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Empire forestry and American environmentalism

In the nineteenth century the United States government transferred 1 billion acres of public land into private hands, one-half of the land mass of the continental United States.[1] The Department of the Interior deemed public land either suitable for agriculture or not, with forest areas devoid of special designation. Railroad companies received large grants of land, as well as state-sponsored universities (today known as land grant schools), while speculators and settlers purchased or claimed land for the westward migration. Land could be purchased cheaply, and Congress divested the federal government of land as quickly as the market would absorb it. In spite of this great divestiture, the surprising fact is that by the First World War a large section of forests remained in the public trust, managed by a professional cadre of government foresters.[2] Three central foresters, Franklin B. Hough, Charles Sargent, and Gifford Pinchot, credited empire forestry, particularly as practiced in India, with

[1] Early American land policy envisioned little federal ownership of land. The Land Ordinance of 1785 lowered prices on federal lands and encouraged settlement by farmers willing to work 160 acres. See Ordinance May 20, 1785, 28 J. Continental Congress 375. In order to encourage a stable society of landowner and small gentry, the transfer of land by allocation was favored over cash in the following acts: Preemption Act 1830, ch. 208, 4 Stat. 420; Homestead Act 1862, ch. 75, 12 Stat. 392, 393; Timber Culture Act 1873, ch. 277. 17 Stat. 605; Timber and Stone Act 1878, ch. 151, 20 Stat. 89.

[2] In 1881 Congress established the Division of Forestry under the Department of Agriculture, though its advisory role gave it little authority. But the General Revision Act of 1891 contained what is often called the Forest Reserve Act and authorized the President to create, by proclamation alone, new forest reserves. In 1905 the Bureau of Forestry became the US Forest Service. See the General Revision Act, ch. 561, 26 Stat. 1095. Section 24 reads: "That the President of the United States may, from time to time, set apart and reserve, in any State or Territory having public land bearing forests, in any part of the public lands wholly or in part covered with timber or undergrowth, whether of commercial value or not, as public reservations, and the President shall, by public proclamation, declare the establishment of such reservations and the limits thereof." The General Revision Act is paralleled by expansion in the economic sphere with, in 1887, the Interstate Commerce Act, ch. 104, 24 Stat. 379 and in 1890, the Sherman Act, ch. 647, 26 Stat. 209. To place conservation legislation in a broader political context, see Hays, *Conservation and the Gospel of Efficiency*. Also helpful is Elmo R. Richardson, *The Politics of Conservation: Crusades and Controversies, 1897–1913* (Berkeley, 1962).

the political compromise that led to massive forest reservations by Congress, and the beginning of modern environmental practice in the United States.[3]

The British colonial example ranked as an unparalleled antecedent to the environmental problems faced by Americans, and featured a highly articulate philosophy of management with a powerful ratiocination for public ownership. The presence of a revenue-producing paragon advanced conservation efforts precisely at the moment when the federal government precipitated either massive forest reservations or a final disposal of forest area to private companies.[4] Two-thirds of the federal land mass had been transferred to settlers, institutions and, in some cases, to the state governments. But 500 million acres remained in federal hands in 1890 and, coupled with the perception that the frontier had closed, pressure groups closed in to advocate a final reckoning for the remaining land. The US Census in 1890 proclaimed: "Up to and including 1880 the country had a frontier of settlement, but at present the unsettled area had been so broken into by isolated bodies of settlement that there can hardly be said to be a frontier line. In the discussion of its extent and its westward movement it can not, therefore, any longer have a place in the census reports." Conservation of millions of acres of forest lands for timber, water supply, wildlife, forage for cattle, and recreation all commence in this period.[5]

Franklin B. Hough and empire forestry

Franklin B. Hough served as the nation's first Federal Forest Agent, and the division of forestry owes its origin largely to him. After a stint with the Sanitary Commission during the civil war, he served as Superintendent of the 1870 US census. While compiling timber data for the project, he grew alarmed at the rapid depletion of forest resources and wrote a paper on forestry for the American Association for the Advancement of Science. In 1876 Franklin Watts, Commissioner of Agriculture, appointed him as the nation's first forest agent. In this position he wrote his monumental *Report on Forestry*, published over the tenure of his office, the most comprehensive account of the condition of the US public forests at the time.[6]

[3] Michael Williams provides the best overall background and context to the history of forests and forest conservation in the United States in *Americans and their Forests: a Historical Geography* (Cambridge, 1989).

[4] See Bureau of the Census, US Department of the Interior, Compendium of the Eleventh Census, 1890, part 1 at 48 (1892). Homesteaders successfully placed provisions in both the Republican and Democratic platforms between 1872 and 1888 to privatize the remaining land in small plots. A variety of lobby interests pressured Congress in the 1870s and 1880s to relinquish control of the remaining acreage. See Gary D. Libecap, "Bureaucratic Opposition to the Assignment of Property Rights: Overgrazing on the Western Range," *Journal of Economic History* 41 (1981): 51.

[5] Harold Steen, *The US Forest Service: A History* (Seattle, 1976), vi.

[6] "Franklin B. Hough," *American Forests and Forestry Life* (July 1922). "Remembering Franklin B. Hough," *American Forests* 86 (1977): 34–37, 52–53.

With an active interest in geography, physics, meteorology, and botany, Hough served as America's first Chief of Forestry. He put his prodigious talent for statistics to work for the 1870 census of the United States, where he noticed a decline in forest land and brought the decline to the attention of the United States Congress. From a reading of Marsh's *Man and Nature*, he accepted the view that deforestation led to dramatic climate changes. In 1873 he gave an address to the American Association for the Advancement of Science (AAAS), entitled "On the Duty of Governments in the Preservation of Forests." Here he argued for a system of training and forestry management similar to the forestry policies pioneered in the British colonies, especially British India. On the basis of this report, the AAAS memorialized Congress to appoint a chief forester to report on the condition of the nation's forests. The memorial, written primarily by Hough, is entitled *Cultivation of Timber and the Preservation of Forests* and heavily engaged the example of British India, as did his earlier report to the AAAS. The memorial produced an invitation for Hough to meet with President Ulysses S. Grant, at which time he, along with George S. Emerson, a Harvard botanist, discussed "for some time [issues] about forestry."[7] After gaining the approval of the Secretary of the Interior, Columbus Delano, President Grant forwarded the memorial to Congress, who in 1876 approved the bill and voted $2,000 to pay the salary of the United States' first forest agent, under the Department of Agriculture. Agriculture Secretary Franklin Watts chose Hough for the position, which he held until 1883.

In his memorial to Congress Hough discussed an impending timber shortage in the US and the need for an American Evelyn. He also pointed out the effects of deforestation on climate and the need to plant trees to fight flooding. But forestry practice in India drew his special attention. He quoted extensively from Captain Ian Campbell-Walker, Deputy Conservator of Forests in Madras, who calculated the needs of a 200 million population for building material and firewood. Hough observed that the government of India had to "consider such questions as climate, rain-fall affecting the irrigation and cultivation of thousands of acres, and supply of wood-fuel to the railways."[8] The responsibility of all this "devolves on the government" where the necessity of preserving forests involved, in Hough's words, an "equilibrium of temperature and humidity." Forestry in British India implicated the "social welfare" of the populace as well as the welfare of industry and railroads, arts, and "daily utility."[9]

Hough also sketched the history of forestry in British India. The British had "laid the foundation of an improved general system of forest administration" by conserving state forests, and developing state forests as state wealth. That "all superior

[7] Franklin B. Hough, *Diaries*, Nov. 20, 1873, Feb. 2–12, 1874, Franklin B. Hough Papers, New York State Library, Albany.

[8] Campbell-Walker, as quoted in Franklin B. Hough, *On the Duty of Governments in the Preservation of Forests* (Salem, 1873), 48. Taken from Campbell-Walker's *Reports on Forest Management in the Madras Presidency* (Madras, 1873).

[9] ibid.

government forests are reserved and made inalienable, and their boundaries marked out to distinguish them from waste lands made available for the public," were principles worthy of American emulation. The Indian Forest Act of 1865 defined the "nature of forest rules and penalties" and the "executive arrangements" of the local administrations, while surveys also "obtain accurate data concerning the geographical and botanical characterizations of the reserved tracts."[10]

Perhaps most impressive of all to Hough, the Indian government had created a forestry educational system where none previously existed. By sending officers to the European forestry schools, a professional cadre of officers was created. Hough quoted Dietrich Brandis as saying that "with great perseverance and industry these officers went through a regular course of studies in the mixed beech and oak forest of Villiers Cotterets, in France, at Nancy, and in the spruce and silver fir forests of the western Cotterets." There they "derived great benefit from what they learned, and their example has been followed by a number of forest officers from different provinces of India."[11] For more information on the subject Hough recommended an article on forest conservancy in India by Hugh Cleghorn.[12]

Hough served as Chief Forest Agent of the United States until 1883. He had predicted ten years earlier that "those who take an active interest in it [state forestry] now . . . will deserve and hereafter secure an honorable place in the annals of forestry." His goal to initiate a forestry program in the United States such as the British maintained in India did not see fulfillment in his lifetime but was taken up, also on the empire forestry paradigm, by Charles Sargent and Gifford Pinchot, among others.[13]

Charles Sargent and empire forestry

His successor, Charles Sprague Sargent, was born in Boston and attended Harvard University. He became Director of the Harvard Botanical Garden in 1872. He added the duties of Professor of Horticulture and Arboriculture and became Director of the Arnold Arboretum in 1873. His writing affected public perception of forestry and legislation on many levels. As a special exploratory agent for the 1880 census, he published the *Forests of North America*. This massive scientific survey of American forests alerted the public to the devastation caused by unregulated timber extraction and forest fires. Now largely forgotten, he also published a popular magazine entitled *Garden and Forest* in the critical years between 1888 and 1898. In this journal he edited weekly reports, new studies of trees and garden flora, reviews of new books related to the environment, and editorials concerning the progress of forest legislation. Empire forestry received particular prominence. *Garden and Forest* became a clearing house of ideas for legislative action. Throughout

[10] ibid. [11] Dietrich Brandis, as quoted ibid., 47.
[12] ibid., 46. For the article Hough recommended, see Hugh Cleghorn, *British Association* (1868): 90.
[13] As quoted in Steen, *History*, 20.

1888–1898 Sargent discussed, proposed, and promoted legislation that inaugurated the nation's first forest reserves.[14]

Against this background, Sargent's *Garden and Forest* served as a meeting of minds in the conservation movement in the late 1880s and 1890s. Each issue reviewed books of interest and carried columns and editorials on forestry. Letters from readers also reported atrocities across the American landscape, while Sargent alerted conservationists and congressmen to late-breaking preservation policies in other nations. Decades later Bernhard Fernow reminded readers that the journal *Garden and Forest* "should not be forgotten" for the role it played between 1888 and 1898 to "enlighten the public on forestry matters."[15]

International in scope, the discussion of forest literature in *Garden and Forest* offered panoramic visions of deserts reforested, wastelands reclaimed, and rain cycles restored. Sargent urged empire forestry as a paradigm on Congress, as it considered legislation to set aside forest reserves: "India has given to the world the most conscious example of a national forest policy adopted over a vast area . . . We can pick out climatic parallels between portions of India and of the United States more readily than we can between the United States and Europe."[16]

Why? Because India boasted evergreen forests like the northern territories of the United States, a great interior plain like the Midwest, and tropical areas like the Gulf Coast states. Moreover, the rail network in India crisscrossed the large subcontinent coast to coast. Even though forests were ravaged by speculators and contractors, the public in both India and the United States expected use of the forest by right. But Dietrich Brandis and Berthold Ribbentrop had "walked India" through the "education stage" and "recognized at once that conservative management could only be initiated by the government, the greatest landlord of the Empire."[17]

This aspect of the Indian example was critical to Sargent. Though he advocated government intervention, he also tried to promote empire forestry-style working plans adapted to the American market.[18] Because the public demanded forest access, Brandis and Ribbentrop made "settlement" with the public a priority, sorting out the thorny issues of what rights would be given out to whom, while keeping the ecological and economic value of the forests intact for the state. To gain legislative sanction and enforcement, they rejected the romantic notion of "a more complete ownership." Sargent expressed breathless admiration for the achievement of Brandis and Ribbentrop. By 1896, 130,000 square miles of Indian forests had "been formed into permanent forest reserves, in which the rights of the state and the adverse rights of the communities and private persons have been finally determined." The reserves dwarfed the forests of western Europe, with some working

[14] Biographical information on Sargent can be found in the *Journal of Arnold Arboretum* (April 1927) and the *National Academy of Science: Biographical Memoirs* 12 (Newark, 1929).

[15] Fernow, *Brief History of Forestry*, 371.

[16] Charles Sargent, *Garden and Forest* 9 (13 May 1896): 191–192.

[17] ibid.

[18] "An American Working Plan," *Indian Forester* 20 (1894): 238, 239.

plans for areas larger than Switzerland itself. Great Britain administered in her colonies a forestry area ten times her own geographic size, and it appeared to many Americans, Sargent among them, that empire forestry proved worthy of emulation.

Sargent recognized early on that the United States needed instructions in forest management and in models of legislation.[19] Intermixed with lamentations and alarm over the white pine forests in the south, the Adirondack forests in New York, the Douglas fir forests of the northwest, the pine forests of New Jersey, and the redwood forests of California, Sargent outlined in 1889 some basic points for American replication of empire forestry. "To provide for the conservation of the forest" Congress should withdraw all the forest lands belonging to the nation from public sale. The United States Army should be deployed for the "care and guardianship of the forests belonging to the nation . . . [Because] the forests are pillaged by settlers, and by the employees of railroad and mining companies, without scruple or limit," hence private exploitation necessitated constant and effective policing. Finally, the President should appoint a commission to examine the condition of the forests belonging to the nation's care and create a "comprehensive plan for the preservation and management of the public forests . . . a system for the training by the government of a sufficient number of foresters for the forest service" including a national school of forestry modeled along the lines of "the national military academy at West Point."[20]

There is reason to believe Sargent had India in mind. In 1887 he reviewed a government report by Ribbentrop, Inspector General of the Indian Forest Department.[21] After recounting the accomplishment of the forest department under Brandis and then Ribbentrop, Sargent suggests that

> The history of forest administration in India might be studied with advantage by the Secretary of the Interior and members of Congress of the United States. [Unlike India] the forests which grow upon our national domain produce no income. The land upon which they stand is sold sometimes at a mere nominal price, and while the government is waiting for customers the forests themselves are robbed of their best timber, burned, pastured, devastated, and destroyed.[22]

In addition, the Indian example showed Sargent how to build a management system from scratch, drawing on medical and military personnel to "bring such knowledge to bear on the question." The Ribbentrop report gave Sargent hope that American schools of forestry, yet to be founded, could attain world preeminence, like Cooper's Hill in England, or even the forest school at Dehra Dun founded in

[19] Charles Sargent, "The Future of our Forests," *Garden and Forest* 1 (1888): 25.
[20] Charles Sargent, "The Nation's Forests," *Garden and Forest* 2 (1889): 49.
[21] B. Ribbentrop, *Review of Forest Administration in British India for the Year 1885–86* (Dehra Dun, 1887). Sargent's review included a discussion of Lt. Col. Ian Campbell-Walker's *Report of the Forest Department, Madras Presidency, for the Year 1885–86* (Dehra Dun, 1887).
[22] Charles Sargent, "Periodical Literature," *Garden and Forest* 1 (1888): 48.

1878. Though far from Europe, the Dehra Dun school, he observed, "ranks with the best institutions for education and subordinate staff in any country in the world."

But revenue impressed Sargent the most. He noted that in India revenue

> has more than kept pace with the growth of the expenditure. The net average surplus for five successive five-year periods beginning with 1867–68 and ending with 1891–92 is as follows: (1) 1,339,000 rupees: (2) 2,129,000 rupees, (3) 2,689,00 rupees, (4) 3,848,000 rupees (5) 6,186,000 rupees with the cash surplus for the year 1881–82 being about seven and a half million rupees.[23]

Cash surplus not only augmented the government budget in India, it superimposed huge industrial and economic activity that public use of forest product engendered. In addition, the forest department even produced surplus revenue while defraying the expenses of the forestry schools, countless fire lines, forest houses for rangers, enforcement patrols, replanting, roads, canals, and railways to make the timber accessible. Development, conservation, and profit were concomitant with empire forestry. Sargent enthused that "we are certainly justified in taking heart and hope at what has been accomplished in India during thirty years," for here, as in India, the government holds large forest-bearing areas, and therefore "there is no reason to doubt the same thing can be done in America."[24]

The money saved by forest management in the US would be immense, Sargent believed, if Congress installed fire protection. For this he also turned to India and, nearer to home, Canada. In "Forest Fires – Another Lesson from India," Sargent adds that "The [Indian] Forest Department has thus proved clearly that it is possible to protect large forest areas from fire even in the very driest climate by a well-considered system of patrol."[25] Citing the *Report of the Commissioner of Crown Lands for Ontario*, he noted that Canada had already organized a system of fire protection that saved large stands of forest.[26] The cost of such fire protection came to three and a half cents per thousand feet of wood, which meant that if successfully emulated by the United States, fire protection for the states of Michigan, Wisconsin, and Minnesota would cost no more than $35,000 a year! Given that millions of dollars worth of timber burned to the ground every year, this fire protection would result in a massive saving for both industry and the government.

Sargent recounted how the president of the National Academy of Science had given three questions to the Secretary of the Interior that he felt America needed to answer regarding forestry policy. First, what proportion of the forests in the public domain ought to be privatized? Second, how should the government forests be administered? And third, what provision should be made for "a continuous, intelligent and honest management of the forests that have already been made"? Sargent himself proposed that "most of these questions have received an

[23] ibid. [24] ibid. [25] Sargent, *Garden and Forest* 9 (27 May 1896): 211.

[26] ibid. In this same article Sargent refers to the *Report of the Commissioner of Crown Lands for Ontario, 1895* (Ontario, 1896).

actual and practical answer in the management of the Indian forests." Public opinion can be educated to adopt and enforce legislation that will "look toward the selection of suitable tracts for conservative forest treatment" with India in mind.[27]

His ardent editorials had the desired effect, for to Sargent's delight the National Academy of Science asked Dietrich Brandis, former Inspector General of Forests in India, to lay out a plan of action for the protection of American forests that Congress ought to consider. Brandis responded by suggesting: (1) the collection of data, as had been done in India under the Survey; (2) the instigation of efficient timber extraction; (3) the initiation of discriminatory logging; (4) the planting of trees for valuable wood; (5) the replanting of trees for sustained yield; and (6) the reservation of as many large areas as possible into government forests. Sargent recommended these points to his readers and elsewhere concluded that "it ought not to be impracticable to frame a system of forest management for this country which would contain all the essential features of the plan which has proved such a conspicuous success in India."[28]

It is not the romanticism of the Lake Poets that Sargent and other Americans picked up from empire forestry, but rather a hard-headed "demonstrated use" argument for forest management that produced clear results for a variety of constituents, as well as a positive revenue for the government. In a quip that reverberated through the American press, Gladstone announced that the greatest obstacle to a sound forest policy in Great Britain itself, "was the superstition that invested trees with a certain sacredness so that felling was looked upon as a sacrilege."[29] The prime minister's observation, noted approvingly by Sargent, summed up the practical, utilitarian approach to nature that proved so successful for the British colonies. As Sargent pointed out, environmental progress is retarded when

> Worthy people who, in their newborn zeal, are led to speak of all lumbermen as enemies of the human race. Of course there can be no system of forestry without tree-cutting, and the protest, to have any value, should be made against wasteful cutting or the stripping of mountains where the trees serve a higher purpose as a protection to the water courses than they can when made into lumber. It often happens too, that to secure the highest landscape beauty, trees . . . need to be removed.[30]

Gifford Pinchot and "what saved the national forests"

Gifford Pinchot, the third of the American forestry triumvirate, pioneered early American forestry and conservation. Born in 1865, he graduated from Yale and studied European methods of forestry at the National Forestry School in Nancy, France, and later in Austria, Switzerland, and Germany. After a stint as a private forester on the Vanderbilt estate, he worked with the National Forest Commission

[27] Sargent, *Garden and Forest* 9 (5 Aug. 1896): 191, 192. [28] ibid., 312.
[29] Charles Sargent, "Arbor Day," *Garden and Forest* 1 (1888): 73. [30] ibid.

of the National Academy of Sciences to craft a strategy to reserve large tracts of government land under the management of state forestry. In 1897 he served as Confidential Forest Agent for the Secretary of the Interior and in 1898 assumed the post of Chief of the Forestry Division, then, in 1905, he became chief of an independent forest service under the umbrella of the Department of Agriculture. He served with distinction under four presidents, including William McKinley, Theodore Roosevelt, and William Howard Taft, until his retirement in 1910. His other accomplishments include serving as member of the Public Lands Commission, the Inland Waterways Commission, and in 1908, Chairman of the National Conservation Commission. He founded and then became a professor of the Yale School of Forestry. His articles in popular magazines and the sheer volume of press coverage that his activities garnered gave him ample opportunity to explain to a reluctant public the need for governmental control of public forest lands.[31]

When Gifford Pinchot decided to be a forester, he went to Europe to study. What tends to be forgotten is that he studied primarily under French- and German-*trained* foresters, who in turn had served much of their professional careers in British India. Though unsure of the quiddity of his new vocation, he heard "that Forestry was practiced in British India, and it occurred to me that I might get some publications on the subject if I went to India House in London and asked for them."[32] This plan suggested itself to Pinchot because no journals of forestry had been printed in English other than the *Indian Forester*. Later, when American journals of forestry appeared, they imitated the *Indian Forester*, which remained the premier forestry journal until well into the twentieth century.

Accordingly Pinchot went to Wilhelm Schlich, at that time head of the forest school at Cooper's Hill in England, where young men were trained for the Indian forest service. The former Indian administrator promptly advised young Pinchot "to strike for the creation of National Forests" in the United States.[33] With a copy of volume one of Schlich's *Manual of Forestry* under his arm, he traveled to Nancy, where "for many years the foresters for the British Indian service had been trained." Afterwards he went to Germany to study with Brandis, to whom, he later claimed, "[I] owe[d] more than I can ever tell . . . After I came home I sent him news and many questions about what was doing and needed to be done in American Forestry . . . we never lost touch."[34]

[31] The outline of Pinchot's career can be found in his eminently readable autobiography, *Breaking New Ground* (Washington, DC, 1947). See also Harold T. Pinkett, *Gifford Pinchot: Private and Public Forester* (Urbana, 1970).

[32] Pinchot, *Breaking New Ground*, 6.

[33] Before he gained employment as a government forester, Pinchot implemented a "little working plan" on the Biltmore Estate in North Carolina, which he hoped would serve as a model of market-based forestry. See "American Working Plan," 239, 240.

[34] Pinchot, *Breaking New Ground*, 17. Gifford Pinchot, "Forestry Abroad and at Home," *National Geographic Magazine* (March 16, 1905): 375–388.

Brandis' hopes for Gifford Pinchot and for American forestry were well placed. In 1898 Pinchot assumed duty as head of the Division of Forestry and oversaw the transfer in 1905 of 63 million acres of forest land from the unmanaged public domain to the Department of Agriculture. His staff of 11 employees in 1898 grew to a professional corps of 821 in 1905. Under his administration the formation of the modern forest service took place.[35]

Few today realize how fascinating the public found forestry in the late nineteenth century. Arcane reports from Indian foresters received widespread treatment in American magazines.[36] If forestry had been a discussion solely about timber supply and the timber industry, it is doubtful that interest in the subject would have been so far-reaching. Rather, forestry was the flagship of early environmentalism and a fledgling ecology. Pinchot shared Ribbentrop's view of the forest as a "household of nature" and described it as a complex organism with "a population of animals and plants peculiar to itself." Additionally he saw the forest as "beautiful as it is useful."[37] Forest officials of the Indian Forest Department were even interviewed to understand the innovations. A prime source of information proved to be the *National Geographic*, which ran regular articles on forestry from around the world.

In an article in the *National Geographic* entitled "Forestry Abroad and at Home," Pinchot, then Chief of the Bureau of Forestry, stated that America had profited by the forestry so advanced in British colonies at large. "In Australia and New Zealand forestry has already made important advances. In Canada the English have made real progress in forestry." While Canada had retained full possession of the forests, it nonetheless sold off the surplus timber, guaranteeing a solid return from the land – land that it guarded with an efficient fire protection service. Hough had also admired British forestry in Canada and corresponded with Dietrich Brandis on the subject. He proposed a timber lease system comparable to that used in Canada, to be administered by the General Land Office.[38] From the Cape of Good Hope,

[35] William G. Robbins, *American Forestry: a History of National, State, and Private Cooperation* (Lincoln, NB and London, 1985), 12.

[36] Stories and interviews that appeared in popular magazines were often reviewed in forestry publications. For example see Sargent, "Periodical Literature," for a review of an interview Mr. George Cadell, former Indian forester, gave to *McMillan's Magazine* (January 1888).

[37] See Gifford Pinchot, "A Primer of Forestry, Part 1, The Forest," *Direction of Forestry*, Bulletin 24 (United States Department of Agriculture, 1903). To illustrate how reviewers and the general public interpreted his work as environmentalism, see W. R. Fisher, "An American Primer of Forestry," *Journal of the Society of Arts* 54 (1905–1906): 730.

[38] See Franklin Hough, *Report Upon Forestry*, vol. III (Washington, DC, 1882), 1, 6, 8, 14. Bernhard Fernow, Chief of the Division of Forestry between 1886 and 1898, helped draft the forest reserve legislation of 1891 and proposed "the Canadian plan" to protect forest fires. This is widely regarded by scholars to be the prototype of the fire protection programs administered under the Weeks Law of 1911 and the Clarke–McNary Act of 1924. Other works circulated that pointed Americans to empire forestry in Canada: the Department of Agriculture, Statistical Office, published a *Report on the Forest Wealth of Canada* (Ottawa, 1895), which served as an appendix to the *Report of the Minister of Agriculture for 1894* (Ottawa, 1895), circulated at forestry associations; J. C. Chapais' *Canadian Forests:*

"where they have an excellent forest service," to British India, where "they have met and answered many questions which still confront the American Forester," the British Empire had in thirty years created "a forest service of great merit and high achievement."[39] Pinchot ticked off British colonial forestry credits one by one and concluded that in comparison, "The US has scarcely yet begun."[40]

The concrete examples accomplished in the British Empire impressed Pinchot, Hough, and Sargent. All three Both men discerned that the empire forestry matrix produced a net revenue from the start. In a paper to the American Economic Association entitled "Government Forestry Abroad," Pinchot pointed out that the forests in India satisfied all the needs of the population without deforestation, and protected the water supply in the mountains as well. Additionally the Indian prototype served to show the United States how to proceed with government forestry in a country where "interference by the government with private rights would be so vigorously resented and where private enterprise must consequently play so conscious a part."[41]

The same opposition had existed in India, but the practical settlements under Brandis and Ribbentrop enabled forestry to progress. European land, monopolized as in Great Britain, or tenured under autocracies, as in the Russian Empire, could not present the same analogy. Neither could France, though advanced in forestry methods, because the government did not possess comparably vast areas of public land. Thus India had special significance for the United States as "the closest analogy to our own conditions in the magnitude of the area to be treated, [the] difficulties presented by the character of the country . . . the prevalence of fire, and the nature of the opposition which it encountered, [all these examples are] to be found in the forest administration of India."[42]

Pinchot believed that the precedents of empire forestry had saved the national forests of the United States. He stated in his autobiography that

> Admirable as German Forestry certainly was, there was about it too much artificial finish, too much striving for detailed perfection . . . Dr. Brandis never let his pupils forget . . . that in the long run Forestry cannot succeed unless the people who live in and near the forests are for it and not against it. That was the keynote of his work in India. And when the pinch came, the application of that same truth was what saved the National Forests in America.[43]

Conclusion

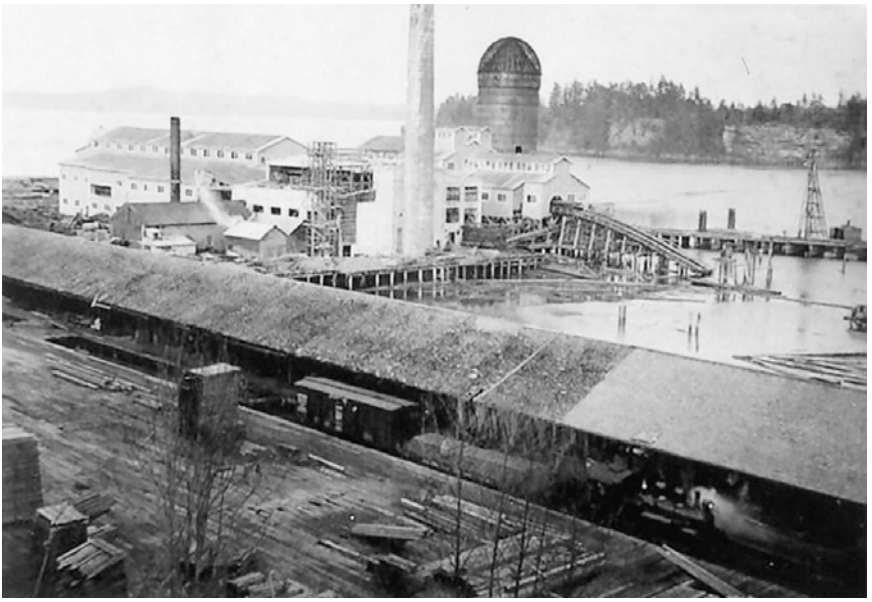
Empire forestry posed for the United States both the environmental problems and solutions in stark relief to foresters, congressmen, and the public. Given the devotion to the free market in the United States, it is surprising that it followed

Illustrated Guide (Montreal, 1885) sold tolerably well in the United States. A. T. Drummond's *Forest Preservation in Canada* (Montreal, 1885), printed as an addendum to the *Report of the Annual Meeting at Boston of the America Forestry Congress* (1894) explored the discrepancy between empire forestry in Canada and the dearth of sound forestry policies in the United States.

[39] Pinchot, "Forestry Abroad and at Home," 375–388. [40] ibid., 376.

[41] Gifford Pinchot, "Government Forestry Abroad," *American Economic Association* 6 (1891): 50.

[42] ibid., 50. [43] Pinchot, *Breaking New Ground*, 17, 18.



22 Lumber mill in British Columbia.

after colonial countries in the reservation of forest areas. In Australia, for example, Lieutenant-General Ralph Darling established land-purchase rules that steered clear of broad farm ownership to favor grants of one square mile or more for "respectable" people willing to invest 500 pounds or more. Larger grants of up to 9,900 acres were sold at competitive bids. Conquest rather than purchase proved the rule in Cape Colony, assigned to Britain by 1815. Though European settlers could purchase land by sweat equity, the military nature of land acquisition beyond the Orange did not raise expectations of unlimited free or cheap land from the government. In Canada, due to the misguided effort to eliminate speculators, most new forest and agricultural lands were highly concentrated in few hands. H. G. Ward complained in the House of Commons in 1839 that land transfers were made through "personal edicts of the Secretary of State instead of under statute." By contrast American settlers expected land that could be purchased at Congress price, that is, $1.25 per acre, or if more, after improvements by speculators, which usually included a road, store, and often a bank and a church. Environmentalism in nineteenth-century America cut against the egalitarian and progressive grain, while the oligarchies established under direct and indirect imperial rule proved most compatible with the "settlement" of rights, precisely because fewer rights were distributed to fewer individuals.[44]

[44] For Australian land policy in the 1820s, see C. N. H. Clark, *History of Australia*, vol. II (Cambridge, 1962–1968), 69; For South African land policies in this period, see G. M. Theal, *History of South Africa, 1798–1828* (London, 1903), 202ff.; for H. G. Ward's speech to Parliament see *Hansard*,

23 Douglas fir and western hemlock forest in British Columbia.

Hard-headed environmentalists like Hough, Sargent, and Pinchot found a ready-made model to persuade the public and Congress that the reservation of vast areas of the public domain would simultaneously serve environmental, industrial, settlement, and budgetary purposes. The empire forestry matrix of government reservations, fire protection, professional management, and revenue-enhancing forests provided the solution to the tension between Romantic preservationists' notions

3rd series, 33, 852. To compare American intolerance of governmental interference with colonial tolerance, see Forester, "Conservancy of Forests," *Cape Monthly Magazine* 16 (1897): 166.

and *laissez-faire* policies. Fernow, chief of the Division of Forestry between 1886 and 1898, alludes to this when discussing the influence of Canada in the United States. He argued that Canada, "having escaped the period of sentimentalism which in the United States retarded the movement so long, could at once accentuate the economic point of view and bring the lumbermen into sympathy with their effort."[45]

This differentiates the men who implemented the forest reserves from men like Henry David Thoreau, John Audubon, and John Muir, whom environmental historians today celebrate as the founders of modern environmental thought. The careers of Franklin Hough, Charles Sargent, and Gifford Pinchot illustrate how the legislative process that resulted in the reservation of millions of acres required a dedicated effort of selling the proposal to a suspicious public little given to poetic raptures, especially in the western states.[46]

India exemplified how forests could be utilized by the public and not "locked up" like Yellowstone Park. Settlers and lumber companies could extract forest product while the state retained ownership. Thus western senators and congressmen acquiesced to the idea that the reservation of large forest areas would be in the best interest of the public. Empire Forestry denoted a less pristine solution that proved to be the practical compromise that both the early environmentalists and the public found acceptable. Empire Forestry, as the life and work of Hough, Sargent and Pinchot transcribe, laid the cornerstone of modern American environmentalism.

[45] Fernow, *History of Forestry*, 371.

[46] Pinchot's successor, Henry Graves, also "passed through the classic curriculum of British colonial forestry." Brandis considered Graves as well as Pinchot his protégé. See Pyne, *Burning Bush*, 262, 263.