

Our Missouri Podcast

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KEVIN WALSH: Welcome to *Our Missouri*, a podcast about the people, places, culture, and history of the 114 counties and independent city of Saint Louis that comprise the great state of Missouri. Each episode focuses on a topic related to the state ranging from publications about Missouri's history to current projects undertaken by organizations to preserve and promote local institutions. The *Our Missouri Podcast* is recorded at the Center for Missouri Studies in Columbia, and is generously provided to you by the State Historical Society of Missouri. And now, here's your host, Sean Rost.

SEAN ROST: Good morning, good afternoon, and good evening, or at whatever hour you are tuning in to listen to the *Our Missouri Podcast*. My name is Sean Rost and I will be your guide as we explore the memories, moments, and misfortunes from our Missouri. Fifty years ago this summer—1969 to be exact—the space race pitting the United States against the Soviet Union was reaching the proverbial finish line. The only question that remained was: Who would land on the Moon first? Over the next four episodes, we will explore the history behind the contributions made by Americans—and more specifically, Missourians—to not only explore the far reaches of space, but also to land a person on the Moon. So, let's prepare for launch.

[Mission Control Opening Sequence]

SEAN ROST: Today's episode is on stargazers, or, more specifically, two Missourians whose careers made people around the world ponder what it meant to explore the far reaches of space. We begin in Marshfield, a town of roughly 7,000 people in southwest Missouri's Webster County. Marshfield was the home of the Hubble Family—John, Virginia, Henry, Lucy, and Edwin. The Hubbles were considered an old Missouri pioneering family by the time of Edwin's birth on November 20, 1889. His great-grandfather, John B. Hubble, followed the path of many of his southern-born brethren and left Virginia—where his family had been since the 17th Century—to settle in Missouri's Boonslick Region in the 1830s. Martin, Edwin's paternal grandfather, was born in 1835 and spent the early years of his life in Boone County. But, when Martin's father died in 1847, the family moved to Tennessee to live with his mother's family. Sarah Lavinia Jones Hubble was originally from Virginia like her husband, but her family later moved to a slave plantation in Tennessee.¹

Young Martin Hubble spent his teenage years on this plantation under the careful watch of his mother as well as his maternal grandfather, Martin Jones. Jones eventually freed his slaves, but the larger issue of slavery deeply divided the Jones and Hubble families. Edwin's great uncle,

¹ Gale E. Christianson, *Edwin Hubble: Mariner of the Nebulae* (New York: Farrar, Straus, and Giroux, 1995), 3-10; Marcia Bartusiak, *The Day We Found the Universe* (New York: Penguin Random House, 2009), 170.

George Washington Hubble, eventually joined the Confederacy during the Civil War. Martin Hubble moved his family to Springfield in Greene County in the 1850s, and after serving as clerk for the Greene County Circuit Court, and failing in a bid for a seat in Congress, he enlisted in the 72nd Missouri Militia. After the war, Martin served a brief appointment as a land commissioner in Greene County before managing John S. Phelps' gubernatorial campaign in 1872. By the 1880s, Martin was a successful insurance salesman and a respected member of the Springfield community. He was so financial successful that he gambled on a farming venture in nearby Marshfield called the Hubble Land and Fruit Company, which specialized in apples and livestock.²

As the Civil War loomed, and Martin began building his reputation in Springfield, the family welcomed John Powell Hubble in 1860. Growing up in Springfield, John attended local schools and opted to initially enroll at Drury College, now known as Drury University. His connections to Drury were strong as his father had been a strong advocate for keeping the young institution in Springfield when some people favored moving it to Neosho. After a few years, John left Drury to enroll in a preparatory school in Saint Louis in anticipation for enrollment in law school at Washington University. His plans to study law never fully materialized though, and John soon returned to Springfield and married Virginia James.³

By the time of Edwin's birth, John, like his own father, was an insurance salesman and frequently shuttled the family between the Marshfield farm and nearby Springfield. Yet, for much of Edwin's early life, his father was away from home. Working for several insurance companies, John traveled frequently between Missouri, Kansas, Illinois, Wisconsin, and farther points throughout the Midwest. Perhaps hoping to lessen his time away from the family, the Hubbles moved with their father for short residences in Kansas City and Saint Louis in the early 1890s. By the time that Edwin enrolled in school in 1895, the family was back in Marshfield. However, John's travels once again strained the family. When he accepted a position with Greenwich of New York, the Hubbles opted to move near the company's western offices in Chicago. So as the 19th Century came to a close, the Hubbles packed up their belongings and headed for Evanston, Illinois.⁴

As the Hubbles boarded a train for Chicago, Leonard Johnson endured the hustle and bustle of downtown Kansas City. Born at the close of the Civil War, Leonard arrived in the city from Mississippi around the end of the 19th Century. Though he moved around to several different residences in Kansas City during his time in the city, Johnson was a well-respected waiter at a number of downtown restaurants, including the J.A. Johnston Café and Café Valerius. In 1910, Leonard married Annie Anderson, and the couple celebrated the birth of a daughter, Dorothy, soon after. For the first few years of Dorothy's life, the Johnsons resided at 1630

² Christianson, *Edwin Hubble*, 3-10; Bartusiak, *The Day We Found the Universe*, 170.

³ Christianson, *Edwin Hubble*, 12-20; Bartusiak, *The Day We Found the Universe*, 170.

⁴ Christianson, *Edwin Hubble*, 12-20; Bartusiak, *The Day We Found the Universe*, 170; *Springfield Missouri Republican*, 9 August 1899.

Wyandotte with her mother working as a domestic and her father serving as headwaiter at Café Valerius.⁵

While it is easy to track Leonard's movements in Kansas City before and after Dorothy's birth, including his participation in efforts to organize the African American waiters in the city, details about Annie Johnson's life are hard to come by. Yet, we can reconstruct elements of her past by following two people living with her at 1630 Wyandotte right before her marriage—Ovie Anderson and Ethel Anderson. The Anderson siblings—including Annie—moved to Kansas City from Topeka, Kansas, around 1908. In Topeka, they lived with their father, Henry Anderson, as well as their step-mother Laura. Prior to moving to Topeka, the Andersons had resided in Argentine and Fort Scott in Kansas. Records are not clear on the location of Annie's birth, but as of her fifth birthday in 1895, she lived with her biological parents, Henry and Kate Anderson, as well as siblings Ovie, Ethel, and Atwood in Fort Scott, Kansas. Kate Anderson died only a year later in 1896, and Henry quickly remarried when the family moved to Argentine around 1900.⁶

By the time of Dorothy's second birthday in 1912, the Johnsons had moved to East 10th Street. However, Dorothy's happy new home would not be happy for long. In October 1912, Annie died from what her death certificate lists as a puerperal hemorrhage likely caused by a ruptured uterus during labor. While the shock of her mother's death no doubt had a major impact on her, Dorothy was not denied a motherly figure in her life. In 1913, Leonard married Susie

⁵ Margot Lee Shetterly, *Hidden Figures: The American Dream and the Untold Story of the Black Women Mathematicians Who Helped Win the Space Race* (New York: William Morrow, 2016), 12; Dewey W. Fox, *A Brief Sketch of the Life of Miss Dorothy L. Johnson* (West Virginia African Methodist Episcopal Sunday School Convention, January 1, 1926), 3; *Fortieth Annual Issue, Kansas City Directory* (Kansas City: Gate City Directory Co., 1910), 106, 815; *Forty-First Annual Issue, Kansas City Directory* (Kansas City: Gate City Directory Co., 1911), 840, 847; *Forty-Second Annual Issue, Kansas City Directory* (Kansas City: Gate City Directory Co., 1912), 900; *Missouri Marriage Records*. Jefferson City, MO, USA: Missouri State Archives. Microfilm, Ancestry.com. For information on Leonard H. Johnson's life prior to Dorothy's birth see 1910 U.S. Census. 1910; Census Place: Kansas City Ward 8, Jackson, Missouri; Roll: T624_786; Page: 16B; Enumeration District: 0094; FHL microfilm: 1374799, Ancestry.com; *Thirty-Eighth Annual Issue, Gould's Kansas City Directory* (Kansas City: Gould Directory Co., 1908), 634; *Thirty-Seventh Annual Issue, Hoye's Kansas City Directory* (Kansas City: Hoye Directory Co., 1907), 758; *Thirty-Sixth Annual Issue, Hoye's Kansas City Directory* (Kansas City: Hoye Directory Co., 1906), 739; *Thirty-Fifth Annual Issue, Hoye's Kansas City Directory* (Kansas City: Hoye Directory Co., 1905), 587; *Thirty-Fourth Annual Issue, Hoye's Kansas City Directory* (Kansas City: Hoye Directory Co., 1904), 629; *Thirty-Third Annual Issue, Hoye's Kansas City Directory* (Kansas City: Hoye Directory Co., 1903), 622; *Thirty-Second Annual Issue, Hoye's City Directory of Kansas City, Mo.* (Kansas City: Hoye Directory Co., 1902), 608; *Thirty-First Annual Issue, Hoye's City Directory of Kansas City, Mo.* (Kansas City: Hoye Directory Co., 1901), 564; *Twenty-Seventh Annual Issue, Hoye's City Directory of Kansas City, Mo.* (Kansas City: Hoye Directory Co., 1897), 364; *Twenty-Sixth Annual Issue, Hoye's City Directory of Kansas City, Mo.* (Kansas City: Hoye Directory Co., 1896), 373.

⁶ *Kansas City Sun*, 18 March 1916; *Thirty-Ninth Annual Issue, Goulds' Kansas City Directory* (Kansas City: Gould Directory Co., 1909), 104-105, 108; Kansas State Historical Society; Topeka, Kansas; 1905 Kansas Territory Census; Roll: ks1905_151; Line: 27, Ancestry.com; 1900 U.S. Census. 1900; Census Place: Argentine Ward 3, Wyandotte, Kansas; Page: 2; Enumeration District: 0141; FHL microfilm: 1240504, Ancestry.com; Kansas State Historical Society; Topeka, Kansas; 1895 Kansas Territory Census; Roll: v115_10; Line: 28, Ancestry.com; Find A Grave, database and images (<https://www.findagrave.com>: accessed 24 April 2019), memorial page for Kate Anderson (1867–1896), Find A Grave Memorial no. 179545213, citing Evergreen Cemetery, Fort Scott, Bourbon County, Kansas, USA; Maintained by Joanne Scobee Morgan (contributor 46991706).

Peeler. A woman closer in age to her father, Susie seems to have come to Kansas City in the 1890s as well. By the time that she came into Leonard and Dorothy's lives, her occupation was listed as "furnishing rooms," but prior to that she had spent several years as a matron at the Grand Central Depot.⁷

By all accounts, the relationship between Dorothy and her new step-mother was good. At an early age, Dorothy's step-mother taught her to read and write so well that she was advanced for her age when she entered Lincoln School in 1915. While the family's prospects in Kansas City seemed stable at the dawn of World War I, Leonard could not pass up an opportunity to serve as a waiter at a prestigious black-owned restaurant in West Virginia. With war raging off in Europe and American involvement in that conflict not far away, the Johnsons loaded up their belongings—just like the Hubbles before them—and headed for Morgantown, West Virginia along the banks of the Monongahela River.⁸

DANIELLE GRIEGO: Hi, I'm Danielle Griego, the Education Coordinator for the State Historical Society of Missouri. I'd like to talk to you briefly about National History Day in Missouri. National History Day in Missouri is a unique opportunity for middle and high school age students to explore the past in a creative, hands-on way by producing a documentary, exhibit, paper, performance, or website on a topic of their choosing. In June, Missouri students traveled to Washington D.C. for the National Contest and brought home 3 bronze medals and 2 Outstanding Entry Awards. In 2020, the theme will be "Breaking Barriers in History," and we look forward to the amazing projects Missouri students will produce. To learn more about National History Day in Missouri, including how to start a program at your own school, please visit shsmo.org/nhdmo.

⁷ Shetterly, *Hidden Figures*, 12; Fox, *A Brief Sketch of the Life of Miss Dorothy L. Johnson*, 3; Anna Johnson, death certificate, 28 October 1912, file no. 33131, digital image available in "Missouri Death Certificates, 1910-1968," s.v. "Anna Johnson" (1890-1912), *Ancestry.com*. For information on Susie Peeler Johnson prior to her marriage to Leonard Johnson see 1900 U.S. Census. 1900; Census Place: Kansas City Ward 3, Jackson, Missouri; Page: 9; Enumeration District: 0024; FHL microfilm: 1240861, *Ancestry.com*; 1910 U.S. Census. 1910; Census Place: Kansas Ward 8, Jackson, Missouri; Roll: T624_787; Page: 16A; Enumeration District: 0099; FHL microfilm: 1374800, *Ancestry.com*; *Forty-Second Annual Issue, Kansas City Directory* (Kansas City: Gate City Directory Co., 1912), 1340; *Forty-First Annual Issue, Kansas City Directory* (Kansas City: Gate City Directory Co., 1911), 1259; *Fortieth Annual Issue, Kansas City Directory* (Kansas City: Gate City Directory Co., 1910), 1204; *Thirty-Seventh Annual Issue, Hoye's Kansas City Directory* (Kansas City: Hoye Directory Co., 1907), 1105; *Thirty-Sixth Annual Issue, Hoye's Kansas City Directory* (Kansas City: Hoye Directory Co., 1906), 1084; *Thirty-Fifth Annual Issue, Hoye's Kansas City Directory* (Kansas City: Hoye Directory Co., 1905), 889; *Thirty-Fourth Annual Issue, Hoye's Kansas City Directory* (Kansas City: Hoye Directory Co., 1904), 943; *Thirty-Third Annual Issue, Hoye's Kansas City Directory* (Kansas City: Hoye Directory Co., 1903), 920; *Thirty-Second Annual Issue, Hoye's City Directory of Kansas City, Mo.* (Kansas City: Hoye Directory Co., 1902), 919; *Thirty-First Annual Issue, Hoye's City Directory of Kansas City, Mo.* (Kansas City: Hoye Directory Co., 1901), 847; *Twenty-Ninth Annual Issue, Hoye's City Directory of Kansas City, Mo.* (Kansas City: Hoye Directory Co., 1899), 658; *Twenty-Eighth Annual Issue, Hoye's City Directory of Kansas City, Mo.* (Kansas City: Hoye Directory Co., 1898), 586; *Twenty-Seventh Annual Issue, Hoye's City Directory of Kansas City, Mo.* (Kansas City: Hoye Directory Co., 1897), 534.

⁸ Shetterly, *Hidden Figures*, 12.

SEAN ROST: Just as Dorothy Johnson had shown exceptional intelligence in her first few years of formal education, so too had Edwin Hubble. Hubble was smart, there's no denying that, and it seemed that his early educational years were marked by reprimands and behavioral issues in the classroom. Yet, by his teens, Hubble's opinion on education changed with his immersion in literature and the introduction by his grandfather, William James, to astronomy.⁹ By the time he entered high school, Hubble was a stellar student both academically and athletically. He sported high grades as well as stardom in track, football, and basketball. Because he had started to school at an early age, Hubble graduated high school at sixteen in 1906 and his high marks in both academics and athletics earned him a scholarship to the University of Chicago. However, memories of his own family's career struggles defined his search for an academic major. No doubt wanting to please his father, though probably aware of his own failings, Hubble opted at first to study law. Yet, his time stargazing with his relatives and friends in Missouri, also inspired him to pursue astronomy.¹⁰

At first, law won out. In fact, had he not been selected for a Rhodes Scholarship in 1910, the most notable part of Hubble's college career would have been his participation on the University of Chicago's 1909 national championship basketball team. Nevertheless, despite being one of the university's brightest physics scholars, he arrived at Oxford University in 1910 as a student of law. But, just as he had done in Chicago, so too did he continually find himself among astronomers on both campus' observatories. However, despite adopting a noticeably Anglophile persona while overseas, Hubble's time was devoted to the law in an effort to impress his father. Yet, when his father died in 1913 of Bright's Disease, Hubble found himself back in the United States and at a crossroads in his life. Would he continue his legal career as his father hoped? Or, with his father gone, would he finally embrace his love of astronomy as more than just a hobby?¹¹

Initially, Hubble took up teaching, not law, at a school just north of Louisville, Kentucky. His time at the school was brief, however, and he soon applied for admission to earn a graduate degree at the University of Chicago. This time, however, he set his sights not on law but on astronomy and the Yerkes Observatory. Upon returning to Chicago, Hubble spent countless hours in the observatory. When given the opportunity, he fixed a camera to a smaller telescope to snap pictures of various nebulae for what would soon become his doctoral project, "Photographic Investigations of Faint Nebulae." This research was not groundbreaking, even for his era, but it served as a bridge to the discovery that would later earn him substantial praise roughly a decade later. When he completed his doctoral work in 1917, Hubble was offered a position at the

⁹ Christianson, *Edwin Hubble*, 14-18, 24-26. It was from working the farm that John met his wife Virginia whose father, Dr. William James, attended to John following a farm accident. The James, like the Hubble's came to Missouri by way of Virginia, but William also tried his hand at mining in California and Nevada during the gold and silver rushes of the mid-19th Century. By the 1870s, the James were back in Missouri with his medical offices in Marshfield. Christianson, *Edwin Hubble*, 10-12.

¹⁰ Bartusiak, *The Day We Found the Universe*, 170-171; Christianson, *Edwin Hubble*, 30-35.

¹¹ Bartusiak, *The Day We Found the Universe*, 170-174; Christianson, *Edwin Hubble*, 36-83. For John Hubble's obituary see *Springfield Missouri Republican*, 21 January 1913.

prestigious Mount Wilson Observatory, though it would be two years before he arrived in California due to his enlistment in the army during World War I.¹²

While Edwin Hubble spent time on the Western Front, the Johnsons spent the war years in Morgantown, West Virginia. Upon arriving in town, Dorothy enrolled at the Beechhurst School, a facility for black school age children not far from West Virginia University. She graduated from Beechurst High School in 1925 at the age of fifteen. Her hard work and love of learning paid off and she earned the Wilberforce Scholarship from the West Virginia African Methodist Episcopal Sunday School Convention, which enabled her to attend Wilberforce University in Ohio, a well-respected black university. Much like Edwin had at the University of Chicago, Dorothy quickly caught the attention of faculty at the college with her high grades. She opted initially for a degree in mathematics, with her professors encouraging her to consider graduate study at Howard University. Yet, with the onset of the Great Depression, Johnson's collegiate career took a decided turn.¹³

Realizing that family financial stability was more important than her career ambitions, Dorothy switched her major to education in the hope of earning a steady living as a teacher. She graduated from Wilberforce in 1929. In her first teaching job, Johnson came back to the Midwest and accepted a position at an all-black school in Tamms, Illinois, located roughly twenty miles from Cape Girardeau and the Missouri border. Her teaching tenure was short-lived, however, with the school closing due to financial reasons the next summer. Working her way back to the East Coast, Johnson found temporary employment in North Carolina and Virginia before accepting a teaching position at Moton High School in Farmville, Virginia. It was in Farmville that she met Howard Vaughan, a hotel worker, who traveled extensively with the vacationing seasons along the East Coast. They married in 1932.¹⁴

By the time that Howard and Dorothy Vaughan married in 1932, the United States was in the midst of the Great Depression. Yet, for Edwin Hubble, the 1930s opened with greater fanfare than had his initial arrival to California a decade earlier. In many ways, Hubble's time high up in the mountains at the Mount Wilson Observatory left him disconnected from the plight of many Americans at the time. His generous salary, combined with the celebrity status his research provided from scientists, astronomers, and Hollywood's elite, allowed Hubble, and his wife, Grace, to live lavishly and travel the world. In fact, Hubble's arrival in southern California at the dawn of the 1920s was the start of what would become a tenure of roughly three decades observing the faint light of distant stars and the bright lights of nearby Hollywood.

While working at Mount Wilson, Hubble achieved the highest of heights. Building on his dissertation research, Hubble probed farther into the heavens with Mount Wilson's 100-foot Hooker telescope in search of images of spiral nebulae. At the time, astronomers and scientists debated the definition of the universe. For some, these faint nebulae were seen as distant stars

¹² Bartusiak, *The Day We Found the Universe*, 174-181; Christianson, *Edwin Hubble*, 84-111.

¹³ Shetterly, *Hidden Figures*, 12-13; Fox, *A Brief Sketch of the Life of Miss Dorothy L. Johnson*, 3-6.

¹⁴ Shetterly, *Hidden Figures*, 13-14, 22.

within the Milky Way galaxy. Yet, others felt that they might be part of neighboring galaxies. Over several years, Hubble spent many a chilly night gazing through the Hooker telescope in search of photographic evidence of these nebulae. By the mid-1920s, he had his answer. He concluded that his analysis of Andromeda, one of the closest nebulae, indicated that it existed well beyond the boundary of the Milky Way Galaxy. In fact, if his calculations were right, Andromeda was its own galaxy within a vast universe.¹⁵

Despite the magnitude of his discovery, Hubble was cautious about publishing his findings. Instead, he pushed on to further confirm his research. Yet, by 1924, news of Hubble's work began to reach a wider audience through word of mouth. He finally relented to mounting pressure and submitted his findings to the American Association for the Advancement of Science. Opting not to attend the Association's annual meeting, Hubble stayed in California while his paper, "Cepheids in Spiral Nebulae," was read to a stunned audience. It would still be years before the gravity of Hubble's findings were fully realized, but 1925 opened with declarations of the young astronomer's discovery of the universe. His rival, former Mount Wilson colleague, and fellow Missourian, Harlow Shapley was stunned by Hubble's revelation. He allegedly told a Harvard colleague that Hubble's letter to him about the findings "destroyed my universe."¹⁶

By the 1930s, Edwin Hubble was considered one of the most renowned astronomers in the world. He was the youngest member selected to the National Academy of Sciences. The first American to deliver the Rhodes Memorial Lecture at Oxford University. And, the president of the Astronomical Society of the Pacific. He even created a world-wide sensation when Albert Einstein visited Mount Wilson and announced to the press that Hubble's findings made him re-evaluate and revise his own research.¹⁷ And yet, Edwin Hubble was not invincible. It has been noted extensively that he was not selected for a Noble Prize in Physics because the committee at the time did not consider astronomy within the field of physics. Even after his death, when the committee had revised its original ruling, Hubble was not awarded one posthumously. He opted to serve once more in the Army when the United States entered World War II, but the years of travel and long nights in the mountains took a toll on his body. At the end of the 1940s, he suffered a heart attack while vacationing in Colorado. He survived this health scare, but doctors greatly limited his time in the mountains. It would be several months in fact before he was allowed to return to Mount Wilson for further research. On September 28, 1953, Edwin Hubble died of cerebral thrombosis just as his wife pulled their car into the driveway of their California home.¹⁸

¹⁵ Bartusiak, *The Day We Found the Universe*, 3-168, 182-249; Christianson, *Edwin Hubble*, 112-202.

¹⁶ Bartusiak, *The Day We Found the Universe*, ix-xii, 202-204; Christianson, *Edwin Hubble*, 152-162.

¹⁷ Bartusiak, *The Day We Found the Universe*, 250-256; Christianson, *Edwin Hubble*, 179, 187, 209-210, 218-220, 250-251.

¹⁸ Bartusiak, *The Day We Found the Universe*, 250-267; Christianson, *Edwin Hubble*, 328-336, 358-361.

For all of his contributions to science and astronomy, Edwin Hubble will be remembered as a complicated man. He was a Missourian by birth, but he largely eschewed his rural upbringing for the glitz and glamour of Hollywood and Europe. In fact, he rarely communicated with his mother or siblings after arriving in California. He also made enemies within his profession due to his demeanor around colleagues and fellow scholars.¹⁹ And yet, for all that we don't know about him because of the private nature of his life, including his final resting place, Edwin Hubble is still revered in small communities like Marshfield, Missouri, where an elementary school and a portion of Interstate 44 are named after him and a replica of the Hubble Telescope—the great mechanical eye that photographs distant corners of the universe to this day—is on display at the Webster County Courthouse.

DANIELLE GRIEGO: The Missouri Bicentennial provides an occasion for reflecting upon and increasing understanding of various aspects of the State's cultural and geographic landscape. Missouri 2021 invites professional and amateur photographers to capture and share unique and meaningful aspects of place in Missouri. Through the My Missouri 2021 Photograph Project, two hundred photographs will be selected to be part of the permanent Missouri Bicentennial collection at the State Historical Society of Missouri. Together these images will create a snapshot of the state's physical and cultural landscape during its Bicentennial that will be available to researchers, teachers, and students, and the public for generations to come. To learn more about the My Missouri 2021 Photograph Project, please visit missouri2021.org/my-missouri.

SEAN ROST: At the time of Hubble's death in 1953, Dorothy Vaughan, as she now went by, had achieved some acclaim of her own as the head of West Computing at the Langley Memorial Aeronautical Laboratory. Dorothy had come to Langley in 1943 during the midst of World War II. Prior to that she had taught several years at Moton High School in Farmville, Virginia. She had established deep roots during her time in Farmville, opting to serve on the PTA and founding the local chapter of the NAACP. Yet, she could not pass up the opportunity presented to her in a local job posting. As war raged on in the European and Pacific Theaters, Dorothy saw an employment notice seeking mathematicians at Langley Memorial Aeronautical Laboratory in Hampton, Virginia.²⁰

The move to Langley proved daunting for Dorothy as she would have to either uproot her family and move closer to the Chesapeake Bay or commute the roughly 150 miles to Hampton and only see her family as her schedule allowed. At first, she kept her family in Farmville, but by 1944 everyone relocated to Newsome Park. Though her employment at Langley was initially temporary, Dorothy eventually shifted over into a full-time civil service position with the West Area Computing Office. West Computers, as it was called, was a segregated section that employed female mathematicians of color. The corresponding East Computing employed white female mathematicians. Over her years at Langley, the facility, known today as Langley

¹⁹ Bartusiak, *The Day We Found the Universe*, 199-224; Christianson, *Edwin Hubble*, 224-225.

²⁰ Shetterly, *Hidden Figures*, 15-22, 92.

Research Center, served as one of the pivotal locations for studies under the National Advisory Committee for Aeronautics (NACA) and later NASA into aeronautical engineering, wind tunnels, and flight simulation.²¹

Building upon her mathematics credentials, Dorothy moved quickly through the ranks at West Computing. By the end of the 1940s, she had risen from mathematician to become a shift supervisor in West Computing. In 1949, she was acting head of the section, and two years later was appointed the full-time head supervisor of West Computing. And yet, despite her quick rise, Dorothy saw a confrontation on the horizon between human computing and data processors. With more and more projects shifting over to data processing, Dorothy realized the future of human computing was in jeopardy. To offset this, she encouraged her staff to become proficient in computation. She even took it upon herself to enroll in evening classes so that she would not be left behind.²²

Though she had grown up in a segregated world and worked initially in a segregated facility, Dorothy Vaughan also witnessed the substantial change that integration brought to Langley. Over the span of a decade, Langley slowly passed through a phase of desegregation. It began when East Computing was disbanded in 1947. As a result, more and more female mathematicians were pulled out of East and West Computing for other sections and projects. In fact, some of Dorothy's most promising staff members from West Computing, including Katherine Goble Johnson and Mary Jackson, were transferred to more lucrative positions in neighboring engineering departments. By 1958, the same year that NACA became NASA, West Computing officially disbanded. Segregation, for all intents and purposes, was over at Langley.²³

With its new distinction as a branch of NASA, Langley shifted much of its focus in the late 1950s and early 1960s towards the space race. In an effort to combat Soviet space exploration in the wake of Sputnik, the east side of the Langley became the early home of the Space Task Group and work began on Project Mercury. Soon after, the famous Mercury 7 astronauts came to Langley to prepare for their spaceflight missions. Dorothy Vaughan was not connected with the manned space flight program while at Langley during the 1960s. Instead, she moved to the Analysis and Computation Division following the closure of West Computing and worked as a computer programmer. Yet, she was involved in a little known assignment—Project Scout—a rocket test program that studied the long-term viability of orbital flight.²⁴

As NASA's Apollo missions wound down in the early 1970s, Dorothy Vaughan opted to retire after twenty-eight years of service. As she had attempted to do in Farmville prior to her career with NACA and NASA, she worked hard to better her community over the remaining

²¹ Shetterly, *Hidden Figures*, 39, 61-63, 107, 165.

²² Shetterly, *Hidden Figures*, 81, 91-92, 139.

²³ Shetterly, *Hidden Figures*, 165-171.

²⁴ Shetterly, *Hidden Figures*, 184-188, 204-205, 219.

years of her life.²⁵ Dorothy Vaughan passed away in 2008, but her memory and accomplishments live on thanks to recent histories of the space race, including Margot Lee Shetterly's 2016 book, and the later film, *Hidden Figures*. "[S]he had midwived many careers," Shetterly concluded, "Her name never appeared on a single research report, but she contributed, directly or indirectly, to scores of them."²⁶

SEAN ROST: Thanks for listening to this week's episode. As always, I am your host, Sean Rost. The show's producer is Brian Austin. The opening and concluding credits are narrated by Kevin Walsh. Stay tuned for Part 2 of the Summer Series when we explore McDonnell and the race for the Moon.

KEVIN WALSH: Thank you for listening to the *Our Missouri Podcast*. If you would like to learn more about the podcast, including past and future episodes, information about guests, and upcoming events, please visit our website at shsmo.org/our-missouri.

²⁵ Shetterly, *Hidden Figures*, 263-265.

²⁶ Shetterly, *Hidden Figures*, 264.