

HISTORY OF SCIENCE

The Great American Pantheist

Jared Farmer

In 2004, Governor Arnold Schwarzenegger selected the design of the California quarter in the U.S. Mint's current commemorative series. He chose an image of John Muir—identifiable by the biblical beard, walking stick, and rumped suit—gazing at Yosemite Valley's Half Dome. According to the Austrian-born governor, the Scottish-born naturalist “has been a model for generations of Californians and conservationists around the world.”

Yes, but a model of what? Muir's life was multilayered. Depending on which stratum one reads, Muir can be characterized as a model of amateur science, agrarian capitalism, or simple wanderlust. Today he is best known as the founding father of American environmentalism and most remembered for two periods of his life—the late 1860s and early 1870s, when he worked and wandered in the Sierra Nevada, and the 1890s and 1900s, when, as honorary president of the Sierra Club, he advocated for the protection and enlargement of Yosemite National Park.

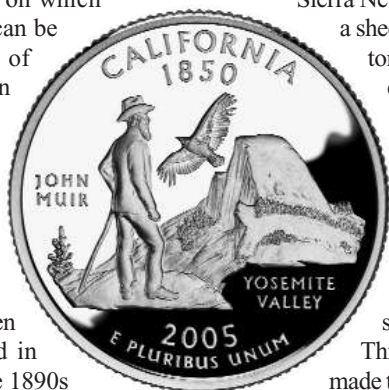
In his comprehensive biography *A Passion for Nature*, Donald Worster shows Muir at every stage of life—a man in full, warts and all. We meet the draft-dodger who went to Canada during the Civil War and the domesticity-dodger who went to Alaska on seasonal field trips during his daughters' childhood years. Like any good biographer, Worster (a professor of history at the University of Kansas) corrects the simplifications of popular memory. Readers may be surprised by certain details. For example, Muir was more gregarious than solitary. He made a small fortune managing an orchard staffed with Chinese laborers, about whom Muir felt race-based wariness. His writing career was facilitated by a series of wealthy benefactors, including Edward Harriman, a railroad magnate of the Gilded Age.

Worster also discusses Muir's contribution

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to geology. Muir lived in the proto-professional era of science. As a young man, he dreamed of following the footsteps of Alexander von Humboldt, combining personal discovery and scientific discovery while traveling to exotic tropical locales. In 1867, Muir embarked on a Humboldtian journey to South America. When a bout with malaria waylaid him in Cuba, he decided to go to California instead. There in the Sierra Nevada, during his off-hours as a shepherd and sawmill operator, Muir joined the great scientific conversation of the day—breaking the biblical limits of time with geology and evolutionary theory. Without any institutional affiliation, Muir published in the proceedings of AAAS and corresponded with Louis Agassiz. Through his fieldwork, Muir made the case that the slow, uniformitarian work of glaciers—not some sudden, catastrophic event—created the sheer cliffs of Yosemite Valley.

Despite his ken for science, Muir lacked a scientific temperament. He was the opposite of disciplined and dispassionate. This came out when in 1877 Asa Gray and Joseph Hooker, two prominent champions of Darwin, climbed Mount Shasta with Muir. The august scientists wanted to talk pure science; they declined Muir's invitation to dance and shout, “Look at the glory! Look at the glory!” Gray and Hooker commented that “Muir is so eternally enthusiastic, we like to tease him.” Whereas Gray famously tried to reconcile Darwinism with his belief in a Christian God—an earlier, more intelligent version of intelligent design—Muir advocated a more sacred yet less Christian position. After abandoning the Calvinism of his father, Muir developed a concept of “God” synonymous with beauty and harmony—universal principles of nature. In a clever turn, Worster employs Linnaean taxonomy to describe Muir's belief system: *Pantheism muirii* var. *sierra*. In today's world when science so often gets dragged into bipolar debates between theists and atheists, Muir offers a historical



A Passion for Nature
The Life of John Muir

by Donald Worster

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example of a third way. He felt equally comfortable with the language of science and the language of religion. For him, holism was a spiritual as well as a scientific pursuit.

It is ironic, then, that Muir's ecological sensibility—his holistic view of biological systems—was stunted. As Worster points out, Muir's fixation on mountain geology and mountain scenery blinded him to the ecological importance of unspectacular lowland environments like wetlands. Muir privileged faraway wilderness areas over local inhabited spaces. After Yosemite, his favorite landscapes were the glacial bays and fjords of Alaska. Similarly, he focused his botanical enthusiasm on individual sublime species like the giant sequoia (*Sequoiadendron giganteum*) and the coast redwood (*Sequoia sempervirens*). Late in life, when he traveled across the globe, he went looking for other champion trees such as Australia's mountain ash (*Eucalyptus regnans*) and Africa's baobab (*Adansonia digitata*). It has taken the environmental movement a long time to overcome the Muirian bias for extraordinary nature. Without faulting Muir personally, it seems fair to say that biodiversity would have been better served had the Sierra Club been complemented by a Marsh Club, a Prairie Club, and a Desert Club—not to mention an Urban Nature League.

Worster clearly admires his subject and even speculates that Muir's life may demonstrate E. O. Wilson's biophilia hypothesis. Perhaps. (If we need prophets like Muir to remind us of our innate passion for nature, how innate can it be?) It is remarkable that Worster, an environmental historian who has been typed as a “declensionist”—someone who focuses unremittently on how humans have degraded nature—displays such Muir-like faith in the transformative power of nature worship. He insists that we still have much to learn from the great American pantheist. A radical egalitarian, Muir argued for the natural rights of other living things. A radical optimist, Muir believed that industrial capitalism and nature preservation could be reconciled.

In one of his most quoted passages, Muir condemned those who would—and did—build a dam inside Yosemite National Park: “These temple destroyers, devotees of ravaging commercialism, seem to have a perfect contempt for Nature, and, instead of lifting their eyes to the God of the mountains, lift them to the Almighty Dollar.” Compared to most of Muir's writing, that passage is unusually political and priggish. Muir's full life demands a different

kind of epitaph—something more impure and for that reason more uplifting. One suspects that Muir might actually agree with Schwarzenegger, who, standing beside the quarter-dollar image of the apostle of nature, said, “Here in California, growth, progress, wilderness protection and the protection of the environment go hand in hand, even though some people believe that you can only have one or the other, we want to be committed to make it go hand in hand.”

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HISTORY OF SCIENCE

The Kingdom of Plants

John C. Waller

When Joseph Dalton Hooker returned to England in 1843 from a Royal Navy expedition sent to the South Magnetic Pole, he could only lament the state of British botany. Leading scientists were talking of the decline of science as a result of state parsimony, but the outlook for aspiring botanists like Hooker was particularly bleak. The discipline to which he wished to devote his life remained a poor relation of the physical sciences or zoology. Its practitioners had made few of the bold and brilliant generalizations that marked out a science as being truly “philosophical,” while gardeners and amateur collectors sporting trowels, bags, and prettily illustrated handbooks laid as much claim to the title “botanist” as did the head of a vast herbarium like Kew Gardens in west London. In fact, even Kew was still making the transition from royal park to a state-funded center of botanical research.

Hooker deplored the lowly status of botany, and he had strong personal reasons to want to hurry it into a state of maturity. Intelligent, educated, and well-traveled, Hooker was also out of pocket. Even when he had gained a salaried position at Kew, the rewards for his labors were only modest. And, to make matters worse, he realized that many of his contemporaries considered the pursuit of pure knowledge to be sullied by earning a wage.

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In *Imperial Nature*, Jim Endersby shows how the person who was to become Britain’s foremost botanist and Darwin’s right-hand man strove to get botany invited to the high table of Victorian science. In doing so, Endersby focuses on the practical dimensions of Hooker’s drive to establish the reputation of Victorian botany: how he obtained properly preserved specimens from far-flung regions of the globe, reconciled his gentlemanly status with drawing a wage from doing science, and sought to make botany economically useful to his nation by having trees and plants (such as rubber and sisal) shipped from one part of the empire to another.

Endersby’s story is as much about the exercise of power as the acquisition of legitimate expertise: scientific advance and self-interest went hand in hand as Hooker and his allies elevated botany to a higher plane. Accordingly, several chapters follow Hooker in his dogged attempts to assert the primacy of metropolitan botanists like himself over a multitude of amateur enthusiasts and colonial collectors.

To this end, isolated colonial collectors, many of them incorrigible taxonomic “splitters,” were told that they lacked the broader perspective needed to say where one species ended and another began; only metropolitan experts had access to the extensive herbaria and libraries necessary for conducting proper systematics. Similarly Hooker and company claimed

sole authority to name the empire’s plants, to the disappointment of collectors like William Colenso in New Zealand, who would have preferred to use Latinized versions of Maori terms for the specimens he sent to Hooker at Kew. Collectors had to be kept sweet, but they were still taught to see themselves as “worker bees.” Hooker keenly resisted the attempts of some of his collectors to indulge in theorizing, arguing that those armed with only local knowledge were unfitted to grapple with the bigger, abstract issues. And it was theorizing, for Hooker, that would make botany into a recognizably scientific endeavor, allowing the metropolitan expert to move beyond dry lists of species and genera.

Endersby (a historian of science at the University of Sussex) astutely reveals the difficulties of the relationship between metropolitan botanist and colonial collector. And his book usefully reminds us that underpinning



Fashion setter. Hooker’s *Rhododendrons of Sikkim Himalaya* (1849) led many British gardeners to grow the genus for its colorful blossoms.

many of the advances in theory made by naturalists of the 1800s were the efforts of vast networks of these collectors. Without the often-unpaid work of those who labored in jungles, forests, and marshes; on mountains; and along shores in search of rare examples of fauna and flora, neither Hooker nor Charles Darwin could have made the breakthroughs they did.

Endersby also argues that the directors of herbaria, like Kew, were inclined to be taxonomic “lumpers” rather than splitters in part because they would otherwise have been overwhelmed by the sheer number of plants to classify. This brings us to Hooker’s relationship with Darwin. One of the reasons that Hooker became a Darwinian, says Endersby, is that the theory of natural selection chimed with his own preference for lumping. Darwin’s emphasis on variability allowed Hooker to insist that naturalists must not let slight differences between one plant and another mislead them into erecting more and more species categories.

Imperial Nature is not a conventional scientific biography. The usual fare of birth, love, and death is largely absent. Instead, Endersby give us a detailed, scholarly account with a deeper point: that science is about more than the grand battles of competing ideas. In doing so, he provides a richly textured account of a period in which the status of natural science was far more precarious than it is today. And the book will hopefully stand as a reminder, during next year’s Darwin celebrations, of just how many unsung individuals contributed to the scientific progress of the age.

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CREDIT: PLATE 30 FROM RHODOENDRONS OF SIKKIM HIMALAYA (1849)/NATURAL HISTORY MUSEUM, LONDON/ALAMY