

Dayton Aviation Heritage

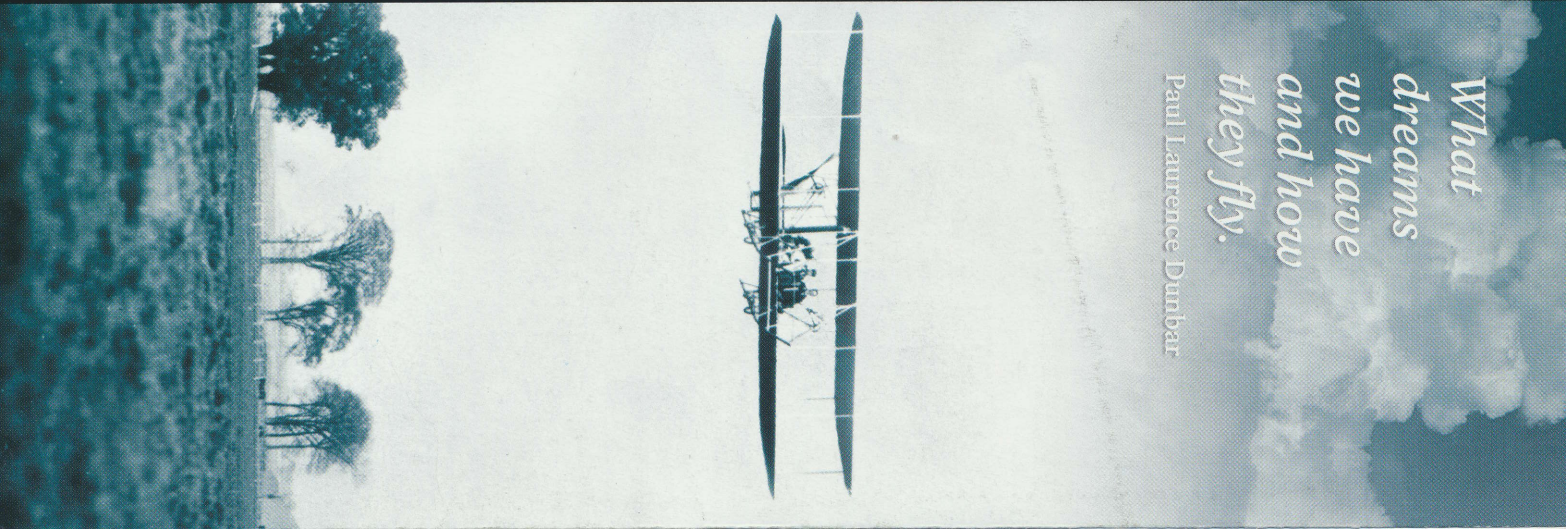
National Park Service
U.S. Department of the Interior

National Historical Park
Ohio

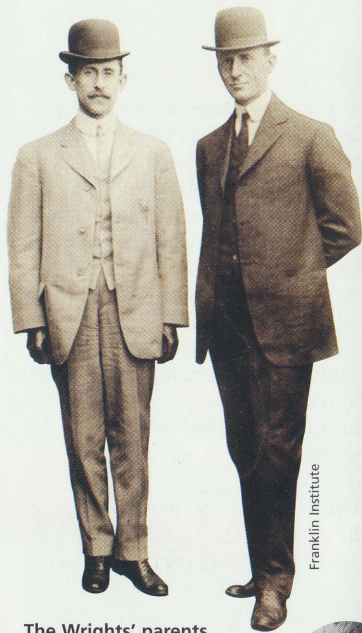


*What
dreams
we have
and how
they fly.*

Paul Laurence Dunbar



The human imagination found its highest expression in three men from Dayton, Ohio: Wilbur and Orville Wright, first to fly a powered, heavier-than-air machine and creators of the practical airplane, and Paul Laurence Dunbar, who with his compelling new voice was the first African American writer to win high distinction in American literature. This park preserves sites associated with the Wrights and the home of Dunbar.



Franklin Institute

The Wrights' parents, Milton and Susan Wright (left), were major influences in their lives. Their sister Katharine (right) was a steadfast supporter and traveling companion for their European demonstrations.



Orville Wright (back row center) poses with his high school class, though by then he had decided to concentrate on printing rather than graduating. His friend Paul Laurence Dunbar (back row left), the only African American in the class, became a nationally known poet, returning to Dayton to be feted by the town's literary clubs.



Cover image: U.S. Air Force Museum; Milton and Susan Wright portraits: Wright State University; Katharine Wright and school class photo: Wright State University; *Dayton Tattler*: Dayton and Montgomery County Public Library; Dunbar portrait: Ohio Historical Society; Otto Lilienthal: Library of Congress; Octave Chanute: National Air and Space Museum

Home in Dayton

In a sense the Wright brothers and Dayton came of age together. In 1878, when Wilbur was eleven and Orville seven, the Wrights moved to Iowa and Indiana for a few years. They returned in 1884 to a rapidly modernizing city of 40,000. Telephone lines and electric streetlights had arrived. Hundreds of factories and machine shops made the city a leader in the production of farm implements and railroad cars. Dayton was also an innovator, leading the nation in patents per capita by 1890.

It was a nurturing environment for the curious and creative brothers. From childhood they tinkered, built,

and showed an entrepreneurial bent—tendencies finding an outlet in the print shops they ran from 1887 to 1899. (One was in the Hoover Block, at right in the West Third Street photo below.) In 1892 they added a bicycle business, the first step on their path to the invention of the airplane, because they would adapt bicycle technology to aeronautical design and because they recognized the parallels between controlling a bicycle and an aircraft. Their exciting achievements on North Carolina's Outer Banks were grounded in Dayton. Theoretical work in Dayton lay behind the revolutionary control system employed at Kitty Hawk,

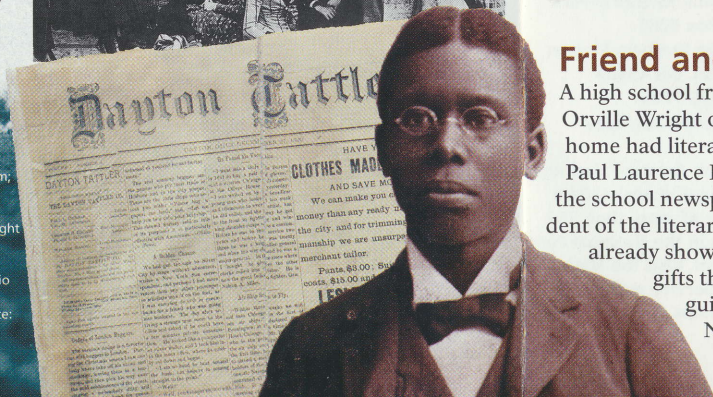


Marvin Christian Photography

Friend and Poet

A high school friend with whom Orville Wright often walked home had literary aspirations. Paul Laurence Dunbar, editor of the school newspaper and president of the literary society, was already showing the poetic gifts that would distinguish his short life. Nicknamed

"Deacon" for the solemn manner in which he recited, Dunbar recalled: "My chums encouraged me. My teachers encouraged me." He published a newspaper for the African American community, the *Dayton Tattler*, which the Wrights printed for him, and after his graduation the Wrights printed the tickets and handbills for Dunbar's public readings.



N.C. They overcame the problem of inadequate lift by gathering new data on lift in Dayton. The aircraft they assembled at Kitty Hawk were made from components fabricated in their hometown bicycle shop.

The brothers' father and sister provided support and encouragement throughout their aeronautical careers. (Their mother died in 1889.) Katharine, especially, was a source of stability at home and a constant correspondent during their experiments. She believed in them, helping to keep the sometimes discouraged brothers on an even keel as they worked toward their goal.

"A Machine of Practical Utility"

The Wrights' success at Kitty Hawk in North Carolina on December 17, 1903, when they made the first free, controlled, and sustained flight in a powered heavier-than-air machine, was one of history's great technological feats. They were well aware, however, that they had only taken the first step. The exhilaration of getting their Flyer into the air would have to be followed up by the long, arduous process of building a machine that could make lengthy, routine flights and be safely landed. This was the second phase in the invention of the airplane—not as well known as the first flight, but just as important to their final achievement.

They decided to continue their experiments in Dayton. Although flights over ground would be riskier than over sand and the winds were less reliable, they could avoid the long trip to North Carolina and have ready access to their workshop. They received permission to use a pasture near town, called Huffman Prairie, for their experiments. Their first flights in 1904 were less than impressive; it took more than two months to exceed the longest flight of 1903. They were frustrated by the fact that they were not yet skilled pilots, something needed for productive experiments, but the 1904 Wright Flyer II couldn't remain in the air

long enough to allow the necessary practice. They erected a catapult to pull the machine along a rail fast enough to achieve needed lift even in weak headwinds, giving them more flight time. They flew their first circle in September 1904 and had flown five minutes by December, but most of the flights were still short, undulating hops. Landings were anything but routine, with frequent accidents.

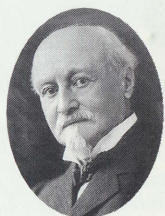
A particularly bad accident in July 1905 spurred the final breakthrough. Pitching up and down, the Flyer dove into the ground at a sharp angle, throwing Orville through the broken upper wing. The elevator, skids, and

a dozen ribs were broken—none of them Orville's, who escaped serious injury. In rebuilding the Flyer the brothers used a larger elevator and extended it farther out from the wings. This was the final piece in the puzzle. The wild pitching disappeared, and by October the length of the flights was essentially limited only by the gas supply. They had a practical airplane, the 1905 Wright Flyer III. In 1907 and 1908 they built new flyers with pilot and passenger seats and redesigned controls for demonstration flights in France and at Fort Myer, Va. With a U.S. Army contract in hand, they established The Wright Company in 1909.

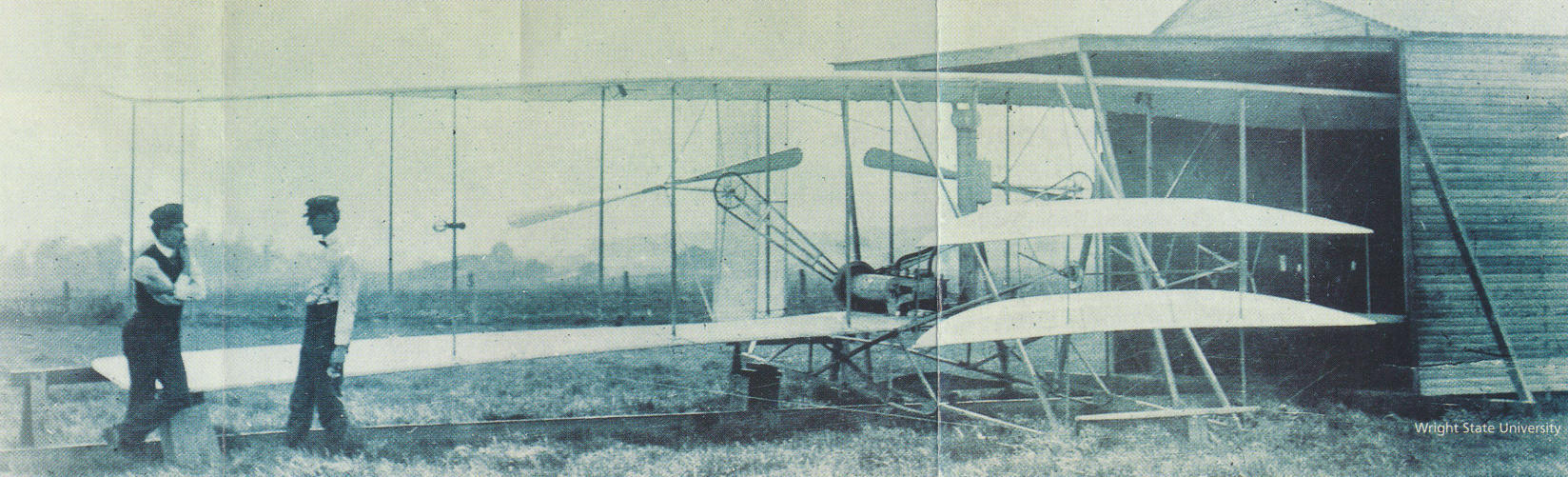
The Wrights built two new airplanes for their experiments at Huffman Prairie. The 1904 Wright Flyer II (*below*) essentially duplicated the 1903 machine except for a more powerful engine. The following year they were more confident of their flying skills, and on the 1905 Wright Flyer III they separated the controls for the rudder and wing-warping (to roll the wings), giving the pilot more control.



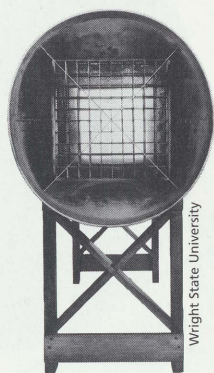
The German gliding experimenter Otto Lilienthal (1848-96) inspired the Wrights to undertake serious aeronautical work. He understood that full-sized manned gliders were the first step towards human flight. He died in a gliding accident.



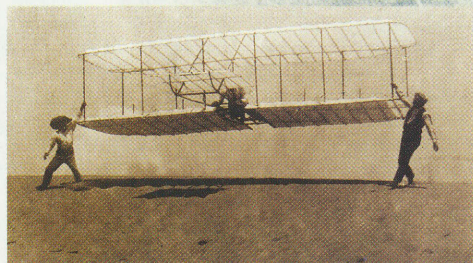
Octave Chanute (1834-1906), civil engineer and authority on aeronautics, became the Wrights' friend and sounding board for many of their ideas as they conducted their flight experiments. The biplane design of his own gliders influenced the Wrights.



Wright State University



Wright State University



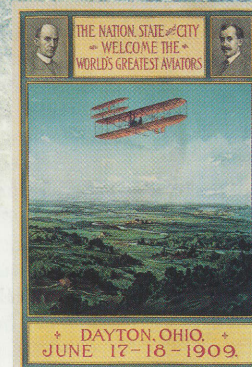
Wright State University

The failure of their gliders to generate the expected lift at Kitty Hawk in 1901 (*left*) made the Wrights doubt the standard tables of lift. Back in Dayton that Fall they built a wind tunnel (*replika far left*) with which they compiled data on dozens of model airfoils.



Wright State University

At The Wright School of Aviation, students learned on an earth-bound trainer before going up in a Wright Model B (*left*). Dayton threw a grand party (*poster at right*) for the Wrights upon the brothers' return from their European successes.



Allen Airways Flying Museum



If a man is in too big a hurry to give up an error, he is liable to give up some truth with it.

—Wilbur Wright



If we all worked on the assumption that what is accepted as true is really true, there would be little hope of advance.

—Orville Wright

Portraits of Orville and Wilbur Wright: Library of Congress; Hoover Block and "W": NPS; Cat woodcut: Wright State University (WSU); The Wright Cycle Company: NPS; Wright Cycle Company interior: WSU; Bike, Camera, and Wright Hall: Carillon Historical Park; Huffman Prairie Flying Field: WSU; Dunbar House: NPS; Dunbar portrait: Ohio Historical Society; Memorial plaque: Wright-Patterson Air Force Base; Dunbar books: WSU

Wright-Dunbar Interpretive Center

The Wrights moved their printing business to the second floor corner suite of offices in the Hoover Block (below) when it opened in 1890, continuing to operate here until 1895. Below right are the "W" from the masthead of their newspaper, *The West Side News* (1889-90), and an 1886 woodblock print made by Wilbur. This historic building is now the location of the main

visitor center for the park. Combined with the adjacent Aviation Trail Visitor Center, this facility offers exhibits on every phase of the Wrights' lives, from their Dayton childhood to their early careers as businessmen to their aeronautical experiments. Visitors can also learn about aviation history in the Dayton area and about the life and works of Paul Laurence Dunbar.



Partners in Aviation Heritage

The park established by Congress in 1992 to commemorate the achievements of Orville and Wilbur Wright and Paul Laurence Dunbar cooperates closely with partners on whose work it was founded. Aviation Trail, Inc. (ATI), established in 1981 to preserve and promote the Dayton area's unique aviation heritage, was instrumental in getting the national park established. After saving and preserving The Wright Cycle Company building and the Hoover Block, ATI and Dayton citizens lobbied Congress for their inclusion in the National Park System. Their dedicated work prompted passage of the Dayton Aviation Heritage Preservation Act (1992) creating the national park. The Wright Cycle Company building and Hoover Block are two of more than 45 landmarks on the Aviation Trail, including Woodland Cemetery, burial place of the Wright family and Dunbar, and Hawthorn Hill, the home built by the Wrights. A trail guide can be purchased at the park.

The Ohio Historical Society, which manages the Paul Laurence Dunbar State Memorial, a unit of the national park, promotes research and understanding of Ohio's history and prehistory. The City of Dayton and the Wright-Dunbar Village Main Street Program have played prominent roles in the development of the neighborhood surrounding the National Park Service sites in West Dayton. Carillon Historical Park, a 23-building historical complex depicting the stories of the Miami Valley's settlement, transportation, and invention and industry, includes the *John W. Berry, Sr.* Wright Brothers Aviation Center, a unit of the national park. Other national park units, Huffman Prairie Flying Field and the Huffman Prairie Flying Field Interpretive Center, are within the bounds of Wright-Patterson Air Force Base. The base is also the location of the Wright Memorial, United States Air Force Museum, and National Aviation Hall of Fame.

The Wright Cycle Company

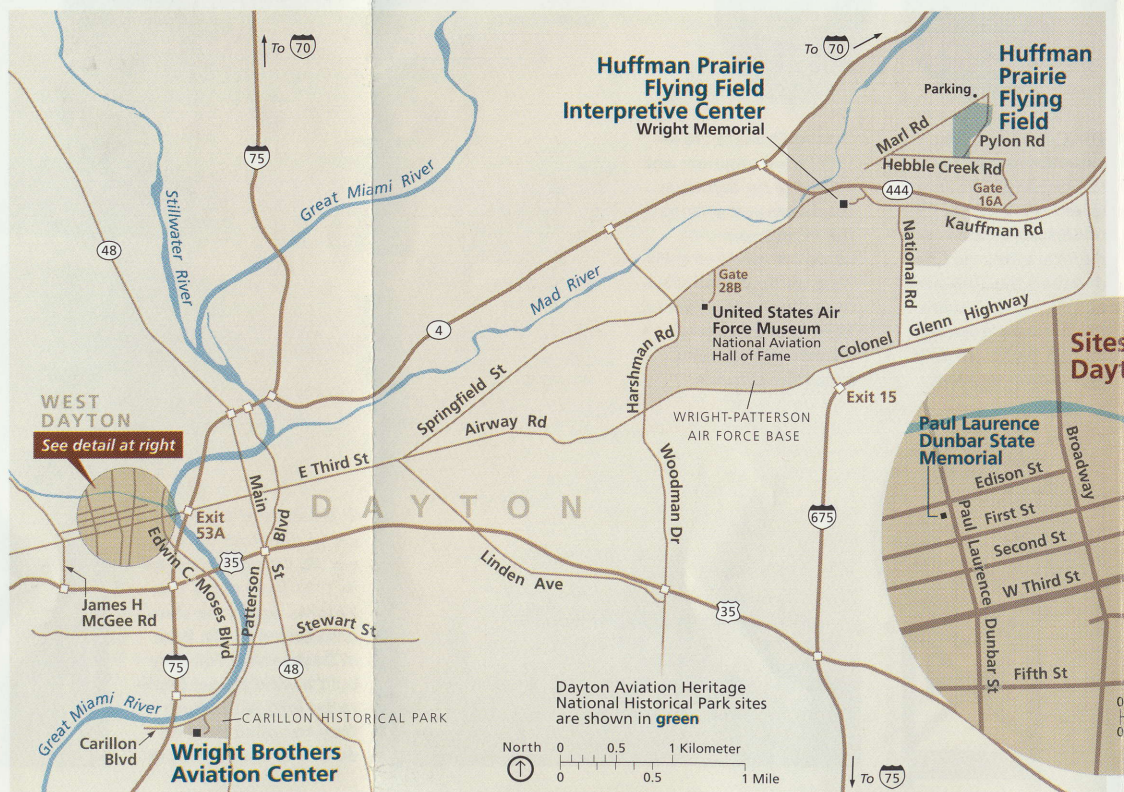
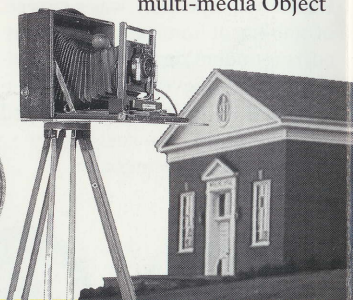
In 1892 the Wrights opened a bicycle repair shop in addition to their printing business. From 1895 until 1897 both were located at 22 South Williams Street (*below*), the fourth of five locations for their bicycle business. *Below left*: Orville, at right, and an employee are shown filing frames in 1897. In this shop they began manufacturing their own brands, including the Van Cleve (*emblem*

below right). Here they also began giving serious thought to the possibilities of flight. A National Historic Landmark and the only one of the bicycle shops intact and in its original location, it now houses an exhibit on the Wright bicycle business. Here the visitor can view the bicycle technology the Wrights incorporated into the structure and mechanisms of their gliders and flyers.



Wright Brothers Aviation

The collections of the *John W. Berry, Sr.* Wright Brothers Aviation Center in Dayton's Carillon Historical Park tell the story of the Wright brothers' lives and their historic achievement. The centerpiece is the 1905 Wright Flyer III, restored under the close direction of Orville Wright and placed in Wright Hall, the center's main building (*below*), when the park opened in 1950. The multi-media Object



tion Center

Theater dramatically displays some of the most significant artifacts associated with the Wright story, such as an original Van Cleve bicycle, one of the Wrights' own designs. Visitors can also see the camera (below left) used to take the famous photograph of the first flight. Next to Wright Hall is a replica of the bicycle shop the brothers operated from 1897 to 1908.



About Your Visit

Contact Dayton Aviation Heritage National Historical Park for information on hours at The Wright Cycle Company and the Wright-Dunbar Interpretive Center. Call 937-425-0008 for information on Huffman Prairie Flying Field and the Huffman Prairie

Flying Field Interpretive Center. Call Carillon Historical Park (937-293-2841) and the Paul Laurence Dunbar State Memorial (937-224-7061) for information on those sites.

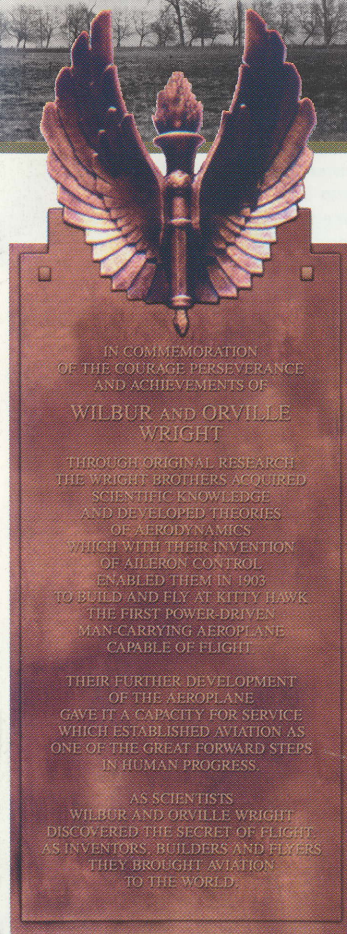
The Huffman Prairie Flying Field Interpretive Center, near Huffman Prairie Flying Field, features exhibits on the Wrights' activities at the flying field and the role of Wright-Patterson Air Force Base in aeronautical research. Close by is the Wright Memorial, erected by Daytonians in 1940 (memorial plaque at right). While visiting Huffman Prairie Flying Field, please help us protect the world's first airport; do not dig or disturb plant life.

The Paul Laurence Dunbar State Memorial, owned and managed by the

Huffman Prairie Flying Field

Over this 84-acre patch of rough pasture outside Dayton, the Wrights undertook the difficult and sometimes dangerous task of creating a dependable, fully controllable airplane and training themselves to be pilots. They made hundreds of flights here after developing the 1905 Wright Flyer III, testing the aircraft built by The Wright Company. At the Wright School of Aviation here they trained more than a hundred pilots, including flyers for the

Wright Exhibition Team and the first military flyers. The U.S. Army Signal Corps purchased the field in 1917 and renamed it, along with 2,000 adjacent acres, Wilbur Wright Field. In 1948 Wright-Patterson Air Force Base was established here. Today visitors can see where the Wrights developed the world's first practical airplane as well as replicas of their 1905 hangar and launching catapult.



Ohio Historical Society, was Dunbar's final home.

For Your Safety Use caution on steps and ramps. At Huffman Prairie Flying Field watch for groundhog burrows. Use insect repellent; in hot weather this can be chigger country. Check for ticks after your walk.

More Information Dayton Aviation Heritage National Historical Park P.O. Box 9280 Wright Brothers Station Dayton, OH 45409 937-225-7705 www.nps.gov/daav

Dayton Aviation Heritage National Historical Park is one of more than 380 parks in the National Park System. Visit the National Park Service website at www.nps.gov.

*We wear the mask
that grins and lies,
It hides our cheeks
and shades our
eyes,—
This debt we pay to
human guile;
With torn and
bleeding hearts
we smile,
And mouth with
myriad subtleties.*

*Why should the
world be over-wise,
In counting all our
tears and sighs?
Nay, let them only
see us, while
We wear the mask.*

*We smile, but, O
great Christ, our
cries
To thee from tor-
tured souls arise.
We sing, but oh the
clay is vile
Beneath our feet,
and long the mile;
But let the world
dream otherwise,
We wear the mask!*

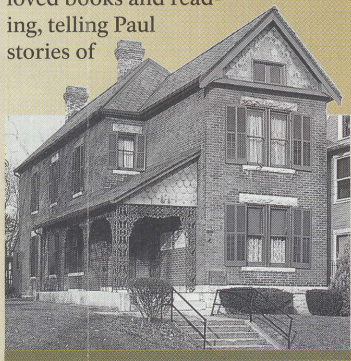
—We Wear the Mask, 1895

es in West
yton



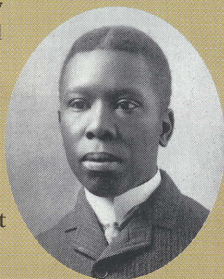
Paul Laurence Dunbar State Memorial

Paul Laurence Dunbar's life and works embodied the dilemma of "twoness" facing 19th-century African Americans as expressed by W.E.B. DuBois: "an American, a Negro; two souls, two thoughts, two unreconciled strivings . . ." Dunbar was born in Dayton on June 27, 1872, to ex-slaves. Both his parents loved books and reading, telling Paul stories of



slave life and the Civil War. As a grade schooler he was composing and reciting his own poems and in high school he contributed poems to the school newspaper. His parents had ambitions for Paul, but after graduation he faced the realities of racism. He worked as an elevator operator, writing on the job between calls. His break came when he addressed a literary conference in Dayton. A poet in the audience, impressed by Dunbar, wrote a newspaper article read by the poet James Whitcomb Riley. After Riley wrote Dunbar an encouraging letter, Paul

published his first book of poems, *Oak and Ivy*, in 1892. The well-known critic William Dean Howells favorably reviewed *Majors and Minors*, Dunbar's second book, and wrote the introduction for the next, *Lyrics of Lowly Life*. He anointed Dunbar the first African American writer to have "evinced innate distinction in literature," and helped gain for him a national and international reputation. But Dunbar was frustrated by Howells' and others' preference for his poems written in heavy "plantation" dialect—what he dismissed as "broken



tongue." He craved recognition for his more serious poems written in standard English, some of which powerfully evoked the yearnings of African Americans. After returning from a reading tour in England, Dunbar married the writer Alice Moore in 1898 and resigned his job at the Library of Congress to write full time. He was diagnosed with tuberculosis in 1899, but continued to write. After his marriage ended in 1902 he lived with his mother, eventually purchasing a house in Dayton (*above*). This house, where he died in 1906, would become the first public memorial to an African American.

