

BY CHAR MILLER



W. W. ASHE FOREST NURSERY
IN MEMORY OF
WILLIAM WILLARD ASHE

1872 - - - 1932



DENDROLOGIST
BOTANIST
AUTHOR



A PIONEER IN THE SCIENCE
OF FORESTRY

Reclamation Project

*Rediscovering W. W. Ashe and
the Origins of Watershed Stewardship*

A forgotten figure in the history of U.S. federal watershed protection is the subject of a reclamation project for his reputation.

William Willard Ashe, a senior forest inspector for the U.S. Forest Service, had no idea when he scheduled a trip to the Lone Star State in late summer 1921 that his hypotheses about forest stream dynamics would receive a shocking real-world test. Shortly after arriving in central Texas, where he was to speak to the State Board of Water Engineers, he witnessed one of that region's most devastating floods, courtesy of a hurricane that stalled over the Balcones Escarpment and Edwards Plateau, pounding the high ground above San Antonio and Austin with more than two feet of rain in twenty-four hours.¹ Yet however unnerved Ashe may have been by the resulting loss of life—officially, 224 people died, and many more went missing—the level of destruction provided eerie confirmation of the results of his career-long investigation into the consequences of poor land management in riparian headwaters.

On learning that the forester had been stranded, a reporter for the *San Antonio Express* sought him out for a big-picture perspective on why the city was so vulnerable. Under a front-page bold headline—“Cities Will Continue to Be Devastated Unless State Acts”—Ashe drew parallels between the physical geography of the Edwards Plateau and his home ground in the Southeast: “The streams of Texas are erratic and exhibit the same character of flow as those at

the southern end of the Appalachian Mountains,” a consequence of “the enormously heavy rainfall at irregular intervals and rapid run-off on account of steep slopes.”² What complicated these natural processes and drove the devastating floods that wracked each region was the human impress. In central Texas, “greed for land” had pushed flood-control works so close to streambeds that floodplains lost the ability to act as a sponge, thereby intensifying downstream damage. Upstream, excessive grazing had compacted the ground and stripped it of vegetation so that even modest storms generated major floods. It was no wonder that the deluge on September 9–10 had produced such horrific consequences.³

The solution, Ashe advised, was to act at a landscape scale. Engaging with the watershed as a watershed, he assured readers of the *San Antonio Express*, would provide quantifiable and long-term benefits, as the Forest Service had demonstrated in its watershed management across the country. Just as in North Carolina, the Mississippi River valley, and Colorado, the key to controlling floods in central Texas was the “protection of the forest cover in the central portion of the State in gorges, along the flood plains, on mountain slopes and in ravines.” To achieve this end required rigorous regulation of the region's overworked, hardpan rangelands that were suffering from extreme soil erosion—conditions that had energized the recent floods. “By these means,” Ashe predicted, “storm waters, in place of being an agency of calamity and destruction . . . will become one of the most potent and permanent of the resources of the state.”⁴

San Antonio would not heed his advice. Instead of developing a master plan to mitigate flooding in the watershed, the Anglo power elite opted for the construction of a flood-retention dam on the main branch of the San Antonio River to

defend their downtown businesses and properties. Left unprotected were the low-lying, impoverished west-side neighborhoods where the city's Hispanic residents lived. For the next fifty years, floods repeatedly tore through these areas; it was not until the 1970s that Ashe's watershed-wide prescription for effective flood control, which bound together natural systems and human structures, began to be adopted. His more sustainable solution, born of two decades of research and analysis, was the result of a sustained and immersive approach that was one of the hallmarks of his conservation career.⁵

NATURE AND NURTURE

That Ashe found himself in Texas during a major flood confirmed another defining feature of his life: he had a remarkable habit of being at the right place at the right time. Even in childhood. True, he had no control over when he was born (June 4, 1872), to whom (Samuel A'Court Ashe and Hannah Emerson Willard), or where he grew up (on the family's estate, known as Elmwood, on the western outskirts of Raleigh, North Carolina). But those details aside, young Ashe, the oldest child of nine, took full advantage of his site and situation. That was obvious to his sister Elizabeth, who after her brother's death in 1932 wrote lovingly of his childhood spent in nature. “The environment of his birthplace,” she observed, “with its pretentious surroundings, its ancient trees and various shrubs; its nesting places of many birds in its almost forest-like protection, probably had much to do with the early molding of Willard's character.” If by character she meant his future career, then she was on to something: Ashe spent so much time exploring the local woods, meadows, streams, and fields—botanizing every step of the way—that his collection of specimens overwhelmed the family homestead.

The memorial marker at the W. W. Ashe Forest Nursery in Mississippi, taken in 1939, three years after it was installed.

So large had it grown by 1891, when he graduated from the University of North Carolina, that Ashe had to construct a two-story building to house everything; no sooner built than it had to be expanded, a vast archive that continued to grow and ultimately formed the basis for the University of North Carolina Herbarium.⁶

Ashe collected mentors with the same ease and alacrity that he spotted new, rare, or endangered species. The first two came with his natal terrain: his mother and a great-aunt home-schooled him, sharing their academic interests and scientific knowledge with their eager charge. The great-aunt in particular came to the 15-year-old student's rescue when he learned that a missing credit meant he had to take an entrance exam before being admitted to the university. Over a three-month period, she tutored him in the natural sciences, giving him an intensive immersion that seems akin to an SAT prep course. A quick study, Ashe aced the university's entrance exam and gained a new mentor. Joseph A. Holmes, renowned professor of geology and natural history and one of the readers of Ashe's test, reportedly was astonished at the breadth and depth of the teenager's proficiency. Taking Ashe under his wing, Holmes proved an able adviser, guiding his talented student through an interdisciplinary curriculum; urging Ashe's parents to send their son to Cornell University for graduate school, where he specialized in geology and botany and received a master's in 1892 in one year; and then luring Ashe back to North Carolina that same year for his first job—as a forester for the state's Geological Survey, for which Holmes served as director.

It was through Holmes that Ashe met his next mentor, Gifford Pinchot, who was developing forest management plans for George W. Vanderbilt's Biltmore Estate in Asheville, North Carolina (named for

one of Ashe's progenitors). Out of his conversations with Holmes, Pinchot recalled, emerged the idea of a regional system of national forests. Sitting around a fire "one night in the winter of '92 or '93," Holmes "suggested that the Federal Government ought to buy a big tract of timberland in the Southern Appalachians and practice Forestry on it. It was a great plan and he and I never let it drop. Nearly twenty years later the Weeks Law was passed, Holmes' dream came true, and today Eastern and Middle Western National Forests which cover 18 million acres owe their origin to his brilliant suggestion."⁷

Pinchot was indebted to Holmes for another bright idea: to have his protégé, W. W. Ashe, help Pinchot prepare an exhibit about Biltmore forestry for the 1893 World's Columbian Exposition in Chicago.⁸ The two young men worked easily together, and would do so again on another Holmes-brokered venture: writing the first compendium of the state's forest resources, which the Geological Survey ultimately published in 1897. The Pinchot-Ashe collaboration was more than a little one-sided, however—a fact Pinchot acknowledged in his preface to the report: "The second part of the Bulletin is contributed entirely by Mr. Ashe, whose acquaintance of the woodlands of North Carolina is so much more extensive than my own that I thought it best not to attempt to edit his MS. in any way."⁹ Pinchot did more than give Ashe credit. He gave him his second job. In 1899, shortly after Pinchot became the fourth head of the U.S. Division of Forestry, he hired Ashe as a consultant, a "special agent." Six years later, Pinchot turned that temporary assignment into a permanent position as a forester in the newly created U.S. Forest Service.

POSTHUMOUS PROMOTION

Privileged on many levels, Ashe was a well-off, well-educated white male

in an impoverished, poorly schooled, patriarchal, and segregated South. He also benefited from the related emotional encouragement and professional guidance that his dense social network provided. Yet in the emerging forestry profession at the turn of the twentieth century, replete as it was with young white men with undergraduate and graduate degrees in this new academic discipline, Ashe was something of an outlier. Pinchot alluded to this status when tallying the forestry-specific training of his first hires in the Division of Forestry. Ashe, he noted, was one of three new colleagues who did not have the requisite pedigree, but "just the same they pulled their weight."¹⁰ Although not a backhanded compliment exactly, Pinchot's comment hints that had Ashe been better credentialed, had he served as a line officer in a western national forest or, even more consequentially, fought the Great Fires of 1910 as did so many of the agency's subsequent chiefs and upper-level administrators, he might have held leadership positions.¹¹

The fulsome praise his Forest Service colleagues heaped on Ashe in their 1932 eulogies thus may be compensatory. Certainly, they were unstinting in their admiration for his encyclopedic knowledge, administrative skill, prolific writing, and intense work ethic. That he was humble, retiring even, only added to his merit. For fellow forester Leon Kneipp, Ashe's definitive virtue may well have been his keen vision. "A motor trip through a forest with Ashe was a unique experience. With the car moving at a speed of forty miles an hour, wayside plants to the average eye were somewhat blurred. But not so Ashe," Kneipp remembered. "Absorbed in thought, apparently half somnolent, he would suddenly see something of interest and his exclamation would bring the car to a skidding stop. Walking back fifty to a hundred yards, he would turn off into



W. W. Ashe, in an undated portrait.

For his admirers, Ashe's impressive intellectual range offered a counternarrative to the increased specialization that by the early twentieth century had gained traction in the academy and in public land agencies.¹⁶ He was memorialized as that rare individual who knew the forests *and* the trees, and seemingly every species that inhabited American woodlands and grasslands. Blessed with a botanist's focus on the particular, which is how he managed to publish 510 plant names in his career,¹⁷ he benefited as well from a conservationist's perspective on the larger systems in which specific species flourished. In this facility, Kneipp argued, Ashe was unlike his forestry colleagues who were "apt to think of the Appalachian hardwood and southern pine forests in terms of a score or two of the tree species of greatest utility and commercial importance." By contrast, Ashe conceived of this region *as* a region because he knew it "intimately, lovingly and well—knew its ecology, associations, and its habits of growth. To him the forest was not so much a potential source of boards, timbers, or pulpwood, as it was an intricate biological complex."¹⁸ Perhaps out of step with his time, a century later Ashe's interdisciplinarity seems strikingly modern.

WATER WORKS

Just as prescient was Ashe's growing realization of the complicated interplay between forests and rivers. His expertise in watershed dynamics grew incrementally, a matter of gathering evidence and gaining experience to recognize what that evidence revealed. Consider what Ashe described in his contribution to the North Carolina Geological Survey Report of 1897. On one level, it offered

the brush to emerge shortly with a specimen of a plant needed to supply a certain deficiency in his collection."¹²

Although some in the agency described Ashe's lifelong passion for botany as a hobby, something lesser than a professional or technical achievement, Forest Service ecologist William A. Dayton took exception.¹³ In an extensive biography and bibliography of Ashe's career that Dayton self-published in 1936, four years after Ashe's death at age 59, he tried to convey what this modest polymath had achieved in his too-short life. Not just a student of botany, dendrology, economics, forestry, hydrology, and soil science, Ashe was a "true seer," an innovator in each of these fields and their complex intersections. "He planted one of the first commercial stands

of longleaf pine in North Carolina, and discovered the secret of its successful transplanting," Dayton wrote, and he is "credited with introducing the modern cupping system in the American naval stores industry."¹⁴ Dayton then shared what he perceived to be Ashe's precedent-setting accomplishments: "His monograph on loblolly pine has long been looked upon as a model. He is one of the real fathers of the forest acquisition policy for the federal government. He was among the first to recognize the need for forest research and pioneered the study of the relationship of forests to the potability of streams. He was an authority on logging costs, forest economics, erosion, forest types, and the taxonomy of southeastern woody plants."¹⁵

a snapshot survey of the state's forest health and wealth. But even as he detailed its ecological diversity and economic prospects and cataloged changes in soil cover and tree type from coastal wetlands and the Great Dismal Swamp west to the Blue Ridge and Great Smoky Mountains, Ashe took note of environmental damage that resulted from exploitation and mismanagement. In the "Level Pine Woodland," he attributed the shifting mosaic of tree species to natural and human causes. Here the "cover of pine has been broken by frequent windfalls and culling; in many places browsing cattle have suppressed the broad-leaf trees, or they have been killed by fires." An interrelated set of problems also characterized the "Table Mountain Pine Division," in the state's western mountains. In each case, Ashe's prescription for improving the condition of land was the same. "The first and absolute prerequisite before any attempt can be made" to restore what had been damaged "is the entire exclusion of cattle and hogs, and complete protection from fire." There was another issue evident in the "deep and narrow hollows that indent the eastern slopes of the Blue Ridge," where fire and grazing were less manifest. Although farms there "are few and confined almost entirely to the narrow alluvial bottoms," Ashe observed, "a few clearings have been made on the more gentle slopes or broader rounded crests. Some bottoms have been permanently damaged by washing during flooding and the deposition of a heavy mud sediment on the surface of the loams." This, the only reference to flooding in the voluminous report, suggests that Ashe saw what was happening but did not yet comprehend the direct link between high-country despoliation and downstream inundation.¹⁹

Within five years, Ashe had developed that connection to such a degree that it would deeply inform his subsequent research and profoundly

shape Forest Service perspectives and policies. His newfound knowledge was manifest in a 1902 report, "Forests and Forest Conditions in the Southern Appalachians," coauthored with H. B. Ayres of the U.S. Geological Survey. Its first photographic plate signals the document's larger argument: the image depicts what is described as the "original forest" cover in the Great Smoky Mountains, but the caption tells a more ominous story: if "the forests are destroyed the soils will be rapidly washed down into the river channels; and the terrible floods will destroy everything along the great river valleys."²⁰ Fires were also implicated: "The damage by fire causing a loss of the earth cover does not end with erosion, for it also prevents water from penetrating and being stored in the earth." Ayres and Ashe held that an impoverishment of soil health further destroys woodland regeneration and intensifies the "violence of floods."²¹ That violent outcome was seen in river basin after river basin. One example was the Nolichucky, which drains nearly 570,000 acres in eastern Tennessee and western North Carolina before joining the French Broad River. "The floods of the Nolichucky are well known. They may be partly due to the topographic configuration of the area, by reason of which a rise of the three main tributaries at one time may cause a flood in the river. There is no room for doubt, however, that the large amount of cleared land in this basin greatly increases the floods" and, seemingly counterintuitively, was also responsible for a noticeable if episodic decline in streamflow: "Every resident who has known the river ten years or more states very positively that the volume of water is now much less constant than in former years."²² For Ashe, the cycle of drought and deluge now signified poor management at the landscape scale.

Over the next seven years, Ashe would expand on this insight in a

series of agency reports and articles in professional journals and popular magazines. He studied the forest devastation in the Potomac River basin and western Pennsylvania and assessed the related connections between forest resilience, public health, and agricultural productivity.²³ This array of contingencies found fuller expression in his 1909 report, "Special Relations of Forests to Rivers in the United States," first presented to the Inland Waterways Commission in 1908. His coverage is continental in scope; the sweep of land and subject reflects Ashe's expanded understanding of the physical characteristics of these large watersheds and their systematic influence on social development and economic opportunity. His analysis also went granular, containing assessments of each basin's record of erosion and silt burden, navigable waters, current uses, and flooding potential. The Connecticut River, with its headwaters in New Hampshire's White Mountains, was one of many problematic watersheds. Because "large areas in the White Mountains . . . have been stripped of their forests, and subsequently burned," and in the process "the deep humus and duff, which in many places beneath the spruce formed practically the only soil . . . storm waters pass quickly and unchecked into the river." He found similarly disturbing evidence along the Tennessee River, from source to mouth: extensive farming, logging, and grazing in its headwaters had accelerated erosion, silting, and the frequency of punishing floods. The solution that Ashe proposed for the East was consistent with what he witnessed in and advocated for western river basins: more aggressive protection and restoration of their mountainous headwaters. No surprise, given his federal employer and his professional predilections, Ashe was convinced that the establishment of national forests across the western

high country, and the regulatory controls that the Forest Service was applying to logging, mining, and grazing, would aid in the regeneration of forest cover and soils, reduce the damage from erosion, silting, and flooding, and increase water quality and quantity. The same results would accrue in the East, once similar protections were enacted. With this comprehensive argument, Ashe had found his voice and the agency had found its agent.²⁴

WHAT THE WEEKS ACT WROUGHT

Ashe was an agent whose scientific conclusions reinforced a political end that Progressive Era conservationists in and out of government had been pursuing since the late nineteenth

century: federal legislation that would establish national forests in the eastern half of the nation. In New England and the South, local activists had propelled the movement from the bottom up, slowly bringing along public opinion, wooing media outlets, and securing the endorsement of chambers of commerce, local public officials, and influential industrialists, ministers, and scientists on both sides of the Mason-Dixon Line.²⁵ On board, too, was the conservationist-in-chief, President Theodore Roosevelt, who in his 1907 message to Congress made the larger case for conservation: “We should acquire in the Appalachian and White Mountain regions all the forest lands that it is possible to acquire for the use of the Nation. These lands, because they form a National asset,

are as emphatically national as the rivers which they feed, and which flow through so many States before they reach the ocean.”²⁶

Congressional leaders were not immediately moved to action. It would take another four years before the Weeks Act of 1911 authorized the federal purchase of headwater acreage from willing sellers.²⁷ Aptly enough, the first two eastern national forests—

Erosion gullies on spruce-fir lands cut and burned on the slopes of Mt. Mitchell, North Carolina, in 1915, photographed in 1923. Scenes like this led Ashe to argue for more aggressive protection and restoration of river headwaters throughout the Appalachian Mountains.



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the Pisgah (1916) in western North Carolina and the White Mountain (1918) in central New Hampshire and western Maine—were in the epicenters of support for the Weeks Act (and Ashe had written about them both). In time, another fifty national forests were established to protect more than twenty million acres of rugged mountains, upcountry watersheds, and coastal wetlands from the far north to Florida and west to the Mississippi. As its proponents had predicted, the Weeks Act was transformative.²⁸

Count W. W. Ashe among those also transformed. Because he had helped craft the intellectual foundation for the Weeks Act and therefore contributed to the evolving political calculations that led to the legislation, the Forest Service tapped him to serve as secretary to the National Forest Reservation Commission, a position he held from 1911 until 1928. Congress had authorized the commission, whose members included two representatives, two senators, and three members of the cabinet, to evaluate and purchase acres offered for sale.

But the real workhorse of this body was Ashe, for whom the position seemed ready-made. It drew on his organizational talent and indefatigable commitments, according to E. A. Sherman, who had worked for Ashe early in his career and was later, as associate chief of the Forest Service, his supervisor. Ashe's most important quality, though, was his tenacity as a negotiator. "More than once," Sherman recalled, "I have seen 'Acquisition men' almost in tears because Ashe had recommended against the purchase of some particularly desirable tract at a price which he believed to be too high, although the examiner considered it a bargain at that price and believed the Service, in rejecting it, would be overlooking an opportunity it never

would have again." In the end, it was the owner who usually buckled, "accepting the price which Ashe had indicated as representing fair-going value of the property under existing market conditions." Sherman was among those who took their cues from Ashe's considered judgment: "I never once recommended the purchase of a tract of land at a cent higher than Mr. Ashe had indicated."²⁹

ONE FINAL PROJECT

After seventeen years on the commission, Ashe stepped down in time to throw himself into one final, and related, project. In the aftermath of the massive flooding that swamped the Mississippi River valley in 1927, the Forest Service produced a tributary-by-tributary report of what had happened and why, and what could be done to minimize

future loss of lives, property, and soil. In his foreword to the report, E. A. Sherman set the 1927 inundation in historical context. Acknowledging that the basin had always flooded, "even before the white man had disturbed the heavy forests of the Mississippi River Basin," that situation changed radically "with the settlement of the country." The resulting "forest fires, overcutting, and the abuse of forests and other lands have served to increase the possibility of floods and their severity and the amount



and extent of erosion.” To counteract these damages, Sherman argued, required a “program of sound forestry development” that would permit the “forests of the Mississippi River Basin to exert their greatest influence on the regulation of water flow.” As Ashe had in 1921 for the smaller watersheds in Texas, Sherman advocated for a massive, basin-wide intervention on the Mississippi that “should include protection of all forest lands against fire, the reforestation of all denuded lands unsuited for agriculture, the extension of proper forest practices to all forest lands, the public ownership of particularly critical areas, the continuance of existing public forests, and placing public grazing lands under management.” Worried that this expansive strategy might provoke a turf war with the powerful U.S. Army Corps of Engineers, Sherman inserted a meaningful caveat: “It is not proposed that forestry should supplant engineering works in flood control, but that forestry should supplement whatever means of artificial control may be adopted by the engineers.”³⁰

Ashe toed that same line in his chapter on the Arkansas–White River basin, agreeing that the “possibility of developing reservoir sites with the flood-control engineers” would have multiple benefits, including augmenting “flood-control works” and storing water “to further irrigation enterprises.”³¹ Yet his report on this particular watershed, which drains 188,342 square miles from the Rocky Mountains east nearly fifteen hundred miles to the Mississippi River southeast of Pine Bluff, Arkansas, centers not on concrete solutions (dams, channels, and levees) but on conservation measures (reforestation, rangeland management, and increased public ownership). On private land in the basin’s upper reaches, clearcut forests, like overgrazed grasslands, had destroyed the capacity of the land to regenerate naturally. In its

middle and lower reaches, where agriculture predominated, once-forested terrain had been slicked off. Deforestation, when combined with generations of poor farming practices, had robbed the land of its absorbing power and stripped the soil of its nutrients. Caved-in riverbanks, erosion-cut grasslands, and deep gullies and gashes were captured in black-and-white photographs that illustrated Ashe’s text, images that prefigured photographs of environmental devastation during the Great Depression. In the late 1920s, these photographs and related text were emblematic of the manifold and pressing challenges facing this specific river basin and southern watersheds generally, challenges that no amount of concrete alone could fix.³²

Reviving this battered land and associated riparian ecosystems required instead long-term strategies for effective land management. Regenerating forest cover would take decades, Ashe asserted, but was essential to help stabilize soil and combat flooding. Reseeding rangeland would take just as long and was every bit as essential, and for the same reasons. Recovering agricultural productivity—a matter for landowners, states, and county extension agents—called for an array of interventions, including changes in how farmers plowed and what they planted. If, as was happening, farmers abandoned their degraded properties, which Ashe dubbed “naked lands,” there was evidence that nature would reclothe them, returning these acres to forest and increasing the land’s resilience.³³

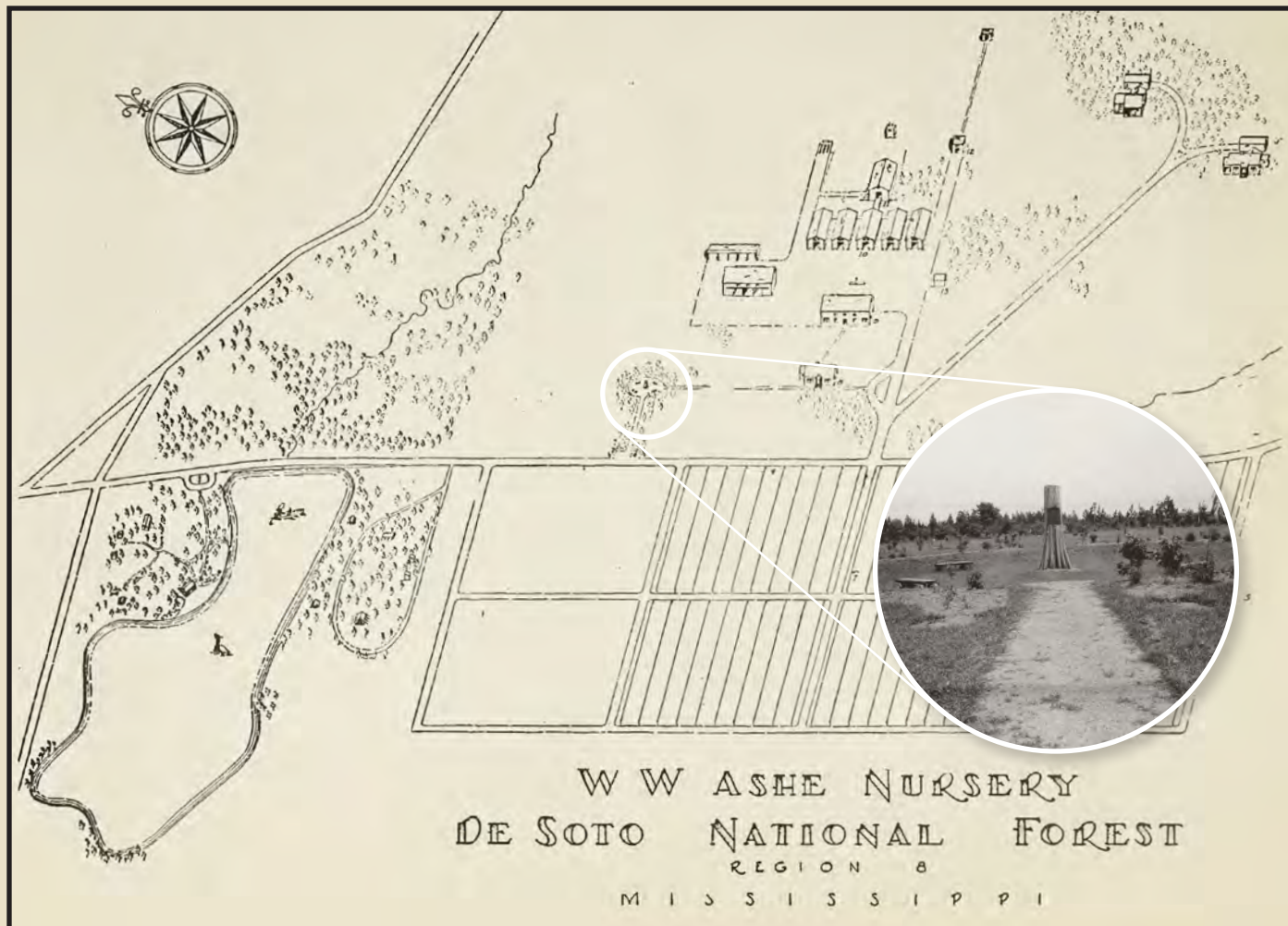
To expedite this basin-wide reclamation project, Ashe indicated, would require a permanent presence that only federal stewardship seemed capable of guaranteeing. To that end, and drawing on his considerable experience in organizing, evaluating, and negotiating Weeks Act–funded land purchases, he recommended

sweeping acquisitions in the Arkansas–White River watersheds. In their Rocky Mountain headwaters, Ashe proposed the addition of six hundred square miles to what is now the Pike and San Isabel national forests. In the Ozarks, public forests should be increased by “not less than 3,000,000 acres,” a recommendation that came coupled with another to expand federal ownership in Oklahoma’s Ouachita Mountains (“not less than 1,000,000 acres”) and still another one million acres downstream in Arkansas.

His proposals, broad though they were, dovetailed with the larger report’s subtext: for foresters and forestry to mitigate flooding in the Mississippi River valley, the number, size, and location of national forests had to increase. At the time, neither Ashe nor any other agency forester could have predicted that the Great Depression would boost the perceived need for enhanced public land ownership that they advocated just a few years earlier; they could not have envisioned that Franklin D. Roosevelt would become president and that the New Deal would provide funding to purchase more than fourteen million acres of national forest in twenty states. But one critical reason that the Forest Service was able to respond so quickly and identify and acquire so much land was the agency’s (and Ashe’s) analysis of flooding in the Mississippi River basin.³⁴

RESTING PLACE

Ashe would not live to see this outcome, dying on March 18, 1932, “after an operation resultant from an old injury incident to field work for the Forest Service.” To honor its late employee, in November 1935 the agency established the W. W. Ashe Forest Nursery in Brooklyn, Mississippi, site of a once-healthy longleaf pine forest. The land’s status was anything but resilient: since the late nineteenth century, repeated,



heavy harvests had left behind a few longleaf relicts and saplings, a thick stand of wire grass, and an estimated “two to three hundred old stumps per acre.” On this exhausted terrain, the Forest Service erected a commemorative marker, a twelve-foot-tall cypress stump with a bronze plate inscribed with Ashe’s name, dates, and expertise: Dendrologist, Botanist, Author.

But the real monument was the nursery itself, which was tasked with producing thirty million seedlings annually to restore what Representative William M. Colmer described in his dedicatory speech as “the forest wealth of Mississippi.” The first beneficiary of this new growth was the newly created De Soto

National Forest, purchased from willing sellers with Weeks Act funding and formally designated in June 1936. The site and its continued operation deftly evoke Ashe’s life-affirming commitment to landscape restoration and environmental stewardship.³⁵

Char Miller is the W. M. Keck Professor of Environmental Analysis & History at Pomona College: “I am deeply grateful once again to James G. Lewis, Eben Lehman, and Jason Howard of the Forest History Society for their incredibly speedy responses to my many queries. This project could not have been completed without their timely support and generous encouragement.”

The W. W. Ashe Nursery on the Mississippi National Forest near Hattiesburg, Mississippi, was dedicated on November 17, 1936. The tidewater cypress tree with the memorial plaque was set in the center of a sunken garden in the nursery grounds at left. Around this memorial in concentric circles were placed pine trees representing the first crop to be grown in the Ashe Nursery. More than 2,000 people joined in the celebration.

NOTES

1. On the 1921 flood, see Char Miller, *San Antonio: A Tricentennial History* (Austin: Texas State Historical Association, 2018), 93–98; and “Streetscape Environmentalism: Flood Control, Social Justice, and Political Power in Modern San Antonio, 1921–1974,” in *The Nature of Hope: Grassroots Organizing, Environmental Justice,*

- and *Political Change*, ed. Char Miller and Jeff Crane (Louisville: University Press of Colorado, 2019), 100–19.
2. “State Control of Flood Waters is Needed, Says Ashe,” *San Antonio Express*, September 16, 1921, 1.
 3. “State Control of Flood Waters is Needed, Says Ashe.”
 4. “State Control of Flood Waters is Needed, Says Ashe.” In “Financial Limitation in the Employment of Forest Cover in Protecting Reservoirs,” U.S. Department of Agriculture, *Department Bulletin no. 1430* (August 1926), 24. Ashe expands on the ideas in his interview with the *San Antonio Express* about how to better manage the headwaters of the region’s rivers: “The woodland and herbaceous cover of this region is too light, on account of the limited rainfall, to protect the surface from erosion, but it is possible, by adequate regulation of grazing, and by better protection of stream banks if not to reduce erosion at least to prevent its further increase.”
 5. “State Control of Flood Waters is Needed, Says Ashe”; Miller, “Streetscape Environmentalism,” 100–19.
 6. Elizabeth Emerson Ashe Drake, “Biographical Sketch of W. W. Ashe,” in *William Willard Ashe (1872–1932)*, William A. Dayton, ed. (Washington, DC: n.p., 1936), 1–2. According to the University of North Carolina Herbarium’s entry on Ashe, as of 2014, the database included “over 2,850 specimens collected by W. W. Ashe,” and “many more remain to be catalogued”; Laurie Stewart Radford, *The History of the Herbarium at the University of North Carolina at Chapel Hill, NC, 1908–1998*, 1–2, <http://www.herbarium.unc.edu/history.htm>, accessed August 8, 2019.
 7. Gifford Pinchot, *Breaking New Ground, Commemorative Edition* (Washington, DC: Island Press, 1998), 56.
 8. Harold K. Steen, ed., *The Conservation Diaries of Gifford Pinchot* (Durham, NC: Forest History Society, 2001), 58.
 9. Gifford Pinchot and W. W. Ashe, *Timber Trees and Forests of North Carolina*, North Carolina Geological Survey, Bulletin 6 (1897), 13.
 10. Pinchot, *Breaking New Ground*, 143. Though Ashe was a member of the Society of American Foresters from 1907 on, and even served as vice president in 1919, his lack of a forestry degree disqualified him from being named a SAF Fellow, its highest career honor.
 11. Ashe’s chances for advancement were decreased in part because he was outside the normal path for promotion identified by Herbert Kaufman in *The Forest Ranger: A Study in Administrative Behavior*, Special Reprint Edition (Washington, DC: Resources for the Future, 2006), 176–83. Leon Kneipp added another reason why Ashe, who “was not an impressive personality nor was he efficient as a self-advertiser,” did not rise through the ranks as high as he might have done: “The fact that his academic training had not been wholly orthodox inspired attacks on his findings—attacks which deterred him from making other contributions he might well have made.” L. F. Kneipp, “W. W. Ashe,” *American Forests*, May 1944, 240.
 12. Kneipp, “W. W. Ashe,” 240.
 13. “Unique Memorial for Forest Scientist,” *Forest Service Bulletin* 20, no. 26 (December 21, 1936), 7.
 14. Dayton was not entirely correct about who introduced the modern cupping system. Ashe had begun a limited experiment in 1894 with a system used in France but didn’t complete the work. When a chemistry professor named Charles Herty contacted him in 1901, Ashe encouraged him and shared his data. Herty’s cup-and-gutter system was widely adopted by 1904, transforming the naval stores industry. Consequently, Herty is widely acknowledged as introducing the cupping system. Gerry Reed, “Saving the Naval Stores Industry: Charles Homes Herty’s Cup-and-Gutter Experiments, 1900–1905,” *Journal of Forest History*, October 1982: 171–72.
 15. Dayton, *William Willard Ashe*, 1–2.
 16. A. Hunter Dupree, *Science in the Federal Government: A History of Policies and Activities* (Baltimore: Johns Hopkins University Press, 1986); Samuel P. Hays, *Conservation and the Gospel of Efficiency: The Progressive Conservation Movement, 1890–1920* (New York: Atheneum, 1969).
 17. “William Willard Ashe,” <http://www.herbarium.unc.edu/Collectors/ashe.htm>, accessed August 8, 2019.
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 30. “Relation of Forestry to the Control of Floods in the Mississippi Valley: Message from the President of the United States, Transmitting Communications from the Secretary of Agriculture Submitting Reports with Reference to the Relation of Forestry to the Control of Floods in the Mississippi Valley” (Washington, DC: U.S. Government Printing Office, 1929), 1.
 31. Ashe, “Forest Conditions in the Arkansas–White Basin,” in “Relation of Forestry to the Control of Floods,” 243. On page 211, Ashe references his 1909 report’s caution that “the work of the engineer to protect and develop the large river becomes useless unless it is protected by the forest. In the Appalachians, in the Rocky Mountain region, and in the Southwest, and indeed wherever forest influences are high, the river engineer and the forester must work hand in hand.” Ashe, “Special Relations of Forests to Rivers,” 534. He had made that same point in his interview in the *San Antonio Express News*, September 16, 1921.
 32. Ashe, “Forest Conditions in the Arkansas–White Basin,” 205–40.
 33. Ashe, “Forest Conditions in the Arkansas–White Basin,” 205–40.
 34. Ashe, “Forest Conditions in the Arkansas–White Basin,” 242.
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