

COMMON Ground

P R E S E R V I N G O U R N A T I O N ' S H E R I T A G E F A L L 2 0 0 3



Wings of Fate



The Wright Brothers' Drive for the Sky

plus **From Sand Dunes to Sonic Booms**

a travel itinerary from the National Register of Historic Places



Reaffirmation

| BY DE TEEL PATTERSON TILLER |

RECENTLY I MET WITH a small delegation from the Coalition of 9/11 Families—survivors and families and friends of those killed in the attack on the World Trade Center on September 11, 2001. By their count their membership numbers around 3,000—roughly the same as lost that dark day more than two years ago. The group’s journey to Washington, DC, was borne of an interest in seeing the remains of the towers designated as a National Historic Landmark. The putative leader of the delegation was a young, purposeful man, Anthony Gardner, whose older brother, Harvey Joseph Gardner, died in the collapse of the North Tower. **THE MEETING WAS DIFFICULT** and, at times, heart wrenching. Everyone had a story making the tragedy compelling in ways the media never could. For the first time, I had a personal connection to the events of September 11. During the meeting, I referred to three grainy color photocopies, photographs of the site today from what I guess to be 10 to 15 stories up. There, in the bedrock of Lower Manhattan, in an area now inelegantly dubbed The Bathtub, were two dotted outlines, one clear and one barely perceived. **THE IMPRINTS OF** Minoru Yamasaki’s twin towers were unmistakable. The inches-high remnants of the beams anchoring the towers—driven into the rock in the late 1960s—were now two perfect squares, each exactly an acre. I had seen these photos before. But now they had a profound impact where before they had not. What had changed? **IT WAS, I THINK, THE PERSONAL CONNECTION** that I now had with the horrific event. As I looked at the images and listened to the group’s struggles to ensure that the footprints (as the Coalition calls them) were preserved in the Studio Daniel Libeskind design, I was struck again by what compels us to be part of historic preservation. **WE PRESERVE HISTORY IN PLACE** so that generations yet to come can make a personal connection or, as Martin Buber would put it, an “I/thou” relationship with our Nation’s past. We often lose sight of this amidst the paper, regulations, politics, and processes. We do what no book, television show, movie, video game, or amusement park ever can. In the 388 national parks, in the more than 1.3 million properties listed on the National Register of Historic Places, and in the more than 2,300 National Historic Landmarks, we make the story of this

land tangible and accessible. **IT REMAINS TO BE SEEN** whether the Coalition will be successful. New York City politics is a no-holds-barred contact sport and much is at stake in the redevelopment of the World Trade Center site. I hold out the hope that it may be possible to find some compromise that preserves the remnants of the towers so that 100 or 1,000 years from now, Americans of those generations will be able to walk over the bedrock and forge their own connections with this event that so changed our lives at the beginning of the 21st century.

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HISTORY IS A POWERFUL AGENT. And the places where history happened are nothing less than touchstones that convey who we are as a people, where we have been, and where we are going. Preserving these places is a social contract among generations. That ennobling fact compels the Coalition of 9/11 Families. And in a world constantly struggling to meet the most basic of human needs—peace, health, freedom—history is fundamental. Often it is not for the faint of heart, playing out in frightening ways. But without history, how would we know what is worth struggling for?

de Teel Patterson Tiller is Acting Associate Director, Cultural Resources, National Park Service.



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Above: Pan Pacific Auditorium, Los Angeles.
Cover: Wright glider takes flight over the North Carolina dunes.
LIBRARY OF CONGRESS

Icon's Power Takes Center Stage in New Exhibit

Tourists coming to Philadelphia for early American history no doubt sense the tension of an urban environment that seems to envelop the shrine to the country's beginnings. The mannered restraint of Independence Hall, the rigorous virtue of colonial society expressed in the old architecture, is starkly at odds with the striving exuberance of the modern city.

A \$314 million plan to renovate Independence National Historical Park, in progress for some years now, will reintroduce Philadelphia to its colonial legacy, not only physically, but intellectually and emotionally as well. If the overriding ethos of today's city is confident and supercharged, it is worth remembering that 18th century Philadelphia, the cultural jewel of the colonies and a magnet for free thinkers and seditious thought, wasn't much different.

Perhaps nothing expresses this continuity more than the Liberty Bell. In the latest round of renovations, the international symbol of freedom was moved to a new exhibit center that celebrates how an old idea still burns bright. The setting, open to Philadelphia's hustling cityscape, unites the icon with a living example of liberty in motion. The long, one-story center boasts floor-to-ceiling windows with a view of the mall on one side and imposing urban vitality on the other.

As part of a plan formed in the mid-'90s, the bell was moved from the small enclosure it had occupied since 1976 to a place closer to Independence Hall, not far from the original belfry. The city has changed a great deal in the five decades since the National Park Service acquired the three-block site. So have perspectives on history. Technology and interpretive methods offer more than ever, and public expectation is high. The plan brings a fresh view to a place that was threatening to slip into the musty annals of men in wigs and knickers.

According to Karie Diethorn, chief curator for the park, the mall—though considered very good for its day—lacked human scale. “It was designed after the grand European cities,” she says, “but the design became impractical over time.” The new approach blends the fabric of the city with that of the park. Cafes and shops will be on one side, so Diethorn says that “people will interact with the history even if they are just passing through.”

Inside the exhibit, the bell's story unfolds through an interactive exhibit that, according to Doris Fanelli, chief of cultural resources management, describes “how it went from a functional object to an international symbol.” A wealth of memorabilia illustrates the iconic pervasiveness of the bell, its feted symbolism on dramatic display in photo blowups. An eight-minute film plays on a flat, unobtrusive screen; the soundtrack is pure atmosphere, with Martin Luther King, Jr.'s voice drifting into the recesses of the space.

The exhibit follows the bell's meaning from a symbol of the abolition movement, to one of unification between North and South (it was less controversial than the flag), to an icon of women's suffrage. “More lately,” says Fanelli, “it's been a symbol of human rights on an international level.” Nelson Mandela and the Dalai Llama have visited the relic.

The bell itself is on view at the end of the exhibit, dramatic in stark natural light, with Independence Hall and its looming bell tower behind it. The tableau brings the presentation full circle to its roots in colonial America.

AFFIRMING THE BLUEPRINT FOR FEDERAL ARCHEOLOGY

National Park Service Director Fran Mainella recently affirmed the National Strategy for Federal Archeology, which sets archeological goals for agency preservation programs and Federally funded and authorized projects such as dam and highway construction. The National Park Service, as the leading Federal agency in preservation, developed the strategy in 1991, signed by then-Secretary of the Interior Manuel Lujan.

The strategy focuses on four primary areas: preserving sites in place, conserving collections and records, putting research to use, and promoting public education. The strategy sets general goals for research and calls for making the results available to professional and public audiences.

Citing the importance of this finite, fragile legacy, Director Mainella called on the preservation community to embrace the strategy's objectives.

For an in-depth look at how the strategy shapes the nation's archeological heritage, go to www.cr.nps.gov/aad/tools/natlstrg.htm.

Right: The Liberty Bell in its new environs.



Certain truths about colonial America became contentious as the exhibit was planned. The executive mansion for the first two presidents was practically on the same spot; George Washington had slaves when he lived there. A local historian published an article on the subject that triggered concern about how liberty was going to be portrayed. Historians joined National Park Service officials to embrace the topic.

Is it ironic that the father of our country owned slaves just a short distance from where the Declaration of Independence was signed? “I don’t see it as irony but as an opportunity,” Diethorn

says. “We want visitors to comprehend that history is not a straight line. History isn’t finished yet.”

The architectural firm of Bohlin Cywinski Jackson designed the center. The \$12.9 million project was funded primarily by the city, the Annenberg Foundation, and the Pew Charitable Trusts.

For more information, contact Phil Sheridan, Public Affairs Officer, Independence National Historical Park, 143 South Third St., Philadelphia, PA 19106, (215) 597-0060, e-mail phil_sheridan@nps.gov.

UNCIVIL WAR

Investigating a Day of Carnage at an Isolated Mountain Farm

Robert E. Lee's first foray into the North, best remembered by its epic culmination at Antietam, was regarded by many as the South's best chance at turning the tide in the Civil War. The larger-than-life events of Lee's campaign, however, began in a quiet saddle in the Blue Ridge now being studied for its archeological potential.

Fox Gap, located on the Maryland stretch of the Appalachian Trail, was the focus of a recent study aimed at shedding light on the events of September 14, 1862, establishing an archeological inventory of the site, and determining how to preserve and interpret it. The project is part of an effort to identify and preserve the trail's historic and cultural sites, work that has involved States, Federal agencies, and member clubs of the Appalachian Trail Conference.

THE BATTLE ALTERED LEE'S PLANS AND SET THE STAGE FOR THE BLOODIEST DAY IN AMERICAN HISTORY: ANTIETAM.

The place was the site of a mountain farmstead owned by Daniel Wise and his family, who had the misfortune to be there when the Union and Confederate armies discovered each other in the autumn of 1862. The battle altered Lee's plans and set the stage for the bloodiest day in American history: Antietam.

Realizing that large numbers of Confederates were moving north in the Shenandoah Valley, the Union Army tried to cut them off. Anticipating the move, the Confederates plugged the mountain gaps. At Fox Gap and nearby Turner Gap, the two sides fought a fast and furious battle, known as the Battle of South Mountain. The Wise Farm was at the center of the day-long fight that ended with 6,000 dead and wounded. Emerging from their refuge at a nearby church, the Wise family found their home transformed into a hasty cemetery (see sidebar, opposite).

In the 1990s, the National Park Service and the Maryland Department of Natural Resources acquired tracts around Fox Gap, as did the nonprofit Central Maryland Heritage League. The league was awarded a grant from Preservation Maryland, a nonprofit, to conduct research and to develop a plan for Fox Gap.

The Appalachian Trail Conference joined the partnership, as did several local trail clubs, and the project got underway with an enthusiasm that reflects the increasing focus on preserving the trail's history. Joe Baker, an archeologist with Indiana University of Pennsylvania, led the investigation. "I had enough turnout from the professional [archeology] community," he says, "that I was pretty much able to pair up one professional with one amateur," an extremely rare event. The goal was to record as much as possible with minimal excavation. The archeologists visually surveyed the property and used remote sensing equipment to plot the findings in a Geographic Information System.

Though the study's main focus was the battle, researchers were very interested in the Wise family, which, in spite of extensive research remains something of an enigma. The farm and battlefield are described as having major potential for archeolog-



NICOLE MARTYN

Clockwise from lower left: Archeologist works a shovel at the Fox Gap site; sifting for clues; dishware and munitions from the Civil War era.

ical research and unparalleled opportunities for public education. The entire site, according to researchers, would likely qualify as a National Historic Landmark. Baker and his team recommend its nomination. Now it is up to the entities with an official stake in the place to agree—as soon as possible—on a course of action. For models, researchers looked at how the National Park Service manages bat-



tlefields such as Antietam and Gettysburg. The Revolutionary War-era Cowpens battlefield in South Carolina is a particularly good example because, like Fox Gap, it is undeveloped and isolated. Says Baker, "This is a pastoral, beautiful, wild place. It will not bear a big parking lot and a visitor center. It's monumental enough as it is."

For more information, contact Joe Baker, (717) 705-1482, e-mail joebear8r@aol.com, or Don Owen, Appalachian Trail Project Office, NPS Harpers Ferry Center, P.O. Box 50, Harpers Ferry, WV 25425-0050, (304) 535-4003.

The Battle of South Mountain

A Meditation on People and Place by Joe Baker

I am always the first one up. My reward is a solitary drink of mountaintop dawn over a cup of coffee. There is no sound from the other tents, and the pair of deer at the edge of this ridge top meadow pay no attention to me. It is unimaginably peaceful here . . . and I am in the middle of a battlefield. In 1862, a family named Wise was farming this ridge top. Yesterday we found the cellar hole of their cabin, some of their simple belongings, the stonework around their well. They had been here about five years, and while local talk and the newspapers brought them word of the great national struggle out in the lowlands, it must have seemed peripheral. Here what mattered was squeezing a living out of a four acre cornfield and a garden patch that were mostly rocks. Their family and neighbors mattered, and this same cool dawn quiet I'm enjoying, I'll bet that mattered too. The war was far away, below the Potomac. Then came a morning in mid-September and the sound of men and horses. A kindly infantry sergeant with a thick Carolina accent warned them they ought to vacate. Daniel, the patriarch, and his kids John and Matilda, and his granddaughter laid up in the little church below Boonsboro with their neighbors and kin, and over the next eight hours they heard the roar of cannon, the crack of rifles, shouting, screaming. What would you think? What would any of us think? In their day, the Wises were of no great consequence. They are almost invisible in the historical records. They didn't have any money, they didn't hold any office, or go to college, or wind up in the social registry. Why would an archeologist, or anyone else, care about these people? My dad's people were Scotch/Irish and German folks from off this same mountain, further north in Pennsylvania, so I have a stake in this, but it doesn't end there. Archeology has taught me that every culture under the sun can inform the rest of us, if we ask the right questions. The question here is: How did they do it? When Daniel and the family came back to the house a couple days later, there were still Union burial details hanging around. They were drunk and mean, and looked haunted. The crop was destroyed. The house was shot full of holes, used as a field hospital and looked like it, with no animals or food. There were men buried everywhere, four or five hundred, some with their toes poking out of the rocky soil. The burial details, sick of the labor and smell of corpses, dumped 58 dead down the well. Curious folks were looking for souvenirs; some cut the rings off the Rebel boys' fingers. The Wises cleaned everything up, and farmed this ground for the next 22 years. The archeology of the Wise farm is the archeology of people on the edge of things. They can teach us lessons about ingenuity, about perseverance and pride and community. I doubt they were saints or role models, just folks who carried on with dignity under circumstances that would destroy most of us. They are, in fact, people of consequence, and we ought to hear what they have to say. The only way that tale will ever get told is through the record of what we find buried here. So I'm going to finish this coffee and start waking people up. It's gonna be a hot one today, and we have a lot of dirt to move.

Notes from Archeological Field Camp, The 17th Michigan Field, Fox Gap, Maryland, August 18th, 2002, 6:13 am.

LIVING LARGE IN SMALL CITIES

Urban Spaces Find New Life Where Preservation Meets Panache

BY RAY A. SMITH

Whenever Lawrence Brooks, a native and longtime resident of Columbus, Georgia, tuned in to one of his favorite programs, MTV's "Real World," he found himself looking longingly at the screen—not so much at the spirited young adults meandering about, but at their gorgeous loft apartments.

Brooks doesn't have to watch in envy anymore—the 26-year-old guest-services team leader at the local Target store now lives in a loft himself. And his loft apartment building—the first one in this city about 100 miles southwest of Atlanta—is a landmark, a former cotton mill dating to 1886 that is slated for listing in the National Register of Historic Places.

"It's a mix of the old and the new," Brooks says of his digs, where his modern furniture and appliances blend with the old brick wall of the historic mill. "I love it."

After years of being a way of life in big cities like New York and San Francisco, lofts are popping up in the downtowns of many smaller cities that have seen better days. One reason for the loft trend is the growing number of conversions of federally registered historic properties, as more struggling cities focus on revitalizing their downtowns to lure back residents.

The developers have been spurred by a Federal program that grants builders tax credits that total 20 percent of the rehabilitation cost of a registered property. That provision has breathed life into left-for-dead buildings in small to midsize cities throughout the country.

In Camden, New Jersey, developer Dranoff Properties is putting the finishing touches on the \$60 million conversion of the RCA Nipper Building, a National Historic Landmark that was built in phases from 1909 to 1916 and where workers assembled pioneering radios and television sets. The building is being turned into a 550,000-square-foot complex featuring 341 luxury loft apartments.

The long-vacant complex, which includes a tower featuring a stained-glass image of RCA's mascot, Nipper the dog, was designated a landmark in 2002. (Nipper is being preserved.) Huge window walls, 14- to 20-foot ceilings, and massive columns and beams recall the building's original form.

In St. Louis, developer Historic Restoration, Incorporated recently completed a \$47 million conversion of a 350,000-square-foot distribution center built in 1889 for tobacco magnates John Liggett and George Myers into 213 luxury "historic" lofts. The Landmarks Association of St. Louis, Inc. describes the building style as Romanesque revival, with a "medley of materials" including polished and rough-cut rose granite, sandstone, cast iron, and copper. The building, which was designated a historic landmark in 1984, had been empty since the early 1980s and was on the verge of being demolished in 2001.

Similar rehabs are underway or being proposed in small and medium-size cities and towns in Louisiana, Maryland, New York, North Carolina, Ohio, Pennsylvania, and Virginia, according to the National Park Service, which administers the Federal historic preservation tax-incentives program (also known as the rehabilitation investment tax credit).

The tax-credit program has been growing. In 1977, when it began, there were 512 projects representing \$140 million invested in rehabilitation. The average cost of a project was

REHAB RIGHT

Preserving old industrial space is generally welcomed as positive, but there is an issue of concern to preservationists, mainly having to do with re-creating a 19th century mood in a building from another era. People want the "loft" look, so, in some cases, developers give it to them—even if it means tearing the ceiling and walls from a historic 20th century office building to expose the bricks and structure. Rehabs that leave new pipes and ductwork exposed for an "industrial" look have become part of the gambit.

Unfortunately these projects do not qualify for the Federal tax incentive. "If you want your building to look like a warehouse, start with a warehouse," says Michael Auer, historian with the Technical Preservation Services branch of the National Park Service, which provides technical assistance on meeting standards set by the Department of the Interior.

For information, go to www2.cr.nps.gov/tps/tax/index.htm or contact Michael Auer at (202) 354-2031.

Right: The RCA Nipper Building in Camden, New Jersey, re-habbed with the help of Federal tax credits.





TRENDLINE

\$270,000. Last year there were almost 800 projects for a total of \$2.1 billion. The average is now \$2.7 million. About 41 percent of those were apartments. Under the Internal Revenue Code, housing rehabs have to be income-producing, such as rental properties, not cooperatives. Conversions into condominiums are permitted under the program only if they are rented out, not sold.

The way the tax credits work is that developers often take in financial partners—in the RCA Nipper project, for example, Dranoff Properties turned to Related Capital Co., a New York-based apartment-finance company. In this process, developers get immediate cash that they can use to build, as opposed to getting a reduction on their taxes once the project is completed. In the same process, big banks and life insurance companies hold credits for their tax benefits and high returns, or use them to count as investments in urban renewal.

“We have seen a trend where the projects are really getting to be bigger and more complex,” says Sharon Park, an architect and manager of the tax-credit program in the National Park Service’s National Center for Cultural Resources, in Washington, DC. “We are seeing multimillion-dollar projects now. And it’s all in the high end.”

Of rehab projects during fiscal 2002, the region that saw the biggest percentage increase in work was the Mountain Plains: Colorado, Illinois, Iowa, Kansas, Minnesota, Missouri, Oklahoma, Texas, and Wyoming, Ms. Park says. That’s a switch from the program’s early years, when a majority of the projects were in the Northeast.

“Mayors and businesspeople in smaller cities across the country began to notice that the stronger cities tended to be the ones that had 24-7 street life and a residential component, so now lots of communities are trying to revitalize their downtowns,” says John McIlwain, senior resident fellow for housing at the Urban Land Institute in Washington. “There’s a market for people who want to live downtown and developers are taking advantage of that market by converting historic buildings, which are usually in downtowns, into residential.”

In many cases, the high ceilings, exposed brick, wooden columns, and other historic architectural touches—features that often are protected by standards regarding such renovations—lead developers to turn these buildings into loft apartments. The buildings often can’t realistically work as anything else. What’s

more, lofts have proved to be a popular living option for affluent, style-conscious renters.

To dangle something extra in front of prospective residents, developers are milking the historic character of their projects to lend an aura of prestige and grandeur to the apartments, using history as a selling tool to help them stand out over lofts that don’t have landmark designations. Dranoff Properties, for example, includes a historical narrative on the RCA Nipper Building in its promotional material and boasts that Rachmaninoff and Gershwin recorded in the building’s studios.

The lofts coming on line appear to be popular. Carl Dranoff, president of Philadelphia-based Dranoff Properties, says that 100 people attended special first-time showings of the apartments at the RCA Nipper building over a rainy Memorial Day weekend and that 45 of them leased apartments. Tom Leonhard, president of Historic Restoration, the developer of the distribution center in St. Louis, says that 77 of its 213 units have been leased since it opened and that the project gets “a lot of foot traffic.” A spokeswoman for PRS Companies of Roswell, Georgia, the developer of the Johnston Mill in Columbus, says 25 percent of the building’s 336 units have been leased since opening.

Being listed on the National Register is a voluntary, honorific designation—a private developer that isn’t interested in using Federal tax credits could knock down these buildings. So even preservationists who aren’t enthusiastic about some of the conversions are relieved that the buildings are being rescued from worse fates. “These historic buildings would be more at risk of demolition,” says Richard Moe, president of the National Trust for Historic Preservation. The tax-credit program “allows the buildings to be used productively,” he says.

Indeed, Kathy Smothers, a self-described middle-age woman who is “young at heart,” has lived most of her life in St. Louis and remembers often wondering when someone would do something with the big vacant landmark building downtown that was originally built for Messrs. Liggett and Myers. She is glad that the building was turned into apartments, especially because she is now a tenant there.

“I remember this building from when I was a little girl and my mom used to take me downtown to go shopping,” she says. “It gives me a sense of nostalgia. This is a nice way to mix the contemporary with the nostalgic and to bring downtown back alive.”

Ray A. Smith is a staff writer for the Wall Street Journal. The original version of this article appeared in the May 28, 2003 edition. Reprinted with permission.

Left: Before and after. The RCA Nipper Building’s original space and its residential reincarnation with historically accurate windows.

Ellis Island Counterpart Gets Day in the Sun

As American icons go, there are perhaps none more powerful than the Statue of Liberty and Ellis Island. Yet often unnoticed in the story of immigration is that, while millions were arriving in New York, an island in San Francisco Bay was also receiving a multitude of hopeful souls in search of a better life.

Angel Island was the entry point for hundreds of thousands of immigrants—most of them Asian—between 1910 and 1940. The immigration station, a National Historic Landmark, is now the focus of a preservation effort involving California, the National Park Service, and the nonprofit Angel Island Immigration Station Foundation. A \$500,000 grant from the National Park Service-administered Save America's Treasures program will help fund the project. The goal is to restore the site as a major tourist draw where visitors can not only learn about immigration—and the difficult racial issues—but trace their origins in a genealogical research center.

Often referred to as “the Ellis Island of the West,” Angel Island bore some prominent differences. It was meant to enforce laws intended to keep immigrants out—mainly Chinese. In the late 1800s, powerful anti-immigration sentiment blossomed in the United States. Chinese workers were blamed for taking jobs away from whites and for helping to trigger the depression of the 1870s. In 1882, Congress passed the Chinese Exclusion Act, halting the immigration of Chinese laborers for 10 years. Teachers, students, merchants, and travelers were allowed in, but only with difficult-to-obtain certificates. Variations of the law extended exclusion to other unwanted groups. The attitude of the times was reflected in the name that an official gave the island: “Guardian of the Western Gate.”

With an average stay of three weeks, immigrants lived in crowded, unsanitary conditions, separated by ethnicity and gender and kept under lock and key by night. Guards patrolled the fences. Detainees were subjected to rigorous physical exams and interrogations, with entry into the United States prohibitively stringent. Immigrants expressed their sadness and frustration by carving poetry into the walls of the barracks and hospital, now one of the island's most unique features.

By 1963 the station had become a State park, with the buildings slated for demolition until a ranger discovered the carved writings. The foundation helped procure funds to save the barracks as a State monument. When the station was designated a National Historic Landmark in 1997, it was as an artifact of what nominators called the “unique immigration experience resulting from a series of racially prejudiced immigration laws enacted in the late 19th and early 20th centuries.”

In recent years the foundation has done much to publicize the plight of the place, which has languished. The State legislature allocated \$400,000 in 1999 and voters approved \$15 million for preservation as part of a bond measure to improve parks.

Intensive work is now underway. A National Park Service report—on the island as a cultural landscape—offers a detailed historical overview. Volunteers are clearing overgrown pathways while planners weigh ideas about a visitor center, exhibits, and digitized immigration case files.

Angel Island is only one of two National Historic Landmarks commemorating Asian American history; the other is California's Manzanar National Historic Site.

For more information, contact Nick Franco, 750 Hearst Castle Rd., San Simeon, CA 93452, (805) 927-2065, e-mail nfranco@hearstcastle.com.

Right top: Japanese women with San Francisco Bay in the background, captured in hand-colored lantern slides; Right bottom: Arrivals in a mix of traditional and western dress.



Above: Hand-colored lantern slides of Angel Island in the 1920s. Produced by the Episcopal Methodist Church in New York, they may have been used to publicize the immigrants' plight.



ALL PHOTOGRAPHS CALIFORNIA STATE MUSEUM

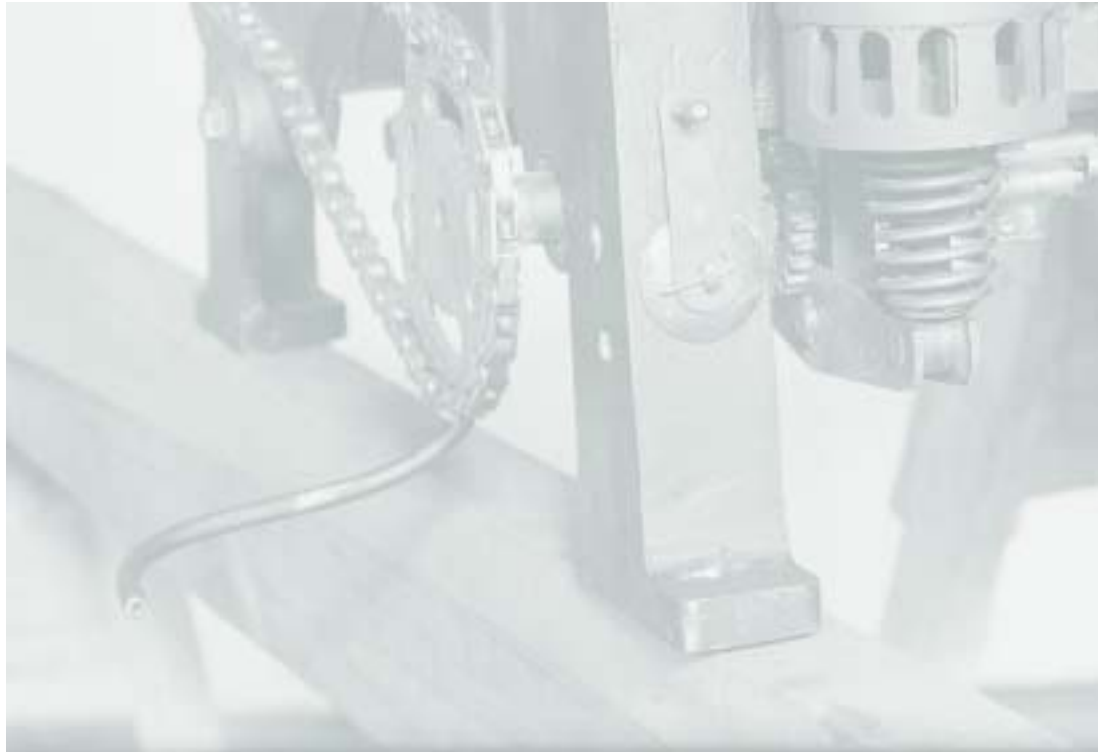


W

ings of fate

the wright brothers' drive for the sky

by david andrews



Above left: Wright glider takes flight over the North Carolina dunes; Center: Reconstruction of the 1903 motor that powered the airplane; Right: Wilbur Wright, age 38.

*The bird wafted on the wind, eye to eye with a solitary figure on the crest of the dune. Sleeves rippling, the man felt the sting of the sand on the side of his face. He was here for the wind, but the wind usually had its way. Gnarled oaks hugged the hollows. Roads went under with the march of the sand. Drifts plugged one inlet, storms pried open another. Big blows left the shore a litter of wrecks, bleached hulls a testament to the caprice of this sometimes sorcerous place. **Then, as now, the Outer Banks** were an open window on the sea's malevolence. Yet this was where the man and his brother, aboard a frail craft of wood, muslin, and wire, came to test their mettle.*



Left: Orville Wright.

ALL PHOTOS LIBRARY OF CONGRESS



Above: A view down Hawthorne Street, where the Wrights lived in Dayton, Ohio.

Wilbur Wright was transfixed as the bird hung nearly motionless on the headwind. The man could shutter the world with his uncanny focus. In a flash, he would glean a gem of insight for the next glider run.

In an age of machines, Will was their kin, honed efficiency his stock in trade. There is no evidence that he ever strolled the surf or stood in awe of azure skies. “The prettiest I have ever seen,” Orville said of the sunsets, with “deep blue clouds of various shapes fringed with gold,” yet Will was often lights out in his bed by that time, and likely up with the sun. Perhaps he was driven by a premonition of early death, haunted by a teenage injury and its emotional aftermath.

Next morning he put a formidable mind to work in the garb of the professional—coat, tie, and hat. Will was not the bootstraps-rustic, Capra-esque soundbite of today. He was a successful businessman, enough to spend summer and fall in pursuit of a dream. Later in life he played tête-a-tête with European royalty—perhaps the first international celebrity, his reversed cap a craze on the continent.

When he turned his inward outward (not often beyond his family), he could charm a tire off a rim. He regaled his nieces and nephews with a wry humor.

Neither brother married. Will, always shy with women, said he didn’t have time for a wife and an airplane. He lived at home, like Orv, seeing older brothers struggle through the economically troubled times.

He skipped the ceremonies at high school graduation, and college passed him by due to a chain of events. A hockey stick across the face—a seemingly minor sports injury—brought dental work, digestive problems, and heart palpitations. The event “drew a line across Will’s life,” says James Tobin, author of *To Conquer the Air: The Wright Brothers and the Great Race for Flight*, inducing the close-lipped smile of later renown. He stayed at home, assuming care of his tubercular mother and devouring the library his father, a bishop in the United Brethren Church, had built. “*The Encyclopaedia Britannica* and *Chamber’s Cyclopaedia* were at his fingertips,” says Tom Crouch, author of *The Bishop’s Boys: A Life of Wilbur and Orville Wright*, “as were those classics of history and biography which the bishop cherished—Plutarch’s *Lives*, Gibbon’s *Decline and Fall of the Roman Empire*, Guizot on the history of France, Greene on the history of England, and Boswell’s *Life of Samuel Johnson*. There were sets of Hawthorne and Sir Walter Scott, and popular science alongside theological works.”

About younger brother Orville, his father said, “Enthusiasm always made him a leader among boys.” He had memory to spare. Orv amused officials in the second grade by racing through a reading passage with the book upside down. He had his own path through the puzzle.

Together the boys combusted, forging a mental space greater than the sum of their synapses, smithing ideas in the fire of discourse. It went beyond gray matter. Orville’s enthusiasm parried Wilbur’s doubt. Often Orville was the motor that made it go.



Near right: Front view of the Wright home; Far right: The Wrights' sister Katharine boards a carriage outside the house.

They were right brain and left brain, sculptors and statisticians.

Genius? Will had an answer in reply to a friend. "To me, it seems that a thousand other factors, each rather insignificant in itself, in the aggregate influence the event 10 times more than mere mental ability or inventiveness . . . If the wheels of time could be turned back . . . it is not at all probable that we would do again what we have done . . . It was due to a peculiar combination of circumstances which might never occur again."

Riding a Craze

Dayton, Ohio, was founded in 1805 where three creeks flowed into the Miami River. The "city of a thousand factories" teemed with machinists and carpenters, carriage-makers and wood-benders, artisans and engineers, engravers and glass-makers, says Tobin. The stuff of the 19th century was made in Dayton, he says. Motors and medicine and metal castings. Steam pumps and stoves and farm machinery. Particularly cash registers, the main export. By 1900, the city had more patents per capita than any other. "Its 60,000 people knew machines," Tobin says. "They were perhaps particularly susceptible to the charms of the bicycle." And so was the rest of 1890s America. Says Crouch, "The sheer exhilaration of cycling captured a generation of Americans accustomed to the restraint of high, tight collars, ankle-length skirts, and corsets. Nothing in their experience could compare with the thrill of racing down a steep hill into the wind, and the newfound sense of personal independence was irresistible."

" . . . If the wheels of time could be turned back . . . it is not at all probable that we would do again what we have done . . . It was due to a peculiar combination of circumstances which might never occur again."

—Wilbur Wright

The brothers rode the craze from mechanics to makers of their own line—fleet-wheeled BMWs of their day—crafted in a machine shop complete with drill press, turret lathe, and tube cutter driven by a one-cylinder engine of Wright design. “They had no intention of mass-producing bicycles after the fashion of the large manufacturers,” says Crouch. “Each of their machines was a hand-built original, made to order.”

This secured their financial future.

The Wrights had the business sense to see a niche and fill it. But money didn’t drive Wilbur. He glimpsed a new niche to fill. “Up to that point, he probably thought his life was insignificant,” says Darrell Collins, historian at Wright Brothers National Memorial, in the documentary *Kitty Hawk: The Wright Brothers’ Journey of Invention*. “I think Wilbur knew that if they could add to [the discourse] or even invent the airplane, they would achieve immortality.” In a letter to his father Will said: “It is my belief that flight is possible, and, while I am taking up the investigation for pleasure rather than profit, I think there is a slight possibility of achieving fame and fortune from it. It is almost the only great problem which has not been pursued by a multitude of investigators . . .”

“For some years I have been afflicted with the belief that flight is possible to man . . . My disease has increased in severity and I feel that it will soon cost me an increased amount of money, if not my life . . .” —Wilbur Wright in a letter to aviation pioneer Octave Chanute

Multitudes, no, but a formidable rival, Samuel Pierpoint Langley, head of the Smithsonian and informal chief scientist of the United States. Born in Roxbury, Massachusetts, in 1834, Langley—a renowned astrophysicist—was, like Will, an autodidact sans college degree. As a young man he read his way through the Boston libraries, absorbing through apprenticeships with engineers and architects.

Langley was bitten with the flight bug. In 1896, he grabbed global headlines when his small unpowered craft, powered by steam engine, took to the air over the Potomac. President McKinley, seeing a weapon in the brewing war with Spain, approved \$50,000 in funds for the project from the War Department. The Smithsonian’s resources at his command, Langley saw success just over the horizon. “Everything connected with the work was expedited as much as possible,” he wrote, “with the expectation of being able to have the first trial flight before the close of 1899.”

After a letter from Will, the Smithsonian sent pamphlets and a list of reading matter. The brothers hit the books, immersed in a methodical course of study. They digested Langley’s *Experiments in Aerodynamics* and *Story of Experiments in Mechanical Flight Progress*. They read *Progress in Flying Machines* by Octave Chanute, the grand old man of aeronautics. And they were inspired by the zesty accounts of gliding in *The Problem of Flying* and *Practical Experiments in Soaring*, whose author, noted aerialist Otto Lilienthal, had plunged to his death a few years before. *The Empire of the Air*, by French flight enthusiast Louis Pierre Mouillard, sounded a cautionary note: “If there be a domineering, tyrant thought, it is the conception that the problem of flight may be solved by man. When once this idea has invaded the brain it possesses it exclusively.”

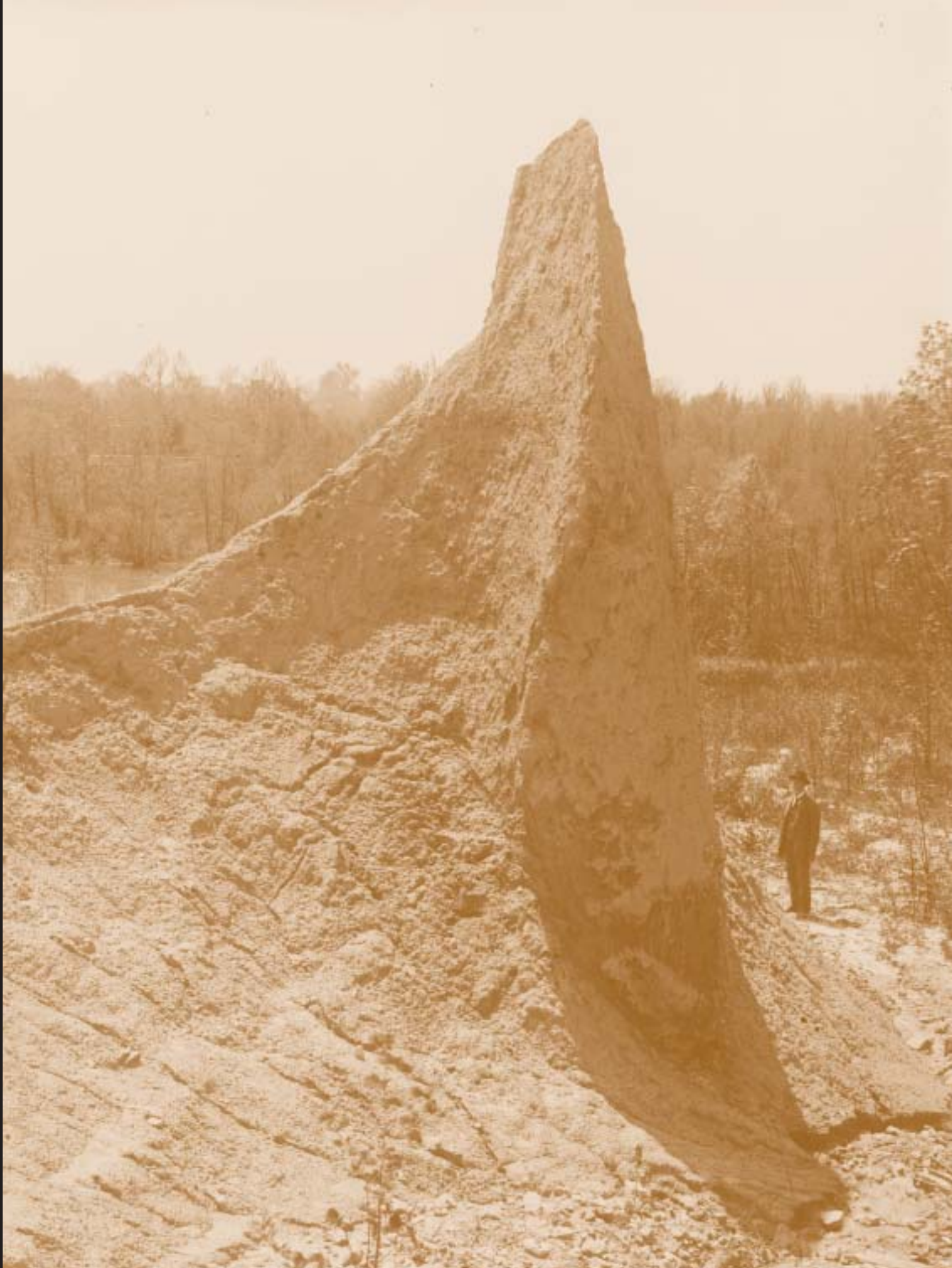
The more the Wrights read, the more they saw how little was known. Will concluded that there was no flying art, “only a flying problem.” It was an open playing field.

Sometimes Will pedaled to a place called the Pinnacles, eerie outcrops where buzzards and hawks dove and darted in the heights above the Miami River. Now, thanks to a growing aeronautic vocabulary, his observations took on a new cast. Birds distributed their weight on a “center of gravity,” upward forces focused on a “center of pressure,” balance controlled by keeping the two roughly in line.

Will saw that, hit by a gust, birds reasserted their balance with a slight twist of the wingtips. One day in late July 1899, a customer came in to buy an inner tube. As they chatted, Will idly twisted the long, empty inner tube box. When the customer left, he tore the ends off. He saw a pair of wings.



Above: Wilbur at work in the bicycle shop; Opposite: The Pinnacles, where Wilbur Wright observed buzzards and hawks working the air currents.





That night Will was aflutter with ideas for twisting the wings with pulleys and ropes. Orv got it instantly. They immediately set to work on an airplane.

The Wrights determined to dodge Lilienthal's fate, testing a kite first. It had biplane wings (an idea from Chanute), each five feet long by thirteen inches wide, plus a horizontal tail to stabilize front and rear. Will took it for a spin in a field just outside Dayton, letting it out with cords attached to the wings—a set per side—which let him twist the tips in the wind. It was an immediate success.

Emboldened, Will wrote to Chanute. "For some years I have been afflicted with the belief that flight is possible to man," he said. "My disease has increased in severity and I feel that it will soon cost me an increased amount of money, if not my life. I have been trying to arrange my affairs in such a way that I can devote my entire time for a few months to experiment in this field."

Will sought advice on "a suitable locality where I could depend on winds of about 15 miles per hour without rain or too inclement weather." Chanute embraced his fellow enthusiast with a prompt response. He said he "preferred preliminary learning on a sand hill and trying ambitious feats over water." A spot on the South Carolina or Georgia coast might have the right mix of wind and sand, he wrote.

Gliding the Wild Places

Kitty Hawk, North Carolina, was the country's sixth windiest area, according to the tables Will got from the chief of the U.S. Weather Bureau. It had other pluses too—hills and seclusion. No one had ever heard of the place.

Mercurial winds greeted Wilbur Wright when he arrived on the Outer Banks in September 1900. Instead of a steady breeze, he got gust—and sometimes gale—and then calm. It was good luck disguised as bad. Their plane would have to tough its way through the wind. "This was a rough environment," says Collins in *Kitty Hawk: The Wright Brothers' Journey of Invention*. In fall and winter, some of the life saving stations could average a shipwreck a week, he says.

Control was the key to the air, the Wrights believed. You needed wings, a motor, and a way to steer. Gliders and automobiles had the first two on the run. Steering was the missing piece. "When this one feature has been worked out," said Will, "the age of flying machines will have arrived." He aimed to control the machine along every axis, a natural notion for a cyclist. To Will, banking an airplane and leaning a bike into a curve were likely close cousins.

They unfurled the first glider—spars, ribs, and white French sateen to clothe the wings—in a makeshift canvas lean-to. Each part was meticulously remeasured and retested before assembly.

It looked like the kite but three times larger, dimensions guided by lift tables from the ill-fated Lilienthal's writings—still the best data on the subject. The arched wings spanned 17 feet.

High winds forced the brothers to test the controls from the ground. They launched the glider unmanned, like the kite, guided by tethers. After one trial, the wind grabbed the craft and rammed it into the sand 20 feet away. The brothers almost packed it in, but set to reassembling the shattered hulk the next day.

To get a feel for manned flight they loaded the glider with chains to approximate a person's weight. Finally satisfied with the results, they hauled the craft to Kill Devil Hills, about four miles south, ascending 80 feet up a summit of shifting sand. With Will prone—at first unsure that this was safe—Orv and a couple of the Outer Bankers took hold of the wings and ran the machine downslope until the wind grabbed it. Soon the glider was skimming through the air at 30 miles per hour for the length of a football field.

Ecstatic, the Wrights broke camp on October 23. "Wilbur was real charged up," says Collins. "They felt that the 1900 glider was very successful." The wing warping

Two agencies with very different missions have joined to celebrate the anniversary of flight—the U.S. Air Force, which wrote much of the history, and the National Park Service, whose task it is to preserve it. Using a theme study—a tool to identify places tied to a specific historical topic—a host of areas are being evaluated as potential National Historic Landmarks or listings on the National Register of Historic Places. So far, a trove of information has yielded a pair of spinoffs, designed to both educate and share the thrill of flight.

From Sand Dunes to Sonic Booms

"From Sand Dunes to Sonic Booms," a new online travel itinerary (the latest in a series of 29), lets site visitors follow the story through a series of essays, maps, and historic photographs. They can visit over 100 National Register properties online, from Orville Wright's house to a Nike missile site intended to ward off a potential Cold War attack on Chicago. The itinerary is also for those who want to see these places in person.

"From Sand Dunes to Sonic Booms" was produced in cooperation with the Air Force, the U.S. Centennial of Flight Commission, Dayton Aviation Heritage National Historical Park, and the National Conference of State Historic Preservation Officers.

Go to www.cr.nps.gov/nr/travel/aviation/ to see the itinerary and others in the series.

Wright Lessons

A new online lesson from Teaching with Historic Places offers an instructional tour through the history of flight—with physics, geography, and practical thinking thrown in—the central point of reference being the Wright Brothers National Memorial.

Students get a feel for the time via historic photographs, maps, excerpts from Orville Wright's diary, and selected readings. Activities like designing and testing a glider immerse them in the Wright world. Or they can learn through group discussions of what flight has meant for warfare, commerce, and transportation. Links to related sites supplement the lesson.

The Organization of American Historians assisted with the plan—co-sponsored by the Air Force—developed to meet the standards of learning for U.S. history. Staff from the Wright Brothers National Memorial contributed to the production.

There are over 100 lesson plans in the series. Go to www.cr.nps.gov/nr/twhp.



made the difference. So did the elevator on the front of the craft. “Because they had designed their elevator in the front instead of the back of the airplane,” Collins says, “instead of crashing to the ground it would kind of pancake to the ground with a soft landing.” The lift was less than expected, but maybe Lilienthal’s tables were in error. More likely the wings needed more curve.

After a brisk exchange with Chanute, the Wrights realized that they were nearer to the secret than anyone. Spurred to single-mindedness, they set to work in the shop—advancing their return from September to July—and hired a skilled mechanic, Charlie Taylor, to run the store.

A Stir in the Aviation World

By the time they hit the sands in 1901, the Wrights were creating a stir in the aviation world, thanks to Chanute.

The brothers quickly assembled a spacious shed from lumber pre-cut to size. Then they paid the price for the early arrival, as enervating heat and a sky black with mosquitoes took it out of their hide. “They chewed us clear through our underwear and socks,” Orv wrote to his sister Katharine. “Lumps began swelling up all over my body like hens’ eggs.”

“They said, ‘Misery, misery . . . this is unbelievable,’” Collins says. “They weren’t used to this. They were city boys. The mosquitoes were tearing them up.”

But the ship was set to go on July 27.

No one had ever flown a glider as big or heavy as this year’s model. But for the size, it was a virtual twin of the last one, except that the wing curvature was nearly double.

Unfortunately the new machine did not duplicate the old performance. It had a habit of nose diving, or sharply climbing and then threatening to slip back (nowadays called a stall). Only Will’s hand on the controls saved him from Lilienthal’s fate.

With improvised adjustments in the field, the Wrights reduced the wing camber. Soon, they were riding the wind again. Will wrote, “The control of the machine seemed so good that we then felt no apprehension in sailing boldly forth.” Chanute, just arrived, was impressed.

Instead they sailed backwards. When banking into a turn, Will sometimes sensed a tremor on the dipping wings; the upper wings whipped around, sending him into a spin, which they called “well digging.” In one test, the craft slammed into the sand.

Dismayed, the Wrights headed home early. Wilbur was ready to give up.

Chanute arrested his descent with an invitation to address the prestigious Western Society of Engineers in Chicago. Will wowed them with a generously revealing treatise on the art of flying, punctuated with a thrilling lantern-lit slide show—and near-heresy. Will announced that the lift tables of the German pioneer Lilienthal were wrong.

He started to doubt himself as soon as he got home. There was only one way to be sure. They had to test the table data.

“He analyzed a problem, and took it apart piece by piece, then solved it one piece at a time,” says biographer Tobin in *Kitty Hawk: The Wright Brothers’ Journey of Invention*. “That was different from many experimenters, who were attempting to do all things at once.” Crouch, in *The Bishop’s Boys*, says that “by the time the Wrights entered the field, so many studies had been conducted that it was no longer easy to differentiate between accurate data and the faulty product of flawed experiments.”

The brothers tread carefully. “No truth is without some mixture of error,” Will wrote later, “and no error so false but that it possesses some elements of truth.”

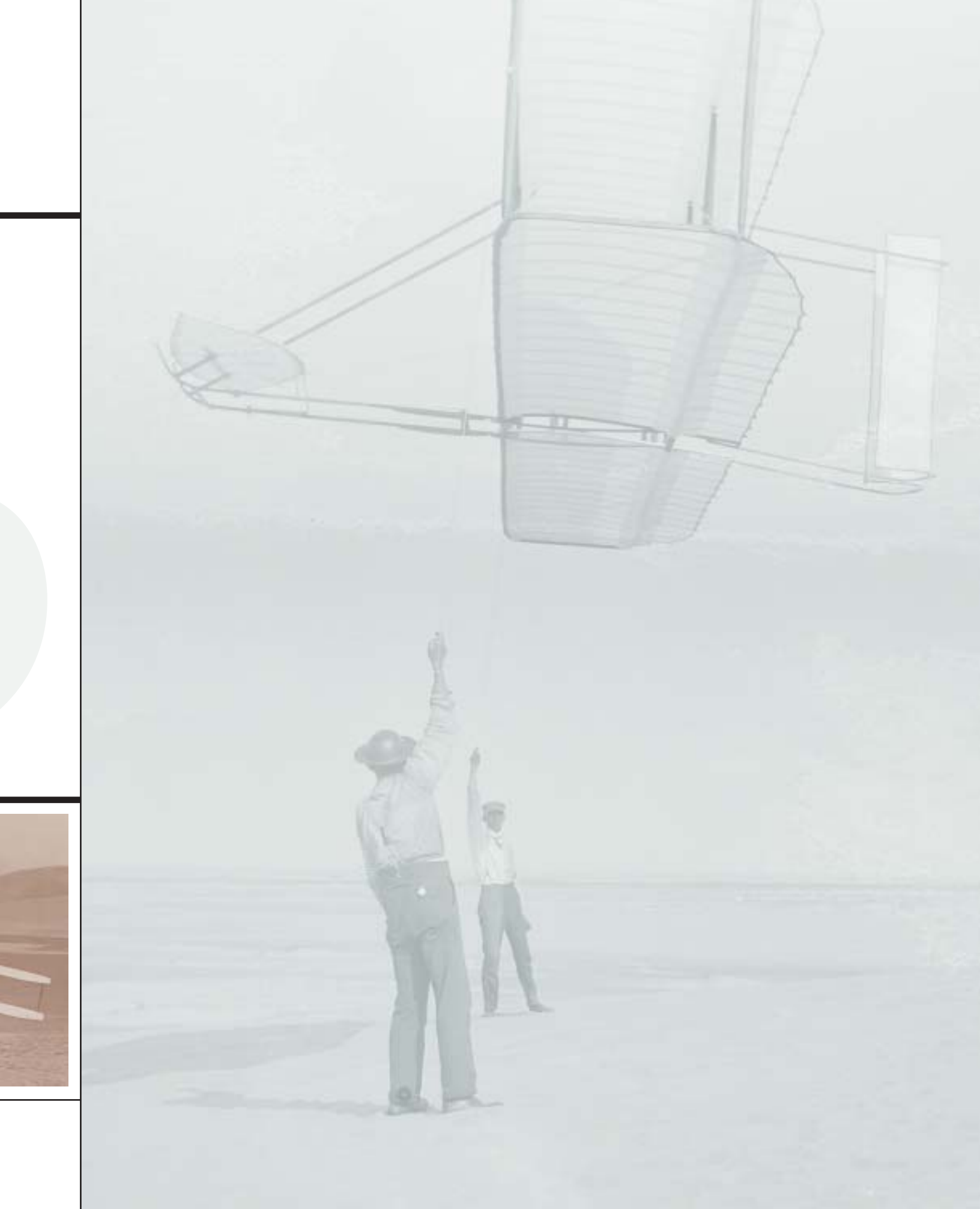
The Wrights proceeded to reshape aeronautics with a few shards of metal and a small wooden box—a primitive wind tunnel. The idea was not new, but in their hands it took off. They sculpted tiny airfoils from slivers of sheet steel, in the wing shapes used by Lilienthal, Langley, and other experimenters. “They discovered that Lilienthal had flown with a very inefficient wing,” Crouch says. “They identified a much better surface—a parabolic curve.” The brothers were intoxicated. Orv said later, “Wilbur and I could hardly wait for morning to come, to get at something that interested us. *That’s happiness!*”

“No truth is without some mixture of error, and no error so false but that it possesses some elements of truth.”

—Wilbur Wright



Above: Wilbur takes a turn in the glider; Opposite: Testing the 1902 glider as a kite.





“There are two ways of learning to ride a fractious horse. One is to get on him and learn by actual practice how each motion and trick may be best met; the other is to sit on a fence and watch the beast a while, and then retire to the house and at leisure figure out the best way of overcoming his jumps and kicks . . . ” —Wilbur Wright

The 1902 model looked familiar, but in the details it was transformed. The wind tunnel showed the superiority of longer, narrower wings. And now there was a tail, a pair of vertical fins.

The first tests proved deceptive. On September 19, Orv wrote in his diary: “We are convinced that the trouble with the 1901 machine is overcome by the vertical tail.” The next few days saw the return of the hair-raising spins. With Orville at the controls, the glider was almost destroyed.

After a late nighter of coffee and conversation, Orv was rolling in bed. He hit on the answer—a movable tail. The problem was, as the spin commenced the fixed fin advanced almost broadside to the wind, aggravating the problem by slowing down the airspeed. Angling the tail would reduce the wind’s resistance. The next day Will added the idea of tying the tail controls into the wing warping mechanism, to simplify operation.

They spent the rest of 1902 topping each others’ records. “In 1901, they’re pretty much like most of the other experimenters around the world,” says Tobin in *Kitty Hawk: The Wright Brothers’ Journey of Invention*. “They’ve had some success, they really don’t know where they’re going. In 1902, they’ve become the Wright brothers as we think of them.”

Riding a Fractious Horse

A sense of urgency set in. The Wrights had started with little hope of gain, but now fame and fortune stared them in the face. Meanwhile, Will’s talk—published in the journal of the Western Society of Engineers—was spreading apace in the global aeronautics community. Someone might beat them into the air.

Langley wrote inquiring about their “special curved surfaces,” all but inviting himself down for a look. The Wrights politely rebuffed him, along with an offer of a paid trip to Washington.

The Smithsonian chief had taken his own road. He put his chips on developing a light engine with enough oomph to toss his plane into the sky. The powerplant would overcome any aerodynamic deficiencies. His model flew, didn’t it? That’s all that mattered. The drama of a man aloft would impress his backers—and the newspapers. He’d solve any control nuances later.

The engine proved easier said than done, but now it was nearly ready.

Langley’s *Aerodrome* took shape in the lab—guided by state of the art theory, built by top craftsmen—while Will and Orv were out

on the dunes. The brothers had their own method. “There are two ways of learning to ride a fractious horse,” Will said. “One is to get on him and learn by actual practice how each motion and trick may be best met; the other is to sit on a fence and watch the beast a while, then retire to the house and at leisure figure out the best way of overcoming his jumps and kicks. The latter system is the safest; but the former, on the whole, turns out the larger proportion of good riders.”

An engine would be there when they needed it, the brothers believed, given the advancing auto industry. Now they didn’t have time to wait. They designed their own, built by their mechanic Charlie Taylor.

The propellers were a challenge. The brothers thought they could borrow from nautical theory, but there wasn’t much when it came to ship props. They reasoned that a propeller was a wing moving in a circular direction. After months of torturous testing and calculations, two delicately contoured blades—smoothly glued spruce shaped with hatchets and drawknives—emerged from the shop.

“Isn’t it astonishing that all these secrets have been preserved for so many years just so we could discover them!” said Orv.

Throwing Caution to the Wind

The camp was a shambles when they arrived on September 25, 1903. “The rain has descended in such torrents as to make a lake for miles about our camp,” Orv said in a letter to his sister Katharine. “The mosquitoes were so thick that they turned day into night, and the lightning so terrible it turned night into day.” The shed, ripped from its foundation, had been tossed toward the ocean, the 1902 glider unscathed inside. Waiting for parts to arrive, they built a new hangar and set a slew of gliding records.

Then a storm brought walls of surf and howling wind, tearing tarpaper off the hangar roof and welling water around the newly arrived crates. As gales hit 75 miles an hour, the Wrights braced the structure. After a weekend of whipping wind, the storm exhausted. Winter was on the way; time was short.

Langley fared no better. On October 7, the *Aerodrome*—launched from a houseboat on the lower Potomac—went into the drink, a dart board for the press. Undaunted, he went to the well for more funds, faulting the catapult launch mechanism. It looked like he was on for another go—soon.

Opposite top: 1903 machine on the launching track at Kill Devil Hills; Bottom: History being made, the first powered flight.



The Wrights abandoned caution, skipping plans to test the new plane as a glider first. From the start there was trouble. In stationary runs the motor kicked and backfired, and the props jerked loose, damage necessitating their return to Dayton for repair.

Small ponds were freezing up in the morning; their washbasin was too. Some days their numbed hands couldn't do the work. On November 20, they got the props back, but they wouldn't rotate; the drive chains from the engine were too loose. "Day closes in deep gloom," says Orv's diary entry.

Glue to the rescue—in the form of the stuff used to fasten bike tires to rims. "Thanks to Arnstein's hard cement, which will fix anything from a stop watch to a thrashing machine, we stuck those sprockets so tight I doubt whether they will ever come loose again," said Orv in a letter. The engine and props hummed with purpose.

On the 25th, they were about to trundle the plane out for tests, when a biting wind and drizzle set in. The brothers huddled around a stove for two days as the temperature dipped and flurries blanketed the beach, an ominous sign. The weather warmed for a few days, but they found a crack in one of the propeller shafts.

The brothers sensed disaster. Orville left for Dayton, hoping to return in haste with spring steel shafts.

A Changed World

Ice bobbed in the Potomac on December 8. Not a good day for a launch, but the sky was clear, and Langley was out of money, out of time, and out of weather. His crew had been on overtime for weeks. To speed the test, the houseboat was moved from its mooring downstream to the Anacostia River's confluence with the Potomac, in full view of Washington.

The catapult hurled the *Aerodrome* into the dusk at 4:45 pm. Even before the end of the ramp it shot skyward, tail crumpled, then slid backwards into the frigid water. Charles Manly, Langley's pilot and chief engineer, struggled to get free of the wreck before his lungs filled with the icy Anacostia. He dove, swam clear, and rammed his head on the ice before he was hauled onto the houseboat, unhurt.

The New York Times called the affair "a ridiculous fiasco." Langley's flying days were done, success cruelly withheld. The cost of his enterprise approached \$70,000, according to the official books. The Wrights had spent just under \$1,000.

Orv arrived with the shafts on December 11, reading about the debacle on the train. With a clear day and wind, they had a shot.

Will won the coin toss, but—unfamiliar with the touch of the new plane—nosed up into a stall. They set to repairing the damage. On December 17 it was Orv's turn. Collins says it was a frosty day for flying. "To give you an example of how cold it was that morning, it had

rained the night before, so a number of the fresh water puddles that had accumulated around the campsite may have been frozen over."

Will ran alongside, steadying the wingtip, as Orv charged down the launch ramp, then took off. He alighted about 100 feet away after 12 seconds in the air. Will and a band of onlookers dashed to where he skidded to a halt, history written in the sand.

By the end of the day, Will had the record—59 seconds aloft for a distance of 852 feet.

At first most papers refused to carry the auspicious event; later some picked up an exaggerated account.

Legends of a New Age

The Wrights knew that a minute in the air would not impress a skeptical world. They gave up bicycle making for an isolated cow pasture near Dayton—Huffman Prairie—where over the next two years they built the world's first practical airplane.

They held their secret close to the vest, which almost proved their undoing. They refused to make flights or show pictures until a potential buyer signed on the dotted line, contingent on delivery as promised. Enough had already leaked to their competitors, the Wrights reasoned. They were out of the sky for three years. The French called them "Les Bluffeurs."

Maybe secrecy was a good gambit early on, but now the product demanded a dramatic demonstration.

In 1908, to cinch a deal with France, Will gave a triumphal performance at Le Mans; shortly after, Orville, in pursuit of a contract, astounded U.S. Army officials at Fort Myer, Virginia.

Buoyed by success, they were soon dragged down by lawsuits over infringement of their patent. Even before the French flight, their competitors had thrown crude versions into the air—thanks in good measure to Will's article—though none approached the finesse of the *Wright Flyer*. Now, with the machine an open book, the competition took the technology to new heights.

The Wrights' days as innovators were over, yet other legends of the air arose to nearly define the century—Charles Lindbergh, Amelia Earhart, Chuck Yeager, John Glenn, and many more.

In the end, perhaps Will's premonition proved out. He died in 1912 at age 45. His death was attributed to typhoid, but his sister said it was stress over the patent wars. Financially secure, Orv lived until 1948.

The good die young, and dreams do come true.

For additional information, go to the National Park Service website for the Wright Brothers National Memorial at www.nps.gov/wrbr/index.htm or the Dayton Aviation Heritage National Historical Park website at www.nps.gov/daav/index.htm.

Opposite: Orville at the controls over Huffman Prairie near Dayton; Below left: A model with seats for passenger and pilot; Below right: The Wright brothers with their machine at Huffman Prairie in Ohio.



Above: The four-cylinder engine used in the 1911 airplane.

on flight **The National Parks**

A Lift for the Wright Memorial

Anticipating throngs of visitors to the Outer Banks, the National Park Service has joined with the First Flight Centennial Foundation to enhance the experience of visiting Wright Brothers National Memorial. A temporary 20,000 square-foot pavilion will feature exhibits, speakers, and a host of celebrations. For more information, contact Julie Ketner Rigby, First Flight Centennial Foundation, (919) 840-2003, www.firstflightcentennial.com. Or visit the Wright Brothers National Memorial online at www.nps.gov/wrbr/index.htm.

Field of Dreams

Much of the Wrights' work was closer to home. An 80-acre cow pasture, Huffman Prairie, gave them flying room and privacy from the prying eyes of competitors. The world's first flying field—now part of Dayton Aviation Heritage National Historical Park—was where the Wrights perfected their plane.

After the Wrights' day, the field was untouched and out of sight for 74 years within the confines of Wright-Patterson Air Force Base. Its 1991 entrance into the National Park System has yielded "From

Pasture to Runway: Huffman Prairie Flying Field," an interpretive plan and report produced by the park with the National Park Service Midwest Regional Office and Olmsted Center for Landscape Preservation, co-sponsored by the the U.S. Air Force.

The report spells out the field's heritage from prehistoric times to the dawn of flight, looking to strike a balance among preserving the field's historic character, providing an educational experience, and accommodating visitors.

The interpretive plan calls for a visitor center telling the Wright story through an array of media. The thrust will be how their work in the pasture, through "inspiration, trial, and error," revealed unknown aeronautical technology—and changed history.

The plan is to maintain the field's peaceful, pastoral character as a way of maintaining a connection to the place where the Wright brothers worked their magic.

For more information, contact Dayton Aviation Heritage National Historical Park, 22 South Williams St., Dayton, OH 45407, (937) 225-7705, www.nps.gov/daav/index.htm.

70 *years*

THE HISTORIC AMERICAN BUILDINGS SURVEY

A Journey in Pictures

SEVEN DECADES OF PHOTOGRAPHY FROM
THE ARCHIVES OF THE HISTORIC AMERICAN BUILDINGS SURVEY

Clockwise from top: Kentucky School for the Blind, Louisville, Theodore Webb, photographer, 1934; Ernest J. Magerstadt House, Chicago, Cervin Robinson, photographer, 1963; McLean House, Appomattox, Virginia, Jack E. Boucher, photographer, 1959; Death Valley Ranch, California, Jack E. Boucher, photographer, 1987-89; El Dorado Apartments, Miami, Walter Smalling, Jr., photographer, 1980; Tudor Place, Washington, DC, Cervin Robinson, photographer, 1962





70 years

THE HISTORIC AMERICAN BUILDINGS SURVEY



Clockwise from top left: **George Blanchard House**, Medford, Massachusetts, Arthur C. Haskell, photographer, 1934; **Rosedown Plantation**, Saint Francisville, Louisiana, Richard Koch, photographer, 1934 (two views); **Mission San Gabriel Arcangel**, San Gabriel, California, Henry F. Withey, photographer, 1937

Mission Atocuimi de Jororo, vicinity New Smyrna, Florida, R.H. Lesesne, photographer, 1934



1930s

1940s



Above: Kiva, vicinity Bland, New Mexico, Donald W. Dickensheets, photographer, 1940; Right: Prudhomme-Hughes Building, Natchitoches, Louisiana, Lester Jones, photographer, 1940





70 *years*

THE HISTORIC AMERICAN BUILDINGS SURVEY



San Xavier del Bac
Mission Mortuary
Chapel, vicinity
Tucson, Arizona,
Donald W. Dickensheets,
photographer, 1940



Jerathmeel Pierce
Place, Salem,
Massachusetts,
Frank O. Branzetti,
photographer, 1940

Near right:
Abraham Knabb
Barn, Berks County,
Pennsylvania,
Cervin Robinson,
photographer, 1958;
Far right:
Chesapeake & Ohio
Canal, Monocacy
Aqueduct, vicinity
Dickerson,
Maryland, Jack E.
Boucher, photogra-
pher, 1959



1950s

Left to right: Fort Bennett Old Blacksmith
Shop and Barracks, vicinity Pierre, South
Dakota, John A. Bryan, photographer, 1952;
Exeter Friends Meetinghouse, Berks County,
Pennsylvania, Cervin Robinson, photographer,
1958; Tavern Guesthouse, Appomattox,
Virginia, Jack E. Boucher, photographer, 1959





70
years

THE HISTORIC AMERICAN BUILDINGS SURVEY



70 years

THE HISTORIC AMERICAN BUILDINGS SURVEY

Right: Republic Building, Chicago, Richard Nickel, photographer, 1960



Far left: Bodie Bank, Bodie State Historic Park, Bodie, California, Ronald Partridge, photographer, 1962; Near left: Rookery Building, Chicago, Cervin Robinson, photographer, 1963; Right: Richfield Oil Building, Los Angeles, Marvin Rand, photographer, 1968

Near Right: James Watson House, New York City, Cervin Robinson, photographer, 1962; Far right: Republic Building, Chicago, Richard Nickel, photographer, 1960



1968



60s



Left: Balboa Park Botanical Garden, San Diego, Marvin Rand, photographer, 1971; Below: First Church of Christ Congregational Church, Farmington, Connecticut, Jack E. Boucher, photographer, 1976; Below right: Florida Southern College, William H. Danforth Chapel, Lakeland, Florida, Walter Smalling, Jr., photographer, 1979; Bottom: Shaker Meetinghouse, Pleasant Hill, Kentucky, Walter Smalling, Jr., photographer, 1978

Below: Paramount Theatre Lobby, Oakland, Jack E. Boucher, photographer, 1975



70
years

THE HISTORIC AMERICAN BUILDINGS SURVEY



1970s



70
years

THE HISTORIC AMERICAN BUILDINGS SURVEY

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Left top: Mills Building, San Francisco, Jet Lowe, photographer, 1981; Left below: Mount Auburn Cemetery, Cambridge, Massachusetts, Jack E. Boucher, photographer, 1987



980s

Above left: Carrie Dabney House, Nicodemus, Kansas, Clayton B. Fraser, photographer, 1983; Above right: Death Valley Ranch, California, Jack E. Boucher, photographer, 1987-89; Far right, top to bottom: El Dorado Apartments, Miami, Walter Smalling, Jr., photographer, 1980; Miami Beach Art Deco Historic District, Walter Smalling, Jr., photographer, 1980; Los Angeles City Hall, Julius Shulman, photographer, 1981



70
years

THE HISTORIC AMERICAN BUILDINGS SURVEY

1990s



Far left: Fox Theater, Seattle, John Stamets, photographer, 1991-92; Near left: Springer-Bize-Coffee House, Columbus, Georgia, Dennis O'Kain, photographer, 1994; Right: Jefferson Memorial, Washington, DC, Jet Lowe, photographer, 1991

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70
years

THE HISTORIC AMERICAN BUILDINGS SURVEY

2003

fleeting streets

THE PLIGHT AND PROMISE OF NORTH PHILADELPHIA

BY BRIAN D. JOYNER PHOTOGRAPHS BY JOSEPH ELLIOTT

Dense and visually stimulating, downtown Philadelphia bustles with shoppers, business-people, and day-trippers. Musicians raise the spirits of passersby with impromptu concerts on street corners. Hotels, restaurants, specialty shops, and gourmet outlets crowd the streets. Center City—as the downtown district is known—caters to the young middle class and empty-nesters eager to take advantage of Philadelphia’s new energy. Everywhere, it seems, are signs pointing out the city’s legendary connection to a nascent America. It is not hard to convince people of the importance of Independence Hall, the Liberty Bell, or the Betsy Ross House. It is Philadelphia’s other history, in another part of town, that needs civic and economic bolstering.

Opposite: Boys on Diamond Street in North Philadelphia, a fashionable address in the 19th century. Most of the row houses are still in good shape.





In North Philadelphia, there is no saxophone music to brighten the afternoon, no signs trumpeting the neighborhood's rich past or directing visitors to trendy shops and historic sites. Dilapidated buildings sit next to vacant lots, which are as common as homes with residents. Construction equipment sits knee-high in weeds, seemingly a portent of things to come.

This in spite of the fact that North Philadelphia is a catalogue of 19th-century architecture, the tangible record of an Industrial Age boom that earned the city the nickname "Workshop of the World." Swaths of eclectic Victorian-era buildings, from the mansions of industrialists to the row houses of workers, line the streets.

That this legacy is in danger prompted a recent study by one of the country's official authorities on historic architecture. The Historic American Buildings Survey, part of the National Park Service, came to North Philadelphia in the summer of 2000 to document the neighborhood's extraordinarily intact specimen structures. The place could be a poster child for the HABS mission.

Philadelphia's Urban Legacy

Between 1875 and 1900, North Philadelphia underwent an amazing transformation. Until about 1850 it was mostly farmland. After the Civil War, with a surging populace and industrialization, the area transformed into one huge construction site. Philadelphia became the world's premiere industrial city, a leader in pharmaceuticals, textiles, shipbuilding, glass, and more. Giants such as the Disston Company, the world's largest saw manufacturer, called the city home.



Opposite: Church of the Advocate; Above left: Molded brickwork of the Greater Straightaway Baptist Church; Above center: Attic of Girard College; Above right: Carved detail on a pew at Green Hill Presbyterian Church.

When the HABS team arrived, the job was twofold: to create a record of the remarkable buildings and to bring attention to the need for preserving them. Perhaps no one was happier to see the team than the Advocate Community Development Corporation, run by local activists with a stake in the place. Advocate has roots in North Philadelphia going back to the late '60s, the peak of urban unrest and the early days of the Black Panther movement.

Advocate is all about preserving the community. From the start, there was a confluence of vision with the HABS team—historians, architects, and a photographer.

Lensman Joseph Elliott captured the decaying splendor of the place, conveying a sense of loss and urgency. At the time, the nonprofit Foundation for Architecture (now defunct) was conducting tours. The foundation paired with HABS to produce a promotional brochure using the project's research—by historians Jamie Jacobs and Donna Rilling—as well as its compelling images. "Going Uptown: The Extraordinary Architecture of North Philadelphia" was part of a plan to draw attention to the place. When the foundation folded, Advocate picked up the tours and took the effort farther. Drawing again from the HABS work, the group developed the exhibit "Acres of Diamonds: The Architectural Treasures of North Philadelphia," which spent early 2003 at the University of Pennsylvania's Myerson Hall Gallery, cosponsored by the university and the Preservation Alliance of Greater Philadelphia.

The industrial wealth displayed itself in stark contrast to the Quaker roots of William Penn's city. Streetcar lines gave easy access to downtown, the disposable income of the nouveau-riche manifest in brownstones and row houses, the new geography of an Anglo-American middle class with its businesses and institutions.

The HABS documentation offers a breathtaking view of this history. The work produced meticulous measured drawings, historical research, and large-format photographs (some shown here). A congressional appropriation—to fund HABS documentation in southeastern Pennsylvania—helped finance the project, with the monies matched by the William Penn Foundation.

The survey highlights many of the prominent buildings, some of which are focal points and a source of pride in the community: the Wagner Free Institute of Science, an example of late-Victorian educational-institutional architecture; the Disston Mansion, the ornate Victorian home of the industrial magnate; and the Divine Lorraine Hotel, one of the country's few luxury hotels open to African Americans during the Jim Crow era.

The team captured the more pedestrian specimens as well, characterized nonetheless by ubiquitous and wonderful detail. On West Girard Street are twin row houses with canted bay win-



Above: A longstanding community makes its life amidst a 19th century landscape.

dows and ornate stone lintels. North 16th Street is filled with identical three-story row houses with corbelled brickwork.

Eventually, speculative building ventures in North Philadelphia provided housing for all income levels. Well-to-do Philadelphians moved on to the Main Line and other suburbs. Churches, synagogues, and other institutional buildings were built for the new constituency. Later, much of this fabric would be adopted by the African Americans who arrived in

the great migrations of the 1920s. They eventually became the dominant population in North Philadelphia and remain so.

Life in the Here and Now

HABS historian Catherine Lavoie explains that while her program has become well known for “tramping around in the backwoods looking for vernacular architecture,” its purpose is to record outmoded and endangered buildings as a hedge





against potential loss. Lavoie sees the deterioration of urban areas as one of the most pressing preservation issues of our time.

Effectively abandoned, North Philadelphia west of Broad Street was spared the destruction of urban renewal in the 1960s. By the 1970s, the residents who remained were unable to maintain the buildings. The houses were too large for low-income renters, and out of vogue for middle-income buyers. As in many cities today, decay crept in slowly until desolation became a fixture. Despite the affection for any number of architectural styles in this country, says Lavoie, “We’ve largely ignored the urban environment.”

Former Mayor Ed Rendell focused most of his efforts on improving Center City. Using HUD community development block grants, he encouraged a refurbished downtown, attracting new hotels, visitor facilities, and reinvestment. The relative rarity of the city’s remaining colonial architecture provides a compelling incentive for its preservation. Saving Philadelphia’s industrial past has been less of a priority, in part (and ironically) because of its ample stock.

There are many places that could be added to the catalogue of national treasures. John Gallery of the Preservation Alliance of Greater Philadelphia says that cities with a size and history comparable to his have two to three times the number of historic districts. But because of limited resources, the city has not conducted surveys to designate districts locally or nominate them to the National Register of Historic Places, which are measures that could help to provide protection and open doors to potential funding.

North Philadelphia’s case is hampered by its public image. Most Philadelphians know little of

its history or architecture, but do know it to be rough. News reports offer a steady diet of crime and vandalism.

Advocate is on the front lines of the daily challenges. It has reconstructed or built over 400 properties, is involved in 500 more, and has won numerous awards for its projects. Director Joanne Jackson arrived four years ago to lead a nonprofit and has since become a staunch preservationist. Take a walk around Diamond Street and she will show you numerous projects Advocate is working on—from the landscaping, new playground, and murals at the Duckery School, to the row of three-story townhouses designed by well-known local 19th century architect Willis Hale, now being converted into duplexes with a revenue



Above: Supporting walls in the attic of Girard College; **Left:** Children pose for photographer Joseph Elliott on a North Philadelphia street; **Near left:** Inside the former home of jazz legend John Coltrane.



producing apartment in each unit. Many are rented to students at nearby Temple University. Advocate is deeply involved with the community, looking to attract retail stores to an area where Rite-Aid does more business per square foot than any other place in the city.

Jackson's group is a presence in the HABS imagery. One of the most notable structures in the photos is Advocate's namesake and spiritual center, the French Gothic Revival Church of the Advocate, one of the few examples of its kind in the United States. Its spectacular architecture stands in stark contrast to the nets installed over the pews to catch the crumbling plaster.

The church is where Advocate got its start, formed in 1968 by Christine Washington, whose husband, Paul, was pastor. The Washingtons, who made the church available for Black Panther meetings, commissioned the artwork that adorns its walls. Based on biblical passages, the murals take two different looks at the African American experience: one, a fiery, retributive interpretation, the other a Cubist time capsule of events and prominent figures. In contrast to the transcendent architecture, the epistolary art is staggering, part of the historic gravity of the place.

While some work is being done to revive North Philadelphia, there is concern that the elements that define the neighborhood are being forgotten or devalued. Gallery points out the incongruity of some of the housing built by the Philadelphia Housing Authority, particularly the Swiss chalets constructed next to 19th century row houses. "The new urbanism seems too often to be the new suburbanism," he says. The city should let Advocate select the models and handle the renovation, Jackson says.

The issue of gentrification has arisen, but Jackson says the community is happy at this point just to have buildings occu-

ped. Advocate depends on Temple University, not just for renters, but also for volunteer and work-study help. Temple has built several dormitories in the area, and students are choosing to stay in the neighborhood rather than seek housing elsewhere. There has been some infusion of middle-class homeowners as well.

What Should Happen Now

Neighborhood improvement for places outside City Center was a component of John Street's successful political campaign to replace Ed Rendell as mayor. His Neighborhood Transformation Initiative seeks to rebuild Philadelphia's neighborhoods as safe, thriving communities with quality housing and cultural character. This is one means of encouraging development, providing an administrative flexibility that the HUD block grants did not. However, in fulfilling two of its goals—eliminating blight and acquiring land for development—some historic fabric may be destroyed.

At a recent conference of the Philadelphia chapter of The American Institute of Architects, Gallery and Jackson presented their passion for North Philadelphia. Knowing the effect that it would have on the partisan audience, Jackson made the most of the HABS photographs. She wants to re-establish the neighborhood and its buildings in the public consciousness. She and Gallery suggested ways that the government and developers can contribute to North Philadelphia's rejuvenation.

Gallery suggests that better use be made of the 20 percent Federal tax credit for rehabilitating National Register properties that produce revenues (rental housing, restaurants, offices, and the like). He says there is a proposal in the State legislature for a similar tax incentive. The city is considering a tax credit for homeowners who restore their historic houses.



Far left: Statue at Church of the Advocate; Center and near left: Details of Founders' Hall at Girard College, one of the greatest expressions of 19th century Greek Revival architecture in the United States.

Opposite: The Disston Mansion, home of a wealthy tool manufacturer during Philadelphia's industrial heyday.

He also recommends easements and conservation districts to protect areas not eligible for national or State recognition.

Jackson says the cost of a building, depending on size and condition, ranges from \$75,000 to \$300,000. Replacing marble windowsills and repointing brickwork, to say nothing of structural repair and interior work, can put the price well into the hundreds of thousands of dollars. There's the rub: New construction is expensive too; the only "cheap" option is leaving properties unoccupied.

So what is the answer? Other areas around the country have used tax inducements to attract people back to the urban core. Tax credit programs have had some success in Maryland, most notably in Baltimore. In Richmond, the Jackson Ward Historic District has benefited from tax breaks linked to National Register designation. Such measures are not a cure for urban woes, however. No city has revitalized its core through tax incentives alone.

All parties agree that higher visibility will only benefit the community and encourage home buying and rehabilitation. The local chapter of The American Institute of Architects gave three blocks in North Philadelphia its Landmark Building Award. But ultimately it is the public that has to embrace the area's industrial past and its legacy.

Depressed conditions aside, it is the hidden grandeur of North Philadelphia that could be its saving grace. When Jackson describes being in the Disston Mansion, she voices a sentiment shared by many, "After you've been in this building, you can never look at North Philadelphia the same way again."

Brian D. Joyner is a writer and editor in the National Park Service's Office of Diversity and Special Projects. For a retrospective of HABS' work over the decades, see the inaugural issue of *CRM: The Journal of Heritage Stewardship* at www.cr.nps.gov/CRMJournal/. For more information on the HABS North Philadelphia project, contact Catherine Lavoie, National Park Service, Historic American Buildings Survey, 1849 C St., NW (2270), Washington, DC 20005, (202) 354-2185, e-mail catherine_lavoie@nps.gov. The exhibit "Acres of Diamonds" will be in Harrisburg, Pennsylvania, in May 2004, at the Community College of Philadelphia in September 2004, and at Philadelphia's Temple University in February 2005.



Left to right: A family in front of a brownstone on 17th Street; the Divine Lorraine Hotel; skylight at Girard College; one of the Disston Mansion's turrets; Top: Advancing decay.





WHEN WEST WAS EAST

RUMORS OF CALIFORNIA GOLD spread far and wide in the mid-19th century—as far as China—inviting a wave of hopeful immigrants. The Chinese people worked the claims others abandoned. Their persistence paid off, and in little towns across northern California, prosperous communities sprang up. The successful prospectors bought up entire blocks from their Anglo owners, and soon there were Chinese grocery stores, gambling halls, rooming houses, and restaurants. **THEY BUILT CHURCHES TOO.** Weaverville's Taoist temple—one of its ornaments displayed here—is the oldest of its kind in continuous use in the United States. Built in 1874, it is now on the National Park Service's National Register of Historic Places and preserved as part of California's park system. **PHOTOGRAPHED FOR POSTERITY** by Jack Boucher of the National Park Service's Historic American Buildings Survey, which also produced measured drawings, it is officially known as the Weaverville Joss House, a title that may be a relic of early Chinese contact with the Portuguese ("Joss" being a Chinese approximation of the Portuguese "Deos," or God). **THE TEMPLE AMONGST THE FOREST BENEATH THE CLOUDS**, as the Chinese called it, served not only as a place of worship, but as a community social hall, a place to conduct business, a fraternity house, and even a traveler's hostel. Outwardly, it is a combination of the functional and fanciful, a traditional clapboard A-frame accentuated with Asian features. **TODAY VERY LITTLE REMAINS** of Weaverville's Chinatown. By the early 20th century, many of its residents had returned to their homeland. The Joss House, however, remains as a reminder of the past and a haven for modern day followers of Taoism.



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“With an average stay of three weeks, immigrants lived in crowded, unsanitary conditions, separated by ethnicity and gender and kept under lock and key by night. Guards patrolled the fences. Detainees were subjected to rigorous physical exams and interrogations, with entry into the United States prohibitively stringent.” —“Uncertain Path to the Promised Land,” page 12

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