in the library of the Princeton Historical Society) add to a picture of a hard-working woman who, especially in later life, shouldered the responsibilities more often held by men and had less and less time to indulge in the more characteristically feminine pursuits. A close reading of the letters, however, in light of the archaeological evidence from the garden and recent scholarship dealing with Quaker women, particularly widows, in the nineteenth century, suggests that Sally was not all that unusual.

The letters dating to the 1830s and 1840s describe unending social visits, including trips to Philadelphia, and contain repeated pleas with her cousin, Elisa, to visit Walnford. Although Sally mentions the education of her various wards and other relatives and friends' children (an important concern among Quaker women), there is no discussion of the womens' struggle then being waged by Lucretia Mott in Philadelphia and elsewhere. By the early 1850s, the period immediately following Nicholas Waln's death, Sally's letters are a mixture of social trivia—weddings, illnesses, funerals—value judgments on sub



Figure 4. Sally Waln Hendrickson, ca. 1856.

jects as diverse as the plurality of wives among Mormons to the tendency of men to try to tell women what to do, and business concerns, such as the hiring of someone to work on the farm, the search for a miller who doesn't drink like the old one, the filling of the icehouses, and the slaughtering of the hogs. She also mentions her garden several times—a rose she thinks will bloom in December, a new method of starting fruit trees, and a day of pruning that left “my hand not very pliable.”

The letters written in the 1860s are much the same—lots of social events and even more death—from diphtheria in the early 1860s and later in the decade from typhoid. She talks more of her own domestic activities—baking, sewing, and quilting—but there is also the hard work of killing the hogs and making sausage, of going out into the pines for boards and shingles, and putting the “cheese to press.” In 1869 Sally supervised the replacement of the roof and had the house painted, activities that seem

to have made the harvest late. By the late 1860s she sounds overburdened with work and generally critical of the hired help. It is probably at this time that she began to assume most of the responsibility for running Walnford. She continues complaining in the 1870s, describing herself as "a maid of all works." Her concerns are practical—the care of her failing mother and another invalid in the house, the progress of various crops, the replacement of water pipes that burst and the grist mill that burned, and the usual servant problems.

By the 1870s Sally had become very sure of herself and suspected selfish motives when her brothers tried to convince her not to rebuild the mill. She defied the remembered advice of her father and grandfather to never build a mill with borrowed money, looking anywhere she could for just that. She seems to have lost faith in men, even in relatives. Her life in the 1870s was composed of too much work and a succession of funerals. There were still parties, but she was disinclined to go and considerably less interested in the social entanglements that had taken up so much of her earlier letters. Once Sally had full responsibility for Walnford, she was all business, or so it seems from these letters.

None of this is unique. Recent research (Bacon 1986) shows that many Quaker women remained unmarried. For daughters born to Quaker families after 1786, 23.5% never married and 40% of all

Quaker women were single in Philadelphia during the second half of the nineteenth century. Because many of these women worked as teachers or traveling ministers, they were not viewed as burdens to their relatives. Widows, in particular, demonstrated competence as heads of households. According to one scholar (Waciega 1987:41),

propertied women in Philadelphia and Chester County ... carried on complex business matters with ease and often with considerable success, both before their husbands died and afterward. They acquired financial competence not just from their spouses, but from their experience outside, and previous to, marriage. Furthermore, the husbands of these women generally trusted their economic acumen. Reflecting this trust, inheritance patterns reveal that husbands counted on their wives to act capably on their shared concern for their families' welfare. Accordingly, many wives were well prepared to make the transition to life alone; they knew how to use their husbands' legacies to support themselves and their families.

Esther Lewis of Chester County, Pennsylvania, is a good example. Widowed in 1824, she ran a 114-acre farm, discovered and mined iron ore on the property, cared for an aging mother and dependent kin, and eventually divided the farm equally among

her four daughters (Jensen 1986:84). She also used her farm as a refuge for runaway slaves and educated her children herself, one of whom became a well-known naturalist (Jensen 1986:129). Although Esther did not leave letters, she kept a diary of her daily activities during the 1830s and 1840s, the details of which can be compared with Sally Waln Hendrickson's descriptions. Both women did all kinds of work, from sewing to processing butter to butchering, but both women also noticed the world around them. Esther wrote of "turtle doves cooing," trees "elegantly dressed in sleet" and a beautiful butterfly "with dark spotted wings edged with pale yellow" (Jensen 1986:140). Like Sally, for whom the aesthetic pleasure of a garden parterre was worth the work, Esther also treasured beauty in her everyday existence.

Woman's Work

It is evident that these competent women were very complex and their gender identity does not seem to fit any of the existing models. These were not merely women shouldering the responsibilities of men in their absence. Their work seems to have spanned spheres that since the Industrial Age have been compartmentalized as either men's or woman's work. Woman's work, in this case, included significant economic responsibility, the management of a variety of commercial enterprises (mills, mines, etc.), in addition to the management of

a household. There were the characteristic domestic tasks—baking, sewing, candle-making—but there was also the making of butter and cheese on a larger scale for the market and the raising and slaughtering of animals for commercial purposes. (Jensen [1986] claims that during nineteenth-century industrialization rural women made up in butter what was lost as wheat, pigs, and sheep were more easily and cheaply raised in the west.) These women educated children, cared for the infirm, and indulged in a good deal of socializing. On top of it all, some of them preached, taught school, and practiced medicine (both Sally Waln Hendrickson and her mother were interested in "doctoring," the elder having achieved a local reputation for her abilities to care for the sick and dying).

The reality of these women's lives has only recently received scholarly attention. It has taken a feminist perspective (and female scholars) to notice how different they were from the gender model dictated by the "biology is destiny" paradigm (Gero and Conkey 1991:8). Writing specifically about Quaker widows, Waciega (1987:40) notes the "conventional wisdom that while men could make their way in the area of economic enterprise, politics, or the learned professions, women remained in the home. Within its walls they found both a safe haven and a paternalistic forum of confinement." That Walnford as a site presents physical evidence of a different re-

ality contributes to its significance. In fact, the site's real significance may lie in Walnford's connection to Sally Waln Hendrickson, in particular, and to other women like her in Monmouth County.

Significance on the Local Level

The Beers 1873 Atlas of Upper Freehold Township, Monmouth County (Figure 5), identified 25 properties with women's names, among them Mrs. S. Hendrickson (i.e., Sally Waln Hendrickson) of Walnford. While the historical and archaeological work at Walnford has done a great deal to reveal the complexity and competence of Sally Waln, these other women remain unknown. However, in light of the recent scholarship discussed above, as well as the evidence from Walnford, it is likely that Sally and the rest of the propertied women had much in common. Walnford thus gains significance as representing a way of life that was not unique to a fancy family from Philadelphia. It is a site associated with women who did work that was appropriate to their class in their time. Sally was not eccentric; she was one among many.

In a more general way, the physical reality of the site brings to life a part of the past that relates directly to an important concern in the present: gender. As Lowenthal tells us, "A past lacking tangible relics seems too tenuous to be credible" (Lowenthal 1986: 247). That women could have been so different than usually portrayed (but not so different

than many contemporary women) requires physical evidence to be convincing. Sally's letters—her own words describing an unfamiliar (and seemingly unfeminine) mixture of hard physical labor, managerial responsibility, and trivial pleasures—and her archaeologically revealed fashionable garden suggest the complexity of her life. The rebuilt grist mill looms as a symbol of her stubborn determination to replace the mill that had burned against the advice of her male relatives.

It was the unexpected discovery of a Victorian parterre that began the process of investigating who Sally Waln really was. A review of recent scholarship dealing with Quaker widows broadened the picture and made Sally seem less eccentric than representative. On the local level, Walnford is not significant because it is special. It is significant because it is one of many places where women were in charge. In the case of Walnford, they were in charge for three generations. Anne Meirs, the third generation, transformed Walnford from a commercial enterprise into a country estate. She effectively "hid" Walnford's real past by destroying some structures (the store, for instance) and moving others (several barns and maybe the fulling mill). Like other Colonial Revivalists, she was less interested in the authentic past than in a vision of the past she could project onto the property. In great part, her vision remains today, but

Figure 5. Beers Atlas Map of Upper Freehold Township, 1873. Female property holders are circled

there is the potential, based on the research discussed, to bring to life the previous generation as well. The garden parterre is a clue to another reality, one which included women—both the known and the mere names on a map—whose work was as complex and varied as that of contemporary women, whose gender identity seems to have combined managerial and physical prowess with aesthetic and social sensibility.

There is, of course, the danger that these insights are colored by the presentist lens through which we invariably view the past (Tilly 1989; Potter 1989). In this instance, however, recent research reflecting present concerns has immediate relevance for interpreting what were otherwise contradictory and confusing remnants of the past. Ideas about the malleability of gender identity, finally taken seriously in the present, illuminate aspects of nineteenth-century gender identity that have previously been obscured by rigid stereotypes based in biological determinism. To ignore these insights and continue to present Sally Waln as the eccentric character who ran Walnford with man-like capability is to perpetuate ideas about women that no longer

pertain. To recognize the site's value in educating the public about gender—in the past and in the present—and about a local history that included propertied women who have heretofore gone unnoticed, is to find true significance on the local level.

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About the GWS . . .

The George Wright Society was founded in 1980 to serve as a professional association for people who work in protected areas and on public lands. Unlike other organizations, the GWS is not limited to a single discipline or one type of protected area. Our integrative approach cuts across academic fields, agency jurisdictions, and political boundaries.

The GWS organizes and co-sponsors a major U.S. conference on research and management of protected areas, held every two years. We offer the FORUM, a quarterly publication, as a venue for discussion of timely issues related to protected areas, including think-pieces that have a hard time finding a home in subject-oriented, peer-reviewed journals. The GWS also helps sponsor outside symposia and takes part in international initiatives, such as the Global Biodiversity Conservation Strategy.

Who was George Wright?

George Melendez Wright (1904-1936) was one of the first protected area professionals to argue for a holistic approach to solving research and management problems. In 1929 he founded (and funded out of his own pocket) the Wildlife Division of the U.S. National Park Service—the precursor to today's science and resource management programs in the agency. Although just a young man, he quickly became associated with the conservation luminaries of the day and, along with them, influenced planning for public parks and recreation areas nationwide. Even then, Wright realized that protected areas cannot be managed as if they are untouched by events outside their boundaries.

Please Join Us!

Following the spirit of George Wright, members of the GWS come from all kinds of professional backgrounds. Our ranks include terrestrial and marine scientists, historians, archaeologists, sociologists, geographers, natural and cultural resource managers, planners, data analysts, and more. Some work in agencies, some for private groups, some in academia. And some are simply supporters of better research and management in protected areas.

Won't you help us as we work toward this goal? Membership for individuals and institutions is US\$35 per calendar year, and includes subscription to the Forum, discounts on GWS publications, reduced registration fees for the GWS biennial conference, and participation in annual board member elections. New members who join between 1 October and 31 December are enrolled for the balance of the year and all of the next. A sign-up form is on the next page.

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The editorial board welcomes articles that bear importantly on the objectives of the Society—promoting the application of knowledge, understanding, and wisdom to policy making, planning, management, and interpretation of the resources of protected areas and public lands around the world. The FORUM is now distributed internationally; submissions should minimize provincialism, avoid academic or agency jargon and acronyms, and aim to broaden international aspects and applications. We actively seek manuscripts which represent a variety of protected-area perspectives, and welcome submissions from authors working outside of the U.S.A.

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