

# MAN AND NATURE: GEORGE PERKINS MARSH AND ALEXANDER VON HUMBOLDT\*

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**ABSTRACT.** George Perkins Marsh's book *Man and Nature* was the first work of natural history to fundamentally influence American politics. This paper establishes the powerful impact that Alexander von Humboldt's writings had on Marsh. Marsh took ideas that Humboldt introduced across his books and synthesized them into a single powerful argument regarding the dangers of deforestation. These warnings eventually led to policies that sought to more carefully manage forestland, plant trees, and spawn the 20<sup>th</sup> century conservation movement. *Keywords:* *History of Geography, Humans and the Environment, Forests, Public Policy.*

On 6 May 1859, the eighty-nine-year-old German explorer and visionary thinker Alexander von Humboldt died in his bed in Berlin. As the news spread across the world, headlines and letters announced his death. "The great, good and venerated Humboldt is no more!"<sup>1</sup> wrote the United States ambassador to Prussia in a dispatch to the State Department in Washington D.C., which took more than ten days to arrive in America. A telegraph from Berlin reached London's newsrooms only hours after Humboldt had died, announcing "Berlin is plunged in sorrow."<sup>2</sup> Two days after his death, English newspapers ran long obituaries and reports about Humboldt. The first line of a long article in the *Times* in London simply stated "Alexander von Humboldt is dead."<sup>3</sup>

When the steamer that carried the news of Humboldt's death reached the United States in mid-May, thinkers, artists, and scientists alike grieved. One of Humboldt's former protégés, the scientist Louis Agassiz, delivered a eulogy to the Academy of Art and Sciences in Boston during which he claimed that every child in America's schools had its mind fed "from the labors of Humboldt's brain."<sup>4</sup> On 19 May 1859, newspapers across America reported the death of the man whom many called the "most remarkable"<sup>5</sup> ever born. They had been lucky to have lived in what they now called the "age of Humboldt."<sup>6</sup> For many, Humboldt was, as King Friedrich Wilhelm IV of Prussia had said, simply "the greatest man since the Deluge."<sup>7</sup> (Figure 1)

Alexander von Humboldt was not only the most famous scientist of his age, but he also changed the way we understand nature. Born in 1769 into a wealthy Prussian aristocratic family, Humboldt was brazenly adventurous and risked his life many times when he explored Latin America for five years

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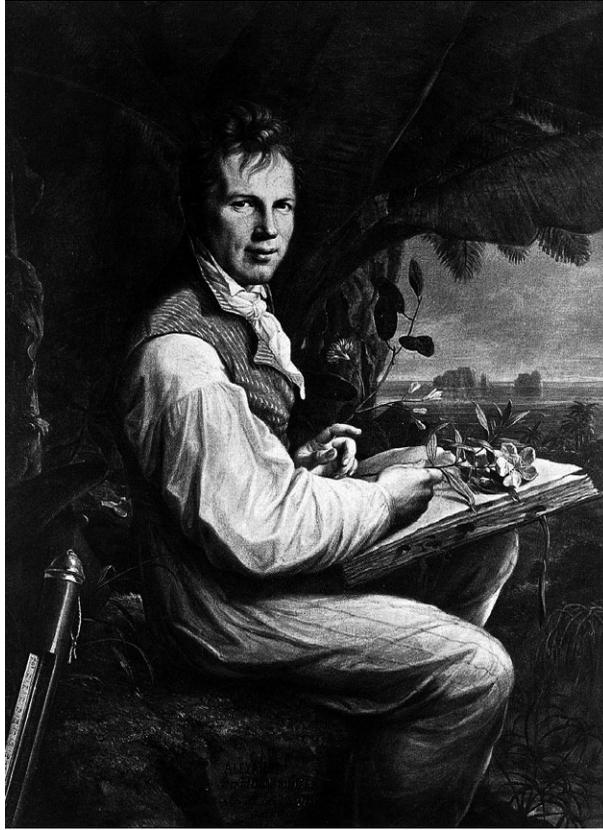


FIG. 1—Alexander von Humboldt in South America (photogravure after Friedrich Weitsch, 1806, Wellcome Collections)

starting in 1799—a voyage that shaped his life and made him legendary across the world. He returned to Europe with a new vision of nature: a concept that described the natural world as a web of life, a living organism where everything was connected from the tiniest insect to the highest mountains, from humankind to a fleck of moss. He found connections everywhere. Nothing, not even the smallest organism, was looked at on its own. “In this great chain of causes and effects,”<sup>8</sup> Humboldt said, “no single fact can be considered in isolation”

Perceived as a web, nature’s vulnerability also became obvious. Everything hangs together. If one thread is pulled, the whole tapestry may unravel. After Humboldt saw the devastating environmental effects of colonial plantations in Venezuela in 1800, he became the first scientist to talk about harmful human-induced climate change. Deforestation there had made the land barren, water levels of the lake were falling, and with the disappearance of brushwood torrential rains had washed away the soils. Humboldt was the first to explain the forest’s ability to enrich the atmosphere with moisture and its cooling effect, as well its importance for water retention and protection against soil erosion. He

warned that humans were meddling with the climate and that this could have an unforeseeable impact on “future generations.”<sup>9</sup>

Humboldt is the forgotten father of environmentalism—and his ideas influenced George Perkins Marsh, an American diplomat and linguist, who in 1864 published a book that I believe is one of the most important environmental texts ever published in the United States: *Man and Nature*.

Just as news of Humboldt’s death arrived in the United States, George Perkins Marsh was leaving New York to return to his home in Burlington, Vermont (Figure 2). The fifty-eight-year-old Marsh missed the eulogies, which were delivered in Humboldt’s honor two weeks later, on 2 June 1859, at the American Geographical and Statistical Society in Manhattan where he was—as well as Humboldt—a member. In a room decorated with portraits and photographs of Humboldt, several speeches were given and dozens of letters were read in his honor. “We mourn for one whom the whole world knew,”<sup>10</sup> one speaker said, and “the work whose name is on every lip.”<sup>11</sup> The audience was also regaled for hours about Humboldt’s many achievements—and reminded that it was his “love of nature, which seems to pervade all his acts.”<sup>12</sup>



FIG. 2—George Perkins Marsh (circa 1850, DLC)

Buried in his work in Burlington, Marsh was tackling several projects at the same time. He was completely broke. In a bid to replenish his funds, he was writing up a lecture series on the English language that he had given over the previous months at Columbia College in New York, compiling a report on railroad companies in Vermont, and composing a couple of poems for publication in an anthology, as well as writing several articles for a newspaper.

He had returned from New York to Burlington, he said, "like an escaped convict to his cell."<sup>13</sup> Hunched over piles of papers, books and manuscripts, he hardly left his study and rarely spoke to anybody. He was writing and writing, he told a friend, "with all my might,"<sup>14</sup> and with only his books as company. His library contained 5,000 volumes from all over the world with one entire section dedicated to Humboldt. The Germans, Marsh believed, had "done more to extend the bounds of modern knowledge than the united labors of the rest of the Christian world."<sup>15</sup> German books were of "infinite superiority to any other," Marsh said, with Humboldt's publications as the crowning glory.

Marsh could read and speak twenty languages including German, Spanish, and Icelandic. He picked up languages as others picked up a book. "Dutch," he claimed, "can be learned by a Danish & German scholar in a month."<sup>16</sup> German was his favorite and he often peppered his letters with German words, using "Blätter" instead of newspapers, for example, or "Klapperschlangen" instead of rattlesnakes. When a friend struggled to observe a solar eclipse in Peru because of the clouds there, Marsh referred "to what Humboldt says of the *unastronomischer Himmel Perus*"<sup>17</sup> —Peru's unastronomical sky.

Humboldt was the "greatest of the priesthood of nature,"<sup>18</sup> Marsh said, because he had understood the world as an interplay between man and nature, a connection that would underpin Marsh's own work because he was collecting material for a book that would explain how humankind was destroying the environment.

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Marsh was an autodidact with an insatiable thirst for knowledge. Born in 1801 in Woodstock, Vermont, the son of a Calvinist lawyer, Marsh had been a precocious boy who by the age of five was learning his father's dictionaries by heart. He read so rapidly, and so many books simultaneously, that friends and family were always surprised how he could grasp the content of a page with one glance. All his life people would remark on Marsh's extraordinary memory. He was, as one friend said, a "walking encyclopaedia." But Marsh was not only learning from books; he also loved the outdoors. He was "forest-born," he said, and "the bubbling brook, the trees, the flowers, the wild animals were to me persons, not things."<sup>19</sup> As a young boy, he had enjoyed long walks with his father, who had always pointed out the names of the different trees. "I spent my early life almost literally in the woods,"<sup>20</sup> Marsh told a friend, and this deep appreciation for nature stayed with him for the rest of his life.

For all this ferocious appetite for knowledge, Marsh was surprisingly unsure about his career. He had studied law but was a useless lawyer because he found his clients rough and uncouth. He was a great scholar, but disliked teaching. He was an entrepreneur with an unfailing knack for disastrous business decisions and he sometimes spent more time in court dealing with his own affairs than with those of his clients.

There was one thing Marsh was certain about: he wanted to travel and see the world. The only problem was that he never had enough money. The solution, he had decided in spring 1849, was to seek a diplomatic post. His dream posting would have been Humboldt's hometown of Berlin, but Marsh's hopes were dashed when a senator from Indiana, who also had his eyes set on Berlin, sent several cases of champagne to Washington with which to bribe the politicians who would decide on the candidate. Within hours the men were in such "a state of fearful intoxication,"<sup>21</sup> Marsh heard from friends, that they were dancing and singing. By the end of the night the drunken politicians announced that the senator from Indiana would be going to Berlin.

Marsh was determined to live abroad. Having been a congressman for several years, he was certain that with his contacts in D.C., he would be able to find a position. If not Berlin, then he would go elsewhere. He was lucky, because a few weeks later, at the end of May 1849, he was made the American Minister to Turkey, in Constantinople, with instructions to expand trade between the countries. Though it was not Berlin, the lure of the Ottoman Empire—at the crossroads between Europe, Africa and Asia—was exciting enough. The administrative tasks were supposed to be "very light,"<sup>22</sup> Marsh told a friend. "I shall be at liberty to be absent from Constantinople a considerable part of the year."

And so he was. Over the next four years Marsh and his wife Caroline travelled a great deal through Europe and parts of the Middle East. When they first travelled from the United States to Constantinople, they made a detour of several months to Italy, but their first real expedition was to Egypt. In January 1851, a year after their arrival in Constantinople, they went to Cairo and then sailed down the Nile. They saw a patchwork of fields hugging the river, planted with rice, cotton, beans, wheat, and sugarcane. From early dawn to late night they heard the creaking wheels of the irrigations systems—long chains of jars and buckets pulled by oxen that delivered the Nile's water to the surrounding fields. Along their way, they stopped at the remains of the ancient city Thebes, and further south they visited the pyramids of Nubia.

This was a world that exuded history. The monuments told a story of past riches and long-gone kingdoms, while the landscapes showed the traces of ploughshares and spades. Barren terraces shaped the countryside into a geometrical patchwork and every sod turned or tree felled had left indelible records on the ground. Marsh saw a world shaped by humankind and marked by thousands of years of agricultural activity. The "very earth,"<sup>23</sup> he said, the naked rocks and the shaven hills, bore testimony to the toil of man. Marsh saw the legacy of ancient

civilizations not only in the pyramids and temples, but carved into the soil. Marsh realized that the appearance of nature was tightly interwoven with the actions of humankind. As they sailed along the Nile, Marsh could see how the vast irrigation systems turned the desert into lush fields, but he also noticed the complete lack of wild plants because nature had been ‘subdued by long cultivation.’<sup>24</sup>

Everything that Marsh had read in Humboldt’s books suddenly made sense. Humboldt had written that the “restless activity of large communities of men gradually despoil the face of the earth”<sup>25</sup> —exactly what Marsh was seeing now. Humboldt had said that the natural world was linked to the “political and moral history of humanity”<sup>26</sup> —from imperial ambitions that exploited colonial crops to the migration of plants along the paths of ancient civilizations. He had described how sugar plantations in Cuba and the smelting of silver in Mexico had caused dramatic deforestation. Greed shaped societies *and* nature. Man left trails of destruction, Humboldt had said, “wherever he stepped.”<sup>27</sup>

For eight months Marsh and Caroline travelled through Egypt and then across the Sinai desert on camels to Jerusalem and all the way to Beirut (Figure 3). At Petra, they saw the magnificent buildings cut into the marbled pinkish rocks, and between Hebron and Jerusalem Marsh noted how the old terraced hills, which had been in cultivation for thousands of years, now looked “for the most part barren and desolate.”<sup>28</sup> Towards the end of the expedition, Marsh had come to believe that the “assiduous husbandry of hundreds of generations”<sup>29</sup> had transformed this part of the earth into an “effete and worn out planet.” It was a turning point in his life.

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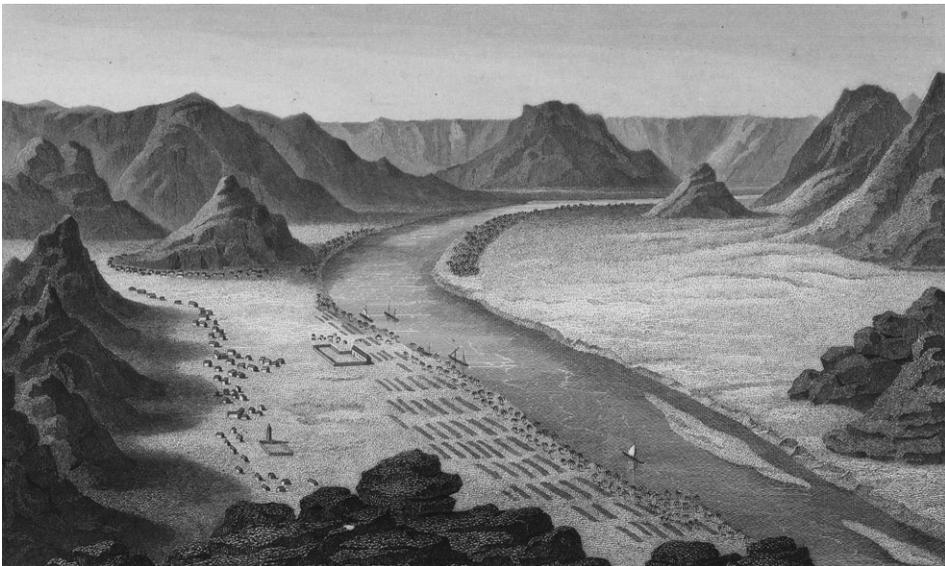


FIG. 3—Fields and terraces along the Nile at Nubia (Atlas zu Alexander von Humboldt’s *Kosmos* by Traugott Bromme, 1851, detail from pl.37, Wellcome Collections).

By the time Marsh was recalled from Constantinople, in late 1853, he had travelled through Turkey, Egypt, Asia Minor, and parts of the Middle East, as well as Greece, Italy, and Austria. Back home in Vermont, he saw the countryside that he had known all his life through the prism of his observations in the Old World and realized that America was marching towards the same environmental destruction. He now applied the lessons of the Old World to the New World. So radically had Vermont's landscape, for example, changed since the first white settlers had arrived, that what was left was "nature in the shorn and crippled condition to which human progress has reduced her,"<sup>30</sup> Marsh said.

America's environment had begun to suffer. Industrial waste polluted the rivers and entire forests disappeared as timber was used for fuel, manufacturing, and railroads. "Man is everywhere a disturbing agent,"<sup>31</sup> Marsh said and, as a one-time mill owner and sheep farmer, knew that he had himself contributed to the damage. Vermont had already lost three-quarters of its trees but with the steady move of settlers across the continent, the Midwest was also changing. Chicago had become one of the greatest lumber and grain depots of the United States. It was shocking to see how parts of Lake Michigan's waters were covered with logs and timber rafts from "all the forests in the States,"<sup>32</sup> Marsh said.

Meanwhile the efficiency of America's agricultural machinery overtook that of Europe for the first time. In 1855, visitors to the World Fair in Paris were amazed to see that an American reaping machine could cut an acre of oats in twenty-one minutes—a third of the time comparable European models took. American farmers were also the first to power their machines with steam, and as U.S. agricultural methods became industrialized, the price of grains fell. At the same time manufacturing output was steadily rising and in 1860 the United States became the fourth largest manufacturing country in the world. That same year, in spring 1860, Marsh pulled out his notebooks and began to write *Man and Nature*, a book in which he would take Humboldt's early warning about deforestation to its full conclusion. *Man and Nature* told a story of destruction and avarice, of extinction and exploitation, as well as of depleted soil and torrential floods.

For most people, it seemed that humankind was in control of nature. Nothing showed that more clearly than the raising of Chicago out of the mud. Built on the same level as Lake Michigan, Chicago was a city hampered by sodden grounds and epidemics. The city planners' audacious solution was to raise entire blocks and multistory buildings by several feet in order to build new drainage systems beneath. As Marsh composed *Man and Nature*, Chicago's engineers defied gravity by lifting up houses, shops, and hotels with hundreds of hydraulic jackscrews while people continued to live and work in the very buildings.

There seemed to be no limit to the ability nor to the greed of humankind. Lakes, ponds, and rivers that had once abounded with fish had become eerily

lifeless. Marsh was the first to explain why. Overfishing was partly to blame, but so too was pollution from industry and manufacturing. Chemicals poisoned the fish, Marsh warned, while the milldams stopped their migration upriver and sawdust clogged their gills. A stickler for details, Marsh underpinned his arguments with facts. He didn't just state that fish disappeared or that railways were eating up forests, he also added detailed statistics of fish exports from across the world and exact calculations of how much timber was needed for each mile of rail track.

Like Humboldt, Marsh blamed the reliance on cash crops such as tobacco and cotton for some of the damage. But there were other reasons too. As the income of ordinary Americans rose, meat consumption, for example, increased, which in turn had a big impact on nature. The ground required to feed the animals, Marsh calculated, was much greater than the size of the fields needed for the equivalent nutritional value in grains and vegetables. Marsh concluded that a vegetarian diet was environmentally more responsible than that of a meat eater.

In tandem with wealth and consumption came destruction, Marsh claimed. For the time being, though, his concern for the environment was drowned in the cacophony of the noises of progress—the cranking noise of mill wheels, the hissing of steam engines, the rhythmic sounds of saws in the forests, and the whistle of locomotives.

Meanwhile Marsh's financial situation had grown precarious. His salary in Turkey had not been sufficient, his mill had gone bust, his business partner had cheated him, and his other investments had all been disastrous. On the verge of bankruptcy, he was now looking for a job with 'small duties & large pay.'<sup>33</sup> Relief came in March 1861 when the newly elected president, Abraham Lincoln, appointed him as the ambassador of the United States to the recently established Kingdom of Italy.

Marsh and his wife moved to Turin, but this new diplomatic position was a great deal more demanding than Marsh had hoped. Social etiquette in Turin required a constant round of visits and he also found himself having to deal with American tourists who treated him almost like a private secretary abroad; he had to find their lost luggage, organize passports, and even advise them on the best sightseeing. There were incessant interruptions. "I have been entirely disappointed as to the rest and relaxation I looked for,"<sup>34</sup> Marsh wrote to friends back home. The idea of a job that demanded little but paid a lot quickly evaporated.

Marsh snatched moments to work on his projects in the early morning hours, and slowly *Man and Nature* took shape. His study was filled with boxes and so many manuscripts, letters, and books that he sometimes felt overwhelmed. He had been collecting data for years. There was so much to include, so many connections to make, and so many examples to consider. As Marsh wrote, Caroline read and edited, also confessing to feeling "rather knocked

out”<sup>35</sup> by it all. Marsh grew so desperate that Caroline feared he would commit a “libricide.” He wrote urgently, even rushed, because he felt that humankind needed to change fast if earth was to be protected from the ravages of plough and axe. “I do this,” Marsh wrote to the editor of the *North American Review*, “to get out of my brain phantoms which have long been spooking in it.”<sup>36</sup>

In early July 1863, he finished his last revisions and sent the manuscript to his publisher in America. He wanted to call the book *Man the Disturber of Nature’s Harmonies*<sup>37</sup> —a title he was persuaded to abandon by his publisher, who felt it would damage sales. They agreed on *Man and Nature*, and the book was published a year later, in July 1864.

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*Man and Nature* was the synthesis of what Marsh had read and observed over the past decades. Marsh had raided libraries for manuscripts and publications from dozens of countries to collect information and examples. He had read classical texts to find early descriptions of landscapes and agriculture in ancient Greece and Rome. To this he added his own observations from Turkey, Egypt, the Middle East, Italy, and the rest of Europe. Marsh included reports from German foresters, quotes from contemporary newspapers, as well as data from engineers, excerpts from French essays, and his own childhood anecdotes —and of course information from Humboldt’s books.

Humboldt had taught Marsh about the connections between humankind and the environment.<sup>38</sup> And in *Man and Nature* Marsh reeled off one example after another of how man interfered with nature’s rhythms. When a Parisian milliner invented silk hats, for instance, fur hats became unfashionable—and that then had a knock-on effect on the decimated beaver populations in Canada, which began to recover. Or how farmers, who had killed birds in large numbers to protect their harvests, then had to battle with swarms of insects that had previously been the birds’ prey. During the Napoleonic Wars, Marsh wrote, wolves had reappeared in some parts of Europe because their usual hunters were occupied on the battlefields. Even miniscule organisms in water, Marsh said, were essential in nature’s balance—scrupulous cleaning of the Boston aqueduct had eliminated them and then turned the water turbid. “All nature is linked together by invisible bonds,”<sup>39</sup> he wrote.

Man had long forgotten that earth was not given to him for “consumption.”<sup>40</sup> The produce of earth was squandered, Marsh argued, with wild cattle killed for their hides, ostriches for their feathers, elephants for their tusks, and whales for their oil. Humans were responsible for the extinction of animals and plants, Marsh wrote in *Man and Nature*, while the unrestrained use of water was just another example of ruthless greed.<sup>#</sup> <sup>41</sup> Irrigation diminished great rivers, he said, and turned soils saline and infertile.

Marsh’s vision of the future was bleak. If nothing changed, he believed, the planet would be reduced to a condition of “shattered surface, of climatic excess . . . perhaps even extinction of the [human] species.”<sup>42</sup> He saw the American

landscape magnified through what he had observed during his travels—from the overgrazed hills along the Bosphorus near Constantinople to the barren mountain slopes in Greece. Great rivers, untamed woods, and fertile meadows had disappeared. Europe's land had been farmed into "a desolation almost as complete as that of the moon."<sup>43</sup> The Roman Empire had fallen, Marsh concluded, because the Romans had ruthlessly destroyed their forests and thereby the very soil that fed them.

The Old World had to be the New World's cautionary tale. At a time when the 1862 Homestead Act gave those who headed out to the American West 160 acres of land each for not much more than a filing fee, millions of acres of public lands were placed into private hands, waiting to be "improved" by axe and plough. "Let us be wise,"<sup>44</sup> Marsh urged, and learn from the mistakes of "our older brethren!" The consequences of man's action were unforeseeable. "We can never know how wide a circle of disturbance we produce in the harmonies of nature when we throw the smallest pebble in the ocean of organic life,"<sup>45</sup> Marsh wrote. What he did know was that the moment "*homo sapiens Europae*"<sup>46</sup> had arrived in America, the damage had migrated from East to West.

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Others had come to similar conclusions. In the United States, James Madison had been the first to take up some of Humboldt's ideas. Madison had met Humboldt in 1804, in Washington, D.C., and later read many of his books. He had applied Humboldt's observations from South America to the United States. In a widely circulated speech to the Agricultural Society in Albemarle, Virginia, in May 1818, a year after his retirement from the presidency, Madison had repeated Humboldt's warnings about deforestation and highlighted the catastrophic effects of large-scale tobacco cultivation on Virginia's once fertile soil.<sup>47</sup> This speech carried the nucleus of American environmentalism. Nature, Madison had said, was not subservient to the use of man. Madison had called upon his fellow citizens to protect the environment, but his warnings had been largely ignored.

It was Humboldt's friend and revolutionary Simón Bolívar who had first enshrined Humboldt's ideas into law when he had issued a visionary decree in 1825, requiring the government in Bolivia to plant one million trees.<sup>48</sup> In the midst of battles and war during the revolutions in South America, Bolívar had understood the devastating consequences of arid land for the future of the nation. Bolívar's new law was designed to protect waterways and to create forests across the new republic. Four years later he had ordered "Measures for the Protection and Wise Use of the National Forests"<sup>49</sup> for Colombia, with a particular focus on controlling the quinine harvest from the bark of the wild-growing cinchona tree—a damaging method that stripped the trees of their protective bark and one that Humboldt had already noted during his expedition.

In North America, Henry David Thoreau had called for the preservation of forests in 1851. “In Wilderness is the preservation of the World,”<sup>50</sup> Thoreau said, and then later concluded in October 1859, a few months after Humboldt’s death, that every town should have a forest of several hundred acres “inalienable forever.”<sup>51</sup> Whereas Madison and Bolivar had seen the protection of trees as an economic necessity, Thoreau insisted that “national preserves”<sup>52</sup> should be set aside for recreation. What Marsh now did with *Man and Nature* was to bring it all together and dedicate an entire book to the subject—presenting the evidence that humankind was destroying earth.

“Humboldt was the great apostle,”<sup>53</sup> Marsh had declared when he began *Man and Nature*. Throughout the book he referred to Humboldt, but expanded the ideas. Where Humboldt’s warnings had been dispersed across his books—little nuggets of insight here and there, but often lost in the broader context—Marsh now plaited it all into one forceful argument. Page after page, Marsh talked about the evils of deforestation. He explained how forests protected the soil and natural springs. Once the forest was gone, the soil lay bare against winds, sun, and rain. The earth would no longer be a sponge but a dust heap. As the soil was washed off, all goodness disappeared and “thus the earth is rendered no longer fit for the habitation of man,”<sup>54</sup> Marsh concluded. It made for gloomy reading. The damage caused by just two or three generations was as disastrous, he said, as the eruption of a volcano or an earthquake. “We are” he warned prophetically, “breaking up the floor and wainscoting and doors and window frames of our dwelling.”<sup>55</sup>

Marsh was telling Americans that they had to act now, before it was too late. “Prompt measures”<sup>56</sup> had to be taken because “the most serious fears are entertained.” Forests needed to be set aside and replanted. Some should be preserved as places of recreation, inspiration, and habitat for flora and fauna—as an “inalienable property”<sup>57</sup> for all citizens. Other areas needed to be replanted and managed for a sustainable use of timber. “We have now felled forest enough,”<sup>58</sup> Marsh wrote.

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Marsh was not just talking about a parched spot in the south of France, an arid region in Egypt, or an overfished lake in Vermont. This was an argument about the whole earth. *Man and Nature*’s power stemmed from its global dimension, because Marsh compared and understood the world as a unified whole. Instead of looking at local occurrences, Marsh lifted environmental concerns to a new and terrifying level. The whole planet was in danger. “Earth is fast becoming an unfit home for its noblest inhabitant,”<sup>59</sup> Marsh wrote.

*Man and Nature* was the first work of natural history to fundamentally influence American politics. It was, as the American writer and environmentalist Wallace Stegner later said, the “rudest kick in the face”<sup>60</sup> to America’s optimism. At a time when the country was racing towards industrialization—fiercely exploiting its natural resources and razing its forests—Marsh wanted to

make his compatriots pause and think. To his great disappointment, the initial sales of *Man and Nature* were low. Then over the next few months sales improved and over 1,000 copies were sold. His publisher began to reprint.

*Man and Nature's* full impact was not felt for several decades, but the book influenced a great number of people who would become key figures in the preservation and conservation movements. John Muir, the "father of the National Parks," would read it, as would Gifford Pinchot, the first Chief of the United States Forestry Service, who would call it "epoch-making."<sup>61</sup> Marsh's observations on deforestation in *Man and Nature* led to the passage of the 1873 Timber Culture Act, which encouraged settlers on the Great Plains to plant trees.<sup>62</sup> It also prepared the ground for the protection of America's forests, leading to the 1891 Forest Reserves Act, which took much of its wording from the pages of Marsh's book and from Humboldt's earlier ideas.

*Man and Nature* also resonated internationally. It was intensely discussed in Australia and inspired French foresters as well as legislators in New Zealand. It encouraged conservationists in South Africa and Japan to fight for the protection of trees. Italian forest laws cited Marsh, and conservationists in India even carried the book "along the slope of the Northern Himalaya, and into Kashmir and Tibet."<sup>63</sup> *Man and Nature* shaped a new generation of activists and would in the first half of the twentieth century be celebrated as "the fountainhead of the conservation movement."<sup>64</sup>

Marsh believed that the lessons were buried in the scars that the human species had left on the landscape for thousands of years. "The future," he said, "is more uncertain than the past."<sup>65</sup> By looking back, Marsh was looking forward.

#### NOTES

<sup>1</sup> "The great, good and": Joseph Albert Wright to U.S. State Department, 7 May 1859. *Alexander von Humboldt in Berlin. Sein Einfluß auf die Entwicklung der Wissenschaften*. Edited by Hamel, Jürgen, Eberhard Knobloch, and Herbert Pieper, Augsburg: Erwin Rauner Verlag, 2003, p. 225.

<sup>2</sup> "Berlin is plunged": *Morning Post*, 9 May 1859.

<sup>3</sup> "Alexander von Humboldt is dead": *The Times*, 9 May 1859; see also *Morning Post*, 9 May 1859, *Daily News*, 9 May 1859, *The Standard*, 9 May 1859.

<sup>4</sup> "from the labors": Agassiz, L. 1859, *Boston Daily Advertiser*, 26 May 1859.

<sup>5</sup> "most remarkable": *Daily Cleveland Herald*, 19 May 1859; see also *Boston Daily Advertiser*, 19 May 1859; *Milwaukee Daily Sentinel*, 19 May 1859; *North American and United States Gazette*, 19 May 1859.

<sup>6</sup> "age of Humboldt": *Boston Daily Advertiser*, 19 May 1859.

<sup>7</sup> "the greatest man since": Friedrich Wilhelm IV quoted in Taylor, B. 1860. *The Life, Travels and Books of Alexander von Humboldt*, New York: Rudd & Carleton, p. xi.

<sup>8</sup> "In this great chain": Humboldt, A. and Bonpland, A. 2009. *Essay on the Geography of Plants*, edited by Stephen T. Jackson, Chicago and London: Chicago University Press, p. 79.

<sup>9</sup> "future generations": Humboldt, A. and Bonpland, A. 1814–1829. *Personal Narrative of Travels to the Equinoctial Regions of the New Continent during the years 1799–1804*. Translated by

Helen Maria Williams. London: Longman, Hurst, Rees, Orme, Brown and John Murray, vol. 4, p. 143.

<sup>10</sup> “we mourn”: *Journal of the American Geographical and Statistical Society*, vol. 1, no. 8, October 1859, p. 226.

<sup>11</sup> “work whose name: *Journal of the American Geographical and Statistical Society*, vol. 1, no. 8, October 1859, p. 226.

<sup>12</sup> “love of nature”: *Journal of the American Geographical and Statistical Society*, vol. 1, no. 8, October 1859, p. 242.

<sup>13</sup> “like an escaped convict”: Marsh to Caroline Marsh, 26 July 1859, Lowenthal, D. 2003. *George Perkins Marsh. Prophet of Conservation*, Seattle and London: University of Washington Press, p. 199.

<sup>14</sup> “with all my might”: Marsh to Spencer Fullerton Baird, 26 August 1859, George Perkins Marsh Collection, Special Collections, University of Vermont.

<sup>15</sup> “done more to extend”: Marsh, G. P. 1846. ‘speech of Mr. Marsh, of Vermont, on the Bill for Establishing The Smithsonian Institution, Delivered in the House of Representative’, 22 April; Germans and German books: Marsh, G. P. 1888. *Life and Letters of George Perkins Marsh*. Edited by Caroline Crane Marsh, New York: Charles Scribner’s and Sons, vol. 1, pp. 90–91, 100, 103; Lowenthal, D. 2003, p. 90.

<sup>16</sup> “Dutch . . . can be learned”: Marsh to Spencer Fullerton Baird, 10 October 1848, Marsh, G. P. 1888. *Life and Letters of George Perkins Marsh*. Edited by Caroline Crane Marsh, New York: Charles Scribner’s and Sons, vol. 1, p. 128.

<sup>17</sup> Marsh used German words: Marsh to Caroline Escourt, 10 June 1848; Marsh to Spencer Fullerton Baird, 15 September 1848; Marsh to Caroline Marsh, 4 October 1858. Marsh, G. P. 1888, vol. 1, pp. 123, 127, 400.

<sup>18</sup> “greatest of the priesthood”: Marsh, G. P., “The Study of Nature”, *Christian Examiner*, 1860, in Marsh, G. P. 2001. *So Great A Vision: The Conservation Writings of George Perkins Marsh*. Edited by Stephen C. Trombulak. Hanover, N.H.: University Press of New England, p. 83.

<sup>19</sup> “forest-born”: Marsh to Charles Eliot Norton, 24 May 1871. Lowenthal, D. 2003, p. 19.

<sup>20</sup> “I spent my early”: Marsh to Asa Gray, 9 May 1849, George Perkins Marsh Collection, Special Collections, University of Vermont.

<sup>21</sup> “a state of fearful”: Marsh to C.S. Davies, 23 March 1849, Lowenthal, D. 2003, p. 106.

<sup>22</sup> tasks “very light”: Marsh to James B. Estcourt, 22 October 1849, Lowenthal, D. 2003, p. 107.

<sup>23</sup> “very earth”: and following quotes: Marsh to Caroline Estcourt, 28 March 1851. Marsh, G. P. 1888, vol. 1, p. 215.

<sup>24</sup> ‘subdued by long’: Marsh to Frederick Wislizenus and Lucy Crane Frederick Wislizenus, 10 February 1851, Marsh, G. P. 1888, vol. 1, p. 206.

<sup>25</sup> “restless activity”: Humboldt, A. 1849. *Aspects of Nature, in Different Lands and Different Climates, with Scientific Elucidations*. Translated by Elizabeth J. L. Sabine London: Longman, Brown, Green and John Murray, vol. 2, p. 11.

<sup>26</sup> “political and moral”: Humboldt, A. 2009, p. 73.

<sup>27</sup> “wherever he stepped”: 10 March 1801, Humboldt, A. 2003. *Alexander von Humboldt. Reise auf dem R2450 Magdalena, durch die Anden und Mexico*. Edited by Margot Faak. Berlin: Akademie Verlag, 2003, vol. 1, p. 44; see also Humboldt, A. 1811. *Political Essay on the Kingdom of New Spain*. Translated by John Black. London and Edinburgh: Longman, Hurst, Rees, Orme, and Brown; and H. Colburn; and W. Blackwood, and Brown and Crombie, Edinburgh, vol. 3, pp. 251–52.

<sup>28</sup> “most part barren”: Marsh to Caroline and James B. Estcourt, 18 June 1851; for travels in 1851, see Marsh to Susan Perkins Marsh, 16 June 1851, Marsh, G. P. 1888, vol. 1, pp. 227–232, 238.

<sup>29</sup> “assiduous husbandry”: and following quote, Marsh to Caroline Estcourt, 28 March 1851. Marsh, G. P. 1888, vol. 1, p. 215; see also Marsh, G. P. “The Study of Nature”, *Christian Examiner*,

1860, in Marsh, G. P. 2001. *So Great A Vision: The Conservation Writings of George Perkins Marsh*. Edited by Stephen C. Trombulak. Hanover, N.H.: University Press of New England, p. 86.

<sup>30</sup> “nature in the shorn”: Marsh, G. P. 1857. *Report on the Artificial Propagation of Fish*. Burlington, Vt.: Free Press Print, p. 11.

<sup>31</sup> “Man is everywhere”: Marsh, G. P. 2003. *Man and Nature; or, Physical Geography as Modified by Human Action*, 1864, facsimile of first edition. Edited by David Lowenthal. Seattle and London: University of Washington Press, p. 36.

<sup>32</sup> “all the forests”: Marsh, G. P. 2003, p. 36, p. 234.

<sup>33</sup> ‘small duties & large’: Marsh to Francis Lieber, 12 April 1860. George Perkins Marsh Collection, Special Collections, University of Vermont.

<sup>34</sup> “have been entirely disappointed”: Marsh to Henry and Maria Buell Hickok, 14 January 1862; Marsh to William H. Seward, 12 May 1864, Lowenthal, D. 2003, p. 252; demanding new post: Caroline Marsh, 17 September 1861, 5 January 1862, 26 December 1862, 17 January 1863, Caroline Marsh Journal, Crane family papers. Manuscripts and Archives Division. The New York Public Library. Astor, Lenox, and Tilden Foundations, pp. 43, 94, 99, 107.

<sup>35</sup> “rather knocked out”: Marsh, C. 1 April 1862, Caroline Marsh Journal, Crane family papers. Manuscripts and Archives Division. The New York Public Library. Astor, Lenox, and Tilden Foundations, p. 151; and “libricide”: Lowenthal, D. 2003, p. 272.

<sup>36</sup> “I do this”: Marsh to Charles Eliot Norton, 17 October 1863, George Perkins Marsh Collection, Special Collections, University of Vermont.

<sup>37</sup> “Man the Disturber”: Charles Scribner to Marsh, 7 July 1863; Marsh to Charles Scribner 10 September 1863, Marsh, G. P. 2003, p. xxviii.

<sup>38</sup> Marsh references to Humboldt: Marsh, G. P. 2003, pp. 13–14, 68, 75, 91, 128, 145, 175ff.

<sup>39</sup> “All nature is linked”: Marsh, G. P. 2003, p. 96.

<sup>40</sup> for “consumption”: Marsh, G. P. 2003, p. 36.

# Humboldt had already seen these dangers and warned that the scheme to irrigate the Llanos in Venezuela by canal from Lake Valencia would be irresponsible. In the short-term it would create fertile fields in the Llanos, but the long-term effect could only be an “arid desert.” It would leave the region around Lake Valencia as barren as the deforested surrounding mountains.

<sup>41</sup> reference for footnote: 4 March 1800, Humboldt, A. 2000, *Alexander von Humboldt. Reise durch Venezuela. Auswahl aus den Amerikanischen Reisetagebüchern*. Edited by Margot Faak. Berlin: Akademie Verlag, 2000, p. 217; Humboldt, A. and A. Bonpland, *Personal Narrative of Travels to the Equinoctial Regions of the New Continent during the Years 1799–1804*. Translated by Helen Maria Williams. London: Longman, Hurst, Rees, Orme, Brown and John Murray, 1814–1829, vol. 4, p. 154.

<sup>42</sup> ‘shattered surface’: Marsh, G. P. 2003, p. 43.

<sup>43</sup> “a desolation almost”: Marsh, G. P. 2003, p. 42.

<sup>44</sup> “Let us be wise”: Marsh, G. P. 2003, p. 198.

<sup>45</sup> We can never know”: Marsh, G. P. 2003, pp. 91–92; see also p. 110.

<sup>46</sup> “*homo sapiens Europae*”: Marsh, G. P. 2003, p. 46.

<sup>47</sup> Madison’s speech: Madison, Address to the Agricultural Society of Albermarle, 12 May 1818, Madison, J. 2009. *The Papers of James Madison: Retirement Series*. Edited by David B., Mattern et al., Charlottesville: University of Virginia Press, vol. 1, p. 260–283; Wulf, A. 2011. *Founding Gardeners. The Revolutionary Generation, Nature and the Shaping of the American Nation*. New York: Knopf, p. 204ff.

<sup>48</sup> Bol245var’s Decree: Bol245var, Decree, 19 December 1825, Bol245var, S. 2009, *Doctrina del Libertador*. Edited by Manuel Pérez Vila. Caracas, Venezuela: Fundación Bibliotheca Ayacucho, p. 258.

<sup>49</sup> “Measures for the Protection”: Bol245var, “Measures for the Protection and Wise Use of the National Forests”, 31 July 1829, Bol245var, S. 2003. *El Libertador. Writings of Simón Bol245var*. Edited by D. Bushnell. Translated by F.H. Fornhoff. Oxford: Oxford University Press, pp.

199–200; Humboldt and quinine harvest: Humboldt, A. 1849, vol. 2, p. 319; Humboldt, A. 2003, vol. 2, p. 126–30.

<sup>50</sup> “In Wildness is the”: Thoreau, “Walking”, 1862, (first delivered as lecture in April 1851). Thoreau, H.D. 1906: *The Writings of Henry David Thoreau: Excursion and Poems*, Boston: Houghton Mifflin, 1906, .vol. 5, p. 224.

<sup>51</sup> “inalienable forever”: 15 October 1859. Thoreau, H. D. 1906. *The Writings of Henry David Thoreau: Journal*. Edited by Bradford Torrey. Boston: Houghton Mifflin, 1906, vol. 12, p. 387.

<sup>52</sup> “national preserves”: Thoreau, H. D. 1906, *The Writings of Henry David Thoreau: The Maine Woods*, Boston: Houghton Mifflin, 1906, vol. 3, p. 173.

<sup>53</sup> “Humboldt was the great”: Marsh, G. P. “The Study of Nature”, *Christian Examiner*, 1860, in Marsh, G. P. 2001. *So Great A Vision: The Conservation Writings of George Perkins Marsh*. Edited by Stephen C. Trombulak. Hanover, N.H.: University Press of New England, p. 82.

<sup>54</sup> “thus the earth is”: Marsh, G. P. 2003, p. 187, for evils of deforestation, see pp. 128, 131, 137, 145, 154, 171, 180, 186–88.

<sup>55</sup> “We are . . . breaking up”: Marsh, G. P. 2003, p. 52; damage like earthquake, p. 226.

<sup>56</sup> “Prompt measures”: Marsh, G. P. 2003, pp. 201–202.

<sup>57</sup> “inalienable property”: Marsh, G. P. 2003, p. 203; replanting forests, pp. 259ff, 269–280, 325.

<sup>58</sup> “We have now felled”: Marsh, G. P. 2003, p. 280.

<sup>59</sup> “Earth is fast”: Marsh, G. P. 2003, p. 43.

<sup>60</sup> rudest kick”: Marsh, G. P. 2003, p. xvi.

<sup>61</sup> “epoch-making”: Lowenthal, D. 2003, p. 304; Gifford Pinchot to Mary Pinchot, 21 March 1886, Miller, C. 2001. *Gifford Pinchot and the Making of Modern Environmentalism*, Washington: Island Press, p. 392; for Muir, see Wolfe, L. M. 1946. *Son of Wilderness. The Life of John Muir*. New York: Alfred A. Knopf, p. 83.

<sup>62</sup> 1873 Timber Culture Act and 1891 Forest Reserves Act: Lowenthal, D. 2003, p. xi.

<sup>63</sup> “along the slope”: Hugh Cleghorn to Marsh, 6 March 1868, Lowenthal, D. 2003, pp. 303–305.

<sup>64</sup> “the fountainhead of”: Mumford, L. 1931. *The Brown Decades. A Study of the Arts in America, 1865–1895*. New York: Harcourt, Brace and Company, 1931, p. 78

<sup>65</sup> “The future . . . is more uncertain”: Marsh, G. P. 1861. *Lectures on the English Language*. New York: Charles Scribner, p. 637.