

Empire of Energy:
Environment, Geopolitics, and American Technology before the Age of Oil

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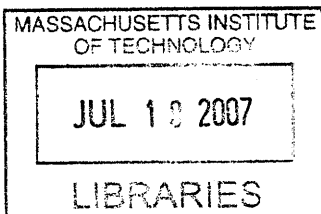
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Abstract of the Dissertation

**Empire of Energy:
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by

Peter Adam Shulman,
Doctor of Philosophy

in

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This dissertation asks how the United States physically built its global empire. Between 1840 and 1930, empire building involved the establishment of a network of naval bases and coaling stations. By focusing on energy, I reconceptualize the American overseas empire as neither inevitable nor geographically predetermined. I trace how coal shaped U.S. expansion, how this expansion influenced ideas about national security, and how these security concerns affected the global environment. Coal reveals continuities in American foreign relations that link overseas expansion to responses to the introduction of steam power into ocean travel. As the Navy sought coal, it progressively assembled the familiar contours of America's global reach.

The dissertation addresses both global and local history. It shows how policy makers before the Civil War demonstrated tremendous creativity in initiating geological investigations, diplomatic arrangements, and commercial agreements in foreign territories. Between the Civil War and 1898, these approaches gradually gave way to a more singular effort by the Navy to control strategic ports around the world. Soon, coal was so central to the Navy that coaling strategy and technology formed a foundation for the education of elite officers at the Naval War College, where its study shaped the planning for future wars. Attention to Americans in Borneo, Japan, the Isthmus of

Chiriqui, Haiti, and Alaska shows how coal reoriented the American geographic perspectives.

Three themes structure this work. First, the peculiar geography of the U.S. overseas empire of coaling stations was never predetermined, for the perceived needs of expansion changed with evolving diplomatic and technological circumstances. Paying close attention to scientists and engineers, I show how the fundamental obstacles presented by coal were addressed not only by diplomacy but also new inventions and geological expeditions. Second, that the American pursuit of steamship lines, coal, and territory abroad took place amid the global context of other maritime nations. Finally, the ultimate shape of American global expansion often depended on the particular histories of specific places and local events. I thus show how coal linked mine labor, professional geologists, naval officers, and global expansion to the construction of a recognizably modern United States.

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Introduction: Discovering American Power

Matthew Perry was by nature a cautious man. When selected in 1852 to command an American expedition to Japan, he spent months preparing his ships and crew. He interviewed whaling captains in New Bedford who knew the Pacific's waters better than any sailor in America or Europe. He also composed meticulous plans for coaling his steamers. Steam was, in fact, essential to his mission. His ships, the *Mississippi*, the *Susquehanna*, and the *Powhatan*, were selected to impress upon the Japanese the technological might of the United States. For Perry, the steamers offered him more control to maneuver in different seasons and weather. Steam was also a motive behind the mission itself, for steam power required coal. In the vast Pacific Ocean, Americans lacked no resource more than coal. As one of his most pressing objectives in Japan, Perry determined to secure supplies of coal for future American steamship lines from California to China.¹

Perry did not restrict his hunt for coal to Japan alone. He brought what stocks he could with him, arranged for additional supplies to be deposited in advance of his arrival in certain ports, and hoarded any quantity he could obtain wherever he dropped anchor. He sent geological expeditions to search for coal in Formosa and the Ryukyu Islands. He even purchased a strip of land from an American settler in the Bonin Islands where he anticipated establishing an American coaling station. The desire for coal in the far east convinced Perry, however, that perhaps more drastic measures were necessary, that perhaps a more political and geographic solution to the coal problem was required.

¹ On the Perry mission in general, see Peter Booth Wiley and Ichiro Korogi, *Yankees in the Land of the Gods: Commodore Perry and the Opening of Japan* (New York: Viking, 1990).

Writing in 1844 to James Dobbin, then Secretary of the Navy, Perry suggested formally annexing Great Lew Chew Island, the largest of the Ryukyu group and home of Okinawa for coal and a coaling station. Perry's suggestion horrified his superiors in Washington. Dobbin called Perry's suggestion to take the island "embarrassing." President Millard Fillmore, briefed on the proposal, acknowledged Perry's "patriotic motive" but was "disinclined, without the authority of Congress, to take and retain possession of an island in that distant country, particularly unless more urgent and potent reasons demanded it than now exist." Why? Dobbin did not refer to theories of representative government or racial superiority, but rather the stark language of great power politics and naval strategy. Dobbin explained that "it would also be rather mortifying to surrender the island, if once seized, and rather inconvenient and expensive to maintain a force there to retain it."²

How different the world looked in 1899. When Royal B. Bradford, Chief of the Navy's Bureau of Equipment, wrote that year that "it is necessary to have stations where provisions, ammunition, and coal may be obtained," more Americans were inclined to listen. That year, the United States assumed control of the Samoan harbor of Pago Pago. Only the year before, the United States had annexed Hawaii. Guam and the Philippines came under formal U.S. sovereignty in 1899. The Navy intended on building or enlarging naval stations on each of these islands. In the Caribbean, the Navy appropriated the Cuban harbor at Guantánamo, and began planning for a naval station in eastern Puerto Rico as well.

² J.C. Dobbin to Matthew Perry 5/30/1854, *A Report of the Secretary of the Navy, in Compliance with a Resolution of the Senate of December 6, 1854, Calling for Correspondence, &C., Relative to the Naval Expedition to Japan, Senate Ex. Doc. 34, 33rd Cong., 2nd sess. (1855).*

Only a few more years and fueling the American empire was a well institutionalized activity. “The efficiency of a battleship depends upon its coal almost as much as upon its guns,” explained Franklin Roosevelt to Congress in 1915. Roosevelt, then Assistant Secretary of the Navy, was describing his department’s obsession with purchasing the finest coal available. “Had it been necessary,” he observed, “as fortunately it has not been, to submit to what we consider monopolistic and extortionate prices, or to take coal of an inferior character, we would unhesitatingly have submitted to such extortion rather than impair the efficiency of our ships.”³ Alfred Thayer Mahan, the dean of American naval historians and strategists, went even further than Roosevelt in characterizing the nation’s dependence on coal. “Fuel stands first in importance of the resources necessary to a fleet,” he noted in 1911. “Without ammunition, a ship may run away, hoping to fight another day, but without fuel she can neither run, nor reach her station, nor remain on it, if remote, nor fight.”⁴ Without fuel, the American empire would not run.

* * *

How does a nation build an empire? What are its sinews and where are its synapses? How is foreign policy and naval strategy tied to the geography of natural resources, and in particular to the resources of energy? How do strategic concerns affect the environment? In the late nineteenth and early twentieth centuries, as the United States expanded its commercial and military reach into the Caribbean and Pacific, a central rationale for territorial acquisition was the establishment of coaling stations to help

³ Committee on Naval Affairs. House, Statement of Hon. Franklin D. Roosevelt, Assistant Secretary of the Navy, 63rd. Cong., 3rd. sess., 1915, 957.

⁴ A. T. Mahan to G. von L. Meyer, April 21, 1911, Box 41, File “414-2 1900-1915,” General Board Subject File, 1900-1947, RG 80, National Archives I.

enlarge foreign markets and to provide national security. But why did the association of coal with empire and control of distant territories seem to matter more in 1899 or 1915 than 1854?

This dissertation is about the United States' first energy policy and how it shaped the global expansion of the nation. According to the cultural historian of technology, David Nye, "energy systems" structure the social world, from work and leisure to the organization of cities and the human interaction with nature.⁵ Energy systems also fundamentally shape a nation's foreign affairs and patterns of geographic expansion in ways that demand careful historical analysis. As Nye emphasizes, energy systems—and the technologies that implement them—do not themselves *determine* the choices people make about how much energy to use, in what forms to consume it, or what policies a state should adopt. These choices are made by individuals, and after the emergence of industrial power sources, increasingly by governments and corporations. As those choices are made, energy systems shape "assumptions about what is normal and possible."⁶ What energy made normal and possible in the mid-19th century looked very different in the early 20th, and in part, these changes stimulated and facilitated the growth of the American global empire.

Empire is a tricky word for the historian, especially in the context of the United States. Empire is sometimes celebrated and often criticized. Its connotations range from continental expansion to economic exploitation to cultural hegemony. It is always political. It is also more than markets and ideas. It requires a material underpinning, and that underpinning changed with industrialization in the 19th century. In the 1840s,

⁵ David E. Nye, *Consuming Power: A Social History of American Energies* (Cambridge, Mass.: MIT Press, 1998), 8.

⁶ *Ibid.*, 7.

American policy-makers began thinking very consciously about what they wanted for the future of their country, and what sorts of resources and technologies would facilitate that vision. Projecting American influence overseas—building an empire—began in part with the incorporation of industrial technology into the realm of American foreign relations. In the modern world, the most fundamental of these industrial technologies involve energy.⁷

This dissertation is about power. It is about political power operating in the halls of Washington. It is about the geopolitical power of an expanding nation, butting against other nations and peoples. It is about an economic power brought about by industrialization. These narratives will be familiar to many readers. But power has other valences as well. I argue that American power, as measured by its economic output, the size of its armed forces, or its ability to influence the affairs of other nations, was directly related to the harnessing of material power—the power found in coal—that the nation possessed in abundance at home but struggled for nearly a century to make serve foreign policy. French Chadwick, President of the Naval War College, captured the significance of this power in 1901. Speaking proudly of his nation, he declared that “on coal depends this civilization as truly as does life upon air.” Upon coal he anticipated building the 20th century, for “the future is ours,” he exclaimed, “because the coal is ours.”⁸

⁷ For important recent works touching on the emergence of the American empire, see Niall Ferguson, *Colossus: The Price of America's Empire* (New York: Penguin Press, 2004), Michael Hardt and Antonio Negri, *Empire* (Cambridge, MA: Harvard University Press, 2000), Eric Tyrone Lowery Love, *Race over Empire: Racism and U.S. Imperialism, 1865-1900* (Chapel Hill, NC: University of North Carolina Press, 2004), Charles S. Maier, *Among Empires: American Ascendancy and Its Predecessors* (Cambridge, MA: Harvard University Press, 2006), Neil Smith, *American Empire: Roosevelt's Geographer and the Prelude to Globalization*, California Studies in Critical Human Geography 9 (Berkeley, CA: University of California Press, 2003).

⁸ Captain French E. Chadwick, “Coal; Lecture Delivered 1901,” Folder 1, Box 2, RG 14, Naval War College, Newport, RI.

This history also has an environmental context. Steam power might seem a peculiar subject for environmental history, but environmental historians are no strangers to empire. Charting the ecological aspects of empire has, in fact, been an important topic for historians of European imperialism for some time.⁹ Some works have examined ecological exchange, like the flow of plants, animals, and disease organisms between previously isolated ecological regimes.¹⁰ Describing the exchange of specific food and cash crops, other historians have traced the impacts of European colonial agriculture and the social consequences of the introduction of new foods and products like sugar, coffee, and tobacco.¹¹ Still other works have examined the ways imperialism provided a context for science and the development of scientific ideas, as well as the ways in which science was used to project or buttress imperial power. From the development of “environmentalist” thought to the collection of medicinal plants, historians have shown that empires depend on scientific networks and technological systems as much as on political control.¹²

⁹ For one American environmental historian’s foray into the historiographic differences between U.S. and non-U.S. environmental history, especially the latter’s emphasis on imperialism, see Paul Sutter, “Reflections: What Can U.S. Environmental Historians Learn from Non-U.S. Environmental Historiography?,” *Environmental History* 8, no. 1 (2003).

¹⁰ Alfred W. Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492*, 30th anniversary ed. (Westport, Conn.: Praeger, 2003), Alfred W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900-1900*, 2nd ed., Studies in Environment and History (New York: Cambridge University Press, 2004), William Hardy McNeill, *Plagues and Peoples* (New York: Anchor Books, 1989), Elinor G. K. Melville, *A Plague of Sheep: Environmental Consequences of the Conquest of Mexico*, Studies in Environment and History (New York: Cambridge University Press, 1994).

¹¹ For a classic study of sugar in the Caribbean and Europe, see Sidney Wilfred Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (New York: Penguin Books, 1986). For two works that consider the European reception of crops including tea, coffee, tobacco, chocolate, the potato, quinine, and cotton, see James Walvin, *Fruits of Empire: Exotic Produce and British Taste, 1660-1800* (New York: New York University Press, 1997), Henry Hobhouse, *Seeds of Change: Six Plants That Transformed Mankind*, New ed. (London: Papermac, 1999).

¹² Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens, and the Origins of Environmentalism, 1600-1860*, Studies in Environment and History (New York: Cambridge University Press, 1995). For two excellent recent studies on scientific networks, see Richard Harry Drayton, *Nature’s Government: Science, Imperial Britain, and the ‘Improvement’ of the World* (New Haven: Yale University Press, 2000), Londa L. Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World*

American historians have been encouraged recently to draw upon this Europe-centered scholarship and help recast U.S. history in global, environmental terms. In a provocative essay in *Diplomatic History*, Mark H. Lytle has spoken of a “silence” among historians of American foreign relations on environmental topics.¹³ The silence is gradually being filled. Kurk Dorsey has pioneered this field by showing how international cooperation between the United States and Canada over fisheries, fur seals, and migratory birds placed the natural world front and center among diplomats.¹⁴ Richard Tucker has argued that American demand for natural goods like sugar, rubber, and timber have led to a global environmental decline.¹⁵

Only recently, however, have historians begun considering the relationship between war, militaries, and environmental change.¹⁶ The mutual dependence of war and the environment evokes an array of iconic images: in recent history one thinks immediately of the napalm devastated forests of Vietnam or Kuwait’s smoldering oil fires from the First Gulf War. Surprisingly, however, historians now studying the

(Cambridge, Mass.: Harvard University Press, 2004). On the emergence of ecological thought, see Greg Barton, *Empire Forestry and the Origins of Environmentalism*, Cambridge Studies in Historical Geography ; 34 (New York: Cambridge University Press, 2002). Peder Anker, *Imperial Ecology: Environmental Order in the British Empire, 1895-1945* (Cambridge, Mass.: Harvard University Press, 2001).

¹³ Mark Lytle, "An Environmental Approach to American Diplomatic History," *Diplomatic History* 20, no. 2 (1996): 280.

¹⁴ Kurkpatrick Dorsey, *The Dawn of Conservation Diplomacy: U.S.-Canadian Wildlife Protection Treaties in the Progressive Era*, Weyerhaeuser Environmental Books (Seattle: University of Washington Press, 1998).

¹⁵ Richard P. Tucker, *Insatiable Appetite: The United States and the Ecological Degradation of the Tropical World* (Berkeley, CA: University of California Press, 2000).

¹⁶ To be sure, historians have long noted the effects of military campaigns on agriculture and landscapes, though these observations have typically been ancillary to other aspects of their narratives. The lack of historical evidence also makes the evaluation of some of these claims difficult. For example, the fifth century, B.C. historian Thucydides describes the torching of Athenian crops and forests, though the classicist Victor Davis Hanson demonstrated in the 1980s that this strategy caused little long-term damage to Athens and did not, as had long been assumed, contribute to the polis’s fourth century decline. On the Peloponnesians torching of Athenian crops, see Thucydides, Walter Blanco, and Jennifer Tolbert Roberts, *The Peloponnesian War: A New Translation, Backgrounds, Interpretations*, 1st ed., Norton Critical Edition (New York: W.W. Norton & Co., 1998), 67, 79. For Hanson’s now classic analysis, see Victor Davis Hanson, *Warfare and Agriculture in Classical Greece*, Rev. ed. (Berkeley: University of California Press, 1998).

environmental impacts of war have observed that the violence of combat actually produces little lasting ecological damage. The same cannot be said for preparations for war and economic mobilization. What J. R. McNeill has recently written about forests and warfare holds true for the environment in general. McNeill notes that in all likelihood, preparing for war has affected forests far more than warfare itself “because societies more often have prepared for war than gone to war, and because preparation often lasted longer, remained more constant, and thus had more ongoing effects.”¹⁷ Although war plays pivotal roles in this history, most of the story takes place in long years in between when thinking about the next war consumed naval and diplomatic thought about the natural world and its useful resources.

My thinking about flows of commodities in the construction of bounded political spaces draws on William Cronon’s magisterial *Nature’s Metropolis*, with two important differences. Cronon explores how urban Chicago emerged simultaneously with its grain, timber, and meat producing hinterland. Railroads connected country and city, and city to the growing nation. Where Cronon describes city and hinterland, I am interested in nation and its global companions in trade and war. In a sense, I am interested in inverting Cronon’s analysis: instead of looking at how a city shaped a nation from within, I am

¹⁷ J.R. McNeill, “Woods and Warfare in World History,” *Environmental History* 9, no. 3 (2004): 403. For other recent examples of the far environmental reach of military mobilization, see A. Joshua West, “Forests and National Security: British and American Forestry Policy in the Wake of World War I,” *Environmental History* 8, no. 2 (2003), Edmund Russell, *War and Nature: Fighting Humans and Insects with Chemicals from World War I to Silent Spring*, Studies in Environment and History (New York: Cambridge University Press, 2001). Rauno Lahtinen and Timo Vuorisalo, “It’s War and Everyone Can Do As They Please!” An Environmental History of a Finnish City in Wartime,” *Environmental History* 9 (October, 2004), Peter A. Shulman, “‘Science Can Never Demobilize’: The United States Navy and Petroleum Geology, 1898-1924,” *History and Technology* 19 (2003), William M. Tsutsui, “Landscapes in the Dark Valley: Toward an Environmental History of Wartime Japan,” *Environmental History* 8 (April, 2003), Richard P. Tucker and Edmund Russell, *Natural Enemy, Natural Ally: Toward an Environmental History of Warfare*, 1st ed. (Corvallis: Oregon State University Press, 2004). For an exposé of the environmental risks posed by the U.S. military in the late twentieth century, see Seth Shulman, *The Threat at Home: Confronting the Toxic Legacy of the U.S. Military* (Boston: Beacon Press, 1992).

interested in how the U.S. empire shaped the nation from without. The second difference is more subtle. Nineteenth century Chicago was built amid the hustle and bustle of commerce and competition. The construction of the American empire—the formal parts of it, at least—involved more overtly political decisions. Serendipitous at times but never random, it was a process we can, and must, associate with individual choices. I am interested in connecting the structural features of empire with the human and institutional choices that helped bring it about.¹⁸

Exploring the American empire from an ecological, scientific, and, technological perspective requires departing from familiar periodizations. By focusing on the development of coal and coaling systems, technological innovations, geological discoveries, and the invention of robust logistical networks matter at least as much as the usual temporal boundaries of presidential administrations, decades, and wars. The historian Charles Maier has described historical periodization as an interpretive tool, a decision less about an inherent logic of history and more “to assign a meaning to historical phenomena.”¹⁹ Part of my goal for this work is assign a new meaning to the American empire by connecting its emergence and geographical structure to the technological changes that propelled and shaped it.

In the chapters that follow, I make three interlocking arguments. First, the United States, working mostly through the Departments of State and Navy, developed its first national energy policies, and in particular, its first foreign energy policies, as the Navy

¹⁸ William Cronon, *Nature's Metropolis : Chicago and the Great West*, 1st ed. (New York: W. W. Norton, 1991). On the global flow of cotton and its shaping of the United States in the 19th century, see Sven Beckert, "Emancipation and Empire: Reconstructing the Worldwide Web of Cotton Production in the Age of the American Civil War," *American Historical Review* 109, no. 5 (2004), Sven Beckert, "From Tuskegee to Togo: The Problem of Freedom in the Empire of Cotton," *Journal of American History* 92, no. 2 (2005).

¹⁹ Charles Maier, "Consigning the Twentieth Century to History: Alternative Narratives for the Modern Era," *American Historical Review* 105, no. 3 (2000): 809.

increasingly made use of steam power. This energy policy was explicitly linked to questions of national security and commercial expansion from the beginning. Second, American architects of empire thought about nature and resources, and this thought framed the development of foreign policy. Nature for naval officers may have been less elegant than nature for Emerson or Muir, but it shaped their thinking and actions in no less significant ways. Finally, I argue that American power in the twentieth century, so identified with petroleum, was built upon decades of empire building based around coal. The federal government's support of American oil companies in their actions overseas merely continued a policy long pursued by international-looking government officials, especially in the Navy, to ensure that Americans had fuel for commerce and defense. This policy began with coal.

* * *

The five chapters of this dissertation examine the evolution of U.S. naval and foreign policies related to coal from the 1840s through the 1920s. I emphasize three central themes: that the peculiar geography of the U.S. empire was never predetermined, as solutions to the coaling problem constantly evolved; that U.S. efforts to supply coal took place in a global context of other competing nations; and that this global network was built in particular places and influenced by local events.

In chapter one, "Embarking," I ask how Americans fueled steam navigation. I link the development of a global steam network to transport mail, news, and business information with a similarly global search for the coal resources to support it. I focus on American naval expeditions for coal in Borneo in the 1840s and in Japan with Matthew Perry in the 1850s. In these expeditions, American policy-makers employed tremendous

creativity addressing the coaling problem, engaging in diplomatic agreements, commercial arrangements, geological exploration, and ultimately military coercion. At the end of the 1850s, no one policy appeared more promising than any other.

In chapter two, “Race, Technology, and the Politics of Mineral Wealth on the American Isthmus,” I describe how the demand for coal in the U.S. Navy and merchant fleet that began earlier in the century prompted entrepreneurs to join in the search for coal in strategic locations. I focus on an account of the failed attempt of American entrepreneur Ambrose W. Thompson to establish a major coal mine for the Navy in New Granada’s province of Chiriqui in the 1850s and 1860s. There, the technological changes brought about by industrialization intersected with the social and political conflicts of race. As part of his isthmian project, Thompson interested the Lincoln administration in developing a colony of emancipated slaves in Chiriqui in to mine coal for the Navy in the Caribbean and Pacific. This project suggests that even 19th century social and political issues like race were understood and addressed in the context of technological change and the aspirations of American leaders for geopolitical influence.

In chapter three, “The Geography of Power,” I show how Union and Confederate difficulties in obtaining coal for their vessels during the Civil War inspired decades of attempts to acquire coaling stations—from ports to harbors to whole islands—to support the growth of American hegemony in the Caribbean. Focusing especially on negotiations for coaling stations on St. Thomas and in Haiti, this chapter traces how naval strategy shifted from antebellum creativity to the acquisition of coaling stations in the late 19th and early 20th centuries, bringing into sharper focus how strategy, resources, and politics interacted to produce the geography of the United States’ geographic reach in the early

20th century. I also show how the pursuit of coaling stations was not the only avenue policy-makers of the late 19th century had for addressing the coaling problem. They also supported scientific and engineering projects to reduce the Navy's dependence on coal and increase the efficiency of steam engines. Through chemical analyses, engineering experiments, and geological expeditions, the federal government complemented its simultaneous interest in acquiring new territory.

Chapter four, "Inventing Logistics," shifts the coaling narrative from conducting war to planning for it, examining how ideas about industrial warfare crystallized in the education of elite officers at the Naval War College in Newport, Rhode Island. In the early 20th century, officers there evaluated naval strategy and tactics, systematizing war preparation and execution. Coal formed a central element of this education. In this chapter I argue that coal provided the model for war planning that the College later generalized as "logistics"—the provision of all resources for war and the strategy for ensuring their availability. I look closely at lectures, exams, student essays, and instructor evaluations to trace the emergence of a comprehensive idea of logistics among the elite officer class.

The U.S. global coaling network was shaped not only by economic, strategic, and material constraints, but by how naval policy elites imagined the relationships between places. This is the subject for chapter five, "Alaska: Infinite Coal Mine of the Imperial Imagination." After prospectors discovered massive coal deposits in Alaska in the late 19th century, the U.S. Navy began investigating Alaska as both a coaling station and as a source for inexpensive coal. In the 1920s, the Navy operated its own experimental coal mine near Anchorage. I show in this chapter how Alaska became an increasingly

important part of naval planning from strategic and environmental perspectives. Drawing on documents from both Alaska and Washington, D.C., I link naval planners' ideas about grand strategy in the Pacific to local obstacles in exploration, labor, and mining. By moving from a global narrative to a local one, I weave together environmental change, geology, labor, naval strategy, economic development, and evolving steam technology. By retracing this coaling story from the perspective of Alaska, we gain a clearer idea of how American foreign and naval policy were tightly bound to U.S. industrialization as well as how flows of important resources link otherwise unconnected lands.

* * *

Like many of his contemporaries, Perry wrote enthusiastically about America's future in world affairs in the Pacific and beyond. "It may be looked upon as mere speculation in me," he apologized to his audience in New York, "but I have been long a believer in the doctrine of the 'manifest destiny' of this great nation, still in its youth." His youthful nation, no less than for a youthful person was "destined at some *indefinite* time to attain a full and vigorous manhood." But Perry's history was cyclical in nature, and like a man the United States would inevitably weaken with age. Like empires past, economic might would rise and fall. Glory was transient, he concluded, and it was also destiny for the United States, "like all earthly governments, to fall into decadence, to decline in power, and at last, to fall asunder, by the consequences of its own vices and misdoings; thus making room for some new empire now scarcely in embryo." But in 1856, the potential for decline seemed a long way off, and Americans hungered for coal.²⁰

²⁰ M.C. Perry, *A Paper by Commodore M. C. Perry, U.S.N., Read before the American Geographical and Statistical Society, at a Meeting Held March 6th, 1856* (New York: D. Appleton and Company, 1856), 12.

Chapter 1: Embarking

The 19th century United States was built upon the visible and the invisible. The visible included the most recognizable artifacts of industrialization: railroads, steamships, and the bridges, and factories, associated with the “technological sublime”—the peculiarly American enthusiasm for machines that transformed human creations into transcendent experiences.¹ The visible could be seen, of course, but also touched, smelled, and heard. The visible was experienced through its material form—the arc of the bridge or the design of the skyscraper. The visible was composed of iron, or steel, or wood, and it reminded Americans at every moment of the stuff of which their worlds were composed.

“On the contrary,” to this visible world, wrote Walter R. Johnson in 1850, “the material which furnishes *motive power*, is either wholly overlooked, or soon forgotten.” For Johnson, a chemist and the founding General Secretary of the American Association for the Advancement of Science, it was too easy to praise the locomotive and neglect its fuel or marvel over Manchester’s fabrics instead of the coal that helped steam them across the Atlantic. “The evanescent movement of machinery, which transports materials from place to place, or transforms them from one shape to another, leaves nothing visible or tangible on which our senses can dwell,” Johnson remarked.² This evanescent

¹ On the technological sublime in America, see David E. Nye, *American Technological Sublime* (Cambridge, MA: MIT Press, 1994). As Nye notes, the term originates in Perry Miller’s *The Life of the Mind in America* and was developed subsequently by both John Kasson and Leo Marx. See Perry Miller and American Council of Learned Societies., *The Life of the Mind in America: From the Revolution to the Civil War*, 1st ed. (New York: Harcourt Brace & World, 1965), John F. Kasson, *Civilizing the Machine: Technology and Republican Values in America, 1776-1900*, 1st Hill and Wang ed. (New York: Hill and Wang, 1999), Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (London and New York: Oxford University Press, 1967).

² Walter R. Johnson, *The Coal Trade of British America, with Researches on the Characters and Practical Values of American and Foreign Coals* (Washington, D.C.: Taylor & Maury; [etc. etc.], 1850), 6.

movement, he insisted, was the product of coal, a material itself, but one consumed in the very activity that made it useful and leaving little trace of its importance.

Johnson knew some Americans paid more attention to coal than others. He had been employed several years earlier, in fact, by the U.S. Navy to investigate different coals from around the country to determine which provided better fuels for naval steam engines.³ The Navy was not alone in its interest in coal, however. Any entrepreneur or politician interested in establishing a new steamship line had to pay close attention to it. Those who did not quickly failed. This chapter describes the earliest ways Americans faced the physical constraints brought about by steam power in ocean transportation during the inaugural years of regular trans-oceanic steamship service between 1840 and 1860. Instead of examining the technological or social aspects of steam, I want to refocus attention on the environmental context with which builders and operators of steamships themselves had to contend. Building an industrial ecology, they discovered and directed flows of resources into new paths that would make modern civilization possible.

This industrial ecology began in the broad economic context of ocean steam travel, where information, not the transportation of material goods, first concerned steam line pioneers. The transmission of this information preoccupied American merchants abroad and led some to pursue the creation of steamship lines to transport mail. As these lines grew, the American government began taking an interest in facilitating foreign trade by securing coal concessions overseas, first in Borneo in the 1840s and then in Japan, Formosa, and the Lew Chew islands in the 1850s. Throughout these episodes, Americans

³ Walter R. Johnson and United States. Navy Dept., *A Report to the Navy Department of the United States, on American Coals Applicable to Steam Navigation, and to Other Purposes*, Senate Doc. No. 386, 28th Cong., 1st sess. (1844).

operated in a global context of competing economic and political interests, especially with English traders and the Royal Navy. By placing coal front and center, I argue that the materiel of energy—the invisible foundation of nineteenth century power—both motivated and constrained the activities of American merchants and especially government representatives abroad.

The Information Economy

“The mail is in; here is the ‘Straits’ Times!” came the call in Canton.⁴ The year was 1853. Pressed upon “a half sheet of foolscap” in Singapore, the ‘Straits’ Times’ was a digest of newspapers freshly delivered from Europe and the United States. The western papers arrived in southeast Asia by steamer via the overland route connecting the Mediterranean with the Red Sea. These steamers, which delivered mail as well as news, reached Canton from Boston in only sixty-five days. “Such speed is almost incredible even now,” exclaimed an American expatriate living in the bustling Chinese port. Only twenty years earlier, the fastest American and British clippers might have taken twice that time and the future promised even greater speeds. “Boston and Canton will be still more closely approximated in point of time,” continued the expatriate in Canton, “when a railroad connects the Atlantic and Pacific coasts of the United States and a system of steam navigation is established across the Pacific, between California and China.”⁵ The pursuit of this system, which would complete a vast chain of western commerce and

⁴ “Notes and Commentaries, on a Voyage to China: Chapter XXI,” *Southern Literary Messenger* 19, no. 8 (1853): 474. Punctuation emended to correct an error in the original publication.

⁵ *Ibid.*: 476.

communication around the globe, would bring the United States into the overseas empire business for the first time.

The United States was a commercial nation in 1853, and commerce depended on information. Information—in the form of newspapers, business instructions, and personal correspondence—provided the tenuous umbilical that connected capital to its investments, merchants to their homes, and traders to the producers and consumers of their goods. Steam allowed that information to travel more rapidly than ever before. It is no accident that one encounters the phrase “steam communication” far more often in historical documents than “steam transportation”—the ability to transmit information regularly and rapidly was probably the most appealing feature of steamships in the 1840s and 1850s.⁶ Nowhere were American merchants more dependent on this information in the 1850s than in China. There, over 6,000 miles and an ocean away from North America, American trading houses competed with other westerners, mainly from Britain, to exchange opium, bullion, and cotton goods for teas and silk.⁷ “Early information as to the changing condition of the markets in Europe and America is very important to merchants in China,” related the expatriate. Control over this flow of information, he continued, meant “to a considerable extent, the advantages of a limited monopoly of the trade”—the difference between profit and bankruptcy.⁸

⁶ The first ten years of the *New York Times*, for example, searchable online at Proquest Historical Newspapers, reveal only four instances of “steam transportation” as opposed to 122 for “steam communication.”

⁷ Mira Wilkins, “Impacts of American Multinational Enterprise on American-Chinese Economic Relations, 1786-1949,” in *America's China Trade in Historical Perspective: The Chinese and American Performance*, ed. Ernest R. May and John K. Fairbank, Harvard Studies in American-East Asian Relations (Cambridge: Committee on American-East Asian Relations of the Dept. of History in collaboration with the Council on East Asian Studies Harvard University: Distributed by Harvard University Press, 1986), 259-62.

⁸ “Notes and Commentaries, on a Voyage to China: Chapter XXI.” Historians have recently begun to explore how information and the construction of a state apparatus to deliver it have shaped political and social development. Reflecting on the U.S. postal service’s success in connecting the early republic’s

Competition to control commercial information in the early nineteenth century had begun in the Atlantic. In the two decades after the end of the Napoleonic Wars, American packet boats took the lead. On January 1, 1818, New York merchants launched the first regular shipping line to bring mail, passengers, and cargo across the ocean. This line, which would become known as “the Black Ball” for the distinctive circle adorning the ships’ fore topsails, sailed between New York and Liverpool on a predetermined monthly schedule. Other lines followed, and by 1840 there were forty-eight packets crossing the ocean. American sailing vessels, in the words of maritime historian Robert Albion, “were *the* ships of the North Atlantic.”⁹

During precisely this same period, American and British shipping firms and engineers began experimenting with using steam to cross the Atlantic. In 1819 the American steamship *Savannah* crossed from the eponymous city in Georgia to Liverpool in twenty-seven days, though most of the journey was, in fact, powered by sail. Only in 1833 did the *Royal William*, a Canadian ship from Quebec, complete the Atlantic voyage entirely by steam. Five more years and the British *Sirius* began carrying mail across the ocean, followed only days later by the *Great Western*. Nevertheless, American packet boats continued to grow in number speed to compete with steam for carrying the mail. For the sender and receiver of mail, increasingly frequent sailings made the transit of

scattered cities, towns, and settlements, the historian Richard John has labeled the postal service acted “a powerful agent of change.” See Richard R. John, *Spreading the News: The American Postal System from Franklin to Morse*, 1st paperback ed. (Cambridge, Mass.: Harvard University Press, 1998). Examining information as a form of political capital, C.A. Bayly has shown both how British control and failure in India depended on collecting information. See C. A. Bayly, *Empire and Information: Intelligence Gathering and Social Communication in India, 1780-1870*, Cambridge Studies in Indian History and Society 1 (Cambridge and New York: Cambridge University Press, 1996).

⁹ Robert Greenhalgh Albion, *Square-Riggers on Schedule: The New York Sailing Packets to England, France, and the Cotton Ports* (Princeton and London: Princeton University Press; H. Milford Oxford University Press, 1938), 35, see also vii, 20-1. See also George E. Hargest, *History of Letter Post Communication between the United States and Europe, 1845-1875*, 2d ed. (Lawrence, Mass.: Quarterman Publications, 1975), Frank Staff, *The Transatlantic Mail* (New York: J. DeGraff, 1956), 62.

information across the Atlantic faster and more predictable than ever before. In 1838, the British Government began accepting proposals for a formal steam mail route, and the following year, a contract was forged with Samuel Cunard of Halifax, Nova Scotia for a seven year service between Liverpool, Halifax, and Boston. Over the following years, the British government began subsidizing additional mail steam services along other routes of commercial interest, from the Mediterranean to India, China, and the South American Pacific Coast. As the cost of sending mail decreased and its delivery became more regular, more and more American mail began traveling in foreign ships. The greatest strength of the British mail network, however, was its near simultaneous emergence. Each separate line formed the connective tissue that linked the British empire together.¹⁰

The carriage of American mail by British vessels troubled many Americans. When America and Britain stumbled to the brink of war over Oregon in 1846, the ramifications of Britain transporting American mail—including diplomatic correspondence—became clear. “What an idea,” wrote the American chargé in Lima in 1846,

that the American squadron in the Pacific should be dependent upon English steamers of war for their letters and dispatches from the government of the United States, when each is looking the other in the face upon the Oregon question. Our navy dependent upon the British fleet to give them notice when it is time to fight! To fight whom? Why, those giving them the information; and our whalers dependent upon the same source for information, when it is time for them to run to avoid the same English fleet.¹¹

¹⁰ Staff, *The Transatlantic Mail*, 62-3, John A. Butler, *Atlantic Kingdom: America's Contest with Cunard in the Age of Sail and Steam*, 1st ed. (Washington, D.C.: Brassey's, 2001), 83. See also J. C. Arnell, *Steam and the North Atlantic Mails: The Impact of the Cunard Line and Subsequent Steamship Companies on the Carriage of Transatlantic Mails* (Toronto, Ont.: Unitrade Press, 1986).

¹¹ Albert Gallatin Jewett, 4/13/1846, quoted in Thomas Butler King, *Ocean Steamers*, *H. Rep. Doc. 685*, 29th Cong., 1st sess. (1846).

Britain's commercial steamers were even commanded by Royal Navy officers, who could collect another kind of information: a sailor's intimacy with the American coast. Knowledge of its harbors and shoals, its winds and currents, offered the British a maritime familiarity that might be utilized in a future war. As the size of the British fleet grew with subsidies from the Crown, Americans felt increasingly threatened. "In carrying out this system, the steam-marine of England has been extended to a limit that startles belief," explained Texas Senator Thomas J. Rusk in 1852, "and suggests to every reflecting mind the propriety, on the part of other and rival nations, of taking steps to guard themselves from the attacks of so overwhelming a force, in the event of a collision with that great power."¹² Like Rusk, many Americans in the 1850s vividly recalled the British invasion in 1814 and the war scare over Oregon remained very real.

As Cunard and the other lines grew, Americans began planning for steam lines of their own. Under an act passed in 1845, Congress directed the Postmaster General to contract with private investors to create two steam mail lines, one of them to Europe. According to Alabama Representative Henry Hilliard in 1846, "[t]he time has arrived for increasing our means of communication with Europe."¹³ A year later, the postal contract took effect when Edward Mills began a modest mail steamer service between New York and Bremen. His ship, the first American mail steamer, *The Washington*, left New York that winter.¹⁴ It joined the Cunard line (Liverpool to Halifax and Boston) and a French

¹² *Reports of the Secretary of the Navy and the Postmaster General, Communicating, in Compliance with a Resolution of the Senate, Information in Relation to the Contracts for the Transportation of the Mails, by Steamships, between New York and California*, (Washington, D.C.: A. Boyd Hamilton, 1852), 20.

¹³ Henry Hilliard, *Atlantic Mail Steamers*, *H. Rep. Report 476*, 29th Cong., 1st sess. (1846).

¹⁴ "American Mail Steamers," *Niles' National Register* 21, no. 23 (1847).

line (Havre or Cherbourg and New York) that were already in service across the Atlantic.¹⁵

Bremen appealed to Congress as a terminus for a mail line for several reasons. First, throughout the early nineteenth century, American trade with German states traveled through Britain, which imposed heavy taxes upon it. The British government similarly taxed American mail. A direct line connecting New York to Bremen thus bypassed British taxation. Second, for years the British post detained American mail in its offices until it thoroughly distributed British letters, giving British companies and investors advance notice of world events, commercial transactions, and investment opportunities. According to one Senator, “every English merchant got his letters, and if there was anything interesting to be done on the Continent, they had the benefit of it, instead of our own citizens.” The practice outraged Americans, and the British government eventually ceased the practice and tendered an apology.¹⁶

Steam mail service offered apparently boundless opportunities for trade. “The rapid and certain transmission of intelligence is of the highest importance to a commercial people,” declared Representative Hilliard, “and instead of relying upon the steamships of Great Britain for the transportation of our mails, we should enter at once upon an enterprise to which we are invited by the most powerful considerations connected with our relations to the world, and which can no longer be neglected if we

¹⁵ Hilliard, *Atlantic Mail Steamers*. “Trial Trip of the U.S. Mail Steamer Washington,” *New York Evangelist* 18, no. 21 (1847): 1. “Steam and Sailing Lines,” *Scientific American* 2, no. 43 (1847). Mills boasted that his first ship, *The Washington*, would reach Southampton from New York in a dramatic eight or nine days, but unexpected mechanical trouble delayed the voyage to just under two weeks. Though still a respectable time, the ship’s passengers nevertheless complained. “Arrival of the Washington Steamer in England,” *Scientific American* 2, no. 43 (1847).

¹⁶ *Cong. Globe Appendix* 31st Cong., 1st Session (1850): 1325.

would keep pace with the movements of an enlightened age.”¹⁷ This enlightened age brought a second round of mail steamships in 1847 when Congress instructed the Secretary of the Navy to contract for three additional lines. Georgia Representative Thomas Butler King’s Committee on Naval Affairs had developed the plan in 1846 in order to enlarge the U.S. Navy by subsidizing a steam powered merchant marine. The idea was “to render the transmission of the mail, passengers, and freight subservient to the extension of her naval establishment,” much as Britain had similarly done.¹⁸ King had originally sought a more general enlargement of the Navy, but could only receive support by proposing mail steamers to operate in peacetime that would be convertible into warships in the event of a national emergency. Even so, many Americans already blurred the distinctions between a merchant and a naval steam marine and considered Britain’s success at sea at least as much a product of its mail subsidies as its already substantial Navy.¹⁹

The new steamship lines concentrated on important trade routes. One line would connect New York to Liverpool, a second would link New York to Havana and on to the Caribbean coast of Panama, and a third the Pacific side of Panama up to San Francisco and the Oregon Territory.²⁰ Congress began funding steam mail lines to Europe “upon considerations of the highest State and commercial policy,” according to one Senator.²¹ At all times, government policy required that these ships be captained by naval officers

¹⁷ Hilliard, *Atlantic Mail Steamers*.

¹⁸ King, *Ocean Steamers*.

¹⁹ *Ibid.*

²⁰ *Reports of the Secretary of the Navy and the Postmaster General, Communicating, in Compliance with a Resolution of the Senate, Information in Relation to the Contracts for the Transportation of the Mails, by Steamships, between New York and California.*

²¹ *Cong. Globe Appendix* 31st Cong., 1st Session (1850): 1322.

and supported by American midshipmen. According to Texas Senator Rusk, “the arts of peace shall be made tributary to the purposes of defense.”²²

The first new American mail steamers took to the sea in 1850 and their record-breaking speeds became a point of national pride.²³ Supporters of American steam navigation could only have been pleased to read the reaction of one observer from Britain who declared that “the Cunard line has a lost pre-eminence to regain.”²⁴ In a jab at Cunard, which originated in Halifax, a writer in the town’s own newspaper praised an American vessel on the Liverpool-New York route by noting that “[t]he interior arrangements of the Arctic far, very far, surpass in elegance any thing of the kind previously seen in Halifax.”²⁵ The *Arctic* belonged to the New York and Liverpool United States Mail Steamship Company, better known as the Collins Line for its first director and a leading investor, Edward Collins. “Too much praise cannot be bestowed on the patriotic pride and public spirit of Mr. Collins,” gushed one American. But, he continued, success in wresting mail a service—and thus control of communications across the Atlantic—depended on more than the pride and spirit of American entrepreneurs; steam mail service, after all, depended on a public-private partnership. “We have very little doubt that if our Government extends the same fostering care to the Collins’ line that the British Government has to the Cunard, that Mr. C. in his next assay will be able in reality to reduce the passage to eight days” from the already impressive

²² *Reports of the Secretary of the Navy and the Postmaster General, Communicating, in Compliance with a Resolution of the Senate, Information in Relation to the Contracts for the Transportation of the Mails, by Steamships, between New York and California*, 26.

²³ Even before they were put to sea, one observer declared the new ships would be “as fine a fleet of sea-going steamers as the world has ever seen.” “Ocean Steam Navigation,” *Niles’ National Register* 74, no. 1917 (1848): 267.

²⁴ “Progress in Steam Navigation,” *The United States Postal Guide and Official Advertiser* 1, no. 5 (1850): 151.

²⁵ “United States Mail Steamer Arctic,” *The United States Postal Guide and Official Advertiser* 1, no. 9 (1850): 277.

ten.²⁶ The Collins' line so excited national sentiment that New York's *Journal of Commerce*, ordinarily a vocal adversary of government subsidies, could make an exception—at least until the venture could pay for itself. “It would lower the pride and affect the reputation of the country to withdraw those great steamers from the ocean.”²⁷ By the mid-1850s, Collins had four ships steaming between New York and Liverpool; George Law and associates had four more ships on the line between New York, New Orleans, Havana, and Chagres; and William Aspinwall had six vessels plying the Pacific coast between Panama and San Francisco.²⁸

The lines involved substantial money. The government paid the two companies carrying mail from New York, across Panama, and to California and Oregon nearly \$600,000 a year.²⁹ By 1854, government support totaled over five-and-a-half million dollars in interest-free loans and payments to the three steamship companies.³⁰ As the lines grew, Americans took advantage of the lines. In 1852 private Americans citizens spent more than \$200,000 sending mail between New York and Chagres. Between New York and Liverpool, gross postage carried by the Collins line totaled over \$273,000; newspapers brought in an additional \$279,000. Information, it is clear, was more than just personal letters. Collins' company that year earned nearly \$200,000 in revenue. American mail traveled more frequently aboard Collins Line vessels than its British

²⁶ "Atlantic Steamers," *The United States Postal Guide and Official Advertiser* 1, no. 11 (1851): 339.

²⁷ "Steamships," *The United States Postal Guide and Official Advertiser* 2, no. 9 (1852).

²⁸ *Steamships: Letter from the Secretary of the Navy, in Reference to the Adaptation of Ocean Mail Steamers to War Purposes*, H. Exec. Doc. 75, 33rd Cong., 1st sess. (1854).

²⁹ *Report of the Secretary of the Treasury, in Answer to a Resolution of the Senate Calling for the Amount Expended for the Transportation of Troops, Supplies, and Munitions for the Land and Naval Forces in the Pacific; Also, for the Transportation of the Mails for the Last Three Years*, Senate Ex. Doc. No. 57, 33rd Cong., 1st sess. (1854).

³⁰ Daniel Mace, *Ocean Mail Steamers*, H. Rep. No. 281, 33rd Cong., 1st sess. (1854).

competitor, Cunard: of the more than \$400,000 earned by the United States for trans-Atlantic postage, over sixty percent came from mail shipped aboard American steamers.³¹

Steam offered several advantages over sail: it was faster, independent of winds, could leave on set schedules during any season, and usually arrive at predictable times. Steam power not only appeared to defeat nature but the palpable limits of human experience as well. "Time and space seem to be overcome, and the winds and tides in a measure disregarded" observed Senator King.³² According to Pelatiah Perit, President of the Chamber of Commerce of New York, "wherever the mail steamer has gone, and whence it has come, by a law which was manifest on the scene of its first triumph, the most valuable trade has followed in its course." Perit, of course, overstated both the ease and certainty with which mail steamers captured international commerce. But by their regularity and speed, the steamers diverted not only mail traffic from sailing vessels, but the patronage of wealthy passengers and the carriage of luxury goods as well. Perit lamented that American packet boats, "which once stood so high in the estimation of the traveler, and which bore to our shores the most costly merchandise," were now "degraded to the service of the emigrant, to the carrying of coal, crockery, and iron, and the bulky products of our own soil."³³

Yet the lines were not unmitigated successes, for they were limited by the environment through which they steamed and the availability of resources they consumed. Although the American mail steamers successfully and regularly transported

³¹ *Mail Ocean Steamers: Letters Addressed to the Chairman of the Committee of Ways and Means, Transmitting Statements of Revenue Derived from Ocean Mail Steamers, House Misc. No. 17, 32nd. Cong., 2nd. sess. (1853).*

³² King, *Ocean Steamers*.

³³ *Memorial of the Chamber of Commerce of New York Praying That the Aid of the Government May Be Granted for the Establishment of a Line of Mail Steamers through the Waters of the Pacific Ocean to the Populous Cities of the Eastern World, Senate Misc.Doc.No. 10, 36th Cong., 2nd. sess. (1861).*

letters, newspapers, and packages from U.S. to foreign ports, the Navy grew increasingly dissatisfied with the mail steamers. Lieutenant David Dixon Porter, for example, commanding the U.S. Mail Steamship *Georgia* on the route from New York to New Orleans and Havana, regularly reported to the department that while his ship was fast and reliable, he often relied on auxiliary sails and could not push the ship's engines too hard because coal supplies were so hard to come by and rapidly exhausted.³⁴

The Navy quickly decided that mail steamers like the *Georgia* were poor substitutes for ordinary naval vessels. Success in mail delivery involved maximizing speed and required that coal would remain available, at least in the ports between which the ships traveled. War vessels, in contrast, often had to travel unpredictable routes for undetermined lengths of time. To permit a steamer, so tied to its fuel supply, to serve as a war vessel in the antebellum period, these ships all possessed masts and sails and could thus travel by wind. Aboard the mail steamers, however, the placement of their coal bunkers and steam engines made adding appropriate masts impractical. Without this option for raising sails, the mail steamers could only travel prescribed distances with an assured coal supply at all ports, a constraint considered disqualifying by naval authorities. According to one captain, "they are only fit for steam-tugs and transport vessels."³⁵

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But mail steamers were not created by legislation alone. Developing steam mail service on a global scale was a much an environmental struggle as a political or financial one.

The experience of William Wheelwright, a mariner and entrepreneur from Newburyport,

³⁴ *Reports of the Secretary of the Navy and the Postmaster General, Communicating, in Compliance with a Resolution of the Senate, Information in Relation to the Contracts for the Transportation of the Mails, by Steamships, between New York and California*, 114-8.

³⁵ *Steamships: Letter from the Secretary of the Navy, in Reference to the Adaptation of Ocean Mail Steamers to War Purposes*.

Massachusetts, captures the difficulties faced in the establishment of the new industrial ecology of steam. In 1823, Wheelwright arrived in South America, victim of a shipwreck off of Buenos Aires. By the end of the decade, he had made his way to Chile's commercial center, Valparaiso. There, he began a series of commercial and industrial ventures, most significantly the establishment of a steamship line.

His principal motivation was the regularization of communication along South America's Pacific Coast. After failing to find investors in the United States, he turned to Great Britain, but quickly found his project vastly more difficult than he had originally imagined. "Owing to the present irregularity of advices," Wheelwright explained in 1838 to investors in London, "vessels are often indefinitely detained at the different ports of the Coast; and from the same cause no changes in markets can be beneficially and mutually acted upon." In Wheelwright's view, the unpredictable arrivals and departures of sailing vessels arrested otherwise attractive business opportunities. And if preserving a British finger upon the pulse of Latin American commerce did not induce his backers to support steam mail service, Wheelwright also appealed to their fiscal sense. By the late 1830s, Britain had offered millions of pounds in loans to South American governments, though few countries appeared likely to repay them any time soon. Political unrest and scant infrastructure hampered the development of stable state institutions. Wheelwright argued that an effective transportation and communication network based upon steam power would rid South America of these constraints. "The effect of it would be," he insisted, "to strengthen the executive authorities, to promote the industry of the people, and to contribute to an improved state of public and private credit."³⁶ Steamships,

³⁶ William Wheelwright, *Statements and Documents Relative to the Establishment of Steam Navigation in the Pacific; with Copies of the Decrees of the Governments of Peru, Bolivia, and Chile, Granting Exclusive*

however, consumed vast quantities of coal, and securing coal in South America proved far more difficult than Wheelwright or his backers had first anticipated.

Wheelwright had good reason to believe coal would not present a problem to his steamer project. He was assured of it by no less a figure than Robert FitzRoy, captain of the *Beagle* during Charles Darwin's voyage around the world between 1831 and 1836. "In my own mind," wrote FitzRoy to Wheelwright in 1838, "there is no doubt whatever of the existence of coal in abundance at various places on the western coasts of South America." Moreover, continued FitzRoy, "its quality is sufficiently good to make it available for steam-vessels."³⁷ Wheelwright himself had investigated reports of coal in the Chilean port town of Talcahuano in 1834. As he planned his steamship service, he planned on obtaining inexpensive supplies from these or other Chilean mines nearby. If necessary, he believed imports from Britain or Australia would provide additional stocks.³⁸ He was soon forced to reconsider these plans. Arriving in Lima in early September 1840, he expected the first steamer of his fleet to join him within days. The absence of coal in Lima's port of Callao, however, threatened to doom his steamship service before it even began.

Privileges to the Undertaking (London: Whiting, Beaufort House, 1838), 7-8. For a near hagiographic account of Wheelwright's life and legacy, see Juan Bautista Alberdi, *The Life and Industrial Labors of William Wheelwright in South America* (Boston: A. Williams & co., 1877).

³⁷ Wheelwright, *Statements and Documents Relative to the Establishment of Steam Navigation in the Pacific; with Copies of the Decrees of the Governments of Peru, Bolivia, and Chile, Granting Exclusive Privileges to the Undertaking*, 13. Whether FitzRoy had personal knowledge of this coal or not is unclear; his account of the *Beagle* voyage spends two paragraphs citing *other* voyagers testifying to the presence and quality of coal along the western South American coast. See Robert Fitzroy and Charles Darwin, *Narrative of the Surveying Voyages of His Majesty's Ships Adventure and Beagle, between the Years 1826 and 1836, Describing Their Examination of the Southern Shores of South America, and the Beagle's Circumnavigation of the Globe*, 3 vols., vol. 2 (London: H. Colburn, 1839), 423-4.

³⁸ Wheelwright, *Statements and Documents Relative to the Establishment of Steam Navigation in the Pacific; with Copies of the Decrees of the Governments of Peru, Bolivia, and Chile, Granting Exclusive Privileges to the Undertaking*, 10.

Wheelwright began frantically searching for more fuel. Rumors of coal from the nearby island of San Lorenzo failed to pan out, while anthracite he learned of from the Cordillera proved too far to supply the port. Samples of “coal” from Piura province turned out to be mineral pitch, useless for steaming. With few options for fuel remaining and his charter from the government of Chile expired, he prepared to accept defeat. He boarded his ship the *Peru* and left Callao for Valparaiso. There, to his surprise, he discovered the *Portsea* had arrived with six hundred tons of coal. Wheelwright was elated, but only until he discovered that the coal not only failed to generate steam, but that it damaged his ships boilers as well. This episode, as Wheelwright recounted to his directors in London, “has brought this beautiful enterprise, commenced under the most brilliant circumstances, upon the verge of ruin.”³⁹ When the *Peru* left Valparaiso to return to Callao, Wheelwright did not expect it to return again for lack of fuel. It did in fact return, but only because the ship’s captain encountered a shipment of wood in the port which he promptly purchased and consumed.⁴⁰

For two-and-a-half months in early 1841, Wheelwright and Captain Peacock of the *Peru* canvassed the Chilean coast from the river Maule to the island of Chiloé. They made their way to Talcahuano, where Wheelwright had collected coal samples seven years before, they deposited mining equipment, rounded up forty men living nearby, and began mining.⁴¹ According to one observer, “it was found to give abundance of steam, although yielding a large amount of residuum, and about 20 per cent. Greater consumption than the best Welsh coals, requiring consequently more space in the ship

³⁹ W. Wheelwright, “To the Directors and Proprietors of the Pacific Steam Navigation Company,” in *Goldsmiths’-Kress Library of Economic Literature, No. 33380.10*. (1843), 34.

⁴⁰ *Ibid.*, 2-4.

⁴¹ *Ibid.*, 17-21.

and greater labour in working.”⁴² By 1843, Wheelwright’s miners had excavated almost 5,000 tons; just over a decade later, that number stood at 30,000.⁴³ All told, Wheelwright estimated that his difficulties in supplying coal cost his company some £23,000—or \$121,000.⁴⁴ Although Chile undoubtedly contained substantial deposits of coal, turning natural abundance into practical resources was far from easy.

Wheelwright’s troubles obtaining coal in South America offer a microcosm of the difficulties confronted by other American entrepreneurs seeking to extend steam mail service in the Pacific Ocean. After the United States acquired California in 1848, more and more Americans began looking to expand commercial opportunities in eastern Asia, especially China, and steamers offered a tantalizing vision of connecting the world through communication and trade. One booster of China-bound steamers, Perry McD. Collins, expressed the momentum he felt towards westward expansion of mail, trade, and telegraphs by urging national leaders in politics, commerce, and philosophy to “just keep the ball in motion... and send the fleet and stately steamer across the gentle Pacific, and, consequently, finish the *last link in compassing the round earth with steam and electricity*.”⁴⁵

“This Island Possesses Coal Mines of Great Richness”

The U.S.S. *Constitution* was in a sorry shape when Navy Secretary David Henshaw assigned Captain John Percival to supervise her repair in 1843. Ship and captain formed

⁴² William Bollaert, "Observations on the Coal Formation in Chile, S. America," *Journal of the Royal Geographical Society of London* 25 (1855): 173.

⁴³ Wheelwright, "To the Directors and Proprietors of the Pacific Steam Navigation Company," 20. Bollaert, "Observations on the Coal Formation in Chile, S. America," 20.

⁴⁴ William Wheelwright, "To the Proprietors of the Pacific Steam Navigation Company," in *Goldsmiths'-Kress Library of Economic Literature ; No. 33380.11* (1843), 5.

⁴⁵ Perry McD. Collins, "Steam and the Telegraph to India and China," *Hunt's Merchants' Magazine* 45, no. 6 (1861): 603. Emphasis in the original.

a fitful match. The *Constitution* was one of only three ships-of-the-line remaining from the original six built in 1797.⁴⁶ After service in the War of 1812, she was in such need of repairs by 1830 that she was almost abandoned. She was saved in part by the publicity surrounding Oliver Wendell Holmes Sr.'s publication of his poem, "Old Ironsides," a celebration of her naval exploits. Almost fifteen years later, even the repairs had degraded and the ship was performing a meager receiving duty in Norfolk. In 1843, again threatened with decommissioning, the ship was again saved, this time by Percival. The Captain had been looking for a respectable command, and was convinced he could repair the *Constitution* at a minimum of expense to the government. When he succeeded, his reward was to command the ship in an unusual voyage around the world.⁴⁷

Percival's instructions from Washington arrived in January 1844, and directed him to Mozambique and Madagascar, north to Cape Guardafui (the promontory of the Horn of Africa that guarded the trade routes through the Gulf of Aden) and then further east to Sumatra, Java, and Borneo. From Borneo he was to proceed to Malaya and into the Gulf of Siam to open intercourse with Cochin China and islands of the China Sea. His objectives throughout his travels included encouraging American trade, fostering amity among nations, and gathering intelligence on "the people, resources and commerce" along his journey. The Navy and State Departments considered this intelligence essential to promote American commercial opportunities along the Indian

⁴⁶ The other five were the *Constellation*, the *United States*, the *President*, the *Congress*, and the *Chesapeake*. The Congress had been disassembled in 1836 while the *Chesapeake* and *President* were lost to the British during the War of 1812. See James H. Ellis, *Mad Jack Percival: Legend of the Old Navy*, Library of Naval Biography (Annapolis, Md.: Naval Institute Press, 2002), 152-3. Today, two ships still remain—the *Constitution* in Boston harbor and the *Constellation* in Baltimore.

⁴⁷ For the history of the *Constitution* and the origins of this mission, see Tyrone G. Martin, *A Most Fortunate Ship: A Narrative History of Old Ironsides*, Rev. ed. (Annapolis, Md.: Naval Institute Press, 1997), 266-8, David Foster Long, "Mad Jack": *The Biography of Captain John Percival, Usn, 1779-1862*, Contributions in Military Studies, No. 136 (Westport, Conn.: Greenwood Press, 1993), 132-40, Ellis, *Mad Jack Percival: Legend of the Old Navy*, 152-86.

Ocean rim. “The countries you will visit are vast and fertile,” wrote Secretary of the Navy David Henshaw, “and comparatively little known to the American people.” Though Henshaw sketched the framework of an itinerary for the *Constitution*, he acknowledged that the ship’s ultimate route depended on conditions of climate, weather, health, and politics far beyond the limits of advance planning.⁴⁸

With one exception. Henshaw insisted in his secret instruction that the ship visit Borneo. “It is represented that this island possesses Coal mines of great richness,” he explained to Percival, “both for quantity and quality. Your enquiries will therefore be especially directed to this subject, of finding coal that can be readily procured for the use of sea steamers; and if deposits be found, easily accessible, for supplying steamers or other vessels. You are authorized to purchase a right to such mine, for the United States, of the Government which owns it, at a reasonable compensation.”⁴⁹ Henshaw sought to extend American steam service to southeast Asia, and hoped that securing coal from Brunei would facilitate this project. The Secretary was, in effect, sending the Navy’s oldest vessel in pursuit of resources that would power vessels of the future. For the first time in American history, energy resources had become the objects of foreign relations.

Henshaw’s instructions betray an interesting fact. He observed that “[i]t is represented” to the Navy that Borneo possessed substantial deposits of coal. Just who was doing this representing? The Secretary does not say. A closer look inside the world of trade and colonialism in southeast Asia, however, reveals the networks of knowledge and resources that likely brought this news to the attention of Washington bureaucrats. The uncovering of coal in Borneo reveals the complex interaction between trade,

⁴⁸ David Henshaw to John Percival 1/22/1844, in *The New American State Papers: Naval Affairs, Vol. 3: Diplomatic Activities*, ed. K. Jack Bauer (Wilmington, DE: Scholarly Resources Inc., 1981).

⁴⁹ *Ibid.* Long, “Mad Jack”: *The Biography of Captain John Percival, Usn, 1779-1862*, 136.

missionary activity, natural history, and the commercial rivalry between Great Britain and the United States for Asian trade—and coal—in the 1830s and 1840s.

“A Beautiful Fact”

In 1836, a New York-based merchant house in Canton, Olyphant & Co., began outfitting the brig *Himmaleh* to initiate trade with the Sultan of Brunei. Olyphant sought a revival of trade in pepper, a commodity once harvested abundantly around Brunei by Hokkien Chinese immigrants in the late eighteenth century but that had declined in more recent decades. While the company planned this voyage, the British and Foreign Bible Society, a missionary organization operating from Batavia and Manila, sought to further penetrate into southeast Asia. Olyphant and the Bible Society agreed to work together, a collaboration eased by the strong Quaker faith of the trading house’s founder, David W.C. Olyphant. The company, in fact, was one of but two western houses in Asia that steadfastly avoided the opium trade.⁵⁰

The Bible Society’s Far Eastern representative, George Tradescant Lay, joined the *Himmaleh* in Macao for a mission in which he would discover what he called “a beautiful fact.”⁵¹ Lay, a British missionary, had prior experience in the Pacific world, having explored his other interest—scientific observation—while serving as naturalist aboard the

⁵⁰ Bob Reece, “Two Missionaries in Brunei in 1837: George Tradescant Lay and the Revd J.T. Dickinson,” *Sarawak Museum Journal* LVII, no. 78 (New Series) (2002). Olyphant was a successful New York merchant who led the trading house bearing his name. For a brief biographical sketch, see Harrison Ellery, “The Vernon Family and Arms,” *The New-England Historical and Genealogical Register* XXXIII, no. 3 (1879): 317.

⁵¹ Reece, “Two Missionaries in Brunei in 1837: George Tradescant Lay and the Revd J.T. Dickinson.” On the broader activities of the British and Foreign Bible Society, see Stephen K. Batalden, Kathleen Cann, and John Dean, *Sowing the Word: The Cultural Impact of the British and Foreign Bible Society, 1804-2004*, Bible in the Modern World (Sheffield: Sheffield Phoenix, 2004).

H.M.S. *Blossom* during its Pacific voyage in the late 1820s.⁵² Ten years later, aboard in *Himmaleh* during a turbulent north-east monsoon from Macao Roads to Singapore, Lay continued his observations of nature. “It is said in Holy Scripture,” he recorded, “that evil appeareth out of the north, which is true when applied to the meteoric phenomena of this hemisphere; and seems to be brought about by the collision of air-currents differing widely in temperature.”⁵³ For George Lay, science and God were never far apart.

Science and commerce were close for him as well. The *Himmaleh* reached the Brunei River, the gateway to the city of Brunei, on May 10, 1837. After they arrived, the ship’s captain, A. V. Fraser, pursued Olyphant’s commercial interests in pepper while Lay explored the environs and made acquaintances with the local communities of indigenous Dyaks and their Malay rulers.⁵⁴ It was here that Lay stumbled upon something unexpected. While a guest in the Sultan’s palace in Brunei, Lay received a sample of local coal brought to the court for his perusal. Intrigued, Lay pressed his hosts for its origin. He could determine only that it came from “Kianggi,” though to his chagrin “no one could point out the spot, nor had any definite idea of the extent and limits of this *Kianggi*.” Eventually, a court official claimed to know the spot, and offered to supply the *Himmaleh*.

⁵² William Jackson Hooker and G. A. Walker Arnott, *The Botany of Captain Beechey's Voyage; Comprising an Account of the Plants Collected by Messrs. Lay and Collie and Other Officers of the Expedition During the Voyage to the Pacific and Bering's Strait, in His Majesty's Ship Blossom* (London.: 1841), Frederick William Beechey et al., *The Zoology of Captain Beechey's Voyage* (London.: H.G. Bohn, 1839), Frederick William Beechey, *Narrative of a Voyage to the Pacific and Beering's Strait: To Co-Operate with the Polar Expeditions: Performed in His Majesty's Ship Blossom, under the Command of Captain F.W. Beechey ... In the Years 1825, 26, 27, 28* (London: H. Colburn and R. Bentley, 1831).

⁵³ C. W. King and G. Tradescant Lay, *The Claims of Japan and Malaysia Upon Christendom, Exhibited in Notes of Voyages Made in 1837, from Canton, in the Ship Morrison and Brig Himmaleh*, vol. 2 (New York: E. French, 1839), 4.

⁵⁴ Reece, "Two Missionaries in Brunei in 1837: George Tradescant Lay and the Revd J.T. Dickinson," 182, 90.

There the matter rested nearly until the end of Lay's visit to Borneo. While returning from a final trek outside the city, Lay and a companion paused for refreshments beside a fresh spring. While his partner drank, Lay continued to explore. "I struck my hammer upon what seemed to be a vein of sandstone," he later recalled, "but to my very great delight, I discovered that it was the very thing I had so often sought for in vain, the coal of 'Kianggi.'"⁵⁵ New of this discovery, and the prospect of mineral riches from Borneo, would soon reach both Britain and the United States.

Lay's report that Borneo contained substantial deposits of coal had a double significance. First, for scientists in Britain, the discovery of coal veins in Borneo suggested a global distribution of the mineral and a correlation between strata in different parts of the globe. The earth, it would seem, possessed a logic to its layers of sandstones, clays, and coals. As coal-bearing strata in Britain were increasingly understood in the mid-nineteenth century, the discovery of geological correlations in other parts of the world suggested that coal might be found in commercial quantities outside the British Isles as well.⁵⁶ Lay's findings in Borneo thus helped universalize British geology. "Its existence among the sandstone at Borneo is a beautiful fact," Lay recorded of the coal, "supports analogy, and shows us that in distant places on the earth's surface we may find coal measures of a corresponding nature." Second, Lay's geological discovery had a commercial corollary. For the entrepreneur, coal at Kianggi, and coal Lay would soon encounter on the nearby island of Pulo Chermin as well, suggested opportunities for the

⁵⁵ King and Lay, *The Claims of Japan and Malaysia Upon Christendom, Exhibited in Notes of Voyages Made in 1837, from Canton, in the Ship Morrison and Brig Himmaleh*, 138-9.

⁵⁶ On nineteenth century debates in British stratigraphy, see James A. Secord, *Controversy in Victorian Geology: The Cambrian-Silurian Dispute* (Princeton, N.J.: Princeton University Press, 1986), M. J. S. Rudwick, *The Great Devonian Controversy: The Shaping of Scientific Knowledge among Gentlemanly Specialists*, *Science and Its Conceptual Foundations* (Chicago: University of Chicago Press, 1985).

expansion of steamship service and an accompanying expansion in trade to southeast Asia.⁵⁷

News of the “discovery” spread quickly. Lay published his memoirs of the 1837 voyage in New York two years later. In 1842 reports reached Singapore that British agents had recently tested coal from Borneo, including some mined from Pulo Chermin. The agents, members of a special “Committee for Investigating the Coal and Mineral Resources of India,” appointed by the British Governor of Bengal, had evidently learned of this coal from Lay’s memoirs, public correspondence in the region, or both. The committee found that Pulo Chermin coal offered an outstanding steamship fuel. This announcement inspired the editors of the British *Singapore Free Press* to applaud the news. “There is no quarter in the East where a Coal Depot would be more valuable or is more urgently required,” they wrote. No other part of the world offered the British greater promise of commercial gain while presenting even greater obstacles to the flow of goods and information. British steamers in the region depended on coal from distant Burdwan in Bengal or even more distant England. Penang and Singapore occasionally exhausted their coal stocks altogether. British traders in Singapore believed that “a mine at Borneo would serve to keep those two Stations well supplied and thereby greatly facilitate our Steam communication with China.”⁵⁸ Inadequate supplies of coal, not insufficient government subsidies, had been limiting the growth of steam power in the far east.

George Lay was not, however, the only British subject interested in Brunei. As news of coal in Borneo percolated through the trading houses and consulates of southeast

⁵⁷ King and Lay, *The Claims of Japan and Malaysia Upon Christendom, Exhibited in Notes of Voyages Made in 1837, from Canton, in the Ship Morrison and Brig Himmaleh*, 139.

⁵⁸ "Borneo Coal and Mineral Resources of India," *Singapore Free Press*, Sept. 15 1842.

Asia, James Brooke was just beginning his career in Brunei's tangled politics. He did not, however, travel to Borneo in search of coal. Brooke, an adventurer, admirer of Singapore founder Sir Stamford Raffles, and heir to a substantial fortune, had grand visions for the island, its people, and its resources. With proper aid from Parliament, he anticipated subduing regional piracy, quashing the seemingly endless contests for power within the Brunei court, and developing the resources and commerce of southeast Asia.⁵⁹ Brooke began his enterprise on Borneo pledging a different kind of empire, seeking "a pure spot in the troubled ocean of colonial politics," as he called it. Should any local resource draw investment from Europe, Brooke intended a share of that capital to enrich the local court and encourage political stability and economic growth—and Borneo had no shortage of local resources.⁶⁰ Brunei and Sarawak, together comprising the northwest coast of Borneo, possessed a bounty of potential commodities, from the pepper sought by Olyphant & Co. to even more exotic cocoa-nuts, birds' nests, and tortoise shells. The island offered gutta percha, bees' wax, vegetable wax, and betel-nuts, as well as oils, camphor, and ebony wood. And then there was the coal.⁶¹

Brooke had learned of Lay's coal discoveries of 1837, and since his own arrival in Brunei in 1838, additional coal outcrops were discovered around the city. By March 1843, Brooke had concluded that the British government ought to secure an outright monopoly of the coal and establish a naval station nearby.⁶² Nevertheless, he maintained

⁵⁹ Captain Rodney Mundy and James Brooke, *Narrative of Events in Borneo and Celebes, Down to the Occupation of Labuan: From the Journals of James Brooke, Esq., Rajah of Sarawak, and Governor of Labuan. Together with a Narrative of the Operations of H.M.S. Iris*, 2nd ed., vol. 2 (London: John Murray, 1848), 21. See also Nicholas Tarling, *Britain, the Brookes, and Brunei* (Kuala Lumpur, New York: Oxford University Press, 1971).

⁶⁰ Mundy and Brooke, *Narrative of Events in Borneo*, V. 2, 27-8.

⁶¹ *Ibid.*, 342-6.

⁶² Captain Rodney Mundy and James Brooke, *Narrative of Events in Borneo and Celebes, Down to the Occupation of Labuan: From the Journals of James Brooke, Esq., Rajah of Sarawak, and Governor of*

his skepticism that coal was in fact the most valuable offering of the region, and for almost two years, little decisive action occurred. “The truth is,” Brooke confided to a friend on New Years’ Eve, 1844, that British officials “are pottering about coal and neglecting far greater objects.” These greater objects included suppressing piracy, stabilizing the court, and securing a British supremacy in commerce. “Coal there is,” Brooke conceded, “the country is a coal country, but when gentlemen are sent to make specific reports, it is not known that great difficulty exists in finding this coal, and that the search, in a wild country, will occupy months, or else the report will be imperfect.”⁶³ Traces of coal, even coal suitable for steam engines, did not immediately translate into the availability of the fuel.

More than anything, Brooke wanted some conclusive support from Parliament. By the spring of 1843, he was growing impatient, confiding in his journal that “the danger is that other countries may act before we do; indeed, I cannot disguise my impression, that both French and Belgians would colonize provided they had a good opening.”⁶⁴ Neither the French nor the Belgians in fact intervened in Brunei for coal or anything else. The threat to Borneo’s coal would in fact come two years later from the unexpected arrival of an American ship.

Before this ship arrived, however, Brooke would become definitively convinced of the value of Borneo’s coal. His mind changed after one more coal discovery that persuaded him to reconsider the strategic and commercial value of the island. The

Labuan. Together with a Narrative of the Operations of H.M.S. Iris, 2nd ed., vol. 1 (London: John Murray, 1848), 338-9.

⁶³ Brooke to John C. Templer, 12/31/1844, in James Brooke, *The Private Letters of Sir James Brooke, K.C.B., Rajah of Sarawak, Narrating the Events of His Life, from 1838 to the Present Time*, ed. John C. Templer, Esq., vol. 2 (London: R. Bentley, 1853), 43.

⁶⁴ Mundy and Brooke, *Narrative of Events in Borneo, V. 1*, 338-40. Quote on 340.

discovery came just three months after Brooke recorded his New Years' Eve frustrations. Word spread that a British naval Lieutenant exploring the harbor island of Labuan, just a short distance north, had encountered a large coal seam. The outcrop was abundant and easily mined. Captain George Mundy of the Royal Navy, a friend and admirer of Brooke, related that engineers aboard the British steamer *Nemesis* "report it to be the best coal for steaming purposes which they have met with in India." Easy to burn and depositing only an inconsequential residue of ash, samples of Labuan coal made their way to Britain, along with news of the discovery. Chemical experiments performed at London's Museum of Practical Geology by Dr. Lyon Playfair confirmed its high carbon and low ash content.⁶⁵ Playfair's colleague, the geologist Henry de la Beche, advised "that the coal of Labuan should be systematically and carefully worked, so that a hasty and inconsiderate extraction, near the surface, may not impede or damage subsequent workings at greater depth."⁶⁶ Brooke at last conceded that Borneo contained more coal than even he had originally anticipated. "I now begin to think it really may become a prize some future day to our steamers," he wrote.⁶⁷

"Labuan," where this coal was found, derived from a Malayan word for "anchorage."⁶⁸ The island was some eleven miles long, roughly forty square miles in

⁶⁵ Playfair did note, however, that this sample might not represent the genuine quality of Labuan coal, since it had been removed from the exposed surface (rather than mined from underground) and then transported under harsh conditions, including "upon the back of a camel from Suez across the desert," the [--] miles to England. Subsequent tests would indeed find Labuan coal with even higher carbon and lower ash content than the original experiments. Mundy and Brooke, *Narrative of Events in Borneo*, V. 2, 342, 46-8. Playfair noted that John Wilson, later Professor of Agriculture at Edinburgh, actually performed the experiments. See T. Wemyss Reid and Lyon Playfair Playfair, *Memoirs and Correspondence of Lyon Playfair*, 1st reprinted ed. (Jemimaville [Altrincham]: P. M. Pollak, 1976), 95.

⁶⁶ Mundy and Brooke, *Narrative of Events in Borneo*, V. 2, 349.

⁶⁷ Brooke to John C. Templer, 4/4/1845, in Brooke, *The Private Letters of Sir James Brooke, K.C.B., Rajah of Sarawak, Narrating the Events of His Life, from 1838 to the Present Time*, 57-8.

⁶⁸ Frederick E. Forbes, *Five Years in China: From 1842 to 1847: With an Account of the Occupation of the Islands of Labuan and Borneo by Her Majesty's Forces by F.E. Forbes* (Taipei: Ch'eng Wen Pub. Co.,

area, an isosceles triangle with a base in the south of nearly six miles and tapering to a point in the north.⁶⁹ It was near all the major commercial ports in southeast Asia: 650 miles from Manila, 707 from Singapore, 984 from Siam, 1,009 from Hong Kong. The coal discovery, and reports of its steaming qualities, helped Labuan coal figure into great (and rising) power struggles in southeast Asia. “Should there ever be another war,” wrote Brooke’s friend Captain Mundy, “the command of this coal district will be of vast importance; and in the mean time, the quickly increasing numbers of steamers in the neighboring seas will probably draw their supplies from there.”⁷⁰

As the island was uninhabited, strategically located, and now known to contain large quantities of coal, the prospect of a formal colony quickly arose. A new settlement on Labuan “will almost perfect the chain of posts that connects, by means of steam navigation, Southampton with Victoria in Hong Kong,” reported the *Singapore Free Press*. This network already linked England to China via coaling bases in Malta, Alexandria, Suez, Aden, the Ceylon port of Galle, Singapore, and finally Hong Kong.⁷¹ “Thus in a very few years we may expect to see the world fairly *belted* by the steam navy of England.”⁷² Not a year later, the same newspaper would again praise Labuan coal, “the working of which would be of incalculable value to the steamers now frequenting

1972), 311. See also Adrian Room, *Placenames of the World*, 2nd ed. (Jefferson, N.C.: McFarland & Company, Inc., 2006), 208.

⁶⁹ Mundy and Brooke, *Narrative of Events in Borneo*, V. 2, 335.

⁷⁰ *Ibid.*, 349. Following a subsequent discovery of coal on the Borneo mainland, Mundy anticipated that the diligent efforts of Brooke and his naval associates would reduce the cost of coal at Singapore by at least three-quarters and open “this rich and magnificent country... to the commercial enterprise of Great Britain.” Mundy and Brooke, *Narrative of Events in Borneo*, V. 2, 176.

⁷¹ “A New British Settlement,” *Singapore Free Press*, October 10 1845. The article was originally published in *The Atlas (for India, China and the Colonies)* on August 2. A gap in this chain existed between Galle and Singapore; the authors of this article anticipated filling it with a station on either the Andaman or Nicobar Islands—the latter preferably because a Danish expedition there had discovered coal.

⁷² *Ibid.*

that quarter of the world.”⁷³ Americans took a similar view, and they wanted a share of that incalculable value for themselves.

“Incalculable Benefits to Commerce”

By the time the *Constitution* approached Borneo in March 1845, the object of the ship’s visit there was known to the crew. One crewmember, Henry George Thomas, recorded that “[w]e had reports that there was abundant coal in the area and we hoped that an agreement between the Sultan and our country could be reached” over mining it. Thomas and others had also heard rumors of Brunei’s association with regional piracy, though the crew’s “[e]xtra defenses” proved unnecessary when the Sultan warmly welcomed the ship’s expedition with a nine-gun salute.⁷⁴

Negotiations took place almost immediately. Percival, for his part, had long suffered from gout, and found his condition deteriorating as the ship had approached Brunei.⁷⁵ Too ill to conduct diplomacy, he sent Lieutenant William C. Chaplin to the royal court in his place. At the palace, Chaplin introduced his party as representatives of the Sultan of America. He boasted of his nation’s maritime strength and extent of its trade. As he offered the Sultan samples of American goods, he announced his desire to open a regular commerce with Brunei, in exchange for which he promised abundant revenue from trade duties and the gift (from the American Sultan) of American manufacturing. The Sultan, Omar Ali, acknowledged the offer but explained that only

⁷³ “The Island of Lobuan,” *Singapore Free Press*, Aug 13 1846.

⁷⁴ Henry George Thomas and Alan B. Flanders, *Around the World in Old Ironsides : The Voyage of USS Constitution, 1844-1846* (Lively, Va. and Chesapeake, Va.: Brandylane Publishers, Norfolk County Historical Society, 1993), 80-1.

⁷⁵ Benjamin F. Stevens, “A Cruise on the Constitution,” *United Service* 5 (Series 3), no. 5 (1904): 546.

weeks before, he had given the English “the exclusive right of trade in Borneo Proper and now he could do nothing for America.” Chaplin protested that such a policy ran counter to the usual arrangements for trade. He insisted that it limited the development of industry, the arts, and agriculture. As he informed Washington, he explained to the court “that, the Divine Hand for a wise purpose had not [deposited?] the fruits of the earth equally and alike upon every country and climate, and that when it was too late, the Sultan might have cause to regret so ruinous a policy.” Omar Ali remained unmoved, explaining that with the absence of James Brooke, the new English Rajah, no substantive business could be conducted without him.⁷⁶

Nevertheless, Chaplin continued with his negotiations. When he broached the subject of coal, it was no surprise that he was rebuffed a second time. According to Chaplin’s report, the Sultan explained that barely three weeks previously, an English steamer brought “a special agent of the Queen of England who had purchased the exclusive right to all the coal within the [Sultan’s] dominions.” At first, this response tempted Chaplin to conclude that the court was merely bargaining for better terms in the negotiation. Yet as he recalled events and observations from the preceding month, viewed with a newfound clarity, he was convinced otherwise. Chaplin was aware, for instance, of James Brooke’s entreaties to the British crown to incorporate his influence in Brunei into the formal British Empire. Chaplin finally realized as well the significance of a November announcement from the Royal Navy creating a “Special Agent to the Island of Borneo.” The agent, Captain Bethune, had reached Singapore while the Americans were recuperating there from some weeks of illness. Bethune promptly left his sailing ship for a steamer, and unexpectedly altered the course of that ship for what was to the

⁷⁶ Chaplin and Percival to George Bancroft, 4/9/1845, letter 105, Roll #321, “Captains’ Letters,” NAI.

Americans an unknown destination. All this “at a time when we had reason to know that he was aware of the destination and object of this Ship.” The conclusion was unmistakable. Bethune had hurried to Brunei to conclude a commercial treaty before the Americans could arrive. But the British had not only bested the Americans in acquiring Bornean trade, but “that which is still more important,” according to Chaplin, “the use of the immense mines of coal supposed to exist, in this part of the Island, which in course of time must render incalculable benefits to commerce, when Steam, already an important auxiliary, becomes a chief agent in the Commerce of the world.”⁷⁷

Brooke had, by chance, been in Singapore when the *Constitution* touched at Borneo. When he returned, the court reported to him that the Americans had proposed protecting Brunei’s government, acquiring exclusive privileges for mining the region’s coal, and securing a monopoly on the Borneo trade. For his part, Brooke doubted the accuracy of the final stipulation, but worried nevertheless that the opportunity for British supremacy in the region was fast disappearing. “The Americans act,” he observed, “while the English are deliberating about straws.”⁷⁸ To his uncle, a Major Stuart, Brooke made the similar point that the American arrival “proves that while one nation is deliberating another can act.”⁷⁹

Why did the Americans fail in their negotiations? Muda Hassim, an influential minister in the royal court had, in fact, “pledged to forbear from negotiation with other powers, pending his negotiation with the English to repress piracy and to cede Labuan.”⁸⁰ But the story was more complex. “It is probable,” Brooke grumbled, “that from the

⁷⁷ Chaplin and Percival to George Bancroft, 4/9/1845, letter 105, Roll #321, “Captains’ Letters,” NAI.

⁷⁸ Mundy and Brooke, *Narrative of Events in Borneo*, V. 2, 33-4.

⁷⁹ Brooke to Major Stuart, 7/4/1845, in Brooke, *The Private Letters of Sir James Brooke, K.C.B., Rajah of Sarawak, Narrating the Events of His Life, from 1838 to the Present Time*, 77.

⁸⁰ Mundy and Brooke, *Narrative of Events in Borneo*, V. 2, 22.

badness of their interpreter (who was formerly my drunken servant), that the demand for exclusive trade has been erroneously understood.” Brooke, however, was grateful for the misunderstanding. He believed that had the Americans been better prepared, the court would readily have consented to their request, much to the detriment of his imperial project. He brooded about the shifting alliances of the Brunei court, only one faction of which he supported. “Even now they twit our party with the Americans doing at once, what the English cannot do, they are blamed for repulsing the Americans and for preferring our friendship,” he wrote of the situation. He considered Percival’s as evidence of his own inability to control the situation. He feared, in fact, that he was himself trapped within the snares of local politics. His imagery for describing his state is particularly revealing: “I can see no direct and immediate line of conduct, which can extricate our friends, and in the mean time we are in a wretched, inefficient steamer, which could, on occasion, neither fight or run away.” In contrast, “The Americans would act first and inquire afterwards—and they are right.”⁸¹

Nevertheless, the danger for Brooke, at least for the moment, had passed. The *Constitution* left after its officers were rebuffed at the Sultan’s court. The French did not arrive and neither did the Belgians. A year and a half of negotiations later, in November 1846, Brooke received instructions from Viscount Palmerston through Sir Thomas

⁸¹ Percival biographer David Long misunderstood entirely the significance of Brooke’s explanation for the American diplomatic failure, as subsequent sentences from Brooke’s letters reveal. Long quotes Brooke’s May 22 (not May 2, as Long has it), 1845 letter to John C. Templer (not Temple), from Brooke’s published letters (which consists of three volumes and not two). Long’s attribution to Brooke that the court would have granted the Americans “the moderate terms that they desired” appears nowhere in this letter or elsewhere in the volume. Brooke, *The Private Letters of Sir James Brooke, K.C.B., Rajah of Sarawak, Narrating the Events of His Life, from 1838 to the Present Time*, 65-7.

Cochrane to formally take Labuan for England.⁸² Sultan Omar Ali and Captain Rodney Mundy signed the treaty ceding Labuan on December 18, 1846.⁸³

As the British government continued its expansion of steam communication in southeast Asia, the coal fields of Labuan grew in significance. By the late 1840s, mining coal there and the nearby coast of Borneo was well under way.⁸⁴ “The European governments have during late years made careful researches to ascertain the distribution of coal fields,” wrote Horace St. John, noting discoveries of coal in India’s Ternnasserim provinces, along the Malay Peninsula, on Sumatra, Borneo, and many other less familiar locations. Only in Labuan, however, were large enough deposits, suited for steaming purposes, discovered by Europeans.⁸⁵ According to Hugh Low, by then Labuan’s Colonial Secretary, coal “will prove of the greatest value to our increasing steam communication with the East. It has been tried by various government steamers, the engineers of which pronounce it to be of the finest quality, superior to that imported to Singapore from England.”⁸⁶ Further, he added, “[o]ne of the principal reasons which has caused our government to form the settlement at Labuh-an is the value that this mineral will prove both in time of peace and in case of war.”⁸⁷

Joseph Balestier, Special Agent

⁸² Mundy and Brooke, *Narrative of Events in Borneo*, V. 2, 335.

⁸³ *Ibid.*, 295-6.

⁸⁴ Forbes, *Five Years in China: From 1842 to 1847: With an Account of the Occupation of the Islands of Labuan and Borneo by Her Majesty's Forces* by F.E. Forbes, 322-3. Forbes quoted here newspaper articles in the *Times* and *Daily News*.

⁸⁵ Horace Stebbing Roscoe St. John, *The Indian Archipelago; Its History and Present State*, vol. 2 (London: Longman Brown Green and Longmans, 1853), 349-50.

⁸⁶ Hugh Low, *Sarawak: Its Inhabitants and Productions: Being Notes During a Residence in That Country with H. H. The Rajah Brooke* (London: R. Bentley, 1848), 13-4.

⁸⁷ *Ibid.*, 16.

The American effort to obtain coal from Borneo had one final act. It involved a colorful figure named Joseph Balestier, a son-in-law of Boston's Paul Revere and a man already well informed about Bornean coal. When he was the newly appointed U.S. consul to Singapore in 1836, he had aided Olyphant & Co. in preparing Captain Frasier and the brig *Himmaleh* for their commercial and missionary voyage to Borneo.⁸⁸ His association with Olyphant would have made him one of the first to hear of George Lay's discoveries. Almost ten years later, he almost certainly knew about the *Constitution's* secret instructions to secure a coal supply for American vessels as well, for while still consul in Singapore when the ship arrived en route to Borneo, he greeted the Americans when it docked and hosted Percival in his mansion and plantation some three miles from the city's central business district.⁸⁹

In mid-August 1849, Secretary of State John Clayton contacted Balestier to undertake a series of diplomatic missions in southeast Asia. Appointing him "Special Agent of the United States to Cochin China and other portions of South Eastern Asia," Clayton included in his instructions a request to visit the Sultan in Brunei. Two circumstances drew Clayton's attention to Borneo. First, British naval expeditions to crush piracy around the China sea aroused American expectations of expanded, safe commerce in the region. Second, Clayton recounted the object that attracted the government to Borneo five years earlier, "the abundant deposits of fossil coal, suitable for the purposes of Steam Navigation, at Labuan, Sarrawack [sic], and in other districts on the coast of that Island." Percival had failed to win a concession to this coal, arriving too late for an outright grant by the Sultan to work the coal fields but too early to secure a

⁸⁸ King and Lay, *The Claims of Japan and Malaysia Upon Christendom, Exhibited in Notes of Voyages Made in 1837, from Canton, in the Ship Morrison and Brig Himmaleh*, vii-xi.

⁸⁹ Stevens, "A Cruise on the *Constitution*," 543-4.

deal with the British to purchase from their own concession on Labuan. In 1849, with a British company mining coal on the island, Clayton hoped to remedy this situation with “treaties of amity and commerce” between the U.S. and Brunei with the sanction of both the Sultan and Rajah Brooke.⁹⁰

At Macao, Balestier met the U.S.S. *Plymouth* at the end of December, and two months later he boarded the ship to begin his mission.⁹¹ After a failed diplomatic venture in Cochin China, Balestier and the *Plymouth* made their way to Borneo.⁹² Balestier’s general mission involved extending diplomatic recognition to Brooke’s government in Sarawak as well as securing the commercial treaty with the Sultan of Brunei that Percival and Chaplin had failed to do five years before. Although Brooke himself was not present on the island (once again), both objectives were met, though the Americans were barred from trading for Brunei’s antimony, a mineral Brooke kept as a monopoly for exclusively British consumption. From Brunei, Balestier and the *Plymouth* sailed to Labuan, where they continued their negotiations. “Mr. Balestier’s object in coming to this place,” recorded a young American officer aboard the *Plymouth* named George Welsh, “was to make inquiries concerning coal, its price, and at what price it would be furnished

⁹⁰ John Clayton to Joseph Balestier 8/16/1849, in M77, Roll #152; Diplomatic Instructions of the Department of State, 1801-1906: Special Missions" Dec 15, 1823-Nov 12, 1852, Vol. I, NAII (College Park, MD).

⁹¹ George P. Welsh, "Journal Aboard the U.S.S. Plymouth, 1848-1851," in Papers of George P. Welsh, Box 3, LoC Manuscripts., entries for Dec 23, 1849 and Feb 21, 1850.

⁹² The diplomacy of this episode is complex. Balestier was sent by Clayton to apologize for the alleged actions of Captain Percival following his failed visit to Brunei in 1845. After leaving that city, he landed at Tourane, the port for the inland city of Hué. After receiving a supposedly smuggled letter from an imprisoned French missionary threatened with execution, Percival demanded his release from the Cochin authorities. After receiving no response, he took prisoners, and when that, too, failed, he finally fired shots at the city and sailed away. Balestier was sent to apologize for those actions with a letter from President Zachary Taylor, but his efforts were refused on the grounds that no record of the incident could be found in local documents. Infuriated by persistent diplomatic protocols that he could not understand, Balestier, like Percival before him, left frustrated and empty handed. See Ibid. March entries. For two peculiar, apologist readings of the episode, see Long, *"Mad Jack": The Biography of Captain John Percival, Usn, 1779-1862*, 167-84, Ellis, *Mad Jack Percival: Legend of the Old Navy*, 172-8.

American steamers, besides to form a sort of treaty with the Sultan of Borneo.” Balestier, Welsh, and the rest of the crew discovered that the British had by then already set up a company to mine coal “of a very superior quality,” easily mined near the surface and evidently abundant. The mining company sold the coal to British vessels for \$4.50 a ton. For Americans, they agreed to \$6.00 a ton. Coming in second had its consequences.⁹³

In Borneo, Balestier observed “immense natural riches” along the northwest coast, inducements to commerce with the west that might lure American merchants. Trade, he hoped, would displace piracy, returning the island to lucrative commerce in tropical agriculture and forestry, articles “to which may now be added bituminous coal of the very best quality in the greatest abundance,” Balestier wrote home to Washington, “in exchange for which a new avenue will be opened for the export of our cotton clothes and other commodities thus creating a new & valuable trade to us and giving importance to the treaty just concluded.”⁹⁴

Balestier’s mention of cotton clothes suggests American expectations for U.S. commerce with Borneo in particular and China and southeast Asia more generally. In the mid-nineteenth century, cotton maintained a unique position in both the American and global economy. In the United States, cotton cultivation shaped both the southern plantation economy and the developing New England industrial economy of cotton mills.⁹⁵ Cotton was also essential to foreign trade. Throughout the century, raw cotton comprised by far the nation’s most valuable article for American export: over the twelve

⁹³ Welsh, “Journal Aboard the U.S.S. Plymouth, 1848-1851.” Entries for May 26 and June 6, 1850.

⁹⁴ Joseph Balestier to John M. Clayton 6/24/1850, in M37, Roll #9: RG 59, Records of Department of State; Despatches from Special Agents of the Department of State, 1794-1906 vols. 18-19; vol. 18 -- Joseph Balestier, NAI (College Park, MD).

⁹⁵ For cotton’s role in the world economy, see Beckert, “Emancipation and Empire: Reconstructing the Worldwide Web of Cotton Production in the Age of the American Civil War.”

months ending on June 30, 1845, cotton exports totaled over \$51 million, comprising just over half the value of *all* U.S. exports.⁹⁶ Most U.S. cotton went to Britain, where the burgeoning industrial cities like Manchester spun cotton fabrics for further exportation. American cotton that was not exported traveled north, to the growing mill towns New England mill towns.

Although China's overall fraction of American foreign trade remained minimal in the nineteenth century, this trade was comprised overwhelmingly of American cotton goods, and China represented the largest single market for finished American textiles.⁹⁷ In 1850, the \$1,203,000 worth of cotton cloth delivered to China represented fully 81.0% of all American exports there.⁹⁸ Moreover, considered as a single market, China consumed the largest share of American textiles sold abroad anywhere. In 1845, nearly 35% of exports of finished textiles landed in China. Although that figure dropped to about 10% in the mid-1850s, it rebounded again by 1860, a year that saw a more than doubling of value exported from just fifteen years earlier.⁹⁹ These factors, beyond crude calculations of China's vast (and presumed cotton-needy) population, contributed to the allure of the Chinese market for American textiles.

⁹⁶ *Letter from the Secretary of the Treasury Transmitting the Annual Report of Commerce and Navigation, &C., House Doc. No. 13, 29th Cong., 1st. sess. (1845).*

⁹⁷ In the fiscal year ending June 30, 1845, for example, total U.S. exports of raw cotton were valued at \$51,739,643—fully 52.1% of the value of all U.S. exports that year. That same year, U.S. manufactured cotton products exported to China were valued at \$1,496,470. While small in comparison with the figures for raw cotton, they still represented over a third of all U.S. exports of manufactured cotton. See *Letter from the Secretary of the Treasury Transmitting the Annual Report of Commerce and Navigation, &C. [29-1 House Doc. No. 13], (1845).*

⁹⁸ Kang Chao, "The Chinese-American Cotton-Textile Trade, 1830-1930," in *America's China Trade in Historical Perspective: The Chinese and American Performance*, ed. Ernest R. May and John K. Fairbank, Harvard Studies in American-East Asian Relations (Cambridge: Committee on American-East Asian Relations of the Dept. of History in collaboration with the Council on East Asian Studies Harvard University: Distributed by Harvard University Press, 1986), 105.

⁹⁹ *Letter from the Secretary of the Treasury Transmitting the Annual Report of Commerce and Navigation, &C, Commerce and Navigation of U.S., 1855, H. Exdoc. 147, 34th Cong., 1st. sess. (1855), Commerce and Navigation of U.S., 1860, H. Exdoc. 90, 36th Cong., 2nd sess. (1860).*

Britain remained the U.S.'s only significant competitor for the cotton trade with China, though the textiles they produced for Chinese markets differed. Chinese consumers, particularly the peasants and urban poor who comprised the bulk of the population, had long preferred thick, heavy fabrics, similar to centuries-old domestic hand woven fabrics considered more suitable for winter chills. British manufacturing specialized in high thread count textiles, preferred by wealthy urban elites, but few else. With relatively high cotton prices, adapting their manufacturing techniques to produce thicker fabrics were prohibitively expensive. American producers, on the other hand, possessed a cheaper supply of domestic cotton and mills already structured to produce coarse fabrics. Americans were aware of Chinese consuming preferences and sought to exploit it against their British competitors.¹⁰⁰ "It is quite clear, therefore," emphasized mail steamship enthusiast and Chairman of the House Committee on Naval Affairs Thomas Butler King in 1848, "*that the great field for American enterprise and skill, in our intercourse with China, lies in the adaptation of our cotton fabrics to the wants and tastes of the Chinese.*"¹⁰¹

¹⁰⁰ Brooke, *The Private Letters of Sir James Brooke, K.C.B., Rajah of Sarawak, Narrating the Events of His Life, from 1838 to the Present Time*, 108-10.

¹⁰¹ T. Butler King, *Steam Communication with China, and the Sandwich Islands*, H. Rep. 596, 30th Cong., 1st. sess. (1848). Italics in original. Not all proponents of American economic growth were so sanguine about cotton, however. Francis Bonyngue, an Englishman who had resided in both India and China, mocked what he portrayed as the false allure of the proposed cotton-for-tea commerce, favoring instead the domestic cultivation of tea and other Asian agricultural products in America. "It was argued, on the part of England" he wrote, that "if we can induce the Chinese only to wear a cotton night-cap each, 367,000,000 night caps! Why, the whole of Lancashire would become one continuous city. Manchester and Liverpool would kiss each other; and all England would have been under one perpetual cloud of factory smoke." As for the United States, Bonyngue continued, "what a day that would be for cotton in America! Ambitious men would pitch all idea of a future president-ship of the South Atlantic States to Old Nick [the Devil], and scamper off to pick cotton bolls!" Bonyngue concluded his hyperbolic parody of British and American proponents of the China trade with a reminder of the true state of trade with the east: Chinese consumption of opium far exceeded that of cotton. Estimates of the illicit opium trade varied; T. Butler King placed the British trade at around \$20,000,000 a year in 1848, not including the much smaller American opium tonnage. Bonyngue estimated the opium trade in 1852 at some \$45,000,000 a year. Cotton goods, on the other hand, including both raw cotton and manufactured fabrics, totaled from all sources in 1844 little more than \$12,000,000 Francis Bonyngue, *The Future Wealth of America: Being a Glance at the Resources of the*

Balestier saw his mission as helping further this American cotton trade with the far east. Securing access to Borneo coal was a step towards developing the transportation and communication infrastructure this trade might require. For Americans, however, interest in Borneo's coal would quickly wane as efforts began to find alternative supplies of coal in eastern Asia. With the death of President Zachary Taylor on July 9, 1850, the incoming Fillmore administration shook up the Cabinet. John Clayton left the State Department, replaced by Daniel Webster, who returned to a post he had filled previously during the Harrison administration between 1841 and 1843. Webster's enthusiasm for Balestier's mission waned, and noting that the endeavor "has not, thus far, produced any important result, and does not seem to promise much for the future," the new Secretary of State ended the mission.¹⁰² Webster, however, soon had other ideas about finding coal in the far east.

Commodore Perry's Pacific

"Of late years," began the account of Luo Shen, "the intercourse between China and the State of California, in America, has greatly increased in extent and frequency." Shen was a Chinese teacher employed as a clerk for Matthew Perry's chief interpreter, S. Wells Williams. "In consequence," Shen continued, "the government of the United States was anxious that steam vessels should run between the two countries, and it became necessary to have an arrangement by which they could purchase coal at the Japanese islands, which

United States and the Commercial and Agricultural Advantages of Cultivating Tea, Coffee, and Indigo, the Date, Mango, Jack, Leechee, Guava, and Orange Trees, Etc. With a Review of the China Trade (New-York: The author, 1852), 125, 78. And King, *Steam Communication with China, and the Sandwich Islands*.¹⁰² Webster, evidently dissatisfied with reports of Balestier's atrocious conduct in Siam, expressed himself in the circumspect but admonishing language of diplomacy: "It is, by no means, necessary for you to return to the United States, merely to be the bearer of the unimportant Convention, which you announce as having been concluded by yourself with the Sultan of Brunei." Daniel Webster to Joseph Balestier 2/15/1851, in M77 Roll #152, RG 59, NAI (College Park, MD).

lie between America and Asia.”¹⁰³ This was a view of Perry’s mission to Japan that put resources and the construction of a communication infrastructure immediately at the forefront. Coal, in fact, shaped Perry’s expedition. He planned for it, he searched for it, and he negotiated for it. He sent his men on geological expeditions to uncover it and he began the construction of depots to store it for steamships. Upon returning to America, he lectured about the importance of American colonies in the far east to ensure the availability of coal to American commerce. Coal was found around the world. Perry understood that the difficulty was getting it where you wanted it.

* * *

Commodore Matthew C. Perry left Norfolk for Madeira in late November 1852. His final destination was Japan, but he thought as carefully about how to get there as he did about what to do upon arriving. Much of this planning involved coal. His ship, the *Mississippi*, had been specially outfitted to hold 600 tons of coal, some 150 tons beyond its original design. The ship had been reconfigured to ensure the *Mississippi* could travel farther without stopping to refuel. These stops were essential to the mission, for without replenished supplies, none of his steamships would survive the voyage east. Perry anticipated an initial coaling at Madeira, then subsequent stops at the Cape of Good Hope, Mauritius, and Singapore.¹⁰⁴ Along the way, however, Perry realized his ship was

¹⁰³ [Luo Chen], "Journal of the Second Visit of Commodore Perry to Japan," in *Narrative of an American Squadron to the China Seas and Japan, Performed in the Years 1852, 1853, and 1854, under the Command of Commodore M.C. Perry, United States Navy, by Order of the Government of the United States* (Washington, D.C.: [33-2 House Ex. Doc. 97], 1856), 395. Luo Shen is actually not given an identity in the official narrative. See D.R. Howland, "Constructing Perry's 'Chinaman' in the Context of Adorno and Benjamin," in *New Asian Marxisms*, ed. Tani E. Barlow (Durham [N.C.]: Duke University Press, 2002). Howland explains that the original Chinese version of this manuscript is substantially different from the English translation by S. Wells Williams.

¹⁰⁴ Matthew Calbraith Perry and Roger Pineau, *The Japan Expedition, 1852-1854; the Personal Journal of Commodore Matthew C. Perry*, Smithsonian Institution Publication 4743 (Washington: Smithsonian Institution Press, 1968), 3.

consuming more coal than he had expected. Unseasonably foul winds and weather were delaying the voyage from Madeira along the African coast, and as the ship slowly consumed its limited fuel supply en route to the Cape, Perry ordered an unplanned stop at St. Helena for an emergency refueling. Steam engines may have helped ocean vessels travel along sea routes unconstrained by the currents of wind or water, but they did not make sea travel immune to Nature.

That Perry could coal at all at Capetown and Mauritius was the result of judicious planning and a dash of good fortune. Before leaving Norfolk, Perry had arranged with the shipping firm of Howland & Aspinwall to dispatch two ships from New York loaded with Pennsylvanian anthracite coal to sail ahead of the *Mississippi*. Both ships arrived at their destinations only days before Perry. Perry believed that without them, purchasing coal for the *Mississippi* and *Susquehanna*, as well as the *Powhatan* and *Allegheny* that were following them, would have involved “great difficulty.”¹⁰⁵ The arrangement with Howland & Aspinwall was a success, and Perry noted that future commanders of steam vessels should likewise send cargoes of coal ahead of themselves to ensure an adequate supply once they arrived at their ports of call along the way to their destinations.¹⁰⁶

At Ceylon, the British maintained a large supply of coal but the frequent arrival of steamships, some ten a month, led the Peninsular and Oriental Steam Navigation Company (the P&O) that oversaw the supply, to forbid the sale of British coal to foreign naval ships. Perry could only scrounge a meager supply from the local Bengali government.¹⁰⁷

¹⁰⁵ Ibid., 35.

¹⁰⁶ Ibid., 20.

¹⁰⁷ Ibid., 38.

Perry's difficulties obtaining coal persisted in Singapore. The British port had become a major coaling depot for mail steamers, facilitating "a constant postal communication, by means of the English and one or more Dutch steamers, with Hong Kong, Penang, Batavia, Shanghai, Calcutta, Madras, Bengal, Bombay, Ceylon, the Mauritius, Cape of Good Hope, and, by the Red Sea, with Europe and America." This mail communication kept Europeans and Americans in constant contact wherever they might be conducting business. Despite the operation of these mail steamers, "[t]here was not a pound of coal ... to be purchased at Singapore." Perry sighed that "there was reason to fear that the *Mississippi* would be deprived of her necessary supplies." Perry was learning, in fact, the cost of Percival's failure to secure a coal concession in Borneo before the British. By the time of Perry's arrival in Singapore, the Labuan mines were producing a substantial 1,000 tons a month, but the P&O again maintained a lock on the supply, consuming it entirely in their own vessels.¹⁰⁸

Good fortune assisted Perry again, however, as P&O coal supplies had fallen low in Hong Kong. Although it had enough coal for both ports in Singapore, the company lacked an available ship to transport it. A deal was reached. Perry was permitted to coal the *Mississippi* at Singapore provided he return the same amount upon a later visit to Hong Kong.¹⁰⁹ Incidents like this one convinced Perry and his officers to ration their coal consumption and jealously guard what supplies they were able to amass in various Asian ports.

¹⁰⁸ Matthew Calbraith Perry and Francis L. Hawks, *Narrative of the Expedition of an American Squadron to the China Seas and Japan, Performed in the Years 1852, 1853, and 1854, under the Command of Commodore M.C. Perry*, 3 vols., vol. 1 (Washington.: 1856), 129.

¹⁰⁹ Perry and Pineau, *The Japan Expedition, 1852-1854; the Personal Journal of Commodore Matthew C. Perry*, 51.

That guarding was not always successful, as suggested by the frustration Perry found storing coal in Shanghai. Perry left coal he had purchased there under the protection of a storekeeper named Amory, whom he forbade to release any amount without Perry's written permission. Perry was concerned, in particular, with the prospects of the French or Russian navies from taking advantage of his actions in Japan before he himself could complete his negotiations there. A Russian vessel arrived in Shanghai in November 1853, and when the Russian admiral approached Amory for a loan of twenty tons of coal, Amory, under Perry's orders, refused. The Russians, however, maintained an agent in Shanghai, who served a second role as the American vice-consul—at the time the State Department permitted such an apparent conflict of interest. The agent pressured Amory to release the coal, which he eventually did. When he learned of the transaction, Perry was predictably outraged, blaming both Amory the consular system which he called “fraught with much evil.” He would not fire Amory, as he was concerned such a move might offend the Russians, but his hopes of using the little coal he collected in Asia to his advantage had clearly failed.¹¹⁰

For the duration of the mission, Perry and his ships scrounged southeast Asia for coal supplies. Some continued to be shipped from the United States, other loads were purchased from British or Asian suppliers. His supplies were precarious and dealers unreliable. “At no time” Perry observed, “have we had more than fifty days of steaming for the three steamers.” Moreover, this limited supply shaped voyage itself, with Perry limiting travel for “its provident and economical use.” At their usual pace, his ships

¹¹⁰ Arthur Walworth, *Black Ships Off Japan; the Story of Commodore Perry's Expedition* (New York,: A. A. Knopf, 1946), 127-8.

consumed between 28 and 32 tons of coal a day.¹¹¹ This was the logistical situation in the Pacific faced by the United States in the 1850s, and as his mission wore on, Perry began to tire of relying upon coal supplied by others.

A vast improvement, he thought, would see Americans developing a coaling network of their own. An important element of this network, Perry believed, would involve discovering alternative sources for coal in the mines of various Asian countries, a project Perry initiated with a series of geological expeditions. These expeditions played as significant a role in the Japan expedition as Perry's planning for strategic outposts.¹¹²

There were two geological expeditions of note. Together, they suggest the ways in which studying natural history was not merely a opportunistic addition to commercial and naval expeditions in the mid-19th century but central to it. These missions must be understood in a broader context of western scientific observation. The observational skills of a Charles Darwin were, of course, rare. So too were voyages *primarily* devoted to exploration, like that of the American naval officer Charles Wilkes in his Exploring Expedition in the Pacific between 1838 and 1842. But natural history, embracing botany, zoology, and geology, as well as observations of cultures, currents, and climates, formed the foundation of trade and diplomacy. The products of Nature were not only the objects of commerce, but as food and fuel, sustained the voyagers themselves as they traveled.

¹¹¹ Commodore Perry to SecNav 2/2/1854 in Matthew Calbraith Perry, *Official Correspondence*, U.S. Senate Exec. Doc. Serial No. 751, Doc. No. 34 (Washington, D.C.: GPO, 1855), 142.

¹¹² The importance of these expeditions is clear from the literary form by which Perry publicized his mission to Japan. Upon returning to the United States, Perry collaborated with the Reverend Francis L. Hawks to produce an official narrative of his voyages. The narrative was published in three volumes in 1856. In an unusual action, both the U.S. Senate and House of Representatives issued their own editions. Volume I is the familiar narrative: the account of the voyage, mostly from Perry's perspective, in chronological order. It remains the standard first reference for the mission, even as its errors and omissions have been clarified by subsequent scholarship. The other two volumes are much less familiar, but it is no accident that they both cover scientific observations—Volume II on natural history and Volume III on astronomical observations. Perry, and his publishers, understood that collecting reports on agriculture, celestial navigation, and geology were directly tied to contemporary and anticipated needs for commerce and defense.

The first substantial geological expedition of the Japan voyage occurred in what Americans then called the Lew Chew Islands, now known as the Ryukyu group, home of Okinawa. In January 1854, Perry dispatched his geologist, the Reverend George Jones, to explore reports of coal on the island. Four officers accompanied him: Dr. Daniel Green, to study disease and agriculture, Dr. Charles Fahs, to study botany, Dr. James Morrow, studying both botany and agriculture, and Wilhelm Heine, the expedition's artist. Jones took responsibility for observing the geology of the island. Two enlisted crew came along as well to manage food and supplies. Adding to the party, some thirty residents of the island also joined them as they began their trek. Their mission, as Jones affirmed in his report to Perry, "was to examine some indications of coal at Shah bay," coal Perry hoped might support American steamers.¹¹³

The group trekked north from Napha in early February, composing geological, botanical, agricultural, and medical observations. At Farnigi, some fifty-five miles north of Napha, the party encountered their first indications of coal. They found traces of conglomerate, a jumble of diverse rock fragments fused into a single mass. Conglomerate passed into coarse sandstone, and coarse gave way to fine. For seven miles, sandstone alternated with slate, until the group encountered "some outcroppings of the black bituminous slate," the kind, Jones noted, "usually accompanying coal." Three miles further and they reached Shah Nehatu, or Shah anchorage. There they found an even larger deposit of the bituminous slate. The village of Shah itself sat atop a small island in the bay. As the Americans circumscribed it in their boat, they observed additional outcrops of the slate. Slate, however, even bituminous slate, was not coal, but

¹¹³ Rev. George Jones, "Report of an Exploration of Great Lew Chew," in *Narrative of the expedition of an American squadron to the China seas and Japan, performed in the years 1852, 1853, and 1854, under the command of Commodore M.C. Perry, V. 2, House Ex. Doc. 97, 33rd. Cong., 2nd. sess. (1856).*

was often found near it, frequently forming the ceilings of coal mines in America. Nevertheless, Jones acknowledged that the evidence for coal on Lew Chew remained circumstantial: "I wish to guard against too sanguine or certain expectations," he explained his report to Perry. The slate would not burn and, as Jones noted, "for steam navigation, it would be useless." Even so, the expedition had suggestive evidence that coal might still be found around Shah.¹¹⁴

The second and more extensive coal expedition occurred five months later. While visiting the Japanese port of Simoda in June 1854, Perry instructed Captain Joel Abbot of the *Macedonian* to detach from the fleet and sail to Formosa. Perry gave Abbot two objectives. First, inquire on the island for American sailors thought shipwrecked nearby. Second, as in the expeditions on Lew Chew, to explore for coal. Perry offered specific instructions. According to the letter of dispatch, Abbot was to ascertain "the convenience of procuring and shipping it; the productiveness of the mines; the quality of the coal for steaming purposes; its cost per ton of 2,240 pounds at the mines; the convenience and cost of shipping, &c., &c." Geological exploration was again delegated to George Jones while Abbot was instructed to inquire whether coal might be purchased there directly. If so, Perry sent along the storeship *Supply* to collect as much as 300 tons—but only if it was relatively inexpensive. Higher prices (Perry quoted \$20 a ton) were to decrease the volume purchased. The *Macedonian* and *Supply* left Simoda on June 26.¹¹⁵

¹¹⁴ Rev. George Jones, "Report Made to Commodore Perry of a Geological Exploration, Etc., of the Island of Great Lew Chew," in *Narrative of an American Squadron to the China Seas and Japan, Performed in the Years 1852, 1853, and 1854, under the Command of Commodore M.C. Perry, United States Navy, by Order of the Government of the United States, V. 2., House Ex. Doc. 97, 33rd. Cong., 2nd. sess. (1856).*

¹¹⁵ "Instructions and Report in Relation to the Island of Formosa and Manila," in *Narrative of an American Squadron to the China Seas and Japan, Performed in the Years 1852, 1853, and 1854, under the Command of Commodore M.C. Perry, United States Navy, by Order of the Government of the United States*, ed. Francis L. Hawks (Washington, D.C.: [33-2 House Ex. Doc. 97], 1856), 137-8, 42.

Jones' presented his expedition for coal in Formosa in the style of a travel narrative. As best he could, he obscured the fact that he was not exploring virgin land for coal outcrops but searching diligently for Formosan coal mines already in use. He first tried to gather information about coal from the residents of Kelung, the port where the *Macedonian* dropped anchor. To his frustration, they refused to share any information. "Nearly all that we have learned about the coal in this region has, therefore," Jones noted, "been by pushing and persevering investigations, in the face of constant attempts of the inhabitants to mislead us or to blind us as to the facts." When Jones persisted with his pushing and persevering, he met little resistance, though his actions along the way suggested that the "native" recalcitrance was well founded.¹¹⁶

The *Macedonian* had arrived in Kelung on Tuesday morning, July 11. That afternoon, Jones shuttled ashore with the ship's purser, two midshipmen, and the master's mate, "determined to commence our explorations before the authorities could suspect our object and throw difficulties in the way," he explained. After collecting an interpreter from Amoy, the group were led to a house in town with a large pile of some ten or twelve tons of coal. The owner offered to sell it to the visitors for a few dollars a ton. The coal, reasoned Jones, was probably mined nearby, and the group "set out on an exploratory walk" to a valley in the east. Residents of Kelung tried discouraging this walk, insisting no coal was to be found there. The party, collecting scraps of coal from their path, ignored them and continued on. The locals from Kelung followed them as far as mile out

¹¹⁶ Naturally, Jones does not speculate on why the residents of Kelung refused to help him. Perhaps they worried about the intentions of the Americans, or perhaps they were concerned more with their own government. Rev. George Jones, "Reports Made to Commodore Perry of a Visit to the Coal Regions of the Island of Formosa," in *Narrative of an American Squadron to the China Seas and Japan, Performed in the Years 1852, 1853, and 1854, under the Command of Commodore M.C. Perry, United States Navy, by Order of the Government of the United States, V. 2, House Ex. Doc. 97, 33rd. Cong., 2nd. sess. (1856).*

of town, where a handful of coal piles again encouraged the Americans. Only then did their discouragers return home.

Alone, Jones and his group continued along a path that cut through another valley heading south. Along the way, “with the help of some country people,” they were led further to where Jones triumphantly declares, “to our great pleasure, [we] discovered some mines.” With nighttime approaching and lacking lanterns or other tools, the party returned to the *Macedonian*, “gratified with our first day’s work.”¹¹⁷

The next day, Jones, Abbot, and the purser, Richard Allison, returned to shore for the coal that Jones had located at the house in Kelung the day before. This time, however, the owner explained he could not, in fact, sell the coal to the Americans. He did not explain why, but Jones surmised that “the mandarins had interfered,” and in his opinion, “the man seemed almost afraid to speak to us.” The ruling mandarin, described by Jones as the “Hip-toy” Le-chu-ou, met the party, explained that the coal *could* in fact be sold, but that it came from an island some 100 miles away.¹¹⁸ Confused, and skeptical, the crew returned again to the ship.

The following morning, Jones, the midshipman Williams, and four sailors (armed, Jones noted), returned to the island to explore the mines they encountered the day before. The party first found three separate entrances to the mine, each about thirty inches wide and four feet tall. A short crawl inside brought the Americans to the coal seam. Horizontal drifts stretching along the length of the seam for what Jones estimated to be about 120 feet indicated the extent of the workings of the mine. The report noted that the miners there evidently used only a sharp pick to remove the coal, and carted the pieces

¹¹⁷ Ibid.

¹¹⁸ Ibid.

they dislodged from the seam away in baskets. Jones believed this method led to substantial waste, pulverizing the coal into an unusable dust. Jones, however, “found no difficulty in getting it out in large pieces, of which, as specimens, we brought away as much as we could carry.” Further exploration and negotiations continued over the next few days. Jones was hardly “discovering” coal in any meaningful sense; he was finding mines already in use and planning for their extension to serve needs of western commercial steamers.¹¹⁹

Monday began early. One of the two midshipmen who had accompanied Jones on the first day of exploration, Kidder Randolph Breese, penned an entry in a friend’s journal explaining, with both humor and irritation, the events of his day. “I started this morning at half past four in the cutter for the famous mines of Formosa,” he began, “from which so much benefit to the whole world (some few speculating Amer[ican] merchants) is to be derived, and for which I, poor fellow, was turned out of my ship to incommode some and benefit others.” Breese spends most of the rest of the entry complaining about being forced into the coal exploration business and his repeated failures to secure breakfast.¹²⁰

This time, Jones, the reluctant Breese, and purser Allison were joined by two Chinese guides (“who to serve Mammon forgot their master,” according to Breese) and an interpreter. The guides had earlier been promised by the local mandarin, but he had seemed to reconsider out of fear of a reprimand from the mainland. The men nevertheless had arrived at the ship the night before, offering to help the Americans if

¹¹⁹ Ibid.

¹²⁰ Breese in John Glendy Sproston and Shiho Sakanishi, *A Private Journal of John Glendy Sproston, U.S.N.*, Monumenta Nipponica Monograph (Tokyo: Sophia University in cooperation with Charles E. Tuttle Co. Rutland Vt., 1968), 70. (Entry of July 17, 1854.)

first they were disguised as sailors. They had promised not to disclose their participation if promised a hefty reward. Jones agreed, provided the men spend the night aboard the ship to be sure of their intentions.¹²¹

When the party, disguised guides and all, set off for the mines Monday morning, they were thus expecting substantial “discoveries,” and they were not disappointed. Jones had been suspicious when Le-chu-ou claimed the town’s coal came from 100 miles away. With the help of the guides, they found it was closer to a mere three miles. Slipping by a channel in the bay and turning past the “Sphinx Head” promontory, the party came upon the coal mines in a location that “was also everything that could be desired.”¹²² After they learned of the mine, Le-chu-ou permitted them to purchase coal there. They paid about \$3 a ton for about 12 tons.¹²³ Another midshipman, John Sproston, who learned of these events from his friend Kidder Breese, noted that the exploration was successful, “a great source of satisfaction to all, as it has placed beyond a doubt the fact of the existence of extensive veins of coal upon the Island, of easy access, and from all appearances of good quality.” He added an observation that placed the coal expeditions on Formosa into a larger context of fuel supplies and markets in the far east. “When we consider,” he observed, “that not three hundred miles from this port (Shanghai) coal is selling for \$60 a ton, it is truly astonishing that more notice has not been taken of the existence of it here, and [a] depot for the useful article established.”¹²⁴ Perry would later cite the knowledge gained on this exploration as material support for

¹²¹ Breese in *Ibid.* Jones, “Reports Made to Commodore Perry of a Visit to the Coal Regions of the Island of Formosa.”

¹²² Jones, “Reports Made to Commodore Perry of a Visit to the Coal Regions of the Island of Formosa.”

¹²³ “Instructions and Report in Relation to the Island of Formosa and Manila,” 142.

¹²⁴ Breese in Sproston and Sakanishi, *A Private Journal of John Glendy Sproston, U.S.N.*, 71-2.

steam power and a future American colonization of the region to compete with Great Britain.¹²⁵

Returning

Perry carried the findings of these coal expeditions, as well as his agreement with Japan to provide coal to American steamers, back to the United States. In a paper read before a packed crowd at the American Geographical and Statistical Society in New York in 1856, he observed the prospects for “a flourishing trade” with Japan and “the boundless elements of trade” offered by China. Of all the products of Asia, however, Perry noted the “one mineral that calls for special remark.” Coal, Perry observed, had become “the most valuable to commerce of all the minerals since the introduction of steam in aid of navigation.” As he had learned while traveling to Japan, the availability of coal circumscribed the limits of steam communication. It meant the difference between a successful voyage and being stuck in port. Perry encouraged his American audience that coal could be found in China, as well as in Japan, Formosa, and Borneo.¹²⁶ But even as Perry’s plans gained domestic support, American relations with the far east were interrupted by a convulsive Civil War.

¹²⁵ M.C. Perry, "Remarks of Commodore Perry on the Expediency of the Extension of Further Encouragement to American Commerce in the East," in *Narrative of an American Squadron to the China Seas and Japan, Performed in the Years 1852, 1853, and 1854, under the Command of Commodore M.C. Perry, United States Navy, by Order of the Government of the United States, V. 2, H. Ex. Doc. 97, 33rd. Cong., 2nd. sess. (1856).*

¹²⁶ Perry, *A Paper by Commodore M. C. Perry, U.S.N., Read before the American Geographical and Statistical Society, at a Meeting Held March 6th, 1856, 7-8.*

Chapter 2: Race, Technology, and the Politics of Mineral Wealth on the American Isthmus

Ambrose W. Thompson knew of Matthew Perry's pursuit of coal in the far east. Thompson, an inventor, entrepreneur, and inveterate promoter, agreed with the Commodore that obtaining coal for the Pacific was a grand project of national importance. His papers reveal his interest. Appended to a long essay in Thompson's files was an asterisked excerpt from the first volume of Perry's *Narrative* of the Japan expedition published in 1856: "It was not practicable to make any arrangement with the 'Labuan Coal Company'—" it read, "for the whole produce of the mines under their control was exhausted by the Oriental & Pacific S.S. Co."¹

The quote referred to Perry's experience in Singapore, the port in which the Americans had been unable to obtain any coal for their vessels despite the city's regular supply from Labuan. Labuan coal—coal from the concession obtained by James Brooke for Britain and lost to John Percival aboard the U.S.S. *Constitution*—was purchased on an exclusive contract by the British steamship company and was thus unavailable to ships of other companies or navies. Glued to the left of the quote was a newspaper article describing Labuan coal. Thompson's papers reveal that he thought broadly about the geography of coal, geography that was global in scope.

For Thompson, however, the far east was too far away. From the early 1850s, Thompson labored to develop a major coal mine, as well as a major trans-isthmian road,

¹ "Untitled Essay Beginning 'Trading' Dated in Pencil '1866 My 30'," in LoC, Papers of Ambrose W. Thompson, Box 43, Chiriqui Improvement Co., 1865-1866. The original quote from the *Narrative* omits the words "Coal" in the name of the British mining company and "S.S." for the steamship company. See Perry and Hawks, *Narrative of the Expedition of an American Squadron to the China Seas and Japan, Performed in the Years 1852, 1853, and 1854, under the Command of Commodore M.C. Perry*, 129.

naval stations, and colony of Americans, on the isthmus of Chiriqui, a province of New Granada on the border of Costa Rica.² After obtaining and consolidating a series of grants and concessions there in the middle of the decade, Thompson embarked on an ambitious scheme to interest the United States government in isthmian coal for consumption in the Caribbean and Pacific, a plan that by the Civil War involved resettling freed blacks in Chiriqui in order to mine coal for the Navy and to develop the territory as a major outpost of American geopolitical power. President Lincoln and much of his cabinet would endorse the plan, and from the middle of 1861 through the end of 1862, tried to make it happen.

While historians have long been interested in Abraham Lincoln's efforts to colonize freed blacks in various places—including Liberia, Haiti, and Central America—they have not grasped the fundamental context of industrialization and the challenges that fueling American power had posed over the preceding two decades.³ Lincoln had been attracted to the idea of colonization, but his particular enthusiasm for Chiriqui stemmed from its promise of addressing a second, less visible obstacle to American development: coal in distant ports. Why voyage to Borneo or Japan for coal, asked Thompson, when coal in the nearby Caribbean could be mined instead? And who better to mine this vital coal than freed blacks? Thompson and eventually Lincoln, believed that the fuel imperatives created by steam power provided a new and enticing solution to the country's social dilemmas around race. Through the reconnaissance of scientists and engineers and

² With American assistance in 1903, this province would break away from Colombia to form the nation of Panama, but in the 1850s, it was subject to shifting borders and political authorities.

³ On Lincoln and colonization, see Benjamin Quarles, *Lincoln and the Negro* (New York: Oxford University Press, 1962), 108-23, Eric Foner, *Reconstruction: America's Unfinished Revolution, 1863-1877* (New York: Harper & Row, 1988), 6, James M. McPherson, "Abolitionist and Negro Opposition to Colonization During the Civil War," *Phylon* 26, no. 4 (1965), Paul J. Scheips, "Lincoln and the Chiriqui Colonization Project," *Journal of Negro History* 37, no. 4 (1952), Warran A. Beck, "Lincoln and Negro Colonization in Central America," *Abraham Lincoln Quarterly* VI (1950).

the wide dissemination of their reports, Lincoln and his supporters increased their enthusiasm for solving two pressing problems at once. But Thompson was not the first American to insist that steam navigation could be used to solve the pressing racial tensions that threatened to tear the country apart. The idea dated, in fact, to 1850, and it reveals how technology enticed some Americans to believe that could solve the complex social dilemmas that race posed in the 19th century.

Steamships and Slavery

At the beginning of the 1850s, as national political debate continued on the federal subsidization of mail steamship lines, a group of Americans began advocating the adoption of these steam lines to address the nation's most pressing social issues, slavery and the commingling of races in the United States. Mail steamers became, in effect, a solution in search of a problem. Not only could steam lines be used to carry inter-continental mail and advance commerce, went the argument, but they could be used to resettle free blacks in Africa. The solution to the race problem was imagined to come from the new technological opportunities offered by steam power, not the painful and difficult process of social accommodation. The driving force behind the steamship plan was the American Colonization Society.

The American Colonization Society was founded in Washington, D.C. by the Reverend Robert Finley in 1816. Like many of his contemporaries, Finley believed the intermingling of races in the United States presented the greatest obstacle to the social health and stability of the young republic. For Finley, the problem was larger than slavery; following a common argument, the mere coexistence of different and

presumably unequal races on the American continent compromised the political and social well-being of all groups. Removing people of African descent from the country, Finley argued, would allow the distinct races to flourish in their own ways in their own spaces. Finley looked to Africa as the logical location for a colony, a choice that would have the added inducement of offering a Christianizing influence over the heathen continent.

Like other benevolent societies operating in the early 19th century, the American Colonization Society pursued an agenda of social change; uniquely, however, it staked its success from the beginning on federal support, both financial and political. Attracting such prominent and politically diverse figures as Washington lawyer Francis Scott Key, Kentucky's Speaker of the House of Representatives Henry Clay, Clay's principal political opponent Andrew Jackson, and long list of statesmen and clergy, the organization quickly grew. The Society's most lasting accomplishment came in December 1821, with the purchase (quite literally at gun point) of a tract of land on Cape Mesurado along Africa's Grain Coast. The new settlement, christened Liberia, had within its first year 135 black colonists formerly of the United States and struggling to survive.⁴

The fortunes of the Society rose and fell over the next three decades with political shifts and alternating periods of debt and solvency. Every year, scores, and sometimes even hundreds of blacks made the voyage to Liberia. Despite the steady flow of emigrants, interest among the larger American black population remained miniscule, and the Society struggled to turn its vision of settlement into a political, social, and

⁴ By the Civil War, over 10,000 American freedmen left for Liberia, and an additional 5,000 went by the end of the century P. J. Staudenraus, *The African Colonization Movement, 1816-1865* (New York,: Columbia University Press, 1961), 15-35, 59-68, 251.

demographics fact. New technology presented a new opportunity. During a temporary surge in popularity and influence in the early 1850s, proponents of African colonization in the Society began arguing that funding steamship lines offered the most efficacious solution to the colonization problem, thus linking the continued settlement of Liberia to the possibilities of steam power. Judge Joseph Bryan of Alabama first conceived of the plan in 1850, and submitted it to the House of Representatives for consideration.

Bryan's plan linked the existing interest in mail steamers to the fundamental issue of race. In their memorial, Bryan and his colleagues proposed establishing a line of four steamships (which they would operate for a profit), of 4,000 tons apiece, to steam regularly between the United States and the western coast of Africa. The ships would ferry black colonists eastward, contribute to the national assault on the maritime slave trade, transport mail, and promote trade between Africa and North America. As considered by the House's Committee on Naval Affairs, the new line would provide an auxiliary steam fleet for the Navy, for like other mail steamship lines then being established, these ships would be commanded by American naval officers and operated by naval engineers. The Secretary of the Navy could enlist the vessels into active naval service if needed. More importantly, the committee concluded that the line would address the two elements of the race problem: it would smother the source by helping police the continued African slave trade and it would remove the toxic social consequences by transporting willing free blacks to Africa.⁵

The Committee recommended a fleet of three steamships. One would leave New York with colonists every three months for Savannah, where it would load both freight

⁵ *Report of the Naval Committee on Establishing a Line of Mail Steamships to the Western Coast of Africa, and Thence Via the Mediterranean to London: With an Appendix Added by the American Colonization Society*, (Washington, D.C.: Gideon & Co., 1850), 3, 8-9.

and mail. A second ship would leave Baltimore, with stops in Norfolk and Charleston, and a third would leave New Orleans with stops in the West Indies. All three ships would then steam to Liberia, discharge their passengers and cargo, and stop at any desired port along the African coast before heading to Gibraltar with mail for Mediterranean destinations. Final stops in Spain, Portugal, France, and Britain would conclude the voyage before the ships returned to the United States.⁶

It would be easy to assume that the members of the Colonization Society, as well as representatives on the House Naval Affairs Committee, were not interested in steamships per se, but instead merely capitalizing on the political support gathering in Washington behind the enlargement of the nation's steam navy. If money was to be had from Congress for mail steamers, according to this view, why not take advantage of it for colonization purposes? While the Colonization Society and the committee no doubt tried to take advantage of prevailing political winds, it would be too simple to dismiss their support of Bryan's steamship proposals as mere opportunism. Steamships offered an incentive its proponents believed would overcome what they considered the explanation behind the long-standing reluctance of free blacks to emigrate: the length and discomfort of the journey. "That the free negroes of the U.S. will be induced to go in large numbers to Liberia," explained the report on the plan from the House's Committee on Naval Affairs, "if a quick and pleasant passage by steam vessels be provided... cannot admit of any doubt." Moreover, since the ships could carry as many as 1,500 émigrés at a time, the Colonization Society would be able to take advantage of tremendous economies of scale as the costs for transporting each colonist would presumably plummet.⁷

⁶ Ibid., 23.

⁷ Ibid., 15, 27-8.

American missionaries in Africa believed the steamships would aid their work. According to D.T. Harris, an American in Liberia, the steamship plan “is bold and original, and if it succeeds, will give an impetus to colonization, that will either surpass the most sanguine hopes of its friends, or else rebound to the joy of its enemies.”⁸ Others praised the plan with biblical imagery, writing of the vessels as ships rescuing blacks from a modern day deluge. “Let these steamers,” wrote the missionary John Seys, “like so many arks, be provided for them, and the God of Ham as well as of Japhet will shut them in, and guide them safely above all the waves of prejudice, and bear them to a better country.”⁹ In the 19th century, if the steamer was a modern ark, then technology, not divine intervention, was the principal agent of salvation.

Support of the plan, soon known as the “Ebony Line” of steamships, also came from state and municipal governments. The diversity of bodies that lent their imprimatur to the plan suggests the wide support the idea had among the nation’s political elite in both northern and southern states. The Virginia Reform Convention, the constitutional convention convened in 1850 to resolve tensions between the white populations of the eastern and western parts of the state, supported the Liberian-bound steamers. Members of the Commonwealth’s legislature agreed.¹⁰ The Mayor and Boards of Aldermen and Common Council of Washington, D.C. offered their endorsements, along with the Governor and Legislature of New Jersey; the Governor, Speaker of the Senate, and members of the Legislature of Delaware; the Mayor and Common Council of Brooklyn,

⁸ D.T. Harris, “Letter from D.T. Harris, Liberia,” *African Repository* 27, no. 2 (1851).

⁹ John Seys, “The Line of Steamers to Africa,” *African Repository* 27, no. 6 (1851).

¹⁰ *Memorial of Members of the Virginia Reform Convention in Favor of the Establishment of a Line of Mail Steamers between the United States and the Western Coast of Africa, Senate Misc. No. 19, 31st. Cong., 2nd sess. (1851), Memorial of Members of the Legislature of Virginia in Favor of the Establishment of a Line of Mail Steamers between the United States and the Western Coast of Africa, Senate Misc. No. 18, 31st. Cong., 2nd. sess. (1851).*

New York; and ninety legislators from Pennsylvania.¹¹ The state of Maryland pledged \$200,000 in support, and Virginia \$40,000 a year.¹²

Religious bodies and newspapers similarly offered their endorsements. The Steamship plan received the full support of the Lutheran Synod of Virginia, which urged Congress to pass the bill.¹³ The *Nashville Union* observed that the steamers would stimulate trade, especially American textiles in exchange for the agricultural produce of Liberia.¹⁴ The African steamers also received the editorial support of the *N.Y. Express*.¹⁵

The Colonization Society's official organ, the *African Repository*, later explained that the organization had been reluctant to embrace the plan at first, given both the ships' anticipated costs and the meager numbers of free blacks then interested in emigrating. Yet the Naval Affairs Committee's endorsement encouraged the Society's full support. As the organization concluded its explanation of its shifted view, it noted "[t]he vast importance of such a line of steam ships" to American trade and "great and important results" that will accrue to the cause of emigration.¹⁶

The Society hailed the four steamship plan as an essential inducement to mass emigration. Steam reduced the duration of ocean voyages, and members of the Society asserted that regular mail steamers would stimulate free blacks to embrace a return to their ancestral continent. They proclaimed that regular steamship service to Liberia would trim the trans-Atlantic voyage to a mere fortnight. The Society imagined the

¹¹ *Cong. Globe* 31st Cong., 2nd Session (1851). *Cong. Globe* 31st Cong. 2nd Session (1851).

¹² *Report of the Naval Committee on Establishing a Line of Mail Steamships to the Western Coast of Africa, and Thence Via the Mediterranean to London: With an Appendix Added by the American Colonization Society*, 16.

¹³ "Action of the Synod of Virginia on Colonization, and the Proposed Steamships," *African Repository* 26, no. 12 (1850).

¹⁴ *Nashville Union*, "The Colonization of Free Blacks. Steamships to Africa," *African Repository* 27, no. 7 (1851).

¹⁵ *N.Y. Express*, "A Line of Steamers to Africa," *Christian Register*, Aug 3 1850.

¹⁶ "The Great Steamship Enterprize," *African Repository* 27, no. 1 (1851).

engines of steam awakening the dormant engines of commerce, strengthening the bonds of trade between the Africa and the Americas while releasing the United States from the intolerable burden of slavery. "The steamships must be built," opined proponents of colonization. "The great work must be done."¹⁷

But "the great work" languished in a fiercely divided Congress.¹⁸ Emigration was opposed by many abolitionists, who looked suspiciously at colonization as a plot by southern slave holders to remove free blacks while still maintaining slavery. On the other hand, some slaveholders opposed it because they feared it an opening salvo against slavery that would ultimately lead to abolition. By the summer of 1854, Congressional support remained tepid and the technical constraints of steamship construction became more evident. The original proposal for four, 4,000-ton ships became three ships at "not less than 1,200 tons." The emigration of 1,000 to 1,500 passengers per voyage became a meager 350. Ships costing as much as \$900,000 became ships of \$120,000. The fourteen-day passage became twenty two or twenty three, "quicker time requiring a consumption of coal very much greater in proportion than the gain in speed, the room for which is a very important consideration in a voyage so long."¹⁹ Mere enthusiasm, whether technological or political, was an insufficient guarantor of success.

Despite the advocacy of the American Colonization Society, Congress ultimately declined to act on the Ebony Line proposal. Opponents of slavery viewed emigration not as a resolution to the slavery issue, but as a buttress to it. They accused slavery supporters as hoping to deport free blacks, "who constitute the chief source of

¹⁷ "but Will They Go?" *African Repository* 26, no. 10 (1850).

¹⁸ "The Liberia Steamships," *African Repository* 26, no. 11 (1850).

¹⁹ H.M. Scheffelin, Thomas W. Williams, and James Hall, "Report of the Committee on Steamships to Liberia, Made to the Executive Committee of the American Colonization Society, July 28, 1854," *African Repository* 31, no. 2 (1854).

disturbance and danger to Slavery,” in order to maintain slavery itself.²⁰ Opponents of the Ebony line in Congress also railed against its expected cost. Citing the contract delays and cost overruns of the mail lines already granted, they argued that while perhaps meeting the desires of the American Colonization Society, a steam line to Liberia would not fulfill the other tasks delegated to it: supporting the U.S. Navy, suppressing piracy, or increasing international commerce.²¹ But as the nation began heading towards a more violent resolution of the race question, the Ebony Line would stand out as only the first effort to turn the technology of steam power to the service of resolving racial conflict. The next began in a little known province of New Granada, the mid-19th century republic that embraced Colombia, Panama, and parts of other Central and South American States.

Encountering Chiriqui

The American isthmus, the narrow strip of land separating the Atlantic and Pacific Oceans, had attracted European interest since the time of Columbus. Columbus, in fact, left his mark there in 1502 by naming the body of water on the Caribbean side of what became the Province of Chiriqui, “Almirante Bay,” after his naval rank of Admiral. In 1510 Vasco Nuñez de Balboa fled Hispaniola for Panama to avoid repaying debts and became the first European to cross the isthmus and see the Pacific Ocean. After Balboa claimed the land for Spain, a Royal Road across the isthmus began carrying to Spain bullion from Peru and Asian trade from Manila. As a global crossroads, Simón Bolívar would call Panama “the center of the universe.” But as Spanish power in the Americas

²⁰ “The Colonization Society--Agitation Again,” *National Era* V, no. 5 (1851).

²¹ Walter R. Johnson, *The Coal Trade of British America, with Researches on the Characters and Practical Values of American and Foreign Coals* (Washington, D.C. and Philadelphia: Taylor and Maury (Wash) and A. Hart (Phila), 1850).

declined in the late 18th and early 19th centuries, and as individual states declared their independence, the significance and centrality of the isthmus waned as well.²²

By the middle of the 19th century, it had become clear that geography alone was an insufficient source of greatness. Some Central American states concluded that given their natural riches and proximity to the Caribbean Sea and Atlantic and Pacific Oceans, they were missing only the right sort of population to turn gifts of nature into political and economic strength. Observing that “the wealth and power of nations depend on the importance of their population,” for example, the government of Costa Rica sought to encourage immigration to their state through a colonization project. On October 16, 1849, the government of Costa Rica granted Gabriel Lafond, director of the French assurance company, *L’Union des Ports*, twelve leagues of land stretching between Bay of Golfo Dulce along the Pacific coast and heading inland, land bounded by Punta Gorda and the river Chiriqui. Within the area enclosed in this grant, Lafond received title to its supposedly abundant natural resources, including forests, rivers, mines, and coastal islands. In exchange for the land titles, Lafond pledged to recruit European settlers. The entrepreneur was to have the first batch of colonists in Golfo Dulce within three years, and fully one thousand within four years after that or lose the grant.²³ At the same moment Americans encouraged blacks to colonize Africa, Costa Rica encouraged Europeans to colonize Central America. Both plans anticipated voluntary emigration,

²² John Haskell Kemble, *The Panama Route, 1848-1869* (Berkeley and Los Angeles: University of California Press, 1943), Walter LaFeber, *The Panama Canal: The Crisis in Historical Perspective* (New York: Oxford University Press, 1989), esp. 3-22, John Major, *Prize Possession: The United States and the Panama Canal, 1903-1979* (New York: Cambridge University Press, 1993), esp. 9-33.

²³ According to the grant, the population of the region was purposefully excluded from Lafond’s authority. “Grant of the Territory in Costa Rica to the Concessionaries [16th October, 1849],” in *Colonisation of Costa Rica, for the Development of Rich Mines of Its Gold, Silver, Lead, Copper, Iron and Coal, and for Opening a New Route between the Atlantic and Pacific*, ed. James Silk Buckingham (London: E. Wilson, 1852). Buckingham published his tract with English translations of the largely French and Spanish originals.

however, and the enthusiasm of their promoters failed to capture the imagination of their intended audiences.

The area in which Lafond's grant was located was called Chiriqui, and it stretched between the Caribbean and Pacific along the disputed border between Costa Rica and New Granada. Golfo Dulce was located along the isthmus's Pacific Coast, however, and transportation for as large a settlement project as Lafond envisioned introduced obvious challenges in transplanting settlers from Europe. Five months after Lafond's agent, Colonel Rafael Escalante, and Costa Rica's Minister of Foreign Affairs, Joaquin Bernardo Calvo, agreed upon the terms of the colonization project, Lafond received an additional concession to facilitate the journey of potential colonists. The new grant embraced a strip of land one league wide, winding from the Caribbean-facing Bocas del Toro to the intended settlement at Golfo Dulce, with an eastern boundary running roughly along the contested border between Costa Rica and New Granada. Constructing a road connecting the Atlantic and Pacific through this narrow band would become a principal object of Lafond's company, known as the Atlantic and Pacific Junction and Costa Rica Colonisation Company.²⁴

Constructing a road required surveying the land, and Lafond turned to a series of engineers for expert advice. The engineers envisioned ultimately building a railroad, but only after initial steps of simpler road construction. Jacques de Courtines, a civil engineer who had previously served on a failed French canal project in Panama, examined the route in 1850. De Courtines proposed beginning with a simple mule road, two meters wide, to initiate the flow of colonists and goods. A four meter-wide carriage

²⁴ "Grant of the Route across the Isthmus, a League in Breadth," in *Colonisation of Costa Rica, for the Development of Rich Mines of Its Gold, Silver, Lead, Copper, Iron and Coal, and for Opening a New Route between the Atlantic and Pacific*, ed. James Silk Buckingham (London: E. Wilson, 1852).

road, bordered by fences, would come next, followed eventually by an eight meter-wide road, ideally to accommodate a railroad.²⁵ Another agent, Louis Cheron, spent forty days trekking through the ceded territory. He reported on the land's potential for cultivation, the health of the climate, and comfort of the atmosphere. Timber grew in abundance, as did vanilla and sarsaparilla for medicines and bananas, sugar cane, maize, rice, and a wide spectrum of fruits. Wild boars, jaguars, monkeys, and tortoises abounded. As for minerals, Cheron reported gold, silver, and coal. Worried that he might be accused of overstating the riches of the land, he wrote to his employers that "I can assure you that far from exaggerating, I have left much to be added."²⁶

Cheron's mention of coal would prove to be of great importance for future colonization efforts for this border region between Costa Rica and New Granada. In 1850, certainty of coal along Lafond's land remained unclear. Coal seams were suspected on the Caribbean side. A naval captain and senator from the nearby Province of Veragua confirmed this likelihood, "as small pieces [of coal] have been discovered in a river which falls into the Bay de l'Admiral, probably having been carried down by the current."²⁷ Two Frenchmen, Captains Colombel and Lallier, spent six months in 1851 exploring the granted territory for Lafond. During a visit to Punta Arena, they learned of

²⁵ De Courtines anticipated that the successful railroad would capture traffic then confined to following the route around Cape Horn, some 850,000 tons worth in 1850. While de Courtines wrote with an engineer's precision about costs and the promoter's enthusiasm for success, he warned Lafond about the pitfalls of national pride. "If," he noted, "in 1846, on my return from Panama, I had taken my plan of a Railway to England or the United States, instead of persisting in wishing to execute a French work, it would have been already executed, and the public would have reaped the advantage.

"I conjure you, then, to beware of an exclusive patriotism in this affair, and to receive such propositions as may be made to you, from whatever quarter they may come."

²⁶ "Louis Cheron to M. Rafael Escalante, July 3, 1850," in *Colonisation of Costa Rica, for the Development of Rich Mines of Its Gold, Silver, Lead, Copper, Iron and Coal, and for Opening a New Route between the Atlantic and Pacific*, ed. James Silk Buckingham (London: E. Wilson, 1852).

²⁷ "La Barrière to Mr. Victor Herran, Sept. 13, 1850," in *Colonisation of Costa Rica, for the Development of Rich Mines of Its Gold, Silver, Lead, Copper, Iron and Coal, and for Opening a New Route between the Atlantic and Pacific*, ed. James Silk Buckingham (London: E. Wilson, 1852).

newly discovered coal beds reported in Costa Rican journals. And while they handled “some specimens of carbonized or anthracite wood,”²⁸ they refrained from confirming the existence of large beds. Shortly thereafter, news spread among Lafond and his associates of the certainty of a coal seam along the Pacific side of the isthmus, near the town of Terraba in Costa Rica. The French Admiral, Odet Pellion, who followed Colombel and Lallier to Golfo Dulce in June 1852, also acknowledged reports of coal at Terraba, and while he lacked adequate time and resources to explore for it himself, he recovered some samples and instructed his ship’s surgeon to examine them. The surgeon, meanwhile, could only get as close to the coal as the captain of the port of Punta Arenitas, who had himself observed the coal seams. The seams, he explained, were a variety of lignite—low carbon, young coal. This captain, however, insisted the coal was suitable for the steam engine he intended to construct in his port. Admiral Pellion, though hopeful, could only assure Lafond that existence of coal was certain, but its quality only knowable after further exploration and experiment.²⁹

Subsequent information forwarded to Europe provided additional evidence of the Terraba coal and introduced a new feature that distinguished this isthmian project from others before it. Terraba coal was found in a bed six miles long and 180 feet wide. The Costa Rican Colonisation Company was operating in a period of industrial power, in which coal rested at the center. Lafond’s promotional pamphlet advertised that “this discovery alone must give an immense advantage to the Golfo Dulce over all other ports

²⁸ "Report of Captain Colombel on Golfo Dulce, Received 25th of September, 1851, to Serve for the Colonization and Explanation of the Maps of This Part of the Pacific Coast," in *Contracts for Coal [36-1 House Rep. Report No. 568]* (Washington, D.C.: G.P.O., 1860), 75.

²⁹ "Extracts from the Report of Admiral Odet Pellion on Golfo Dulce, Made in June, 1852, after the Hydrographical Explorations of Captain Delapin, Commanding the Corvette "La Brillante," And Addressed to His Excellency the Minister of Marine of the Empire of France," in *Contracts for Coal, House Rep. No. 568*, (1860).

along the coast, in determining the most appropriate line of Route from Ocean to Oceans.” Appropriate, because the settlement offered an ideal station for replenishing steamers along the fuel-starved coast. “The discovery of the mine of Coal...” wrote one San José merchant in December, 1851, “is *certain*; there is not only one, but many, and all of excellent quality, for I have seen specimens of them at the house of the President, and some of them appeared to me very superior.” This report relied on both the weight of eye-witness testimony and the authority of associating the material evidence with a senior public official.³⁰

Despite its promising beginning and the enthusiastic reports of engineers and officers, by the middle of the 1850s, Lafond’s project had struck insurmountable obstacles. Capital from French investors dried up with the outbreak of the Crimean War in 1854. In addition, Lafond likely succumbed to the fierce competition with other isthmian schemes. These other plans included the highly successful Panama Railroad, supported by John Lloyd Stephens, William Henry Aspinwall, and Henry Chauncey; Cornelius Vanderbilt’s concession for a canal, railroad, and carriage road across Nicaragua; and New York’s Hargous Brothers’ original concession from Mexico for a route across the isthmus of Tehuantepec.³¹ Nevertheless, Lafond’s early promotion of Chiriqui would be continued and in a manner that would quickly connect the isthmus with the racial politics of the United States.

Several American interests had followed Gabriel Lafond to the Chiriqui isthmus. As a consequence of the claims and counter-claims to Chiriqui by the governments of

³⁰ James Silk Buckingham, *Colonisation of Costa Rica, for the Development of Rich Mines of Its Gold, Silver, Lead, Copper, Iron and Coal, and for Opening a New Route between the Atlantic and Pacific* (London: E. Wilson, 1852), 28, 34.

³¹ Paul J. Scheips, "Gabriel Lafond and Ambrose W. Thompson: Neglected Isthmian Promoters," *The Hispanic American Historical Review* 36, no. 2 (1956): 213-6, 19.

Costa Rica and New Granada, occasionally the grants they issued overlapped, perhaps deliberately. Santiago Agnew—or James Agnew as he had been known in his native United States—received a land grant in October 1852 from the government of New Granada for lands around Golfo Dulce on the isthmus's Pacific side (and overlapping with Lafond's grant from Costa Rica). Agnew intended to begin colonizing the coastal land. On the Caribbean side, James Alfonso Morel acquired a concession for coal land in 1854 from the government of the New Granada's district of Bocas del Toro. Between 1854 and 1856, both Agnew and Morel would discharge their grants to a new interest, the Chiriqui Improvement Company.³²

The Chiriqui Improvement Company was established by Ambrose W. Thompson to develop his financial and political interests in Central America. Thompson, born in Lewes, Delaware but a long time resident of Philadelphia, had long been interested in steam navigation. In 1851, he patented a new design for a ship's propeller, and had previously tried to gain federal grants for steam packet lines.³³ By the middle of the decade, he set his primary interest on Chiriqui, where it would remain until his death in 1882.

Thompson himself obtained a concession from Chiriqui to construct a road between the Pacific town of David, Chiriqui's capital city, and the Chiriqui Lagoon, on the Caribbean side. By 1855, Thompson and his company had assembled a substantial collection of grants and land titles with the multiple objectives of colonization, resource development, and transportation across the isthmus. Unlike rival isthmian schemes,

³² Paul J. Scheips, "Ambrose W. Thompson: A Neglected Isthmian Promoter" (University of Chicago, 1949), 27-30, *Contract for Coal, House Rep. No. 568*, 36th Cong., 1st. sess. (1860), "The Chiriqui Improvement Company and Ambrose W. Thompson: Abstract of Titles," in LoC, Papers of Ambrose W. Thompson, Box 45, second folder, 1-6.

³³ Ambrose W. Thompson, "Propeller," in Google Patents, ed. United States Patent Office (U.S.A.: 1851).

however, Thompson's Chiriqui grants encompassed the unusual presence of possibly large quantities of coal. As Thompson was quick to realize, in an age of industrial power, this coal might be as valuable as the right of way across the isthmus.³⁴

As with Lafond, Thompson's success in building his Chiriqui Improvement Company depended on the representation and circulation of scientific authority. His promotional documents were marked by the conspicuous inclusion of reports by civil engineers, results of geological and chemical analysis, and testimony by professional and often government sponsored scientists like Dr. Newton Manross and James Cooke. While the New World promoter described natural abundance and climatic healthfulness since the days of Richard Hakluyt and John Winthrop, by the mid-19th century, these statements earned credibility by their proximity to dispassionate accounts of minerals and soils by certified experts.

Thompson's company, in fact, presented its business decisions as dependent on scientific study. While the earliest reports of coal from Lafond's company conveyed hints, rumors, and circumstantial evidence, Thompson mobilized expert authority from the outset. Even when the company did report rumors, its public presentation of its decisions about them were rooted in expert evidence. Writing of the territory embracing the Chiriqui Lagoon, for example, a company pamphlet extolled reticence in the absence of knowledge. "These lands were believed to contain inexhaustible mines of bituminous coal;" the report observed, "but the Company did not deem themselves warranted in disposing of their shares, or providing large means to develop these mines, until a

³⁴ Scheips, "Ambrose W. Thompson: A Neglected Isthmian Promoter", 27-30, *Contract for Coal*, "The Chiriqui Improvement Company and Ambrose W. Thompson: Abstract of Titles," 1-6.

geological examination should give positive value to their proceedings.”³⁵ While later promotional efforts suggest that Thompson indeed believed in the potential of his concessions beyond the available evidence, his efforts to persuade others and to entice investors always depended on certified expert advice.

The first desired geological examination of Chiriqui came from Dr. Newton S. Manross, a Yale graduate who had recently completed his doctoral studies at Göttingen. Manross had experience in geological expeditions, having trekked through South America searching for gold in 1853 and reporting on Trinidad’s Pitch Lake in 1854.³⁶ The eminent Professors Benjamin Silliman of Yale and Edward Hitchcock of Amherst College suggested the young geologist to Thompson, and as if to provide additional credibility, their names were conspicuously cited in Manross’s own findings. To examine the potential for mining and road construction, two engineers also explored the region as well.³⁷

Manross focused on exploring for coal. Determining the age of Chiriqui’s coal seams was an essential part of promoting Thompson’s colonization project, for fixing the age of the coal allowed the mineral to be correlated with coal from other, better known parts of the world and hence evidence of its quality for various applications like cooking, coke making, or raising steam. Manross found fossil shells and sooty tree trunks lying on either side of the coal-bearing strata. In both cases, the species there resembled those still living nearby. Since older coal typically contained fossils of long extinct species, the

³⁵ Chiriqui Improvement Company, *Geological Report of Professor Manross, with Accompanying Papers, Maps, &C.* (New York: George F. Nesbitt & Co., 1856), 3.

³⁶ For a brief biography of Manross, see Eddy N. Smith et al., *Bristol, Connecticut : "In the Olden Time New Cambridge", Which Includes Forestville* (Hartford, Conn.: City Print. Co., 1907), 463, James Grant Wilson and John Fiske, *Appleton's Cyclopaedia of American Biography*, vol. 4 (New York: Appleton, 1888), 194-5.

³⁷ Chiriqui Improvement Company, *Geological Report of Professor Manross, with Accompanying Papers, Maps, &C.*, 3-5.

Chiriqui strata appeared relatively young. The absence of older fossils afforded evidence as well. “None of the peculiar fossils of the older coal formations were detected in these rocks,” Manross observed. The surrounding strata of rock similarly appeared relatively young. Taken together, these observations pointed to beds from the older Tertiary (no more than 65 million years old or so) or more recent still. By age then, Manross noted, “the coal of this region is therefore similar to that so extensively worked in France, Belgium, and many parts of Germany.”³⁸ Linking these European beds to the Chiriqui ones served both the geological purpose of surveying land and the rhetorical purpose of certifying the quality of the coal.

James Cooke, the Chief Engineer of the Company, likewise provided a detailed report of Chiriqui, its resources, and the possibilities of constructing a road across the isthmus. Like Manross, he noted the seeming ubiquity of coal there, by both the Caribbean and Pacific termini of the proposed route and most likely, he noted, along the proposed path of the road itself. And the road, according to the engineer, would do more than just bridge the isthmus. He described in his report how the “[t]he Chiriqui road will ... from these natural advantages, secure to itself the great travel not only from the cities of the United States to California, but also from England to Australia and the East Indies.” According to Cooke, Chiriqui would connect cities and nations around the globe. If its resources were insufficient to impress potential investors of the value of the route, Cooke noted, unlike the rival routes across Tehuantepec, Nicaragua, Darien, Panama, and Guatemala, the province of Chiriqui was the most healthy, for it lacked “the decaying matter of their swamps and marshes [that] impregnate the air with their

³⁸ Newton S. Manross, "Report of Prof. Newton S. Manross, to the President and Directors of the Chiriqui Improvement Company," in *Geological Report of Professor Manross, with Accompanying Papers, Maps, &C.* (New York: George F. Nesbitt & Co., 1856), 7-8.

destroying miasma.”³⁹ These scientific reports gained an additional level of credibility by their publication in scientific journals with national circulation. In 1857, for instance, the *Mining Magazine*, a short-lived New York journal, reproduced verbatim Manross’s geological report and Cooke’s engineering report.⁴⁰

Thompson’s Company publicized three conclusions from the geological report. First, that the area of the Chiriqui grant contained not only “superior quality” coal but coal “in inexhaustible quantities.” Since these mines, the only ones then known along the isthmus, all belonged to the Chiriqui grant (a fact contested by Costa Rica), the Company boasted that it could monopolize the valuable production of steam fuel for both nearby Caribbean and Pacific ports. Second, and equally importantly, this coal was found “in the most favorable places for mining,” permitting both inexpensive production to out-compete imported British and American coals and easy transportation “from the very mouths of the mines into the largest class vessels.” For Thompson and his associates, controlling this coal and the harbors from which ships could procure it introduced a new economic geography to the isthmus. With the increasing establishment of steam lines for mail and passenger service, monopolizing the region’s only coal fields distinguished the Chiriqui Company’s lands from competing isthmian schemes, positioning this narrow strip of land as a heady contender for the routes between England and Australia and the Atlantic and Pacific coasts of the United States. Finally, Thompson expected European and American colonists to be drawn to Chiriqui’s supposed gold mines and farm land. The order of these statements is suggestive that coal—and in particular coal for

³⁹ James B. Cooke, “Report on the Proposed Chiriqui Road,” in *Geological Report of Professor Manross, with Accompanying Papers, Maps, &C.* (New York: George F. Nesbitt & Co., 1856), 24-6.

⁴⁰ “Art. VI.—Chiriqui Improvement Company—Report of Prof. Newton S. Manross,” *Mining Magazine* 8, no. 3 (1857).

steamships—not colonial settlement per se, was foremost on the mind of Company directors.⁴¹

The Politics of Steam

As his company's geological reports increasingly suggested the prevalence of coal in Chiriqui, Thompson began promoting his land in Washington not only as a site of colonization or isthmian transit, but as a unique site for fueling American power. After a year of negotiation, on May 21, 1859, Secretary of the Navy Isaac Toucey signed a contract with the Chiriqui Improvement Company that involved paying the company to provide inexpensive coal to the Navy at Chiriqui and allowing the government to use land there for naval purposes.⁴²

The House of Representatives' Committee on Naval Affairs considered approving the Toucey contract a year later. It concluded that Thompson's title was subject to question, especially whether he had fulfilled certain conditions placed upon him, like the development of a carriage road across the isthmus. Nevertheless, reports from residents and government officials of New Granada suggested that Thompson was indeed on track to complete the road on time, and that he was supposedly spending substantial sums of money in the process—a good indication, to the committee, that his claims were legitimate. Although two members dissented from the report, the committee offered its

⁴¹ Chiriqui Improvement Company, *Geological Report of Professor Manross, with Accompanying Papers, Maps, &C.*, 4-5.

⁴² "J.S. Black to Isaac Toucey, 5/11/1859," in *Contracts for Coal [36-1 House Report No. 568]* (Washington, D.C.: G.P.O., 1860), 35-6.

provisional approval on the condition that the President appoint a scientific commission to examine the territory for its coal, roads, and harbors.⁴³

After the Civil War, the Buchanan administration's interest in naval stations and coal mines in Chiriqui would appear as a policy dead end, but in 1859 and 1860, it represented a crisp expression of the contours of American foreign strategy. The Committee on Naval Affairs explained the stakes by noting that that the foreign trade of Latin America exceeded \$338 million, while only about one-seventh of that figure represented trade with the United States. Britain absorbed the lion's share. The chairman of the committee, Maine's Congressman Freeman Morse, linked this British success in a territory he believed to include the natural trading partners of the United States to the rival's aggressive investment in mail steamship subsidies. "Mail steamers afford great facilities to mercantile communities," he wrote in the committee's report, "and wherever first established between countries divided by oceans, or like Central and South America, having no communication with the great markets of the world by railroad, are always followed by a remunerative trade to the country starting and sustaining them." The United States had erred over the previous decade, the committee concluded, in failing to keep pace with British subsidies. Contracting with Thompson's Chiriqui Company offered a substantial remedy. The United States would receive in Chiriqui excellent harbors, a right of way across the isthmus, and, not insignificantly, rights to the province's coal.⁴⁴

The other major isthmian routes, across Panama, Nicaragua, and Tehuantepec, universally lacked substantial harbors. The Panama road, for example, connected the

⁴³ *Contract for Coal.*

⁴⁴ *Ibid.*

town of Aspinwall on the Atlantic side to Panama on the Pacific. Steamers from San Francisco could only moor three and a half miles from Panama itself, due to the shallow water there, and travelers required the inconvenient and time consuming ferrying by lighters to the shore. The other two routes possessed similar limitations.⁴⁵

As news of the contract spread, it provoked a barely muted denunciation from some quarters. In one unsigned letter to the editor of the *New York Times*, ostensibly from Panama, the writer assailed the government for its failure to confirm the status of Thompson's grant, a problem that would resurface several times in the later 19th century. The author identified three fundamental problems with Thompson's claim. First, Thompson himself had not fulfilled the terms of his grant from the Province of Chiriqui in failing to begin construction of his road within the prescribed two years initially stipulated. According to the grant, this failure should have annulled his claim. Second, this grant could not have been legally extended, for the body that issued it, Chiriqui's Provincial Legislature, dissolved when the province was incorporated into the new state of Panama. Under these circumstances, only the Government in Bogotá, according to the critique, needed to extend the grant, which it was prevented from doing by the terms of its earlier contract with the Panama Railroad Company which stipulated a 49-year monopoly on building isthmian roads. Thompson had earlier skirted the issue by asserting that he was not building a new road, but merely "improving" and enlarging an older one. Predictably, the critiquing author disputed the validity of that argument as well, claiming that large portions of this supposed path were barely passable (though he conceded their use by natives) and that building a mule path or railroad clearly violated the spirit of the restrictive grant to the Panama Railroad Company. Finally, the author

⁴⁵ Ibid.

noted that the stated objective of moving U.S. troops across the isthmus on Thompson's road was flatly prohibited according to the terms of Thompson's own (and perhaps lapsed) grant from the Provincial Legislature, for it stipulated that Thompson's rights to use the road could not be assigned to a foreign power without the express permission of the government. In short, the writer claimed that Thompson's grant was invalid, illegal, and unhelpful in any event.⁴⁶

Importantly, while the anonymous author assailed Thompson and his Chiriqui Company, he affirmed the *objects* of the contract. "The importance of securing these privileges for the use of the United States cannot be too highly appreciated," he wrote. These privileges included the use by the Navy of capacious isthmian harbors on both the Caribbean and Pacific coasts, in which the department could moor "at all times ships of the largest class, and an unlimited number of them" and establish bases for supplies; the privilege of transporting troops and munitions from one side of the isthmus to the other—a coveted object in the effort to unite the booming west coast with the east; and finally a steady source of coal for the Navy in both Caribbean and Pacific waters. Even as he attacked the Thompson contract, the author noted that these goals were "objects of great importance to the United States, and, if attainable, ought not to be overlooked."⁴⁷

⁴⁶ [anon], "Another Mule Job," *New York Times*, January 28 1860.

⁴⁷ Ibid. Thompson's supporters were quick to counter this very public assault in Thompson's own home city. The attorney Joseph B. Stewart penned a response to the anonymous letter in February disputing many of its claims, though with questionable efficacy. To the attack on both the quality of the granted land and the status of the grant itself, Stewart offered the credibility (and credulity) of the Buchanan cabinet itself. Citing the "due diligence in examining out title before they acted," Stewart claimed that the Secretaries of State and Navy, along with the Attorney General, "must have had, at least, *prima facie* evidence" before signing their contract with Thompson. In effect, Stewart argued that Thompson's claim was valid because the U.S. government would not have moved to purchase the claim if the case was otherwise. Stewart concluded by attacking the credibility of the anonymous disputer, questioning his claim to residence in Panama and his possible financial interest in the rival Panama Railroad Company. Joseph B. Stewart, "The Chiriqui Company," *New York Times*, February 21 1860.

In June 1860, Congress directed the President to select “some competent person or persons” to determine once and for all the prospects for coal, naval stations, and railroad building in Chiriqui. The \$10,000 Congress appropriated was not much, but it provided President Buchanan the chance to select members for an exploratory expedition. The President appointed Captain Frederick Engle of the Navy to lead the survey with an engineer, First Lieutenant James St. Clair Morton, a geologist, Dr. John Evans, and a hydrographer, William N. Jeffers, to accompany him. The expedition left Norfolk aboard the U.S.S. *Brooklyn*, captained by the David Farragut, on August 13th, 1860 and arrived at Chiriqui’s harbor of Boca del Toro on the 23rd. There, the expedition divided into four exploratory teams. The topographical engineer, James St. Clair Morton, took charge of the party surveying the route for a railroad. The appropriation for the project restricted Morton to only six assistants, as well as Thompson’s son, Ambrose Thompson, Jr., and a guide and nine native porters hired upon landing. The team quickly split into two, one half sent to examine the Pacific coast and the other the Atlantic.⁴⁸

Early reports from the commission suggested “that the coal deposits found were amply sufficient to supply naval coal depots on either side of the Isthmus.”⁴⁹ Rumors about the proposed railroad route were mixed. One account had the surveyor, Lieutenant Morton, finding that available paths were both too long and cutting through too much elevation.⁵⁰ Another report ostensibly from a commission member just returned to Norfolk claimed that Morton *had* located a feasible path, Chiriqui’s harbors “unequaled,”

⁴⁸ "Chiriqui Survey," *Baltimore Sun*, July 19 1860, "By Telegraph for the Baltimore Sun," *Baltimore Sun*, July 26 1860, "The American Navy. Annual Report of the Secretary of the Navy," *The Philadelphia Enquirer*, December 6 1860.

⁴⁹ "Eastern News by Mail," *The Desert News*, November 21 1860.

⁵⁰ "The Chiriqui Expedition.--Panama, Thursday, Nov. 15, 1860," *The Philadelphia Inquirer*, November 27 1860.

and coal “discovered of superior quality and in inexhaustible quantities.”⁵¹ According to *The Philadelphia Inquirer*, the Panama Railroad, which had long denied Thompson and Chiriqui’s claims about roads and resources, expressed surprise at the results of the commission’s exploration. Jeffers conducted his hydrographic survey, concluding that “no finer harbors than these can be found,” and since an earlier, published Royal Navy survey of 1838 so precisely measured the hydrography of Chiriqui Lagoon, much of the hard work was already done.⁵²

The expedition and interest in Chiriqui’s coal underscored the unique obstacles and opportunities facing steam navigation in the Pacific. Unlike steam lines in the Caribbean, Mediterranean, or Persian Gulf, or Atlantic and Indian Oceans, steamships seeking to traverse the Pacific in the 1850s lacked a regular coal supply. Most steaming coal in the Pacific was anthracite shipped there as ballast from half-way across the world, an expensive process that was reflected in the price of the fuel. High fuel costs discouraged steam line investment. While the American ship *Golden Age* successfully steamed the route between Australia and Panama in 1854, the vessel was quickly sold and the line discontinued when the cost of fuel proved prohibitive. The possibility of Chiriqui’s coal fueling the expansion of steam navigation in the Pacific Ocean thus occasioned substantial enthusiasm. According to *The Philadelphia Enquirer*, the report of the Chiriqui expedition was “exceedingly cheering” and looked forward to the day when “American steam vessels will... soon be found in Chinese ports, and the trade with Asia may be diverted to San Francisco.”⁵³

⁵¹ "Result of the Chiriqui Commission," *The Philadelphia Inquirer*, November 29 1860, "The Chiriqui Commission--Arrival of the Brooklyn," *Baltimore Sun*, November 29 1860.

⁵² "Our Washington Letter," *The Philadelphia Inquirer*, December 1 1860.

⁵³ "The Chiriqui Expedition," *The Philadelphia Enquirer*, December 3 1860.

The New *El Dorado*

Only a few months after Thompson had signed his contract with the Buchanan administration, the province of Chiriqui, previously hardly mentioned or even known within the United States, became the subject of an extraordinary press coverage. Over the summer, news trickled into the country of remarkable discoveries of gold in the province. The contrast between reports of the gold rush and Thompson's promotional efforts could not have been more striking. While Thompson based his scheme on geologists and engineers, the gold seekers traveled to the isthmus on rumor and hope. Thompson sought legal rights to land, even amid shifting political boundaries, while the gold seekers cared about land only to plunder it. Thompson perceived the great wealth that lay in the geography of coal deposits, while the gold seekers sought the quick and fungible material wealth of gold.

In June 1859, news reached the United States of residents of Chiriqui uncovering gold relics buried in the cemeteries of long vanished native tribes. The earliest reports of the discoveries published in the United States doubted the claims emanating from the isthmus, but over the summer, additional letters confirmed the basic outline of the story and further stimulated the excitement over gold. The gold seekers described finding solid gold animal figures buried in graves, known as *huacas*. The figures, sealed within earthenware pots and buried four or five feet underground, were called in local dialects "sapos, calmones, camarones, borigueros, aquilas, palomas, plastas, *y otras figuras de oro*." By these various names, one eye-witness reported that they included golden "birds, savage beasts, toads, fishes, men or women, and many symbolic things—some having a

man's body, with the beak of a bird, or a hideous head, resembling nothing of late known in ornithology, ichthyology [sic], zoology, or any other ology." One report suggested that fifty thousand dollars worth of these figures had already been uncovered.⁵⁴

Anecdotes from Chiriqui conformed to the familiar form of the mineral rush narrative. After the initial discovery, a local town was vacated of its population who had left seeking gold. Elections supposed to take place were cancelled after no voters arrived, all similarly preoccupied searching for gold. Instant wealth drove one native insane. One gold seeker hired natives at astronomical wages, evidently made possible by the abundance of gold, to locate additional objects. Experts, in the form of Californian miners, arrived to identify the source of gold that produced the ritual artifacts.⁵⁵ There were also hyperbolic assertions about the find. The *Daily Evening Bulletin* of San Francisco called the find "one of the most singular of all the singular gold discoveries of the past twelve years," no small claim from a Californian paper.⁵⁶

The origins of the Chiriqui gold rush had begun amid rumor. One account suggested that a large tree had collapsed in a heavily forested cemetery, its unearthed roots extracting a mound of dirt along with it, thus exposing the buried gold underneath to a passer-by.⁵⁷ According to another version, related in June 1859, the gold rush resulted from a more human intervention. A native named Roberto Delai, who had long plundered Indian graves at Bugaba near the border with Costa Rica for the earthenware pots and stones buried near the surface, one day dug several feet deeper to the depth of

⁵⁴ "The New Gold Excitement," *Ohio Statesman*, August 11 1859, "'Los Huacales' Of New Granada. Interesting Letter from the Grave Diggings," *Daily Evening Bulletin [San Francisco]*, September 13 1859.

⁵⁵ "The New Gold Excitement.", "Interesting from the Isthmus: The Chiriqui Gold Excitement--Great Stampede for the Grave Diggings," *Baltimore Sun*, August 13 1859, "The Chiriqui Gold Fever," *Baltimore Sun*, August 3 1859.

⁵⁶ "'Los Huacales' Of New Granada. Interesting Letter from the Grave Diggings."

⁵⁷ "The Pacific Coast," *New York Times*, August 1 1859.

the skeletons. By the skeletons he uncovered the figure of a solid gold bat. Delai managed to hide his discovery for some time, but word eventually seeped out, and the full torrent of a gold rush began. Other grave robbers found golden plates, still others animal figurines.⁵⁸ Yet another account, perhaps the most reliable given the author's first-hand investigation of the story, placed the initial discovery in November 1858, and that digging from then until the beginning of the next July, a two farmers had unearthed a total of 125 pounds of golden figures.⁵⁹ All accounts agreed that the first discoveries occurred on burial grounds, and it was to ancient native burial grounds that the rapidly arriving gold seekers flocked.

News of would be gold rush spread quickly throughout the United States. Papers covered the story in Baltimore, San Francisco, San Antonio, Columbus, Ohio, and Amherst, New Hampshire, to name a few. Some reported through correspondents in Central America, others printed letters from witnesses or reprinted stories from other cities' papers. Not every publisher appeared terribly sanguine about a gold rush on an ancient Indian burial ground. New Hampshire's *Farmer's Cabinet* concluded one article on the gold fever by reminding its readers of the alleged source of the gold. Quoting the *Panama Star*, it noted that "[i]n all the wars between ... tribes no enemy was ever guilty of disturbing the resting places of the dead."⁶⁰ One correspondent discouraged the arrival of additional gold-seekers on account of serious rain (possibly a self-serving warning, of

⁵⁸ "Interesting from the Isthmus: The Chiriqui Gold Excitement--Great Stampede for the Grave Diggings." For a similar version of this article, see also "The Chiriqui Gold Discoveries," *Farmer's Cabinet*, August 17 1859.

⁵⁹ ""Los Huacales" Of New Granada. Interesting Letter from the Grave Diggings."

⁶⁰ "Panama," *Farmer's Cabinet*, August 10 1859. According to the probably reliable eye-witness account referenced in note 9, however, none of the graves evidently contained human remains, even hair. ""Los Huacales" Of New Granada. Interesting Letter from the Grave Diggings."

course), adding that “there are graves enough for ten thousand to keep robbing for the next hundred years.”⁶¹ The moral valence of this statement is certainly unclear.

Chiriqui had become what a *New York Times* correspondent labeled “the grave-diggers’ ‘El Dorado.’” The most ambitious treasure hunters skipped the cemeteries and searched for the gold mines from which they supposed the gold figurines had been formed. Cautious reports from the isthmus noted that no gold mines were then known, and that the gold figures had probably been assembled over a period of centuries from very small quantities discovered here and there, perhaps in stream beds.⁶²

Ambrose W. Thompson, the main promoter of land in Chiriqui, insisted that he held the title to the entire swath of land on which the gold rush was taking place, and he wanted a part of it, if only to further his larger plans. Thompson’s Chiriqui Improvement Company allegedly hired local Indians to plunder the Indian cemeteries for golden artifacts.⁶³ In August, Thompson began advertising the intention of the Chiriqui Improvement Company to send “[a] superior steamer” to the gold-rich graves. In an ineffectual protest against the flood of treasure seekers, Thompson explained that “[t]he Indian tombs containing gold are upon the lands which belong exclusively to the Chiriqui Improvement Company” and that “none but those having permits from the Company will be permitted to enter upon the lands.” There is no evidence that gold seekers were deterred by these warnings. Whether Thompson viewed the discoveries as a threat to his investment or a boon, he did try to capitalize on it; in addition to planning the gold

⁶¹ “Chiriqui Grave Diggins [Sic],” *Daily Columbus Enquirer*, September 3 1859.

⁶² “The Pacific Coast.”

⁶³ *Baltimore Sun*, August 13 1859.

expedition of his own, he also invited gold seekers to consider settling on his lands in Chiriqui permanently.⁶⁴

Thompson seems to have made little headway, either for a gold expedition or in recruiting colonists. Inevitably, a more sober picture of the gold “deposits” had emerged. Only one in twelve to fifteen graves contained the mysterious golden objects, far from every grave as had been previously asserted. The graves without gold contained more mundane pottery, whistles, tools, or idols. More importantly, by the end of August, the Chiriqui graves had been thoroughly looted, and no new sources of figures or gold itself had been found. A *New York Times* correspondent estimated the total value of the plunder thus far had been a modest \$100,000.⁶⁵ Far from the millions of dollars enthusiastically claimed for future looting, a correspondent with a San Francisco newspaper reported the likely results would be between a few hundred and a few thousand for the following digging season.⁶⁶ According to a correspondent for the *Charleston Mercury*, the Chiriqui gold fever had begun to decline in New York as well. Neither Thompson’s “unmentioned inducements” for colonists to settle there nor a band of gold-seekers who had purchased the former Revenue Steamer *Nautilus* to mount a mining expedition met with much interest.⁶⁷ A letter published in the *New York Times* estimated that some 2,000 treasure seekers had converged upon the *huacas* in the summer of 1859, but that as early as the middle of July, the gold excavations had largely ceased.⁶⁸ The only *huacas* that evidently contained golden figurines had been thoroughly stripped

⁶⁴ See the advertisements, for instance, in "Chiriqui Gold Region [Classified Ad]," *New York Times*, August 6 1859, "Chiriqui Gold Regions [Classified Ad]" *New York Times*, August 12 1859.

⁶⁵ "The Pacific Coast."

⁶⁶ "Los Huacales" Of New Granada. Interesting Letter from the Grave Diggings."

⁶⁷ "Correspondence of the Mercury," *Charleston Mercury*, August 12 1859. See also "Later from the Isthmus," *Baltimore Sun*, September 30 1859.

⁶⁸ "Arrival of the North Star," *New York Times*, August 12 1859.

of their riches. New York's gold rushers suffered more than a financial loss; several died while others fell ill.⁶⁹

Some figurines made their way to Europe and New York for sale to collectors.⁷⁰ By October, a French trading house in San Francisco was advertising its collection of Chiriqui *huacal*, and rumors spread that they were, in the words of the San Francisco press, "manufactured for the occasion." Further investigation revealed "large quantities of these monsters abroad," and collectors were cautioned about investing in the electroplated fakes.⁷¹

It was only after the disappointing confirmation that the *huacas* were largely empty of the expected gold figurines that two Californian prospectors who had voyaged to Chiriqui at the end of August returned to New York with some samples of gold and seemingly countless stories of their seven week adventure. The men had early on decided to leave the grave robbing to others and instead uncover the source of the gold itself. According to their account to the *New York Times*, this prudence endeared them to a native tribe living by the coast, which provided guides into the interior. After prospecting in the mountains of the Cordillera, they claimed to have uncovered "better diggings than were ever found in California"—a claim bolstered by their individual fame as successful prospectors there in 1849. After returning to New York to purchase mining equipment and sending gold samples to President Buchanan in Washington, the men intended to return to Chiriqui. Lest the reader remain skeptical about the final outcome of the expedition, the *Times* assured its readers that the recent incorporation of this unfamiliar, tropical territory into modern networks of steam power would soon reveal the

⁶⁹ *San Antonio Ledger and Texan*, April 21 1860.

⁷⁰ "From the Pacific Coast," *New York Times*, July 28 1859.

⁷¹ "The Jerez Body Contract Line," *Daily Evening Bulletin [San Francisco]*, October 20 1859.

answer. The explorers' "sanguine expectations as to the final pecuniary result..." concluded the paper, "cannot long remain in uncertainty in this age of quick travel, fast dissemination of news, and eager watching for splendid speculations."⁷² It is not clear whether the gold rush, or its rapid deflation, influenced Thompson's negotiations with the U.S. government. The Chiriqui Improvement Company never mentions the event in its own documents, but considering the torrent of news the rush generated—in all sections of the country and in large cities and small towns—this absence is conspicuous. Thompson had spent the previous half decade consolidating grants to assure his company's sole legal authority over Chiriqui. Perhaps the flood of gold seekers, few of whom bothered with the niceties of titles and property claims, revealed that Thompson's assertions to authority in the region were flimsier than he had previously suggested. Perhaps the disappointment of discovering so little gold in a place touted by Thompson as possessing it suggested additional doubts about his other claims, to coal in particular. Whatever the consequence, by early 1860, the gold rush had subsided, and Thompson's contract with the Navy Department was placed before Congress.

Steamships and Slavery

The election of Abraham Lincoln interrupted Thompson's negotiations with Washington. The new administration was, at least at first, unfamiliar with the promoter's contract with Secretary Toucey to supply coal for the Navy. Even if it had known about it, the cabinet was quickly confronting more pressing business as the nation careened towards war. Thompson managed to make his case, however. Over the first two years of the conflict,

⁷² "Gold-Hunting in Chiriqui," *New York Times*, December 24 1859.

the combination of racial crisis and the continuing—and even increasing—interest in steam navigation combined to create a new proposal for linking the destinies of Chiriqui and the United States. Thompson proposed, and Lincoln endorsed, a plan to colonize freed blacks in Chiriqui to mine coal for the government. If slavery remained the central social issue of the United States in 19th century, the problems of industrialized energy unfolded alongside and interwoven with it.

Historians have long been interested in the Lincoln administration's efforts towards colonizing free blacks as a permanent solution to the race and slavery conflicts that had caused the war. As noted above, projects for colonization had existed almost throughout the entire 19th century, but Lincoln's evident personal interest in colonization, alongside the halting actions he took towards emancipation, have remained particularly intriguing. Lincoln had, in fact, long affirmed the principles of colonization, although he had never taken an active role in furthering the process along. During the 1850s, the politically maturing Lincoln had viewed colonization as the ideal solution to the nation's racial problems, but remained unable to imagine a practical manner of carrying it out. "If all earthly power were given me," said Lincoln in his August 21, 1858 debate with Stephen Douglas in Ottawa, Illinois, "I should not know what to do as to the existing institution. My first impulse would be to free all the slaves and send them to Liberia,—to their own native land. But a moment's reflection would convince me that whatever of high hope (as I think there is) there may be in this, in the long run, its sudden execution is impossible." Lincoln thought too concretely to be enticed by a chimerical vision. Logistics mattered. How would the colonists make a living in their new home? Who could provide sufficient ships to move them or capital to pay for it? With such questions

unanswered, the vision remained addressed until Lincoln was in the political position to do something about it.⁷³

When Lincoln became president, he took a variety of actions towards addressing the racial tensions, though his early years in office were marked as much by his inactions. At first, Lincoln had resisted taking steps to end slavery, preferring instead to frame the developing war as a defense of the Constitution and about the preservation of the nation itself. In 1861, Lincoln rejected all offers by blacks to form military regiments to support the North, rebuked officials who declared slaves captured within their jurisdictions freed, and only signed the Confiscation Act, a bill declaring slaves used to support the Confederacy forfeited, out of political necessity. His decisions were instead focused on limiting the spread of slavery. In May 1861, he issued a presidential order directing the Secretary of the Interior to enforce long ignored laws banning the Atlantic slave trade. The following Spring, he submitted a bill to Congress to compensate states who emancipated their slaves. And central to Lincoln's thinking about these soon-to-be emancipated slaves was that they would chose to leave the United States upon receiving their freedom.⁷⁴

Ambrose W. Thompson first met the president on April 10, 1861, only two days before the opening volleys were fired at Fort Sumter. On the 11th, Thompson penned a long letter enumerating his opinion of the practical ways of addressing the growing crisis of secession. Nowhere does he mention Chiriqui, his contract with the Navy Department,

⁷³ Lincoln had actually first spoken these words in a speech at Peoria in 1854, the text of which he read aloud four years later to counter Douglas's claim that he "was engaged at that time in selling out and Abolitionizing the old Whig party." Edwin Erle Sparks, ed., *The Lincoln-Douglas Debates of 1858*, Collections of the Illinois State Historical Library, Volume III, Lincoln Series, Vol. 1 (Springfield, IL: Illinois State Historical Society, 1908), 100-01.

⁷⁴ Quarles, *Lincoln and the Negro*, 67-71, 93-6, 101-8.

or colonization, though the two might have discussed any of these topics in their meeting from the day before.⁷⁵

Over the following months, news of the Chiriqui lands did eventually make their way back to the Navy Department. Gideon Welles, its new secretary, may have learned of Chiriqui from New York's Charles B. Sedgwick, the new Chairman of the House's Committee on Naval Affairs. In 1860, Sedgwick had penned the Minority Report to the committee's evaluation of the Thompson-Toucey contract, producing a list of objections. His complaints were both of a legal and a geological nature. He had questioned the right of a private company to convey what amounted to naval rights to one country within the sovereignty of another and he had rejected the claim that Thompson could permit foreign troops to use the road without the permission of the New Chiriqui government. As to the supposed coal deposits, Sedgwick noted that he was unsatisfied that workable coal existed at Chiriqui at all. "Not so much as a single ton of good coal has ever been taken from any such mine," he complained, noting that merely noticing coal along a coastal cliff did not inspire confidence for a practical mining operation. Worse still, the Navy had not pursued a thorough investigation of the supposed beds, the titles were questionable, and there were no guarantees in the contract for the Chiriqui Company to produce any coal—only that the American government itself could begin mining for itself.⁷⁶ Sedgwick had emerged in the House as one of Thompson's biggest critics.

Barely a year later, in August 1861, that criticism had turned into praise. "I know of no other coal deposits on the Atlantic Coast south of the Potomac," Sedgwick wrote to

⁷⁵ "Ambrose W. Thompson to Abraham Lincoln, 4/11/1861," in LoC, Abraham Lincoln Papers, Series 1. General Correspondence. 1833-1916.

⁷⁶ *Contract for Coal Minority Report [36-1 House Report No. 568]*, (Washington, D.C.: G.P.O., 1860), 10-3.

Welles, “& I consider it of the last importance that a supply of coal depots should be secured from for the use of our Navy in the Gulf & on the Pacific.” The Representative explained to the new Secretary his experience with Chiriqui and its coal, and how he had previously “devoted much time to its investigation.” His opinion had shifted after additional grants from New Granada eliminated the uncertainty surrounding the legitimacy of Thompson’s titles, and the government’s own geological expedition convinced him of the character and availability of the province’s coals.⁷⁷

Thompson had likely coordinated Sedgwick’s appeal to Welles. Only a day after the Representative had drafted his letter, Thompson sent his own note to the Navy, confirming new terms for a proposed lease of Chiriqui to the government. Thompson promised Welles that the Chiriqui Improvement Company could supply as much coal as the Navy desired in the Chiriqui Lagoon for half the cost at any point in the preceding decade. With a railroad across the isthmus, Thompson guaranteed the delivery of coal at the Pacific’s Golfo Dulce at half the cost of other Pacific coals.⁷⁸ With this first formal broaching of the subject in August 1861, Thompson presented the advantages of Chiriqui very similarly as he had to the Buchanan administration: as a matter of fueling American power on either side of the isthmus and strengthening the ties of east and west.

The matter quickly reached the President, who referred it to his brother-in-law and confidant, Ninian Edwards. Edwards proved very taken by the reports of the 1860 Chiriqui Surveying Expedition, noting the government affiliation of its leaders (in the army, navy, or other executive department) and the respectability of Charles Jackson, the

⁷⁷ “C.B. Sedgwick to Gideon Welles, 8/7/1861,” in LoC, Papers of Ambrose W. Thompson, Box 7, General Correspondence, July-December 1861. How a copy of Sedgwick’s letter found its way into Thompson’s papers is certainly interesting, and raises the question of a new relationship—financial or political—between the two men. I have found no evidence thus far to substantiate this possibility.

⁷⁸ “Ambrose W. Thompson to Gideon Welles, 8/8/1861,” in LoC, Abraham Lincoln Papers.

Boston geologist and chemist who had examined the coal samples brought back.

Published statements from the government of New Granada assured him of the legality of Thompson's grant.⁷⁹

Most importantly, Edwards described the "vast saving" to be expected from acquiring rights to Chiriqui's coal. The Navy paid \$14.00 per ton in the Caribbean and Gulf, and Edwards expected those prices to drop by more than half with the new mines.⁸⁰ With then current consumption, the government would save over \$100,000 a year in Atlantic waters alone. Should the railroad across Chiriqui be completed as well, another \$130,000 might be saved per year in Pacific waters. These direct savings for fuel would be compounded by additional advantages as well. The Navy would no longer need to keep its expensive supply ships floating off the ports of Aspinwall and Panama in favor of depots on shore, perhaps saving over half a million dollars a year. Furthermore, Chiriqui offered a new source of valuable timber for shipbuilding. The vast harbors of the Chiriqui Lagoon offered unprecedented strategic advantages in the Caribbean, as well, where it "might save whole squadrons." And during wartime, by then no mere hypothetical event, Edwards looked to the prospects of fueling the Union Navy—with savings he suggested in the neighborhood of nearly \$2 million a year. Almost as an afterthought, Edwards noted that the lands might also be employed for colonization.⁸¹

⁷⁹ "Ninian Edwards to Abraham Lincoln, 8/9/1861," in LoC, Abraham Lincoln Papers.

⁸⁰ Edwards' figures came from the House of Representatives' Committee on Naval Affairs' 1860 report.

⁸¹ "Ninian Edwards to Abraham Lincoln, 8/9/1861." Whether Thompson's grant could be transferred to the United States was another question. More broadly, Edwards asked whether the United States, or any nation, could own land under the sovereignty of another state. That he and Lincoln debated this question at all reveals the novelty they perceived in this situation. Purchasing land at Chiriqui was evidently considered as entirely different from the previous three-quarters of a century of westward expansion. Edwards believed that international law adequately provided for such a case, and pointed to Emer de Vattel's *The Law of Nations*. Vattel differentiated between the "high domain" of a state—the land of the nation itself under the ultimate authority of the sovereign—and the "useful domain"—the land held by private citizens of the nation and with certain rights. According to Vattel, there was nothing stopping

The difficulty remained in working out a deal favorable to the government. Thompson had proposed separate contracts for each element of the deal—for supplying coal, leasing the land, and so on. Edwards worried that with such an arrangement, should the Chiriqui project fail to produce coal, the government would still be saddled with paying for the land leases it did not want or need absent the fuel. Since the “main object” of the plan was fueling the Navy, Edwards suggested to his brother-in-law that a single contract ought to be drafted that would ensure that receiving coal remain the key stipulation.⁸²

Lincoln referred the matter to Welles in the Navy Department. The secretary was cool on the project from the beginning, later recalling that his inquiry into the Chiriqui plan convinced him “that it was a speculating, if not a swindling scheme,” about which he alerted the still enthusiastic president. The president instructed the Navy to support the plan and to pay Thompson’s Chiriqui Improvement Company \$50,000 to begin colonization and mining. Welles insisted that his department was restricted by law to purchase coal on yearly contracts from the lowest bidder. Only after learning of this restriction did Lincoln reluctantly rescind his order.⁸³

Lincoln then turned to his Secretary of Interior, Caleb B. Smith to confirm Welles’ claim. Lincoln wrote enticingly to Smith of the potential of the contract. The

foreign nations from possessing land within another “in the manner of private individuals.” As Edwards read Vattel, there was nothing stopping the United States from legally acquiring Thompson’s grants. See Emer de Vattel, *The Law of Nations, or, Principles of the Law of Nature Applied to the Conduct and Affairs of Nations and Sovereigns*, A new , rev., cor. and enriched with many valuable notes never before translated into English. ed. (London: G.G. and J. Robinson, 1797), 165-6.

The point was largely moot by August 1861, however, because Thompson was no longer trying to sell his Chiriqui privileges, merely lease them. Such a lease was evidently permissible, Edwards noted, because of existing arrangement “in the common and ordinary case of leasing lands, wharfs, & warehouses in foreign ports for storing coal and naval purposes.” “Ninian Edwards to Abraham Lincoln, 8/9/1861.”

⁸² “Ninian Edwards to Abraham Lincoln, 8/10/1861,” in LoC, Abraham Lincoln Papers.

⁸³ Gideon Welles, “The History of Emancipation,” *The Galaxy* 14, no. 6 (1872): 849, “Caleb B. Smith to Abraham Lincoln, 11/4/1861,” in LoC, Papers of Ambrose W. Thompson, Box 7, General Correspondence, July-December 1861.

president enthusiastically noted that four executive departments—War, Navy, the Post Office, and Caleb’s own Interior, “may all derive benefits from the proposed contract.” While the first three departments might all benefit from the reduced cost of coal, it was Interior’s charge to return Africans captured in the slave trade. With a base in Chiriqui, the expenses of this work might be measurably reduced. Moreover, the possible colony would provide an outlet for Lincoln’s own interest in the emigration of free and freed blacks. Already in 1861, Lincoln was considering how to combine the coal and resettlement problems into a single solution.⁸⁴

After nearly two weeks of study, Smith returned with a very different opinion from Gideon Welles. “I apprehend the Hon-Secretary [Welles] has no had leisure to examine at length the legislation of Congress upon this subject,” he wrote caustically. Far from the Navy Secretary’s assertions of insufficient authority, Smith replied that at least three acts of Congress suggested far greater flexibility in dealing with coal. Smith ridiculed the claim that an 1843 law requiring competitive bidding for “all provisions and clothing, hemp, and other materials of every name and nature” should be interpreted to include coal. Fuel was too important, Smith argued, to be subject to such a binding constraint and classified with mundane supplies. “It can hardly be supposed,” he asserted, “that Congress designed to prevent the Navy Department from purchasing such supplies of fuel as might be needed at remote Stations thousands of miles from our own coast except upon contracts made after advertising.” Even more clearly, the Navy’s Appropriation Act of 1850 explicitly gave the secretary special authority over coal, granting him the “power to discriminate and purchase, in such manner as he may deem proper, that kind of fuel which is best adapted to the purpose for which it is to be used.”

⁸⁴ "Abraham Lincoln to Caleb B. Smith, 10/23/1861," in LoC, Abraham Lincoln Papers.

Finally, and most concretely, the Navy's Appropriation Act of 1845 explicitly excused "ordnance, gunpowder, medicines, or the supplies which it may be necessary to purchase out of the United States" from the requirements of competitive bidding. And lest the president mistake the aim of his legal argument, Smith declared his own opinion of the Thompson contract, an opportunity with which he was "strongly impressed" about the coal and harbors Chiriqui had to offer the United States.⁸⁵ Smith was also concerned at the time that the Navy might forsake a rare opportunity to secure the coal before another nation claimed it for itself.⁸⁶

Political momentum built up behind the Chiriqui plan. Another Lincoln confidant, the influential former editor and Republican party founder, Francis P. Blair, Sr., drew an analogy with the British in India. There, according to Blair, a private company supported by a rising geopolitical power consolidated rule over a fractured polity. In consequence, Britain acquired a vast empire, political stability on the subcontinent, countervailing power against European rivals, and, of course, commercial opportunities.⁸⁷ For Blair, Central America represented the India of the United States. Thompson's offer of Chiriqui offered the administration tantalizing solutions to the most pressing issues facing the divided nation: a home for emigrating blacks, a reliable path across the isthmus, and a buffer against the incursion of European influence on the continent. He grandly insisted that "Chiriqui may be made the pivot on which to rest our

⁸⁵ "Caleb B. Smith to Abraham Lincoln, 11/4/1861." On the acts Smith discussed, see Richard Peters, ed., *The Public Statutes at Large of the United States of America, from the Organization of the Government in 1789, to March 3, 1845*, vol. V (Boston: Little, Brown and Company, 1856), 617, 794, George Minot, ed., *The Statutes at Large and Treaties of the United States of America. From December 1, 1845 to March 3, 1851*, vol. IX (Boston: Little, Brown and Company, 1862).

⁸⁶ Gideon Welles and Edgar Thaddeus Welles, *Diary of Gideon Welles, Secretary of the Navy under Lincoln and Johnson*, 3 vols., vol. 1 (Boston, New York,: Houghton Mifflin Company, 1911), 151.

⁸⁷ Blair's assertion that the East India Company "brought under subjection all their [the Mughal rulers'] elements of disorder and debility—their discordant castes & religious antipathies" just four years after the Mutiny of 1857 suggests more than a little wishful optimism on his part.

lever to sway Central America and secure for the free states on this continent the control which is deemed necessary for the preservation of our Republican Institutions.”⁸⁸ In effect, Chiriqui became a fantasy upon which Blair projected his deepest hopes for averting the worsening national crisis.

For Blair, Chiriqui represented only the beginning of American colonization projects. The U.S. Minister to Guatemala had altered him of that nation’s willingness to support a colony of freed blacks, if only to counter the British settlement of Belize. An additional land grant from Honduras, along the border between those two states, would offer yet another trans-isthmian railroad route and Blair enthused that “American Merchants, mechanics, planters and manufacturers would do the rest and spread much more rapidly these new Colonies on the coasts of Central America East and West, than our earlier colonies of Jamestown and Plymouth spread along the shores of the Atlantic.” Yet enthusiasm and confidence in American ingenuity—whether regarding the skills of freedmen in raising cotton or engineers in laying railroad tracks—were no substitute for the material reality of terrain and the presence of promised resources. Thompson’s promotional documents, and even the Chiriqui survey of the previous administration, could only be trusted so far, and Blair proposed (with the consent of Thompson himself), the appointment of yet another official investigator. Blair suggested Henry T. Blow, then serving as Lincoln’s Minister to Venezuela, and a man with experience in business, railroads, and steamships; “a practical miner,” Blair called him, adding that he had “made

⁸⁸ "Francis P. Blair, Sr. To Abraham Lincoln, 11/16/1861," in LoC, Abraham Lincoln Papers.

his fortune in that line.” A confirmation from Blow of the earlier Chiriqui surveys would add measurably to the government’s case for both coal and colonization.⁸⁹

Thompson embraced Blair’s proposal and he immediately outlined a plan for the critical mission to Chiriqui. He would personally steam immediately to Havana with sealed orders to the American consul and any available “commander of any national steamer which might be in port” to carry him to Venezuela. There he would retrieve Minister Blow and proceed to Chiriqui to begin their inspection. “I can show Mr. Blow the coal,” Thompson wrote, “the magnificent harbors, the splendid cotton lands, fertile beyond conception,” and so on he continued listing the natural bounty he expected to find.⁹⁰

Thompson requested that the President permit his son, Ambrose, Jr., to accompany Blow on his quickly materializing mission.⁹¹ Blair agreed, and immediately drafted two letters for Lincoln’s signature. The letters represented a crystallization of Blair’s plans for advancing the Chiriqui cause. The first letter instructed Simon Cameron, Lincoln’s soon to be dismissed Secretary of War, to relieve the younger Thompson of his current duties in favor of the special mission to Chiriqui. The second had Secretary Welles order a naval vessel of his choosing to carry Thompson to meet Blow in Venezuela and then transport both of them to Chiriqui. Neither letter was

⁸⁹ Ibid. Blair included in his letter to Lincoln a pamphlet of Thompson’s listing several advantages of a colony in Chiriqui: the projection of American influence into the Gulf and Caribbean, a route to the west coast, a supply of coal at reduced prices for both the Gulf and Pacific naval squadrons, a territory for the settlement of emigrated blacks, and finally, the prospects for a new steamship line for mail and defense along the entire route from east to west coasts. “Memoranda of Proposals, to Secure to the Government of the United States, Enclosed in Francis P. Blair Sr., Saturday, November 16, 1861,” in LoC, Abraham Lincoln Papers, Series 1. General Correspondence. 1833-1916.

⁹⁰ “Ambrose W. Thompson to Francis P. Blair, 11/17/1861,” in LoC, Abraham Lincoln Papers, Series 1. General Correspondence. 1833-1916.

⁹¹ “Ambrose W. Thompson to Francis P. Blair, 11/18/1861,” in LoC, Abraham Lincoln Papers, Series 1. General Correspondence. 1833-1916.

evidently sent, and Blow's mission to Chiriqui, for some reason, never materialized.⁹²

Other events in Washington were quickly changing the political ground for the Chiriqui proposal.

On April 16, 1862, Congress emancipated the slaves of Washington, D.C. Slave owners of the District who declared allegiance to the Union were eligible for up to \$300 per freed slave. As part of the act, Congress also appropriated \$100,000 to allow the president to begin colonizing not only the newly free but also all "such free persons of African descent now residing" in Washington. Congress mentioned Haiti and Liberia specifically, but added "such other country beyond the limits of the United States as the President may determine." The president was permitted up to \$100 per potential emigrant.⁹³

Several people immediately considered the relevance of Thompson's land in Chiriqui. In the Cabinet, Caleb B. Smith from Interior connected the growing needs of naval power with the political interest in the emigration of free blacks from the United States. Less than two weeks after Congress passed the act, Smith wrote Thompson, asking whether his Chiriqui Improvement Company would be willing to accept free black "colonization and settlement" in New Granada. Just as the American Colonization Society had argued a decade before with its mail steamship plan for Liberia, Secretary Smith linked steam power to the pressing racial conflicts facing the United States.⁹⁴

⁹² "Francis P. Blair to Simon Cameron, 12/1861, Draft," in LoC, Abraham Lincoln Papers, Series 1. General Correspondence. 1833-1916.

⁹³ George P. Sanger, ed., *The Statutes at Large, Treaties, and Proclamations, of the United States of America. From December 5, 1859, to March 3, 1863*, vol. XII (Boston: Little, Brown and Company, 1863), 378.

⁹⁴ "Caleb B. Smith to Ambrose W. Thompson, 4/26/1862," in LoC, Papers of Ambrose W. Thompson, Box 7, General Correspondence, September-December, 1862.

Only the day before Smith sent his letter, Thompson's son, Ambrose, Jr., had himself drafted a letter to the president. The younger Thompson was then serving as a Captain in the Army's Quartermaster's department, and he wrote from Winchester, Virginia, only about 80 miles from the capital. He had been awake for three consecutive nights, but he feverishly drafted and redrafted his letter, completing it only after midnight on April 24th. He embraced the opportunity of welcoming freed blacks to Chiriqui, and he urged his father to support the colonization plan. His experiences in the war, with the poverty of freed slaves, coupled with his judgment of the political mood in Washington, clearly influenced his interest in colonization. The younger Thompson still mentioned the "inexhaustible coal beds of fine quality," the abundance of fish, game, and plants, and a healthful and varied climate. He called Chiriqui "the Switzerland of tropical America," offering "a preponderating influence in Central and South America," naval advantages, and a tighter connection between the nation's eastern and western coasts. But it was now the solution to racial conflict to which the younger Thompson appealed most, for at Chiriqui the United States had found "a country in which the negro could himself work out, with every advantage on his side, the social problem of his race." To demonstrate the minimal expense required to initiate the project, he enclosed a tabulation, no doubt suggested by his experience as an assistant quartermaster, of the supplies and costs needed for the initial settlement. Sending the letter to his father, he asked that if it met his approval, that it be sent directly to the president.⁹⁵

Lincoln charged Secretary of the Interior Smith with devising ways to comply with the colonization provision of the act freeing slaves of Washington. Smith was

⁹⁵ "Ambrose Thompson to Abraham Lincoln, 4/25/1862," in LoC, Abraham Lincoln Papers, Series 1. General Correspondence. 1833-1916.

partial to Chiriqui over rival possibilities. Liberia was a problem both because it was expensive to travel there and because, as Smith put it, “the unwillingness of the colored populations to emigrate there”—no small problem. Haiti, though closer, raised three concerns, one religious (“the predominance of the Catholic religion”), one cultural (“the low grade of civilization there”), the last geopolitical (“a fear that the Spanish Government will secure the control of the entire Island”). Other proposals reached the administration for colonies on the Spanish side of the island of St. Domingo, as well as Honduras and Costa Rica, but the Clayton-Bulwer treaty of 1850 seemed to prevent the fortification or colonization of most, or all, of Central America. Smith seemed to believe that the treaty could be sidestepped if a private company conducted the colonization. But there remained Chiriqui, available for colonization, and also beyond the reach of Clayton-Bulwer because it was not considered part of Central America proper. Smith claimed “that the province of Chiriqui presents greater advantages both in view of the interests of the emigrant and economy to the government than any other point that has been suggested.” He looked at the plan “but as the commencement of a great national scheme which may ultimately relieve the United States of the surplus colored population.”⁹⁶

Prospects for the colonization of Chiriqui gathered steam into the summer of 1862. Like Smith, John P. Usher likewise urged the President to accept the contract. Reviewing its terms in August 1862, Usher, then the Assistant Secretary of Interior, insisted that not only would the country support the plan, but that the small but effective congressional resistance met during the Buchanan administration had dissipated.

According to Usher, the financial interests of Ambrose W. Thompson and the political

⁹⁶ "Caleb B. Smith to Abraham Lincoln, 5/9/1862," in LoC, Papers of Ambrose W. Thompson, Box 7, General Correspondence, September-December, 1862.

and strategic interests of the nation at war coincided. Nevertheless, he addressed the lingering concern about the quantity and quality of coal there. The terms of the contract, he explained, protected the government, for they shielded the government from spending any money on mining before an official survey could be undertaken and the coal tested for its capacity to raise steam. In addition, whatever the government did invest in mining, its capital would be returned as mined coal. Thus colonization and mining would reinforce one another. “The advantage you gain in this,” Usher wrote, “is the employment of the blacks and the obtaining the coal, when the government must want it in large quantities.”⁹⁷

Usher’s “advantage” cut to the heart of the administration’s interest in Chiriqui. Neither black colonization nor industrial power alone justified interest in the isthmus, but the two taken together. Coal did not offer one mode of employment among other possibilities, instead it formed the heart of Chiriqui’s usefulness to the United States.

A week after Usher’s endorsement of the plan, on August 14, Lincoln invited to the White House a delegation of black representatives led by Edward M. Thomas, president of the Anglo-African Institute for the Encouragement of Industry and Art. The other four, recently freed slaves, were deliberately chosen to not represent leaders of the black community. According to an account of meeting published by the *New York Tribune* the following day, Lincoln assumed a patriarchal tone, speaking of the suffering experienced by both blacks and whites and the impossibility of true equality within the same nation. To this gathering of free residents of Washington he instructed that “[f]or the sake of your race you should sacrifice something of your present comfort” and

⁹⁷ "John P. Usher to Abraham Lincoln, 8/8/1862," in LoC, Abraham Lincoln Papers, Series 1. General Correspondence. 1833-1916.

asserted that given the relations between the races, “[i]t is better for us both, therefore, to be separated.”⁹⁸

But where to go? Lincoln was deliberately unclear on this point. He mentioned Liberia and noted equivocally that “[i]n a certain sense it is a success,” but not ideal as a colony. Instead, the President spoke vaguely of a place in Central America, not mentioning Chiriqui by name, but clearly implying to anyone knowledgeable of it. This place was nearer to the United States, along a great commercial route, rich with natural resources and a healthy climate, and with a climate “suited to [his guests] physical condition.” But most importantly, it had coal. Lincoln put great emphasis on this colony’s coal fields, and he explained why. “Why I attach so much importance to coal is,” read the account in the *Tribune*, “it will afford an opportunity to the inhabitants for immediate employment till they get ready to settle permanently in their homes.” Farming took time, but coal mining offered instant work. “Coal land is the best thing I know of with which to commence an enterprise.”⁹⁹ Coal would link the colony’s labor to the industrial steam network of the Caribbean and Pacific.

Lincoln’s address was widely reported in both the white and black presses. Lincoln reportedly received “twenty or thirty responses” to his proposal, all but one in favor of the plan and many volunteering their families for resettlement.¹⁰⁰ Nevertheless, most American black communities rejected the idea. One group in Philadelphia informed the President of the moral weakness of the plan. Another in Queens County, New York

⁹⁸ Abraham Lincoln, Roy Prentice Basler, and Abraham Lincoln Association (Springfield Ill.), *The Collected Works of Abraham Lincoln*, History Book Club ed., 9 vols., vol. 5 (New Brunswick, N.J.: Rutgers Univ. Press, 1953), 371-5, Quarles, *Lincoln and the Negro*, 115-9.

⁹⁹ Lincoln, Basler, and Abraham Lincoln Association (Springfield Ill.), *The Collected Works of Abraham Lincoln*, 371-5, Quarles, *Lincoln and the Negro*, 115-9.

¹⁰⁰ *Farmer’s Cabinet*, August 8 1862.

explained that the United States was their home as well. Some directly ridiculed the mining proposal that was so central to the plan. “‘Coal land,’ you say, ‘is the best thing I know of to begin an enterprise.’” wrote A.P. Smith of Saddle River, New Jersey to the president, “Astounding discovery! Worthy to be recorded in golden letters like the Lunar Cycle in the Temple of Minerva... Twenty-five Negroes digging coal land in Central America! Mighty plan! Equal to about twenty-five Negroes splitting rails in Sangamon.”¹⁰¹

Like A.P. Smith, historians have been critical of Lincoln’s plan, and dismissed his emphasis on coal as unworkable. But Lincoln, Ninian Edwards, Usher, and the Blairs approached the project very seriously. Why? Their interest in the project reflects their familiarity with, and understanding of, the government’s nearly two decades of interest in supplying coal for American vessels in the Caribbean and especially the Pacific that stretched back to Borneo, Japan, and Formosa. The contours of the plan were shaped in the historical context of industrialization and the rise of steam navigation. The social problems created by American racial politics occurred alongside one of the most significant technological transformations in world history. Both race and technology created problems, and Lincoln hoped that adding two problems together might create a solution.

The Twilight of Chiriqui

Lincoln’s continued promotion of the Chiriqui resettlement scheme irritated Joseph Henry. In the 1860s, Henry was perhaps the most widely known and distinguished

¹⁰¹ Smith quoted in Quarles, *Lincoln and the Negro*, 116-8.

scientist in America. In 1846, he had left a distinguished career at Princeton, where he had pursued a series of innovative experiments in electromagnetism, to lead the new Smithsonian Institution, a position he still held during the war.¹⁰² Secretary of State William Seward had contacted him for scientific advice on Chiriqui's coals, a favor he was happy to provide. Henry had written a firm, though fair, report critiquing the quality of the coal and its possible use for steam power, conclusions he explained in greater detail to Seward personally. If Seward was already convinced, the message had clearly not yet reached the President, as evidenced by his widely publicized speech of August 14, 1862. Writing to his close friend, head of the U.S. Coast Survey, Alexander Dallas Bache, Henry observed that "I was much surprised to find that he [Lincoln] believed in the humbug coal mines of the Isthmus." Henry found the whole matter dubious. Not only had he rejected the findings of the earlier government reports, but he claimed that Thompson, whom he mockingly referred to as "St. Ambrose," had dangled before him "a direct offer... of a share in the speculation" if Henry produced "a favorable report" to the government. No evidence has been found that corroborates this assertion (it might well have happened in a conversation), but it fits with Henry's suspicion that money, not sound geology, was driving the plan.¹⁰³

Two weeks later, on September 5, Henry again wrote Seward, and this time he was very blunt with his conclusions. "I hope the government will not make any contract in regard to the purchase of the Chiriqui district until it has been thoroughly examined by

¹⁰² On Henry's early life and career, see Thomas Coulson, *Joseph Henry: His Life and Work* (Princeton: Princeton University Press, 1950), Albert E. Moyer, *Joseph Henry: The Rise of an American Scientist* (Washington and London: Smithsonian Institution Press, 1997).

¹⁰³ "Joseph Henry to Alexander Dallas Bache, 8/21/1862," in *The Papers of Joseph Henry*, ed. Marc Rothenberg, Kathleen W. Dorman, and Frank R. Millikan (Washington: Smithsonian Institution Press distributed by Braziller New York, 1972).

persons of known capacity and integrity,” a statement clearly undermining the skill and integrity of the isthmus’s prior surveyors, at least some of whom he doubted the truthfulness of. Henry also provided an additional scientific analysis of the coals by an unnamed colleague. Unlike the conspicuous use of names and authority to buttress the claims of earlier Chiriqui observers, Henry did not pursue this rhetoric of authority. Instead of revealing that it was his friend, Pennsylvania’s respected state geologist John Peter Lesley, who conducted tests on the coal, Henry identified him only as “a gentleman who has been extensively engaged in geological surveys and has published a work of much merit on coal.”¹⁰⁴

Henry’s obfuscation of Lesley’s identity is curious. Lesley was widely known in and out of scientific circles. He was also, like Ambrose W. Thompson, a resident of Philadelphia, raising the likelihood that Lesley might have some personal knowledge of Thompson and his business affairs. Henry admitted that he was “some what suspicious” of Lincoln’s plan to settle freed slaves to mine Chiriqui coal for the Navy, but agreed to pursue the matter to “be true to my self and the government.” Suggestive of the evident tangle of scientific knowledge, wartime politics, and questionable international business ventures, Henry sought from Lesley not only his technical insight into Chiriqui coal, but also “any other reliable information” that might aid the government, which from Henry’s perspective probably meant exposing Thompson as unsuitable for the contract.¹⁰⁵

Henry’s care in presenting this authority suggests that his omission of a name was deliberate, perhaps so as not to reveal that the “independent judgment as to the general

¹⁰⁴ An omission that has confused some historians about Lesley’s identity.

¹⁰⁵ "Joseph Henry to John Peter Lesley, 5/28/1862," in *The Papers of Joseph Henry*, ed. Marc Rothenberg, Kathleen W. Dorman, and Frank R. Millikan (Washington: Smithsonian Institution Press distributed by Braziller New York, 1972).

character of the coal” was not really that independent at all. Henry’s participation in the politicization of science does not invalidate his conclusions, but it does indicate the already politicized nature of scientific surveys and a prominent scientist’s requisite strategizing.¹⁰⁶

As far as chemistry is concerned, Lesley was unequivocal in his assessment. “There can be little danger of going wrong in an opinion upon a Tertiary coal,” he replied after examining samples Henry had sent him. Tertiary coal, Lesley explained, was readily distinguishable from coal from the more desirable anthracite and bituminous mines of his native Pennsylvania. Tertiary coal was above all younger—more recently formed—than most Pennsylvanian coal, sometimes hundreds of millions of years younger. Typically, coal that young had not yet been subjected to the kinds of underground pressures and chemistry that removed impurities like sulfur and concentrated the mineral’s combustible carbon. The coal also traveled poorly. “A boxfull [sic] sent to the Academy of Sciences, Philadelphia,” Lesley noted, “has slacked down to a boxfull of coal dirt.” If that was insufficiently problematic, the coal was also prone to spontaneous combustion, a disastrous liability for a coal transported by wooden ships.¹⁰⁷ With the authority of “the experience of the world in the use of coal,” Lesley suggested that the defects of Chiriqui coal, like all other soft, young coals, would prevent their economic use as a steaming fuel, as exported semi-bituminous and anthracite coals, even when shipped from the United States or Great Britain, would arrive in sufficient quantities to price the lower quality coal out of the market. He called Chiriqui coal “as

¹⁰⁶ "Joseph Henry to Frederick W. Seward, 9/5/1862," in LoC, Abraham Lincoln Papers.

¹⁰⁷ For a fictionalization of the hazards of spontaneous combustion at sea, see Joseph Conrad’s novella, *Youth*, the author’s first story introducing the figure of Marlowe. Joseph Conrad et al., *Youth ; Heart of Darkness ; the End of the Tether*, Penguin Twentieth-Century Classics (London, England ; New York, N.Y.: Penguin Books, 1995).

nearly worthless as any fuel can be” and asserted that he believed “the property will always be of little or no value to its owners.”¹⁰⁸

To Lesley’s analysis, Henry added evidence from within the Smithsonian itself. While he had never, and would never, visit Panama, Henry rejected the conclusions of an earlier government report (ambiguously referenced in a letter, but possibly the report of the Chiriqui Commission that had spent several months exploring the region on behalf of Congress in 1860). Geologically, he insisted, Chiriqui coal could not compare with the familiar steaming coals of Britain and the United States because the geological age of isthmian strata was simply too young for the presence of high quality coal.¹⁰⁹ With chemistry and geology on his side, Henry considered the case of Chiriqui coal closed.

Nevertheless, throughout September, Lincoln and his cabinet considered the Chiriqui colonization question. Caleb Smith continued to push how Thompson’s Chiriqui grant could be used to address the coal question and the slavery question at once. “Each was to assist the other,” noted Gideon Welles in his diary. Freed slaves would colonize Thompson’s land in Chiriqui, where they would mine coal for the Navy. To vitalize the project, Smith proposed the Navy provide Thompson with \$50,000 for the first batch of coal.¹¹⁰

The Attorney General, Edward Bates, similarly supported the emigration of free blacks. Before the war he had approved of the work of the American Colonization Society and its efforts in settling Liberia, but increasingly considered Africa’s political and geographical distance from the United States an impediment to the project’s success. Instead, like others, he began to look towards “the tropical regions of America.” Drawn

¹⁰⁸ "Unknown [John Peter Lesley] to Joseph Henry, 9/5/1862," in LoC, Abraham Lincoln Papers.

¹⁰⁹ "Joseph Henry to Alexander Dallas Bache, 8/21/1862."

¹¹⁰ Welles and Welles, *Diary of Gideon Welles, Secretary of the Navy under Lincoln and Johnson*, 151.

to the territory between Venezuela and the Yucatan Peninsula, Bates had considered a settlement there a fruitful approach to solving the slavery question, although, as he noted in his diary, “I have never made a point of it, and do not now.” When Lincoln proposed to his cabinet in September 1862 supporting the resettlement of free and soon-to-be free blacks in various states and colonies of Central America, Bates thoroughly supported the signing of treaties to advance the plan. “The more the better,” he noted, though he cautioned that “such treaties ought to be single, confined to that one object, so as to avoid, if possible, all other debateable [sic] questions, and all disturbing elements.” Bates did not specify what “disturbing elements” he had in mind, although it seems probable that he meant Welles’ resistance to Thompson’s Chiriqui proposal, which would have forced his department to purchase coal the Secretary did not want through contracts he did not believe valid. In Bates’ view, tying the resettlement question to the older question of fueling the Navy in the Pacific merely hindered the success of both projects.¹¹¹

But opposition to Chiriqui colonization also came to Lincoln’s cabinet from another quarter, this one more influential than Henry or Lesley. Governments of Central American nations were not enthusiastic about either the terms of colonization or the manner in which it was announced. Before Lincoln’s speech, the American Minister Resident to Costa Rica, Charles N. Riotte, had begun mentioning the prospects for founding a colony of freed slaves almost as soon as he had arrived at his post in San José.

¹¹¹ The Attorney General also specified that the resettlement project should unfold as an *emigration* to existing states, rather than as a *colonization* by the United States—not, evidently, because of the inevitable opposition of Central American governments and European colonial powers, but because of the obligation it would have imposed on the United States of governance and defense. Edward Bates, Howard K. Beale, and Mary Parker Ragatz, *The Diary of Edward Bates, 1859-1866*, Annual Report of the American Historical Association for the Year 1930, Vol. 4 (Washington: U.S. Govt. Print. Off., 1933), 113,92, 262-4.

He reported to Washington a cautious response, but in the middle of May 1862, the country's Secretary of State, Francisco M. Iglesias, started officially inquiring into the motives and intentions of the Union government, fearful that the United States planned a major diplomatic coup without the knowledge or consent of Costa Rica.¹¹² Responding from Washington, Secretary of State Seward encouraged Costa Rica to submit a proposal for a coastal colony, but cautiously noted that other states had similarly expressed interest in a settlement, that freed slaves would only emigrate on their own volition, and that the President and Congress's own positions were still being formed.¹¹³

After Lincoln's much publicized address at the White House, the public mood in Costa Rica quickly soured. Lincoln's reported use of the phrase "a highway from the Atlantic or the Caribbean sea to the Pacific ocean, to possess on both sides harbors among the finest in the world, rich coal mines..." evidently signaled not an interest in developing a colony *anywhere* in Central America, but one specifically in Chiriqui. According to Minister Riotte, Lincoln's speech "has created a deep sensation," with the prospect of a colony and especially one at Chiriqui. Riotte reported that the Costa Rican congress remained enthusiastic about granting land, but that Chiriqui lay along the disputed boundary between Costa Rica and New Granada, and since Thompson's land claims were contested, the U.S. should avoid paying Thompson as middleman for the project. "Land in abundance," Riotte assured Washington, "and of the choicest quality, will be forthcoming, gratuitously offered by private persons, communities, associations, and states; while, in purchasing, the government would most surely be swindled, and the

¹¹² C.N. Riotte to William H. Seward, 5/15/1862 and F.M. Iglesias to C.N. Riotte, 5/15/1862, in United States. President, *Message of the President of the United States to the Two Houses of Congress at the Commencement of the Third Session of the Thirty-Seventh Congress*, 5 vols., vol. 1 (Washington D.C.: G.P.O., 1862), 887-8.

¹¹³ Seward to Riotte, 6/4/1862, in *Ibid.*, 888.

poor negroes robbed or perched upon miasmatic or miserably poor locations.”¹¹⁴ The states themselves, Riotte argued, should be negotiated with (and compensated), not a questionable private corporation.

These states themselves pressed their case in Washington. Luis Molina, head of the joint Legation of Costa Rica, Nicaragua, and Honduras to the United States, protested that while the governments of Central America embraced the principles of emigration, they were affronted at not being included in planning the project. It appeared that the United States sought to create an independent colony in Chiriqui, a prospect the existing nearby states vehemently opposed. Moreover, while the race of potential emigrants was not a particular concern, Molina observed that the project reeked of “the purpose of importing a plague of which the United States desire to rid themselves.” Thompson had no legal right to Chiriqui, Molina asserted, for that land belonged not to New Granada but to Costa Rica, and he accused the promoter of “solving the ancient problem... of making gold out of that which has no value.”¹¹⁵ Newspapers reported that other Central American diplomats likened the colony to the disastrous filibustering expeditions of William Walker in the 1850s.¹¹⁶

The trouble resulting from Lincoln’s speech was exacerbated by Senator Samuel C. Pomeroy. Lincoln had appointed the Kansas Senator to begin carrying out the Central American colonization project. To inaugurate the colony, Pomeroy sought a contingent of 500 freed blacks. They would steam from New York in early October, and while he sought some women, the colonizers were limited, at least at first, to small families.

¹¹⁴ C.N. Riotte to William H. Seward, 9/14/1862 in *Ibid.*, 888-9.

¹¹⁵ Luis Molina to William Seward, 9/19/1862 in *Ibid.*, 899-900.

¹¹⁶ "The Colonization Scheme," *Baltimore Sun*, September 22 1862. [originally from *New York Tribune*] "Northern News," *Macon Telegraph*, October 6 1862.

Unmarried, adult men would receive a grant of twenty acres, families of five, forty acres, and larger families, eighty. To encourage the plan's success, the government intended to provide food and domestic animals, along with equipment for farming and mining.¹¹⁷

When Pomeroy consulted Welles about the Chiriqui plan on September 10 1862, the Navy Secretary related his suspicions of Thompson and skepticism about the legality of his grants. Should the administration persist in its commitment to colonizing the isthmus, as Welles recalled the conversation in his diary, negotiations should be with the government of New Granada or other Central American states directly, "not through scheming jobbers" like Thompson.¹¹⁸ Pomeroy, much to consternation of Welles and every government of Central America, continued promoting the plan.

Although the resettlement plan received some support from the black community, most reactions were either indifferent or outright hostile, as evidenced by a clash on Thanksgiving Day, when Pomeroy, along with Harriet Beecher Stowe and other abolitionists, attended a banquet for freed slaves in Washington. The Senator spoke glowing of Chiriqui colonization, displaying samples of the region's resources before the gathered crowd. As he concluded his presentation, a escaped Virginian slave and preacher rose and attacked the project—and Pomeroy himself—calling colonization in Central America a trap for an even worse form of slavery. The Senator could offer no response.¹¹⁹

¹¹⁷ "The Negro Colonization Scheme," *Farmer's Cabinet*, September 18 1862.

¹¹⁸ Welles, in fact, speculated that Pomeroy held a financial stake in the colonization plan, an idea tempered only by the continued support of Lincoln, Postmaster General Montgomery Blair, his father, the power broker Francis P. Blair, as well as "one or two men of integrity and character." Welles and Welles, *Diary of Gideon Welles, Secretary of the Navy under Lincoln and Johnson*, 123.

¹¹⁹ "Letter from St. Louis," *Daily Evening Bulletin [San Francisco]*, December 23 1862.

This domestic opposition, combined with the resistance of Central American governments, ultimately doomed Chiriqui colonization. Seward tried reassuring Luis Molina and other diplomats that their concerns should be put to rest. Congress prevented the President any colonization plan at site lacking the consent of appropriate foreign governments, he insisted, and Senator Pomeroy misunderstood the limits of his instructions. With relations between the United States and the Central American states already so tenuous, Seward could hardly afford additional antagonism.¹²⁰

Conclusion

Lincoln's interest in a colony of freed black slaves in Chiriqui gained momentum because it fit neatly into his and much of his cabinet's ideas about building the United States as a world power. Chiriqui, unlike Liberia, could be brought into the growing geographical network of steam power. In 1861, Lincoln was discovering in coal what the American Colonization Society had found in steamships a decade before: technology, and especially the construction of technological networks of steam power, seemed to offer precisely the "earthly power" that Lincoln bemoaned he lacked in Peoria in 1854.

But the project would never come to fruition. Opposition from Henry at the Smithsonian emboldened Secretary Welles, ostensibly the cabinet officer with the most at stake in the material aspects of the project. Protestations from the legations of Central America were even more formidable, for the North needed as much diplomatic support as it could get in the early years of the war.

¹²⁰ United States. President, *Message of the President of the United States to the Two Houses of Congress at the Commencement of the Third Session of the Thirty-Seventh Congress*, 889-98. A copy of Seward 9/24/1862 reply to Luis Molina is also found in Ambrose W. Thompson's General Correspondence papers.

In 1864, Thompson announced to the government his intention of offering his Chiriqui land to the government of Great Britain. He wrote to John P. Usher, by then Secretary of the Interior, asking for copies of the government's surveys of Chiriqui so that he could bring them with him to England. Perhaps he needed the reports, or perhaps he sought a counter-offer from the Lincoln administration. He received neither. Usher acknowledged Thompson's new plan to travel to England, but noted that the contract with the President was still in effect whenever the President decides to invoke it. "I entertain a high opinion of the International value of this property and of the benefits to be derived thereupon by extended commercial relations between maritime nations," he wrote. Yet while the land remained important, with the emigration of freed blacks no longer a realistic proposal, the timely mix of race and technology had passed.¹²¹ By 1864, the Union was facing difficulties with coal far larger and more immediate than might be solved with mining in Chiriqui alone.

¹²¹ "J.P. Usher to Ambrose W. Thompson, 3/18/1864," in LoC, Papers of Ambrose W. Thompson, Box 43, Chiriqui Improvement Co., 1864.

Chapter 3: The Geography of Power

Despite its history of territorial acquisition, the United States' pursuit of coaling stations under American sovereignty after the Civil War presented a new phenomenon. "This policy is quite distinct from a general mania for annexing territory," noted the *New York Times* in 1891, "although it might in some cases pave the way to the latter, and has often been opposed on that ground."¹ According to the *Times*, the hunt for coaling stations "has its origin in a state of things quite outside the experience of the founders of the Republic." Steam power, in this analysis, "created the need of foreign coaling stations, which, acquired in times of peace, could be relied upon also in war." The increasing construction of ships without sails, relying only on their steam engines, appeared to increase the importance of these stations.²

The interest in acquiring coal that began in the Navy in the 1840s and 1850s was accelerated by the naval experience of the Civil War. Diplomatic difficulties with European states, particularly Great Britain, suggested to officials in both the State and Navy Departments the utility of the United States possessing its own coaling stations in strategic locations, especially in the Caribbean and Pacific. Efforts to acquire these stations began immediately after the war, and continued throughout the remainder of the century. Projects for coaling stations in Samoa and Oahu succeeded. Many more failed, as suggested by this wish list from the Navy in 1884, which sought stations at "some or all of the following points: Samana Bay [San Domingo], or some port in Haiti; Curaçao,

¹ "Foreign Coaling Stations," *New York Times*, May 6 1891.

² *Ibid.*

in the Caribbean Sea; Santa Catharina, in Brazil; the Straits of Magellan; La Union, in Salvador, or Amapala, in Honduras; Tullear Bay, in Madagascar; Monrovia, in Liberia; the Island of Fernando Po; Port Hamilton, in the Nan-how Islands of Corea.... Similar stations should in addition be maintained, on at the best point on the Atlantic side of the Isthmus of Panama and another at the islands of Flamenco, Perico, Calabria, and Ilenoa on the Pacific side, now owned by American corporations.”³ The United States built none of these stations in the 19th century, but it did haltingly seek many of them.

But an analysis of most negotiations for American coaling stations in foreign waters suggests that the American “need” for coaling stations flared up most often when American diplomats and cabinet Secretaries were on the defensive, trying to prevent foreign nations like France, Britain, and Germany from acquiring stations in sensitive locations. Between the end of the Civil War and 1898, the most debated “necessary” coaling stations were ones pursued on the defensive. The diplomatic efforts to obtain coaling stations on St. Thomas and Haiti in the 1860s and 1890s highlight this dynamic.

American policy makers, however, did not address the coaling problem through diplomacy alone. They also supported the efforts of scientists and engineers to find technical ways to decrease the American naval dependence on coal and hence to decrease the importance of possessing strategically located territory. These approaches included researching the chemistry of coal combustion, redesigning steam engines, and exploring for coal in distant territory. Taken together, the pursuit of coaling stations and the application of science and engineering reveal the complex ways the changing technology of steam power influenced American foreign policy in the late 19th century.

³ William E. Chandler, *Annual Report of the Secretary of the Navy for the Year 1884, V. 1, H.exdoc.1/10*, 48th Cong., 2nd. sess. (1884), "Foreign Coaling Stations."

A War of Industrial Power

Just eighteen days after arriving at Hatteras Inlet to begin blockading the southern harbor, Union Commander Stephen C. Rowan struggled to find coal. The Atlantic blockade was a central Union strategy to suffocate the Confederate economy from its vital foreign trade, especially with Britain. But most Union vessels depended on steam power, and supplies of coal were difficult to obtain when far from northern ports. A failure to acquire the fuel would doom the blockade, a fact with which Rowan struggled daily. "I have already informed you that I wanted coal," Rowan wrote to the commander of the Atlantic Blockading Squadron in late September 1861. "I have now to state that unless I receive coal within the next ten days we shall not be able to move even the little tug *Fanny*." He requested an immediate shipment. While any coal was better than no coal, Rowan noted that ideally the Navy would deliver multiple shipments and keep the ships of his blockade in action. Anything less would mean defeat.⁴

The shadow of the Civil War loomed over the development of American diplomacy surrounding coal and American geographic expansion in the later 19th century. Many post-war cabinet members, senior officers in the Army and Navy, and important diplomats had observed both the advantages and the limitations of coal-fired steam power in war first hand, and carried that education into their subsequent policy decisions. A major lesson they learned was that modern industrial warfare was global in scope. If the Civil War between the Union and Confederacy on land was by definition a domestic conflict, their naval war saw few boundaries. Both navies had major operations in the

⁴ "S.C. Rowan to Gideon Welles, 9/3/1861 and S.C. Rowan to S.H. Stringham, 9/21/1861," in *ORUCN* (Ser. 1, v. 6, 1897).

Atlantic Ocean, Caribbean Sea, and Gulf of Mexico, and their activities stretched to Europe, the coast of Africa, and the Pacific Ocean—not to mention the extensive operations on inland rivers. As the first major war powered at sea by steam, the Civil War revolutionized American ideas about warfare, technology, and the geographic reach of the United States. Examining how the Union and Confederacy dealt with coal during the war suggests the kinds of questions that would confront policy-makers afterwards.⁵

* * *

Supply lines at sea stretched deep into the country, and the functioning of the warring navies depended on the battles waged on land. These battles affected the availability of coal for naval use. The Union occupation of Chattanooga in August 1863, for example, isolated the productive coal mines of Tennessee that had been supplying Georgia, South Carolina, and the much of the Confederate Navy. Mines in North Carolina and Alabama were slow to increase production, though the activities of a Confederate mining bureau helped substantially. As early as 1863, the Confederacy began substituting wood for coal in its steamers, particularly in the fuel-starved ports of Charleston and Savannah.⁶

The Confederacy also found that coal purchased in foreign ports varied greatly in quality for steaming. The officers of the Confederate steamer *Florida* discovered this problem after loading coal in Havana. The new supply would not raise steam, and a board assembled by the ship's commander hastily concluded that "[i]t does not make a

⁵ For an overview of the naval aspect of the Civil War, see Spencer C. Tucker, *Blue & Gray Navies: The Civil War Afloat* (Annapolis, MD: Naval Institute Press, 2006), William H. Roberts, *Civil War Ironclads: The U.S. Navy and Industrial Mobilization* (Baltimore, MD: Johns Hopkins University Press, 2002), David A. Mindell, *War, Technology, and Experience Aboard the USS Monitor* (Baltimore, MD: Johns Hopkins University Press, 2000).

⁶ "John K. Mitchell to S.R. Mallory, 11/16/1863," in *Official Records of the Union and Confederate Navies in the War of the Rebellion*, ed. United States. Naval War Records Office. and United States. Office of Naval Records and Library. (Washington: U.S. G.P.O., 1917). Hereafter cited as ORUCN, Page: Series, Volume, Year.

lively fire.” More efficient coals loaded in Mobile lay beneath the newer coals from Havana, and the board recommended digging down to the better coals, throwing the Havana coals overboard, and steaming as quickly as possible “to the nearest English port where we can get coal.”⁷

Despite better supply lines overall, the Union, too, often suffered for coal. Rear-Admiral John A. Dahlgren expressed his frustration at one such shortage some six months after assuming charge of the South Atlantic Blockading Squadron. In February 1864, Dahlgren found coal stocks at Port Royal, South Carolina dangerously low. A dispatch from Washington had promised 2,000 tons at the beginning of the month. The only ship that actually arrived carried a mere 300 tons. This addition brought the Squadron’s reserve stocks to a paltry six or seven hundred tons. “This will be expended in a very brief time,” Dahlgren wrote to the Navy’s Chief of the Bureau of Equipment and Recruiting, “and will leave me in a very embarrassing situation.” The Admiral asked for an immediate shipment of 10,000 tons. Dahlgren’s demand for coal spoke for more than the need for mobility; coal was also essential for providing heat and health even in mild South Carolina. “The Bureau is, of course, aware of the consequences of the vessels being without coal,” Dahlgren observed, “particularly at this season, when it is essential to our own safety as well as for blockading the rebels.”⁸

If obtaining coal in continental waters was difficult, it was harder still in the islands of the Caribbean and harbors of the larger Atlantic. There, Union and Confederate navies found themselves subject to the constraints of international law, the political decisions of individual governments, and the availability of coal itself—supplies

⁷ "J.N. Maffitt to S.R. Mallory, 1/27/1863," in *ORUCN* (Ser. 1, v. 2, 1895).

⁸ "John A. Dahlgren to A.N. Smith, 2/20/1864," in *ORUCN* (Ser. 1, v. 27, 1917).

usually well beyond their control. The differential treatment of Union and Confederate vessels coaling in foreign waters in particular raised the ire of both warring governments. In May 1863, the Union consul in Bahia, Brazil, for example, reported that the Confederate ships *Alabama* and *Florida* had recently steamed into port for coal. Only a few days earlier, an English bark, the *Castor* had also arrived, ostensibly steaming from Liverpool to Shanghai loaded with coal and two hundred pound cannons and seeking refuge from the weather. Word quickly reached the consul that the *Castor* had, in fact, planned a rendezvous with the Confederate ships to supply them with fuel and munitions. Over his protests, the transfer of coal and presumably cannons to the *Georgia* occurred under cover of darkness, and the Confederate ship were only ordered to leave the port the following morning. The Bahian government's complicity in supporting the Confederate ships infuriated the consul.⁹

Great Britain, however, presented the greatest obstacle for fueling both the Union and Confederacy. Although international legal experts disagreed on the precise status of coal during wartime, most agreed that providing it to combatants must be limited so as to avoid inadvertently (or deliberately) aiding one over the other. To protect its neutrality as a non-belligerent, the British government decided early in the conflict to supply both Union and Confederate steamers in need of fuel with sufficient coal only to steam to their nearest home port. Sometimes, additional constraints were imposed.¹⁰

⁹ "Thomas F. Wilson to O.S. Glisson, 5/25/1863," in *ORUCN* (Ser. 1, v. 2, 1895). Bahia would remain a favored coaling port for Confederate blockade runners. In December 1863, the British ship *Berbice* unloaded some 900 tons of coal there, though suspiciously not to a coal merchant but the same firm that facilitated the earlier refueling of the *Alabama* and *Georgia*. In January 1864, the *Annette* arrived loaded with coal, supposedly bound for Hong Kong, but rumored to be supplying the Confederacy. "Thomas F. Wilson to William H. Clark, 1/28/1864," in *ORUCN* (Ser. 1, v. 2, 1895).

¹⁰ As Kenneth Blume has shown, the application of neutrality varied considerably among different British colonies and under changing diplomatic circumstances. See Kenneth J. Blume, "Coal and Diplomacy in the British Caribbean During the Civil War," *Civil War History* XLI, no. 2 (1995).

When the U.S.S. *Dacotah* needed fuel in the Bahamian port of Nassau, for example, the British colonial government there consented only on the condition that the American consul, Samuel Whiting, would pledge that for the ten days after the *Dacotah* refueled, she not pass within five miles of any island of the Bahamas. The Americans were dissatisfied with the constraint but had little choice but to comply. “The *Dacotah* is in urgent need of fuel,” wrote Whiting to the islands’ governor, “and, in his emergency, Captain McKinstry has been compelled to give the unusual assurance your Excellency has seen fit to require.”¹¹ To Consul Whiting, these constraints were never applied as stringently to Confederate vessels.¹²

These diplomatic difficulties in the Bahamas continued throughout the war as Americans were prevented from using British territory as a staging ground for combat, even with their own material. When two schooners bearing coal from Philadelphia arrived at Nassau in December 10, 1861, the British authorities prohibited the vessels from discharging their cargo to any American ship during the remainder of war. A frustrated Consul Whiting tested the limits of this order the following day, when an American screw steamer, the *Flambeau*, arrived in port. Though the ship did not need coal herself, Whiting requested of the colonial government that she be permitted to load coal from one of the coal ships, the rapidly leaking *Caleb Stetson*. As he noted in his report to Washington, “The request was courteously refused.”¹³

The *Flambeau*’s commander, Lieutenant William Greenville Temple, protested to the colony’s Lieutenant-Governor, observing that technological constraints interfered

¹¹ "Samuel Whiting to J.P. Mckinstry, 9/14/1862," in *ORUCN* (Ser. 1, v. 1, 1894), "C.R. Nesbitt to Samuel Whiting, 9/15/1862," in *ORUCN* (Ser. 1, v. 1, 1894), "Samuel Whiting to Governor Bayley, 9/15/1862," in *ORUCN* (Ser. 1, v. 1, 1894).

¹² "Samuel Whiting to Charles Wilkes, 10/7/1862," in *ORUCN* (Ser. 1, v. 1, 1894).

¹³ "Samuel Whiting to Gideon Welles, 12/16/1861," in *ORUCN* (Ser. 1, v. 1, 1894).

with the developed body of international law on neutrality and contraband, about which lawyers contested the categorization of coal. “I would be leave to suggest for your Excellency’s consideration the fact that the motive power of this vessel is almost exclusively steam,” he wrote, “and since it is impossible to carry a perpetual supply of coal on board, a prohibition to obtain more would amount to detaining her in port during the war, and so far from preserving the neutrality enjoined, it would really be affording aid to the rebels.”¹⁴ While demand for Southern cotton contributed to Britain’s wavering sympathy to Confederate blockade runners, Nassau’s government explained that coal itself was besides the point. According to the Acting Colonial Secretary, “the real question here is not whether coal is or is not contraband of war, but whether the United States armed vessels are to make this [Nassau] a coaling depot, for the better facilitating their belligerent operations against vessels of the Confederate States.”¹⁵ The network of supplying coal, and its geographic and political implications, mattered far more than the coal itself.

In Jamaica, Lieutenant David Dixon Porter encountered similar obstacles. “There is an indisposition on the part of the Government to furnish us with coal,” he wrote to Secretary of the Navy Gideon Welles, “and there is none for sale except at most exorbitant prices.” The only solution, Porter suggested, involved securing access to a coaling yard from a Jamaican resident and then maintaining there American coal.

¹⁴ “William Granville Temple to Lt. Gov. Nesbitt, 12/17/1861,” in *ORUCN* (Ser. 1, v. 1, 1894).

¹⁵ “A. J. Thompson to W.G. Temple, 12/18/1861,” in *ORUCN* (Ser. 1, v. 1, 1894). Temple planned on remaining in Nassau to keep watch on a Confederate blockade runner, the *Gladiator*, suspected of carrying “arms and equipment for 25,000 men,” a decision made possible by the *Flambeau*’s coal stores, expected to last a month if anchored in harbor. A week later, after hearing rumors that the *Gladiator* would attempt to steam out of Nassau, Temple left first, hoping to catch the Confederate ship off the Bahamas’ banks. The plan failed, the *Flambeau* was sighted by several other ships, and Temple abandoned the islands altogether when depleted coal bunkers forced him to steam to Key West to refuel. “W.G. Temple to Gideon Welles, 12/21/1861,” in *ORUCN* (Ser. 1, v. 1, 1894), “W.G. Temple to Gideon Welles, 1/1/1862,” in *ORUCN* (Ser. 1, v. 1, 1894), “W.G. Temple to Gideon Welles, 1/7/1861 [1862],” in *ORUCN* (Ser. 1, v. 1, 1894).

“Without some arrangement of this kind our steamers can not cruise in these waters.”

Despite Porter’s suggestion, Jamaican authorities would, no doubt, have prevented such an obvious violation of their neutrality if the fuel was used for anything more than emergencies.¹⁶

St. Thomas, too, presented obstacles to coaling. The island, although owned by Denmark, was dominated by British commerce. The Union maintained a coal supply there, but it was stored far from the docks and inaccessible to Union ships. The dock owner, an English merchant, himself owned some 2,000 tons of coal, and according to Commander John DeCamp of the U.S.S. *Iroquois*, “probably has an eye to a small profit, say 500 or 600 per cent.” The dock owner anticipated war between Britain and the United States and shrank from selling Americans coal, a prospect that frightened DeCamp. “All hands here think that we are in for a war with J[ohn] B[ull], and at this coal yard every obstacle is thrown in our way,” he wrote to Washington. With the prospect of a larger war looming, DeCamp observed that rumors in St. Thomas suggested that Britain would grab the Danish West Indies from Denmark as a base of operations, “and if they should do so our chance in the West Indies would be but small.” If British coaling stations closed entirely, only unfortified harbors on Santo Domingo, Cuba, and Puerto Rico would remain available to the Union.¹⁷

Difficulties coaling in British territories existed outside of the Caribbean as well. On St. Helena in the South Atlantic, Union Commander C.H. Baldwin learned from the island’s governor that he could coal upon his arrival on August 18th, 1863, but the following day found that his ship, the *Vanderbilt*, had to leave the port with no more than

¹⁶ "David D. Porter to Gideon Welles, 8/23/1861," in *ORUCN* (Ser. 1, v. 1, 1894).

¹⁷ "John Decamp to G.V. Fox, 1/8/1862," in *ORUCN* (Ser. 1, v. 1, 1894).

500 tons by 5:00 PM on the 20th. The ship's officers and crew coaled throughout the day and night, and still only managed to load 400 tons, the remainder of which Baldwin feared "might still be supplied to our enemies."¹⁸

The negotiation of neutrality laws hindered the Confederate Navy as well. On August 19, 1864, Richard G. MacDonnell, the colonial Lieutenant-Governor of Halifax, Nova Scotia, received a report that the Confederate cruiser, the *Tallahassee* had remained in his port longer than the twenty-four hours he had proscribed for coaling under international law. Observers sympathetic to the Union asserted that the ship had loaded more than 180 tons of coal, far more than that required for her to steam to the nearest Confederate port. MacDonnell was angry, for the *Tallahassee* was no ordinary ship. She was unusually fast, and in the sixteen days since she had steamed from Wilmington, she had allegedly "destroyed or bonded" some thirty-two Union ships. MacDonnell appreciated the sensitivity of the situation. "As I was aware that the *Tallahassee* had been committing extensive havoc among the shipping of the United States," he wrote to London, "and had caused thereby much excitement and alarm," he had insisted that she remain in port to coal no longer than twenty-four hours.¹⁹

Learning that she had violated this agreement threatened to create a diplomatic crisis. "In the peculiar case of the *Tallahassee* even 5 tons of coal in excess of the amount strictly allowed might be regarded as insuring a heavy loss to Federal shipping," MacDonnell observed. He therefore directed her to leave the port immediately, and further that she relinquish all coal loaded after the permitted twenty-four hours. "You must, however," he wrote to her commander, "be well aware that you were only entitled

¹⁸ "C.H. Baldwin to Gideon Welles, 8/20/1863," in *ORUCN* (Ser. 1, v. 2, 1895).

¹⁹ "Richard Graves Macdonnell to E. Cardwell, 8/23/1864," in *ORUCN* (Ser. 1, v. 3, 1896).

to sufficient coal to take you to the nearest confederate port, and any inconvenience which you may suffer is caused by your own act.” Only a few hours later MacDonnell learned that the rumor of excessive coaling was false, and he quickly rescinded his order.²⁰

If coaling introduced a constraint to one party at war, however, knowledge that one’s opponent operated under a similar constraint could be used to great advantage. No episode of the war illustrates the way coal shaped the conflict than the extraordinary career of the Confederate steamer *Sumter*. During most of 1861, the *Sumter* and her Commander, Raphael Semmes, steamed throughout the Caribbean, evading Union vessels and capturing, and sometimes burning, prize ships. Yet even as the Union Navy struggled for coal, the Confederacy fought at an even greater disadvantage. The *Sumter* sought refuge to coal in Curaçao in July 1861. After the island’s government decided to admit the belligerent ship, she loaded 115 tons of coal. On shore, the ship’s officers boasted that they had already captured seven Union vessels, unloaded the captured crews to the consul at Cienfuegos de Cuba, and sold the ships and their cargoes. Yet the new supply of coal would only last a short period, and the Union consul in Curaçao hoped that broadcasting the ship’s likely return to his government would permit the Union Navy to intercept the *Sumter* precisely when she returned for fuel.²¹

The *Sumter* would prove a major irritant to the Union Navy as it consistently evaded capture until it was blockaded in Gibraltar in January 1862, by which point it had

²⁰ After expressing his relief that the rumor was false, MacDonnell consented to the *Tallahassee* remaining in port an additional twelve hours to obtain a new mainmast. The ship, however, left the harbor before doing so, and a Union gunship arrived in port about twelve hours later. Ibid, "Richard Graves Macdonnell to J. Taylor Wood, 8/19/1864," in *ORUCN* (Ser. 1, v. 3, 1896).

²¹ The consul, Moses Jesurun, wrote the State Department as well as fellow consuls in St. Thomas and Havana with this information. "Moses Jesurun to J.T. Edgar, 7/18/1861," in *ORUCN* (Ser. 1, v. 1, 1894), "R. Semmes to S.R. Mallory, 11/9/1861," in *ORUCN* (Ser. 1, v. 1, 1894).

captured 18 vessels, seven of which it had burned.²² Coal alternated as the elusive ship's hindrance and its advantage. In August 1861 it was spotted "without money, credit, or coal," but managed to recover all three.²³ David Dixon Porter heard that she grabbed a coal ship and obtained sufficient fuel in Trinidad for a run to Pernambuco, Brazil and "will do an immense amount of damage."²⁴ This rumor proved mostly correct. The *Sumter* had arrived in Maranhão, Brazil on September 6, where its commander, Raphael Semmes, discovered that coal cost a steep \$17.50 per ton. "It behooved me, therefore," he wrote to Confederate Navy Secretary Stephen R. Mallory in Richmond, "to arrange my cruising so that I should not coal too often."²⁵

In Martinique, when Semmes found that the colonial governor had reneged on an agreement to allow the ship to coal, the Confederate Commander protested that colonial governments in Cuba, Curaçao, Trinidad, Suriname, and Brazil had all permitted his ship to refuel. Semmes, himself a lawyer, pressed the legal aspect of wartime coaling. "It is a well-settled rule of international law that belligerent cruisers have the right to enter freely into neutral ports for the purpose of replenishing their stores of provisions, or replacing a lost mast or spar, and why should not they be equally permitted to receive on board coal?"²⁶ The argument proved persuasive, and the ship was permitted to refuel.

Almost a month later, Porter attributed the *Sumter*'s effective evasion of his much larger ship to its nimble ability to take on fuel. "With a smaller vessel I would have

²² United States. Naval War Records Office. and United States. Office of Naval Records and Library., *Official Records of the Union and Confederate Navies in the War of the Rebellion*, vol. Ser. 1, v. 1-27; ser. 2, v. 1-3., Office Memoranda / United States Naval War Records Office (Washington: U.S. G.P.O., 1894), 744-5.

²³ "G.H. Scott to Gideon Welles, 8/26/1861," in *ORUCN* (Ser. 1, v. 1, 1894).

²⁴ Union vessels in search of the *Sumter*, meanwhile could coal themselves in St. Thomas, Grenada, Trinidad, Barbados, Pernambuco, or other Brazilian ports. "David D. Porter to Gideon Welles, 8/30/1861," in *ORUCN* (Ser. 1, v. 1, 1894).

²⁵ "R. Semmes to S.R. Mallory, 11/9/1861."

²⁶ "R. Semmes to M. Maussion De Candé, 11/12/1861," in *ORUCN* (Ser. 1, v. 1, 1894).

caught the *Sumter* ten days ago," he protested, "for while I have to take in 700 tons of coal, she only takes 100, and makes about the same speed this ship does."²⁷ Commander Jason S. Palmer of the U.S.S. *Iroquois* also hunted for the *Sumter*, and like Porter, was dismayed by the ability of the Confederate ship to find coal. Palmer understood that the *Sumter*'s success resulted from the application of British and French neutrality in the American conflict. "The French, it is said, would refuse coal to either, and the English grant to both."²⁸

The pursuit and the evasion continued for six months. The *Sumter* found coal in unlikely places, aided by sympathetic, or commercially minded, governments and merchants. Every stop in port, however, provided another signal to the Union, though their ships repeatedly missed finding the blockade runner. Eventually, the *Sumter* literally ran out of steam. In February 1862, she arrived in Gibraltar, but local merchants would not sell her coal and the British government there forbid her to take coal from their stocks.²⁹ The ship remained in port through the fall—with Semmes and most of his crew having fled—and after the remaining second officer murdered the commanding officer, the ship was eventually sold to a British merchant.³⁰

* * *

The Union found that a coaling depot in the hands of another power was often worse than no depot existing at all, for the merchants or governments who maintained coal supplies might sell to Confederate ships. Charles W. Dabney, the American consul in the Azores,

²⁷ "David D. Porter to Gideon Welles, 9/24/1861," in *ORUCN* (Ser. 1, v. 1, 1894).

²⁸ "Jason S. Palmer to Gideon Welles, 9/23/1861," in *ORUCN* (Ser. 1, v. 1, 1894).

²⁹ "Horatio J. Sprague to Gideon Welles, 2/12/1862," in *ORUCN* (Ser. 1, v. 1, 1894).

³⁰ "Horatio J. Sprague to Charles F. Adams, 10/17/1862," in *ORUCN* (Ser. 1, v. 1, 1894), "A. Bryson to Gideon Welles, 12/21/1862," in *ORUCN* (Ser. 1, v. 1, 1894).

owned the only commercial coaling depot there, and he refused to coal Confederate ships. He realized, however that other parties in the islands, possibly connected with the Confederate trade with England, maintained their own, private coal supplies for the South. From these stores, Southern steamers refueled and attacked and burned American whaling and merchant ships.³¹

Secretary of State Seward was particularly interested in the geographical problems created by coal. Where Gideon Welles and the leadership of the Navy worried particularly about the practical questions of locating, providing, and shipping coal, Seward thought broadly about the geography of coaling stations. In February 1863, for example, he observed that British ships were likely carrying coal to various islands in the Azores in order to supply Confederate steamers running the Union blockade. Although Charles Dabney would not sell them coal himself, the Confederate ships engaged in more clandestine tactics. Seward suggested that American steamers might better police the neighborhood of the islands.³² Perhaps more than any other public figure, Seward would carry the geographic importance of coaling stations with him after the war and try to turn it into new American acquisitions.

Seward's interest in the geography of coaling stations was shared, however, by some senior officers in the Navy. George Henry Preble, Commander of the U.S. Sloop of War *St. Louis* appreciated the utility of Madeira, the island off the Portuguese and North African coasts in the Atlantic Ocean. Preble observed that "[f]rom its central position this island is likely to be the frequent resort of our steamers for a supply of coal." He suggested that the government establish a depot there and thus avoid the coal monopoly

³¹ "Charles W. Dabney to D.P. Upton, U.S.N., 9/15/1862," in *ORUCN* (Ser. 1, v. 1, 1894).

³² "William H. Seward to Gideon Welles, 2/11/1863," in *ORUCN* (Ser. 1, v. 2, 1895).

then held by two English merchants. An American coaling station also had political dimensions from which the Union might receive tangible benefit beyond serving its fuel needs in the Atlantic. "The establishment of a coal depot," Preble wrote to Welles, "by the employment it would necessarily give to poor people, must tend to increase the good and friendly feeling already existing toward a country that has on more than one occasion relieved them from starvation."³³

Rear-Admiral Charles Wilkes made similar observations in the Caribbean. His years of difficulty obtaining coal around the Windward Islands compelled him to establish a depot of his own on Guadeloupe. His expansive view of geography, both of supplying Union vessels and in routing Confederate, led him to suggest the establishment of additional coaling depots at Curaçao, St. Thomas, San Juan, Cape Haitien, Santiago de Cuba, Havana, and Key West.³⁴ As most of these ports remained the colonial possessions of European powers, however, merely storing American coal there did not solve the fundamental obstacle of a secure Union fuel supply.

Mere supplies of fuel and a suitable harbor for loading it aboard ship were themselves insufficient guarantors of a successful energy network. There remained the question of disease. Otherwise available harbors became toxic following reports, confirmed or not, of the outbreak of an epidemic. Rear-Admiral Wilkes, commanding the West India Squadron in 1862, explained these difficulties after a strategic Cuban port fell under quarantine. "Coal is one of the first considerations which forces itself upon me," wrote Wilkes to Navy Secretary Welles, "in looking to the wants of the squadron, and the danger of having communication with The Havannah to coal during the existence

³³ "George Henry Preble to Gideon Welles, 2/28/1864," in *ORUCN* (Ser. 1, v. 2, 1895).

³⁴ "Charles Wilkes to Gideon Welles, 3/18/1863," in *ORUCN* (Ser. 1, v. 2, 1895).

of the yellow fever.” With Havana a dangerous port in which to refuel, Wilkes instead requested Welles to dispatch several schooners, each loaded with some 1,000 or 1,200 tons of coal, to Florida’s Turtle Harbor, a location nestled away from the Gulf of Mexico along Florida’s panhandle and with water deep enough for coaling. Unlike Havana, Turtle Harbor was free of disease.³⁵

The Union and Confederate struggles to fuel their naval war persisted throughout the conflict. Both governments faced a spectrum of difficulties: legal, diplomatic, material, and geographic. After the war, some key figures took this experience and attempted to devise a new approach to projecting American power—political, economic, and strategic—around the world. If steam was to remain an important element of national strength, they argued, the problem of fuel must be solved first.

Post-War

Secretary of State William Henry Seward embarked on a tour of Caribbean islands in January 1866. He had personal reasons for seeking a vacation—both he and his son, the Assistant Secretary of State, Frederick W. Seward, had narrowly escaped an assassination attempt the same night President Lincoln was shot in April 1865. Moreover, the lurching executive transition from Lincoln to Andrew Johnson had been exhausting, politically and personally. Seward, however, had other motives in mind as well. His itinerary included the Danish West Indies island of St. Thomas, the Republic of Dominica, its neighbor Haiti, and finally Cuba. In at least the first three, the Secretary sought to negotiate the sale or lease of territory for use as American coaling stations. The Navy’s

³⁵ "Charles Wilkes to Gideon Welles, 9/21/1862," in *ORUCN* (Ser. 1, v. 1, 1894). Welles responded affirmatively, instructing the Navy’s agent in New York to gather the necessary vessels and send 2,000 tons of coal to Turtle Harbor. "Gideon Welles to Charles Wilkes, 9/25/1862," in *ORUCN* (Ser. 1, v. 1, 1894).

difficulties coaling during the war suggested to Seward the immense importance of these stations, and he added his own flair for dramatic politics, his desire for a tangible legacy, and presidential ambitions.³⁶

These stations interested the Navy as well. Secretary of the Navy Gideon Welles observed in his diary that “the Navy Department in our war, feeling the want of a station in the West Indies, has favored the subject.” Welles himself desired a coaling station on either Martinique or Guadeloupe. Nevertheless, he disapproved of Seward’s theatrics in attempting to acquire such a station. “I am amused and yet half-disgusted with Seward’s nonsense,” he wrote of Seward’s upcoming voyage to the Caribbean, frustrated that his cabinet rival’s very public actions were likely to raise the cost of the islands and lower the United States’ chances of obtaining them.³⁷

Maritime geography influenced Seward’s attraction to St. Thomas. The island lay at the intersection of major sea routes: from England to Central America, Spain to Cuba and Mexico, and the U.S. to Brazil. It was one of the most convenient ports to serve the trade of both the Windward and Leeward islands to its south. Seward’s son, Frederick, who accompanied his father on the cruise, observed that “St. Thomas has come to be a place where steam lines converge,” and recalled the expression that the island is “the place which is on the way to every other place.” Trade was only one advantage of St. Thomas. It also offered unique strategic advantages to the nation that controlled it. Graced with a commodious harbor and a narrow and easily defended entrance, the island possessed what appeared to be an ideal location for a coaling station. “It would have

³⁶ Gideon Welles and Edgar Thaddeus Welles, *Diary of Gideon Welles, Secretary of the Navy under Lincoln and Johnson*, vol. 2 (Boston, New York,: Houghton Mifflin Company, 1911), 283, Olive Risley Seward, “A Diplomatic Episode,” *Scribner’s Magazine* II, no. 5 (1887): 588.

³⁷ Welles and Welles, *Diary of Gideon Welles, Secretary of the Navy under Lincoln and Johnson*, 393, 406.

been of great value to the United States,” observed the younger Seward, “had they owned it during the civil war.”³⁸

The Swards’ interest in St. Thomas was the first manifestation of American efforts to locate and acquire coaling stations after the Civil War.³⁹ These diplomatic endeavors were halting, affected by the predilections of individual Presidential administrations, the interests of Secretaries of State and the Navy and senior naval officers, and the political and economic conditions where the coaling stations were sought. These projects continued the American interest in coal that began in the 1840s and 1850s, but with increasing frequency and urgency, proposals emerged for the U.S. to assume sovereignty over extra-continental territory—a condition rarely considered in the earlier plans. Examining a few of these post-bellum projects suggests the interest that Americans brought to acquiring coaling stations, and the reasons why so many of these efforts ultimately failed before 1898.

* * *

On their 1866 cruise, the Swards stopped first in St. Thomas, traveling successively to the Republic of Dominica (San Domingo), Haiti, and Cuba. Conversations about coal, coaling stations, and the imperatives of the American steam navy recurred regularly. During one conversation in Haiti, for example, Seward and his hosts discussed the various harbors of the Caribbean, and someone observed that while both states on the island possessed extraordinary harbors—Samana Bay in Dominica and the Môle St.

³⁸ William Henry Seward and Frederick William Seward, *William H. Seward; an Autobiography from 1801 to 1834. With a Memoir of His Life, and Selections from His Letters*, [New] ed. (New York,: Derby and Miller, 1891), 307-8.

³⁹ For the diplomatic origins of the idea, see Halvdan Koht, "The Origin of Seward's Plan to Purchase the Danish West Indies," *American Historical Review* 50, no. 4 (1945).

Nicholas in Haiti—neither state made use of them. The Dominicans instead used the outlet of the Ozama River as their principal harbor and the Haitians Port-au-Prince. Both met the needs of commerce, but Seward looked to the imperatives of modern naval warfare and found both harbors lacking.⁴⁰ The United States, he believed, could benefit from its Caribbean neighbors. “Like every other structure of large proportions,” he observed of his nation while speaking to the President of San Domingo, “it requires outward buttresses. Those buttresses will arise in the development of civilization in this hemisphere.” If stable states in the Caribbean provided a political buttress for the United States, Seward appreciated how the islands’ harbors themselves could provide a geographic one.⁴¹

Within months of Seward’s voyage, rumors spread in the Navy and the American press that the Secretary of State sought to acquire St. Thomas as a coaling station for American ships. The ease with which British blockade-runners during the war refueled in ports like Nassau in the Bahamas suggested the usefulness of naval bases in that sea. Americans usually identified St. Thomas, possessing the largest and deepest harbor of the three main islands comprising the Danish West Indies, as a prime candidate for an American base. “In the event of a foreign war,” wrote one American citizen visiting St. Thomas in 1866, “the possession of it as a coaling station and general *entrepot* for our own ships would be of incalculable value to the United States.” This common-sense appeal for Caribbean naval bases was present as early as the close of the Civil War.⁴²

⁴⁰ Seward and Seward, *William H. Seward; an Autobiography from 1801 to 1834. With a Memoir of His Life, and Selections from His Letters*, 316.

⁴¹ *Ibid.*, 311.

⁴² “The Cruise of the ‘Monadnock.’ No. 1.,” *Overland Monthly and Out West Magazine* 3, no. 1 (1869): 18.

While Seward also pursued the annexation of the San Domingo (in large part for its harbor of Samana Bay), his plan to acquire the Danish West Indies for a coaling station came closest to fruition. Upon returning to the United States after his cruise, the Secretary set negotiations in motion. He pushed Johnson's cabinet to approve the purchase of the islands, and he led the United States to announce its first formal offer to Denmark in July 1866. Seward initially offered \$5 million for St. Thomas, St. John, and St. Croix. A new government in Denmark replied, however, asking for \$15 million for all three islands, or \$10 million for St. Thomas and St. John, and in either case, requiring a plebiscite from the islands' residents approving the transfer.⁴³ After months of negotiation, the Americans and Danes signed the treaty ceding the islands in October 1867. Upon learning of the deal, the *New York Times* applauded, noting that "[t]he necessity of our possessing a naval station somewhere in the West Indies has long been apparent," and referring the reader to the difficulties experienced by the Confederate steamer the *Alabama*, "which traversed the world in search of her fuel."⁴⁴

This celebration proved premature, however, when Nature suddenly roared louder than either the press or Secretary Seward. In the fall of 1867 a series of catastrophes engulfed the islands and soured the prospects for completing the purchase. First, on October 29th, St. Thomas was pummeled by a vicious hurricane, stronger than any to reach the islands in decades. Just a few weeks later, on November 18th, as representatives of the United States and Denmark met in St. Croix's town of Christiansted, the island suffered the additional devastation of a series of 89 earthquakes in a twelve hour period.

⁴³ Denmark sought the additional money as a result of its recent defeat in war with the German Confederation. Seward and Seward, *William H. Seward; an Autobiography from 1801 to 1834. With a Memoir of His Life, and Selections from His Letters*, 588-90.

⁴⁴ "Our New Possessions," *New York Times*, November 5 1867.

The aftershocks lasted for weeks, and the largest earthquakes triggered destructive tsunamis. One massive wave handily wrecked the 2,000 ton U.S.S. *Monongahela*, anchored at St. Croix to support the American delegation. According to an account in *Harper's Weekly*, the ship "was washed out of the ocean, over the warehouses of the town of St. Croix to the market-place, and again carried back over the same warehouses, and landed high and dry on a coral bank on the edge of the town." Four men of the crew died.⁴⁵

The disasters had immediate repercussions on the near-consummated purchase. Popular support in the United States, always ambivalent at best, turned negative, beginning with some of the nation's best known authors. The popular middle-brow poet and writer Bret Harte penned "St. Thomas, A Geographic Survey" in 1868, in which the outwardly edenic island in fact concealed a jealous Nature, fearful of the industrial pretensions of the United States. The poem's Secretary of State, however, saw only opportunities:

Then said William Henry Seward,
As he cast his eye to leeward,
"Quite important to our commerce
Is this island of St. Thomas."

But Nature revolted. St. Thomas's mountains feared Americans "Digging, blasting, with dynamit // Mocking all our thunders! Damn it!" The Sea similarly balked at allowing technology to tame her elemental might:

"Shall I let this scheming mortal
Shut with stone my shining portal,

⁴⁵ Roy A. Watlington and Shirley H. Lincoln, eds., *Disaster and Disruption in 1867 : Hurricane, Earthquake, and Tsunami in the Danish West Indies : A Collection of Accounts and Reports* ([St. Thomas, V.I.]: Eastern Caribbean Center University of the Virgin Islands, 1997), 5-10, 37. On the *Monongahela*, see "The Late Earthquake at St. Thomas," *Harper's Weekly* XII, no. 578 (1868). reprinted in Watlington and Lincoln, eds., *Disaster and Disruption in 1867 : Hurricane, Earthquake, and Tsunami in the Danish West Indies : A Collection of Accounts and Reports*, 31.

Curb my tide and check my play,
Fence with wharves my shining bay?"

The "black-browed Hurricane" worried that ingenious Americans would use science to reduce its awesome power by eliminating its most devastating feature, its unpredictability, leading to its "... secret paths made clear // Published o'er the hemisphere." These three forces of Nature then united to unleash their fury, wrecking the island and Seward's hopes not only for expansion but also for construction. Harte's poem underscored a deep ambivalence about the industrial growth of the United States and its consequences on the natural world.⁴⁶

Mark Twain ridiculed the plan as well. In "Information Wanted," written in December 1867, Twain described an uncle who "wishes to settle down, and be quiet and unostentatious" and who chooses St. Thomas as his new home. A series of misfortunes ensues. His money is stolen, along with the United States treasure used to purchase the islands. He is afflicted with all seven of the island's tropical fevers. But the worst was still to come. His farm is destroyed by a storm that "washed the most of it over to Gibraltar [sic]," an investment in mountain land collapses in an earthquake, a brick factory crumbles into the maw of a hidden volcano, and a surveying expedition to find some remaining place of solitude ends when a "tidal wave" washes his uncle's ship far inland.⁴⁷ While capitalizing on the island's misfortune, Twain's mocking essay errs in its premise that Seward sought St. Thomas for its solitude and salubrity. Caribbean tourism came a century later; the Secretary thought instead in terms of geography, strategy, and steam power.

⁴⁶ Bret Harte, "St. Thomas (a Geographical Survey, 1868)," in *Poems and Two Men of Sandy Bar, a Drama* (Boston and New York: Houghton, Mifflin and Company, 1896).

⁴⁷ Mark Twain, "Information Wanted (Washington, December 10, 1867)," in *Mark Twain's Sketches, New and Old*. (Hartford, CT and Chicago, IL: The American Publishing Company, 1875).

This popular ridicule, along with quiet Senate opposition to Seward's expansionism, allowed the treaty to die without ratification. Seward, however, remained confident in the value of the islands. "Nations are prone to postpone provisions for distant contingencies," he sighed when he realized public support for the St. Thomas purchase had waned.⁴⁸

American interest in St. Thomas as a coaling station, however, continued throughout the 19th century. A Minnesota attorney interested in American trade exclaimed in 1892 that "[a] coaling station is now as necessary for a navy as a woodyard and water tank for a railway." The issue was so important, he insisted, that it transcended petty politics. "No party should vote against the means of protecting the American flag and American people in foreign lands."⁴⁹ Such opinions were widely disseminated and the public reminded of the vital importance of coal to modern trade and security. "If a coaling-station was urgently needed then for the avoidance of the restrictions of neutral ports," wrote *New York Tribune* journalist Isaac N. Ford in 1893 in reference to the Civil War, "it will be required in any future war in which the United States may engage. St. Thomas, by virtue of its central position among the European possessions in America, and its strategic relations with the Isthmus and Nicaragua Canal routes, and the courses of trade with Brazil, would be an ideal coaling-station."⁵⁰

Nevertheless, the memory of hurricane and earthquakes tempered the opinion of many naval officers. Prominent senior figures supported acquiring the islands in the early 1890s, but with caveats. "But for the reputation St. Thomas has for earthquakes

⁴⁸ Seward and Seward, *William H. Seward; an Autobiography from 1801 to 1834. With a Memoir of His Life, and Selections from His Letters*, 370.

⁴⁹ Patrick Cudmore, *Buchanan's Conspiracy, the Nicaragua Canal, and Reciprocity* (New York,: P.J. Kenedy, 1892), 93-4.

⁵⁰ Isaac Nelson Ford, *Tropical America* (New York: C. Scribner's Sons, 1893), 7.

that would be my first choice,” explained Captain N.H. Farquhar in 1891, “as it has more natural advantages which make it impregnable to attack than any other harbor in that section, and would therefore be less expensive to fortify.” Commander A.S. Barker similarly acknowledged how natural events doomed negotiations for the island: “[b]ut for that unfortunate earthquake some years ago the important island of St. Thomas would now be in our possession. It is just as valuable to us now as it was then.” “It is a small Gibraltar in itself,” observed Commander C.M. Thomas, praising its suitability for constructing dry docks and a coaling plant. “We ought to be quick to grab the chance for securing this valuable site.” Yet no officer desired the islands more, or had a higher public profile, than the Navy’s senior officer, Admiral of the Navy David Dixon Porter. “Every provision is made for the coaling of large steamers,” he said of the island, “and in no other port of the West Indies can a vessel be coaled so rapidly as St. Thomas.”⁵¹

How ships coaled at St. Thomas demonstrates how advanced steam technology still depended on traditional sources of labor. Coaling at St. Thomas, like anywhere, was a social process, facilitated by an abundance of cheap labor. This labor worked along gendered lines. The retired Rear-Admiral Samuel R. Franklin recalled coaling frequently in St. Thomas during the Civil War. “The ships were coaled by women,” he observed, “who formed a procession from the coal-pike, each on carrying a basket on her head. In this way a ship was rapidly coaled.”⁵² Island resident and booster Charles Edwin Taylor encouraged his readers to watch the ships coal at midnight, where one might “watch the dusky figures of hundreds of women, each with a basket of coal on her head, swarming up the steamer’s side busy as bees, and running back again with them empty, to be

⁵¹ All quotes from “St. Thomas Island for Our Naval Station,” *New York Herald*, September 24 1891.

⁵² S.R. Franklin, *Memories of a Rear-Admiral* (New York and London: Harper & Brothers Publishers, 1898), 178.

refilled.” Taylor lauded the women’s industriousness and lauded their singing, “in a quaint minor key.”⁵³ If he could only express the women’s labor in the language of the picturesque, however, Taylor expressed the insight that a prosperous coaling port depended upon storage facilities, a functioning harbor, and, of course, a supply of labor. The value of a place included more than its location. At St. Thomas, the newest form of energy remained bound entirely to the oldest.

Just as Seward simultaneously sought Caribbean naval stations in St. Thomas and on San Domingo in the late 1860s, another Secretary of State, James G. Blaine, would revive interest in those coaling stations in the late 1880s and early 1890s. By then, American interest in acquiring a Caribbean coaling station had become more muscular. Nevertheless, here too negotiations collapsed. This time, resistance came from the people of island, not from within the United States.

Becoming Master of the Land and Sea

⁵³ Charles Edwin Taylor, *St. Thomas, as a Naval and Coaling Station* (St. Thomas, D.W.I.: Printed by J.N. Lightbourn, 1891), 12-3. Elsewhere, Taylor used the example of the coaling women to disprove common stereotypes of Caribbean people. Meaningful labor produced purpose in life: “All this movement may seem incredible to those who have been accustomed to associate life in the tropics with laziness and a disinclination to exertion,” he wrote, “especially when the negroes are concerned; give them work, and pay them properly for it, and they will do it quite as promptly, and far more good-naturedly, than their white brother in a like station of life, who, the slave perhaps of some trade union, is far worse off to-day than the negro ever was at the time of slavery.” Charles Edwin Taylor, Isaac B. Rich, and Rogers Memorial Collection., *An Island of the Sea : Descriptive of the Past and Present of St. Thomas, Danish West Indies : With a Few Short Stories About Bluebeard's and Blackbeard's Castles* (St. Thomas, D.W.I.: Published by the Author at Taylor's Book-store, 1895), 34.

St. Thomas visitor Maturin M. Ballou also observed the coaling women. “A hundred women and girls, wearing one scant garment reaching to the knees, are in line, and commence at once to trot on board in single file, each one bearing a bushel basket of coal upon her head, weighing, say sixty pounds. Another gang fill empty baskets where the coal is stored, so that there is a continuous line of negresses trotting into the ship at one port and, after dumping their loads into the coal bunkers, out at the other, hastening back to the source of supply for more.” Ballou also noted their song, and evidently observed the women engaged in “a firefly dance” after completing their night’s labor. Maturin M. Ballou, *Equatorial America: Descriptive of a Visit to St. Thomas, Martinique, Barbadoes, and the Principal Capitals of South America* (Boston and New York: Houghton, Mifflin and Company, 1892), 29-31.

Frederick Douglass believed that unbreakable bonds linked Haiti to the United States, bonds strengthened by modern technology. “Measuring distance by time, improved naval architecture and improved steam navigation,” he explained to an audience in 1891, “Haiti will one day be only three days from New York and thirty-six hours from Florida; in fact, our next door neighbor.” And a next door neighbor, according to Douglass, demanded the development of political friendship between the two nations.⁵⁴

This friendship, he explained, would benefit the citizens of both Haiti and the United States. The existing demands of steam navigation and the eventual completion of an isthmian canal, in particular, heralded mutual benefit. Haiti could profit from increased trade and international importance, while the United States could acquire access to the island’s particular strategic advantages. Douglass looked particularly to the Môle St. Nicholas. This harbor, tucked into the extreme northwest peninsula of Hispaniola and facing Cuba to the west, offered a unique and strategically located harbor for an American coaling station in the Caribbean. Douglass lauded Haiti’s Môle, French for “breakwater,” with the now familiar appellation, “the Gibraltar of that country” for its strategic position overlooking the Windward Passage and standing as “the natural gateway of the commerce both of the new and the old world.” The eventual completion of an isthmian canal through Nicaragua would make the Mole more important still. “It is seen” Douglass observed, “that the nation that can get it and hold it will be master of the land and sea in its neighborhood.”⁵⁵

Elsewhere, Douglass described his support for the annexation of the entire island of Santo Domingo, of which Haiti only occupied the western third, by observing that

⁵⁴ “Lecture on Haiti,” in Box 27, reel 17, Haiti folder 8 of 14, Frederick Douglass Papers, Manuscript Division, Library of Congress, Washington, D.C., 2.

⁵⁵ *Ibid.*, 5.

“small nations are going out of fashion.” In the place of petty nationalisms, he argued, have stepped “[o]rganization, progress, [and] unification.” But Douglass did not view annexation only from the parochial perspective of Santo Domingo. Acquiring the island offered advantages to the United States as well, the same advantages held by Britain in India and Jamaica and Spain in Cuba. “Almost every great maritime [sic] nation in the world, but our own,” he wrote, “has some footing and foothold in the Caribbean sea.” Writing of expansion as bringing “freedom, knowledge and progress,” the progress he described remained inextricably tied to the politics and commerce of the sea.⁵⁶

The United States, however, did not annex Haiti or acquire its Môle St. Nicholas as a coaling station. This failed negotiation has suggested that the plan was insignificant, but understood in the context of its time, it is clear this was not the case. Frederick Douglass’s role in these failed negotiations reveals the importance attached to acquiring the Môle, and the continuing 19th century efforts of the United States to compensate for its relative naval weakness in the Caribbean.

The American interest in the Môle St. Nicholas as a coaling station began as early as 1868, when rumors reached the United States that the new Haitian government of Major Sylvain Salnave had ceded the harbor to the U.S. The *New York Times* remained skeptical that such a deal had been consummated or would ever come to pass. Although the frequent turnovers of power in Haiti and neighboring Dominica tempted new administrations to seek funds by disbursing their land to other nations, the *Times* noted that “of the many sales and leases thus attempted, not one has ever been carried out, as no

⁵⁶ Frederick Douglass, "Santo Domingo," in Box 28, reel 18, Santo Domingo folder 4 of 5, Frederick Douglass Papers, Manuscript Division, Library of Congress, Washington, D.C. (n.d.), 33-6.

party remains in power long enough to accomplish its designs.”⁵⁷ These limitations did not prevent various American administrations from approaching the Haitian government for access to the Môle as a coaling station over the next several decades.

In 1870, the U.S. Senate was still considering the acquisition of a coaling station on St. Thomas from Denmark or in Samana Bay or the Môle on Santo Domingo. Residents of St. Thomas had recently voted some ten to one in favor of joining the United States, while public sentiment in Dominica was largely against the proposal. The consequences of acquiring harbors on either island, or acquiring the islands altogether, remained unclear. The *New York Times* noted “that annexation of an island willing to come is economy, but annexation of an unwilling island is bad economy in the end, whatever the first or contract cost.” The *Times* observed that while residents of some urban areas of Santo Domingo approved of ceding a harbor to the United States, a powerful nationalism prompted people in rural areas to oppose such suggestions vehemently. On Santo Domingo, at least, the issue’s prominence within the political discourse of some insurgent groups suggested that pursuing the coaling station would arouse overwhelming public opposition.⁵⁸

Americans favoring naval expansion refused to let the issue go away, however, and they renewed the question in earnest during the first presidential administration of Grover Cleveland. Attention to the Môle had returned after the deposition of Haiti’s long serving President, Lycius Salomon in August 1888. As rival factions led by Generals Francois Légitime and Florvil Hyppolite struggled for political ascension, both looked abroad for vital foreign aid to arm and support their activities. Légitime turned to Haiti’s

⁵⁷ "West India Purchase," *New York Times*, August 18 1868.

⁵⁸ "St. Thomas and San Domingo," *New York Times*, February 15 1870.

traditional sponsor, France, which was quietly supported by Great Britain. The United States, meanwhile, backed Hyppolite. This decision was both strategic and defensive. A *Légitime* victory might mean Haiti's cession of the Môle to France in return for the nation's support, a possibility perceived as a potential threat to American aspirations for hegemony in the Caribbean. Since the Môle was located along the shipping route from the Atlantic to the proposed Nicaraguan canal, losing the Môle to France seemed particularly worrisome. While obtaining a coaling station in the Caribbean would support the U.S. Navy, the threat of France acquiring a station there motivated the Americans more than any positive aspirations for a station for its own sake.⁵⁹

Americans supported Hyppolite clandestinely. Firms in Boston and New York supplied the Haitian General with arms, run through *Légitime's* naval blockade. When *Légitime's* forces captured the Boston based blockade-runner *Haytian Republic*, Cleveland's Secretary of State Thomas F. Bayard sent American naval vessels to guard "innocent merchantmen." By skirting American neutrality laws, Cleveland's government managed to scuttle the French advantage in acquiring the Môle.⁶⁰

This policy continued under the Republican administration of Benjamin Harrison. In 1889, Harrison's Secretary of the Navy, Benjamin Tracy, and Secretary of State, James G. Blaine, together began presiding over a substantial building program within the Navy. As fall approached, the Harrison administration embarked on a series of what the *New York Times* called "small schemes of annexation." It would continue to press for the Môle St. Nicholas and Samana Bay, as well as revive official interest in St. Thomas and

⁵⁹ Myra Himelhoch, "Frederick Douglass and Haiti's Mole St. Nicolas," *The Journal of Negro History* LVI, no. 3 (1971): 161-2.

⁶⁰ *Ibid.*: 162.

also Hawaii, all for use as naval coaling stations.⁶¹ The *Washington Post* attributed the Secretaries' interest in Haitian ports to the growing naval construction. "Now that cruiser after cruiser is being built ... the question of securing coaling stations becomes one of the utmost importance." With the proximity of Môle St. Nicholas to British and French interests in the Caribbean and its location near the path towards the prospective Nicaraguan Canal, the *Post* asserted the wisdom of negotiating for use of the Môle—leasing, if not ceding—for the United States.⁶² Rumors also spread around the U.S. that the Harrison administration was secretly aiding Hyppolite in return for the cession of the Môle.⁶³

This interest in a Haitian coaling station ultimately drew the United States into the island's domestic politics. In August 1889, Légitime was finally dislodged from office, and in October, Hyppolite installed as Haiti's new President. Shortly thereafter, the Americans returned to make good on the promise of a coaling station in return for their support during the revolution.⁶⁴

In the beginning of December 1889, Rear Admiral Bancroft Gherardi's squadron—comprised of the *Kearsarge*, the *Dolphin*, and his flagship, the *Galena*—left for a winter cruise in the West Indies. The Navy scheduled the Môle St. Nicholas as the ships' primary destination, and sought the opening of negotiations with Hyppolite's new government for an American coaling station there.⁶⁵ Gherardi arrived at Port au Prince

⁶¹ "A New Harrison Policy: Various Small Schemes of Annexation Planned: Not Only the Mole St. Nicholas, but the Island of St. Thomas Wanted--Possibility of Reviving the Treaty with Hawaii," *New York Times*, September 23 1891.

⁶² "Out Interests in Hayti," *Washington Post*, July 20 1889.

⁶³ "The Haytian Question: Are France and the United States Tangled up in It?," *Washington Post*, August 22 1889.

⁶⁴ David Healy, *James G. Blaine and Latin America* (Columbia and London: University of Missouri Press, 2001), 183-6.

⁶⁵ "Admiral Gherardi's Cruise," *New York Times*, November 30 1889.

on December 18, and sent the *Dolphin* ahead of the other ships to the examine the Môle. Over the next several days, Gherardi met with the new President. When the *Dolphin* returned from its reconnaissance, Gherardi boarded it and himself sailed to the Môle. The meaning of the naval visit was clear to the residents of Port au Prince, and the prospect of ceding the Môle provoked considerable anxiety; when Gherardi arrived, the discount rate of the country's paper currency increased from 14 percent to 30.⁶⁶ When Gherardi's negotiations with Hyppolite's government broke down in January 1890, the *New York Times* decried that "all hope must now be abandoned of ever securing the Mole St. Nicholas for a coaling station for the American Government" and placed the weight of the blame on the newly accredited American Minister to Haiti, Frederick Douglass.⁶⁷

Douglass had not sought an appointment to the diplomatic service. In return for his campaigning for Harrison in 1888, he had desired, and on at least two occasions, officially requested, a reappointment to his old position as Recorder of Deeds in Washington, D.C. Harrison, however, wanted him for a foreign post. Douglass suggested the exotic Cairo. Harrison replied with an offer to represent the United States in Haiti. Douglass accepted the appointment, even amid the very ambiguous reaction it received in both the white and black presses. Some praised Douglass for his past accomplishments, others objected to sending a black man to represent the United States at all, still others considered the minor post beneath him.⁶⁸

When Gherardi began negotiations with Hyppolite's new government for the Môle, Douglass actually had little involvement in the matter. Despite his keen interest in American expansion and the acquisition of a coaling station in Haiti, during his first year

⁶⁶ "Out Interests in Hayti."

⁶⁷ "Mole St. Nicholas Is Lost to Us," *New York Times*, January 31 1890.

⁶⁸ Himelhoch, "Frederick Douglass and Haiti's Mole St. Nicolas," 164-5.

at Port au Prince, Douglass had never received instructions to open negotiations for harbor. All the more reason the diplomat was surprised by the arrival of the U.S.S. *Philadelphia* on January 25th, 1891 and bearing Admiral Gherardi and orders from Washington to negotiate for the Môle.⁶⁹

After Gherardi's arrival, Douglass found himself in a compromised position. The Admiral had effectively usurped Douglass's position as the chief American representative in Haiti. Not only did Gherardi announce his charge from Secretary of State Blaine to negotiate for a coaling station at the Môle, but all that Douglass could determine of his own instructions came indirectly through the Admiral as well. Nevertheless, Douglass played the hand dealt him. He immediately arranged a meeting the following morning with Anténor Firmin, Haiti's Minister of Foreign Affairs, and President Hyppolite to discuss the coaling station matter.

Douglass entered the meeting as a junior partner to Gherardi. The Admiral took charge of the discussion, and although neither American spoke French, only the Admiral's translator was invited to attend, giving Gherardi an additional advantage over the diplomat. At the meeting, Gherardi explained the desire of the United States to lease the Môle St. Nicholas, alluding to the support, both political and material, that the U.S. had lent to what became the new Haitian government during the recent revolution, and, according to Douglass, "of certain promises made by the Haitian Provisional Government, which now it was the desire of the Government at Washington to have fulfilled." In his report to Secretary of State Blaine, Douglass praised Gherardi for his

⁶⁹ "Frederick Douglass to James Blaine, No. 123 Confidential Diplomatic, 1/29/1891," in *A Black Diplomat in Haiti: The Diplomatic Correspondence of U.S. Minister Frederick Douglass from Haiti, 1889-1891*, ed. Norma Brown (Salisbury, N.C.: Documentary Publications, 1977).

“masterly manner” of diplomacy and noted that “[h]is presentation was marked by skill and ability.”⁷⁰

Cracks in the diplomatic solidarity emerged, however, even in this first meeting as Gherardi laid the American claims on the table. While Gherardi insisted that Hyppolite’s government was “morally bound” to honor ambiguous promises for land in return for the U.S.’s support of their revolution, Douglass reminded him that pressing this claim would put the United States in the position of having purchased a coaling station for the price of “plac[ing] our Government in an indefensible attitude before mankind as, in fact, violently interfering by its navy with the affairs of a neighboring country and assisting one faction against another.”⁷¹ As Firmin and Douglass were quicker to realize than Gherardi, staking a claim on the Môle based on the very real material aid provided to Hyppolite’s revolution by the United States simultaneously acknowledged the unseemly, and possibly illegal American interference in Haitian politics. Instead, Douglass asserted that a concession of the Môle “was in the line of good neighborhood and advanced civilization,” building trust between the two countries and strengthening, not weakening, the island. Douglass maintained “that national isolation was a policy of the past” and a concession would allow the country “to touch the world at all points that make for civilization and commerce.”⁷² Haiti’s persistent resistance to leasing territory to foreign powers “grew out of conditions which had long since ceased to exist,” Douglass insisted,

⁷⁰ Ibid.

⁷¹ Frederick Douglass, “[Essay],” in Box 31, reel 19, Môle St. Nicholas folder 1 of 4, Frederick Douglass Papers, Manuscript Division, Library of Congress, Washington, D.C., 27.

⁷² Frederick Douglass, “Haïti and the United States. Inside History of the Negotiations for the Môle St. Nicolas [Part I],” *The North American Review* CLIII, no. CCCCXVIII (1891): 343-4.

adding that this “policy of Exclusion, once a source of safety, was now, under altered conditions, a source of danger.”⁷³

Firmin responded by inquiring into the basis for the American request. Did the Americans believe leasing the Môle was it “an obligation” incurred from “promises made” during Hyppolite’s provisional term as president, as Gherardi seemed to claim? Or was it Douglass’s version, “a simple application from one friendly power to another for a special accommodation”? Firmin denied that leasing the Môle could be an obligation, and while he expressed his support for the lease “as an individual,” his opinion as a representative of the new administration complicated the matter. As the conversation concluded, the Americans received a promise that the Hyppolite government would support the lease as soon as the Haitian legislature permitted it.⁷⁴

Two weeks later, the Americans received an unexpected reply from the Haitian government. On the 16th of February, Minister Firmin suddenly cut off negotiations with Gherardi for the Môle, insisting that no additional progress could be made unless the Admiral presented a letter from the United States officially appointing him “a Special Commissioner of the United States.” Though Douglass, Gherardi’s secretary and translator Harry Huse, and most of all, Gherardi himself believed he already had such authority, Douglass counseled him to seek a formal letter from the government to speed the negotiations along. The Americans suspected Firmin was only trying to buy additional time. Gherardi protested to the Minister, who replied that without such an official appointment, any negotiation might bind the government of Haiti without similarly binding the government of the United States, which might claim that any

⁷³ "Frederick Douglass to James Blaine, No. 123 Confidential Diplomatic, 1/29/1891."

⁷⁴ Ibid.

promises made by the Admiral were not, in fact, in an official capacity representing the United States. Only, according to Firmin, a letter from President Harrison to President Hyppolite investing Gherardi with full diplomatic credentials would do.⁷⁵

The American press asserted the rightness of their country's position. "The reputation of the United States for fair dealing and our well-known reluctance to resort to the bullying methods of other countries has shorn the situation of all that moral influence that would otherwise be derived from the stay of our ships of war in Haitian ports," wrote the *New York Times* as three American gun boats floated at anchor in the harbor of Port au Prince during a lull in the negotiations for the Môle.⁷⁶ The *Times* was more than willing to forgive Gherardi for the possible failure of the Môle negotiations, noting that "elements that have been arrayed against him have made his task one of great difficulty," with the subtext that the most difficult of these "elements" was the presence of Douglass himself.⁷⁷ The *Times* suggested that the U.S. diplomats in Haiti instruct President Hyppolite "that the vast interests of the United States demand that the harbor of the Mole should be in our hands; let him appreciate, in short," the newspaper continued, "that the United States is here to stay."⁷⁸ Further, it advocated granting Gherardi the full

⁷⁵ "Frederick Douglass to James Blaine, No. 132 *Special and Confidential Diplomatic*, 2/18/1891," in *A Black Diplomat in Haiti: The Diplomatic Correspondence of U.S. Minister Frederick Douglass from Haiti, 1889-1891*, ed. Norma Brown (Salisbury, N.C.: Documentary Publications, 1977).

⁷⁶ "In West Indian Waters: The Vessels of Our Squadron Now Scattered," *New York Times*, March 26 1891.

⁷⁷ Ibid. Douglass himself suspected that the author of these anonymous *Times* dispatches was Gherardi himself, or someone writing with the Admiral's personal approval. Although the *Times* by-lines suggested a correspondent writing from Port au Prince, Douglass observed that the author only filed reports when Gherardi's squadron was at anchor. See Douglass, "[Essay]," 3-6. This essay appears to be an early, and more forceful and accusatory, draft of the version Douglass ultimately published in *The North American Review*, *supra*.

⁷⁸ "In West Indian Waters: The Vessels of Our Squadron Now Scattered."

diplomatic credentials requested by Minister Firmin with the expected result that “the Môle will be at our feet in twenty-four hours.”⁷⁹

During the spring of 1891, relations between Douglass and Gherardi continued to strain. Douglass learned that Gherardi had written a letter to Secretary Blaine claiming that Douglass, in his official role, had “recommended and advised the seizure by the United States of the Môle for the purpose of making of it a naval coaling station.” Douglass dismissed the accusation as “amazingly inaccurate,” claiming that it “is calculated to do me marked and startling injustice.” Douglass admitted, however, to stating “that if the United States should take the Môle for a coaling station, the Government of Haïti would thus be relieved from assuming a responsibility which, in view of the well known sentiments of the Haïtian people on the subject, that Government might deem it unwise to assume.” Douglass flatly denied that this statement implied that he desired taking the Môle by force.⁸⁰

Gherardi and Douglass waited in Haiti for the arrival of the Admiral’s official credentials from Washington for two months, and during part of that time, Gherardi left the capital. Douglass observed that the long period of waiting coupled with Gherardi’s leaving the city stimulated the spread of many pernicious rumors about the intentions of the United States. “It was said that Admiral Gherardi had left Port au Prince in anger,” Douglass recalled, “and had gone to take possession of the Môle without further parley; that the American flag was already floating over our new naval station; that the United States wanted the Môle as an entering wedge to obtaining possession of the whole island”

⁷⁹ Ibid.

⁸⁰ “Frederick Douglass to James Blaine, No. 152 Diplomatic, 4/20/1891,” in *A Black Diplomat in Haiti : The Diplomatic Correspondence of U.S. Minister Frederick Douglass from Haiti, 1889-1891*, ed. Norma Brown (Salisbury, N.C.: Documentary Publications, 1977).

and so on.⁸¹ The Admiral was not, however, content to wait around Port au Prince. Aboard the *Philadelphia*, he had been cruising around the island, stopping at Gonaïves and the Môle, as well as nearby Kingston, Jamaica. Despite his earnest intention on pressuring the Haitians for the Môle, Gherardi remained oblivious to the consequences his actions were having on the ever important public opinion.⁸²

The seriousness, or desperation, of the United States became clear as the negotiations for the Môle descended into gunboat diplomacy. On April 18th, the warships *Boston*, *Atlanta*, *Yorktown*, and *Chicago*—the latter carrying Rear Admiral John G. Walker—arrived in Port au Prince where they joined Gherardi's *Philadelphia*. The *Kearsarge* and *Enterprise* were expected to join them imminently. Walker's "White Squadron" made the American naval presence in Port au Prince, in the words of the *New York Times*, "the most formidable American fleet that has assembled in any one harbor since the [Civil] war."⁸³ Walker gave neither Douglass nor the Haitian government an explanation for his visit, but rumors spread quickly through the city. The "secret" negotiations had evidently become known, if only in a general way. Douglass reported the arrival of the ships as fomenting "a feeling of apprehension, anxiety and even of alarm, beyond anything of the kind that I have ever before personally known to exist here." As Douglas read the country, popular sentiment felt uncomfortably squeezed between two equally unpleasant options: if the Môle were to be ceded, the government that permitted it would "fall under the crush of popular condemnation," while if the government resisted, they feared that the naval warships would simply take the Môle on

⁸¹ Douglass, "Haïti and the United States. Inside History of the Negotiations for the Môle St. Nicolas [Part I]," 452.

⁸² Ibid.: 452-4.

⁸³ "Home Again from Haiti: Arrival of Rear Admiral Gherardi and His Flagship," *New York Times*, May 17 1891.

their own anyway. As Douglas noted in his official dispatch, "in either case internal disorders, violence and revolutionary uprisings will follow." By now, Douglass began to insist that his government think through the potential consequences of its actions.⁸⁴

The newly arrived American warships also brought Gherardi's updated commission from New York with President Harrison's certification to negotiate with the Haitian government for the Môle. Significantly, the new orders differed from the old. Gherardi's original charge had required that Haiti agree not to lease any portion of their territory or provide any special privileges to any power besides the United States so long as the U.S. maintained a naval coaling station at the Môle. In contrast, the new one focused on acquiring only the naval station there without the restrictive terms originally imposed. It also charged both the Admiral *and* the Minister with negotiating for the harbor. Douglass insisted that the new, conditions-free instruction superseded the old, restrictive ones, but Gherardi disagreed and insisted on pressing for the original terms. Douglass would later attribute part of the failure of the negotiations to this decision.⁸⁵

On April 21st, the Americans met with Firmin, who acknowledged Gherardi's new appointment, but insisted that he could only negotiate further after receiving word from President Hyppolite.⁸⁶ Two days later, word was received, though not the word the Americans had hoped for. In a hurried telegram, Douglass notified Secretary Blaine in

⁸⁴ "Frederick Douglass to James Blaine, No. 154 Diplomatic, 4/21/1891," in *A Black Diplomat in Haiti : The Diplomatic Correspondence of U.S. Minister Frederick Douglass from Haiti, 1889-1891*, ed. Norma Brown (Salisbury, N.C.: Documentary Publications, 1977).

⁸⁵ Douglass, "Haïti and the United States. Inside History of the Negotiations for the Môle St. Nicolas [Part I]," 452-4. "Frederick Douglass to James Blaine, No. 155 Diplomatic, 4/21/1891," in *A Black Diplomat in Haiti : The Diplomatic Correspondence of U.S. Minister Frederick Douglass from Haiti, 1889-1891*, ed. Norma Brown (Salisbury, N.C.: Documentary Publications, 1977).

⁸⁶ "Frederick Douglass to James Blaine, No. 155 Diplomatic, 4/21/1891."

Washington that “Hayti has declined lease of Môle.”⁸⁷ Firmin explained in his official letter that the Haitian government could not accept the American terms on the lease of the Môle St. Nicholas, in particular the demand that while the United States lease the Môle, Haiti refrain from leasing any other “port, harbor or other territory in its dominions or grant any special privilege or rights of use to any other Power, State or Government,” precisely the original terms Gherardi had insisted on pursuing. Furthermore, Firmin acknowledged the domestic political difficulties created by the arrival of the American warships. Firmin insisted that his government had to avoid the suggestion that it buckled under threat of force. If, as Douglass would later imply, acquiring the Môle was impossible from the outset, Gherardi’s bluster provided Hyppolite’s government with plausible—and diplomatic—reasons for declining the American offer.⁸⁸

In early May, Douglass reported to Washington that Haitian newspapers had taken up the Môle St. Nicholas issue with a passion, “practically calling upon the people to be prepared to resort to the most extreme measures to prevent the least occupation, under any pretext whatever, of Haïtian territory by a foreign power.” Meanwhile, the Haitian newspaper *Le Peuple* began attacking the United States, in Douglass’s words, “on account of the prejudice there existing against persons of African origin.” To quell discontent, the Hyppolite government, through Minister Firmin, officially declared that no portion of Haitian territory would be granted to another nation. Announcing the government statement in *Le Moniteur*, the Haitian administration assured its people that

⁸⁷ “Frederick Douglass to Secretary of State, Telegram, 4/23/1891,” in *A Black Diplomat in Haiti : The Diplomatic Correspondence of U.S. Minister Frederick Douglass from Haiti, 1889-1891*, ed. Norma Brown (Salisbury, N.C.: Documentary Publications, 1977).

⁸⁸ “Frederick Douglass to James Blaine, No. 156 Diplomatic, 4/23/1891,” in *A Black Diplomat in Haiti : The Diplomatic Correspondence of U.S. Minister Frederick Douglass from Haiti, 1889-1891*, ed. Norma Brown (Salisbury, N.C.: Documentary Publications, 1977).

all negotiations with the United States were friendly, that only policy and constitutional restrictions limited the continuation of negotiations, and that ultimately, only the legislature could approve such a deal in any event.⁸⁹

Even after the Haitian rejection of the coaling station plan, Douglass pursued it. On April 24th, Douglass met with Firmin to inquire whether the removal of American warships and the elimination of the clause restricting the island nation from leasing ports to other powers would allow the reopening of negotiations. Although he reported Firmin as considering these new circumstances, the minister unequivocally declined to begin further talks and called the matter “closed.”⁹⁰

In public as well, the Haitian government sealed their decision. On May 3, President Hyppolite held his monthly “audience” with Haitian elites. He assured them that any accusation that his government sanctioned the leasing of Haitian territory was wildly incorrect, and specifically that any intimation that his government had earlier assured the United States that it would lease the Môle was false. Calling rumors to the contrary “propagandism” and promising to print all official correspondence on the matter in the government organ, Hyppolite insisted on his solidarity with the Haitian people. “I am not white,” he said, according to a witness reporting the speech to Douglass, “I belong to the same race as you do; the day when there should be a question of such an act, I should prefer to see this country disappear like Gomorrah.” Distorting the nature of the

⁸⁹ “Frederick Douglass to James Blaine, No. 159 Diplomatic, 5/2/1891 and Enclosure No. 2,” in *A Black Diplomat in Haiti: The Diplomatic Correspondence of U.S. Minister Frederick Douglass from Haiti, 1889-1891*, ed. Norma Brown (Salisbury, N.C.: Documentary Publications, 1977).

⁹⁰ “Frederick Douglass to James Blaine, No. 161 Diplomatic, 5/2/1891,” in *A Black Diplomat in Haiti: The Diplomatic Correspondence of U.S. Minister Frederick Douglass from Haiti, 1889-1891*, ed. Norma Brown (Salisbury, N.C.: Documentary Publications, 1977).

negotiations to his benefit, Hyppolite demonstrated how domestic politics had clearly and predictably taken charge of foreign policy.⁹¹

Private frustrations at the failure of negotiations for the Môle quickly became rumors of Douglass' inadequacy, and rumors just as quickly were reported as facts. The *Washington Post* reprinted a piece from the *New York Recorder*, claiming that the collapse of negotiations would soon lead to "the probable recall of Minister Douglass, whom the Haytians regard very unfavorably, desiring a white minister from the United States." This account was wildly inaccurate, echoing old claims that Haiti was unhappy with Douglass on account of his race, but the article claimed that "[n]egotiations failed because of this state of affairs."⁹²

An already ambivalent American press turned on Douglass after the failure to acquire the Haitian coaling station. Douglass recounted how his old friend and ally, the *New York Tribune*, began writing that it "regrets that I have been 'blurting out' state secrets."⁹³ Douglass rejected the scorn heaped upon him by the press and their accusations that he compromised the negotiations for the United States. The hand of the United States was not revealed by him, he protested, but by the press at every moment during the delicate negotiations. If the *Tribune*, or any other paper genuinely intended to protect that national interest, their calls to discretion were directed at the wrong corner and came too late. "It should have come when the white squadron was yet in the waters of Haiti," Douglass fumed. "It should have come when Rear Admiral Gherardi was sent

⁹¹ "Frederick Douglass to James Blaine, No. 164 Diplomatic, 5/7/1891," in *A Black Diplomat in Haiti: The Diplomatic Correspondence of U.S. Minister Frederick Douglass from Haiti, 1889-1891*, ed. Norma Brown (Salisbury, N.C.: Documentary Publications, 1977).

⁹² "May Ask Minister Douglass' Recall," *Washington Post*, May 23 1891.

⁹³ "[Haiti Lecture]," in Box 27, reel 17, Haiti folder 2 of 14, Frederick Douglass Papers, Manuscript Division, Library of Congress, Washington, D.C., 1.

as Commissioner to Haiti. It should have come when the salt water writers were wielding their pens against me in the leading papers of the country. It should have come when the public mind was being poisoned by lengthy editorials and anonymous defamers.” And on he railed at a press determined to make him “a cowardly scapegoat.”⁹⁴

In September 1891, Douglass lashed out at his critics in a scathing two part essay in *The North American Review* detailing his role in the Môle negotiations. He wrote “not only as a personal vindication from undeserved censure, but as due to the truth of history.”⁹⁵ Douglass attacked those who accused him of squandering his first year in Haiti, so jeopardizing an American hold on the harbor that Rear Admiral Gherardi was dispatched from Washington to salvage the negotiations. He balked at the idea that his supposed failure was attributable to his race, mocking his critics who suggested “it monstrous to compel black Haïti to receive a minister as black as herself.”⁹⁶ If Douglass had done anything wrong, it was in allowing himself to see the national perspectives of both the United States and Haiti together. “Is the weakness of a nation a reason for our robbing it?” Douglass asked. “Are we to take advantage, not only of its weakness, but of its fears? Are we to wring from it by dread of our power what we cannot obtain by appeals to its justice and reason?”⁹⁷

Douglass insisted that the heart of matter rested in nationalism, and the overpowering reluctance of Hyppolite’s government to risk the ire of the Haitian people and thus risk yet another revolution. Moreover, Douglass insisted that the proud boasts of New York’s large newspapers that “once in possession of the Môle, the United States

⁹⁴ Ibid., 2.

⁹⁵ Douglass, “Haïti and the United States. Inside History of the Negotiations for the Môle St. Nicolas [Part I],” 337.

⁹⁶ Ibid.: 337-8.

⁹⁷ Ibid.: 339-40.

would control the destiny of Haïti,” coupled with threatening gunboat diplomacy similarly did more to doom negotiations than advance them.⁹⁸

To the accusation that he could not possibly comprehend the significance of the Môle to the United States, Douglass caustically replied that he had advocated the U.S. acquisition of a naval station in the Caribbean “when some of these writers were in their petticoats.” The rest of the world possessed naval stations in the Caribbean, he observed, and he believed the United States ought to have one too. Douglass’s annexationist impulse had been leashed while the nation maintained slavery, “[b]ut since its abolition” he wrote, “I have gone with him who goes farthest for such extension.”⁹⁹ As to his neglect of the matter during the first year of his appointment, he asserted that he had never been charged with such a project, and “[w]here no duty was imposed no duty neglected.”¹⁰⁰

Regarding the Haitian nationalism that overpowered negotiations for the Môle, Douglass concluded that his expectations of Haitian willingness to concede the harbor were mistaken, and that neither peacefully nor by violence would a Haitian government permit the Môle to fall into the hands of another country. “It could not be done by any government without costing the country revolution and bloodshed.”¹⁰¹ Douglass rejected the histrionics of the press as “neither reasonable nor creditable.” The island was under no obligation to lease the harbor, and had every right as a sovereign state to refuse.¹⁰² Importantly, both Douglass and his critics in the press agreed that the naval and coaling

⁹⁸ Ibid., no. CCCCXIX: 452-4. "Frederick Douglass to James Blaine, No. 155 Diplomatic, 4/21/1891."

⁹⁹ Douglass, "Haïti and the United States. Inside History of the Negotiations for the Môle St. Nicolas [Part I]," 340.

¹⁰⁰ Ibid.: 341.

¹⁰¹ "Lecture on Haiti," 5-6.

¹⁰² Ibid., 6.

station at the Môle was in the national interest; they disagreed on how to approach the issue and on why negotiations had failed.

* * *

Admiral Gherardi and the *Philadelphia* had a difficult time returning to the United States. During its formal steam trials, the ship had reached speeds of 20 knots per hour for four hours straight. While returning from Haiti, the maximum speed was 14 knots per hour, and an average of 12½. At one point, an exasperated and impatient Gherardi, according to the *New York Times*, “threatened to place the Chief Engineer under arrest for disobedience of orders.” Although barnacles growing upon the hulls of ships often contributed to reducing speeds, an examination of the ship upon docking in New York revealed no significant marine growth. Instead, the ship seemed to be hindered by two other obstacles, both related to the constraints of steam power. First, the ship’s original steam trials had a single, specially selected fireman tending each of the thirty-two furnaces. Upon returning from Haiti, only twenty-four firemen were available, and they were divided into three shifts, leaving only eight per shift and forcing each man to tend four furnaces. This labor, for a crew already exhausted from four months straight aboard the ship in a tropical heat, contributed to the slow steaming.

Second, and at least as significantly, the *Philadelphia* burned an inferior grade of coal. This coal, a variety of Cardiff coal from Wales, purchased in St. Thomas and Kingston, Jamaica, according to the *Times*, “was mere refuse.” Most of it was at least two years old and much degraded from exposure to the weather. “when put aboard the cruiser it was little else than sand,” recorded the *Times*. “Once on the fire, it would sizzle and flash, produce little or no heat, and consequently no steam. With such coal to handle,

the Philadelphia's firemen were compelled to shovel incessantly. They broke down, unable to stand the strain. Men were sent down from the deck to assist them, but being unskilled in the fireroom were of little or no use."¹⁰³ The voyage was a palpable reminder of the limits of steam technology and the constraints placed upon ocean travel by coal, precisely the limitations Americans hoped a major Caribbean coaling station would overcome.

After returning to the United States, Gherardi was asked by a reporter if the United States might still acquire a Haitian coaling station. According to the press account, "he smiled and suggested that the inquiry be directed to some one in that land." He suggested that a future revolution might well reverse the American opportunities for strategic expansion.¹⁰⁴

* * *

On July 30, 1891, the State Department announced it had accepted Douglass's resignation, a fact the now former Minister learned from a *Washington Post* reporter visiting him at his home in Anacostia. The reporter recorded the interview. A startled Douglass insisted that until he learned from the State Department his resignation was official, his comments must remain circumspect. "You must have noticed, however," Douglass continued, "that I have been most vigorously assaulted by a number of newspapers, who have charged me with incapacity, slothfulness, and want of interest in the Mole St. Nicholas matter. Other papers and persons have asserted that a white man

¹⁰³ "Only Fourteen Knots an Hour: Why the Philadelphia Was So Long Coming from Haiti," *New York Times*, June 26 1891.

¹⁰⁴ "Home Again from Haiti: Arrival of Rear Admiral Gherardi and His Flagship."

could accomplish more than a black man. All these things probably had their effect upon this government.”

“What foundation did these charges have?” asked the reporter.

“Absolutely none,” came the reply. “I do not believe I am incapacitated. I know that I worked diligently, and as for want of interest, why, I have been advocating the acquisition of the Mole St. Nicholas for twenty years. Since the abolition of slavery I have always contended that the United States should secure a freehold in islands of the Caribbean Sea or in that vicinity. I split with my dear friend, Charles Sumner, on that question. Great Britain, France, Holland, Denmark, Portugal, and Spain are already there, and we should have a supply depot near at hand. After working as hard as I did to secure the accession of the mole it was very exasperating not to succeed.”

Douglass denied his race impacted his ability to negotiate, and recounted the series of diplomatic successes he enjoyed. “But why did you not succeed with the negotiations for the mole?” continued the reporter.

“For several reasons,” answered Douglass. After recounting the opposition Haiti faced as the first republic of freed slaves, he noted that “as a dog will scratch his neck after his collar has been removed, Haiti observes a superstition that has no further significance. It is very hard to make the Haitians believe that the United States are not trying to take advantage of them.” Moreover, he asserted that “conspirators” in both the U.S. and Jamaica were prepared to foment a further revolution in Haiti, and merely awaited an opportune moment to attack the Hyppolite government. Selling, leasing, or otherwise alienating Haitian territory might provide the perfect cover for such a claim, a fact well known to both Minister Firmin and Hyppolite himself. And while Douglass

claimed he “argued with the Haitians that if the mole was not peacefully ceded to us, it might fall into our hands in some other way,” he could not get them to concede.¹⁰⁵

National pride proved too powerful an obstacle to acquiring the Môle in 1891. But the episode demonstrates the seriousness, if also the clumsiness, with which the United States sought a Caribbean coaling station in the early 1890s. By the end of the decade and after a war, that interest in strategically located depots for coal would lead Americans to another natural harbor across the Windward Passage at Cuba’s Guantánamo Bay.

Chemistry, Steam Engines, and Coal Mines

Negotiating for Caribbean and Pacific coaling stations were not the only way Americans attempted to solve the Navy’s persistent problems locating fuel outside the United States in the late 19th century. Alongside diplomatic efforts, Americans employed science and technology to alleviate the strain of diplomacy while still maintaining the activities of the fleet. These technical efforts may be grouped into three approaches: practical chemical analysis, engineering developments, and geological exploration. The 19th century search for coaling stations must be understood in this broader context. Few expansionists sought islands in the Caribbean or Pacific for the sake of expansion alone. For naval officers, their civilian leadership, and their supporters in Congress, the broader question involved matching American Navy capabilities with the possibilities afforded by steam technology in the context of other maritime powers.

¹⁰⁵ “Fred Douglass Resigns: His Successor to Haiti Will Probably Be a White Man,” *Washington Post*, August 11 1891.

Practical chemistry provided one approach to improving the operation of naval steam engines, and throughout the middle and late 19th century, Americans working for the Navy explored which coals were most suited for raising steam in marine engines. It was well known that every coal burned differently, giving off different amounts of heat and leaving characteristic residues. In the 1840s, the Navy sought to determine which American coals best suited steaming. This research began with an exhaustive 1844 study by the Harvard trained chemist Walter R. Johnson. His massive, 600 page report announced the performance of coals from Pennsylvania, Maryland, Virginia, and elsewhere. Johnson observed that his “primary object” was “that of increasing the efficiency of the navy” and noted how advancing “public defence” [sic] would stimulate other American industries that depended on coal for fuel. For Johnson, the Navy served as the agent that stimulated national economic growth. Not only did coal provide the power for naval steam engines themselves, he believed, but it was needed for the larger industry of producing engines and for building iron hulled ships as well. Those commercial vessels would carry manufactured goods similarly produced with coal fired steam power as well, providing an additional application of his research. So thoroughly did the maritime consumption of coal reverberate through the American economy that Johnson asserted “that few subjects of a practical nature are more deeply and immediately interesting to the public.”¹⁰⁶

Johnson’s research into coal for naval use in the 1840s was widely celebrated by American politicians and industrialists as a propitious foundation for modern economic growth. At least one coal producer published a promotional brochure based on Johnson’s

¹⁰⁶ Walter R. Johnson, *A Report to the Navy Department of the United States, on American Coals Applicable to Steam Navigation, and to Other Purposes*, Senate Doc. No. 386, 28th Cong., 1st. sess. (1844).

results, advertising the consistently high performance of its product.¹⁰⁷ Consumers of coal similarly saw the value of his research. After the chemist exhausted his research funds, over sixty prominent citizens of Massachusetts, including numerous railroad and manufacturing executives, petitioned Congress in 1850 to renew its support of Johnson's coal investigations, citing newly uncovered coal fields, the proliferation of railroads and steamships, and burgeoning industry—all amounting to a doubling of American coal consumption in just seven years.¹⁰⁸

The year 1850 also saw Johnson himself publishing a second volume of coal research, this one privately funded and not targeted solely at maritime consumption. The federal government quickly acknowledged its significance. The Senate's Committee on Public Lands requested that the government purchase 15,000 copies to distribute throughout the nation. Americans in every state would benefit from information about American coal, argued the committee. "The salt of their daily food is manufactured; their iron, zinc, and copper are smelted; their locomotives, steamboats, and manufactories are propelled; their food is prepared, by its aid, and their dwellings made habitable by its genial influence."¹⁰⁹ Before the mid-19th century, Johnson noted, only the residents of regions denuded of alternate sources of fuel or subject to bitter, cold weather took an interest in coal. Industrialization began to broaden this interest. For Johnson, three areas stood out: the role of coal in metallurgy, its combustion in steam engines, and steam navigation, for "especially since the practicability of navigating the ocean by steam was

¹⁰⁷ *Abstract of Professor Johnson's Report to the Secretary of the Navy, of the United States, Respecting Forest Improvement Coal*, (New York: George F. Nesbitt, 1845).

¹⁰⁸ *Memorial of Citizens of Massachusetts, Praying That Provision Be Made for Continuing the Experiments on American Coal Commenced by Professor Johnson in 1843, Senate Misc. No. 117*, 31st. Cong., 1st. sess. (1850).

¹⁰⁹ Solon Borland, *Report: The Committee on Public Lands, to Whom Was Referred the Following Resolution... Report, Sen. Rep. Com. No. 51*, 31st. Cong., 1st. sess. (1850).

discovered—COAL has assumed for all nations, in all climates, an importance which, a century ago, had not entered into the conceptions of men.”¹¹⁰ By analyzing different varieties of coal for their chemical composition and behavior in steam engines—and publicizing his results widely—Johnson hoped to educate his contemporaries on how to make the best use of new technology. Based on his research, the Navy began burning high carbon anthracite coal almost exclusively aboard its ships, a policy that fit Johnson’s research but complicated naval transportation; by a geographic and geological quirk, the world’s greatest abundance of anthracite coal was found in eastern Pennsylvania, and in few other places of commercial value anywhere else in the world. Until the mid-1880s, distributing this anthracite proved the greatest obstacle for commercial and naval American vessels.

Discovering which varieties of American coal burned best in naval steam engines was only the beginning, however, for the question remained whether the steam engines themselves could be designed to maximize the characteristics of particular coals. Naval engineers sought more efficient engines. Engines that burned coal more efficiently could steam farther on the same quantity of coal and thus require fewer stops—and fewer coaling stations. Nearly ten years after Johnson concluded his experiments, in 1859, Benjamin Franklin Isherwood, a Chief Engineer in the Navy, initiated a series of experiments on American coal that quickly led him to re-design naval steam engines. Isherwood’s research began when Pennsylvania’s Trevorton Coal Company petitioned the Navy to investigate the quality of its semi-anthracite coal, hoping to bring it into competition with coal the Navy was already purchasing. The task of evaluating the coal

¹¹⁰ Johnson, *The Coal Trade of British America, with Researches on the Characters and Practical Values of American and Foreign Coals*, 5.

fell to Isherwood, who began a series of experiments at New York's Navy Yard in which he investigated the relative efficiencies of three types of coal: the two already supplied to the Yard under contract, Pennsylvania's Blackheath Anthracite and Maryland's Cumberland semi-bituminous, as well as Trevorton's semi-anthracite. "The importance of these experiments can scarcely be exaggerated" observed Isherwood, "when the immense amount of these coals consumed in generating steam is considered." By measuring the heat-generation of these coals on an actual steam boiler (of the Yard's blacksmith shop), Isherwood sought to understand the characteristics of coal in actual conditions rather than laboratory experiments, which were more common.¹¹¹

Isherwood compared the coals in six categories he considered most relevant for maritime use. These categories included how quickly the coals ignited, how well they maintained their shape amid the jostling ever-present in coal transportation and handling, how little smoke they exuded (little smoke both reduced the fouling of ships and prevented revealing a warship to enemies at a distance), how little waste they produced upon combustion, how efficiently they raised steam, and finally, how densely they could be stored within the limited space available on ships. Isherwood did not endorse one coal over the others as the conclusively best fuel; each had different advantages in the six categories he analyzed. Nevertheless, Isherwood preferred anthracite coal above all.¹¹²

These coal experiments warmed Isherwood up to a much more important, and ultimately contentious set of experiments. "The second paper is a sequel to the first," he wrote of another experiment of 1859. Rather than investigate coal, this time he looked at

¹¹¹ B. F. Isherwood, *Engineering Precedents for Steam Machinery; Embracing the Performances of Steamships, Experiments with Propelling Instruments, Condensers, Boilers, Etc., Accompanied by Analyses of the Same* (New York: H. Bailliére, 1859), V. 2, vii.

¹¹² *Ibid.*, 29-35.

the engines that consumed it. Isherwood's problem involved how to burn coal efficiently. A typical steam engine burned coal to boil water. The boiled water—steam—expanded, and the force generated by this expansion pushed a piston in a cylinder in the steam engine. The steam was then cooled and condensed and the piston returned to its original position. The movement of the piston, up and down, provided the utility of the engine: by attaching the piston to different devices, its linear motion could be turned into the rotation of a ship's paddle wheel, a railroad's wheels, the motion of machines in a textile factory, or just about any other mechanical motion.¹¹³

Steam power, however, depended on a supply of coal, and aboard ships, space was always at a premium. Engineers sought any technical innovation that could extract additional power from the same amount of coal. Since James Watt in the late 18th century, steam engineers had investigated whether fuel might be saved by applying the principles of physics. These engineers used the term “working steam expansively,” and called the device that accomplished it a “cut-off,” for it arrested the flow of steam into the engine's cylinder before the piston was entirely raised. In principal, the momentum of the smaller quantity of expanding steam would still propel the piston, but with gradually decreasing pressure. Using less steam to raise the piston meant conserving valuable coal and engine manufacturers made extravagant claims for these devices.¹¹⁴ Isherwood observed that in the U.S., “certificates abound upon certificates of savings of fuel of from 25 to 50 per centum” through the use of cut-offs. According to Isherwood, these claims

¹¹³ For an influential description of steam engine design in the 19th century, see William John Macquorn Rankine, *A Manual of the Steam Engine and Other Prime Movers*, 5th, revised ed. (London: Charles Griffin and Company, 1870).

¹¹⁴ For descriptions of the principal of working steam expansively, see John Bourne, *Handbook of the Steam-Engine* (New York: D. Appleton and Company, 1865), 183-5, Robert Wallace, *The History of the Steam-Engine, from the Second Century before the Christian Era to the Time of the Great Exhibition* (London: John Cassell, 1852), 68-70, Paul R. Hodge, *Analytical Principles and Practical Application of the Expansive Steam Engine* (London: John Williams & Co., 1849).

offered “the most exaggerated nonsense” served “by interested sellers and believed in by duped buyers,” increasing both the price and complexity of marine engines without, he insisted, actually saving any fuel. His experiments determined that the coal savings of working steam expansively was far lower than usually claimed. Real savings, he believed, would come from a practical understanding of steam engines and how they consumed coal.¹¹⁵

These experiments proved contentious. Isherwood was attacked both during and after the Civil War by civilian critics and line officers in the Navy who assailed him for his novel naval engine designs. A lawyer and would-be engine designer named Edward N. Dickerson, for example, blasted Isherwood for suggesting that working steam expansively with cut-offs failed to improve engine efficiencies as claimed. Dickerson preferred the older designs that included cut-offs, like the engine of the sloop of war *Iroquois*, to Isherwood’s engines. “Such as the *Iroquois*,” he wrote, “weigh less, take less room, and cost vastly less money than these abortions do, to produce the same power; so that it is economy of money, space, and weight, to alter them—to say nothing of coal.”¹¹⁶

As Isherwood and others continued to push for newer steam engines, older officers seemed to wish for a simpler time without the complexities of steam. Then Vice-Admiral David Dixon Porter, for example, famously issued orders in 1869 requiring that all naval vessels be capable of sail power and insisting that sail be used as the primary mode of locomotion. Any use of steam was to be thoroughly explained to the

¹¹⁵ Isherwood, *Engineering Precedents for Steam Machinery; Embracing the Performances of Steamships, Experiments with Propelling Instruments, Condensers, Boilers, Etc., Accompanied by Analyses of the Same*, vii-viii.

¹¹⁶ Edward N. Dickerson, *The Navy of the United States. An Exposure of Its Condition, and the Causes of Its Failure, Contained in a Speech Delivered to a Jury in the Supreme Court of the District of Columbia, before Chief-Justice Carter* (New York: John Gray & Green, 1864), 5.

department. The rising status of engineers, and the waning authority of officers who grew up in an age of sail, certainly contributed to this conflict.¹¹⁷ Nevertheless, the supposed conservatism of older naval officers misunderstands the larger geopolitical context in which officers like Porter operated. Far from rejecting steam, the Admiral spent decades after the Civil War supporting the acquisition of coaling stations around the world. His orders to use sail reflected not innate conservatism but his concern about the limited availability and high cost of coal.

Some Americans turned the U.S. lack of coaling stations from a liability into an asset. If conventional naval authorities believed that a modern navy *required* coaling stations, and if European colonial powers either had them or had little ideological difficulty in pursuing them, some navalists in the United States looked for an alternate path. Instead of foreign bases, some Americans turned to the genius of invention. If the United States lacked coaling stations or the political will to acquire them, reasoned some, what was to stop the invention of engines and refueling systems to eliminate the need for them? That is, could technology be developed to erase the constraints of geography and international politics?

After the Civil War, Isherwood would continue championing technological ways to conserve valuable coal. In 1881, Isherwood described to the Secretary of the Navy a peculiar new invention by John Gamgee, a member of a scientifically prolific English family and who was then visiting the United States to consult on a variety of public

¹¹⁷ See, for instance, Edward William Sloan, *Benjamin Franklin Isherwood, Naval Engineer; the Years as Engineer in Chief, 1861-1869* (Annapolis, United States Naval Institute, 1966), Lance C. Buhl, "Mariners and Machines: Resistance to Technological Change in the American Navy, 1865-1869," *Journal of American History* 61, no. 3 (1974): especially 705.

health matters.¹¹⁸ Gamgee had proposed what he called the “zeromotor,” a device that produced mechanical motion not by the combustion of conventional fuels like coal, but by employing the heat latent in ordinary water at room temperature to boil pressurized ammonia. As Isherwood noted in his report, the consequences of such a machine were enormous, especially to the U.S. Navy. An engine that ran without coal “would produce an industrial and consequently social and political revolution equal to what was effected by the introduction of the steam engine.”¹¹⁹ The zeromotor would, specifically, free the Navy from pursuing coaling stations abroad: straightforward technology, not messy politics or ideology, would shape the future, according to the hopeful Isherwood. No longer would the United States operate with the handicap of lacking coaling stations, and no longer would European navies maintain a strategic superiority over the U.S. fleet. “If coal ... can be dispensed with,” Isherwood noted, “we are at once placed on an equality in this respect, and our cruisers enabled to penetrate the remotest seas as easily as those belonging to countries having possessions there.” His description was vague, but enthusiastic, asking that the Navy offer Gamgee the use of the Washington Navy Yard for his research.¹²⁰

Isherwood maintained that the zeromotor was “far from chimerical.” Still, other inventions of the 1890s and 1910s to facilitate coaling at sea appear more conventional

¹¹⁸ Ruth D'Arcy Thompson, *The Remarkable Gamgees : A Story of Achievement* (Edinburgh: Ramsay Head Press, 1974), 157-72, especially 66. For Gamgee's original patent, see also John Gamgee, "Thermo-Dynamic Engine," in Google Patents, ed. United States Patent Office (U.S.A.: 1881).

¹¹⁹ B.F. Isherwood, "The Gamgee Perpetual Motion," *Scientific American* XLIV, no. 21 (1881).

¹²⁰ Ibid. For more on Isherwood's contentious career in the Navy, see Brendan Patrick Foley, "Fighting Engineers: The U.S. Navy and Mechanical Engineering, 1840-1905" (Ph.D. Thesis, M.I.T., 2003), 134-45, Sloan, *Benjamin Franklin Isherwood, Naval Engineer; the Years as Engineer in Chief, 1861-1869*. Just a year later, the Secretary of the Navy would explain the importance of coaling stations by noting that “[i]t is far better, and much more economical, that our vessels should be supplied with coal at coaling stations owned and controlled by the Navy Department, than to be compelled to pay the prices often exacted from them in foreign ports, where they are frequently imposed upon by extortionate monopolists.” Better, still, though, to dispense with needing such stations at all. *Annual Report of the Secretary of the Navy, H.exdoc.1/9*, 47th Cong., 2nd. sess. (1882).

by comparison.¹²¹ The North Atlantic flagship *San Francisco* and the steamer *Kearsarge* tested one such device in 1893. It involved connecting the vessels with a cable and sending two hundred pound sacks of coal from one ship to the other. Under the carefully designed circumstances of the experiment—a calm sea and a short distance between the vessels—the delivery proceeded slowly, but it still offered hope for a similar technological solution in the future. “Any one who will devise a method of rapidly and safely coaling our cruisers at sea will add to the navy’s efficiency and, no doubt,” noted *Scientific American*, “will receive an abundant reward in dollars from the government.”¹²²

The *San Francisco* and *Kearsarge* experiment was part of a larger trend in engineering experimentation. In the late 19th and early 20th centuries, American inventors filed nearly fifty patents with the U.S. Patent Office for devices to facilitate coaling at sea. The devices were typically systems for connecting two ships together with ropes or wires and transferring bundles of coal from one to the other. Though some of these systems were adopted, the Navy found that they could be used effectively only in still water, ideally that of a harbor, thus reviving the very problem the inventions sought to avoid. The striking feature of so many of these proposals is that their inventors justify them with the geopolitical fact of the lack of American coaling stations abroad.¹²³

Finally, Americans continued geological expeditions for coal around the world. In the second half of the 19th century, in fact, geology served as an essential buttress to

¹²¹ Isherwood, "The Gamgee Perpetual Motion."

¹²² "Coaling Cruisers at Sea," *Scientific American* LXIX, no. 19 (1893). Even if coaling at sea remained impractical, the Navy could, and did, develop vessels like the battleship *Indiana* in 1895, a ship smaller than its British counterparts but capable nevertheless of firing larger and more devastating rounds. By building the *Indiana* to hew close to the U.S. coast, it required less fuel and ammunition. "The Battle Ship *Indiana*," *Scientific American* LXXIII, no. 17 (1895).

¹²³ Search performed at <http://www.google.com/patents>, site accessed May 1, 2007.

American economic and political power, and in particular, the United States maintained its interest in locating steaming coal in Asia. These expeditions did not always begin with the U.S. government, but it often remained aware of them and granted its approval. One such expedition began in China in the early 1860s, and it reveals the complex interactions between British, American, and Chinese interests in the 19th century. The Chinese government wished to address the persistent irritation of smugglers and pirates along their coast. Interested in increasing their naval force to surveil coastal waters, the government directed the British Inspector-General of Maritime Customs, Horatio Nelson Lay, to acquire a fleet of gunboats under British command.¹²⁴ Like other steamships in eastern Asia, these gunboats were limited to consuming coal imported by sea from Britain, Australia, or the United States at substantial cost—between eight and twelve taels per ton. Aware that China itself possessed substantial coal reserves, the government sought to survey fields in China's province of Chili that might offer adequate steaming coal. The head of the British legation in China, Sir Frederick Bruce, suggested employing the distinguished American geologist Raphael Pumpelly, then visiting China. Pumpelly, who had connected with Bruce through Anson Burlingame, the head of the American Legation there, promptly accepted the project.¹²⁵

Pumpelly recalled with puzzlement the attitude of his Chinese hosts towards coal mining. While officials from the Board of Foreign Affairs explained to him their conviction that new deposits of coal surely grew in the interstices of older mines, they

¹²⁴ After the Opium Wars (1842-3), the British established the Maritime Customs Service to facilitate foreign trade with China and British interests there specifically. For more detail on the institution, see Donna Brunero, *Britain's Imperial Cornerstone in China: The Chinese Maritime Customs Service, 1854-1949* (New York, NY: Routledge, 2006).

¹²⁵ "Mr. Burlingame to Mr. Seward, Diplomatic Note #61, 1/4/1864," in *Message of the President of the United States and Accompanying Documents, to the Two Houses of Congress, at the Commencement of the Second Session of the Thirty-Eighth Congress, Part III, H. Rep. Ex. Doc. No. 1, 38th Cong., 2nd. sess.* (1865), Raphael Pumpelly, *My Reminiscences* (New York: H. Holt, 1918), V. 1, 411.

simultaneously resisted large mining operations, “on the ground that it would exhaust the store on which future generations would be dependent,” Pumpelly recalled, “an inconsistency in reasoning which they got over by saying that the rate of growth of new coal is not known.”¹²⁶ The American Pumpelly brought a very different attitude towards coal, one that sought to extract as much as possible to lower prices and stimulate trade.

Pumpelly examined ten coal mines in Chili, the entire survey totaling three weeks. Two objectives guided the mission. First, to locate a coal supply suitable for supplying steamships in Chinese waters, and second, to determine what “improvements,” according to Pumpelly, were needed to facilitate coal production and delivery. To characterize the coal according to their steaming qualities, the geologist cited the categories employed by Walter Johnson twenty years before, most importantly “raising steam quickly” and “raising it abundantly for the quantity consumed.”¹²⁷ He concluded that China, in fact, possessed enormous reserves of both bituminous and anthracite coal, “of a quality equal to the best and superior to much that is imported.” Nevertheless, the maintenance of Chinese mining methods prevented the large-scale exploitation of these reserves necessary for decreasing the price of steaming coal in China and leading to its use in steamships. If the Chinese government or a foreign company introduced western mining methods, Pumpelly thought, the price of coal in Chinese ports might decrease from the

¹²⁶ Pumpelly, *My Reminiscences*, V. 1, 411.

¹²⁷ Raphael Pumpelly, "Report of the Chinese Government on a Preliminary Examination of the Coal Districts of the Si Shan, in the Province of Chili [December 1, 1863]," in *Message of the President of the United States and Accompanying Documents, to the Two Houses of Congress, at the Commencement of the Second Session of the Thirty-Eighth Congress, Part III, H. Rep. Ex. Doc. No. 1*, 38th Cong., 2nd. sess. (1865). For details of the geology there, see Raphael Pumpelly, *Geological Researches in China, Mongolia, and Japan During the Years 1862 to 1865*, vol. 15, Smithsonian Contributions to Knowledge. (Washington,: Smithsonian institution, 1867).

present eight to twelve taels per ton to a mere two or three.¹²⁸ The American diplomat Burlingame immediately forwarded Pumpelly's report to Secretary of State Seward, whose interest in expanding American steam communication around the world led to a hearty approval of his Department's representative in China.¹²⁹

Such an interest in Asian coal geology continued later in the 19th century, when an American naval engineer undertook an expedition to the coal mines of Korea in November 1891. The engineer, H.N. Stevenson, had traveled ashore to Ping Yang City (Pyongyang) from the U.S.S. *Alliance* on an "official visit" with the American minister, Augustine Heard. While there, Stevenson found a chance to search for coal near the city. He was led to a substantial outcropping, which he described, photographed, and collected samples of to send to Washington. European steamers did not burn this coal, for reasons Stevenson could not understand, preferring instead to steam to Japan for what the engineer believed to be a vastly inferior grade. Stevenson concluded his report by observing that "if Corea can supply a better coal than Japan, and the indications are that she can do so, and place it in these markets as cheaply, there will be an immediate market for it in all the Eastern countries."¹³⁰

None of these technical approaches were taken in isolation. In addition to diplomatic arrangements to provide coaling stations in the 19th century, the U.S. Navy pursued a three part strategy to address the needs of industrial power: analyze coal, develop more efficient steam engines, and, support geological expeditions to uncover and

¹²⁸ Pumpelly, "Report of the Chinese Government on a Preliminary Examination of the Coal Districts of the Si Shan, in the Province of Chili [December 1, 1863]."

¹²⁹ "Mr. Seward to Mr. Burlingame, Note #52, 2/29/1864," in *Message of the President of the United States and Accompanying Documents, to the Two Houses of Congress, at the Commencement of the Second Session of the Thirty-Eighth Congress, Part III* (Washington, D.C.: G.P.O. [38-2 H.Rep. Ex. Doc. No. 1], 1865).

¹³⁰ H.N. Stevenson, "Report of a Visit to the Coal Seam near Ping Yang City; West Coast of Corea, November 15th 1891," in Folder 4, Box 707, XF 1871-1910, RG 45, NAI.

make accessible deposits of coal in strategic locations around the world. By employing science and engineering, American sought to overcome the political and geographic limitations placed on them by coal.

Conclusion

The American drive for coaling stations in the late 19th century could also generate scorn and sarcasm. For the historian W.D. McCrackan, the growing Navy would lead quite naturally to coaling stations. “They have become indispensable to the conduct of modern naval warfare,” he wrote in 1893. McCracken, however, warned of the potential consequences of acquiring these bases, in particular in Haiti and Hawaii. After coaling stations, he wrote, “[a]nnexation is the next step, and an era of conquest must inevitably follow in its wake. Another ten or twenty years of this much-vaunted building up of the navy,” he continued, “and we shall have a train of mean little wars to our credit. The United States will figure as the bully of the western hemisphere.”¹³¹

McCracken’s cynical analysis proved in part correct in the years after the American war with Spain in 1898 and the territorial growth that accompanied them. The Navy began building coaling stations in San Juan, Puerto Rico; Honolulu, Hawaii; Guam; Cavite, the Philippines; and on its existing territory on Tutuila, Samoa. Guantánamo Bay, Cuba would likewise serve as a coaling station. According to the Navy’s Bureau of Equipment that supervised naval coaling, while the war provided the opportunity for expansion, coaling provided the reason. “The Bureau has reason to believe that the great utility of Honolulu as a coal depot during the Spanish War largely influenced Congress in its decision to annex the Hawaiian Islands,” wrote Bureau Chief Royal B. Bradford in

¹³¹ W.D. McCrackan, "Our Foreign Policy," *The Arena*, no. XLIV (1893): 147.

1902. “The retention of Guam as an American possession after its capture...” he added, “was for the express purpose of establishing a naval coal depot.”¹³² This expansion, however, took place in a context of decades of interest and struggle within the Navy to harmonize the challenge to geography presented by steam technology.

¹³² *Annual Report of the Secretary of the Navy for the Year 1902, H. Doc. 3, 57th. Cong., 2nd. sess. (1902).*

Chapter 4: Inventing Logistics

“If one looks at a fleet of war-ships on the sea,” wrote the Rear-Admiral Bradley A. Fiske in 1916, “he will be impressed consciously or unconsciously with the idea of power. If he is impressed consciously, he will see that the fleet represents power in the broadest sense—power active and power passive; power to do and power to endure; power to exert force and power to resist it.” For Fiske, a prolific inventor as well as a distinguished commander, this power was more than mere metaphor. Power had a material foundation. Look closely at the modern Navy, he advised, and discover that “it is not merely a mental suggestion, but a realization of the actual existence of tremendous mechanical power, under complete direction and control.”¹

The concept of “sea-power” dominated the discourse of naval strategy in the decades around the turn of the 20th century. In the hands of an Alfred Thayer Mahan in the United States, or Alfred von Tirpitz in Germany, sea-power evoked sentiments of nationalism, maritime prowess, and boundless commercial opportunities. Sea-power assured economic growth and political security. For Bradley Fiske, power meant the power of machines themselves. Naval power meant harnessing this mechanical power to advance national policies. And as Fiske knew well, mechanical power was the expression of a certain amount of energy expended over time. Since “energy is energy, no matter to what purpose it is applied,” Fiske knew that naval planners needed to pay careful attention to the Navy’s vast appetite for fuel.²

¹ Bradley A. Fiske, *The Navy as a Fighting Machine* (New York: Charles Scribner's Sons, 1916), 49.

² *Ibid.*

Environmental historians have typically looked to philosophers, artists, and scientists to trace changing ideas about Nature and the human place in it.³ And for good reason; writers and scientists have frequently and explicitly taken the natural world as their subject. In the 20th century, however, few forces have shaped the natural world more—directly or indirectly—than the world’s militaries.⁴ How naval thinkers have addressed the natural world, and the technological systems for manipulating it, has remained largely unanalyzed.

The views of Nature expressed by American naval officers might lack the nuance, beauty, and romanticism characteristic of a Thoreau, Muir, or Aldo Leopold; their thought might appear instrumental, calculated, and desiccated—but before most Americans, they recognized how the material world provided the connective tissue between what was desired and what was possible, how a battle in Manila might turn on the availability of coal dug in Maryland, corn grown in Iowa, or on the training of an officer. During the first three decades of the 20th century, instructors at the Naval War College in Newport, Rhode Island developed a new science to manage the natural world during wartime and peace. In these years, these officers developed an autochthonous, American science of logistics. In part, they rediscovered, refined the work of 19th century

³ On ideas of Nature in the West, see Clarence J. Glacken, *Traces on the Rhodian Shore : Nature and Culture in Western Thought from Ancient Times to the End of the Eighteenth Century* (Berkeley: University of California Press, 1990), Roderick Nash, *Wilderness and the American Mind*, 4th ed., Yale Nota Bene (New Haven ; London: Yale University Press, 2001), Donald Worster, *Nature's Economy : A History of Ecological Ideas*, 2nd ed., Studies in Environment and History (Cambridge ; New York, NY, USA: Cambridge University Press, 1994).

⁴ Rauno Lahtinen and Timo Vuorisalo, "It's War and Everyone Can Do as They Please! an Environmental History of a Finnish City in Wartime," *Environmental History* 9, no. 4 (2004), McNeill, "Woods and Warfare in World History.", Russell, *War and Nature: Fighting Humans and Insects with Chemicals from World War I to Silent Spring*, William M. Tsutsui, "Landscapes in the Dark Valley: Toward an Environmental History of Wartime Japan," *Environmental History* 8, no. 2 (2003), West, "Forests and National Security: British and American Forestry Policy in the Wake of World War I.", Peter A. Shulman, "'Science Can Never Demobilize': The United States Navy and Petroleum Geology, 1898-1924," *History and Technology* 19 (2003).

European war strategists. Their work, however, contained much that was new and unfamiliar to the Navy. Above all, American naval logistics grew from the peculiarly American problems of fueling the Navy, or, of turning abstract notions of “sea-power” into the vast mechanical war machine envisioned by people like Bradley Fiske.⁵

From Art to Science

Historians who have analyzed how questions of supply, provisions, and resources have impacted warfare have typically done so by examining past campaigns—their organization, flows of materiel, bureaucratic management, and so on.⁶ But logistics itself has a history. Its importance or significance was not universally recognized before the nineteenth century, and even then, it was not until the turn of the twentieth that logistics began to receive extensive analysis by planner of war, at least in the United States. By then, logistical thinking depended on shifts in thinking about both Nature and how modern industry moved people and materials in ways analogous to natural processes. Logistics introduced a science of resource flows and mechanical processes into thinking about war.

Writers on war in the nineteenth century disagreed on the both the etymology and the scope of the term. The influential Swiss strategist Antoine-Henri Jomini wrote of

⁵ Historians of science have looked increasingly at the the role of education in creating both intellectual fields and also their practitioners. For the best of this work, see David Kaiser, *Pedagogy and the Practice of Science: Historical and Contemporary Perspectives*, Inside Technology (Cambridge, Mass.: MIT Press, 2005), David Kaiser, *Drawing Theories Apart: The Dispersion of Feynman Diagrams in Postwar Physics* (Chicago: University of Chicago Press, 2005), Andrew Warwick, *Masters of Theory: Cambridge and the Rise of Mathematical Physics* (Chicago: University of Chicago Press, 2003).

⁶ The pioneering work of this sort is Martin L. Van Creveld, *Supplying War : Logistics from Wallenstein to Patton* (Cambridge ; New York: Cambridge University Press, 1977). In his introduction, Van Creveld assumes Jomini’s definition of logistics, “the practical art of moving armies and keeping them supplied” and proceeds to study historical campaigns between 1805 and 1944 with it . See also the essays in John A. Lynn, *Feeding Mars : Logistics in Western Warfare from the Middle Ages to the Present*, History and Warfare (Boulder, Colo.: Westview Press, 1993).

“logistique,” a term which he explained derived from the office of the *Major General des Logis*, the officer responsible for directing, housing, and feeding troops on the march. “*Logis*” itself is linked etymologically to the modern English “lodge,” through which its connection to the literal “lodging” of troops is obvious. According to Jomini, the French position corresponded with the German *Quartiermeister* and from there to the familiar English and American Quartermaster.⁷

Jomini had competition in explaining logistics, however. In his *Military Encyclopedia*, former West Point instructor Edward S. Farrow derived the term from the Latin “*Logista*,” meaning “the Administrator or Intendant of the Roman armies.” Under the purview of the *Logista* fell “all details for moving and supplying armies,” from ordnance to medicine, provisions to pay.⁸ General Rudolph von Caemmerer, in contrast, offered in *The Development of Strategical Science During the 19th Century* yet another derivation, this time from the Greek word for “calculation,” “because calculations form an important part of the labors of a General Staff.”⁹ While all these writers agreed that logistics involved the material aspects of war in some form, they disagreed on what duties devolved to the logistician and on how much interest strategic planning itself should pay to logistic problems, whatever they were.

Despite the importance these writers attached to logistics, its study was slow to attract interest in the United States in the nineteenth century. As late as the 1890s, and for figures as influential as Naval War College founder Stephen Luce or the College’s

⁷ Antoine Henri Jomini, *The Art of War*, A new , ed., The West Point Military Library (Westport, Conn.: Greenwood Press, 1971), 252.

⁸ Edward S. Farrow, *Farrow's Military Encyclopedia : A Dictionary of Military Knowledge*, 3 vols., vol. 2 (New York: Published by the author, 1885), 230.

⁹ von Caemmerer, *The Development of Strategical Science During the 19th Century*, trans. Karl von Donat (London: Hugh Rees, Ltd., 1905), 44. von Caemmerer does not in this text, however, record the word himself, λογιστικός.

star professor, Alfred Thayer Mahan, logistics remained subordinate to problems of strategy. Strategy announced a navy's vision of what it believed possible and it remained the job of logisticians to make that vision a reality. Luce, in an 1890 article in the *Proceedings of the U.S. Naval Institute* entitled "Naval Training," wrote that "[t]he underlying principle is that logistics should conform to strategy, not strategy to logistics."¹⁰ His audience hardly needed much convincing; within the U.S. Navy in the 1890s, logistics was rarely studied by officers. Their unfamiliarity with the subject might have been responsible for Luce's defining the term in a footnote (as "the branch of the military art which has to do with the details of moving and supplying armies or fleets")—and this to an audience of professional naval officers. Luce's one notable example of the importance of logistics remained coal, a substance "of the very first importance" and which "[u]nder certain conditions coal may rank above ammunition in the scale of military values."¹¹

Mahan himself recognized the enormity of the task of logistics, but like Luce considered it of lesser importance than the more familiar strategy and tactics. While he observed that "determining the places of rendezvous for coal and other supplies, the protection of the routes, the whole question of keeping the holds and coal-bunkers full, and the several ships in best steaming condition, is a big administrative calculation and coordination," Mahan remained attached to the idea that logistics belonged more properly as the domain of junior officers. According to Mahan, "while as vital to military success as daily food is to daily work," logistics, "like food... is not the work."¹² For Mahan, the

¹⁰ Stephen B. Luce, "Naval Training," *Proceedings of the United States Naval Institute* 16 (1890): 383.

¹¹ *Ibid.*

¹² A.T. Mahan, "The Naval War College," *The North American Review* 196, no. 680 (1912): 74-5.

creativity of strategy and tactics represented “the work,” not the mechanical calculations of logistics.

By the early twentieth century, the naval study of logistics was changing. Rear-Admiral Bradley Fiske, whose observations about machines and sea-power opened this chapter, was inclined to eschew the superiority of one branch of naval warfare to another. By 1916, Fiske preferred to consider strategy and logistics as mutually important foundations of naval thought. Strategic planners who failed to collaborate with logistics officers, Fiske wrote, “would result in making demands that logistics could not supply; or, through an underestimate of what logistics can supply, in refraining from demanding as much as could be supplied.”¹³ Only by working together could strategic visions be balanced by the tedious calculations of logistics.

More generally, the study of logistics within the early twentieth century U.S. Navy suggested a subtle shift in the study of war itself. Where Jomini had written of an “art,” logistics offered a science. A Napoleon or an Alexander, traditional subjects of military analysis, might indeed have embodied genius, but the modern naval officer required diligence. With the size, scale, and mechanization of modern war, explained War College President Austin M. Knight, “an officer in this position [required to outfit ‘a great over-sea expedition’] needs more than instinct to see him thro.”¹⁴ Put another way, with its emphasis on facilitating naval strategy, logistics became connected with the idea of efficiency. According to one officer, logistics was “‘scientific management’ applied to the Navy.”¹⁵ And in the view of Naval War College instructor Commander Carl T.

¹³ Fiske, *The Navy as a Fighting Machine*, 278.

¹⁴ T.J. Cowie, “Logistics [Lecture 5 March, 1915],” in NWC, RG 8, Box 89, Folder 5 (Newport, RI), 10.

¹⁵ H.P. Huse, “Logistics – Its Influence Upon the Conduct of War and Its Bearing Upon the Formulation of War Plans. Submitted by Captain H.P. Huse, U.S.N. (Sept. 15, 1916),” in NWC, RG 4, Box 8, Folder 313.

Vogelgesang, through logistics “we deal with facts and not fancies. Here the demands of the Art are calculable and solvable by rule and method, and cause and effect are only separated in many cases by a problem in simple arithmetic.”¹⁶ What more could a bureaucrat desire?

Even genius itself was constrained by logistics. No officer at the War College long remained unaware of the explanations for Napoleon’s catastrophic defeat during his 1812 march on Russia. As historians subsequently concluded, this greatest military thinker neglected to plan for adequate supplies, intending instead to rely on the territories his armies marched through for provisions. “Genius,” concluded Cowie, “unaccompanied by logistics, invites defeat.”¹⁷

To what do we owe this shift in emphasis from logistics as an *element* of strategy to logistics as strategy’ coequal, or even to logistics as a broader category that itself contained strategy? In large part, the answer lies in practical problems of supply that emerged following the American annexation of the Philippines after 1898. The Navy was committed to both defeating the rebellion from within the islands and defending them from without, and none of these goals were possible without a steady supply of fuel from home. In response, coaling and the problems associated with it comprised an increasingly important element of study at the War College. College President Knight related that in moving the Pacific Fleet from the American coast to the Philippines for even a month would create a demand for some 500,000 tons of coal. To defend the

Some twenty-five years earlier, Huse had served, incidentally, as Rear-Admiral Bancroft Gherardi’s aid and translator on his mission to obtain the Môle St. Nicholas as a coaling station from Haiti. His career thus bridges the Navy’s ad-hoc and scientific approaches to coaling.

¹⁶ C.T. Vogelgesang, "Logistics - Its Bearing Upon the Art of War," in NWC, RG 14, Box 2, Folder 26 (Newport, RI), 4.

¹⁷ Cowie, "Logistics [Lecture 5 March, 1915]," 32. For more nuanced views of Napoleonic logistics, see Martin L. Van Creveld, *Supplying War : Logistics from Wallenstein to Patton*, 2nd ed. (Cambridge, UK ; New York: Cambridge University Press, 2004), especially 40-74.

colony, this coal had to be available at any time, some with the westward steaming fleet, some deposited previously at designated coaling depots, “all arrangements must be so coordinated that there shall be no chance of failure.” With the very mobility of the Navy and the success of U.S. defense and foreign policy at the mercy of the logistics of coal, Knight concluded of its inclusion at the College, “there is no more important subject studied there or elsewhere.”¹⁸

* * *

Without a science of logistics, developing an efficient use of coal came slowly and on an ad hoc basis. Plagued was wildly uneven rates of coal consumption between ships performing the same activities in the late 19th century, the Navy began seeking engineering efficiency. For years, the Navy had pleaded with its officers to conserve fuel. In 1887, for example, the Bureau of Equipment and Recruiting faced drastic cuts in its congressional appropriation. The Bureau, responsible for, among other things, supplying coal, directed the department’s Acting Secretary to issue a blanket order to conserve fuel. “As coal is the largest item of expense to the Bureau,” he noted, “Commanding Officers of squadrons and of vessels acting singly will exercise the greatest economy of its use.” Most steam powered naval vessels in the 1880s maintained masts and rigging for sailing as well, and the order instructed ships to rely on sail whenever possible. Coal “use will be limited to occasions when dispatch is absolutely required, or to emergencies, but steam will never be used under the ordinary circumstances of cruising.” Moreover, when officers did use coal, they were to alert Washington immediately.¹⁹

¹⁸ Cowie, "Logistics [Lecture 5 March, 1915]," 11.

¹⁹ D.B. Harmony, *Navy Department Circular No. 36*, (1887).

In 1891, Navy Secretary Benjamin F. Tracy issued a more detailed order. Requesting naval officers “to practice the utmost economy in the use of coal,” Tracy reaffirmed the instructions for vessels with sail to use them whenever possible and to report unusual circumstances to the department. He added that officers should begin steaming experiments to determine the most efficient circumstances for combustion. He requested lengthy steaming reports that included “the consumption of coal per hour at varying rates of speed from 5 to 11 knots, the kind and quality of coal used, the condition of the bottom [of the ship], as far as known, and such remarks in reference to the most economical rate of steaming of the vessel as the experience of the Commanding Officer may suggest.”²⁰ Similar entreaties to conserve coal continued through the early 20th century.²¹

Approaching coaling from the perspective of engineering economy also developed from the individual initiative of officers at sea. On December 11, 1899, Captain C.F. Goodrich, commanding the U.S.S. *Iowa* took on coal in San Francisco. The dirty, exhausting, familiar procedure presented Goodrich with what he described as “a somewhat unusual and exceedingly satisfactory experience.” The *Iowa* already held the department’s “blue ribbon” by virtue of its speedy coaling. Coaling in San Francisco, however, was something new. The 1,004 tons took eleven hours and 25 minutes to haul aboard from . According to Goodrich, “[t]he rapid coaling of a battleship is the most important general evolution (except actual battle in which she can engage.”²² Goodrich had systematically broken down the coaling process into discrete phases, systematically ticking off the structural elements facilitating taking on coal and enumerating the precise

²⁰ B.F. Tracy, *Navy Department General Order No. 390*, (1891).

²¹ Truman H. Newberry, *Navy Department Special Order No. 8*, (1906).

²² F.W. Hackett, *Navy Department General Order No. 547*, (1900).

actions and location of the entire crew who participated in the activity. Here was scientific management at work. Impressed with the results from the *Iowa*, the department announced in April 1900 a coaling competition for all vessels that year. When the department's Acting Secretary F.W. Hackett announced the results of the coaling drill the following year, Goodrich's *Iowa* had only ranked third, behind the steam yacht *Scorpion* and the *Michigan*.²³

As the Navy increasingly built vessels without sails, it continued investigating alternative methods for increasing the efficiency of coal. The most important approach was the steaming competition. The program, in which ships squared off against one another over the most efficient consumption of coal, began in 1908 during the cruise of the Great White Fleet. The program began when the commanding officer of the Atlantic Fleet issued an order while passing through Rio de Janeiro that alerted his ships that they were now in competition for "steaming and machinery efficiency." The crews responded with zeal. Between Rio and Mexico's Pacific port of Magdalena Bay, the ships conserved nearly 1,500 tons of coal from what had been the expected consumption. Later, as the fleet steamed from Honolulu to Auckland, they saved an additional 2,000 tons above the standard they had just set en route from Rio. These results impressed Navy bureaucrats in Washington, who considered "this order... one of the most important and far-reaching that has been issued since the creation of the present gunnery system" several years before, and anticipated extending it throughout the Navy.²⁴

Extend it they did. In June 1909, George von L. Meyer, President Taft's Navy Secretary, announced a new, department-wide policy. "In view of the fact that the

²³ F.W. Hackett, *Navy Department General Order No. 25*, (1901).

²⁴ *Annual Report of the Secretary of the Navy for the Year 1908*, H. Doc. 1045, 60th. Cong., 2nd. sess. (1908).

efficiency of any vessel is based to a very large extent upon the performance of her engines and their appurtenances,” Meyer explained, “and that her value as a strategical unit is directly dependent upon the economical use of such amount of coal, oil, and other similar supplies as is possible for her to carry,” different classes of naval vessels were to engage in a yearly steaming contest. Meyer established the ground rules. Battleships competed with battleships, armored cruisers with armored cruisers, and so on. Struggling ships could appeal to the department to upgrade their equipment. Denying coal needed for the basic operation of the ship was “strictly forbidden.” Perhaps most importantly, officers were to report their actions to increase efficiency so these practices might be shared with the whole fleet. While the Atlantic fleet’s competitions the year before offered only pride as incentive, Congress now authorized \$5,000 to distribute to the engineering officers of the winning ships (on a graduated scale according to rank). The ships themselves received trophies etched with name of the ship.²⁵

The department responded to the challenge immediately. “The inauguration of the steaming competitions awakened a lively interest in engineering matters throughout the service,” observed Secretary Meyer in his annual report following the first running of the competition. Overall, the horsepower exerted was up (sixteen percent) as were ships’ average cruising speeds (fifteen percent). Nevertheless, the department saved more than \$2,000,000 in coal purchases compared with the year before. In addition, Meyer noted, although ships steamed more in the second half of the year, naval vessels actually consumed less coal.²⁶ The *Washington Post* was less sanguine; it acknowledged the advantages of the steaming competitions, but pointed out that in the first year of the

²⁵ G. v. L. Meyer, *Navy Department General Order No. 26*, (1909).

²⁶ G. v. L. Meyer, *Annual Report of the Secretary of the Navy for the Year 1910*, H. Doc. 1005, 61st. Cong., 3rd. sess. (1910).

contest, the Navy's battleships alone steamed roughly a fifth the distances they had only the year before, so savings in fuel and dollars were not entirely due to improvements in engine efficiency.²⁷

One consequence of this practical obsession with economy was the Navy's amassing a substantial record of coal consumption aboard individual ships, at varying speeds and weather conditions, and for different types of coal. Navy Secretary Meyer evidently had this outcome in mind early on, commenting in an annual report that "[f]rom the reports rendered necessary by these competitions, strategical as well as technical information of great value has been and will be obtained."²⁸ Instructors at the War College in Newport collected this information, and in the first three decades of the 20th century, they began using it to fulfill War College President Knight's vision of the supremely important subject of logistics.

Newport

The subtle difficulties associated with naval warfare tended to escape the attention of Americans not directly involved in the details of war planning. During his tenure as Assistant Secretary of the Navy, Teddy Roosevelt is a case in point. In May of 1897, Caspar Goodrich, President of the Naval War College, asked Navy Secretary John Long to propose a war game for his students and instructors. Long forwarded the letter to his assistant, Roosevelt, who immediately replied to Goodrich with a "Special Confidential Problem for War College." Roosevelt asked Goodrich to analyze a conflict in the Pacific between the United States and Japan. The problem as Roosevelt framed it involved

²⁷ "Army and Navy Gossip," *Washington Post* 1911.

²⁸ G. v. L. Meyer, *Annual Report of the Secretary of the Navy for the Year 1911, H. Doc. 119, 62nd. Cong, 2nd. sess. (1911).*

Japan placing “demands on Hawaiian Islands” and incurring a naval retribution from the United States. Roosevelt sought to know “[w]hat force will be necessary to uphold the intervention, and how shall it be employed?”²⁹ In his own musings on the subject, the young Assistant Secretary brashly asserted “that the determining factor in any war with Japan would be the control of the sea,” and insisted that the United States “smash the Japanese Navy.”³⁰

Goodrich was a more careful student of the demands of naval warfare than the naval enthusiast and civilian to whom he reported. “That you are right as to the desirability of smashing the Japanese fleet is a matter of course,” Goodrich noted to Roosevelt, diplomatically adding “but with the qualification, which was doubtless in your mind, although unexpressed, that the fleet should enter upon the proposed theatre of operations.”³¹ But getting to this theatre was a tricky business. The size and armaments of the two fleets needed to be carefully compared, as did the geographic constraints of the Pacific. To make his point stick, Goodrich sent Roosevelt a memorandum on coal supplies. Defeating Japan, whether in Hawaiian waters or Japanese, would depend on maintaining a steady fuel supply for American vessels. Studying the coaling problem, according to Goodrich, “emphasizes the difficulties attending a crossing of the Pacific.” Goodrich concluded his letter with “regrets that facts seem to forbid a rapid, vigorous, aggressive war.”³² Counting, measuring, preparing—these were the skills required for a successful naval campaign, not merely the enthusiasm to defeat the enemy.

²⁹ T.R. to Caspar Frederick Goodrich, 5/28/1897, in Theodore Roosevelt, *Letters*, vol. 1 (Cambridge,: Harvard University Press, 1951), 617-8.

³⁰ T.R. to Caspar Frederick Goodrich, 6/16/1897, in *Ibid.*, 626.

³¹ "Captain C.F. Goodrich; Letter to Assistant Secretary of the Navy [T. Roosevelt] on War with Japan. Strategic Features of the Pacific, Comparison of Numbers of United States and Japanese Vessels, Coal Supply. June 23, 1897," in NWC, RG 8, Box 104, Folder 6, 1.

³² *Ibid.*, 7.

The counting problems of which Goodrich wrote largely involved supplying coal. American ships in the Pacific in the Spring of 1897 required 11,000 tons of coal to refuel. These ships, Goodrich insisted, could not base naval operations against Japan out of Hawaii unless three times as many tons of coal could be provided there. While plenty of coal existed within the United States, an adequate number of American freight steamers or colliers plying the Pacific and capable of moving the coal from the west coast to Hawaii did not. Only if the Navy did not need commercial passenger steamers to transport personnel (which it did) would an adequate tonnage for fuel exist in the ocean. Moreover, should the United States press on past Hawaii to Japan, far more coal—some 50,000 tons in Goodrich’s estimation—would have to travel with the fleet. Since no Pacific coast coals, whether in the United States, Canada, or Australia matched the character of the “smokeless” semi-bituminous coals of Appalachia, the Navy needed to secure this tonnage in the east, and ship it (by transcontinental railroad, according to Goodrich) to the Pacific. Only certain Pacific ports suited naval coaling in the Pacific, and even after a temporary naval base could be established in the ocean, “a constant stream of steam colliers, with provision transports” would then have to be kept up until the conflict ended.³³ Goodrich clearly disagreed with Mahan, who thought logistics must be developed to support strategy. A strategy that ignored logistics, as he tactfully explained to Roosevelt, was doomed to failure.

This epistolary exchange took place in May 1897, nearly a year before the war with Spain. Goodrich’s attention to coal represented an early interest in fuel and logistics at Newport’s Naval War College. The interest grew, unsteadily, over time. Between the turn of the twentieth century and the early 1920s, logistics instruction at the College

³³ Ibid., appended document entitled, “Coal Supply”.

assumed a variety of forms. Lectures introduced the systematic study of fuel and resources to naval officers. These officers helped develop logistics tables (described below), principally for determining fuel consumption for individual ships and various speeds, as well as for quantities of ammunition. Students employed these tables in solving war simulations like Roosevelt's problem sending an American fleet across the Pacific. These problems emphasized questions of supply, not actual combat per se, and activities "which," according to one instructor, "might even result in the Fleet becoming impotent if the convoy failed."³⁴

How logistics was taught at the College in the early twentieth century depended on the interests of the institution's leadership and the predilections of individual faculty. For a while, the College required its students to produce a logistics thesis. These essays, much like a term paper, analyzed one particular logistics problem, drawing on the theory presented in lectures and on statistics of engine fuel consumptions, sea routes, and war-making capabilities on file—and sometimes in secret files—at the College. Once submitted, drafts were kept in the College library for future study. This essay requirement was later merged with a thesis in strategy, though both were discontinued in [1925] when the College adopted a new curriculum based on "the study of the strategy, logistics and tactics of actual battles and campaigns," a program which consequently led to the diminution of emphasis on the gritty calculations necessary for actual logistics problems. The following year, however, the College established a formal Logistics Department for specialized instruction in the problems of supply and organization.³⁵

³⁴ R.E. Bakenhus, "Lecture as to the Course in Logistics: 1 December, 1926," in NWC, RG 4, Box 29, Folder 1204 (Newport, RI), 2.

³⁵ *Ibid.*, 2-3.

Logistics instructors at the College faced a peculiar pedagogical challenge. Students there did not arrive at Newport unfamiliar with the concept of logistics—they were mid-career officers who might well have possessed substantial experience in the daily problems of supply, provisions, and even war itself. How were these students to be educated? One instructor asked his students “to get away from the confining experiences which he himself may have had in his own limited assignments.” Logistics, in this view, offered more than a series of practical examples, perhaps similar to knowledge already earned not in classrooms but aboard ship. It provided instead a broader, theoretical approach of which lived experience was but a special case.³⁶

Throughout the first quarter of the twentieth century, the faculty of the College assigned to teach this theoretical approach to logistics emphasized the importance of the subject while complaining of the absence of attention to it by leading naval thinkers. As late as 1915, logistics—and in particular, naval logistics—was a barely studied field. The head of the Bureau of Supplies and Accounts, Paymaster T.J. Cowie, delivered an important lecture on logistics in 1915, and attributed the lack of study on the subject to a “paucity of the literature.” The absence of literature came from the perception of logistics’ low importance relative to tactics and strategy. This perception that logistics wasn’t as important came, in part, from the lack of literature and sustained study—and so on. While preparing his 1915 lecture on the subject, Cowie had inquired to the Congressional Library in Washington for all works on naval logistics and found only a single, slender volume.³⁷

³⁶ Ibid., 4.

³⁷ Cowie, “Logistics [Lecture 5 March, 1915],” 5.

This volume, in fact, was the text of a lecture delivered in 1913 by Commander J.S. McKean, an officer not enchanted with his subject. The study of logistics, McKean found, with its interminable charts, calculations, and hypotheticals could even dull the minds of officers who appreciated its centrality to modern warfare. “Logistics is one of the least interesting, least studied (therefore least understood), but at the same time one of the most important subjects of study in training for war,” McKean explained. A halfhearted endorsement, at best.³⁸ Paymaster Cowie disagreed. If so important,” he asked, “how can it possibly be the least interesting?”³⁹

The relative lack of logistics study continued to frustrate officers into the 1920s. One professor of a reading course on strategy and logistics in 1921 apologized to his students for the paucity of texts on logistics beyond the few listed on the syllabus. Beyond the five general references on the subject and about a dozen works that touched upon it in practical ways, “[t]here are no other such books available,” he wrote. Interested students were advised to “rely on the deductions they may make from their readings,” as well as theses written by previous students at the College and accounts of historical campaigns.⁴⁰

Despite these challenges, some officers at the College attempted to bring logistics to the center of naval science. One early lecturer on the subject was Carl T. Vogelgesang, who first taught logistics at the College in 1911. Vogelgesang referred to logistics as “one of the too often neglected branches of study in the Art of War,” and

³⁸ The lecture was not published until two years later. J.S. McKean, *Naval Logistics: Lecture Delivered by Commander J.S. McKean, United States Navy, at the Naval War College Extension, Washington, D.C., March 10, 1913* (Washington, D.C.: 1915), 3.

³⁹ Cowie, “Logistics [Lecture 5 March, 1915],” 5.

⁴⁰ “Strategy and Logistics: Reading Course. (Syllabus, 22 January, 1921),” in NWC, RG 4, Box 3, Folder 121 (Newport, RI), 4.

spoke of “awakening our minds to its controlling importance.” He acknowledged that interest in war planning seldom interested the broader American public, whom he called “the masses of a peace loving and peace professing nation,” but the officer had a responsibility to plan for the undesirable. Like Bradley Fiske would note a few years later, Vogelgesang also emphasized the reciprocity between logistics and strategy. “The strategic conception may be that of a genius, but if it be not based on a solid foundation of logistic facts, it can have no force and will be of no effect; unless, indeed, it leads directly to disaster.” Vogelgesang, too, invoked the example of Napoleon at Moscow. There, “[l]ogistics was strained beyond the limits of reason, calculation could not support the demands of the strategic conception.”⁴¹ Even strategic genius, the lecturer implied, could be undone by faulty logistics.

For the Navy, the logistics questions that predominated involved coal and coaling. There were questions of quantity—how much coal was needed—but there was also the question of quality. “The areas of production of good steaming coal ... are very restricted,” Vogelgesang noted, “and while depots may and do exist all over the world where such coal is kept on hand the supply is in limited quantities in any one of them and is usually covered by government contract that will not permit of its release to an outside purchaser.” The Navy demanded the best coal possible for combat, introducing an additional constraint on the provision of supplies. “Here enters into the calculation, therefore, a vastly different proposition in logistics than we would have if we had the coal fields of the world to draw upon.”⁴² There may have been abundant and nearby coal fields in the Pacific, for example, but since a reorientation of naval coal sources in the

⁴¹ Vogelgesang, “Logistics - Its Bearing Upon the Art of War,” 1, 5-7.

⁴² *Ibid.*, 9-10.

mid-1880s, only certain semi-bituminous coals from Appalachia, and possibly from Alaska, suited newly designed naval boilers.

This constraint had been the case through most of the nineteenth century as well. Even so, abundant production of Pocahontas, George's Creek, New River, and Eureka coal from the Appalachian bituminous belt running from Virginia and West Virginia through Western Maryland and southern Pennsylvania ensured ample stocks of even these specialized fuels. The supplies were there—the logistics problem was moving the coal from the eastern seaboard to the Pacific for war. The principal coaling ports of the mid-Atlantic received steady shipments of steaming coals; in a given month in 1915, Philadelphia could receive 150,000 tons of Eureka coal; Baltimore 350,000 tons of George's Creek; Sewall's Point and Lambert Point 200,000 tons apiece of Pocahontas; and Newport News 250,000 of New River. All told, the Navy had some 1,250,000 tons of coal per month available in some of its most visited and well protected ports.⁴³

As the study of logistics at the War College relied so much on America's insular acquisitions in the Pacific like Samoa, Hawaii, Guam, and the Philippines, some officers began to invert the causality of empire building. While officers like David Dixon Porter had once argued that obtaining islands as coaling stations justified building an empire of naval bases, Vogelgesang argued that having possession of those islands justified the rational analysis of logistics and the fortification that analysis dictated. He noted that "Providence has so guided our destiny in the Pacific that we find ourselves the sole possessors of stepping stones that lead across that ocean." These stepping stones, Hawaii, Guam, Samoa, and Kiska in Alaska, suggested to Vogelgesang how logistics preparations in peacetime could be simplified. All that was needed, he claimed, was the

⁴³ Cowie, "Logistics [Lecture 5 March, 1915]," 35.

fortification of these islands with naval bases and coaling stations. “By properly grasping and faithfully solving the logistic problems of the Pacific,” he concluded, “we will properly link up our outposts in the Pacific with the home country by fortifying, garrisoning, and storing those positions.” Logistics, in short, would “supply that present day expression of moral force that alone can ensure and guarantee peace.”⁴⁴ Thus the American insular empire slipped from being a consequence of naval buildup in the past to a cause of naval buildup in the future.

A second influential voice on coaling and logistics at the War College came in 1915 from Paymaster T.J. Cowie. As head of the Bureau of Supplies and Accounts, the Admiral had years of experience provisioning and fueling the fleet. Although an inexperienced teacher, he tried to bring his practical knowledge to the officers studying in Newport. Cowie believed that the science of logistics had never received the kind of interest commensurate with the subject’s importance from American officers, or even from military scholars in any nation. Referencing Jomini and others, Cowie asserted that “instead of being merely one of the branches of the art of war, to which writers and lecturers have assigned it, it is in reality the main artery through which is provided the life and force by which the other branches may be made effective in action, and upon it largely depends the character of the war to be waged, as well as victory or defeat in case of war.”⁴⁵ Only twenty-five years before, Mahan and Luce were proclaiming the inferiority of logistics to strategy; for Cowie the relationship was precisely the opposite.

Like Vogelgesang who lectured before him, Cowie acknowledged the role of peacetime preparation for combat, and the ideological conflicts engendered by professing

⁴⁴ Vogelgesang, "Logistics - Its Bearing Upon the Art of War," 14-6.

⁴⁵ Cowie, "Logistics [Lecture 5 March, 1915]," 3.

peace while anticipating war. Despite the major wars and simmering conflicts that punctuated American history, Anti-militarism ran deep in the American political culture. The outbreak of war in Europe in 1914 seemed to confirm for many Americans that military buildup itself increased the likelihood of conflict. Even Paymaster Cowie conceded that “[a] consistent, complete and full preparation for war savors too strongly of militarism, is wrong and harmful, is liable to cause distrust and antagonize other nations.” Nevertheless, a failure to plan for combat altogether risked limiting the very ability of the military to carry out even elementary defense. For Cowie, studying logistics offered a third way, a middle path between mobilization and pacifism. Cowie concluded that “true logistics, is both right and beneficial, and instead of arousing the ire. ... it commands the respect of the rest of the world, lessens its chances of war, and will do much towards its quicker termination.”⁴⁶ Cowie thus extended the cool rationality embedded in logistics to the political realm, arguing that a patient, scientific approach to war would avoid the temptation of putting these calculations to use. The warring European nations, in this analysis, had not heeded the scientific logic of logistics as a deterrent.

For whatever purpose they would be used, calculations of the scale recommended by Cowie required a bureaucratic apparatus that did not exist in the U.S. Navy in 1915. In January of that year, President Wilson’s Navy Secretary, the South Carolinian newspaper editor Josephus Daniels, composed a memorandum for Tennessee Democrat Lemuel P. Padgett, Chairman of the House Naval Affairs Committee explaining the portfolio for a position he hoped to create. Called the “Chief of Operations,” the position included responsibility for a “logistics section.” The section’s staff were tentatively assigned all the tasks necessary for engaging in warfare: determining expected demand

⁴⁶ Ibid., 50.

for supplies; identifying their sources and availability; planning for transportation, supply vessels, and the conversion of merchant vessels for the needs of combat; and the crafting of plans and orders to carry out these activities. As Cowie added in his review of the proposal, “[p]lans for the conduct of war would be of little use if they only embraced the distribution, maneuvers, and employment of the fighting forces: they must also include arrangements for supplying that force with all the requirements necessary for carrying on the war.” In modern war, success or failure in battle might well depend less on soldiers, sailors, or salvos, but upon the calculations and preparations of war planners months or even years before combat. And among those preparations, Cowie noted, “[t]he necessary fuel supply for our fleet in case of war will be the largest proposition we will have to handle.”⁴⁷

Even with the responsibility for supervising fueling, this new position would do little good without a corps of naval officers who shared the knowledge and appreciation of logistics. Logistics had to be taught, and knowledgeable officers had to be made. Just as the Navy contemplated creating a Chief of Naval Operations, the Naval War College began instructing its student classes of mid-level officers in logistics exercises designed to teach the fundamental obstacles and advantages of fueling war through “scientific management.”

War Planning and Logistics Problems

“War exists between Orange and Blue.” This statement introduced the War College students of July 1915 to Problem VIII for the class “Strategic 49.” “Orange,” in the not-so-secret language of naval discourse, referred to Japan, “Blue” to the United States. The

⁴⁷ Ibid., 8, 34.

origins of the terms are opaque. Perhaps they were intended to indicate that the situations they described were only hypothetical, wars fought only in the subjunctive.⁴⁸ Problem VIII was one of many assignments of the 1910s designed to teach the College's student-officers the tools of war planning. With its emphasis on the logistics of coaling, the problem provides a unique window on the assumptions and expectations of War College lecturers and on the skills they sought their students to develop. What were the meanings associated with logistics problems? What were their assumptions? What knowledge did they take for granted, and how did focus students' attentions on certain aspects of war planning and not on others? Examining student assignments offers a clue on what was involved in creating a successful naval officer in the early twentieth century.

Problem VIII continued by sketching out the following scenario, one whose broad outlines occupied naval thought for more than four decades. It began with a souring of diplomacy between Orange and Blue, after which Orange declared war and invaded the Philippine island of Luzon. The Orange Navy, meanwhile, remained in Orange waters, but maintained a base in the Pescadores, the island archipelago off the western coast of Taiwan. As the Blue hold on the Philippines slipped away, Blue's fleet and transport vessels were stationed at Panama. The problem asserted that Pearl Harbor and Guam remained in solidly Blue hands, with both Oahu and Guam "considered secure from attack." A convenient assumption.

⁴⁸ Other colors in common use included Black for Germany, Red for Great Britain, and Green for Mexico, more exotic ones included Citron for Brazil and Indigo for Iceland. For more on the color system, see "Appendix I: The Colors of the Rainbow" in Michael Vlahos, *The Blue Sword: Naval War College and the American Mission, 1919-1941*, 1st ed., U.S. Naval War College Historical Monograph Series ; No. 4 (Newport, R.I. and Washington, D.C.: Naval War College Press, 1980). For an examination of the development of U.S. war plans against Japan, see also Edward S. Miller, *War Plan Orange: The U.S. Strategy to Defeat Japan, 1897-1945* (Annapolis, Md.: Naval Institute Press, 1991).

The problem asked its readers to fuel the coming war. Specifically, War College students were asked to send the Blue fleet from Panama to the Philippine port of Polillo, passing through Pearl Harbor and Guam. Eschewing abstractions, the problem clarified what it meant by the fleet: it began with the flagship and embraced “Squadrons One, Two, Three, Four, Five, Seven, Nine; Division Fourteen; Destroyer Divisions One to Eight inclusive; Submarine Sections 30 to 33 inclusive; Train and fifteen 5,000 ton transports.”⁴⁹ War College instructors meant the *whole* Pacific fleet. On Guam the students were build a temporary base and ensure it a steady fuel supply from home. All the while, the entire Pacific fleet had to be provided with fuel—mostly coal, but some oil too—while accumulating emergency stocks at bases on Pearl Harbor and Guam.⁵⁰ The fleet was to sail on January 1.

The assignment required students to calculate (there appeared von Caemmerer’s etymology) several elements of the Blue fleet’s logistics plan. These elements included the path for the ships to take (the “line of operations”), the locations of appropriate bases to call upon for fuel and supplies, where fuel was to come from, the location and nature of “lines of communication” between the fleet and Blue’s home territory and along which flowed the fuel itself, the nature of the transportation of the fuel, and where ships to move it would come from.⁵¹

The fundamental tool used by the students to solve this problem was the table. At various intervals, faculty detailed to the College requested reports on the fuel consumption of naval vessels. This material they compiled into large tables quantifying

⁴⁹ "Strategic 49. Class of July, 1915. Problem VIII. Situation, Solution and Critique," in NWC, RG 4, Box 12, Folder 478, 1-2.

⁵⁰ *Ibid.*, 1.

⁵¹ *Ibid.*, 1-2.

and organizing the data the planners believed most salient to war preparations.⁵² But if Vogelgesang supposed that tabulation translated into “simple arithmetic,” Paymaster Cowie asked his students to “imagine for a moment the mass of figures and the number of computations necessary to ascertain the requirements for fitting out a fleet with ordnance alone; and then consider the magnitude and intricacy of the task when it involves not only ordnance but fuel, food, clothing, tentage, camp equipment, supplies, hospital equipment and supplies, additional armament and equipment for repairs, and a multiplicity of details, all requisite to put that fleet in complete preparedness to engage in war in home waters.”⁵³ Tables offered to organize this vast amount of information, but there was nothing simple about the mathematics involved in understanding it.

The table offered the logistician several advantages over simply hoping for military genius. Most importantly, the table could be prepared at any time in advance of combat, with calculations based upon it developed for any imaginable contingency.⁵⁴ Some logistics tables collated a broad spectrum of potentially useful figures and statistics, like the one compiled by Paymaster Cowie himself in 1917. For nearly 100 pages, Cowie composed an economic snapshot of the resources of the nation. From forests to mines, agriculture to manufacturing, imports to exports, he summarized the growing material wealth of the nation. His purpose was neither national pride nor interest in business opportunities, but “[f]or the purpose of considering Logistics along broad lines” and through which “many problems of vital interest to the country ... may be solved.”⁵⁵

⁵² See, for example, the letters and charts reporting fuel consumption for naval vessels in 1919 in NWC, RG 8, Box 38, Folders 2-3, and 5 and also Paul Foley, “Notes on the Preparation of the Logistic Sheet.,” in NWC, RG 8, Box 45, Folder 2 (1911).

⁵³ Cowie, “Logistics [Lecture 5 March, 1915],” 9.

⁵⁴ *Ibid.*

⁵⁵ T.J. Cowie, “Logistic Data on Production and Industry of the United States. 1 March, 1917.,” in NWC, RG 4, Box 2, Folder 86 (Newport, RI), 1.

The constraint placed upon the students—that the Blue fleet needed to pass through Pearl Harbor and Guam en route to Polillo—was arbitrary, but it forced the solver to break the problem down into manageable segments. The first segment involved moving from Panama to Pearl Harbor, a distance of some 4,665 miles. With the ships the students were instructed to include, this voyage was out of reach in a single trip. In particular Squadrons Four and Seven and the destroyers (facts the students were presumed to have looked up), could not steam that far without refueling at least once along the way. Moreover, all the submarines required towing. Could they be effectively towed that far? Should the fleet be divided into two halves, with the larger ships steaming directly for Hawaii and the smaller ones refueling first somewhere in California? These questions offered the students their first logistical decisions. The instructors hoped their students would see the value in keeping the fleet together given the possibility of finding Orange ships somewhere around Hawaii. What followed in the instructors' solutions was a series of choices and calculations that faced the student: what harbors lay north of Panama along the Pacific coast? How far were they from the fleet? Would ships be able to take on coal there? By posing these questions, the War College faculty expected its students to think broadly about industrial warfare, its geographical constraints, and the problems posed by limited supplies of energy.

In the problem's solution by War College faculty, the plan made several significant assumptions, "favorable to us which, unfortunately," noted the authors in their critique of the solutions, "do not exist."⁵⁶ These simplifications included the presence of fortified naval bases on Guam and at Pearl Harbor; the consideration of fuel alone and with "[n]o thought ... given to provisions, ammunition, reinforcements of personnel,

⁵⁶ "Strategic 49. Class of July, 1915. Problem VIII. Situation, Solution and Critique," 48.

return of sick and wounded, clothing, or to general stores”; and finally, that the critical links in the fleet train, the colliers and oil ships, exist where needed by the Navy and in whatever numbers necessary. “This is very convenient,” noted the instructors, “and resembles assuming unlimited credit at a bank where you have no money.”⁵⁷ In practice, these ships belonged to private companies, and their availability to the Navy depended upon their existence at all, the possibility their owners would sell or lease them (itself dependent upon “the lavish use of money” by the Navy), and that they could be brought quickly from their present location to the scene of war.⁵⁸ As complex as Problem VIII was (its model solution comprised over 40 typeset pages), an actual naval operation involved much more.

Of all the elements the War College faculty wanted students to address most about coaling, the most critical involved calculating the quantity of merchant vessels the Navy would need to acquire to support a Pacific operation. For the College’s Class of July, 1915, answers from the twenty students ranged from 140 to 211 ships with an average of 172.⁵⁹

Subsequent problems in later years varied Problem VIII’s details, but maintained the overall scenario. The problems assigned after World War I differ most markedly from their predecessors in their emphasis on the simplified nature of the coaling logistics problems compared with wartime reality. To a degree, and as noted above, all the earlier logistics problems had acknowledged their assumptions and simplifications, but after the war, even these admissions appeared inadequate. “It must be remembered that this

⁵⁷ "Strategic 49. Class of July, 1915. Problem VIII: Situation, Solution and Critique," in NWC RG 4, Box 12, Folder 478 (1915), 48.

⁵⁸ *Ibid.*, 49.

⁵⁹ "Strategic 49. Class of July, 1915. Problem VIII. Situation, Solution and Critique," 53.

problem covers but a part of the task in the solution of what will be the Logistic problem should we have to carry on a war in the Far East,” observed the problem’s authors. More than coal needed to move across the ocean: also food, and munitions, and troops. As the war revealed, some essential articles could not be relied upon from the U.S. alone, either. “We will still be dependent on Brazil and Cuba for Manganese,” they noted, “on Chile for Nitrates and on various tropical countries for Rubber, none of these can be dispensed with.”⁶⁰ War had broadened the perspectives of War College instructors, and even if their specific assignments did not yet reflect it, their message to their students was unambiguous: coaling was a difficult project, but real war was vastly more complicated to orchestrate.⁶¹ Nevertheless, coal and coaling provided the template for understanding the essential process of logistics. Even in an over-simplified form, coal provided the model upon which the logistics of warfare was imagined and taught. By focusing on coal, the War College ensured that its students would gain experience with the kinds of challenges facing the modern officer and the modern nation at war.

Logistics simulations alone, however, were insufficient to teach the full range of skills officers needed to approach coaling in wartime. An additional complication, immediately obvious during wartime was the subject of international law. The legal status of neutral and belligerent nations shaped how coal and other materiel might

⁶⁰ "Strategic 49. Modification 3. Class of June, 1919. Problem VII. (Logistic) Statement of Problem, Discussion, Critique of Solutions, and Solution by War College Staff," in NWC, RG 4, Box 12, Folder 471, 1.

⁶¹ According to two of these exams, “No one who was in a position to see, during the World War, how carefully each ton of coal, iron and other raw materials were allocated to various purposes; how each ship was carefully considered as she came of [sic] the stocks as to whether she should be put in this or that service, and how there never seemed enough [sic] transportation, either water or rail to go round, could be greatly impressed by the magnitude of the task of drawing up the logistic plan for a war.” See "Strategic 49. Modification 4. Class of December, 1919. Problem IV. Statement of Problem, Discussion, Critique of Solutions, and War College Staff Solution," in NWC, RG 4, Box 14, Folder 524, 3-4. The previous exam referred to “the tremendous task of those responsible for the logistic plan of the nation at war.” "Strategic 49. Modification 3. Class of June, 1919. Problem VII. (Logistic) Statement of Problem, Discussion, Critique of Solutions, and Solution by War College Staff," 4.

become available during war. The logistics of coaling was also approached at the Naval War College through the study of international law, a constraint on empire-building almost as substantial as the material availability of coal itself.

International Law Problems

Before the United States declared war on Spain, the U.S. Navy had assembled a coal supply on the island of St. Thomas in the Danish West Indies. The bulk of the coal was stored on shore, but some 1,000 tons rested in the hold of a schooner moored in the harbor. After war broke out, both the *Minneapolis* and the *Montgomery* coaled from the schooner while returning to the United States. In July, the Danish government protested that supplying coal to American warships in the Indies—even with American coal stored aboard an American ship—violated Denmark’s neutrality.⁶² Even before war had broken out in early April, the Haitian government had likewise declared off limits its coal supply at Mole St. Nicholas, a harbor between Hispaniola and Cuba. According to the *New York Times*, the Haitian announcement was but “one of a number of similar notices from foreign Governments whose coalings stations [sic] have been used by our ships in the West Indies, the Lesser Antilles, and along the coasts of South and Central America.”⁶³

The most important neutral supplier of coal in the Caribbean was, of course, Great Britain, who announced in mid-April that should the United States and Spain tumble into war, the British government would consider coal contraband. Under these circumstances, neither the United States nor Spain could make use of British naval stations in the

⁶² "Cannot Take Our Own Coal. Danish Authorities at St. Thomas Apply Neutrality Laws," *New York Times*, July 3 1898.

⁶³ "Mole St. Nicholas Closed. Haiti to Preserve Neutrality at the Coaling Station in the Event of War," *New York Times*, April 6 1898.

Americas except in emergencies. As in the American Civil War, when British neutrality rules applied equally to both the North and South, one side tended to benefit more than the other. During the Civil War, British neutrality favored the Confederacy over the Union, though mainly because the South had more to gain by British aid. In 1898, this policy favored the United States over Spain. Close to secure home ports and an abundant coal supply, the U.S. benefited from Britain's refusal on legal grounds to aid Spain with coal.⁶⁴ This subject suggests the way coaling networks involved more than an assembly of supplies, ships, and ports, but also a framework of international maritime law.

Naval officers attending the War College in the early 20th century devoted substantial time to illuminating this legal framework. In 1901, John Bassett Moore, a Professor of International Law at Columbia University and an Assistant Secretary of State during the war with Spain, arrived at the College to lead a seminar on the legal dimensions of warfare. The seminar presented students with a series of cases for analysis. The College collected student responses and published what would become the first volume of almost 60 to deal with the international legal dimensions of modern war. According to War College President C.S. Sperry, these dimensions included "those difficult and urgent situations in which naval officers have been, or are likely to be, involved."⁶⁵ When Moore left Newport, he advised the faculty to replace him with another prominent figure in the study of international law, George Grafton Wilson. One of the first Americans to define this subject, Wilson had begun teaching international law to undergraduates at Brown University in 1891. In 1900 he began his association with the War College with lectures on one of his academic specialties, the laws governing

⁶⁴ "Coal Contraband of War. Great Britain's Decision Will Be Entirely to the Interest of the United States," *New York Times*, April 17 1898.

⁶⁵ *International Law Situations, with Solutions and Notes. 1904*, (Washington, D.C.: G.P.O., 1905), 3.

insurgency.⁶⁶ Wilson assumed the editorship of the “blue book” series of international law volumes begun by Moore and which were written to guide naval officers in their activities around the world.

Questions about coaling, belligerents, and neutrality formed an important element in the early blue books. Most situations were simply described, and asked students to apply international law to solving them. Problem IV of 1904’s series of situations is illustrative of the general approach. The problem supposes war between the United States and another nation known as State X. An American naval vessel steams into a harbor of State Y, a state that had declared neutrality. In the harbor is anchored a U.S. supply ship. “The war ship is about to take on coal, oil, etc., from the supply ship” the problem asserts, “when the authorities of State Y protest against the action as a violation of neutrality and forbid the use of the port for such purposes, claiming that it would be equivalent to allowing the port to be used for the fitting out of an hostile expedition.” The problem then asks a series of questions: is State Y’s claim legitimate? How should the commander of the American warship respond? Might the legal claim be different if the situation involved not one warship and one supply vessel but instead a whole fleet of warships and their attending supply ships?⁶⁷

Another problem complicated this scenario by presuming that instead of coaling in a neutral harbor, a warring nation’s vessel coaled from a collier less than three miles

⁶⁶ John B. Hattendorf et al., *Sailors and Scholars: The Centennial History of the U.S. Naval War College* (Newport, R.I.: Naval War College Press, 1984), 55-6. On Moore, see “John Bassett Moore,” *Political Science Quarterly* 63, no. 1 (1948).

⁶⁷ The solution to the problem notes that “[t]he protest of State Y is valid,” though to the final question, whether a whole fleet of warships and supply ships might alter the answer, the problem’s authors observe that while the answer is no, “[t]he presence of a fleet of war vessels with supply ships would make it necessary for State Y to use greater care to see that there should be no violation of neutrality.” We might presume that the power of State Y to enforce its neutrality varies inversely with the number of foreign warships in its waters. *International Law Situations, with Solutions and Notes. 1904*, 63.

from a neutral nation's coast. A month later, the warship steamed into the neutral nation's harbor and petitioned for "a reasonable supply of coal." The neutral nation replied that since the warship had coaled from within its waters within the past three months, international law required that it turn away the warship to preserve its neutrality.⁶⁸

An even more complicated legal situation arose when private citizens were involved. This situation, presented in 1912, presumed war between States X and Y, others being neutral. Under one permutation, a coal merchant from the neutral State Z is selling high grade steaming coal to State Y. In open ocean, a cruiser of the belligerent State X encounters a cruiser of the neutral State Z, the latter escorting a collier laden with coal and bound for a neutral port in Z. The captain of X's cruiser knows that unchecked, this coal is intended to be sold to its rival, State Y. Can it legally force the protecting cruiser of Z to abandon the collier on the grounds that it is carrying contraband? What if the coal merchant in Z sells steaming coal both to Y and merchant colliers? Can X insist that sales to both be discontinued? What about the merchant's sales to neutral colliers of Z that intend on steaming to Y to sell their coal? The scenarios were endless, and all depended on the interpretation of a diverse body of legal thought, from U.S. case law to international treaties to Presidential proclamations to examples from past conflicts.⁶⁹

International law must adapt to the world it purports to govern. The declaration of Paris, a clarification of maritime law from 1856, established some fundamental concepts regarding neutrality and contraband, but the new, industrial technologies of the mid-19th century left wide spaces for uncertainty. "Gradually circumstances," observed

⁶⁸ *International Law Situations with Solutions and Notes. 1908*, (Washington, D.C.: G.P.O., 1909), 79.

⁶⁹ *International Law Situations with Solutions and Notes. 1912*, (Washington, D.C.: G.P.O., 1912).

the authors of the solution to one of these coaling problems, “particularly the introduction of steam vessels, forced neutral states to make regulations in regard to the use of their ports by belligerent vessels. Neutral states had come to recognize that they had the right of control over belligerent vessels in their ports, and if they had the right they were beginning to realize that it carried a corresponding obligation.”⁷⁰ As noted in chapter 2, it was during the American Civil War that neutral nations, especially Great Britain, invoked a twenty-four hour rule limiting the time belligerent vessels could remain in neutral British ports. Ulysses Grant announced the American policy on the question in 1870 during the Franco-Prussian War, in detail describing how a neutral United States would treat French, German, or any other warring nation’s ships.

The position of the United States was clarified just two years later during the path-breaking 1872 Geneva Arbitration, when Great Britain submitted to an international tribunal to judge the assertions of the United States that Britain had violated the principles of neutrality during the Civil War. As shown in Chapter 3, coal formed a major point of conflict between Britain and the United States. According to Charles Francis Adams, the American representative to the arbitration board, “[t]his question of coals was little considered by writers on the law of nations and by sovereign powers until the present century. It has become one of the first importance, now that the motive power of all vessels is so greatly enhanced by it.” And further, that “[t]he effect of this application of steam power has changed the character of war on the ocean, and invested with a greatly preponderant force those nations which possess most largely the best material for it within their own territories and the greatest number of maritime places

⁷⁰ *International Law Topics and Discussions*. 1906, (Washington, D.C.: G.P.O., 1907), 67.

over the globe where deposits may be conveniently provided for their use.”⁷¹ If the contours of this changed character were emerging in the 1860s and 1890s, the full impact of industrial power in wartime emerged during World War I. This conflict propelled logistics to a whole new level of importance, for the lines of supply studied and planned for at Newport during the preceding two decades now reached deep into the American industrial economy. As the scope of logistics expanded, so did the perception of its centrality to modern warfare.

Naval Logistics in Newport after World War I

According to one officer, C.S. Baker, from the war experience “there has arisen a modern aspect of logistics, far broader than that of the past.” Mobilization ceased to be a province of strictly military planning, let alone an academic exercise. Its scope had expanded, too, for after the war, writers and lecturers at the War College went beyond the narrow conception of logistics as enabling naval strategy and announced instead “Its National Aspect.” Logistics became a topic of *national* importance. The new conception reflected the war experience, and embraced the mobilization of financial resources through taxation and borrowing, the alliance with industry to produce war materiel like ships, munitions, and fuels, and the provision of vast amounts of food, fuel, and other resources to Americans and their Allies. Baker called the war “[t]he greatest problem in logistics ever given to a warring power.”⁷²

⁷¹ *Papers Relating to Treaty of Washington, Vol. 4: Geneva Arbitration; Report of U.S. Agent, Protocols, Award, Etc., H. Exdoc. 1/6, 42nd. Cong., 3rd. sess. (1872).*

⁷² C.S. Baker, "Logistics - Its National Aspect. Lecture Delivered 22 September, 1922," in NWC, RG 4, Box 15, Folder 663 (Newport, RI), 1.

Baker concluded that future military leaders would require a much wider scope than their traditional expertise in strategy and tactics. “Success in the future,” Baker declared, “more than ever, will depend on a greater task, that of the mobilization of a nation’s finances, resources, materials and man power and their employment in the most effective way.”⁷³

The scale of preparation required for the war introduced a troubling difficulty to naval planners that was only dimly considered in the United States before 1917. With the nation’s professed cultural resistance to extensive war preparations during peacetime and a historic reluctance to develop long term military planning, officers in the Navy found it difficult to persuade Congress for the very resources they believed were desperately needed to prepare for future wars. “Politics and its national viewpoint discourage such national insurance on a big scale,” exclaimed Baker. Since the logistics for warfare dictated that such planning and securing of resources was necessary, officers sought to instruct “a hard headed Congress” and keep wartime planning boards in a “skeletonized” state, ready to be activated in a future emergency.⁷⁴

Instruction on logistics at the College also changed. Unlike many of his predecessors lecturing on this topic in the previous fifteen years, the new head of the College’s Logistics Section, R.E. Bakenhus emphasized the novelty, not historical continuity, of logistical problems. Symptomatically, he rejected appeals to dictionaries or prominent 19th century military thinkers for the proper boundaries of the subject (as Vogelgesang and Cowie had done just a few years before), insisting instead that to understand the meaning of logistics “the dictionary writer should come to the War

⁷³ Ibid., 2.

⁷⁴ Ibid., 27.

College and not the War College to the dictionary.” The World War and industrial revolution had so transformed the field that “[w]e may suffer if we adopt a dictionary definition... or take the viewpoint of some authoritative writer of the past.” Moreover, he explained, “[w]e may not suffer from the limitations of previous thought on the subject while taking full advantage, at the same time, of all that has been written.” In one lecture in 1926, Bakenhus twice repeated for his students (in case they missed the significance the first time) a statement found in a document from the College’s sibling institution, the Army War College: “The greatest difficulty in executing all phases of the War operations lies in logistics.” Repeating the quote, the officer emphasized “greatest,” “all phases,” and “logistics.”⁷⁵

While early logistics study at the College emphasized supplies and provisioning—and fueling the fleet representing the most studied and most important example—logistics after the war embraced what Bakenhus called “a broader subject.” This “broader” conception moved beyond the Navy itself to include both the larger industrial and material activities that made naval warfare possible. In addition, it embraced the Navy’s role in maintaining the economic life of the nation whether at war or at peace. Post-war logistics thus included not only coal and resources for the Navy alone, but the broad spectrum of “strategic raw materials” demanded by industry that the United States did not itself produce domestically. From the broader public, the identity of these materials was kept secret, and students were advised to consult the College’s archives for access to raw materials analysis.⁷⁶

⁷⁵ Bakenhus, "Lecture as to the Course in Logistics: 1 December, 1926," 4-5.

⁷⁶ *Ibid.*, 7-9.

The College's earlier research on coal, however, provided the template for how logistics problems were understood and organized, from the assembly of large tables to the types of calculations performed in war simulations. As the Navy's logisticians began connecting the health of the nation's economy to military preparedness, they began identifying the "national interests" that have since become identified with the American empire that took shape in the 20th century. While the pursuit of coal and coaling stations in the 19th century began with an interest in supporting American trade, after World War I the practitioners of logistics science believed that the very existence of the nation had come to depend on managing resources, especially energy resources like coal.

Moreover, as the conception of naval logistics broadened to include strategic raw materials, so too did corresponding naval strategy. "If we must have a detailed knowledge of our own strategic raw materials and their sources of supply and rates of trade," Bakenhus lectured, "then we must also have the same information as to the enemy's strategic raw materials." This subject became one of widespread study in the 1920s, and this sort of thinking in terms of strategic raw materials could also influence the character of international rivalries. Several students of the logistical aspect of economic growth concluded that Japan's lack of certain materials in both its home islands and its colonies in nearby mainland Asia necessarily implied that it could "never become a first class industrial nation." If this analysis proved conclusive, observed Bakenhus, "it would have a profound effect on the feeling of security which the United States might have."⁷⁷

As naval officers began studying the resources associated with manufacturing and military supremacy, they often remarked on two observations. First, the United States

⁷⁷ Ibid., 9-13.

possessed an unusually bountiful endowment of minerals, forests, and agricultural products. This observation, of course, traced back to the earliest reports of New World abundance from European colonists and explorers. The second observation was more characteristic of the 1920s: that some of these resources were heading towards exhaustion, in both the United States and the world more generally. “Expert mining engineers already see the end of our lead and zinc production,” Bakenhus lectured. “Tin appears to be similarly doomed.” He continued by placing modern resource use in its broader historical context, noting “that more minerals have been mined in the world since 1907 than in all the previous history of the world.” He was speaking in 1926.⁷⁸

By the mid-1920s, the NWC’s formal course in logistics approached the subject from both theoretical and practical levels. Basic principles acknowledged the essential connection between ships and shore. The job of logistics was to understand the constraints this connection imposed on the fleet and to decide how to work within these limitations in carrying out naval policy. The constraints included “physical characteristics” of landscapes and weather, supplies, and finances. Logistics embraced increasing scales of complexity, from ensuring the mobility of individual warships to the larger fleet of repair ships, merchant vessels, and other auxiliaries that facilitated the activities of warships, on to the global network of naval bases, themselves connected to the vast “natural resources of the nation and its mercantile and industrial facilities.”⁷⁹

The World War, in fact, encouraged the division of the subject into two elements. Naval logistics embraced the traditional subject of manpower, material resources, and

⁷⁸ Ibid., 11.

⁷⁹ "Course in Logistics: I. Basic Principles in Naval Logistics; II. Logistics and the Principles of War; III. Logistics. Conservation of Effort and Material. Cost. 15 October, 1926," in NWC, RG 4, Box 29, Folder 1207 (Newport, RI), 1.

“the details necessary to the movement and supply of naval units in naval operations.”

National logistics, in contrast, included the wider problem of mobilizing the resources of the nation to avert or facilitate war.⁸⁰

Naval logistics began with the analysis of the resources made available by national logistics. It embraced inducting and training new recruits; designing, constructing, and supplying ships; and maintaining bases. Destroyers required their own bases, as did submarines. Advanced bases held supplies far from the continental United States near territories believed likely to involve naval activity in the future. Dry docks helped build and repair ships. Supply depots and fuel stations maintained vital war materiel. There were facilities to manufacture, maintain, and distribute ordnance. Hospitals, recreation fields, rifle ranges. Channels and anchorages. Radio stations. Training stations. And industrial warfare also required these facilities be connected, that supplies reach the fleet through colliers, oil tankers, cargo vessels, and refrigerated ships.⁸¹

National logistics embraced the entire material resources of the United States, from its population and geography to its agriculture, minerals, and energy resources. Strategic minerals included antimony, chromium, and manganese. Strategic foods included coffee and sugar. Other strategic goods ranged from hemp fiber for ropes to nitrates for munitions and fertilizers to hides, rubber, silk, and wool. Materials questions also included sources of supply, the trade routes these supplies followed, and the effects

⁸⁰ "Course in Logistics: Outline of Logistics. November 1926," in NWC, RG 4, Box 29, Folder 1206 (Newport, RI), 2.

⁸¹ Ibid., 14-7.

of possible war upon them. Energy shaped industrial productivity and economic mobilization; national wealth the economic limits of peace and war.⁸²

* * *

The invention of modern naval logistics transformed the operations of the Navy. Through the new science, methods of planning, teaching, and organization changed naval strategy and tactics in the early 20th century as much as new weapons and communications technologies. This transformation began with coal, as War College instructors dusted off, revived, and adapted European thinking on logistics as it had been developed for early 19th century land warfare to the needs of 20th century warfare at sea. By bringing this study to the Naval War College, logistics-minded officers ensured that the Navy's brightest young officers would learn the principles of "scientific management" for the Navy and hopefully, carry that thinking with them to more senior levels of naval command.

Even after World War I, as the importance of coal began to wane with the increasing use of energy from oil, the Navy continued its interest in coal and the geography of its supply. Aided by research at the War College, in the 1910s and 1920s, the Navy pursued one final attempt to solve the coal problem, this time by turning its interest to the coal fields of Alaska.

⁸² Ibid., 3, 5-7.

Chapter 5: Alaska: Infinite Coal Mine of the Imperial Imagination

In May 1902, the engineer Harrington Emerson surveyed the prospects for American trade in the Pacific basin, and he nodded approvingly at what he saw. “Commerce and civilization have passed from the Mediterranean to the Atlantic” he declared, “and perhaps in turn will pass from the Atlantic to the larger ocean, the Pacific.”¹ One suspects that Emerson used “perhaps” out of modesty, for he exuded confidence in the westward march of the children of Europe. At the dawn of the twentieth century, this march was no longer of homesteaders but of modern industry, and it carried industry’s appetite for resources, most importantly the energy sources supporting regional growth. “Certainly the Pacific Ocean is assuming importance,” Emerson announced, “and modern commercial importance is founded on coal.”²

Fittingly, the lands surrounding the Pacific were rich in coal. Along the western North American coast alone, geologists estimated that coal reserves rivaled the massive fields of central Appalachia. From Australia to Chile to Alaska, Emerson identified coal fields he believed were destined to elevate American industry, support its international trade, and secure geopolitical influence in the Pacific. Alaska, in particular, drew his notice. It was, of course, already an American possession and thus easier for Americans to exploit than other parts of the Pacific rim. Furthermore, the preceding six years had brought momentous changes to the territory. Gold discoveries in the Klondike in 1896 followed by additional strikes in Nome three years later brought labor and capital

¹ Harrington Emerson, "The Coal Resources of the Pacific," *The Engineering Magazine* 23, no. 2 (1902): 161.

² *Ibid.*: 164.

investment. The explosive growth of Alaskan salmon fisheries, similarly attracted the attention of investors. The construction of the territory's first two railroads offered the prospect of further settlement and industrial development. The United States' acquisition of Hawaii, Guam, and the Philippines stimulated a newfound interest in the nation's older Pacific domain as well, for Alaska's long coastline and island chains lay along the shorter northern route across the ocean and offered valuable harbors for refueling en route to Asia. And, of course, Emerson saw great prospects in the exploitation of Alaska's potentially massive coal fields.³

Two decades later, Emerson's vision of global commerce and industry shifting to the Pacific was not quite fulfilled, but the movement for Alaskan development had only grown stronger and development still meant coal. For no less a visionary of regional planning than Benton MacKaye, coal would usher Alaska into the twentieth century, completing what he called a "big three" of extractive resources beginning with fur seals in the eighteenth century and gold in the nineteenth. If furs first attracted Europeans to the land and gold offered the prospect of instant wealth, coal, according to MacKaye, awakened Americans to the prospect of systematically developing Alaska in a permanent manner.⁴ MacKaye envisioned opening Alaska to massive colonization and the sustainable development of its resources while replacing exploitative and temporary mining camps with permanent mining communities where miners would labor under just conditions. Developing coal resources would stimulate copper mining, thus supporting global electrification, and lumbering, for construction in Alaska and as export for paper

³ Ibid.: 165.

⁴ Benton MacKaye, "Alaska -- an Opportunity to Build a Nation," in Dartmouth College Library; The Papers of the MacKaye Family; ML-5 (182):22 (1920), 3.

products.⁵ With this prosperous future barely visible on the horizon, MacKaye wrote optimistically of “a potential nation,” “a hinterland to be opened up,” and “the chance to build a nation within a nation.”⁶

If Alaskan coal tantalized the promoter and planner with prospects of regional development and fantastic profits, it attracted the U.S. Navy with the possibility of securing a naval and commercial preponderance in the Pacific Ocean. As shown in previous chapters, coal and its relation to Pacific geopolitics had long been of immense interest to the Navy. In the years following 1898, that interest would increasingly involve Alaska. The acquisition of Hawaii, Guam, and most importantly, the Philippines, introduced new strategic and logistic challenges to the United States: how could the U.S. hold these islands in peacetime and in war? How best could the U.S. government encourage commerce between the Americas and Asia? How could the Navy maintain its vital fuel supply, especially during wartime when sea lanes became vulnerable to attack? Alaska’s proximity to central Pacific islands and mainland Asia, a geographical curiosity before 1898, took on a new significance as the Navy extended its technological, ecological, and strategic coaling network into Alaskan waters.

In naval thought during the quarter century after 1898, Alaska moved from the periphery to the center of strategic planning. The Pacific Ocean remained a vast space, but developments in navigation, resource extraction, and labor politics gave Alaska an increasingly important place in that ocean. Scholars have employed the term “imagined

⁵ For food, MacKaye thought colonists could bring agriculture to “ready-made-farms” prepared by the government. Collections of these farms would “be linked together into self-governing communities.” *Ibid.*, 8.

⁶ *Ibid.*, 4, 8. For more on MacKaye’s interest in Alaskan development see, Larry Anderson, *Benton Mackaye: Conservationist, Planner, and Creator of the Appalachian Trail*, Creating the North American Landscape (Baltimore: Johns Hopkins University Press, 2002), 62-9, 76-7, 125, 302-3.

geography” to suggest how the subjective apprehension of spatial relationships has shaped historical processes. There may be a real world out there, these scholars contend, but it is known only through constructed, and therefore contingent, spatial relationships. These geographies, whether formal printed maps or ordinary conceptions of distance, implicitly privilege particular spatial relationships over others of which we might well conceive.⁷ Naval planners viewed Alaska’s relationship to the ocean, the U.S., and naval strategy differently in the 1920s than they had in 1898. They imagined geography differently.

Emerson and MacKaye were better visionaries than oracles. Alaska never developed the coal industry both men so ardently prophesied, and the Navy failed to develop the coaling infrastructure in Alaska that it desired. It misapprehended costs, minimized engineering challenges, fumbled relations with labor, and misinterpreted the meaning of geological surveys, but in the quarter century after 1898, their work transformed Alaska and the way that Americans viewed it. This transformation began at the cusp of the twentieth century, at the historical moment where coal, commerce, navies, and navigation intersected.

Imagining Alaska

⁷ See, for example, a recent sample of such works in Anne Godlewska, "Map, Text and Image: The Mentality of Enlightened Conquerors: A New Look at the Description De L'egypte," *Transactions of the Institute of British Geographers (New Series)* 20, no. 1 (1995), D. Graham Burnett, *Masters of All They Surveyed : Exploration, Geography, and a British El Dorado* (Chicago: University of Chicago Press, 2000), Derek Gregory, "Between the Book and the Lamp: Imaginative Geographies of Egypt, 1849-50," *Transactions of the Institute of British Geographers (New Series)* 20, no. 1 (1995), Susan Schulten, *The Geographical Imagination in America, 1880-1950* (Chicago: University of Chicago Press, 2001), Joan M. Schwartz, "The Geography Lesson: Photographs and the Construction of Imaginative Geographies," *Journal of Historical Geography* 22, no. 1 (1996), Daniel Lord Smail, *Imaginary Cartographies: Possession and Identity in Late Medieval Marseille* (Ithaca: Cornell University Press, 2000), Emma Teng, *Taiwan's Imagined Geography: Chinese Colonial Travel Writing and Pictures, 1683-1895*, Harvard East Asian Monographs ; 230 (Cambridge, Mass.: Harvard University Press, 2004).. The pioneering theoretical roots of this work may be found in Edward W. Said, *Orientalism*, 25th anniversary ed. (New York: Vintage Books, 2003), Benedict R. O'G Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, Rev. ed. (London ; New York: Verso, 1991).

The Great Circle and the Route to Asia

“It is not generally recognized” observed George Washington Littlehales in 1899, “that science, employing the mathematician and the engineer alike in the problem of shortening the duration of ocean transit, has accomplished as much by causing ships to travel fewer miles as by causing them to travel faster.”⁸ Littlehales, an engineer in the U.S. Hydrographic Office, was commenting on one of the most far reaching transformations in ocean navigation since the introduction of steam power itself. Traveling fewer miles by sea had become possible not only because steam power allowed ships to travel independently of the wind, but because new mathematical techniques developed in the nineteenth century allowed navigators to calculate the new routes more directly than ever before. These new techniques facilitated navigation along a great circle.

A great circle is a mariner’s fiction. It describes the imaginary path tracing the shortest distance along the surface of the earth. Imagine sticking two pins into an ordinary globe, one pin at San Francisco, California and the other at Yokohama, Japan. Stretch a thread tightly between the pins. The path traced by the thread describes an arc of a great circle. Mathematicians dubbed it an orthodromic curve. This path between San Francisco and Yokohama does not run through the central Pacific as one might expect, but much farther north, near the Aleutian Islands. If this thread extended beyond both pins and met again on the other side of the globe, the complete curve would represent a circumference of the planet, the largest circle on the globe one could measure:

⁸ G. W. Littlehales, *The Development of Great Circle Sailing*, 2d ed., Publication - U.S. Hydrographic Office ; No. 90 (Washington: G.P.O., 1899), 9.

a great circle.⁹ The equator traces a unique great circle, everywhere equidistant from the poles. Meridian lines are great circles as well, reaching from one pole to the other and back again, crossing the equator at right angles.¹⁰

Navigators had understood for centuries that great circle routes minimized distances. Littlehales himself speculated that “knowledge... of the great circle must have been coeval with the knowledge of the spherical form of the earth.”¹¹ The earliest English authors on navigation were certainly aware of them. The Elizabethan navigator John Davis called great circles “the chiefest” of all possible routes. In the seventeenth century, Henry Phillipps called them “the most exact way.”¹² Yet knowledge of the great circle in theory did not translate into their use in practice. Many standard navigational texts as late as the first half of the nineteenth century barely discussed great circle sailing, if they mentioned it at all. Characteristic of this neglect was Nathaniel Bowditch’s *New American Practical Navigator*, “the seaman’s bible,” well into its 18th

⁹ This model, of course, assumes a spherical globe. The earth is more approximately, though still not perfectly, an oblate spheroid, the figure traced by an ellipse rotated about its shorter axis. The earth’s radius at the equator is 21.39 kilometers greater than its radius at the poles. See, for greater detail, C. M. R. Fowler, *The Solid Earth : An Introduction to Global Geophysics* (Cambridge [England] ; New York: Cambridge University Press, 1990). pp 163-6, 452. Great circles have other defining features as well. The plane containing a great circle always passes through the center of the earth, and thus always divides the planet into two equal hemispheres.

¹⁰ For explanations of great circle routes, see S. T. S. Lecky, “*Wrinkles*” in *Practical Navigation*, 14th revised and enlarged ed. (London, etc.: 1903), 665-8, Nathaniel Bowditch, George Wood Logan, and United States Navy Dept. Bureau of Equipment., *The American Practical Navigator, Being an Epitome of Navigation and Nautical Astronomy*, Rev. in 1880, ed., [U.S.] Hydrographic Office. [Publication] No. 9 (Washington; Govt. print. off., 1906), 11-2, 56-8, Littlehales, *The Development of Great Circle Sailing*. Circles on the earth that are not great circles, like parallels of latitude, are called small circles.

¹¹ Littlehales, *The Development of Great Circle Sailing*, 9.

¹² John Davis, *The Seaman’s Secrets: Devided into 2. Partes, Wherein Is Taught the Three Kindes of Sayling, Horizontall, Paradoxall, and Sayling Vpon a Great Circle...* (Imprinted at London: Thomas Dawson, 1599), 43. The other two sailings were horizontal, by which ships traced courses parallel with the equator and other lines of latitude, and Mercator, also known as paradoxal or rhumb sailing, by which ships’ courses trace constant angles with meridians and thus appear as straight lines on Mercator charts. Henry Phillipps, *The Geometrical Sea-Man: Or, the Art of Navigation Performed by Geometry*, The second edition much enlarged ed. (London: Printed by Robert and Willia [m Leybourn for] George Hurlock ... 1657), 48.

edition in 1848 before its editors even added a section on great circle sailing.¹³ Before steam power first augmented, and later came to dominate ocean propulsion, great circle routes could be traversed only when they coincided with favorable winds, which was rare.

Because sailing ships depended on the wind, they typically required different routes for each leg of a round trip voyage, one leg frequently much longer in distance and transit time than the other. Sailing ships between China and the United States experienced particular challenges. Beginning in China, navigators preparing for this voyage were advised to follow the great circle, catching the mighty, warm Japan stream northeast towards the Aleutian Archipelago before veering southward along the North American coast.¹⁴ The return journey from the United States to Asia was more circuitous. Ships left from ports like San Francisco or Puget Sound, bearing south towards Mexico. There, they picked up the northeasterly trade winds between 15° and 20° north (a band of latitude that includes most of the Yucatán Peninsula), avoiding the quiescent “horse latitudes” to the north. Crossing the Pacific westward, they sailed south of the Hawaiian Islands (or they might stop there for trade or supplies) then north of the Marshalls. Seasonal weather determined what came next. Southwest monsoons between May and October forced ships north of the Caroline Islands and south of the Marianas, where ships could find respite at the group’s southernmost island of Guam. Otherwise, between October and April, northeast monsoons pushed ships north of the Marianas, past

¹³ Editors were necessary because Bowditch himself had died a decade earlier. John F. Campbell, *History and Bibliography of the New American Practical Navigator and the American Coast Pilot* (Salem, Mass.: Peabody Museum, 1964).

¹⁴ See, for example, Ferdinand Labrosse, *The Navigation of the Pacific Ocean, China Seas, Etc.*, trans. Jacob W. Miller, Publications / U.S. Hydrographic Office ; No. 58 (Washington: Government Printing Office, 1875), 219-21.

the volcanic peaks of the Farallones de Pajaros before ships finally entered the Philippine and East China Seas.¹⁵

The introduction of steam power did not immediately obviate the popularity of this central route across the Pacific. In the late nineteenth century, vessels crossing this ocean continued to navigate sea lanes first traversed by the Spanish during the 16th century. Tradition, no doubt, played a role preserving the course through Hawaii, as did milder weather and the developing trade nexus between the American Pacific coast and Asia at Honolulu. But preference alone did not limit ships and their navigators from the advantages offered by steam. Instead, authors of navigational texts suggest a more subtle reason, blaming the general avoidance of great circle routes on the impracticality of performing the navigational calculations it required. More conventional routes, however lengthy or roundabout in practice, required only simple determinations of the ship's course and were easy to chart and straightforward to travel.

Great circles, in contrast, required ponderous, repetitious calculations. Navigators had to plot frequent course adjustments every one or two hundred miles. "It has been found impossible to introduce the general use of great circle sailing" lamented one mathematician, citing the difficulty of "fresh calculations or constructions by no means simple" when a ship inevitably deviated from an originally plotted course.¹⁶ John Towson, the developer of one technique that simplified great circle sailing, explained that course adjustments needed "so often to be repeated as to preclude its being generally

¹⁵ Ibid., 117, 57-9.

¹⁶ Richard A. Proctor, "Charts for Great Circle Sailing," *Scientific American Supplement* XX, no. 501 (1885): 7992.

adopted.”¹⁷ In the Hydrographic Office, Littlehales complained of “tedious operations” and “the want of concise methods for rendering these benefits readily available.”¹⁸ If the technology of steam engines liberated ocean transit from the wind, it left more fundamental mathematical problems of navigation unsolved.

But not for long. Navigation is the quintessential practical science, shaped as significantly by new techniques as by new theories or technologies. The decades between 1840 and 1900 witnessed a flurry of mathematical activity to aid the navigator in the calculation of great circle routes. In fact, German, French, British, and American navigators devised more than two dozen mathematical techniques to simplify steam navigation. The British Astronomer Royal, George Biddell Airy, for example, devised a method for superimposing an approximate great circle track upon an ordinary Mercator chart using a table he prepared and simple geometry. Gustave Herrle introduced another technique, employing unusually distorted maps that represented great circles as straight lines. With these developments, navigators increasingly traveled along great circle routes.¹⁹

For navigators willing to traverse it, the trans-Pacific great circle route made great business. It was the shortest and fastest route possible for passengers, mail, silk, and tea.

The Canadian Pacific Line, the backbone of Canada’s network of transcontinental

¹⁷ John Thomas Towson, *Tables to Facilitate the Practice of Great Circle Sailing, and the Determination of Azimuths*, 6th ed. (London: Hydrographic Office, Admiralty, 1861), 48.

¹⁸ Littlehales, *The Development of Great Circle Sailing*, 10. For a similar observation that cumbersome mathematical technique, not a lack of knowledge of principle, hindered the adoption of great circle navigation, see “Scientific News in Washington: Recent Developments in Great Circle Sailing,” *Science* 12, no. 291 (1888). Even with successive improvements in great circle calculation techniques in the latter half of the nineteenth century, dissatisfaction with their application persisted well into the twentieth. In 1919, a US Navy Commander repined [growled?] that of the two major approaches then available, one required “a rather long preliminary study of the method” and the other “require[d] the navigator to burden his memory with a rarely used formula,” both approaches still tending towards error. H. G. S. Wallace, “Great Circle Sailing -- a Few “Wrinkles” To Save Time,” *United States Naval Institute -- Proceedings* 45, no. 7 (1919).

¹⁹ Littlehales, *The Development of Great Circle Sailing*.

railroads and steamships and a cornerstone of the British world-wide communication network, began traveling this northern route for chartered mail delivery in 1891. Its *Empress of Japan* crossed the Pacific in record time that summer, carrying mail from Yokohama to London two weeks faster than by the competing route through the Suez canal.²⁰ Throughout the ensuing decade, the Canadian Pacific's Empress lines crossed the Pacific, *in either direction*, in barely ten days, maintaining a consistent three day advantage over the southern Pacific route through Hawaii.²¹

The U.S. conquest of the Philippines after 1898 brought a new urgency to great circle navigation for Americans and a newfound interest by the U.S. Navy in Alaska's Aleutian island arc. Between Cape Flattery, the northwestern point of Washington State, and Cape Bojeador, the maritime gateway to Manila, the great circle route passes just north of the Aleutian Archipelago. The route's vertex crosses the 180th meridian, which nearly divides the chain in half. The similar great circle route between San Francisco and Manila passes a mere 250 miles south of the Aleutians. "These facts show," observed Admiral of the Navy George Dewey in 1903, "what is not so easily learned from inspection of a Mercator's chart," that ships steaming to Asia "are diverted from the ideal shortest track" when they travel through Hawaii instead of the Aleutians. The route from Puget Sound to Manila by the great circle route measured fully eleven hundred miles less

²⁰ George Musk, *Canadian Pacific Afloat, 1883-1968: A Short History and Fleet List*, Rev. 1968 ed. ([Warrington,: Canadian Pacific, 1968), 4. The actual length of this voyage is not especially clear. Musk has the route between Yokohama and Vancouver in August, 1891 as lasting ten days, thirteen hours, and ten minutes; Frank Bowen clocks the trip at nine days, nineteen hours, and thirty-nine minutes. Compare George Musk, *Canadian Pacific : The Story of the Famous Shipping Line*, 2nd ed. (Newton Abbot [England]: David & Charles, 1989), 151, Frank Charles Bowen, *History of the Canadian Pacific Line* (London,: S. Low Marston & Co. [1928]), 111. In one work, Musk cites to total trip to London as lasting 26 days, elsewhere, he says 22; compare Musk, *Canadian Pacific Afloat, 1883-1968: A Short History and Fleet List*, Musk, *Canadian Pacific : The Story of the Famous Shipping Line*. Whatever the precise times, the point is that the great circle route between Canada and Asia was consistently faster than the competing route through Suez.

²¹ George Dewey for General Board to SecNav 11/25/1903, in File, "412, 1903-1911," Box 36, General Board [Hereafter "GB"] Subject File, RG 80, NAI.

than the equatorial route passing through Hawaii, Guam, and beyond. To Dewey, the strategic advantages of great circle sailing were inescapable: valuable time and fuel could be saved. What was more, were it possible to find a suitable harbor there, Dewey believed the Aleutian islands provided an ideal location for a major coaling station for ships crossing the Pacific and a new locus for American power in the region.²² Finding that harbor, however, proved unexpectedly challenging.

Aleutian Voyages

The Aleutian archipelago, the reticulated tail of Pacific North America, is a chain of more than three hundred islands stretching roughly 1,200 miles from the Alaska Peninsula in the east to the remote Attu Island in the west. The islands had long provided an important home to sealing and fishing industries.²³ Once the Philippines became an American colony in 1898, the commercial importance of the Aleutians was augmented by a new strategic significance by virtue of its proximity to the great circle route. Before the war, the Aleutians had never drawn any sustained attention from the Navy, but with new possessions in Asia to defend—and subdue—naval planners faced logistic questions on a scale unprecedented in the Pacific. As shown in chapter 3, officers studying at the Naval War College in Newport during this period practiced regular war games to simulate and prepare for a naval war to defend the Philippines against an imagined enemy power. A

²² Ibid.

²³ The Aleutians had been first extensively explored by Americans in the early 1870s, through a series of summer expeditions by the U.S. Coast Survey. Under William H. Dall, Coast Survey scientists measured currents and tides and recorded the meteorology of the chain. In 1873, they surveyed the islands of Attu, Kiska, the Davidoffs, Amchitka, Adakh, Atkha, Unalaska, and the Shumagin group. Kiska was then of particular importance; of all the harbors surveyed, it alone provided a harbor adequate to build a relay station for a proposed telegraphic cable from North America to Japan. Dall described the chain as having a “mild and uniform” climate, “not so cold as that of Philadelphia,” but buffeted by frequent fogs, rain, and “extreme fluctuations” in barometric pressure. William H. Dall, “Explorations in the Aleutian Islands and Their Vicinity,” *Journal of the American Geographical Society of New York* 5 (1874): 244.

large coaling station in the Aleutians might aid such a campaign, allowing battleships to refuel en route to Asia and arrive there ready for combat.

During August 1900, Admiral Dewey and the new naval policy and strategy consulting body over which he presided, the General Board, actively sought more information about the Aleutians. The matter had utmost importance: during the Board's very first meeting that summer, its members considered the selection of just two Pacific bases to defend their new colony, one in the Philippines itself and the other in the Aleutians along the great circle route.²⁴ Through October, the Board contacted anyone with knowledge of the archipelago's weather: naval officers, the Revenue Marine (renamed the U.S. Coast Guard in 1915), the Army's transport service, the Hydrographic Office and the Weather Bureau, and merchant captains familiar with the northern Pacific. From their offices in Washington and Newport, Dewey and the members of the Board considered this information and concluded that five harbors in the region merited further investigation. Four of them clustered around the 180th meridian, the vertex of the great circle route: the Bay of Waterfalls on Adakh Island, Kiska Harbor on Great Kiska Island, and Nazan Bay and the Bay of Islands on Atkha Island, all pristine, undeveloped harbors. The fifth, Unalaska's Dutch Harbor, served as a regional trading post, refueling station for commercial vessels, and port of anchor for fishing vessels. Unlike the other four sites, private companies based at Dutch Harbor maintained a small commercial coaling station there that served the local maritime economy. Dutch Harbor was, however, over 400 miles distant from the great circle route.²⁵ During the next survey season in the

²⁴ George Dewey for General Board to SecNav 11/25/1903.

²⁵ "Dutch Harbor (Unalaska), Alaska; Summary of Correspondence, 4/10/1915," in File, "412, 1912-1915," Box 37, General Board Subject File, RG 80, NAI, Senior Member Present (General Board) to SecNav

summer of 1901, the General Board ordered the USS *Concord*, a veteran of Dewey's assault on Manila Bay, to survey the Bay of Waterfalls and Kiska Harbor.²⁶

Little came of these surveys, though Dewey later recalled having "urged the matter upon the Department's attention." During the summer of 1902, the Navy sent the Revenue Cutter *McCulloch* to the Bay of Waterfalls (for a second survey) and Atkah Island's Nazan Bay. A year later, the entire Pacific Squadron steamed to the Aleutians to survey various islands.²⁷ "It is desirable" wrote Secretary of the Navy William Moody to the Commander-in-Chief of the Pacific Squadron, Rear-Admiral Henry Glass, "to find some harbor near the 180th meridian that can be utilized by naval vessels crossing the Pacific Ocean to take coal from colliers, or possibly for the establishment of a permanent coal depot protected by fortifications."²⁸ Moody instructed Glass to survey the Bay of Islands on Adakh Island and Kiska Harbor on Great Kiska Island; the two islands lay within about 150 miles of either side of the 180th meridian, where the great circle route swept closest to the Aleutians.²⁹

The Pacific Squadron's survey illustrated how life on the sea was inseparably bound to the natural world. Steam transportation had liberated vessels from the circulation of trade winds, but not from weather. Rear-Admiral Glass began his

8/30/1915, "Coaling Facilities in Alaskan Waters," in NAI RG 80; RG Subject File; Box 37; File, "412, 1912-1915".

²⁶ George Dewey for General Board to SecNav 11/25/1903.

²⁷ Ibid.

²⁸ William H. Moody to Comm-in-Chief Pacific Squadron 6/13/1903, in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

²⁹ Ibid. Although the great circle route from Puget Sound to Manila actually swung north of some Aleutian islands, ships following that path typically avoided steaming too far north to avoid passing through the dangerous straits between individual islands. According to one General Board Report of 1903, "[t]he violent and irregular currents, frequent fogs, hidden rocks and imperfectly charted shores, have justly caused these passes to be regarded as difficult of navigation, and have deterred the trans-Pacific steamers from following the true great circle track to the northward of the islands." "Dutch Harbor (Unalaska), Alaska; Summary of Correspondence, 4/10/1915."; See also William H. Moody to Comm-in-Chief Pacific Squadron 6/13/1903.

preparations in May. Urging his superiors that the voyage begin no later than July, he advised against remaining in northern latitudes after the middle of August, after which “the liability of encountering heavy gales increases.”³⁰ Glass also had to plan for coaling, highlighting the very logistical limitations that prompted his survey in the first place. His smaller ships could not steam the more-than-4,500-mile round trip from their proposed departure port of Bremerton, on Puget Sound, to Adakh Island and back without refueling, and squadrons could only travel as far as the bunkers of their smallest vessels permitted. Glass proposed either sending a collier with the fleet or coaling from private shipping lines with stations at Unalaska’s port of Dutch Harbor. Secretary of the Navy William Moody vetoed sending a collier as “impracticable.”³¹ As for Dutch Harbor, both the Alaska Commercial Company and the North American Commercial Company maintained coal depots there, the latter supplied with Comax coal from British Columbia. Yet their supply was both limited and expensive, and Glass acknowledged that an expected shipment of additional coal in August was contingent “upon the settlement of labor troubles at the Comax mines,” a further complication.³²

Glass and the Pacific Squadron reached the Bay of Islands on June 22, 1903 and their survey there proved disappointing. With waters exposed to harsh weather and an anchorage too narrow for more than two ships, “[I] am convinced” he reported to Washington, “that it is entirely impracticable to establish a coaling station at this place.”³³

Kiska Harbor was a different story. Glass led the *New York*, the *Marblehead*, and the *Fortune* to Kiska on June 23, where “[I]t was immediately apparent that this harbor

³⁰ Henry Glass to H.C. Taylor 5/28/1903, in NAI RG 80; RG Subject File; Box 36; File, "412, 1903-1911".

³¹ William H. Moody to Comm-in-Chief Pacific Squadron 6/13/1903.

³² Henry Glass to H.C. Taylor 5/28/1903.

³³ Henry Glass to SecNav 8/13/1903, in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

offered advantages unusual in Alaskan waters.” Geographically, it was ideally situated near the great circle route, a full 600 miles west of the nearest existing coaling station at Dutch Harbor, but less than 2,000 miles east of Yokohama and a mere 1,600 miles east of the Japanese port of Hakodate. As the ships surveyed the entrance to the harbor, the crew found it accessible from both north and south and all navigational hazards were clearly identifiable. “There is abundant room for a large coaling station,” noted Glass in his report. The water was deep enough to anchor any size ship. The shore provided ample land for buildings. And the harbor boasted an “abundant” fresh water supply, needed aboard ship to generate steam. If its resources were rich, however, its labor supply was not. Kiska, like so many Aleutian Islands, was uninhabited. Glass suggested that indigenous Aleuts could be induced to move there, suggesting that a naval station on the island might be incentive enough to attract native and help build a self-sustaining settlement.³⁴

Glass’s report proved contentious within the Navy Department. Specifically, the Bureau of Equipment, whose portfolio included both the Navy’s major coal purchases and the logistics of fueling the fleet, objected to the suggestion that Kiska alone should become the major coaling station in the Aleutians. Royal B. Bradford, Chief of the Bureau, observed that if the Navy built only one coal depot in the Aleutians, it should do so at Dutch Harbor; if it would build two, he insisted that Dutch Harbor should come first.³⁵ Bradford believed that too great an emphasis on strictly *naval* logistics might lose sight of the larger commercial and maritime enterprise the Navy ought to support and protect. Unlike Dutch Harbor, Bradford noted that Kiska lay far from popular trade

³⁴ Ibid.

³⁵ R.B. Bradford endorsing Henry Glass's Aleutian Report (of 8/13/1903) 9/26/1903, in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

routes, and he considered its lack of population a serious liability. He maintained that “in establishing fortified coaling stations the needs of the merchant marine should be considered.”³⁶ Bradford’s support of Dutch Harbor over Kiska cut to the heart of a fundamental tension within the Navy at the turn of the twentieth century: was the Navy an autonomous institution supporting national defense or a component of a larger national strategy for both defense and economic growth?

The General Board did not, however, ignore the needs of commerce. Its members countered that a coaling station at Kiska would in fact encourage steamers to chose the shorter, northern course and thus contribute to the development of the resources of the Aleutians themselves.³⁷ With this image of a prosperous, commercial, and above all *American* northern Pacific in mind, the Navy ordered yet another detailed study of Kiska’s harbor. This study would far exceed the previous three seasons of exploration. “An ordinary hydrographic or topographic survey is not sufficient,” explained George Converse, Bradford’s successor as Chief of the Bureau of Equipment. Instead, he imagined a detailed engineering analysis, with a degree of geographical scrutiny that required engineering expertise and equipment not available aboard ordinary naval vessels.³⁸ During the summer of 1904, the Coast and Geodetic Survey, joined by officers of the Navy’s Bureau of Engineering, dispatched two vessels to chart the group.³⁹

The Coast Survey found a chilly humidity clinging to Kiska. Between June and September, temperatures hovered around 45° Fahrenheit and “numerous mists and light

³⁶ Ibid.

³⁷ George Dewey to General Board to SecNav 11/25/1903.

³⁸ G.A. Converse to General Board 1/28/1904, in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

³⁹ F.H. Sherman to Chief Bureau of Navigation 10/2/1904, "Weather in Kiska," in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

drizzling rains” kept the island air damp. Fog occasionally blew in from the south, carried along by the Japan stream. Although winds were erratic in strength and direction, Kiska at least remained free of williwaws, the fierce storms that plagued Dutch Harbor. The surveying was complicated by the discovery that “[t]he islands are nearly all wrongly charted.”⁴⁰

Meanwhile, the Bureau of Equipment explored the harbor.⁴¹ There too, the team met difficulties. The exasperated crew “nowhere found a solid foundation,” and even deep in the water “only... an excellent variety of peat.”⁴² These conditions complicated the creation of a functioning harbor, and increased the expense—even without spongy terrain, Navy engineers estimated the cost of a major coaling station at Kiska as high as \$1.6 million over several years of construction. The boggy terrain only threatened to increase this figure.⁴³ Geography, it appeared, was more complicated than merely position.

While Navy vessels explored Aleutian harbors, the federal government initiated the legal machinery necessary for naval coaling station construction. President Roosevelt began this process in June 1902. Since the General Board had at first been enthusiastic about a station at Dutch Harbor, Roosevelt issued an executive order reserving a parcel of land for coaling there. Pending reports from surveys of other Aleutian islands, later that month Roosevelt reserved 900 acres at Kiska and 580 acres along the Bay of Waterfalls

⁴⁰ Ibid.

⁴¹ SecNav to Commanding Officer U.S.S. PETREL [F.H. Sherman] 3/29/1904, in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911", also see G.A. Converse second endorsement of letter from George B. Cortelyou (of 2/3/1904) 3/9/1904, in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

⁴² "Memorandum on the State of Progress of the Preliminary Work of Survey for Coaling Station at Kiska 6/18/1904," in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

⁴³ G.A. Converse to General Board 1/28/1904. The Bureau of Equipment had at this time as little as \$140,000 available in its appropriation for “Depots for Coal,” thus requiring the Navy to ask Congress for additional funds.

on Adakh Island.⁴⁴ As the surveys of these harbors arrived in Washington, Dewey and the General Board eventually reversed their recommendations for constructing a depot at Dutch Harbor. By the end of 1903, they concluded that “the ordinary commercial facilities” at Dutch Harbor were adequate for Navy needs, which were modest since the harbor lay far from the great circle route. They instead called for a massive installation at Kiska, garrisoned by the War Department and maintaining 100,000 tons of coal.⁴⁵ President Roosevelt concurred, expanding his earlier reservation on Kiska to include the entire Kiska island group—Kiska, Little Kiska, nearby islets—all to support future naval construction and to hedge against “squatters and speculators” looking to profit from proximity to a new base.⁴⁶

While considering islands along the great circle route for a coaling station, one question the Navy did not explicitly address was where the tens or even hundreds of thousands of tons of coal that would fill it might come from. They did not have to: at the turn of the twentieth century, no coal known in the Pacific region matched “Navy Standard” coals of Appalachia in energy content, smokeless combustion, and ease of handling. The Navy anticipated supplying the proposed Aleutian station the same way it supplied coal to its other west coast and Pacific stations, by shipping eastern coal around Cape Horn. In early 1905, however, a new possibility emerged. Writing to the Secretary of the Navy, the Chief Engineer of the struggling Alaska Central Railway inquired

⁴⁴ "Dutch Harbor (Unalaska), Alaska; Summary of Correspondence, 4/10/1915.", Theodore Roosevelt, "Executive Order of June 13, 1902," in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

⁴⁵ Report of George W. Brown to William C. Edes 10/11/1915, in NAI RG 80; GB Subject File; Box 37; File, "412, 1916".

⁴⁶ Squatters had already caused headaches near naval stations in the Caribbean at Culebra and Guantanamo. George Dewey for General Board to SecNav 11/25/1903, Theodore Roosevelt, "Executive Order of December 9, 1903," in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911", Secretary of the General Board to President Roosevelt 12/8/1903, in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

whether the department was interested in a coaling station around Resurrection Bay, on mainland Alaska's Kenai Peninsula. Such a station was in the financial interest of the ailing railway (it would go bankrupt in 1908), but the General Board maintained that Resurrection Bay was too far removed from the strategic interests of the Navy. It was too remote, too undeveloped, too impractical for serious consideration. But the railway drew its coal from the Matanuska Valley, near the camp that would become known as Anchorage, and whose rich deposits of bituminous, semi-bituminous, and anthracite coal were of the highest quality anywhere then known in the Pacific region. If the Navy declined a coaling station in Resurrection Bay, it affirmed its interest in Matanuska coal to supply the proposed station at Kiska.⁴⁷

As late as 1910, however, the Kiska coaling station remained more an idea than a concrete policy. The General Board affirmed the importance of fortified bases en route to Asia and declared that "[t]he war combinations in Eastern seas held the attention of the world that summer of 1900 no less than now." But developing the base was hampered by the geographical and environmental challenges of Aleutian navigation and construction, the General Board's wariness over defending these islands in an emergency, their perception that conflict in the central Pacific was more likely than in the north, and the Navy's already strained budgets. These factors led the Board to advocate focusing on fortifying bases at Pearl Harbor, Guam, and Manila.⁴⁸ Ultimately, the surveys around the Aleutians did little to create a major base along the great circle route to Asia. But the

⁴⁷ George Dewey to SecNav 3/29/1905, in NAI RG 80; General Board Subject File Box 36; File, "412 1903-1911". See also George Dewey 3/25/1908, "2nd Endorsement to Letter by Arthur R. Boyle, Seward, Alaska; in Re. Establishment of Naval Station at Resurrection Bay (Feb. 17, 1908)," in NAI RG 80; General Board Subject File Box 36; File, "412 1903-1911".

⁴⁸ It should be noted that these stations actually remained unfortified as well. "Dutch Harbor (Unalaska), Alaska; Summary of Correspondence, 4/10/1915."

Navy's persistent interest in the region for over a decade brought it a much greater involvement in and knowledge of Alaskan affairs. At no time before 1898 had the U.S. Navy been concerned with the Territory of Alaska from a strategic, defensive, or resource perspective. That was changing. With a greater presence in Pacific waters, with increased American commerce with Asia, with a greater integration of Alaska into the trade and defense of the Pacific, and with developing Alaskan coal fields, the Navy had begun an involvement with Alaska that would grow over the following decade.

Geology Between Mine and Ocean

At Sea

The armored cruiser *Maryland* arrived at Controller Bay on July 31, 1913. Its mission: to collect and test a sample of coal from Alaska's Bering River field, miles distant from known and traveled seaways. The captain, John M. Ellicott, had anticipated this voyage for more than a decade. His interest in Alaskan waters was sparked when he studied "ocean highways" during a stint at the Naval War College in Newport, when he "happened one day to stretch an elastic across a globe from Puget Sound to China and Japan" and recognized the proximity of the Alaskan coast to the great circle route in the north Pacific. Unaware of the Navy's interest in this topic, he mused about exploring the harbors of Alaska for a way station en route to Asia. He later requested, and received, a commission as Inspector of the Thirteenth Lighthouse District, which held jurisdiction over the expanse of American coastline between California and the Arctic Ocean.⁴⁹ With

⁴⁹ Ellicott was a student at the NWC in 1896 and served on its staff in 1900 and 1901. See the Register of Officers Book for 1884-1968 at the Naval War College Naval Historical Collection. Within the Navy, interest in the waters of Alaska was not widespread—Ellicott reported that the detail officer was happy to assign him this command, explaining that "Nobody ever asked for *that* district before," and adding that Ellicott would "find it the most harassing, hazardous, thankless job you ever undertook." Ellicott later

this command, Ellicott developed a sailor's familiarity with Alaskan waters. When naval planners sought an officer to scout Alaskan harbors and test samples of coal, they selected Ellicott as the obvious choice.

Ellicott's instructions to explore Alaska and examine Alaskan coal involved a number of geological and geographical questions. Most fundamentally, was there coal in Alaska that matched Appalachian coals in energy content and "smokeless" properties? If so, how much? Were the coal veins thick and level or folded, faulted, or crushed? Did the climate permit mining in winter? Was the field accessible—by railroad, if a line could be built—to harbors from where the coal could be shipped to other ports? How the Navy answered these questions reflected how it weighed different kinds of scientific evidence; testing coal in steaming trials aboard naval vessels, for instance, was valued above geological surveys or chemical analysis. While the Navy did employ field geology and laboratory chemistry to develop a picture of Bering River coal and the terrain from which it was mined, above all, they relied upon practical engineering and shipboard steaming tests. Consequently, geological knowledge was produced not only in the field, but in the laboratory and in the boilers of battleships. This focus on shipboard testing minimized the importance of the particular history of the coal they tested, discounting how it was mined, the techniques of extraction, and the climatic conditions that affected it. By ignoring these other facts, the Navy met with great difficulty in determining anything for certain about the quality of Bering River coal.

* * *

affirmed this prediction. John M. Ellicott, "Harbor Hunting in Alaska," *United States Naval Institute -- Proceedings* 63, no. 413 (1937): 939.

Geologists believed that two coal fields in Alaska contained great quantities of soft, semi-bituminous steaming coal: The Bering River field, some twenty miles northeast of Controller Bay where the *Maryland* anchored, and the Matanuska field, two hundred miles to the northwest beyond the Chugach Mountains. Alaska's boosters claimed that in coal rested the development of Alaska, and competing speculators in land, railroads, town sites, and port facilities favored one field or the other, depending on which might lead to geographically favorable industrial development and hence substantial profits.

Estimates of the value of the Bering River field varied, and conservative appraisals were decidedly unusual. Opinions, in fact, ranged widely: one billion dollars worth of coal? Two? Six? Mining engineers familiar with the region quoted the figure of 500,000,000 tons worth of coal, a number frequently cited by the national press. This estimate took into account only the coal lying above the water level. USGS estimates considered all coal to a depth of 3,000 feet, and were much higher.⁵⁰ One USGS report held that both Bering River and Matanuska semi-bituminous coals were "better than anything that is being mined in the West" and compared them to the Navy Standard coals from the Pocahontas, New River, and Georges Creek fields. This report also noted that the Alaskan coals were "eminently adapted for use on warships" by virtue of their "smokeless" properties. These coals were expected to drive competition, whether from the eastern coals, or coking coals produced in Washington or Vancouver, straight from the Pacific market.⁵¹

⁵⁰ Alfred H. Brooks, "Alaska Coal and Its Utilization," in *Mineral Resources of Alaska: Report on Progress of Investigations in 1909*, ed. Alfred H. Brooks (Washington: GPO, 1910). See also SecNav to General Board 4/7/1910, in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

⁵¹ "Extract from 'Geology and Mineral Resources of the Controller Bay Region, Alaska,' U.S. Geological Survey, 1908," in NAI RG 80; GB Subject File; Box 36; File, "412, 1903-1911".

More sober accounts of the Bering River field acknowledged that its geology was complex, its seams folded and faulted in unpredictable ways, and much of its coal crushed into a fine, sooty powder that made it difficult to mine, transport, and consume.⁵² These circumstances made mining laborious and expensive. Alaskan coal nevertheless impressed even usually dispassionate observers. According to Alfred Brooks, the U.S. Geological Survey's leading expert in Alaskan geology (and a scientist quick to point out the exaggerations of others), the development of Alaskan coal was destiny, the instrument of modernity that would support commerce and industry along the Pacific rim, furthering the march of civilization ever westward. There were obstacles to overcome first—transportation, markets, competition with Californian oil—but it was inevitable, he argued, that Americans would exploit the fuel. “What is the future of Alaskan coal?” he rhetorically asked members of the American Mining Congress in 1911. “The answer is simple enough—it will be burned.”⁵³

The Bering River field rose to national prominence in 1909 as the focal point of a national political spectacle. In that year, Gifford Pinchot, the Chief Forester of the U.S., and his allies launched a public broadside against Interior Secretary Richard Ballinger for allegedly mishandling coal leases in the field first sought by Clarence Cunningham in 1902 and pursued by the Guggenheim-Morgan Alaska Syndicate. Pinchot and Ballinger had long been at odds over conservation policy, and Pinchot capitalized on accusations against Ballinger by a Land Office employee that the Secretary had illegally influenced the passage of public coal lands in the Bering River field into private (understood as

⁵² See, for example, George F. Kay, "The Bering River Coal Field, Alaska," *Popular Science Monthly* 79 (1911).

⁵³ Alfred H. Brooks, "The Future of Alaska Coal," *Report of the Proceedings of the American Mining Congress* (1911), Alfred H. Brooks, "Geography in the Development of the Alaska Coal Deposits," *Annals of the Association of American Geographers* 1 (1911): 291.

monopolistic) hands.⁵⁴ As investors and politicians wrestled for a share of the Bering River field's seemingly fabulous profits, an incendiary article in *McClure's* magazine hyperbolically called the coal there "the greatest single prize ever played for in this country."⁵⁵

In the wake of the Ballinger-Pinchot debacle, Alaskan coal fields remained effectively closed and this prize appeared forfeited, but not for long. In July 1913, Washington Senator Miles Poindexter submitted a bill in Congress to open Alaskan coal fields and construct a regional transportation network. Poindexter based his bill on a proposal by James MacKaye, brother of Benton, that proposed dividing Alaskan coal fields into two halves, one half for private companies, the other half for a government mining agency. The plan gained significant press coverage during the summer of 1913 for its proposal to distribute the anticipated ten percent profit from the government's fields equally between miners (including managers) and consumers.⁵⁶ *The Seattle Star*, expecting an economic windfall for its city pending the passage of the bill, threw the weight of the Scripps newspaper chain behind the plan, asking its readers in an front page editorial: "ARE YOU WITH US ON THIS GREAT PROJECT? IT'S TO HELP SEATTLE."⁵⁷ Other Scripps papers printed supporting articles.⁵⁸ Supporters of the plan

⁵⁴ James L. Penick, *Progressive Politics and Conservation: The Ballinger-Pinchot Affair* (Chicago: University of Chicago Press, 1968).

⁵⁵ John E. Lathrop and George Kibbe Turner, "Billions of Treasure: Shall the Mineral Wealth of Alaska Enrich the Guggenheim Trust or the United States Treasury?," *McClure's* 34 (1910): 341. See also, "Alaska's Contribution to Our Coal Supply," *Review of Reviews* 41 (1910).

⁵⁶ A Bill to Authorize the President of the United States to Provide Transportation and Coal-Mine Development in the Territory of Alaska, and for Other Purposes., 1st, S.2714.

⁵⁷ "Are You with Us on This Great Project?," *The Seattle Star*, August 5 1913.

⁵⁸ See, for instance, Gilson Gardner, "Senator's Plan Would Compel Production and Sale of Coal at the Very Lowest Price Possible," *Minneapolis Daily News*, July 28 1913, Gilson Gardner, "People, Not Trusts, to Exploit Alaska," *Cleveland Press*, July 26 1913, Gilson Gardner, "Coal Miner, Consumer and Uncle Sam to Be Partners Who'll Share Equally in the Development of Alaska," *Columbus Citizen*, July 26 1913. The *Cleveland Press* announced the Poindexter plan with the unreassuring headline, "PEOPLE, NOT TRUSTS, TO EXPLOIT ALASKA."

pointed to the high costs of naval steaming coal along the west coast—nearly all of it from West Virginia—as ample evidence that competition from Alaskan coal would lower fuel costs. The Navy paid \$7 per ton for its coal in Pacific ports, alleged Alaskan boosters, some \$5 of which went for transportation from Appalachia and around Cape Horn. Alfred Brooks, head of the U.S. Geological Survey in Alaska, observed that these costs might be halved with an Alaskan coal supply.⁵⁹ The *Chicago Daily Press*, anticipating the Poindexter plan’s effects on commerce and “geographical movement,” opined that opening Alaska “may prove to be but little less great than the building of the Panama canal.”⁶⁰

Thus, when the *Maryland* anchored in Controller Bay in late July, 1913, it was with much anticipation. A successful test might lead to large-scale mining in the region and simultaneously guarantee the Navy as a consumer of enormous quantities of the coal. The tests, however, did not produce a satisfactory result as the supposed qualities of Bering River coal did not appear. In fact, the results were so unexpectedly dismal and diverged so widely from expectations that rumors circulated among Alaskan miners that the Navy had received an intentionally inferior coal sample, the result of a deliberate intervention by former Interior Secretary Walter Fisher. Miners suspected Fisher preferred the “Matanuski” coal field to help develop the government railroad from Fairbanks to the coast.⁶¹ Sabotage was unnecessary to explain the test results, however.

⁵⁹ Gilson Gardner, "The Coal Will Fly When Uncle Sam Opens Alaska," *Minneapolis Daily News*, August 4 1913.

⁶⁰ "Good Definition," *Chicago Daily Press*, August [?] 1913.

⁶¹ Anonymous Miner to Navy Department 8/8/1913, in NAI RG 80; Box 1019; File, "25320 (13) to (105)". The obviously Russian inflection on “Matanuska” is evocative of the forces the proponents of these rumors might have believed behind such a conspiracy. Matanuska, in fact, does derive from the Russian “Mednovtsy,” or “Copper people,” the name Russian traders’ bestowed upon the Athabaskan natives of a region thought to contain many copper deposits. Andrei A. Znamenski, *Through Orthodox Eyes: Russian*

The test results reflected only a kind of narrow evidence that ignored the history of the coal, the story of which underscores the complex relationships between land, technology, experiments, and geography.

Aboard Ship

It took five days to ferry the coal from Chilkat to the *Maryland*. It might have taken less, had low tides not prevented the expedition's four lighters, and the launches that tugged them, from easily reaching the shore. The coal arrived in sacks. Once aboard, the *Maryland*'s crew selected every tenth sack for physical examination, emptying its contents onto the deck of the ship. They measured densities and shook the samples over mesh screens of decreasing apertures to separate different grades, each of which they individually weighed. They extracted the visible shales, slates, and earthen residues.⁶²

Without elaborate examination, they found that the coal was wet. "By picking up a handful it was possible to squeeze water out of it" reported the testing board.⁶³ They soon learned that these coals contained an average of more than five percent moisture. Naval standards limited moisture to three percent, and previous experiments on coal from the Bering River area suggested they contained less than a single percent. High moisture content indicated poor steaming coal. A typical battleship carried about 2,000 tons of coal. With five percent moisture as observed in the Bering River sample, such a ship would take on one hundred tons of water. Water was not coal, and one hundred tons of water meant losing a full day of steaming, or nearly three hundred miles.⁶⁴ To dry some

Missionary Narratives of Travels to the Dena'ina and Ahtna, 1850s-1930s, Rasmuson Library Translation Series ; 13 (Fairbanks: University of Alaska Press, 2003).

⁶² Coal Board to Commanding Officer U.S.S. *Maryland* 9/10/1913, in NAI RG 80; Box 1019; File, "25320 (13) to (105)".

⁶³ *Ibid.*

⁶⁴ *Report on Coal in Alaska for Use in United States Navy: A Letter from the Secretary of the Navy Transmitting Report of Survey and Investigation by Experimental Tests of Coal in Alaska for Use on Board*

of the coal for a rough chemical analysis, the *Maryland's* crew roasted a sample on a canvas tarp hoisted above a boiler.⁶⁵ Although the Navy employed chemistry to measure the carbon, ash, sulfur, and moisture contents of coal samples, it did not trust these laboratory analyses to predict the coal's actual performance aboard ship; instead, they consumed it in a series of steaming trials.⁶⁶

The majority of the coal hauled aboard remained as soggy as it had been in sacks ashore. This coal was shoveled into the *Maryland's* number 7 and number 8 boilers as the ship began its seven day port test, the first of four steaming tests designed to evaluate the sample's performance in a practical setting.⁶⁷ Almost immediately, the coal smoldered, burning slowly and forming clinkers, the fused slag that adhered to engine grate bars.⁶⁸ Bloated with moisture, the coal "lay like a blanket" in the engines. Within twenty-four hours, the test was scrapped. Returning to Navy Standard fuel, the *Maryland* steamed to San Francisco. At the city's Mare Island naval station, the five hundred tons of Bering River coal were unloaded onto four 300 ton lighters lashed to either side of the *Maryland*. The coal was spread out to dry on the lighters' decks. Crews later screened and hand picked the entire sample before again attempting the seven day port test on August 14th.⁶⁹

Ships United States Navy [Sic], and Upon Coal and Coal Fields Available for Said Purpose, 63rd Congress, 2nd Session, House Doc. No. 876 (Washington: GPO, 1914).

⁶⁵ Coal Board to Commanding Officer U.S.S. *Maryland* 9/10/1913.

⁶⁶ "It should be borne in mind, however," observed Robert Griffin, Chief of the Navy's Bureau of Steam Engineering, that "a chemical analysis by itself proves nothing. The only true test of a coal insofar as the Navy is concerned is a practical one aboard ship." Griffin continued by noting that certain physical behaviors, like the unwanted fusing of impurities within coal, called clinkers, could not be predicted by chemical tests. Robert Griffin to Senator Wesley Jones, 8/11/1919

⁶⁷ Coal Board to Commanding Officer U.S.S. *Maryland* 9/10/1913.

⁶⁸ Clinkers resulted when bits of extraneous rock invariably mixed with the coal melted to the ship's engines. Like moisture, a little clinker was common, but a lot of clinker was a bad sign. It adhered to the engine and could suffocate a fire. It also required constant removal.

⁶⁹ Coal Board to Commanding Officer U.S.S. *Maryland* 9/10/1913.

After this week of testing in port, the *Maryland* next simulated an engine room in an emergency, cruising at full power: what the Navy called a four hour full boiler forced draught speed trial. Ash formed quickly, as did more clinkers. Stokers shoveled coal into the furnace, following the rhythm of the boilers and “working until they very nearly collapsed.” A bell signaled the firing of the furnace. The stokers had exactly five minutes to shovel two or three heaps of coal into one fire, stoke a second fire with a hoe, and slice a third. Throughout the exercise they scrubbed the grates clean of the persistent clinker. *Shovel, scrub, stoke, scrub, slice, scrub, FIRE, shovel, scrub, stoke, scrub, slice, scrub, FIRE*—“a severe routine” according to the official report. Underscoring the danger of engine-room labor, the report also noted, approvingly, that “[t]here were no casualties.”⁷⁰

Like the preliminary tests, these experiments did not reveal exceptional coal. In the speed trial test, although the crew tried to reach 20 knots, they managed only a maximum of a little more than 19. Halfway into the third test—a twenty-four hour, fifteen-knot run at sea—the ship exhausted its coal supply, forcing the crew to abandon a final forty-eight hour, ten knot trial. Judging from its performance in the port test, this Bering River coal was, at best, 82 percent as efficient as West Virginian Pocahontas coal; at worst, in other tests, it measured just over 48 percent as efficient.⁷¹ Translating these results into the logistics of the Pacific, Bering River coal could not compete with Navy Standard Pocahontas coal from West Virginia. Outfitted with Pocahontas, the *Maryland* would have no trouble steaming the great circle route between San Francisco and

⁷⁰ Ibid.

⁷¹ Ibid.

Yokohama with coal left over in its bunkers. With Bering River Coal, the ship's cruising radius was cut in half, permitting only the shorter voyage to Honolulu.⁷²

Why the enthusiastic reports of extraordinary coal in the Bering River Field did not match the experimental results aboard the USS *Maryland* puzzled the Navy. Was it the result of a poor sample? Overly enthusiastic boosters? Or was the problem in the geology of the field itself? Problems with the field became the dominant explanation over the ensuing decade, and the Navy abandoned its interest in the Bering River field.⁷³

In conducting practical steaming tests, the Navy assumed that the coal under examination directly reflected the subterranean environment that produced it. This notion—that knowledge of coal developed aboard a ship revealed knowledge about coal in the originating field—explains why the Navy terminated its interest in the Bering River field so quickly after 1913. The Navy learned that Bering River coal, for example, was wet, had a relatively low carbon content, and clinkered badly, and it interpreted these results to hold for the Bering River coal field as a whole. But was this the whole story? The story of this coal's extraction suggests otherwise, as Bering River coal bore the traces not only of the field land from which it came, but also of the labor that mined it and the terrain and weather through which it traveled. This story began a year earlier.

To Know the Land

⁷² *Report on Coal in Alaska for Use in United States Navy: A Letter from the Secretary of the Navy Transmitting Report of Survey and Investigation by Experimental Tests of Coal in Alaska for Use on Board Ships United States Navy [Sic], and Upon Coal and Coal Fields Available for Said Purpose.*

⁷³ This decision had a lasting impact on investment in the Bering River field. In 1919, six years following the tests, Falcon Joslin, the sole remaining commercial coal operator there, was struggling to keep his Bering River Coal Company afloat as he searched for markets for his fuel. The once limitless opportunities ascribed to Bering River coal now appeared very remote. As the Navy focused on Matanuska coal, so too did other regional coal consumers. Joslin attributed his company's troubles to competition from the government mine in the Matanuska field and lamented that "it begins to appear very doubtful whether our mine can be made commercially successful without ... a chance to supply the Navy with at least some of the coal it requires in the Pacific." Falcon Joslin to Senator Wesley L. Jones 6/17/1919, in NAI RG 80; Box 1020; File, "25320 (171:12)".

To mine and transport Bering River coal for steam tests aboard the *Maryland*, the Navy had appointed a Coal Investigating Expedition, which left Seattle aboard the steamship *Mariposa* September 1, 1912.⁷⁴ Its supervisor, Passed Assistant Surgeon John Otho Downey, had mustered a company of fifty: miners and foremen, blacksmiths and carpenters, packers, cooks, and others. In Alaska, they would collect “axemen, rivermen, teamsters, guides and other pioneer laborers” and for winter work, “Indians, dogs and sledges.”⁷⁵ Their arrival off Katalla was inauspicious: disembarking the *Mariposa*, sixteen men lost their personal effects in rough water in Icy Bay.⁷⁶

Once ashore, the mining party pitched their main camp twenty miles north of Controller Bay at the confluence of the Bering River and Stillwater Creek. Six miles of lakes, rivers, and creeks fed by nearby melting glaciers cut through Cunningham Ridge and the Carbon Mountains, separating this camp from the mining site at Trout Creek. In the field, the expedition found neither wilderness nor industry but the traces of miners before them, remnants of the Cunningham investment that only three years earlier had exploded into national political scandal. An abandoned cabin awaited them at Trout Creek. It became the cook and bunk house. Downey’s crew surrounded it by tents. Nearly two miles of navigable stream on the Stillwater and four miles of a preexisting trail, “improved to the extent of being practically rebuilt” connected the base camp at

⁷⁴ "Proposed Amendment to Naval Appropriation Bill Providing for Reimbursement for Loss of Personal Effects of Men Sent by the Navy Department to Alaska in 1912 with the Alaskan Coal Investigating Expedition; Attached to Josephus Daniels to Benjamin R. Tillman 6/29/1916," in NAI RG 80; Box 1019; File, "25320 (13) to (105)" (1916).

⁷⁵ John Otho Downey, "United States Navy Coal Investigating Expedition in the Bering River Field of Alaska," *Proceedings of the United States Naval Institute* (1913).

⁷⁶ "Proposed Amendment to Naval Appropriation Bill Providing for Reimbursement for Loss of Personal Effects of Men Sent by the Navy Department to Alaska in 1912 with the Alaskan Coal Investigating Expedition; Attached to Josephus Daniels to Benjamin R. Tillman 6/29/1916.", Josephus Daniels to Benjamin R. Tillman 6/29/1916, in NAI RG 80; Box 1019; File, "25320 (13) to (105)". It took Congress some four to reimburse the men the \$1,318.43 they lost.

Stillwater and the mining site at Trout Creek.⁷⁷ Where creek and trail met, the crew found another abandoned and dilapidated cabin built to cache equipment closer to the mine site. Despite the presence of this preexisting infrastructure, the construction of a new camp site at Trout Creek lasted into mid-October.⁷⁸

For the next month and a half, the expedition mined coal, and serious problems arose as soon as they began. “It was common talk among [the miners] that the coal had been mined and handled in the most careless manner,” observed one local laborer in a stinging critique of the mining operations, “surface debris being mixed with the coal and shale, and rock being sacked for coal.” In one tunnel, workers were ordered to sack caved in rock and dirt. In another cave in, workers filled as many as 75 sacks with debris. Ordinary sacks weighed 200 pounds and could be routinely loaded by individual laborers, but these sacks were so laden with rock that they required three men to hoist them upon sleds. On account of the pervasive dirt, rock, and shale mixed in, local laborers even predicted that steaming tests would result in a large quantity of clinker, as was later confirmed. Reportedly, the miners maintained “that there was plenty of good coal in the Cunningham tunnel and that there was no need for sacking rock or dirt,” but the effort required for mining clean coal was not undertaken. In the end, the reporting miner concluded that “of the estimated total of 751 tons, about 75 tons is clean coal,” a consequence, he claimed, of “willful carelessness.”⁷⁹

Whatever amount of coal actually comprised the sacked samples, when mining was completed, the mining crew returned to Seattle and the expedition prepared to haul

⁷⁷ Downey, "United States Navy Coal Investigating Expedition in the Bering River Field of Alaska," 1659-60.

⁷⁸ *Ibid.*: 1660.

⁷⁹ Anonymous Miner to Navy Department 8/8/1913.

all 750 tons from the mine to tidewater.⁸⁰ This engineering obstacle challenged the Coal Investigating Expedition. Downey had originally expected to take advantage of winter terrain and sled the coal from the mine to the opening of the Bering River at Controller Bay. “A few weeks in the field” he confessed, “and a study of the meteorological records for the past few years clearly indicated the impracticability of this idea.” Winters in southern Alaska were milder than the expedition had anticipated. Rivers froze only to thaw unexpectedly. Downey abandoned the sledding plan as well as an alternate route, “over the great marshes and flats to the southwest of Bering River” which presented too great a hardship and expense.⁸¹

The crew instead settled on a piecemeal approach, sledding the sample—750 tons worth—the four miles between the mine at Trout Creek to Stillwater Creek before freighting it the remaining twenty miles on boats through a network of creeks, lakes, and rivers.⁸² The trail from Trout Creek they had rebuilt in autumn was too uneven for this project, and Downey set about to rebuild it yet again. The crew relocated about a third of it to ensure “better grades and curves.” They widened some portions, others they built anew. They constructed seven bridges. Dynamite cleared the way for seventy yards along a steep cliff.⁸³ Once built, seven horses dragged sleds, each carrying a ton of Trout Creek coal. Ten men accompanied the caravan to Stillwater. When necessary, communication was effected by native pack trains and dog sleds.⁸⁴ A good day moved

⁸⁰ Downey, "United States Navy Coal Investigating Expedition in the Bering River Field of Alaska," 1660.

⁸¹ Ibid.: 1661-2.

⁸² By the end of the project, the Expedition had sought all “[l]ight draft river boats with power to operate over the Delta Division... and all power boats in that section of Alaska were sent for the trial.” The final riverboat armada consisted of thirty-three separate vessels ranging from an 80-ton lighter to two fifty-foot stern-wheel river boats to a dugout canoe refitted with a power engine that “proved to be invaluable.” Ibid.: 1669-71.

⁸³ Ibid.: 1661-2.

⁸⁴ Ibid.: 1660.

two round trips, a cargo of about 15 tons. The transportation took more than three months and was not finished until mid-April. The project would have been impossible without assistance from local communities. “Practically all the Indians in the region had been under the employ of the expedition” recalled Downey.⁸⁵ They managed communication and transportation during the winter coal sledding and served as bear hunters and guides to the territory.⁸⁶

The spring and summer was devoted to moving the coal from Stillwater to Chilkat. Local opinion “differed widely” on when the Bering River would again be free of ice and navigable. Downey settled on May 10 as the earliest date, and anticipated the use of boats drawing 15 inches by June 1. Eight enlisted naval men arrived from Seattle on May 1. They were sent to operate the riverboats, lighters, and sailing launches specially built at the Navy Yard in Puget Sound for this work.⁸⁷

Hauling coal downriver required attention to the landscape.⁸⁸ “The river was learned perfectly,” Downey recalled, “every sand bar and every stretch of water was named. It was very difficult to speak of or refer to a particular point in the river without specifically designating it.” To this end, the crew partitioned the varied terrain into three divisions. The Lake Division wound seven and a half miles from Chilkat to Bering Lake. Six miles further to Cottonwood was the Delta Division. The Glacier Division stretched

⁸⁵ Ibid.: 1680.

⁸⁶ Ibid.: 1658.

⁸⁷ Ibid.: 1663-4.

⁸⁸ In a similar vein, Richard White has used the evocative phrase “knowing nature through labor.” See Richard White, *The Organic Machine* (New York: Hill and Wang, 1995). For a marvelous elaboration of this theme, appropriate to Alaska, see Kathryn Taylor Morse, *The Nature of Gold: An Environmental History of the Klondike Gold Rush*, Weyerhaeuser Environmental Books (Seattle: University of Washington Press, 2003).

another seven and a half miles to end at the Stillwater coal depot. The mine itself was another four miles north from Stillwater.⁸⁹

Downey and his crew found the Lake Division at tidewater and relatively easy to traverse. They crossed the Glacier Division easily as well, once the crew cleared its gravel bottom of rocks and debris. The Delta Division challenged them, however. The Bering River Delta, “an immense treeless swamp,” emptied onto a wide alluvial flat braided with narrow, shallow channels and patches of tall grass. Quicksand made navigation at times impossible.⁹⁰

To make the Delta Division passable “it was necessary to live on the river.” Downey hoped to carve a channel deep enough to pass barges sent from Seattle. Advancing towards the delta’s center from opposite directions, the crew cleared the channels of rocks and debris. To force several smaller channels together into a single, deeper one, dynamite provided the first and bluntest tool, but axes and blocks and tackle proved essential too. Shallow, glacial currents overturned canoes, their crews spending long hours in the water. To resist mosquitoes, the workers wore head-nets and gloves, and sometimes even abandoned the shore to sleep on a barge in the river.⁹¹ The work of making this waterway passable went on for two months. By June, the coal, still bound in sacks at Stillwater, remained twenty miles from tidewater.

The arrival of summer would bring the USS *Maryland*. Downey redoubled his efforts to move the coal sample. His crew abandoned their efforts to reengineer the landscape of the river’s delta. Even with the labor and equipment they had available,

⁸⁹ Downey, "United States Navy Coal Investigating Expedition in the Bering River Field of Alaska," 1664-5.

⁹⁰ Ibid.

⁹¹ Ibid.: 1667-9.

including the entire native community of Chilkat, they were unable to accomplish so massive a project. They turned instead to building fresh, shallow draft barges from 15,000 feet of lumber milled from the nearby Chugach Forest. They built twenty-one river boats capable of hauling between one and a half and eight tons of coal apiece.⁹²

As for the unexpected wetness of the coal discovered aboard the *Maryland*, the coal sacks (what coal there was in them) had been left along the shore at Chilkat, where they were flooded with salt water. Even the naval officers at the site acknowledged “that the coal would not have a fair test on this account.”⁹³

The immediate consequence of Bering River mining and shipboard testing was the Navy’s abandoning of interest in the Bering River Field, but not in Alaskan coal altogether. The following summer, in 1914, the *Maryland* returned to Alaska and received another shipment of Alaskan coal, this time from the Matanuska field. It performed identical steaming tests as it had the year before, and found strikingly different results—Matanuska coal burned nearly as well as Appalachian coal. Its geographic orientation shifting once again, the Navy turned to the Matanuska Valley for what would become nearly a decade of prospecting, surveying, and ultimately, mining Alaskan coal.

The Matanuska Valley

By 1920, the federal government was no stranger to the Matanuska Valley. In 1898 and 1899, U.S. Army and Geological Survey expeditions surveyed the region to support gold mining. In 1917, the Alaskan Engineering Commission (A.E.C.), an agency of the

⁹² Ibid.: 1669-71.

⁹³ Anonymous Miner to Navy Department 8/8/1913. Eight years later, a naval officer familiar with Bering River testing concurred. He acknowledged (contrary to indications in official reports) that selecting the coal sample “was not made as carefully as should have been done, and not enough of the field prospected.” As a result, the coal “did not have a fair test.” R.H. Gifford to Otto Dowling 8/30/1921, in NARA Alaska RG 80; NACC Records; Box 2; File, “Coal Handling Costs, etc.”

Interior Department charged with assembling the Alaskan Railroad from the Pacific coast to the resource rich interior, assumed control of a coal mine along Eska Creek, a tributary to the Matanuska River. The A.E.C. calculated that mining its own coal was more economical than purchasing it from local mines or importing it from the U.S. or Canada.⁹⁴

The Navy, too, had a history in the Matanuska Valley. After mining a coal sample for shipboard testing in 1914, representatives of the department returned in 1919 for a careful geological exploration. With more resources available now that the war in Europe had ended, the Navy resumed its intention to develop an Alaskan coal supply. After his surveys, the commission's senior member, Captain Sumner Kittelle, predicted more than enough coal to justify mining the field.⁹⁵ In the entire Matanuska Valley, he estimated the availability of 46 million tons of coal, and in the five most promising leasing units of the Chickaloon district alone he predicted 19 million tons, all adequate for naval use. He recommended that the Navy assemble a mining expedition, insisting to Navy Secretary Josephus Daniels that "[t]he whole Matanuska region should be thoroughly and scientifically investigated by means of diamond drilling, shaft sinking, tunnel and slope driving" to adequately determine the amount of coal available and the way to mine it effectively.⁹⁶

From Secretary Daniels' perspective, the strategic advantages of an Alaskan coal supply were obvious. He had long been preoccupied with the length of time involved in shipping coal from the eastern seaboard to the west coast. A typical collier carrying

⁹⁴ Bureau of Supplies and Accounts to SecNav, 10/22/1918.

⁹⁵ Kittelle to CNO 2/26/1920, "Navy Coal in Alaska," in NAI RG 80; Box 1019; File, "25320 (131) to (155:5)". Kittelle to SecNav 6/9/1919, in NAI RG 80; Box 1020; File, "25320 (171:12)".

⁹⁶ "Alaskan Coal Situation: Extracts from Reports of Captain Kittelle," in NAI RG 80; Box 1019; File, "25320 (156) to (156:29)" (1919).

11,500 tons of coal required about 82 days to “load, carry, and discharge” coal from Virginia’s Hampton Roads, the Navy’s principle coal depot, through the Panama Canal, and to the naval station at Puget Sound, Washington. From Anchorage, the voyage to Puget Sound required less than half the time, a mere 40 days. From Hampton Roads to San Francisco, 66 days; from Anchorage, 36. From Hampton Roads to Pearl Harbor, 73.5 days; from Anchorage, 37.5. In the event of a catastrophe at the Panama Canal (frequently noted as a perceived threat for wartime), the Navy added an additional 37 days to voyages from Hampton Roads now forced to steam the “Magellan route” around Cape Horn. When peace prevailed, the cost of shipping coal from the east coast to the Pacific was relatively low and these times were not especially important. During a war, the entire coal supply at the Navy’s Pacific bases was estimated to last a mere three months, and the speed and ease of replenishing the coal supply exceeded any question of cost. “The successful development of the Matanuska Coal Field by the Navy is of inestimable value,” asserted one Navy report a year into Chickaloon mining. “The coal itself has passed Naval tests and fills every requirement. It is the only good steaming coal the Navy has access to on the Pacific in time of national emergency. Every effort should be exhausted here to obtain a future supply of coal for the Navy. It is surely wise policy to push this enterprise as rapidly as machinery and labor permit.”⁹⁷

But would proximity of supply compensate for the costs of development?

Shipping eastern coal westward already made coal consumed in the Pacific more expensive than in the Atlantic.⁹⁸ It was far from obvious, however, that the Navy’s

⁹⁷ Philip J. Weiss Memo 7/1/1921, "Naval Requirements in the Pacific," in NARA Alaska RG 80; Box 2; File, "Coal Handling Costs, etc."

⁹⁸ Comparing the costs of steaming coal in Pacific versus the Atlantic ports demonstrates that shipping eastern coal westward was expensive: during the twelve months between July 1921 and August 1922, the

development of an independent Alaskan coal supply would actually reduce these costs. While naval officers could insist that no price was too high for a secure fuel supply, Daniels ultimately expected to turn Alaskan coal mining over to private industry after the fields were proved and developed by the government. If the mine could not profit, it would perish along with the Navy's new coal supply. Nevertheless, as early as 1917 Daniels imagined Matanuska coal eventually competing in world markets and prepared to commit the Navy to purchasing 150,000 tons per year through the mid-1920s. Although war in Europe interrupted this plan, by 1920 he had returned with determination to develop Alaskan coal.⁹⁹

A Navy Mine

The Navy Alaska Coal Commission (NACC) entered the Matanuska Valley camp of Chickaloon with a great deal of optimism. Admiral Hugh Rodman, the Commander-in-Chief of the Pacific Fleet noted that about 400,000 tons of coal were known more or less for certain, but he expected much more. He predicted, in fact, that although the first year of mine production might be less than what the mine could ultimately support,

Navy purchased 487,000 tons of coal for global use. Stations on the east coast consumed some 294,000 tons. These stations were near Appalachian mines, by rail or by sea, and coal cost about \$5.25 per ton at tidewater, for a total of \$1,543,000 for coal on the east coast that year. West coast stations, including Puget Sound, San Francisco, San Diego, and Honolulu, received about a quarter of this figure, or 118,000 tons and the Asiatic station stocked another 75,000 tons, giving a total of 193,000 tons of naval coal purchased for use in the Pacific Ocean. All of this coal was shipped from the east coast through the Panama Canal. At about \$8.00 per ton, even though the Navy consumed much less coal in the Pacific than in the Atlantic or Caribbean, their Pacific coal expenses that year totaled \$1,544,000—nearly identical to costs on the other coast. See 5-187. This figure might easily have been much higher: as more trade flowed west to east than the other way around, ships occasionally had to steam westward in ballast—that is, filled with water rather than commodities. To encourage more westward traffic, shipping companies offered lower rates for shipping coal to the west coast. See A.B. Canham 4/19/1922, "Memorandum for the Case," in NAI RG 80; Box 1020; File, "25320 (171:12)".

⁹⁹ Josephus Daniels to SecInt 3/12/1917, "Summary of the Opinion of the Navy Department in Regard to the Plan Which Should Be Pursued in So Far as Relates to the Navy's Interest in These Fields," in NAI RG 80; Box 1019; File, "25320 (131) to (155:5)".

subsequent years would likely see some 100,000 tons a year mined and shipped for naval use.¹⁰⁰

Nevertheless, early geological reconnaissance indicated that the field's structure would be difficult to decipher. The Chickaloon formation, an alternating series of shales and sandstones, was thought to be some 2,000 feet thick, but individual coal seams embedded within the earthy matrix were not "persistent," appearing irregularly and terminating abruptly. Igneous masses intruded into the coal beds, forming dikes and sills. These intrusions were further complicated by deformations in the landscape brought about by intense underground forces. A report to Secretary Daniels cautioned that estimating the coal buried in the region was impossible, noting that "[t]he steep dips and complex folding and faulting of the coal areas calls for careful investigation and development of the structural conditions of each individual tract before the development of a mine is attempted."¹⁰¹

The "careful investigation and development" began in the summer of 1920. As it studied the land at Chickaloon, the NACC faced two distinct but related geological questions. First, was Matanuska coal adequate for naval use? Steam testing aboard the *Maryland* in 1914 had tentatively answered this question affirmatively, and the Navy anticipated future tests as mining progressed. Second, was there enough coal available in the field to make mining worthwhile? This question could not be answered in a week of chemical and engineering experiments. Indeed, how much coal the Matanuska field might offer, and how easily it could be mined, consumed the bulk of geological work there for nearly two years.

¹⁰⁰ Hugh Rodman to SecNav 6/18/1920, in NARA Alaska RG 80; NACC Records; Box 4; File, "Policy".

¹⁰¹ "Memorandum for the Secretary of the Navy," in NARA Alaska RG 80; NACC Records; Box 2; File, "Development, Plans for" (8/4/1920).

Coal Creek flowed into the Matanuska River due south from Chickaloon. The NACC began prospecting there in early January, and initiated diamond drilling there at the end of April. Based on the appearance of surface outcrops, NACC geologists estimated that the Coal Creek region might contain something between “several and 30,000,000 tons” of smokeless, steaming coal. Accounting for inevitable obstacles like thinning coal beds and igneous intrusions, this estimate meant the field might practically offer between 15,000,000 tons on the high end to “a small unpromising field” on the low. Through diamond drilling, the NACC anticipated learning how far east and west of Coal Creek the coal beds extended. If they extended only half a mile in either direction, they predicted the field contained upwards of ten million tons of high grade coal; if half was minable, prospects appeared good. If the field stretched only a little farther east and west, thirty million tons seemed likely.¹⁰² Within a month, Commander Otto Dowling, the naval officer in charge of the mining, reported to Washington that the Coal Creek field, like Chickaloon, was showing “unusual conditions.” Although the coal appeared to be high quality, diamond drilling had revealed a geologic mess. Dowling tempered his initial enthusiasm with the warning that the Navy should not expect a single large mine here, but instead settle for several smaller ones.¹⁰³

As the summer field season of 1921 came to a close, a thick, gravel overburden impeded diamond drilling at Coal Creek, “almost maddening” according to Dowling.¹⁰⁴ Yet as late as the end of November, 1921, Dowling reported fine progress, announcing

¹⁰² Philip J. Weiss Memo 7/1/1921, “Naval Requirements in the Pacific.” As Dowling solicited bids for diamond drilling, the department in Washington inquired whether Dowling might be able to disband the NACC in the field, evidently for fiscal reasons. He replied that the answer depended on the results drilling, which he expected would show by the end of the fall the quantity of coal available in Coal Creek. Otto Dowling to unintelligible Captain, 1/25/1921.

¹⁰³ Otto Dowling to William C. Cole 8/1/1921, in NAI RG 80; Box 1020; File, “25320 (156:68) Only”.

¹⁰⁴ Ibid.

that the “condition of coals in Chickaloon mine is excellent” excepting some areas in the west of the operation.¹⁰⁵

The Commission was beginning to encounter evidence that the picture gleaned from drilling did not corroborate what had been supposed from geological reconnaissance. Moreover, drilling was painfully slow, progressing at a paltry twenty one feet per day. At that rate, the crew would not finish probing the field until the middle of April. Dowling began to consider forfeiting his drilling contract.¹⁰⁶ In Washington, Admiral Cole considered the news about Coal Creek disappointing but informative. Responding to Dowling’s exasperation, Cole remained philosophical, reassuring him that “if we had never tried drilling, we would always have wished we had.” Above all, Cole urged him to proceed, whatever the pace. “We must learn the truth about the project in which we are engaged,” Cole wrote, but soon even that assertion was called into question.¹⁰⁷

As the Commission concluded its survey of outlying fields in the valley, it was stymied both by what geological reconnaissance revealed and what it kept hidden. At Coal Creek, for instance, diamond drilling and tunneling revealed a variety of impediments: coked coal beds in the south; faulted or “dirty and bony” beds in the north. Fair coal seams gradually shaded into shale and even the high grade coal required extensive and expensive rail lines to transport it. At Kings River, the complicated geology of the field made predictions impossible. The Commission found satisfactory coal, but judged it “totally valueless” nonetheless, “as the beds cannot be correlated and

¹⁰⁵ Otto Dowling to William C. Cole 11/25/1921, in NAI RG 80; Box 1020; File, “25320 (156:68) Only”.

¹⁰⁶ By November, the Commission had also found that tunneling around Kings River, another prospect in the region, had hit Cretaceous sediment, an age of strata that had never before produced coal in Alaska and further disheartening the Commission. Ibid..

¹⁰⁷ William C. Cole to Otto Dowling 1/11/1922, in NAI RG 80; Box 1020; File, “25320 (156:68)”.

traced for sufficient extent to warrant driving upon them.” As with Coal Creek, even these fair beds were difficult to reach, and therefore promised to be expensive to mine.¹⁰⁸

As for Chickaloon, Dowling remained cautious but optimistic. Although underground tunneling revealed faults disrupting otherwise continuous coal seams, a recent report by the Commission’s two geologists disputed the prevailing opinion that a nearby “intrusive outcropping” infiltrated the high quality coal beds. New field work suggested that these underground beds were, in fact, untouched. “Up to this time,” wrote Dowling to Washington, “I saw no hope for the successful use of the diamond drill in the Chickaloon field, believing the same to be too broken up.” The new report changed his mind. “I now believe just the opposite and that our last and best bet for obtaining a quantity of coal lies right in Chickaloon.” Hauling the drill from Coal Creek, the crew began probing the Chickaloon mine for the first time in April, but “as usual in this country,” the hole repeatedly collapsed, preventing the Commission from forming a clear picture of what lay below. Yet Dowling insisted that “we should not give up until we prove their existence or non-existence, or that they lie at too great a depth for mining.”¹⁰⁹

As the structure of the region was gradually deduced, the Commission reasoned that if Chickaloon contained substantial coal, coal thick enough and contiguous enough to permit profitable mining, it would be located at least 1,500 feet below the surface. After they received word to conclude the operation in March 1922, they hauled the diamond drill from Coal Creek to Chickaloon to investigate, but the drill hole repeatedly caved in.

¹⁰⁸ Otto Dowling to William C. Cole 4/11/1922, in NAI RG 80; Box 1020; File, "25320 (156:68) Only".

¹⁰⁹ At this point, Dowling acknowledged that from the perspective of U.S. strategy in the Pacific region, he “could see the necessity of developing this field no matter what the cost,” with the caveat, of course, that sufficient coal be found there. But the Interior Department’s plan to turn the field over to private industry appeared dubious. Dowling found it increasingly difficult to imagine the profitable extraction of Chickaloon coal, even if it served the national interest. While Alaska had plenty of barely capitalized “shoestring outfits,” no reliable or established company appeared interested in assuming the risks and costs of coal mining in the Matanuska Valley. Ibid.

When the Navy turned the mine over to Interior, they had descended about 1,200 feet; the A.E.C. dug an additional 150 feet before abandoning the project altogether. "Drilling being the only quick method of proving this area, drill hole #9 [at Chickaloon] should be driven thru to completion no matter what the time and cost," concluded the final geological report. The report insisted that the Navy complete its work in Chickaloon "in order that it can be proven for once and for all that coal either does or does not exist in any amount sufficient to be given further consideration as a future source of supply for Naval fuel."¹¹⁰

This drilling never happened.¹¹¹ After nearly two years of exploration, the Navy cut off funding to the mine and the structure of the Chickaloon formation remained a mystery. If the Commission was correct in assuming the overall shape of the field (a syncline) and a reasonable average thickness of coal seams to the north of the field, there might still be as much as twelve or fifteen million tons of coal there. Only diamond drilling would reveal this for certain, they believed, but without funds, they would never learn the answer for certain.¹¹²

The Geography of Labor

A second cause of difficulty at Chickaloon involved relations between labor and management, a conflict that tied this remote mine to a national debate over labor in post-World War I America. These years were particularly volatile for both labor and the coal industry as a whole. The Navy was accustomed to order, predictability, and docility in its work force, but managing coal miners in Alaska introduced dissent, demands for fair

¹¹⁰ W.P.T. Hill, "Inclosure 'B' of the Final Report of the Navy Alaskan Coal Commission to the Secretary of the Navy," in NARA Alaska; NACC Records; Box 1; File, "Inclosure 'B'" (1922), 83.

¹¹¹ *Ibid.*, 47-8.

¹¹² *Ibid.*, 44.

treatment amid a rapidly changing economy, and the threat of strikes. Some voices within the government disapproved of the Navy's Alaskan coal mining, but appeals to the security value of the mine for a time palliated these opinions. Nevertheless, a constant battle with both budgets and labor haunted the project.¹¹³

Nowhere did this complex tension reveal itself more explosively than in the controversy over miners' wages at Chickaloon. In an effort to reduce expenses, in September 1921, Dowling announced a reduction in miners' wages. This cut of nearly 25% lowered the pay scale from \$8.60 to \$6.50 per day.¹¹⁴ The miners protested, organizing an impromptu campaign against Secretaries Denby and Fall in Washington, pressuring them to cancel or postpone the reduction. More was at stake in this conflict than the fairness of living wages; each party wished to define the relationship between the United States and the Alaska Territory. Dowling argued that Alaskan wages were inherently connected to wages in Washington State. Miners, in contrast, argued that their wages must be set in the larger context of America's mining west. Which relationship won would shape life and work at the Chickaloon camp. In the contested space of Alaska, coal mining was as much about the definition of appropriate geographical relationships as it was about economy or security.

The dispute over wages at Chickaloon occurred amidst nationwide tumult in the coal industry. During the First World War, heavy coal demand and increased prices stimulated a nearly 30 percent increase in new mines between 1917 and 1919. The war brought inflation, too. In response, miners fought for, and received, a series of wage increases—around 50 percent of the 1914 scale—in return for promises to abstain from

¹¹³ William C. Cole to Otto Dowling 2/6/1922, in NAI RG 80; Box 1020; File, "25320 (156:68) Only".

¹¹⁴ Mines Committee to Hon. Dan Sutherland, in NAI RG 80; Box 1020, File, "25320 (156:68) Only" (9/23/1921).

striking. With post-war demobilization, the nation slid into an industrial recession; in the coal industry, utility and industrial coal orders slackened and production plummeted.

Faced with a precipitous decline in demand, mine operators closed mines, cut hours, and dismissed miners. Anticipating significant wage reductions, miners, led by the United Mine Worker's skillful and charismatic new President John L. Lewis, threatened to strike on November 1, 1919.¹¹⁵

Last minute attempts by the federal government to broker an agreement between labor and operators failed. When the deadline passed, 600,000 bituminous and anthracite miners set down their picks and abandoned the mines. Through the middle of December, more than 60 percent of the nation's bituminous mines and its entire anthracite region remained shut down.¹¹⁶ While operators sought to retreat from war-time wage increases, miners, with support from labor and industrial advocates within the federal government, pursued further *increases* to keep pace with the continuing rise in the cost of living. Accepting arbitration from a government panel, miners and operators in most of the country eventually accepted wage increases in March 1920 between 20 and 27 percent.¹¹⁷

The November-December strike was by no means the only factor that transformed a coal shortage into a coal "crisis." In addition, the railroads faced persistent shortages of coal cars, inefficient marketing prevented the delivery of coal supplies from regions with

¹¹⁵As historian John G. Clark has observed, the 1919 "coal crisis" itself was a product of deep, structural transformations underway in America's industrial economy. The November-December miners' strike was preceded in September by a deadly strike in the steel industry, and in 1919 alone, roughly 4 million workers participated in 3,600 strikes. John Garretson Clark, *Energy and the Federal Government : Fossil Fuel Policies, 1900-1946* (Urbana: University of Illinois Press, 1987), 112-5. James Johnson notes that these actions were frequently interpreted as "the opening volleys of revolution" whose participants were maligned as agents of Soviet intrigue. See James P. Johnson, *The Politics of Soft Coal: The Bituminous Industry from World War I through the New Deal* (Urbana: University of Illinois Press, 1979), 101-2. On the war-time wage increases, see *Ibid.* 81-4.

¹¹⁶ Clark, *Energy and the Federal Government : Fossil Fuel Policies, 1900-1946*, 113-7.

¹¹⁷ *Ibid.*, 117.

large supplies to regions with large demands, the federal government disassembled the war-time regulatory apparatus, and consumer stocks remained dangerously low.¹¹⁸ These factors, coupled with the wage increase in the winter of 1920, led to low supplies and high prices. Consumers shouldered much of the burden as operators passed the wage increase along in the form of price hikes. Between March and August of 1920, average coal spot prices skyrocketed over 250 percent.¹¹⁹

As administrators in the federal government attempted to understand and address the coal situation from a national perspective, coal operators and miners reacted to pressures they experienced at the local level. In Washington State, these local pressures would spill over into confrontation at the Navy's mine at Chickaloon.

Nationally, most miners and operators accepted a wage increase in March 1920 following the decision of a federal commission, but labor and production conditions varied so greatly in Washington State that the federal government intentionally left fields there out of the agreement. Instead, a separate commission was established to investigate the state. To appoint its five members, miners selected two representatives from their workers while the government selected two representatives from the region's operators. The government instructed these four members to select a fifth. After six weeks of debate they remained unable to do so. Ultimately, President Wilson appointed the fifth and final member and within a month, the board issued a ruling, mandating in August a \$6.75 daily wage.¹²⁰ Neither miners nor operators were satisfied with this result.

¹¹⁸ Ibid., 116.

¹¹⁹ Johnson, *The Politics of Soft Coal*, 107-8.

¹²⁰ Sumner S. Smith to Otto Dowling 11/12/1920, in NARA Alaska RG 80; NACC Record; Box 4; File, "Wages". Fredrick F. Mears to Albert B. Fall 10/7/1921, in NARA Alaska RG 80; NACC Records; Box 4; File, "Wages".

In Alaska, neither the nationally binding wage agreements of March nor the Washington State agreement of August applied. Instead, a series of informal relationships between Washington State and Alaska predominated labor, wages, capital, and markets. Since the Klondike gold rush, Seattle had become what historian Kathryn Morse has called “the most prominent urban gateway to Alaska,” and more than any other city, asserted its voice into the affairs of Alaska.¹²¹ Before and during the war, Alaskan mining wages largely followed wages in Washington State, moderated by local conditions. Miners in Alaska were frequently drawn from the ranks of labor in Washington State, and private operators in the north typically enticed these workers with higher wages. A ten percent premium over Washington wage rates was a common figure.¹²² As a rule, the federal government’s agency for constructing the Alaskan Railroad, the Alaskan Engineering Commission (A.E.C.), followed the wage scales set by private Alaskan operators, and they too drew their labor from Washington.¹²³ The A.E.C. even maintained its own employment agency in Seattle through which it recruited miners.¹²⁴

When the Navy moved into Chickaloon in the summer of 1920, however the ten percent wage gap between Washington and Alaska had nearly equalized for private operators while the A.E.C. paid below Washington rates. Alaskan wages had not decreased, of course, but neither were they keeping pace with jolting wartime inflation. Post-war wage settlements in the states rapidly outpaced wages in Alaska, and miners

¹²¹ Morse, *The Nature of Gold: An Environmental History of the Klondike Gold Rush*, 170.

¹²² Philip Weiss to William C. Cole 9/22/1921, in NAI RG 80; Box 1020; File, "25320 (156:68) Only".

¹²³ Of \$5.25 per day. Sumner S. Smith to Otto Dowling 11/12/1920. See also Joshua Bernhardt and Brookings Institution. Institute for Government Research., *The Alaskan Engineering Commission : Its History, Activities, and Organization*, Service Monographs of the United States Government ; No. 4 (New York, [N.Y.]: D. Appleton, 1922), 20-1. Fredrick F. Mears to Albert B. Fall 10/7/1921.

¹²⁴ Fredrick F. Mears to Otto Dowling 8/4/1920, in NARA Alaska RG 80; NACC Records; Box 2; File, "Development, Plans for".

there fought to keep up with the cost of living.¹²⁵ Although not affiliated with the United Mine Workers, the A.E.C. miners nonetheless acted collectively. The A.E.C. raised wages at Eska after miners struck in April 1920.¹²⁶ When the independent commission settled Washington's wage dispute in favor of labor four months later, A.E.C. miners threatened a second strike to secure a similar increase. Interior Secretary James Barton Payne consented, well aware that without coal, the Alaskan Railroad would grind to a halt. By the end of 1920, A.E.C. miners' wages—including wages at the Navy's mine at Chickaloon—had risen to \$8.60 per day from a mere \$5.25 during the summer of 1917.¹²⁷

No sooner had the A.E.C. and the Navy agreed to this increase than they deliberated over how to rescind it. In 1921, the cost of living in Alaska actually began to decrease. With miners receiving regular work and unusually good lodging, food, and medical care, Navy and Interior officials argued that the government wage was "manifestly too high and out of all reason."¹²⁸ High wages were "a handicap" and "seriously embarrassed" private coal operators in Alaska, who remained unable to offer such rates and remain solvent.¹²⁹ The Navy could ill afford to ignore its effect on private operators, for the exploratory mining at Chickaloon was designed precisely to entice capital to invest in the high grade coals of the Matanuska district. Capital would only

¹²⁵ Philip Weiss to William C. Cole 9/22/1921.

¹²⁶ Ibid. Sumner S. Smith to Otto Dowling 11/12/1920. This increase brought A.E.C. miners from \$6.50 to \$7.10 per day.

¹²⁷ Sumner S. Smith to Otto Dowling 11/12/1920. Otto Dowling to SecNav (ONO) 4/30/1921, in NARA Alaska RG 80; NACC Record; Box 4; File, "Wages". Fredrick F. Mears to Albert B. Fall 10/7/1921. The \$1.50 increase in Washington raised miners' wages there to \$8.25 per day.

¹²⁸ Fredrick F. Mears to Albert B. Fall 10/7/1921. Philip Weiss to William C. Cole 9/23/1921, in NAI RG 80; Box 1020; File, "25320 (156:68) Only". George S. Rice to RDB 10/27/1921, in NAI RG 80; Box 1020; File, "25320 (156:68) Only".

¹²⁹ Fredrick F. Mears to Albert B. Fall 10/7/1921. Philip Weiss to William C. Cole 9/23/1921. George S. Rice to RDB 10/27/1921.

invest, argued the Navy, if it believed that Alaskan coals could compete in Pacific markets with coals of the eastern seaboard. The Navy concluded that industry's perception of excessive labor costs acted as a deterrent against this investment, with high production costs "tending to discredit" the field.¹³⁰

However, too hasty a reduction in wages, reasoned the N.A.C.C., would almost certainly provoke a strike at Chickaloon. The Navy, like the A.E.C., would not permit a strike to interrupt their exploration, but with mining work there unusually complex, it shuddered at the prospect of employing untrained scabs.¹³¹ Operators in Washington had fewer compunctions about dismissing their miners. They believed that the government commission's rate was excessive, and they set about to reduce it.

In Alaska, the Navy resolved in the spring of 1921 to postpone a wage reduction until mines in Washington State acted first, thus providing a justification for reductions at Chickaloon.¹³² The N.A.C.C. was unaware at the time of how contentious a decision linking Alaskan wages so starkly to Washington wages would be. At the time, the Navy's concern was principally for its budget, not the politics of labor in Alaska. If it acknowledged in a private letter "that if any man on the globe deserves utmost consideration, it is the citizen who breathes the coal dust in dark, damp, dusty, close coal mines," it also believed that the demands of economy must be considered first.¹³³

In Washington State meanwhile, coal operators, rapidly losing money and refusing to raise prices any further, announced in March, 1921 a return to prewar wages. In return, the Washington operators promised to provide food, rent, and supplies to their

¹³⁰ Philip Weiss to William C. Cole 9/23/1921.

¹³¹ Otto Dowling to SecNav (ONO) 4/30/1921.

¹³² Sumner S. Smith to Otto Dowling 5/16/1921, in NARA Alaska RG 80; NACC Records; Box 4; File, "Wages".

¹³³ Philip Weiss to William C. Cole 9/23/1921.

miners at 1917 prices, and proposed selling coal to the public at 1917 rates as well. They cautioned that a refusal by the miners to accept the new conditions would result in the closure of the mines altogether. Nevertheless, the miners balked, and ninety percent of the state's commercial mines closed down.¹³⁴

The operators turned to Washington Governor Louis F. Hart to appoint another state-wide commission to settle the wage question once and for all. This new commission, reminiscent of the federal panel of the previous summer, included two representatives of miners, two representatives of operators, and a fifth, "neutral" member. This time, the miners and operators deadlocked on the wage question while the neutral member offered a reduced rate of \$6.00 per day. Neither the miners nor the operators initially welcomed this figure, but in August, a handful of coal operators, mainly around Puget Sound, decided to resist the union's continuing efforts to preserve wage increases and they announced a unilateral wage reduction.¹³⁵ Ten of Washington's thirty-two commercial mines reopened, offering wages at the lowered rate of \$6.00 per day. They further signaled their uncompromising position towards labor by endorsing the principles of the open shop.¹³⁶

These events in Washington provided just the impetus that Dowling in Chickaloon sought to justify the Navy's own wage reduction. Within weeks, he announced that he was lowering wages for the Navy's miners. Dowling insisted on the

¹³⁴ Only the railroad mines and a handful of commercial mines remained open, continuing to pay the previously agreed wage of \$8.25 per day. Otto Dowling to SecNav (ONO) 4/30/1921. Philip Weiss to William C. Cole 9/22/1921, Fredrick F. Mears to Albert B. Fall 10/7/1921.

¹³⁵ Philip Weiss to William C. Cole 9/22/1921. Fredrick F. Mears to Albert B. Fall 10/7/1921.

¹³⁶ Philip Weiss to William C. Cole 9/22/1921. Otto Dowling to OpNav 9/25/1921, in NAI RG 80; Box 1019; File, "25320 (156) to (156:29)". Sumner S. Smith to H. Foster Bain 9/28/1921, in NAI RG 80; Box 1020; File, "25320 (156:68) Only". Philip Weiss to William C. Cole 9/23/1921. The railroad mine at Roslyn and commercial mines at Bellingham and Tono avoided the wage decrease, agreeing instead to continue paying the previously agreed to scale not set to expire until April, 1922. Sumner S. Smith to H. Foster Bain 9/28/1921.

natural link between Washington and Alaskan wages and he maintained that his reduction was based on the recent wage cut declared by the Washington operators.¹³⁷ The new scale, in fact, formalized a relationship that had heretofore been only circumstantial: instead of a loose connection between Washington and Alaskan wages, Dowling's reduction added a fixed fifty cents to the rate set by the neutral member of the Washington commission.¹³⁸ As he increasingly insisted that the wage decrease in Washington warranted a decrease in Alaska, Dowling opened the space for a contestation not merely of wages, but of geographical relationships.

A.E.C. miners did not protest that wages should be determined in relation to wages in other mining districts. Instead, they believed these relationships should work fairly. The more Dowling insisted that circumstances in Washington justified his actions in Alaska, the more the miners asserted that other geographical relationship should shape the wage issue.

The Chickaloon miners' committee quickly drafted a petition that they sent directly to Navy Secretary Denby, accusing Dowling's reduction of being "preemptory and unsupported by the facts."¹³⁹ While the Navy's connected the Chickaloon wages to conditions in Washington State, the miners drew a different map. They observed that day wages in Montana, Wyoming, and Colorado all exceeded \$6.50 and were not set to expire until April 1922. It was unfair, they argued, for the Navy to take action on the violation of an agreement by only a handful of operators in western Washington but still held by most in the state. If the Navy insisted that government scales should follow prevailing regional wages, wage reductions should not be made based on a small number

¹³⁷ Otto Dowling to OpNav 9/25/1921. Fredrick F. Mears to Albert B. Fall 10/7/1921.

¹³⁸ Sumner S. Smith to H. Foster Bain 9/28/1921.

¹³⁹ Mines Committee to Hon. Dan Sutherland.

of exceptions, and neither should these changes be made based on a unilateral reduction, before a settlement between miners and operators in the states could be reached.¹⁴⁰

The miners' unexpected opposition prompted Secretaries Denby and Fall in Washington to order a halt to the wage reduction even before it took effect. The departments agreed to investigate the wage situation themselves and after their analysis, they decided to postpone any wage reduction until the spring of 1922.¹⁴¹ Although they justified the delay with concern over timing, their eroding control over how Alaska related to the rest of the country was evident. "This is not intended as a recognition that Alaska shall be governed by the miners' agreements in the States" wrote Interior officials to their counterparts in the Navy, instead feebly arguing that a wage reduction on the cusp of winter appeared cruel.¹⁴² To Dowling in Chickaloon, Secretary Denby could only wire instructions to delay the wage reduction and exclaim an ambiguous, "Situation more complicated than appears to you."¹⁴³

What precisely Denby meant remains unclear. What is certain is that the Navy's actions were being watched very closely by both labor and coal operators. If Chickaloon wages remained too high, operators might accuse them of supporting miners at the expense of economy; too large a reduction might suggest that the government sided with the coal companies. Ideally, the Navy hoped it could simply wait for a resolution in Washington State, one accepted by both labor and capital, and then follow that decision without much objection. "We comply with, we do not initiate," wrote one officer about

¹⁴⁰ Ibid. The miners' position was strengthened by the support of Alaska's delegate in Congress, Dan Sutherland, who observed to the Navy that their miners were not affiliated with organized labor and that many were themselves recently returned veterans whose "petition merits very serious consideration." Dan Sutherland to William C. Cole 9/24/1921, in NAI RG 80; Box 1020; File, "25320 (156:68) Only".

¹⁴¹ E.C. Finney to Frederick Mears 9/27/1921, in NAI RG 80; Box 1020; File, "25320 (156:68) Only", Sumner S. Smith to H. Foster Bain 9/28/1921.

¹⁴² E.C. Finney to William C. Cole 11/26/1921, in NAI RG 80; Box 1020; File, "25320 (156:68) Only".

¹⁴³ Edwin Denby to Otto Dowling 9/27/1921, in NAI RG 80; Box 1019; File, "25320 (156) to (156:29)".

naval policy, “we do not take sides; we wait until the war between operators and employees is over and then accept conclusions.” But waiting had a price, one that affected both the availability of the Navy’s future fuel supply in the Pacific and the industrial development of Alaska itself.¹⁴⁴ Dowling continued to push for a reduction.

He also came to recant his earlier suggestion that Chickaloon wages be linked so firmly to Washington State. By the spring of 1922, Dowling admitted that “[w]ages in Alaska should be based upon living conditions in Alaska and not upon a territory 1200 miles distant.” While the government should have set its own scale for Chickaloon by loosely following local private operators, the Navy mine was instead following the distant Washington situation and leading, not following, local Alaskan industry. “We should set our own wage scale,” wrote Dowling, “taking into account private operators who have to follow the government scale, but having gotten both feet into the Washington muddle, cannot now do so and must continue to follow.”¹⁴⁵ The “muddle” was both his own linking of Chickaloon wages to the Washington labor “war” that was entirely outside of naval control, as well as his providing the opportunity for Chickaloon miners to argue for a geographical link that worked more in their favor.

As naval officers struggled with wages in Alaska and Washington, they acknowledged that collectively, the nation had failed to address the persistent inequities between labor and capital and the wrenching imbalances between production and consumption. The labor conflict at Chickaloon was merely an element of these problems. Philip Weiss, Dowling’s deputy at Chickaloon, observed that “[s]ociety must continue its efforts to control supply and demand in the coal problem and work out distribution in

¹⁴⁴ Philip Weiss to William C. Cole 12/12/1921, in NAI RG 80; Box 1020, File, "25320 (156:68) Only".

¹⁴⁵ Otto Dowling to William C. Cole 4/11/1922.

such a way as to provide a good wage for the coal miner and more than 200 days work per year.”¹⁴⁶ Failure to do so threatened to lead only to further crises. But national solutions meant connections between distant places, which had clearly gotten the Navy in trouble. Even as he emphasized the national scope of the problem, Weiss insisted on a local solution. The Navy’s operation in Alaska was unique, he wrote, and “we cannot look to the State of Washington alone, or to the States of the Northwest or to the general situation in the United States for a solution.”¹⁴⁷ But he could not have it both ways.

Closing Chickaloon

Suspicion within the Navy that Matanuska coal would never compete economically with Appalachian coal began sinking in during the summer of 1921. Geological reconnaissance indicated irregular beds, making high production costs likely, if not inevitable. Even if coal could be mined for as little as \$7.00 per ton, the combined costs of freight, washing, and handling easily exceeded the cost of eastern coals. “I doubt whether the coal can ever be laid down for the same price as eastern coal,” exclaimed Dowling, “certainly not for less.”¹⁴⁸ Regional markets were not promising either. In the summer, only canneries along the coast consumed large quantities of coal, but they subsisted on cheap lignite. In the winter, even growing towns like Anchorage still demanded very little—about 1,000 tons per month—and they opted for a lower grades of bituminous commercial coal mined near Chickaloon.¹⁴⁹

¹⁴⁶ Philip Weiss to William C. Cole 12/12/1921.

¹⁴⁷ Ibid.

¹⁴⁸ Otto Dowling to William C. Cole 8/1/1921.

¹⁴⁹ Otto Dowling to William C. Cole 11/25/1921.

These market constraints remained unknown to the majority of Alaskans, who grew increasingly discontented over the progress of government mining in the Matanuska Valley in late 1921. One Alaskan paper editorialized the situation by demanding to know why the Navy's project in Chickaloon had not resulted in any obvious benefit to the residents of Alaska. "Where is the Coal?" they asked, "[a]nd why is there not more coal available for commercial use in Alaska towns?" Other Alaskan papers reprinted the piece, to which the Navy was eventually forced to respond. Claiming that the current Navy exploration must not be conflated with previous government mining in the region (for the Alaskan Railroad), the Navy methodically explained the status of their geological exploration and progress of their mining. They listed their leasing units and the quantity of coal blocked out on each. They also noted that problems bringing Alaskan coal to market were not limited to the government, for even the four private companies operating in the Matanuska Valley had difficulty selling their coal, and unlike the Navy, their continued corporate existence depended on it. These companies faced a logistical problem shared by the Alaskan Coal Commission: transporting their coal from their fields to Alaskan markets or other locations along the Pacific coast. The Navy concluded their defense by diffusing expectations that Alaskan coal might ever be able to compete with eastern coals and their "present ridiculously low freight rates."¹⁵⁰

The Navy as a whole was also under extreme financial duress. By the fall, the department was exceeding its Congressional appropriations.¹⁵¹ The Navy faced the "urgent necessity for reducing Naval expenditures to the lowest figure possible"

¹⁵⁰ "The Coal Mining Operations of the Alaskan Engineering Commission 12/16/1921," in NARA Alaska RG 80; NACC Records; Box 4; File, "Policy".

¹⁵¹ J.K. Robison, "Engineering in the Navy," in NARA Alaska RG 80; NACC Records; Box 4; File, "Navy Alaska Coal Commission Chickaloon, AK" (1922).

according to one officer who advocated nixing the \$1 million yearly appropriation for Alaskan mining.¹⁵²

Furthermore, patience between the Navy and the A.E.C. was wearing thin. As originally conceived, the A.E.C. managed daily operations like labor and mining, while the N.A.C.C. supervised policy and budgets. Important decisions were made jointly. This arrangement inevitably led to the duplication of responsibilities. Furthermore, the A.E.C. charged the Navy for transporting supplies and workers over the railroad, as well as for overhead costs for projects the Navy was unassociated with, actions Dowling felt were deeply unfair. Dowling was especially incensed at these perceived indignations since he believed that the Navy's investment in the Matanuska Valley would directly benefit the A.E.C. and its railroad and ultimately "will be their greatest asset." He thought that only one of the agencies should assume authority, though both hoped the job would fall upon the other.¹⁵³ Nevertheless, "[w]e have followed the theory of not changing horses in the middle of the stream" wrote Dowling to Washington, "and we have not removed the monkey wrench that caused the clog in the machinery."¹⁵⁴ The "monkey wrench," in Dowling's opinion, was Sumner Smith, formerly federal mine inspector for Alaska and now the chief mining engineer for the mine at Chickaloon. Smith "has not cooperated with the Commission to his fullest ability by any manner of means," Dowling asserted. Smith's weakness, according to Dowling, was that "his ideas of expenditures tend very closely to extravagance." After regularly reducing Smith's

¹⁵² 5-185

¹⁵³ Otto Dowling to William C. Cole 11/25/1921, Otto Dowling to William C. Cole 4/11/1922.

¹⁵⁴ Otto Dowling to William C. Cole 4/11/1922.

budget estimates, Dowling found it increasingly difficult “to maintain friendly relations.”¹⁵⁵

The suggestion of abandoning coal mining in Alaska was not universally embraced by officers within the Navy Department. The Chiefs of the Bureau of Engineering and the Bureau of Yards and Docks protested to Denby that the closure of the Chickaloon mine must be accompanied by further development of an emergency coal supply there. If the Navy turned its investment in the Matanuska field over to the Department of Interior, they cautioned that the mine should be further developed by the government or through leases, that the available coal supply there remain substantial, that the washery be completed and kept ready for operation, and that government royalties from selling Matanuska coal be spent on port development in Anchorage or Seward.¹⁵⁶ Failure to ensure these precautions, they warned, “would involve a large measure of waste of Government funds already spent.”¹⁵⁷

And what of naval strategy in the Pacific? Only weeks before had Admiral Cole reassured the N.A.C.C. about the strategic necessity of proving and developing Matanuska coal. Cole conceded that speaking strictly economically, Alaskan coal did “not offer captivating allurements.” But the Navy—and the perceived imperatives of national defense—did not operate strictly economically. Cole rehearsed the familiar strategic arguments for an Alaskan coal supply: threats to the Panama Canal locks, the impossibility of shipping massive quantities of coal cross-country by rail, the limited coal storage capacity in Pacific ports. All these strategic weaknesses in the Pacific pointed to an

¹⁵⁵ Ibid.

¹⁵⁶ Chiefs BuEng & Y&D to SecNav [Names?] 3/10/1922, in NAI RG 80; Box 1020; File, "25320 (171:12)".

¹⁵⁷ Ibid.

apparent inevitability to the Navy's development of Alaskan coal. "You may consider as final that if you prove the field the coal will be mined" assured Cole. The Navy might not become the sole consumer of Alaskan coal, he added, "but if our present plans materialize, the coal will market itself."¹⁵⁸

But present plans did not materialize and Alaskan coal did not market itself. Less than three weeks after Admiral's Cole's confirmation of Navy policy, Dowling received a terse telegram from Washington: "Due to lack of funds all expenditures in Matanuska Field will cease April one period Advise all concerned period Letter follows."¹⁵⁹ After nearly two years of digging, drilling, strikes, and strategizing, the leadership in the Navy decided to terminate their direct involvement in mining Alaskan coal.

Later observers would justify the closure of Chickaloon on the grounds that geological exploration determined an insufficient quantity of coal available at unaffordable costs. It is certainly true that supporters of the Chickaloon project overstated the ease of mining and underestimated the cost. But even after the mine's closure was announced, Navy representatives in Alaska still maintained that their work was valuable and that the investment would eventually be validated. It was easier to justify the expenses of the program on learning for certain that coal mining in the Matanuska Valley was impossible than to acknowledge that nearly two years and two million dollars into the project, geological spaces were still unknown. According to Dowling's assistant, "[t]he next 10 years will show actual mining in the field, sale of the

¹⁵⁸ William C. Cole to Otto Dowling 2/6/1922.

¹⁵⁹ Opnav to Otto Dowling 2/25/1922, in NARA Alaska RG 80; NACC Records; Box 4; File, "Telegrams". A subsequent order delayed the closure until May 1st, permitting time to shut down the mine and negotiated a deal to turn Chickaloon over to the Interior Department. See Edwin Denby to Otto Dowling 3/8/1922, in NARA Alaska RG 80; NACC Records; Box 4; File, "Telegrams". OpNav to Otto Dowling 3/18/1922, in NARA Alaska RG 80; NACC Records; Box 4; File, "Telegrams".

coal in Alaska and on the Pacific at a price which will compete with Eastern coal and a feeling of financial satisfaction on the part of the Government for having opened up the field.”¹⁶⁰ But no such actual mining occurred.

Over the following two months, the Navy Alaskan Coal Commission gradually concluded its operations. Miners disassembled the camp at Kings River first.¹⁶¹

Diamond drilling was rapidly brought to a close, leaving the geologists an incomplete impression of the underground structure of the region. Exploration at Coal Creek ceased in early April as miners began working three shifts at Chickaloon to extract enough coal for washing and shipboard testing. Digging one hundred tons daily, they still only finished a day before the scheduled shut down.¹⁶²

* * *

Although boosters, planners, and naval officers imagined an Alaskan energy boom at the beginning of the 20th century, that boom failed to appear. The difficulties of management and labor frustrated the Navy, as did natural obstacles for which the department's expeditions were unprepared. Above all, the Navy encountered too much difficulty in uncovering the tricky geology of distant Alaska.

The Navy's gradual shift to burning oil fuel that began in the 1910s also prevented the Navy from planning to mine Alaskan coal in the future. As the fleet increasingly burned oil, the demand for coal lessened and by World War II, had ended entirely. Yet oil did not eliminate the importance of geography or resources. Only a year

¹⁶⁰ Philip Weiss to William C. Cole 3/6/1922, in NARA Alaska RG 80; NACC Records; Box 2; File, "Reports Monthly - SecNav".

¹⁶¹ Otto Dowling to SecNav (ONO) 3/6/1922, in NARA Alaska RG 80; NACC Records; Box 2; File, "Reports Monthly - SecNav", Sumner Smith to Otto Dowling 3/2/1922, in NARA Alaska RG 80; NACC Records; Box 4; File, "Operations-Matanuska Field-Genr1".

¹⁶² Otto Dowling to SecNav 4/5/1922, in NARA Alaska RG 80; NACC Records; Box 4; File, "Telegrams", Otto Dowling to SecNav 5/22/1922, in NARA Alaska RG 80; NACC Records; Box 4; File, "Telegrams", Otto Dowling to William C. Cole 4/11/1922.

after the Navy closed its mine at Chickaloon, President Calvin Coolidge established the Naval Petroleum Reserve Number 4 on Alaska's North Slope. It joined three other Naval Petroleum Reserves in California and Wyoming, including the one at Teapot Dome, that had been established during the Taft and Wilson Administrations. This interest in reserving a fuel supply for naval use grew directly from the near century of effort to fuel the Navy with coal. As petroleum use grew throughout the 20th century, including its vital use to the American military, the relevance of the geography of energy resources became clearer as well.¹⁶³

¹⁶³ On the Naval Petroleum Reserves, see J. Leonard Bates, *The Origins of Teapot Dome: Progressives, Parties and Petroleum, 1909-1921* (Urbana: University of Illinois Press, 1963), Burl Noggle, *Teapot Dome: Oil and Politics in the 1920's* (Baton Rouge: Louisiana State University Press, 1962), David H. Stratton, *Tempest over Teapot Dome : The Story of Albert B. Fall*, *The Oklahoma Western Biographies* ; V. 16 (Norman: University of Oklahoma Press, 1998).

Conclusion

On January 27th, 1911, large crowds took to the streets in Guayaquil, Ecuador. The government called in troops to disperse them—trying, but failing, to keep them away from the President's house. Gathering at its gates, the protestors assailed the President, the liberal reformer Eloy Alfaro, for planning to lease the Galapagos Islands as a naval coaling station to the United States. The crowds proceeded to “hoot” the government, according to one press report, attacking as well the President of the Guayaquil and Quito Railway Company who was blamed for instigating the plan. Though dispersed by troops, the crowd returned the following night, this time stoning the residence of the President-Elect and the office of the government's newspaper organ, *El Tiempo*. This time, the police kept the crowds from reaching Alfaro's house, but only with the help of a charging cavalry.¹

A wire story, reprinted in many of the U.S.'s largest papers, reported that the Galapagos issue had “resulted in the most serious demonstrations of ill-feeling against everything American seen here in many years.” On the third day of protests, some 10,000 Ecuadorians marched at noon to the President's house. Troops kept the demonstrators from approaching too closely, but their leader, the politician Ignacio Robles, gained an audience with President Alfaro. Robles explained what was by then obvious: that Ecuadorians were opposed to negotiating with the U.S. over the Galapagos. By the end of the long meeting, Alfaro conceded, explaining that his government would

¹ "Hoot Galapagos Lease," *New York Times*, January 28 1911, "Mob Resents Lease to U.S.," *The Washington Post*, January 28 1911, "More Riots over Galapagos," *New York Times*, January 29 1911, Alfredo Luna Tobar, *Historia Politica Internacional De La Islas Galápagos*, Biblioteca Del Pensamiento Internacionalista Del Ecuador 2 (Quito: Ediciones Abya-Yala, 1997), 195-9.

cease its negotiations. The President-Elect took the cue as well, and quickly issued a statement that his administration, too, when it took office, would prohibit such a deal.²

This episode is revealing, because in 1911, neither the State nor Navy Departments had actually desired the Galapagos Islands for use as a coaling station. The United States began negotiations only when approached by the government of Ecuador and pursued them only out of the suspicion that the country might sell or lease them instead to Britain, Germany, or France. But to the massive crowds hooting the government in Ecuador and to Americans learning of the events in their newspapers or through Congressional investigations, U.S. diplomacy for islands had become inextricably identified as expansion for coaling stations, and suggestions of the importance of coaling stations was no longer limited to policy elites. Major national newspapers like the *New York Times*, *Washington Post*, and *Boston Globe*, as well as popular journals like *Scientific American* published literally hundreds of articles around the turn of the twentieth century that suggested the need for these stations.

In 1854, the federal government, including the President and Secretary of the Navy, had balked when Matthew Perry suggested acquiring territory to support the Navy with coal in the Pacific. After 1898, this same notion had become commonplace and had, in fact, resulted in substantial acquisitions of land around the world. The pursuit of coal and coaling stations had normalized the idea of projecting American power abroad through the geographic control of strategic ports, islands, and bases.

Scenes of protest as occurred in Guayaquil would become increasingly common in the 20th century, as the United States gradually acquired land for coaling stations,

² "Show Hatred of America," *The Washington Post*, January 30 1911, "Ecuadorians Angry at U.S.," *Chicago Daily Tribune*, January 30 1911, "To Drop Galapagos Lease," *New York Times*, January 30 1911.

oiling plants, and an increasing range of military facilities. We must situate this change within a long history of adapting American foreign policy to the changes in industrial power.

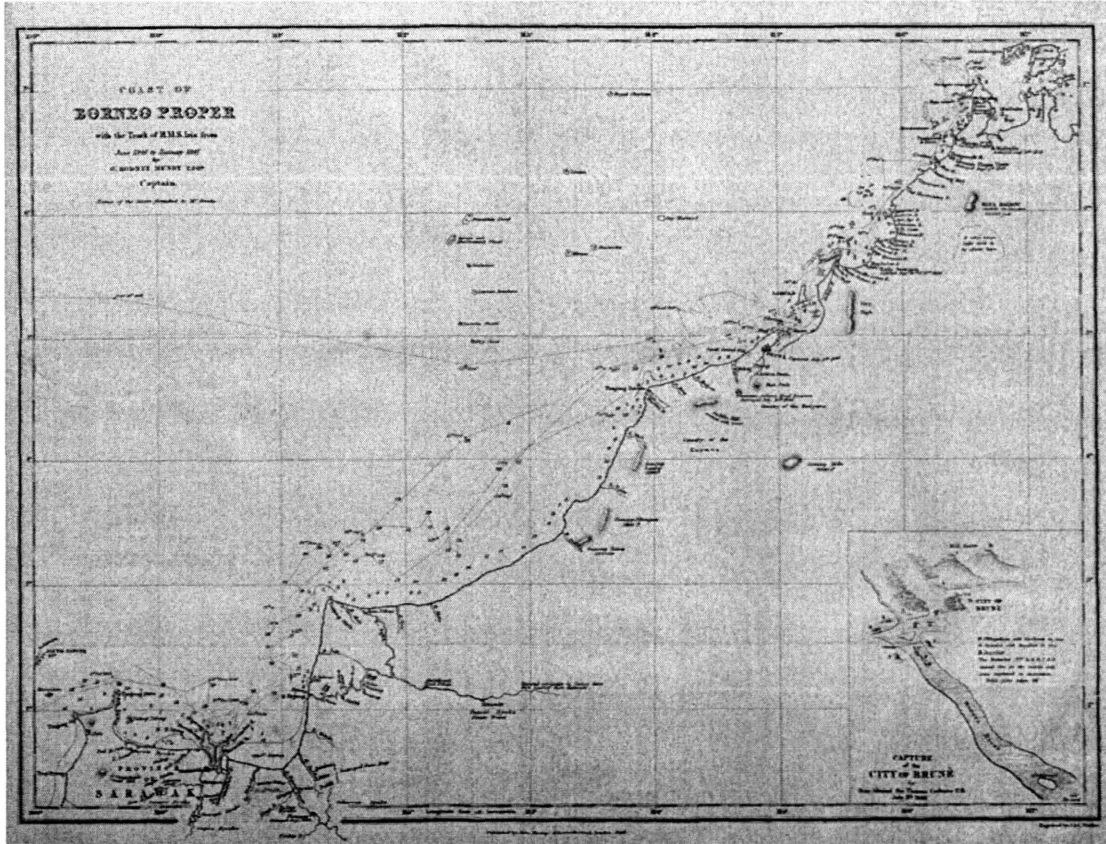
Nevertheless, we must also avoid slipping into an easy technological determinism, that steam power simply required coaling stations. We must reject the idea that coal alone demanded the American empire that emerged after 1898. Coal did not make an empire necessary, but the persistent efforts to acquire coaling stations in the 19th century helped create the *idea* of needing coaling stations, and helped Americans naturalize the acquisition of foreign bases. The idea of the need for an energy network shaped public opinion and policy, even when energy was itself not at stake. The idea of coaling stations helped Americans imagine themselves as a benevolently imperial power—they were not after territory, after all, but merely acquiring the bare minimum land they believed to be required by modern technology. As Rear-Admiral Royal Bradford put it in 1899, “[i]f the layman were asked if he believed in the acquisition of foreign island territory, or in what at the present time is termed ‘expansion,’ the chances are about one to three that he would reply in the negative.” Over sixteen more pages in the popular journal *Forum* Bradford argued that acquiring this foreign island territory was simply a modern necessity for national defense—it couldn’t be argued with.³

But the idea of the coaling station slid rather easily into more muddled territory. It became harder and harder to separate strategic bases for coaling from bases for other strategic purposes, and those strategic purposes grew over the course of the 20th century. Yet the notion that allowed Americans to imagine possessing strategic territory overseas

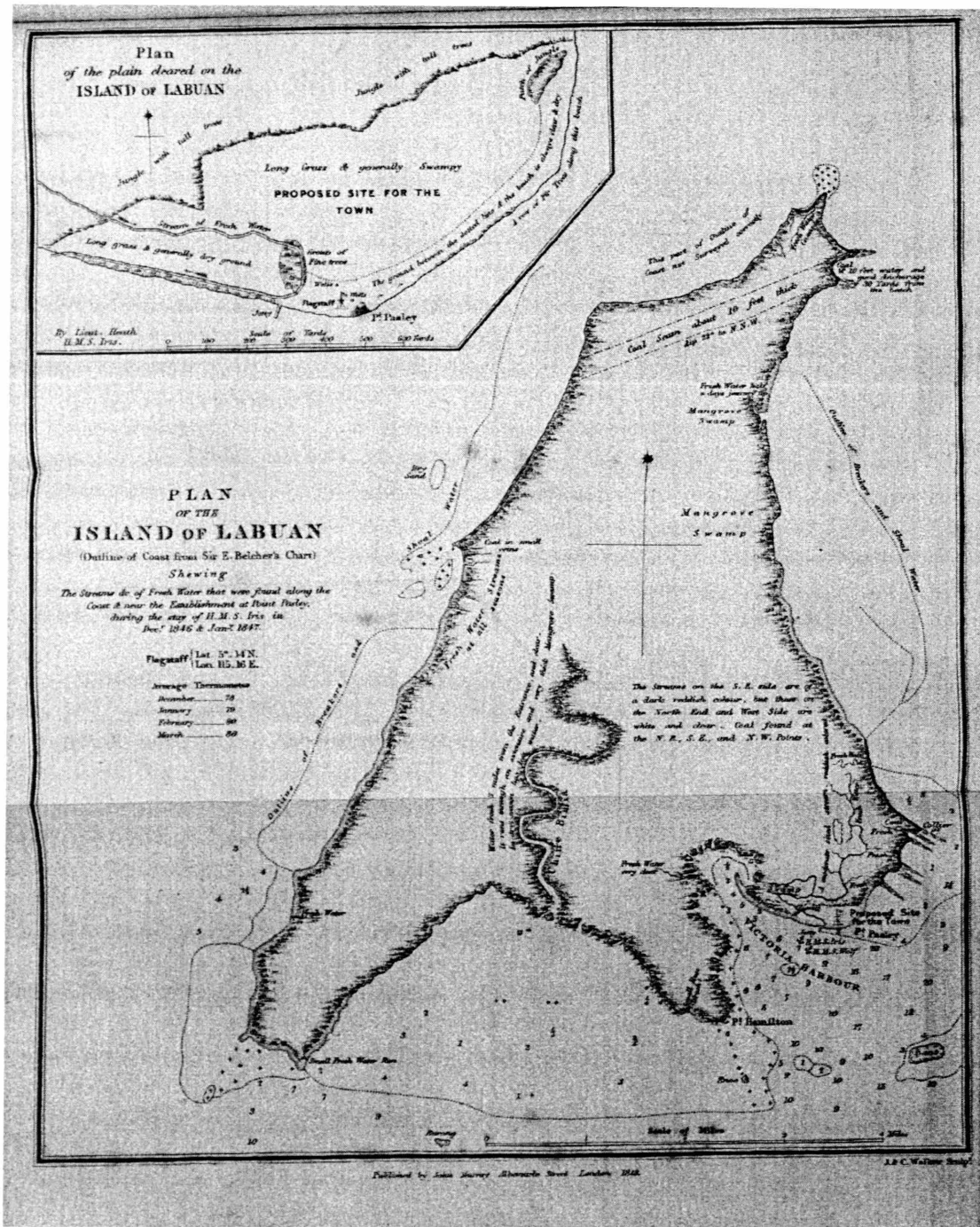
³ Royal B. Bradford, "Coaling-Stations for the Navy," *Forum* XXVI, no. 6 (1899): 733.

was formed much earlier in the 19th century, and at the core of this notion lay steam engines powered by coal.

Appendix



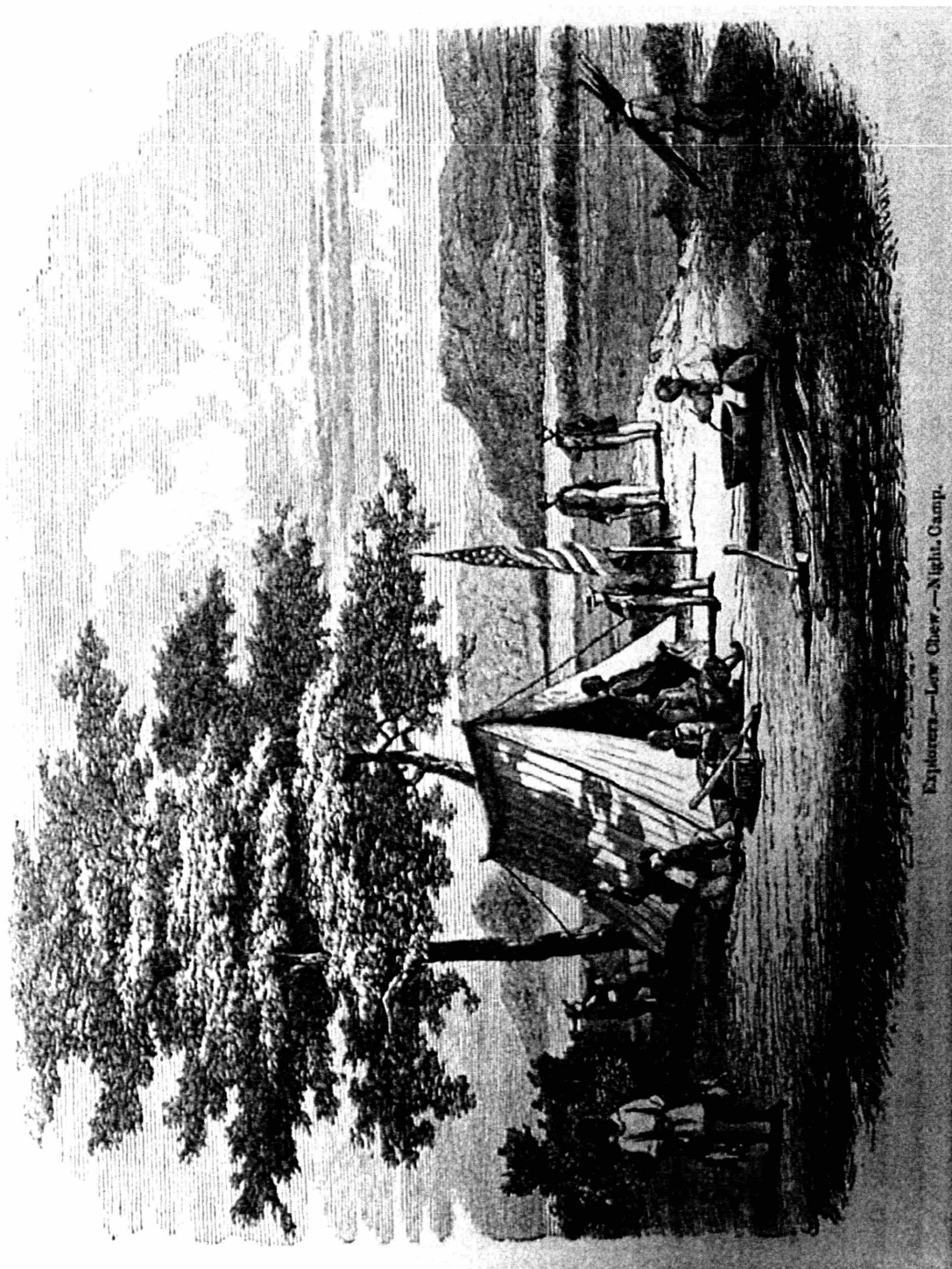
Map 1: Sketch of the “Coast of Borneo Proper” and the city of Brunei. From Captain Rodney Mundy and James Brooke, *Narrative of Events in Borneo and Celebes, Down to the Occupation of Labuan: From the Journals of James Brooke, Esq., Rajah of Sarawak, and Governor of Labuan. Together with a Narrative of the Operations of H.M.S. Iris*. 2nd ed. Vol. 2. London: John Murray, 1848, p. 396A.



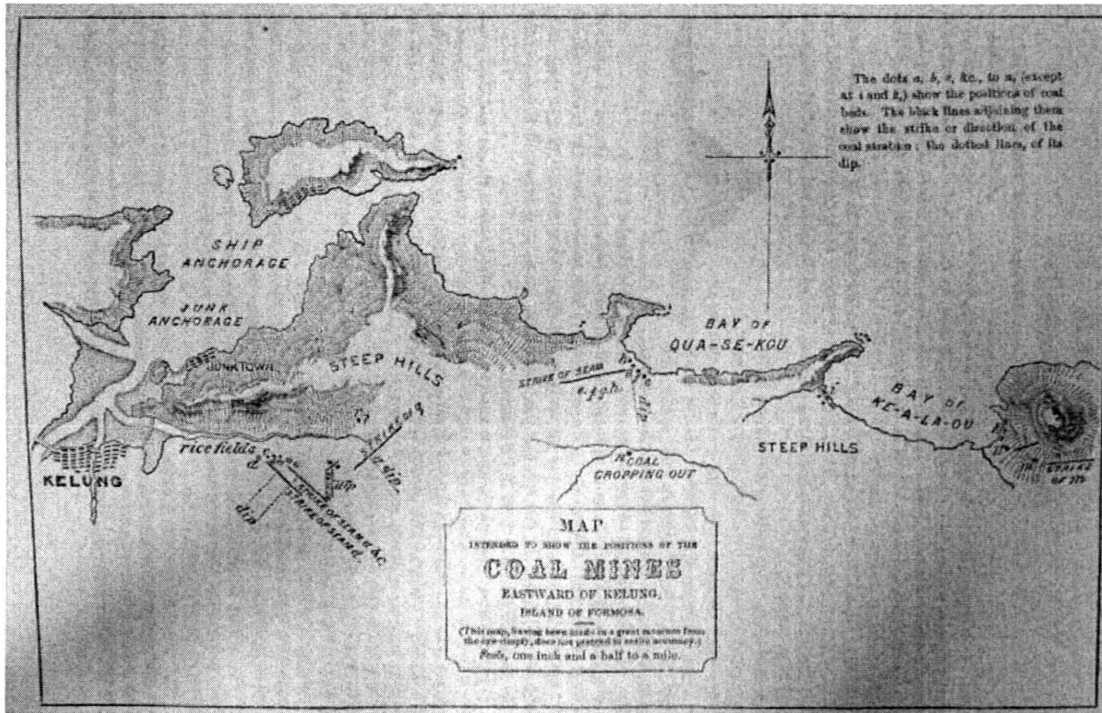
Map 2: "Plan of the Island of Labuan." From Captain Rodney Mundy and James Brooke, *Narrative of Events in Borneo and Celebes, Down to the Occupation of Labuan: From the Journals of James Brooke, Esq., Rajah of Sarawak, and Governor of Labuan. Together with a Narrative of the Operations of H.M.S. Iris.* 2nd ed. Vol. 2. London: John Murray, 1848, p. 396C.



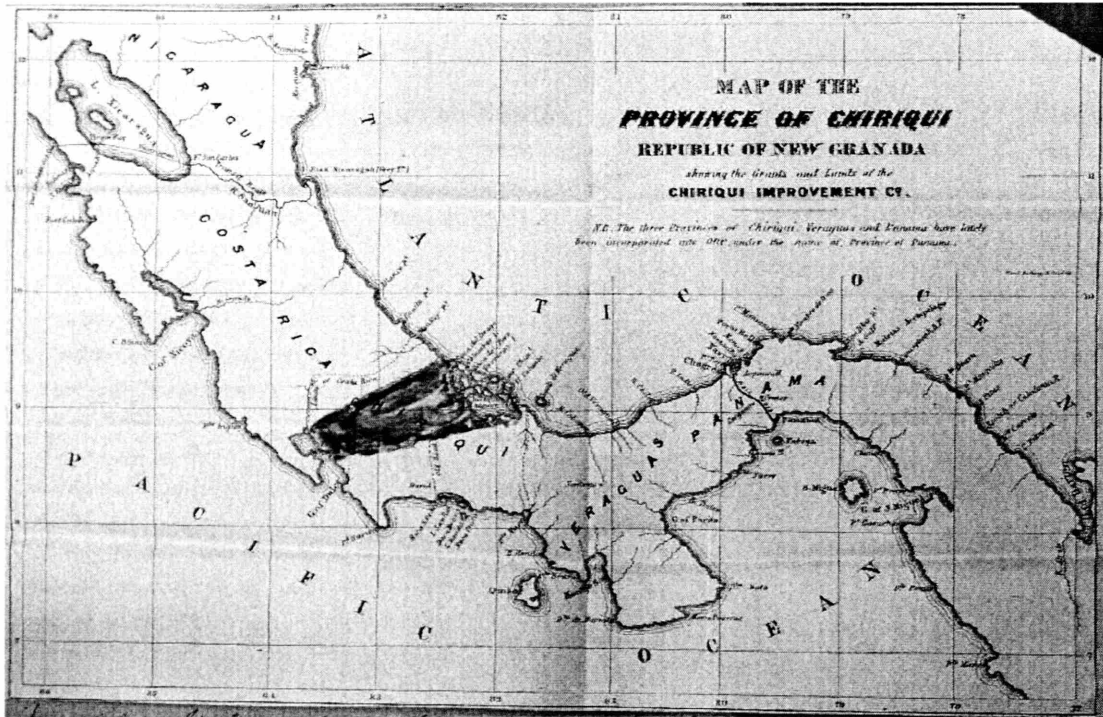
Picture 1: "Coal Seam at Labuan." From Captain Rodney Mundy and James Brooke, *Narrative of Events in Borneo and Celebes, Down to the Occupation of Labuan: From the Journals of James Brooke, Esq., Rajah of Sarawak, and Governor of Labuan. Together with a Narrative of the Operations of H.M.S. Iris.* 2nd ed. Vol. 2. London: John Murray, 1848, p. 348A.



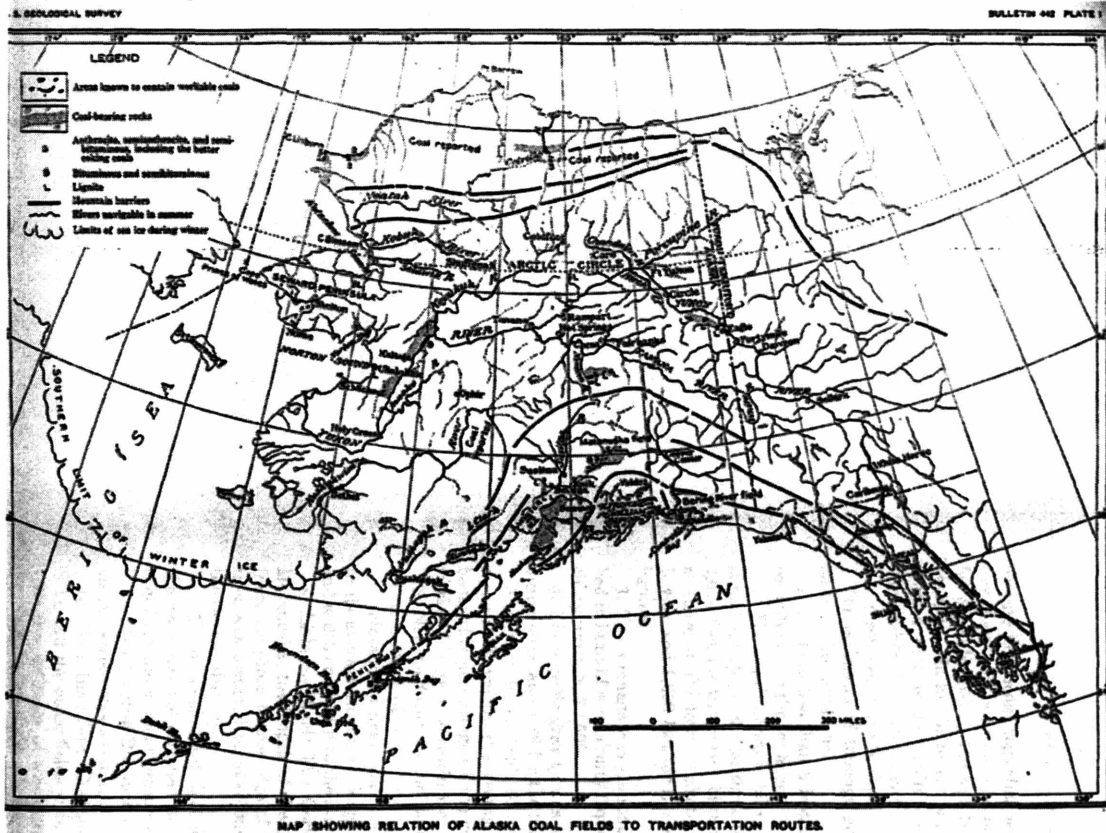
Picture 2: “Explorers.—Lew Chew.—Night Camp.” Wood cut by Japan Expedition artist Wilhelm Heine. From Matthew Perry and Francis L. Hawks, *Narrative of the expedition of an American squadron to the China seas and Japan, performed in the years 1852, 1853, and 1854, under the command of Commodore M.C. Perry*. Vol. 1. H. Ex. Doc. 97, 33rd Cong., 2nd sess., 1856, p. 166.



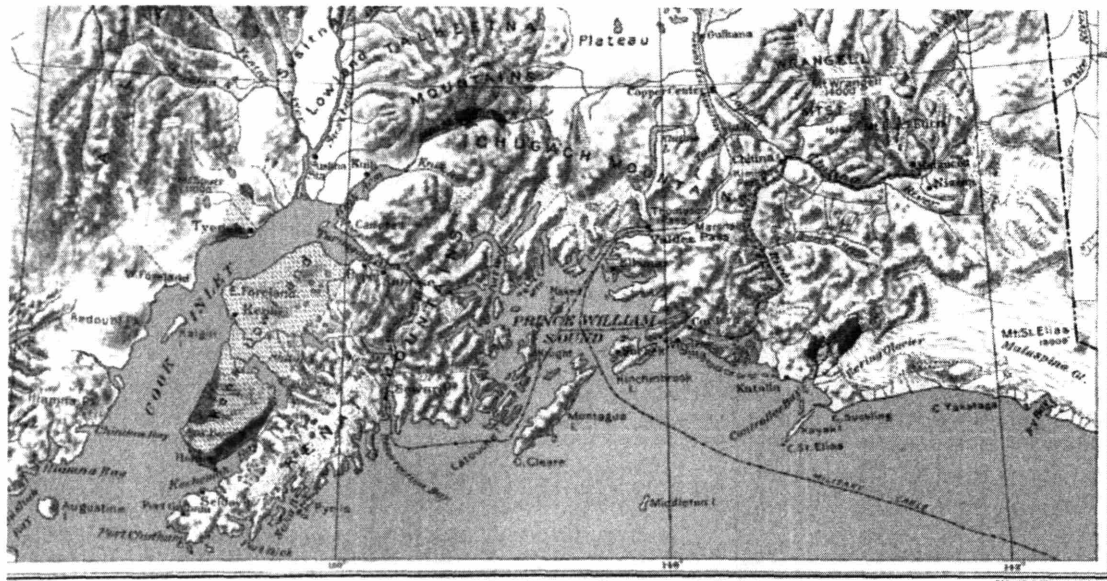
Map 3: "Map Intended to Show the Positions of the COAL MINES Eastward of Kelung, Island of Formosa." From "Reports Made to Commodore Perry on A Visit to the Coal Regions of the Island of Formosa," in Matthew Perry and Francis L. Hawks, *Narrative of the expedition of an American squadron to the China seas and Japan, performed in the years 1852, 1853, and 1854, under the command of Commodore M.C. Perry*. Vol. 2. *H. Ex. Doc. 97, 33rd Cong., 2nd sess., 1856*, p. 155.



Map 4: "Map of the Province of Chiriqui, Republic of New Granada," Ambrose W. Thompson's land shaded in brown. From Ambrose W. Thompson Papers, Box 43: Chiriqui Improvement Co., 1865-1866, Library of Congress.

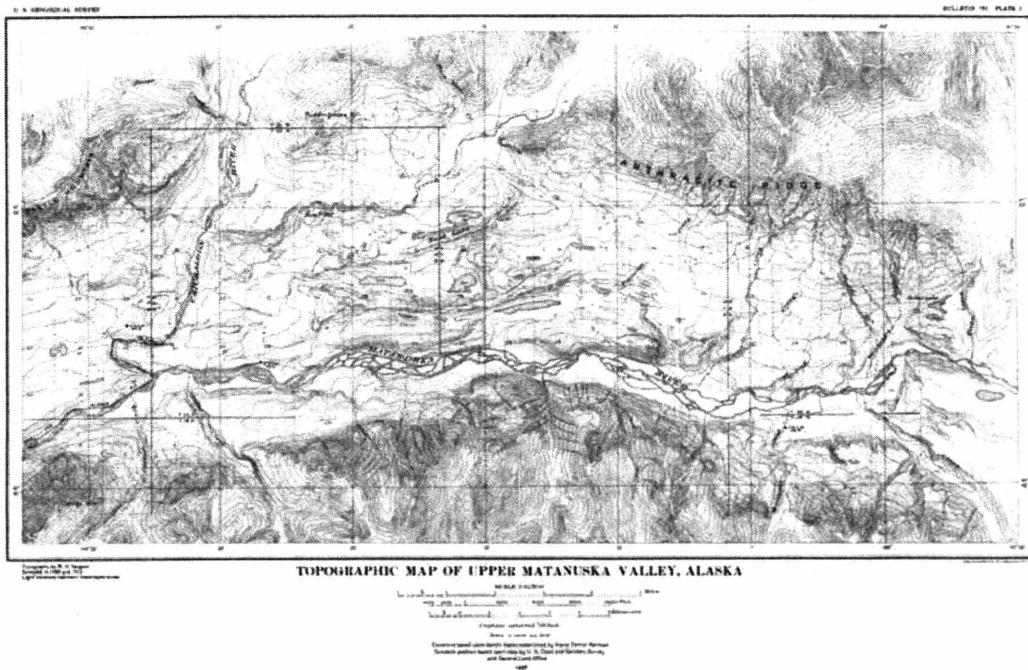


Map 5: "Map Showing Relation of Alaska Coal Fields to Transportation Routes." From *Mineral Resources of Alaska, 1910*, U.S. Geological Survey *Bulletin 442*, Plate 1.



MAP OF CENTRAL ALASKA SHOWING POSITION OF THE COAL FIELDS

Map 6: "Map of Central Alaska Showing Position of the Coal Fields." From *Geology and Mineral Resources of Kenai Peninsula, Alaska*: U.S. Geological Survey Bulletin 587, 1915, Plate 1.



Map 7: "Topographic Map of Upper Matanuska Valley, Alaska." From *Geology of the Upper Matanuska Valley, Alaska*, U.S. Geological Survey Bulletin, 791, 1928, Plate 1.



Picture 3: Photograph of the Chickaloon coal camp, circa 1920. From "Dec 1920 Report," Box No. 1, PC 31 Entry 17, "Reports from the Navy Alaskan Coal Commission, Dec 1920 and May 1, 1922, RG 80 General Records of the Department of the Navy 1798-1947, National Archives I.

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