Rule Britannia: Britain, Breadfruit, and the Birth of Transoceanic Plant Transportation

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Rule Britannia: Britain, Breadfruit, and the Birth of Transoceanic Plant Transportation

A Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

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by

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Introduction

*Rule Britannia!*

*Britannia rule the waves.*

*Britons never, never, never shall be slaves.*

Plant power…is the treasure that buys a nation’s independence and supremacy.…

*Plant power means world power.*

“I am in hell, sir! I am in hell!” Fletcher Christian’s (Mel Gibson) outburst toward Captain William Bligh (Anthony Hopkins) highlighted the mental anguish suffered by all of the *Bounty* officers and crewmen at the hands of Bligh. Christian’s emotional demonstration underscored the verbal and physical abuse Bligh had heaped upon the crew during their pursuit of breadfruit in this dramatic depiction of the mutiny on the *Bounty*. Perhaps it is the novelty and sensationalism of naval mutinies that makes the *Bounty* a popular cinematic subject, although transoceanic plant transportation was a novelty as well. As it turns out, movies fraught with sexual tension, thwarted romance, bloody beatings, and hot young men sell tickets; movies about breadfruit do not. As a result, the *Bounty* takes center stage in Royal Navy history, and breadfruit is merely the understudy. In reality, the impact of the

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Bounty mutiny on the British Empire paled in comparison to the advances realized by the pursuit of breadfruit and transoceanic plant transportation.

Expansion and colonization of the British Empire increased in the late eighteenth century out of necessity and due to the new British nationalism that was given life by the Seven Years’ War and the American Revolution.\(^5\) Beginning around 1750, the rise of the Second British Empire saw Great Britain lose some of the American colonies (keeping parts of Canada) and any future claims to the United States. Conversely, the British Empire gained the nearly equally large combined land masses of Australia and New Zealand, in addition to smaller islands to the east of Australia. Acquiring Australia gave the British a permanent Pacific base of operations and a place to house convicts, but the initial settlement was not self-supporting in its early years.\(^6\) Australian self-sufficiency and exports (particularly food) were things of the distant future, but the British pursued Pacific expansion nonetheless. British merchants and government were convinced that the Pacific arena was an untapped resource that could produce political and economic opportunities equal to those in the Atlantic.

During the First British Empire in the early half of the 1600s, the English colonized along the Atlantic seaboard of North America and in a handful of islands in the Caribbean. England laid claim to the Virginia colony with the establishment of Jamestown in 1607. British possession of Bermuda, Maryland, Rhode Island, Pennsylvania, the Carolinas, the remainder of the eastern American seaboard, and eastern parts of Canada quickly followed. Although the general assumption is that the English came to North America to escape


\(^{6}\) Alan Frost, *Sir Joseph Banks and the Transfer of Plants to and from the South Pacific, 1786-1798* (Melbourne, Aust.: Colony Press, 1993), 3-36.
religious persecution, others saw an opportunity to make money in the new North American colonies. Tobacco, rice and indigo in the southern Atlantic colonies and sugar in the island colonies brought England a handsome financial return. Growth of the First British Empire had slowed by the mid-1700s. By the time of the uprising in the American colonies in the 1770s, the First British Empire was in its death throes. However, the world was big and there were plenty of other “unclaimed” lands available for British control and exploitation.

Its extensive presence in the western Atlantic afforded Great Britain substantial political and economic clout in the global arena. Prior to the American Revolution, the British could count on revenue from goods flowing to and from the American colonies. Even with the loss of the American colonies, the British were still firmly ensconced in the New World. Their West Indian colonies produced massive amounts of sugar that resulted in a huge influx of cash into the British economy. British merchants and government looked to expand their customer base. Utilizing its naval and economic power, the British government and supporting merchants commissioned a series of scientific naval expeditions beginning in the mid-eighteenth century. These expeditions helped reveal possibilities for British expansion around the world. Even as the end of the First British Empire approached, the Second British Empire was beginning. The British Empire began to expand from its familiar Atlantic Ocean waters into the Pacific.

By the mid-eighteenth century, the main British sea trade route was the Atlantic triangle, where food shipped in to Great Britain but rarely out. Ships laden with manufactured goods such as copper, cloth, Asian silk, glassware, guns, ammunition, manila, and pots left Great Britain and headed to West Africa. Those goods were traded for slaves and indigo. The second leg of the triangle – the Middle Passage – took the ships from Africa
to the Caribbean and North America (after the 1690s), where the slaves were traded to plantation owners for sugar, molasses, rum, rice, coffee, tobacco, and cotton that was shipped back to Great Britain on the third leg of the triangle.\(^7\) High-volume trade with well-established colonies and countries translated into convenience and money for British merchants and manufacturers and for colonial planters, but colonies also presented problems. Small, isolated island colonies were vulnerable to food shortages and disease. Large colonies, on the other hand, developed their own cultures and politics, often chaffing under the imperial yoke.

The British relinquished their power over the financially lucrative and strategically located North American colonies as a result of the American Revolution. This meant losing control of exported American cotton and timber. Cotton was vital for the growing British textile industry, and timber was crucial for British ships, especially the masts.\(^8\) Already British shipbuilding was dependent on a foreign power, as the Dutch controlled the supply of Baltic flax and hemp, materials necessary for sails and cordage.\(^9\) With diminishing access to raw shipbuilding materials, it became possible for the British Royal Navy to be held commercially hostage by foreign powers.\(^{10}\) Determined to be at the mercy of no foreign suppliers – Britons would never be anyone’s slaves – the British decided that they should have free and easy access to botanical commodities normally supplied by other countries.

Fine cottons, sugar, raw lumber, dyes, spices, teas, and coffees topped the lists. Unlike subsistence crops, these products were not essential for survival; they were essential if the British desired to overcome the perceived mercantile trade dominance of the Dutch, French, Spanish, and Americans. The British remained at the mercy of outsiders as long as other countries controlled the supply of these plant items.

Taking charge of the plant product supply line meant the British needed to do one of two things. They had to either control the country of product origin or grow the product themselves on land they already possessed. Long-distance management of large colonies proved problematic at times, as evidenced by the American Revolution. The British appeared to choose the easier route by promoting commodity crop production on their smaller, more easily managed islands. Convicts and black slaves could be made to submit more readily than free whites. Since cotton, sugar, dye plants, spices, tea, and coffee generally grew in tropical regions, and since the British administered several tropical islands in the West Indies, the Caribbean seemed the natural choice for the new agricultural venture. Sugar was already a burgeoning industry on Jamaica so the British reasoned that other tropical plant products would probably also grow well there. The one disadvantage was that sugar required extensive labor by thousands of slaves in order to bring the cane to harvest. New commercial crops would involve more slaves, and more slaves meant greater food production from already agriculturally strained islands. British planters were reluctant to relinquish sugar cane fields to subsistence crops, so any new food crop needed to produce abundantly on limited land. Thus the British needed to find a way to supply those islands with subsistence crops. The British Royal Navy proved an indispensable tool in the pursuit of successful transoceanic plant transfer.
British Caribbean food requirements fostered transoceanic plant husbandry and an increase in British expansionism in the Pacific arena. By 1762 the race to introduce new plants into the Caribbean was on. The French were the first out of the gate, transplanting coffee into Martinique around 1720. \(^\text{11}\) Historian Richard Drayton argues that, in addition to the desire to control their food chain, the British “were driven by competition with France, and responded to French precedents.” \(^\text{12}\) Some British officials worried that the French had already introduced breadfruit to the Caribbean. \(^\text{13}\) Indeed, the French had previously introduced cash crops such as cinnamon, cloves, nutmeg, and black pepper to the West Indies. If the French had already transplanted breadfruit and gained the ability to feed larger numbers of slaves, then the commercial crop production of French Caribbean colonies would soon outpace, and possibly replace, that of the British colonies. The Dutch and Portuguese were growing fine cotton in Guyana and Brazil; these countries could supply their textile miles and were not dependent on foreign cotton. Portugal also controlled the timber industry (yet another shipbuilding commodity) in Brazil, a location that offered a near-Caribbean arrival and departure point. \(^\text{14}\) The close proximity of the French, Dutch, and Portuguese Caribbean colonies to those of the British West Indies made it easy for a merchant to conduct business with any one of the four European entities. Larger commercial crop production in these colonies meant lower cost, so a merchant might be more inclined to deal with the colony offering the best deal. Surely the British government was financially compelled to compete with these other European counterparts. Introduction of a sustainable crop to their

\(^\text{13}\) Ibid, 109-16.
\(^\text{14}\) Ibid, 112.
West Indian colonies would allow the British to farm more cash crops increasing their profits.

The need for the British to move food crops to their Caribbean colonies became more pressing with the advent of the American Revolution. Before the revolt, the American colonies were the primary source for West Indian food supplies. Loss of North American food imports for the sugar plantation slaves would mean the end of the British economic sugar juggernaut and would halt plans for expanded production of other crops. A steady dependable food supply for the labor force was a must if the British intended to take charge of their own crop supply and production. The questions then became what food fit the bill, from where would it come, and how would it get to the West Indies? Although British merchants and government agents formulated no official expansion plan, they shared a collective desire to preserve global British supremacy in all things political and economic. Since Great Britain maintained a presence in the Atlantic and Indian Oceans, expansion into the Pacific became the next frontier. Voyages of discovery that centered on plant transplantation to the British West Indies became key to British success.
Eighteenth-Century British Caribbean Colonies

Extent of the First British Empire in 1763.\textsuperscript{16}

Chapter One

The Catalysts

June 26, 1783
Vast dew, sun, sultry, misty, & hot. This is the weather that men think is injurious to hops. The sun ‘shorn of his beams’ appears thro’ the haze like the full moon…. The blades of wheat in several fields are turned yellow, & look as if scorched with the frost…. Red even: thro’ the haze…. Sun looks all day like the moon, & shed a rusty red light.

June 28, 1783
The country people look with a kind of superstitious awe at the red louring aspect of the sun thro’ the fog….

July 2, 1783
The foliage on most trees this year is bad….

July 11, 1783
No dew, sun, & hase, rusty sunshine!

July 19, 1783
Men talk that some fields of wheat are blighted…. Hops grow worse, & worse.\textsuperscript{17}

From his village in southern England just north of the coastal town of Portsmouth, naturalist Gilbert White documented the unusual atmospheric conditions of that summer and their subsequent effects on the English farms and countryside. Six hundred miles to the north, and a mere six days earlier, the Laki volcano fissure in Iceland had begun erupting, producing an ash cloud that spread poisonous fallout across northern Europe, but White did not know

that. He simply knew that the weather was peculiar, the crops were failing, and the locals were fearful.

White was just one of the hundreds of thousands of British Isles subjects who experienced the fringes of one of many natural disasters and manmade situations that renewed British interest in global colonization in the late eighteenth century. The British viewed worldwide colonization of island colonies and other remote outposts as the key to increased oceanic trade and worldwide dominance. Most distant islands and outposts, however, possessed limited natural food resources, a circumstance the British needed to overcome if they were to expand successfully. The volcanic eruption in the north, numerous hurricanes further south in the British West Indies, involvement in revolutions and other military conflicts, and obstinate and unskilled convicts in the new penal colony of New South Wales all combined to reinforce Great Britain’s need to maintain control over its own food supply and suppliers.

The British desired to be free of non-British supply lines and in control of the agricultural plant commodities popular in Great Britain during the mid- to late eighteenth century by eliminating the middleman. In this case, the middleman turned out not to be a merchant but the source country or the country that controlled the source: America, Spain, France, China, and the Netherlands. British merchants and high-ranked government officials wanted to remove the obstacles from the British food chain that impeded British commerce and endangered the well-being of British citizens. With limited natural resources on their

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settled and colonized islands, the British needed to find a way to renew food supplies without continually importing fresh food and other plant products from other countries. Embargoes and trade restrictions made international commerce difficult. With an established presence in the Atlantic, expansion into the Pacific arena during the second half of the eighteenth century was next logical step. This led the British to colonize further abroad and explore innovative ideas in plant husbandry.

While Great Britain maintained superior naval power over its trade rivals, it lacked strategic presence in certain areas around the globe in terms of colonies and outposts. Great Britain also lacked the ability to provide ample food supplies to colonies beyond the British Isles. The British navy dominated the oceans, but other countries dominated the global safe harbor landscape. Other countries claimed possession of more ports around the world for their ships than Great Britain. A Spanish ship leaving Spain, for instance, could find safe harbor in Spanish ports in the Caribbean, Venezuela, Argentina, anywhere along the entire west coast of the Americas, and the Philippines. 19 This provided Spain with ready access to the Atlantic and Pacific Oceans. Even though the British could move in and out of Spanish ports, it was not the same as using a British-controlled supply site. 20

Even the Dutch, from their tiny European state, controlled an astonishing array of oceanic colonies around the globe. These sites included the Dutch West Indies in the Caribbean (Netherlands Antilles), Guyana and Suriname on the northeastern coast of South America, the Cape Colony in South Africa, the Dutch East Indies (Indonesia), Dutch Ceylon (Sri Lanka), New Holland (Western Australia), Van Diemen’s Land (Tasmania), and even

parts of Iran.\textsuperscript{21} They, too, claimed easy access to the Atlantic and Pacific and their Dutch East India Company practically dominated trade on the Indian Ocean routes.

Cost plus vulnerability made foreign ports less desirable and less attractive for British use. Captain James Cook for example, on his first voyage as commander of his own ship in 1768, stopped at Rio de Janeiro after leaving Great Britain and crossing the Atlantic. Because Cook’s ship, the \textit{Endeavour}, had been retrofitted for a voyage of discovery and looked a bit peculiar, the Portuguese Viceroy did not believe the ship was a British naval vessel.\textsuperscript{22} He accused Cook and his crew of being smugglers or spies and threatened to arrest anyone from the \textit{Endeavour} who set foot ashore. Cook spent almost three weeks sorting out the situation, with letters and memoranda shuttling back and forth between himself and the Viceroy. The Viceroy finally relented and supplied Cook with food and water, but it was a situation Cook never would have endured had he landed at a British port.\textsuperscript{23} The need for supplies, especially food, placed Cook and the British at the mercy of other countries.


\textsuperscript{22} Prior to 1790 ships were referred to in full as “His Majesty’s Ship” or “His Majesty’s Armed Vessel” to indicate that the ship belonged to the Royal Navy. For example, the \textit{Bounty} was His Majesty’s Armed Vessel (HMAV) \textit{Bounty}. The earliest record of a ship using the HMS appellation occurs in 1789. The addition of the acronyms occurs in references to ships after this date and may or may not be appended to vessels named prior to this date. For ease of reading, these identifiers have been omitted here. Royal Naval Museum, “Frequently Asked Questions of the Sailing Naval Gallery,” http://royalnavalmuseum.org/visit\_see\_sailfaq.htm#Eleven (accessed Feb. 22, 2011).

\textsuperscript{23} The \textit{Endeavour} was a revamped collier, or freighter. The Admiralty had wanted to use a 24-gun frigate, but relented when it was explained that the frigate would not come near to holding all of the supplies that would be required for a journey around the world. Oliver E. Allen, \textit{The Pacific Navigators} (Alexandria, Va.: Time-Life Books Inc., 1980), 109-10, 114-15; William T. Stearn, “A Royal Appointment with Venus in 1769: The Voyage of Cook and Banks in the \textit{Endeavour} in 1768-1771 and its Botanical Results,” \textit{Science, Empire and the European Exploration of the Pacific}, ed. Tony Ballantyne (Burlington, Vt.: Ashgate, 2004), 97-98.
Food was a major bargaining chip in global control and expansion. Great Britain imported much more food than it exported. The average British diet consisted mostly of meat (when affordable), onions, potatoes, bread, and cheese. The poor ate bread made of barley and oats, while the rich could buy bread made of wheat. Fruit was rare and vegetables were not grown in exportable amounts. Only the rich could afford vegetables other than potatoes and onions. This made Great Britain less than useful for provisioning some of its outlying colonies. Those colonies included Gibraltar, that anomaly on the coast of Spain; the American colonies, with which the British were at war from 1775 to 1783, and which produced most of their own food and exported a great deal more; and Jamaica and the British West Indies, which could not produce enough food to support themselves and were not allowed to import food from America due to trade restrictions imposed during the American Revolution. Other British holdings included tiny St. Helena Island in the south Atlantic, which was not a huge settlement, but hosted a continuous procession of British ships nonetheless; Florida, which Great Britain gave up to Spain in 1783; parts of coastal India; and New South Wales. Since nascent New South Wales proved tenuous, the British essentially had no truly secure Pacific presence and therefore no Pacific base from which to provide support to British nationals and British endeavors. Small remote outposts and island

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colonies could fill the British requirement for provisioning away from home, but those settlements had to first provide for themselves.

The need for the smaller British island colonies to become self-sustaining became apparent when Jamaica’s slave population was devastated by critical food shortages triggered by the hurricanes and droughts of the 1780s and by the prohibition of imports (especially food) to Jamaica from the American colonies during the American Revolution. In the case of Jamaica, because the colony’s focus was on sugar and not food crops, a series of catastrophes in the Caribbean during the 1780s endangered the lives and food supplies of the slave populations of British plantations, which thus endangered the sugar industry.

Natural disasters in Europe and the Caribbean initially heightened British uneasiness concerning food supplies and availability. Jamaica – perhaps Great Britain’s most important West Indian outpost and one of the leading sugar producers of the late eighteenth century – was heavily dependent on slave labor to maintain the sugar plantations and required food to fuel the slave engine. Limited landmass and the high value of sugar meant that a bare minimum of the Jamaican countryside was planted with food crops. Exports from the American colonies to the islands included not only food but also wood for fuel, construction, and casks for shipping the sugar, and livestock for powering the sugar mills. By 1770 American colonial exports to the West Indies totaled £759,000 (over $121 million today).²⁶

The Navigation Acts contributed to the growth of the sugar industry by mandating that certain products grown in the British colonies, including sugar and tobacco, could only be shipped to English ports. Once in England, the goods were distributed to markets around the globe. The rationale was that world traders were more likely to visit England – a place

with established trade habits – rather than small colonial ports. This drawn-out process gave colonial planters greater exposure to the rest of the commercial world and boosted planters’ profits.\(^{27}\) According to historian and economist John McCusker, the value of sugar exported from the British West Indies to Great Britain and North America from 1768 to 1772 was £2,762,250 (over $441 million). Rum and molasses added another £1.2 million to the bottom line.\(^{28}\) West Indian exports were worth more than four times the cost of imports, making planters less inclined to plant subsistence crops. Cane field space was too valuable. While the British government and plantation owners were able to control shipping and increase profits via the Navigation Acts, the weather was outside of their control. During the American Revolution, conflict dried up outside food sources for Jamaica, and weather limited internal ones.

The War for American Independence from 1776 until 1783 made controlling American exports a political necessity. So at the beginning of the war, Great Britain banned the purchase of American exports by its colonies. This was particularly problematic for Jamaica. Over a period of seven years, from 1780 through 1786, a succession of misfortunes endangered Jamaican economy. Hurricanes battered the island in 1780, 1781, 1784, 1785, and 1786, interrupting trade and decimating domestic food reserves.\(^{29}\) Jamaican planter and politician Bryan Edwards wrote a history of the West Indies in 1793, quoting “a report of a committee of the assembly of Jamaica.” He noted that because “the storms of 1780 and 1781” occurred “during the time of war, no foreign supplies, except a trifling assistance from

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\(^{28}\) McCusker and Menard, *Economy of British America*, 160.
prize-vessels, could be obtained on any terms, and a famine ensued in the leeward parts of the island, which destroyed many thousand negroes.” 30 Edwards pointed out that “the plantain walks, which furnish the chief article to support the negroes, were generally rooted up, and the intense drought which followed, destroyed those different species of ground provisions which the hurricane had not reached.” 31 Since British policy prohibited the introduction of goods from countries with which Great Britain was at war, vital food imports from the American colonies were not allowed into Jamaica. Three years after the storm of 1784 and contrary to official British wartime procedure, the lieutenant governor of Jamaica finally permitted “the free importation of provisions and lumber in foreign bottoms, for four months” from American sources. 32 After extending this permission through the end of January 1785, the lieutenant governor informed his advisors that he could no longer disobey the British regulations against American trade and once again suspended American imports of food and other supplies. 33

Fortunately, crops in Jamaica began to rebound that spring and summer and “considerable quantities of corn and ground provisions” were harvested by August. 34 Then the fourth hurricane hit. Edwards wrote,

the lieutenant-governor immediately shut the ports against the exportation of any of our provisions to the French and Spanish Islands, which were supposed to have suffered more than ourselves; but not thinking himself at liberty to permit the importation of provisions in American vessels, the productions of the country were soon exhausted, and the usual attendants of scanty and unwholesome diet, dropsies

31 Powell, Voyage of the Plant Nursery, 8.
32 Ibid.
33 Ibid, 9.
34 Ibid.
and epidemic dysenteries, were again dreadfully prevalent in the spring and summer of 1786, and proved fatal to great numbers of the negroes in all parts of the country.\textsuperscript{35}

One year later, in October 1786, as Jamaica still struggled to regain its footing from the effects of the fourth hurricane, the fifth hurricane struck and “again laid waste the leeward parishes” that had been destroyed five years earlier.\textsuperscript{36} All told, after seven years of misfortunes, the Jamaican assembly said,

\begin{quote}
we hesitate not…to fix the whole loss [of slaves] at fifteen thousand: THIS NUMBER WE FIRMLY BELIEVE TO HAVE PERISHED OF FAMINE, OR OF DISEASES CONTRACTED BY SCANTY AND UNWHOLESOME DIET, BETWEEN THE LATTER END OF 1780, AND THE BEGINNING OF 1787.\textsuperscript{37}
\end{quote}

In the context of this dire need and devastation, the first breadfruit expedition set sail from England in the summer of 1787. William Bligh commanded the mission that later became known for the mutiny on the \textit{Bounty}, an unmitigated and embarrassing failure for the Royal Navy.\textsuperscript{38}

During this climatically turbulent period in the Caribbean another event occurred near the Arctic Circle that had wide-ranging effects on the entire European continent and ultimately on Great Britain’s ability to provision its colonies. On June 8, 1783, the Laki fissure in Iceland began an eruption that lasted until February 1784.\textsuperscript{39} The volcano interrupted normal agricultural activity in northern Europe for more than three years and produced immeasurable negative long-term effects on farming and livestock. According to reports circulated in local British journals during 1783, atmospheric conditions that June and

\textsuperscript{35} Powell, \textit{Voyage of the Plant Nursery}, 9.  
\textsuperscript{36} Ibid.  
\textsuperscript{37} Ibid.  
July in Great Britain, Scotland, France, and Germany were variously described as “frost,” “severe frost,” “haze, smoky fog,” “uncommon gloom,” “odorous, dry fog,” and “infectious smell.” Crop damage reports noted withered and yellowed crops, leaf loss, and mildew. Naturalist White recorded multiple instances of severe thunderstorms accompanied by hail and lightning, a common occurrence with heavy volcanic ash fall. The hail and excessive rain damaged crops and, in some instances, lightning strikes killed some livestock. Other livestock died from a combination of eating grasses tainted with acidic fallout, loss of foraging crops due to acidic fallout, and starvation due to the failure of feed crops such as hay and oats. These effects were not as severe in Great Britain as in Iceland, but they were present and serious enough to considerably limit production of British food supplies at home, and therefore the availability of food for export to its colonies.

Scientists John Grattan and Daniel Charman published a study in 1994 that offered summarized, detailed accounts of “climatic conditions and apparent acid damage in Britain” caused by Laki’s volcanic fallout. Grattan and Charman pointed out that the shedding of leaves is a classic response to concentrations of fluorine and hydrofluoric acid, and charring is typical of damage caused by a sulphuric acid aerosol. All these reported symptoms suggest that acid volatiles were present in sufficient concentration to cause serious plant damage. The Laki fissure eruption is the most likely source for these.

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40 Grattan and Charman, “Non-climatic Factors,” 103.
41 Ibid.
42 Grattan and Brayshay, “An Amazing and Portentous Summer.”
43 White, The Natural History of Selborne.
44 In Iceland, 79 percent of the sheep population, along with 50 percent of the cattle and 76 percent of the horses, died from a combination of eating grasses tainted with acidic fallout, loss of foraging crops due to acidic fallout, and starvation due to the failure of feed crops such as hay and oats. Twenty-four percent of the population died from starvation as a result of the crop and livestock failures, Grattan and Brayshay, “An Amazing and Portentous Summer,” 126.
Based on the documentary evidence, Grattan and Charman concluded “that the Laki eruption of 1783 caused significant environmental damage in southern Britain and western Europe due to acid deposition.” Further, these researchers think, “that large areas of…Britain are sensitive to minimal levels of acid deposition and have a limited capacity for recovery… Severe direct damage to one season’s crop followed by…soil acidification…may have been more significant.” In other words, volcanic fallout poisoned the soil in Great Britain, most likely affecting crop production for many years and hampering Great Britain’s potential ability to provide food the to Caribbean colonies. If the British colonies could not their own grow food and could not import food from other countries, then what could they do?

Not only did Laki affect Great Britain’s agricultural productivity, it impacted other parts of Europe, particularly France, where the government and citizenry were already in turmoil. Benjamin Franklin, working in Paris as the American ambassador, documented conditions that summer in Europe and North America. He made note of “a constant fog over all Europe, and a great part of North America.” He noted that the sun’s “summer effect in heating the earth was exceedingly diminished” leaving the earth “nearly frozen.” The snows did not melt and “received continual additions…the air was more chilled, and the winds more severely cold.” He called the winter of 1783-84 “more severe, than any that had happened for many years.” Judging from Franklin’s comments, the acidic soil and atmospheric conditions present in England persisted on the European continent as well, thus impairing the ability of all of Europe to feed itself. Some researchers have speculated that the volcanic

46 Grattan and Charman, “Non-climatic Factors,” 104.
47 Ibid. (Italics mine)
fallout from Laki contributed to the famine in France by exacerbating the widespread starvation that led to the French Revolution. The revolution coupled with the loss of agricultural productivity in turn jeopardized British food trade prospects with France.\textsuperscript{49}

By the 1770s France, one of Great Britain’s main European competitors, claimed few tropical colonies, but their value was inversely proportional to their size. For example, in the Treaty of Paris in 1763, the French negotiated a swap with the British: since the French considered Guadeloupe extremely valuable to their economy, they agreed to give up all claims to Canada if the British would give the tiny Caribbean island back to France.\textsuperscript{50}

Guadeloupe was the wealthiest province in the world, its riches a product of the sugar and coffee trades and garnered on the backs of slave labor, a situation similar to that of the British West Indies.\textsuperscript{51} On the other hand, Guadeloupe’s population included over a half million slaves, where Jamaica claimed less than 200,000, more than half of the 350,000 slaves in the British West Indies by 1780.\textsuperscript{52} Throughout the American Revolution, however, the French maintained good relations with the Americans and continued to import American goods and food supplies. As a result, Guadeloupe’s large slave population suffered less from the hurricanes of the 1780s than the smaller slave population of the British West Indies. In the

\begin{flushright}
\textsuperscript{49} Kwintessential, “Laki Volcano Eruption Iceland,” http://www.kwintessential.co.uk/articles/article/Iceland/Laki-Volcano-Eruption-Iceland/529 (accessed October 15, 2010). This claim is made on several websites, although there is a dearth of scholarly information for the assertion. However, based on research cited here by Grattan, Charman, and Brayshay, this conclusion is highly plausible.
\textsuperscript{51} Ibid.
\end{flushright}
end, French overseas trade grew five times larger throughout the eighteenth century – mainly because of goods flowing from the Caribbean and their ability to import American food supplies – and only showed signs of slowing while in conflict with Great Britain during the American Revolution from 1778 to 1783.  

At the other end of the disaster spectrum, human ineptitude and willful disobedience nearly led to the collapse of the New South Wales settlement shortly after the arrival of its first convicts in 1788. Sir Joseph Banks, King George III’s royal gardener and president of the Royal Society, went to great lengths to supply plant materials to the ships that transported the convicts to the New South Wales settlement in Port Jackson. The government’s intent was that the settlers become self-sufficient to the point of over-abundance and thus create a British supply station in the south Pacific. Banks gathered a wide variety of food botanicals to accompany the first shipment of convicts. Among the fruit trees Banks included peaches, nectarines, apricots, apples, pears, plums, lemons, limes, mulberry, fig, and cherries. He added almond, walnut, chestnut, and filbert trees to the cargo list, plus herbs such as basil, fennel, marjoram, thyme, tarragon, chamomile, sage, mint, and sorrel. Banks also directed the inclusion of dozens of types of seeds, among them spring and winter wheat, barley, carrot, cabbage, asparagus, beet, cauliflower, cucumber, broccoli, and lettuce. Other seeds and crops “for commerce” – hemp, flax, rhubarb, tobacco, potatoes, and oats – also joined the cargo. Unfortunately, the settlers were ill-equipped to care for the plants and seeds.

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From its establishment in 1788 until it stabilized by 1791, New South Wales was unable to sustain itself between provisioning shipments from Great Britain. For the first three to four years after colonization in the south Pacific, New South Wales was heavily dependent on food imports and could not be counted on as a British food supplier. Viewed not only as a convict colony, New South Wales was also conceived as an important supply, rest, and recreation outpost for sealers (and sailors) who worked the seas around southern Australia.\textsuperscript{56} With such a large landmass, the British hoped New South Wales and the rest of Australia might produce enough food to replace what was no longer available from the Americans. To that end, Banks heavily provisioned the first ships for New South Wales. It was imperative that this antipodean colony thrive in order for the British Empire to be a global economic player. However, the newly established convict settlement nearly collapsed under the weight of agriculturally inexperienced and uncooperative detainees.

Governor Arthur Phillip’s “advices” to the Pitt administration in 1788 outlined the colony’s problems: the land was not as fertile as had been expected, the convicts refused to work, agricultural expertise was lacking, and on-hand supplies were quickly used up.\textsuperscript{57} Governor Phillip also noted that the settlement experienced an “unexpectedly rapid depletion of breeding stocks of domestic animals” caused by the animals eating poisonous grasses, the effects of storms, poor supervision, and “improvident slaughter for food.”\textsuperscript{58} The Home Office recognized that the New South Wales settlement might not be self-sufficient within three years as originally planned and would certainly not be able to supply food to Great Britain.

\textsuperscript{57} Frost, \textit{Sir Joseph Banks and the Transfer of Plants}, 17-19.
\textsuperscript{58} Ibid.
and other British colonies. Indeed, without further, and almost immediate, shipments of plant and seed materials, it was likely the colony would collapse.

The government responded rapidly to Phillip’s report, promptly outfitting and loading the *Guardian* with provisions for the colonists - it only took four months to prepare. Unfortunately, the *Guardian* hit an iceberg and sank on Christmas Eve 1789 during the last leg of its journey, underscoring the need for colonial self-sufficiency and more strategically placed supply sites. The replacement ship *Gorgon* finally reached the colonists with replacement provisions in 1791.59 By that time New South Wales colony was in dire straits agriculturally.

Along with natural disasters and obstreperous villains, wars forced the British to look for alternative trade partners and trade routes. War and political upheaval were serious barriers to imported food supplies in Great Britain and its colonies. From 1750 through the end of the century, sea trade suffered as the British were engaged in conflict with Spain, France, the American colonies, and the Dutch, sometimes all at once, most notably during the Seven Years’ War.60 Additionally, Spain and France took advantage of the American Revolution and participated on the American side to foster their own ends: Spain wanted Gibraltar back, and France had been at odds with England off and on for so long that it seemed natural to take the American side against Great Britain.61 By the time of the French Revolution in 1789, alliances had changed once again, but the French were struggling with

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their own meager food supplies and sought to ease their food and money troubles in any way possible. 62

The French Revolution made British trade with that country and its colonies practically impossible. The Laki eruption interrupted the French ability to provide acceptable quantities of food to its own people and war and revolution cost money. From 1789 until 1801 and beyond, internal chaos put France at odds with nearly everyone except the Americans. Naval battles between the French and the British were the most common. This meant that ships flying French or British flags on the high seas were fair game for the opposing country. A merchant ship flying British colors, for instance, was constantly at risk of being taken as a “prize” by a passing French warship or privateer, and vice versa. 63 Whatever cargo was taken from the ship became spoils of war. Food and money were especially valuable.

Asian trade also became financially more prohibitive. The Dutch East India Company required millions of pounds in bullion (as much as £24 million by 1800) from the British in order to purchase goods in the East. The British produced little, if anything, of interest to the Chinese except precious metals. Silver came primarily from the American colonies and gold mostly from mines in Wales, Cornwall, Spain, and Portugal. The silver supply dried up with the American Revolution. Excessive demand for gold by the Chinese undermined the basis of the British economy. It eventually became financially unreasonable to supply the gold and silver bullion required to purchase Chinese commodities. Instead of using bullion, Great

Britain needed to develop a source of trade items of interest to the Chinese.\textsuperscript{64} Expansion into the Pacific might provide a source for those items. At the very least, it would shorten trade distances, minimizing British dealings with the East India Company and keeping more money within the Empire.

Asian and Middle Eastern ground trade during this time was at risk as well, as upheavals in eastern countries threatened overland routes. Turkey (ruled by the Ottomans), Persia (ruled by the Safavids), and India (ruled by the Mughals) all experienced “tribal breakouts.” This resulted in the formation of regional economies – as opposed to former centralized economies – leading to the creation of new states.\textsuperscript{65} During this period, the Ottomans in Turkey fought a series of wars with Russia, and the Austrian/Balkan frontier shifted with regular frequency.\textsuperscript{66} The Persians invaded India in the mid-eighteenth century, causing enough turmoil and unrest to allow the British to eventually assume control of India.\textsuperscript{67} These transitions were often accompanied by strong ethnic loyalties and increased suspicion of outsiders.\textsuperscript{68} The Ottoman and Mughal empires eventually crumbled. Although they were not directly involved in the Middle Eastern political strife at this time, the British still felt the effects of the discord. However, the war with the Americans had far more effect on British trade.

\textsuperscript{68} Bayly, \textit{Imperial Meridian}, 35-45.
During the American Revolution, both governments imposed trade restrictions on each other. In retaliation for the Navigation Laws and the Townsend Acts, the American First Continental Congress placed restrictions on trade with the British with its documents “Declaration and Resolves” (October 14, 1774) and “Association” (October 20, 1774).\(^{69}\) Within these documents, the Americans prohibited the import of “East-India tea from any part of the world” and molasses, syrups, paneles, coffee, and pimiento from “the British plantations or from Dominica.”\(^{70}\) Americans were also encouraged to limit use of sheep and wool, the traditional source of which was Great Britain. Americans were urged to abstain from horseracing and cockfighting since legislators considered these animals agricultural collateral. Interestingly, these proclamations also discouraged outward shows of mourning, presumably because of the wool involved in making mourning clothes.\(^{71}\) Restricting use of livestock to agricultural and food purposes prevented wasteful use of the animals and allowed the colonies to maintain independent supplies of livestock as food, labor, and clothing sources.

American trade restrictions worked for exports as well. In addition to refusing British imports, the Americans decided that after September 10, 1775, “if the said acts and parts of acts of the British parliament herein after mentioned are not repealed, we will not, directly or indirectly, export any merchandise or commodity whatsoever to Great-Britain, Ireland, or the West-Indies, except rice to Europe.”\(^{72}\) Rice was the number one cash crop in Georgia and South Carolina during the eighteenth century, and the Americans did not want to imperil that

\(^{70}\) Ibid, 45.
\(^{71}\) Ibid, 46.
\(^{72}\) Ibid, 45-46. (Italics mine)
income. Rice exports to Germany and Holland accounted for nearly 80 percent of the American crop.\textsuperscript{73}

These trade prohibitions became a particular problem for the British West Indian colonies. Prior to these restrictions, American trade vessels routinely sailed from Boston to the West Indies carrying cargoes of dried codfish or lumber. These goods were traded for West Indian molasses, sugar, and rum.\textsuperscript{74} With the British at odds with the revolting Americans, the American supply line to the British West Indies soon dried up. This was bad news for islands like Jamaica, where the indigenous food crops consisted mostly of “plantains, maize, and ground provisions” that were deemed “insufficient,” and were subject to periodic destruction by hurricanes and droughts.\textsuperscript{75}

Ultimately, the British decided if they could not buy it or import it, they would find a way to manufacture or grow their own foodstuffs for their slave labor pools and citizenry. Once the American colonies halted shipments of dried codfish from New England, the Standing Committee of West Indian Planters and Merchants endorsed breadfruit as a cheap source of food in the West Indies.\textsuperscript{76} In 1775 the Committee offered a reward and associated costs to anyone who could bring six live breadfruit plants from the South Pacific back to Jamaica.\textsuperscript{77} No one stepped forward, “perhaps [because] the sea captains were not good enough gardeners.”\textsuperscript{78} In late 1778 the French fleet positioned itself in American waters, causing the British to refocus attention on ending the hostilities with the American colonies

\textsuperscript{73} Kenneth Morgan, “The Organization of the Colonial American Rice Trade,” \textit{The William and Mary Quarterly} 52 (July 1995), 433, 436.
\textsuperscript{74} Herman, \textit{To Rule the Waves}, 306.
\textsuperscript{75} Powell, \textit{Voyage of the Plant Nursery}, 8.
\textsuperscript{76} Herman, \textit{To Rule the Waves}, 320.
\textsuperscript{77} Powell, \textit{Voyage of the Plant Nursery}, 10.
\textsuperscript{78} Ibid.
and away from a breadfruit expedition.\textsuperscript{79} By this time, the West Indian colonies were in dire need of relief. They could expect no food imports from the American colonies, Great Britain, or even the neighboring French islands. These conditions persuaded West Indian planters and politicians to begin pressing for a breadfruit voyage. In 1787, twelve years after the initial request, the Royal Society finally organized the first breadfruit expedition, but by then circumstances in Jamaica appeared dismal.

\textsuperscript{79} David Mackay, \textit{In the Wake of Cook: Exploration, Science \& Empire, 1780-1801} (London: Croom Helm, 1985), 128.
Chapter Two

Breadfruit and Institutions

In order to make the most efficient use of the small amount of arable land available for subsistence crops, the British needed to find a plant that produced well and often in Jamaica and other profitable Caribbean islands. Most ground crops yielded food only at certain times during the year, and those crops required a great deal of space for only a small temporary return. Additionally, whatever crops were grown had to be heat and drought tolerant. Maize crops, for instance, yielded only one harvest per year late in the summer and required large tracts of land to produce substantial amounts of food, an unproductive use of the soil. Only maize was harvested for storage. Other subsistence crops were left in place and gathered when needed. Yams, on the other hand, would be harvested several times throughout the growing season, but were generally consumed soon after picking. Yam storage consisted of leaving the tubers in the ground where they continued to grow until it was time for another meal. They, too, needed lots of ground space to produce significant quantities of food, and their growing season was limited. Plantation owners resisted handing over more land than was necessary for subsistence crops; they could make no money on subsistence crops. They wanted a crop that grew well in the tropics, one that bore prolifically and constantly. Breadfruit seemed to fit the bill, and the British navy offered an institution that was sufficiently organized, technologically advanced, and financially able to affect the necessary plant movement.

81 Ibid.
Breadfruit was one of the plants that the British focused considerable energy on moving to their West Indian colonies. Breadfruit was not a south Pacific native. It appears to have originated in the Malaysia/Indonesia area and with seedlings transported in open boats by aboriginal peoples to Guam, the Marshall Islands, the Society Islands (which include Tahiti), and Hawaii.  

While seeded types of breadfruit exist, seedless cultivars are more common. Horticulturalist Diane Ragone notes that the viability of breadfruit seeds is tenuous, so transport of cuttings or shoots was preferable.  

Ragone also observes that different cultivars come into season at different times during the year, making the fruit available for nine out of twelve months.  

Unfortunately, once picked breadfruit goes bad quickly, so early Pacific Islanders developed a process called “pit fermentation” to preserve harvested breadfruit. This storage process involved turning the ripened, mature fruit into a pulp, burying it in a covered, leaf-lined pit, and allowing it to ferment. The breadfruit pulp could be stored this way for a year or more.  

One or two trees supplied enough fruit to feed one person throughout an entire year.  

The British had learned about breadfruit from published copies of William Dampier’s, James Cook’s, and Joseph Banks’s ships’ logs and journals. Dampier, an Englishman and pirate-turned-explorer, was the first sailor to circumnavigate the globe three times.

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83 Ibid, 206.  
84 Ibid, 211.  
85 Ibid, 207.  
86 Ibid, 207-209.  
87 Ibid, 212.
times and published his adventures in *A New Voyage Around the World* in 1697.\textsuperscript{88} In it he wrote,

> The Bread-fruit (as we call it) grows on a large tree, as big and high as our largest Apple trees. It hath a spreading head full of branches, and dark leaves. The fruit grows on the boughs like Apples: it is as big as a Penny Loaf when wheat is at 5 shillings the Bushel. It is of a round shape, and hath a thick tough rind…. The fruit lasts in season 8 months in the year, during which time the Natives eat no other sort of food of Bread kind.\textsuperscript{89}

Dampier’s description of the fruit as a bread substitute, and the fact that the plant was in season for nearly three-quarters of the year, made its introduction appealing to Caribbean plantation owners. Other explorers commented on the fruit, but the next well-known report of breadfruit surfaced more than fifty years later when Joseph Banks returned from Tahiti.\textsuperscript{90}

> Banks accompanied Captain James Cook in 1768 on the first *Endeavour* voyage to Tahiti, and on this trip he first learned of breadfruit:

> In the article of food these happy people may almost be said to be exempt from the curse of our forefathers; scarcely can it be said that they earn their bread with the sweat of their brow when their cheifest sustenance Bread fruit is procurd with no more trouble than that of climbing a tree and pulling it down. *Not that the trees grow here spontaneously* but if a man should in the course of his life time plant 10 such trees, which if well done might take the labour of an hour or thereabouts, he would as completely fulfill his duty to his own as well as future generations as we naives of less temperate climates can do by toiling in the cold of winter to sew and in the heat of summer to reap the annual produce of our soil.\textsuperscript{91}

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\textsuperscript{90} Smith, “Give Us Our Daily Breadfruit,” 53-75.

Banks enthusiastically described what appeared to be an abundance of delicious food that required little labor to propagate successfully. Banks’s friend, Captain Cook, was the next to contribute to the breadfruit literature.

Cook wrote of breadfruit during the first voyage of the *Resolution* in 1772. On that trip, Cook carried a copy of Louis-Antoine de Bougainville’s *Voyage around the World* (1771) and made a point of refuting many of the French explorer’s claims within his own journal. One rebuttal is particularly noteworthy. While describing breadfruit and the labor required to cultivate the tree, Cook noted that Bougainville,

> seems to think there is no personal property among [the Tahitians]. So far from it being so, that I much doubt if their is a fruit tree on the whole island that is not the property of some individual in it. We are even told that whoever takes fruit &c the property of any other person is punished with death or a good beating Indeed it is highly obsurd to suppose everything in Common in a Country where almost every article is raised by cultivation, it is true some things require but little labor, but others again require a good deal, such as roots of every kind and Bananas and Plantains will not grow spontaneously but by proper cultivation, nor will the Bread and Cocoa Nutt trees come to perfection without.\(^{92}\)

Cook’s entry emphasized the importance of breadfruit to the Polynesians. The trees grew freely, but individual islanders could lay claim to specific trees. And while a tree might require a minimum of labor to farm, theft of its fruit might result in dire consequences, underscoring the value of the fruit as a diet staple. The fruit’s nearly year-round availability plus its ease of storage concealed one hugely important fact: opinions varied widely about the taste of breadfruit.

Dampier observed that fresh-cooked breadfruit offered an appealing taste, saying,

> When the fruit is ripe it is yellow and soft; and the taste is sweet and pleasant. The Natives of this Island use it for bread: they gather it when full grown while it is green

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and hard; then they bake it in an Oven, which scorcheth the rind and makes it black; but they scrape off the outside black crust, and the inside is soft, tender and white like the crumb of a Penny Loaf. There is neither seed nor stone in the inside, but it is all of a pure substance like Bread; it must be eaten new; for if its kept above 24 hours, it becomes dry, and eats harsh and choaky; but ‘tis very pleasant before it is too stale. 

Published accounts of expeditions were certainly tailored for the reading public’s enjoyment and entertainment. British citizens could relate to a food that mimicked the size and taste of a loaf of fresh bread. They also knew the taste and texture of old, stale bread. Dampier’s observations on the taste of fresh breadfruit may have been a bit over-simplified, but they were not too far off the mark. One the other hand, fermented breadfruit pulp, or ma, offered less temptation to the British. Horticulturalist Ragone contends that, “Polynesians esteemed it as a fine delicacy; many Westerners thought it foul, odorous, and unfit for human consumption.” Indeed, upon accepting wrapped packages of ma, the English promptly discarded them because of the stench. One British sailor was quoted as calling ma a “nauseous mixture” and “though it may…support life, [it] cannot be said to do more.” This cultural distinction in taste preference would become important once breadfruit was introduced into the West Indies. Before taste could become a problem, however, the British had to figure out how to actually transport living, viable breadfruit specimens to the Caribbean.

Both Banks and Cook recognized that breadfruit would not grow “spontaneously,” meaning it would not grow from seed. Breadfruit had to be propagated from cuttings and then rooted, in the ground or in pots, in order to be transplanted from place to place.

Something more sophisticated than collecting and wrapping seeds in waterproof packages

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95 Ibid, 211.
would be required to transplant breadfruit to Jamaica. If breadfruit could be grown from seeds rather than rooted cuttings, its journey from Tahiti to Jamaica would have been much quicker and less torturous. However, the British did not seriously consider breadfruit as a West Indian food substitute until John Ellis published *A Description of the Mangostan and the Breadfruit* in 1775. Ellis’s tract included a method for plant transport.

As early as 1772, West Indian planter Valentine Morris (who later became governor of St. Vincent) called for the introduction of breadfruit into the sugar-producing islands. In response, Ellis composed his pamphlet on the breadfruit and the mangosteen. Ellis’s description of breadfruit echoed much of what had already been said by Dampier, Cook, and Banks: the tree bore fruit eight out of twelve months, it had to be propagated by suckers or layering, and it produced abundantly. The key difference between Ellis’s pamphlet and previous accounts of breadfruit was that Ellis offered “a description of a wired Box, contrived for bringing over the Mangostan, Bread-Fruit Tree, or any other valuable Trees

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from the East Indies, or South Seas.” Ellis’s pamphlet ignited interest in transoceanic plant transportation and caused the Royal Society of Arts to again offer a bounty on breadfruit in 1776. Banks used Ellis’s drawings of plant transport boxes when he detailed instructions for the first breadfruit voyage, modifying the open wire cages into boxes and tubs that could be covered with canvas. Ellis had set the stage for the movement of breadfruit from the south Pacific.

Moving breadfruit, however, required more than knowledge. An extensive and well-funded bureaucracy with a global reach was necessary; in Great Britain that bureaucracy was the Royal Navy. The Navy was the primary tool for British global expansion and plant transportation. The Navy possessed the means (money and ships), the power (governmental and military), the skills (mapping and navigational), and access to cutting-edge technology (chronometers, telescopes, sextants, and shipbuilding techniques) to locate and claim new lands and to move plants around the globe. By 1787 the British government and the Royal Navy had conducted numerous voyages to map different areas of the globe. When no mercantile body stepped forward to pursue the Jamaicans’ public breadfruit entreaty in 1775, it seemed natural that government-related groups (the Admiralty, the Royal Navy, and the Royal Society) filled the gap. Transoceanic sailors became eighteenth-century versions of twentieth-century astronauts. Exploring exotic and unknown locales, they returned with journals and maps of their travels, along with strange new plants, animals, foods, people, fabrics, and other curiosities, including reports of the abundance of breadfruit. These forays enlarged the British range of trade, added new British territories, and expanded British

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99 Ellis, A Description of the Mangostan, 20. 
100 Mackay, In the Wake of Cook, 127. The Society of Arts was also known as the Society for the Encouragement of Arts, Manufactures and Commerce, not to be confused with the Royal Society of London for Improving Natural Knowledge (the Royal Society).
botanical knowledge. By the time of the breadfruit expeditions, some sailors could add “gardener” to their skill set. Without these voyages of exploration the British might have forfeited all claims to any potential Pacific colonies.\footnote{Allen, *Pacific Navigators*; Ballantyne, *Science, Empire and the European Exploration of the Pacific*; J. C. Beaglehole, *The Exploration of the Pacific* (Stanford, Calif.: Stanford University Press, 1966); Herman, *To Rule the Waves*; Margarette Lincoln, *Science and Exploration in the Pacific* (Rochester, N.Y.: Boydell Press, 1998); Mackay, *In the Wake of Cook*; Steven, *Trade, Tactics, and Territory: Britain in the Pacific.*} These trips also allowed the Royal Navy to become the world leader in plant transportation technology. The navy offered the organization and institutional memory, the technology, and the financing necessary to undertake such a venture.

The navy’s institutional memory of breadfruit stretched back at least as far as Dampier. Dampier had written of breadfruit in the south Pacific seventy years before Samuel Wallis discovered and mapped the route to Tahiti (and breadfruit) for Great Britain. Wallis, captain of the British *Dolphin*, came upon Tahiti in June 1767 on an expedition to circumnavigate the world. In a salute to the monarchy, he called it King George III Island.\footnote{The name did not stick. The island was reclaimed and renamed Tahiti by Frenchman Louis-Antoine de Bougainville the following year. Allen, *Pacific Navigators*, 76.} Wallis’s crew fell victim to the dreaded scurvy, forcing him to make landfall to search for antiscorbutics and to give his crew time to recover. He was fortunate to land at Tahiti, where breadfruit and other fresh foods were plentiful. He and his crew stayed for a month, “nursing [the] scurvy-ridden…back to health,” and becoming the first recorded Europeans to take advantage of its safe harbor, plenty of food, and welcoming inhabitants.\footnote{Allen, *Pacific Navigators*, 76.} When he returned home, Wallis submitted a detailed report of his trip, and the Admiralty soaked up the particulars. From Wallis’s account, the Admiralty viewed King George III Island as the perfect base from which to launch new (and as yet unidentified) trade ventures and
commence constructing naval bases in the Pacific. No thought was given to breadfruit transplantation at this time, but since it and other foods grew there in abundance, the British navy envisioned Tahiti as a rest and re-supply post for ships exploring the Pacific. If the island became a Pacific British trading post, the British did not mind.\textsuperscript{104}

Wallis’s knowledge passed to James Cook when the Navy assigned him to visit Tahiti one year later on what would be Cook’s first expedition in charge of his own ship. Wallis’s discovery and description of the little island of Tahiti in the Pacific convinced the Admiralty that this spot was where Venus’s track through the southern sky should be observed and recorded. Cook was seen as the sailor who could successfully complete that task.\textsuperscript{105} He had earned a reputation for accuracy and detail in charting the St. Lawrence River as master aboard the \textit{Pembroke} in 1758.\textsuperscript{106} Cook’s navigational skills and sailing expertise, for example, brought him to the attention of the Admiralty in 1768 when the Royal Society asked for someone to take charge of the expedition to chart the transit of Venus. His proficiency as a sailor led to his assignment as captain of the \textit{Endeavour}. Good navigational skills required a certain high degree of proficiency in astronomy. Those sorts of skills were vital if the British intended to expand globally. As a result, in addition to commanding the ship and the mission, Cook was also appointed chief astronomer.\textsuperscript{107}

Thus, Captain Cook’s first voyage as master and commander of his own ship occurred in 1768 when he was promoted to lieutenant and assigned to command the 366-ton


\textsuperscript{105}Williams, “The \textit{Endeavour} Voyage,” 3.


\textsuperscript{107}Charting the transit of Venus would aid in calculating the distance of the earth from the sun and in establishing more accurate means of measuring longitude. Williams, “The \textit{Endeavour} Voyage,” 3-18.
Cook in turn shared his institutional memories, most notably those concerning Tahiti and breadfruit, with Joseph Banks, a wealthy civilian soon to become closely associated with the Admiralty, and William Bligh. Banks, not yet affiliated with the Royal Society, joined Cook on the *Endeavour* expedition. Banks’s notes on breadfruit and his sea travel experience became vital twenty years later as he planned the breadfruit voyage of 1787. Even Banks offered valuable skills that would be passed through the naval ranks.

Banks was a meticulous record-keeper. His most important records from the *Endeavour* trip were those containing botanical observations and details on food plants. In Tahiti Banks wrote that, “Besides the Bread fruit the earth almost spontaneously produces Cocoa nuts, Banana of 13 sorts the best I have ever eat, Plantains…Sweet potatoes, Yamms…[and] Sugar cane.” Later on that same trip, while sailing near Batavia (now Jakarta), Banks declared that, “The fruits of the East Indies are in general so much cryd up by those who have eat of them, and so much prefer’d to our European ones, that I shall give a full list of all the sorts which were in Season during our stay, and afterwards my judgement of each.” He proceeded to list *thirty-seven* different fruits with their common and Latin

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108 “Master” in terms of commanding a ship, such as a “master and commander,” was a different, higher rank, than a ship’s master, which was Cook’s rank on the *Pembroke*. In Cook’s case, on the *Pembroke*, master was the highest ranking, non-commissioned officer. A master and commander could be a ship’s captain, although his official rank might be lieutenant. Cook on the *Endeavour* and Bligh on the *Bounty* were both lieutenants, but they were master and commander of their respective ships and thus were entitled to be called “captain,” even though their official ranks were lower. A true captain, however, was a step above master and commander. A lieutenant might be put in charge of a sloop or a non-rated (twenty guns or fewer) ship but never a ship of the line (literally, ships that lined up to do battle; a rated ship). R. Brouwer, ed., “Cook’s Navy,” *The Captain Cook Society*, http://www.captaincooksoociety.com/ccsu4190.htm (accessed Jan. 31, 2011); “Types of Ships-of-the-Line,” *Royal Navy History*, http://www.royal-navy.org/lib/index.php?title=Types_of_Ships-of-the-Line (accessed Dec. 19, 2010); Allen, *Pacific Navigators*, 114.

names, and then offered a short critique of each.\textsuperscript{110} Many of these plants made their way back to the West Indies and Britain on the breadfruit voyage. A prolific record-keeper, Banks’s documentary skills later factored in heavily when planning for transoceanic plant transportation of not just breadfruit, but commodity plants as well. Judging from his botanical lists, breadfruit was not the only plant of interest. Banks and the British government also wanted to create their own supplies of cotton, cochineal host cacti, cinchona (for quinine), and other plants such as spices normally found in non-British countries.\textsuperscript{111}

Continuing to build on its past knowledge, the admiralty assigned Bligh to Cook’s second \textit{Resolution} expedition, Cook’s third (as a captain of his own ship) and final voyage.\textsuperscript{112} Bligh held the rank of master, just as Cook had on the \textit{Pembroke}. Twenty-one-year-old Bligh created most of the charts during the \textit{Resolution} trip, and Cook assigned him to perform much of the navigation.\textsuperscript{113} Bligh carried this knowledge with him on the first and second breadfruit voyages. From Dampier to Wallis to Cook and Banks and Bligh, the Royal Navy boasted a long institutional memory and a strong history that included specific technology and skill sets passed from one naval generation to the next.

Banks’s record-keeping and gardening habits appeared to rub off on Cook and in turn Cook set an example for Bligh. Bligh’s navigational skills proved vital for Britain and the breadfruit expedition. He mapped numerous previously unknown islands and coastlines, giving the British a huge advantage in the Pacific. During both breadfruit expeditions and

\textsuperscript{112} Allen, \textit{Pacific Navigators}, 160.
\textsuperscript{113} Herman, \textit{To Rule the Waves}, 320.
even adrift after the mutiny, he continued to fill in the gaps on British maps.\textsuperscript{114} Along with knowledge transferal, the navy also had the maritime technology and access to financing to complete the expeditions necessary to move plants around the world.

The navy was a wealthy institution that could afford to finance costly expeditions. Prior to 1649 (and Oliver Cromwell’s period in power), the British navy relied on British merchants for financing. In return for operating capital from the merchants, the navy offered protection for merchant convoys. The navy could also open foreign markets through coercion and wars if necessary.\textsuperscript{115} Sir Walter Raleigh had established this guiding naval principle when he said, “Whosoever commands the sea commands the trade; whosoever commands the trade of the world commands the riches of the world, and consequently the world itself.”\textsuperscript{116} This “blue-water policy” created a symbiotic relationship between British merchants and the British navy.\textsuperscript{117} Later, under William of Orange, the government and the Admiralty (not yet a government entity) quarreled over who was in charge of the navy. As luck would have it, the merchants alone would not be able financially sustain the navy, and in 1689 the government took control of the navy and paid off its debt.\textsuperscript{118}

With government funding, the navy was no longer just the merchants’ or “king’s problem.” It “became the nation’s and Parliament’s responsibility.” “Customs and excise taxes” covered the costs, and from 1690 until 1700, the navy grew from 109 ships to 176 ships. The period between 1691 and 1715 witnessed the building of 372 new ships. As the eighteenth century wore on, the peak of the Seven Years’ War saw the active British navy fleet grow to nearly three hundred ships and over eighty thousand sailors. In order to support this naval expansion, property taxes nearly doubled and customs taxes rose to 25 percent by 1759. British merchants still contributed money for convoy support, although they no longer underwrote the entire venture. The new revenue streams, however, not only allowed the navy to grow, but also to make new advances in technology. New innovations included copper-bottomed ships and the Larcum Kendall K1 chronometer. Copper hull sheathing helped the ships resist shipworms and helped inhibit the growth of algae. Shipworms could cause a ship’s hull to rot and break apart. Algae growth, especially in warmer climates, significantly slowed a ship’s speed through the water. The new K1 chronometer, used by Cook on the first Resolution voyage, was useful in finding more

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119 Herman, To Rule the Waves, 221.
120 Ibid.
121 Not all of these ships would stay in the British fleet. Some were sunk in battle, some were captured, and others simply aged out of service. Winterhaze13, “The English Navy 1649-1815.”
122 Winterhaze13, “The English Navy 1649-1815.”
123 Ibid.
accurate longitudinal calculations. And throughout these developments, the navy continued to grow larger.

“By 1775, the Royal Navy had 117 ships of the line and 82 cruisers. France and Spain by comparison had 59 and 64 ships of the line and 37 and 28 cruisers.”\textsuperscript{125} The fleet was rounded out with smaller support ships that included cutters, gun brigs, schooners, sloops of war, fire ships, and bomb ketches.\textsuperscript{126} Some ships, like the \textit{Endeavour} and the \textit{Bounty}, were re-purposed merchant ships. During the French and Napoleonic wars, military spending increased 450 percent. The navy had grown to over 140,000 men and 596 cruisers by 1812.\textsuperscript{127} Money to support the navy now came from a variety of sources, including taxes, mercantile investments, and from groups and private individuals who wished to underwrite voyages for specific purposes. The latter was the case with the breadfruit voyages where the Royal Society, the Society of Arts, and Joseph Banks all provided funding.

Having steady and reliable sources of funding allowed the British government to implement the navy as a sort of green grocer in the plantation owners’ pursuit of sustainable food products. Money also opened the door for the introduction of new cash crops for the British West Indies and other British colonies. The navy’s extensive access to new ships and shipping technologies would help move these crops quickly and accurately. Having used its institutional memory to keep breadfruit on the minds of its explorers and those who underwrote such expeditions, it was time to pursue that food.

\textsuperscript{125} Winterhaze13, “The English Navy 1649-1815.”
\textsuperscript{127} Winterhaze13, “The English Navy 1649-1815.”
Chapter Three

Equipment and Bad Behavior

Once the British decided to organize a breadfruit expedition, two obstacles still remained: the difficulty of ocean travel and the need for a competent mission commander. Ocean-going expeditions centering on plant transportation required meticulous care and attention to the cargo. While fresh water was a necessity on such a trip, salt water threatened at every turn. Success depended on an attentive and dedicated crew, which in turn required a strong leader. The British Royal Navy excelled in leadership and global exploration. Captains James Cook and William Bligh, the two men most qualified and most likely to succeed on such a mission, further exacerbated the shipping and transportation process by adding their own personal baggage to the mix. Both men carelessly and inadvertently sabotaged the timely execution of such a voyage. Between the two, they added ten years to the breadfruit chronology. Joseph Banks, a close friend of King George III and the royal gardener at Kew Gardens, served as the link between Cook and Bligh.\textsuperscript{128} Charged with coordinating the expedition, Banks did all he could to foolproof the process. From detailing the specifics of plant handling to choosing the captain, Banks was integral to the breadfruit voyage.

In 1787 Banks, president of the Royal Society, began prepping a breadfruit expedition that finally departed from England seven months after the first boatload of convicts headed to New South Wales. Just as the settlement and establishment of agriculture in New South Wales was intended to strengthen the British presence in the south Pacific, the British government intended the introduction of breadfruit to the Caribbean to strengthen its presence in the West Indies. Banks coordinated the voyages and botanical procedures and

cargoes for both ventures. His botanical accounts became important when British merchants, the government, and the Royal Society finally organized an official breadfruit expedition. One historian asserts that descriptions such as Banks’s caused breadfruit to be viewed not “in its true light – as a subsistence food – but as royal fare, freely and continuously available.”

That distinction did not seem too important to the organizers of the expedition.

During the early planning stages, acquisition of breadfruit was not the only goal. As early as 1760, the Society of Arts offered rewards to promote the cultivation of cinnamon. Over time the group expanded the bounty to include other tropical plants such as coffee, camphor, indigo, silk, cloves, the cactus that supported the cochineal insect, and fine cotton. Establishing a British colonial source for these plants would minimize – and perhaps even eliminate – Dutch, French, Spanish, Chinese, and American control of those goods. Increased demand for finer cotton products and the desire to develop new cotton supply sources in British-controlled regions set the stage for a plan to smuggle cottonseed out of India on the breadfruit expedition.

Banks and Evan Nepean, undersecretary of state, offered the mission to Anton Hove, a Polish medical student. Hove’s publicly announced “official” duties were to collect exotic Indian plant specimens for Kew Gardens. Privately, “the real Object of [his] Mission [was] to procure for the West Indies seed of the Finer sorts of Cotton.” He was to learn all he could about how the Indians cultivated their cotton

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129 Mackay, In the Wake of Cook, 127.
130 Ibid, 125.
132 Banks, quoted in Frost, Sir Joseph Banks and the Transfer of Plants, 37-38
along with the local effects of climate and soil. Hove’s instructions required him to communicate his findings in Polish, ostensibly to keep the mission secret from the Indians.\(^{133}\)

The British government decided the first breadfruit mission would assist in the creation of a productive cotton industry in the West Indies. Raw cotton supplies from the American colonies evaporated with the advent of the War for Independence.\(^{134}\) The Industrial Revolution, with its new advances in the spinning and weaving industries, heralded a call for larger supplies of finer cotton.\(^{135}\) Ideally this new supply of cotton would originate from lands under British control, specifically the British West Indies. Expanded cotton production in the West Indies meant more slaves and a call for even larger food supplies. The need for more food for slaves placed greater emphasis on requisite establishment of breadfruit as a year round crop in the British West Indies.

In March 1787, two months before Captain Arthur Phillip, governor-designate of the New South Wales colony, sailed for Australia with the first load of prisoners, Banks began outlining instructions for transporting breadfruit to Jamaica. Phillip’s instructions were to establish a remote outpost that the British intended to use for re-provisioning along with housing convicts. Banks intended to take quick advantage of the new settlement. His original plans called for a British ship to transport prisoners to Botany Bay and, after re-supplying the ship, sail to Tahiti to gather breadfruit plants. From Tahiti, the mission would proceed to India to steal the cottonseed then return to England. Banks soon discarded this idea because he thought re-outfitting an expedition at Botany Bay would place too much hardship on the


\(^{134}\) Ibid, 107.

new outpost.\textsuperscript{136} The planned departure location for the breadfruit expedition moved back to England, and the cotton plot fell by the wayside. Moving the departure back to England would not affect the breadfruit and other plants any more or less, but it doubled the sailing distance, increasing the hardships for the ship and crew. The plants would only have to move from the Pacific to the Caribbean whereas the ship while the sailors had to complete the trip from Britain to Tahiti and back again. The plants, however, were the most important consideration.

Having sailed with Cook, Banks knew the inherent difficulties of sea travel. Transoceanic trips were difficult on men and would be even more problematic for plants. Native plants procured in places such as Tahiti and Indonesia could only be re-obtained in those locations. Loss of the plants during shipment might mean another expensive and hazardous trip to replace the seedlings. Consideration for the botanical specimens took first priority. Banks’s instructions for the operation of the ship in regard to the breadfruit were detailed and specific. The captain and crew would have “to give up the best part of [the ship’s] accommodations” to house the breadfruit. Banks also noted that even the slightest bit of seawater, a “small sprinkling” or the “salt-dew,” would kill the plants “if not immediately washed off with fresh water.”\textsuperscript{137} He also indicated that captain’s great cabin should be turned over to the gardeners to house the seedlings. The great cabin typically included a bank of windows along the stern, port, and starboard sides of the ship. There the plants could receive fresh air and some sunlight. Also, the great cabin being closer to the main deck of the ship made it easier for the crew to move the plant containers on deck during good weather. Since the entire cargo was plant material stored in the great cabin, there would be plenty of room in

\textsuperscript{137} Banks, quoted in Frost, \textit{Sir Joseph Banks and the Transfer of Plants}, 42.
the cargo hold for water casks. The gardener was to have free and ready access to all of the water in order to care for the plants and wash them frequently to remove salt residue.\textsuperscript{138}

Plant survival was imperative, and Banks paid attention to every relevant detail. He created detailed drawings and instructions for the tubs that were to hold the plants. The containers had to be deep enough to hold the seedlings securely and protect them from accidental damage. Holes had to be punched in the bottoms for drainage. The containers would be attached to the deck and lashed to each other to prevent them from tipping over.\textsuperscript{139} Canvas covers were made to fit over the tubs to protect the plants. Banks directed the gardener to use the covers as he saw fit and said “no one else must interfere with him in so doing on any account whatever.”\textsuperscript{140} Additionally, Banks instructed the crew to help the gardener move these heavy pots on deck for fresh air and sunlight whenever the gardener deemed it necessary.\textsuperscript{141} The great cabin was also furnished with a wood stove. If the weather was cold, the gardener and his assistants had to keep a fire burning to approximate tropical temperatures, a dangerous proposition on a sea-tossed wooden ship.\textsuperscript{142}

Finally, Banks addressed the issue of on-board pests. “No Dogs, Cats, Monkies, Parrots, Goats or indeed any animals whatever must be allowed on board, except Hogs & Fowls for the Company’s use; & they must be carefully confined to their Coops.”\textsuperscript{143} Animals would eat the plants or soil the plant bedding, killing the seedlings. Banks also warned that, “Every precaution must be taken to prevent or destroy Rats as often as convenient.” Poison

\textsuperscript{138} Frost, \textit{Sir Joseph Banks and the Transfer of Plants}, 42.
\textsuperscript{139} Ibid.
\textsuperscript{140} Ibid.
\textsuperscript{141} Ibid, 42n.
\textsuperscript{142} Ibid, 43.
\textsuperscript{143} Ibid, 42-43.
(arsenic) was to be used to kill rats and roaches, and “the Crew must not complain if some of them who may die in the ceiling make an unpleasant smell.”  

Unpleasant smells were the least of a sailor’s worries, and for such an important ocean voyage to be successful it required a competent captain to maintain the safety and discipline of a ship’s crew. Ocean travel was difficult at best and downright miserable and life-threatening at worst. The Royal Navy endured the travails of life at sea just the same as the poorest merchant ship or whaler. A transoceanic voyage required months at sea. During that length of time, uncomfortable situations aboard a ship – conditions such as disease or unrest – could go from annoying to life threatening. One case of dysentery could become an epidemic, and one disgruntled sailor could become a mutiny. Poor discipline or an inept crew could jeopardize the mission of moving food plants strategically to other British colonies. People were resilient enough to recover (in most instances) from the hardships of ocean travel. Plants, on the other hand, might die from the slightest spray of seawater or change in temperature or even neglect. Unhappy and/or unhealthy crewmen were less than diligent and might endanger the precious plant cargo.

Keeping crews healthy and happy required, above all else, a sufficient supply of nutritious food. Unfortunately, shipboard food nearly always went bad, especially on long voyages. Due to less-than-ideal storage conditions, ship’s biscuit frequently became infested with weevils. Beef and pork might be salted for preservation, but the salt did not inhibit

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vermin. Pests such as rats and cockroaches were constant companions in the larders, creating a pest lifecycle that contaminated human food and threatened plants in a floating greenhouse.\textsuperscript{146} Scurvy was a continual health threat that required a diet including fresh fruits and vegetables on a regular basis and was fatal if untreated. Until the Royal Navy and the Admiralty officially recognized and promoted antiscorbutics as a preventative in the very late eighteenth century, it was not unusual for even the best captain to lose dozens of crewmen to scurvy. Without the means to properly store food, especially the fresh food required for averting scurvy, frequent re-provisioning was a necessity. This requirement underscored the need for the establishment of British Pacific settlements that could serve as re-supply sites and thus reinforced the necessity of moving convenient productive food plants around the globe to strategic locations.

To maintain crew health and discipline and successfully move ships around the world required maritime leaders who possessed great technological knowledge and the ability to lead and manage men. While the captains involved in early voyages of exploration and the breadfruit expeditions had considerable naval skills, their managerial incompetence delayed the movement of that food for more than a decade. Since not all of the skills passed on through the naval generations were desirable, the breadfruit expeditions lost whatever advantages might have been gained from Cook’s and Bligh’s navigational and exploratory skills as a result of both captains’ short tempers.

British naval historian J. C. Beaglehole has argued that, in addition to navigation and recordkeeping, Cook also unintentionally taught Bligh that it was permissible to verbally abuse subordinates and to use physical force on the local citizenry, resulting in Cook’s death.

\textsuperscript{146} Herman, \textit{To Rule the Waves}, 321.
in Hawaii. Bligh knew only the Captain Cook of the last voyage: a man who, by his third trip to the Pacific, was frustrated with what he perceived as lying, thieving islanders. As a result, “Cook…driven beyond endurance by the problem of theft [and] Tongan or Tahitian indifference to his own principle of ‘strict honisty,’ on his third voyage, began to impose floggings and ear-cropping and arm-slashing and destruction of canoes” – behavior that disturbed many of his senior officers. Because of his youth, Bligh took Cook’s behavior as a lesson in how to treat others and carried it to the extreme as his career progressed. Cook’s rash actions toward the Hawaiians gave the younger Bligh tacit permission to cross the diplomatic line, resulting in Cook’s death. Cook’s second lieutenant on that voyage, James King, suspected Bligh of firing the shot at the Hawaiians that prompted the islanders to kill Cook. Had Cook lived and returned to England, it is conceivable that his expertise would have led him to be made captain of the first breadfruit voyage, depositing breadfruit in Jamaica as early as 1783. With Cook’s death, the Admiralty and the Royal Society settled for second best. Belligerent behavior on the part of both Cook and Bligh prolonged the successful completion of a breadfruit mission.

The tempestuous reputation Bligh earned on the last half of the Resolution trip caused him to be passed over for promotion when he returned to England. This in turn delayed the possibility of a breadfruit trip prior to 1787. If Bligh had been more even-tempered, he might have been given the breadfruit mission upon his return from the Resolution trip - even if

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149 Ibid.
150 Herman, To Rule the Waves, 320.
Cook had lived. As it stood, he was not promoted for another two years and even then had no Royal Navy ship assignment for another four years when he was finally offered the *Bounty* command.\footnote{Herman, *To Rule the Waves*, 320; Beaglehole, “Captain Cook and Captain Bligh,” 8.} The Admiralty proved it had a long memory. By the same token, the Admiralty held a certain amount of responsibility for Bligh’s failure on the first breadfruit expedition when it refused to include a Marine detachment on the *Bounty* trip.

Royal Navy captains like Cook and Bligh carried tremendous responsibility. Their voyages of discovery expanded the British Empire with the placement of every “new” island on the map and the planting of every tropical garden. Because of explorers like Cook and Bligh, and even civilians like Banks, the British learned more about breadfruit and pursued plant transportation and transplantation, increasing Britain’s imperial presence around the globe. Colonial expansion during the Second British Empire owed a great deal to the Royal Navy.

Although he was an excellent technical sailor, it was this other reputation – that of a man with a short, abusive temper – which Bligh carried with him on both breadfruit expeditions, the first of which came after a seven-year hiatus from the Navy after the *Resolution* voyage. Bligh’s wife’s uncle, Duncan Campbell, gave Bligh a merchant sailing job commanding trade ships between England and the New World during the period between the *Resolution* and *Bounty* expeditions. Campbell had learned about Bligh from his friend Joseph Banks. Pleased with the way Bligh performed his transatlantic duties, Campbell in turn recommended Bligh back to Banks when he heard that the British government was planning a trip to collect breadfruit in the south Pacific. After all, Bligh had been to the Pacific with the famous Captain Cook, so his sailing and navigational skills were well
established. Thanks to Campbell, Bligh had experience in the British West Indies as well.\footnote{152 Herman, \textit{To Rule the Waves}, 320, 324.} Banks could finally move forward with the breadfruit plan.

Although the Admiralty had plenty of its own money (thanks to the government takeover of the navy in 1689), it was always good when other people or organizations contributed cash to special ventures. For the \textit{Endeavour} expedition, Banks spent £10,000 of his own money ($1,670,484 today) for himself and seven assistants to join the trip, more than twice the Royal Society’s contribution of £4,000. The \textit{Endeavour} itself had cost the Admiralty less than £3,000.\footnote{153 Holmes, \textit{Age of Wonder}, 10.} The cost of purchasing ships was much less than the cost of refitting or outfitting them for a two-to-three year expedition.

In addition to the shipboard conditions laid out by Banks for the breadfruit journey, Bligh’s botanical instructions from the Lords Commissioners of the Admiralty stated he was to collect “as many… [breadfruit] trees as, from [the \textit{Bounty}’s] size, can be taken on board her.”\footnote{154 Admiralty instructions to Bligh, quoted in Frost, \textit{Sir Joseph Banks and the Transfer of Plants}, 48.} In an effort to bring additional plant species to Jamaica and further populate that island and others in the West Indies with sustainable crops, Banks gave Bligh extensive instructions on other plants for collection. From Tahiti, Bligh was to sail to Java and replace any dead or damaged breadfruit trees with “mangosteens, duriens, jacks, nancas, lansas, and other…fruit trees…as well as the rice plant which grows upon dry land.”\footnote{155 Ibid, 48-49.} From Java, Bligh was directed to sail around the Cape of Good Hope to the West Indies and “deposit one half of…the above-mentioned trees and plants as may be alive at his majesty’s botanical garden at St Vincent, for the benefit of the Windward Islands, and then go on to Jamaica” to deliver the...
remaining cargo. Emphasizing the importance of the trip, the Admiralty commanded Bligh “to afford, and to give directions to your officers and company to afford, the... gardeners every possible aid and assistance, not only in the collecting of... trees and plants... but for their preservation during their conveyance to the places of their destination.”

Unfortunately, without Marine assistance, discipline quickly deteriorated after Bligh collected breadfruit and left Tahiti. A portion of his crew mutinied within days of leaving Tahiti, and Bligh was set adrift with eighteen loyal crewmen. The collected pots of breadfruit went over the side of the *Bounty* into the ocean and no other specimens were gathered.

Unquestionably, Bligh was a superior navigator and mapmaker, just like Cook. After the mutiny, he found his way from Tahiti to Timor with no charts (using only a sextant and lunar tables), sailing what amounted to an open rowboat with his castaway crew – four thousand miles in forty-eight days with little food or water and no crewmen lost. He even discovered Fiji during this ordeal. He was a conscientious diarist, even though he skewed the truth at times. But most importantly, he practiced the same “naval gardening” as Cook and other Pacific explorers. Cook understood, more so than most captains of his time, the relationship between fresh fruits and vegetables and continued good health. It was not unusual for a ship’s captain to plant a garden on a remote island as a way of laying claim to

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156 Admiralty instructions to Bligh, quoted in Frost, *Sir Joseph Banks and the Transfer of Plants*, 49.
157 Ibid.
159 Herman, *To Rule the Waves*, 327-29.
161 Beaglehole, “Captain Cook and Captain Bligh,” 7-8.
the land and expanding the Empire. Even Wallis planted limes, lemons, and other citrus when he landed at Tahiti.\textsuperscript{163} Like Cook, Bligh paid attention to plants and other botanic specimens. On the \textit{Bounty} voyage, for example, en route to Tahiti he planted a garden at Adventure Bay in Van Diemen’s Land (Tasmania), noting in his journal,

\begin{quote}
The east side of the bay being not so thick of wood as the other parts, and the soil being good, I fixed on it…as the most proper situation for planting some of the fruit trees which I had brought from the Cape of Good Hope…. We…planted three fine young apple-trees, nine vines, six plantain-trees, a number of orange and lemon-seed, cherry-stones, plum, peach, and apricot-stones, pumkins, also two sorts of Indian corn, and apple and pear kernels.\textsuperscript{164}
\end{quote}

It was details such as this that made Bligh an ideal candidate for the captaincy of a botanical voyage. He could seemingly find his way anywhere and he understood the value that botanical superiority might bring to Britain and her colonies.

Bligh was a sailor who understood his duty, and in the case of the breadfruit voyage, his duty was to the breadfruit, first and foremost. If his instructions called for watering, cleaning, and moving the breadfruit so that it would be exposed to sunlight, then that was what he would do. The ship would be cleaned of pests and no preventable harm would come to the seedlings. And if the care of the breadfruit came at the expense of the crew’s morale, so be it. His skills as a sailor and gardener, and the urgent need for breadfruit in the Caribbean, apparently far outweighed shipboard morale. As long as the crew was healthy and physically unabused, their attitudes did not matter. The navy had the funding, the equipment, and now a sailor who knew how to cultivate and care for breadfruit. As a result, after a court martial cleared him of charges concerning the mutiny, the Admiralty sent Bligh \textit{back} to the

\begin{flushleft}
\textsuperscript{163} Powell, \textit{Voyage of the Plant Nursery}, 13.
\textsuperscript{164} Frost, \textit{Sir Joseph Banks and the Transfer of Plants}, 48.
\end{flushleft}
south Pacific on a second trip to finish the breadfruit job. This time, however, they sent him with two ships and a detachment of Marines to help him keep order.
Chapter Four

The Results

Having failed with the first mission, the British government refused to let the pursuit of breadfruit end with the *Bounty* mutiny; it deemed breadfruit too important to just forget after Bligh lost his ship. The government and sugar planters regarded botanical exchange as crucial for the success of the West Indian colonies. The Admiralty had spent £1,950 (about $291,703 today) to purchase the *Bounty* in May 1787 and then refitted her specifically for the breadfruit expedition at a cost of £4,456 ($677,440 today), nearly two-and-a-half times the purchase price.\(^{165}\) Food and supplies (extra lumber, nails, sails, cordage, and the like) for the voyage added even more to the bottom line. With no concern for this outlay, the mutineers burned her to the waterline in January 1790. A more than one-million-dollar venture literally sank with the *Bounty*. Considering the amount of the investment, her mission clearly had been considered an important one. The significance of breadfruit prompted a second expedition to Tahiti to retrieve samples of that plant and others. To that end, the Admiralty decided that additional precautions, and thus a much larger financial outlay, were necessary when it sent Bligh back to the south Pacific to finish the job he started in 1787.

A navy court martial acquitted Bligh of all charges relating to the *Bounty* mutiny, clearing the way for him to travel once again to Tahiti. The second trip began in 1789 with Bligh commanding the *Providence*, accompanied by Lieutenant Nathaniel Portlock commanding the *Assistant*. The *Providence* carried 134 men and included twenty Marines. The smaller *Assistant* bore twenty-seven crewmen.\(^{166}\) Portlock, already acquainted with

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\(^{166}\) Powell, *Voyage of the Plant Nursery*, 11.
Bligh, had also been a crewman on Cook’s last voyage. Admiralty instructions to the key crewmembers – Bligh, Portlock, and the gardeners – remained nearly identical to the *Bounty* instructions. The Admiralty directed the men to gather breadfruit plants and any other plant specimens Bligh and the gardeners deemed valuable for transport back to St. Helena, St. Vincent, and Jamaica. Once again, Bligh and his crew were instructed to provide all possible cooperation to the gardeners for the plants’ care and survival.\(^{167}\) At all three designated return stops, Bligh was to “leave [plants] there such only as, in your discretion, can be spared, and to take on board such trees, plants and seeds as the said governor and council may order to be delivered to you for the use of His Majesty’s West India Islands or His Majesty’s Botanical Garden at Kew.”\(^{168}\) Still president of the Royal Society and working closely with the Admiralty, Banks outlined plans for Bligh to initiate a plant exchange with St. Helena and St. Vincent to make and keep those British stations botanically valuable. Kew, which would receive samples of all plants and seeds collected by Bligh, remained the central British seed and plant repository, Britain’s version of a botanical Noah’s Ark.

As with the *Bounty* and the convict and supply convoys to New South Wales, the botanical exchange was intended to be two-way: leave and/or cultivate native European/British plants and seeds at various landing sites between Britain and Tahiti, and bring back tropical exotics to Britain and the West Indian colonies.\(^{169}\) Planting European specimens on south Pacific islands was “consciously imperial.”\(^{170}\) It asserted colonial ownership of previously unclaimed land and assured sailors of fresh food supplies on future

\(^{167}\) Frost, *Sir Joseph Banks and the Transfer of Plants*, 51-54;  
\(^{168}\) Bligh, “Instructions from the Admiralty,” *The Log of H.M.S. Providence*, not paginated.  
\(^{169}\) Frost, *Sir Joseph Banks and the Transfer of Plants*, 51.  
\(^{170}\) Rigby, “Seaborne Plant Transportation,” 82.
visits. On the outbound trip, the Providence carried six nectarine seedlings, twenty queen pines, and “3 Boxes of Mould from Kew.” These were supplemented with plantings collected at the Cape of Good Hope and New Holland (Western Australia). As he sailed to Tahiti, Bligh stopped at Adventure Bay in Tasmania where he surveyed his previous crop plantings and noted in his journal, “It was a peculiar satisfaction to me, to find one of the apple Trees I had planted here in 1788 – only one remained, and this, altho alive and healthy, had not made a shoot exceeding 12 or 13 inches.” Out of nearly one dozen different specimens he and Nelson had planted at Adventure Bay four years earlier, only the lone apple tree survived. This orchard would be of little or no use for future sailors who might layover at Adventure Bay looking for food. Bligh commented later in this same log entry that a general lack of interest and care by the locals contributed to the demise of the plantings. Apparently, the indigenous Van Diemeners were not impressed with Bligh’s apples, plantains, plums, peaches, pumpkins, and Indian corn, and failed to tend the plants. This scene was repeated on Tahiti. These gardens would be of no use to future sailors or other visitors.

European plants received a similar poor reception in Tahiti. Bligh noted:

Among a Number of Plants which I have brought here from England, the Cape of Good Hope & New Holland, consisting of Oranges, Pines, Guava, Pomegranates, Quinces, Figs, Vines, Firs, Metrocedera and Aloes. The natives only have a desire for the three last, the Firs & Metrocedera because I assured them they would grow to very large Trees, & were fit for building Ships; the Aloes on account of [its] being a very fine Flower. No Value is set upon any of our Garden productions, it is really taking trouble to no purpose to bring them anything that requires care to get it to perfection. A fine Shaddock Tree, I saw Yesterday, very nearly destroyed by Fire,

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171 Rigby, “Seaborne Plant Transportation,” 82.
172 Frost, Sir Joseph Banks and the Transfer of Plants, 53.
173 Ibid, 54.
174 Bligh, Log of H.M.S. Providence, Feb. 16, 1792.
175 Ibid.
and the Fruit of it they told me was good for nothing. Some Trees in the Country as I have remarked in my last Voyage bore Fruit, & a few very fine ones were brought to me in the Evening from the same place.\textsuperscript{176}

Again, the Europeans, especially sailors, were able to claim no benefit from the imperial gardens. It seemed the “natives” cared little for many of the botanical specimens Bligh and his crew nurtured all the way from England. The reverse, however, was not true for the British. Bligh and his crew meticulously cared for their return plant collection, fully anticipating that it would be put to good use in the Caribbean.

The second breadfruit expedition collected and carried 2,634 plants for return to Jamaica and England. From Tahiti, Bligh noted that those plants consisted of 2,126 breadfruit seedlings, 472 “other” plants, and 36 “curiosity” plants.\textsuperscript{177} Expedition gardeners James Wiles and Christopher Smith, chosen by Banks, later refined this count. They wrote to Banks on December 17, 1792 from the island of St. Helena on the way home from Tahiti, saying they had departed from Tahiti in July carrying 1,996 plants, of which 1,686 were breadfruit.\textsuperscript{178} Bligh amended his count as well in a letter to Banks from St. Helena, and offered an extensive account of the plants he transported from the south Pacific. He wrote that he gave Banks “joy of the success of your plants” saying, “I am happily arrived with a beautiful collection in sight of [St. Helena]…. Posterity will ever remember you for being the means of transmitting to them such and inestimable jewel.” He then told Banks that he left Tahiti with 777 “large pots” of breadfruit seedlings and “313 small Pots – 35 Tubs and 26 Boxes.” Bligh went on to say that he also carried quantities of aahighyyahs or ayyahs (jambu fruit), rattah (Tahitian chestnut), avees (a sort of Tahitian apple), oraihahs (“the fine

\textsuperscript{176} Bligh, quoted in Frost, \textit{Sir Joseph Banks and the Transfer of Plants}, 54.
\textsuperscript{177} Powell, \textit{Voyage of the Plant Nursery}, 15.
\textsuperscript{178} Ibid, 20.
Maiden Plantain”), vayeehs (“the fine mountain Plantain”), peeah (sago root), and ettow and mattee (red dye plants). These new specimens would be introduced into the West Indies along with the breadfruit as possible subsistence crops. The ettow and mattee exhibited potential as commercial export items. The remainder of the letter detailed the expedition’s plant losses and substitute plants acquired between Tahiti and St. Helena.¹⁷⁹

Over two hundred pots of breadfruit and four pots of other plants died between Tahiti and Timor. In accordance with his instructions, Bligh replaced them at Timor with mangos, jambolan, jambu, blimbing (carambola or star fruit), lemon nonesangs (limeberry), seeree boah (long pepper), rice, breadfruit, and a few other miscellaneous plants and seeds.¹⁸⁰ Between Timor and the Cape of Good Hope the expedition lost another 489 breadfruit plants and 16 pots containing other plant samples. Bligh attributed the loss to the heat and close conditions of the plant cabin, assuring Banks that “altho the loss has been so great, the Gardeners have done their duty.”¹⁸¹ He also made it a point to let Banks know that he himself had put forth extra effort to ensure the success of the mission. The Providence’s original cargo plan was calculated to carry 998 plants. Bligh took the initiative to “add… [his] own contrivance on Deck…enlarg[ing] the accommodation” to house an additional 353 plant containers. Undoubtedly, this space for supplementary seedlings enabled Bligh to claim in his letter from St. Helena that “Those Plants that remain are very fine – the 662 vessels contain 830 plants – our loss of Breadfruit stands thus [at 489 plants].”¹⁸² After taking on plants from St. Helena, Bligh proceeded to Jamaica. Bligh’s efforts to gather and accommodate extra breadfruit, in addition to collecting multiple miscellaneous plant samples,

¹⁸⁰ Ibid, 55.
¹⁸¹ Ibid.
¹⁸² Ibid, 55-56.
enabled him to successfully land over 550 plants at, Jamaica. This number included over 330 breadfruit seedlings.  

Finally, the much-anticipated food source had been transferred from the Pacific to the Caribbean.

The expedition’s appearance in Jamaica was big news. The weekly Jamaican newspaper, the *Royal Gazette*, announced the arrival of breadfruit along with the *Providence* and the *Assistant*. Touting the plant’s virtues, the paper claimed “in less than twenty years, the chief article of sustenance for our negroes will be entirely changed: plantains, yams, cocos, and cassava, will be cultivated only as subsidiary…whilst the bread-fruit…will afford in the greatest abundance, for nine months in the year, the choicest and most wholesome food.”  

The timing of the breadfruit delivery could not have been more perfect; France declared war on Great Britain while the *Providence* and the *Assistant* were still in Jamaica. If a declaration of war had occurred while the breadfruit convoy was still at sea, the seedlings would likely have died without being landed at Jamaica and the second breadfruit voyage would have failed. Now that the breadfruit had finally arrived at its destination, the question became whether the quest would be beneficial or just a waste of time.

There was no question that, in terms of biology, breadfruit was viable and successfully grown. In 1794, three years after the arrival of breadfruit, Henry Shirley, a planter and member of the Jamaica House of Assembly, wrote to Banks describing the various successes and failures of the venture. He began by saying, “It is…with great pleasure I take the opportunity of…informing you that the Bread-fruit plants are thriving with greatest

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183 Powell, *Voyage of the Plant Nursery*, 25.
185 Powell, *Voyage of the Plant Nursery*, 35.
luxuriance in every part of the Island.” Specimens planted in different locales on Jamaica were “thriving exceedingly well” despite “inferiority of the soil” in some areas. More than thirty new breadfruit plants had been propagated using layering and cuttings. Shirley’s accounts showed that the breadfruit was hardy, prolific year round, and easy to cultivate.

Shirley observed that plants other than breadfruit achieved varying degrees of success. For instance, the ayyah and rattah flourished, and the ayyah had been successfully cultivated using layering and cuttings. At the opposite end of the spectrum, the avee that Bligh brought had all died. Other avee varieties, “imported at the same time with the Mangos and Cinnamons,” were “not in a very thriving state” and were “much inferior to the [Tahiti] kind.” Likewise, the peeah struggled to “just keep…alive.” However, Shirley assured Banks that the mattee, ettow, maiden plantains, jambu, blimming, long peppers, ayyah, and several other new plants maintained a “prosperous condition” and that there was “every reason to expect complete success.” Two years later, a letter to Banks confirmed Shirley’s prediction. That letter also pointed out breadfruit’s one apparently minor, yet major, drawback – very few people liked the taste.

Breadfruit continued to grow vigorously in the Caribbean. In 1796 Alexander Anderson, superintendent of the botanical garden at St. Vincent, wrote to Banks assuring him that “you will certainly be happy in hearing that the Garden has remained safe & is now in the most flourishing state.” He went on to say that “The Bread fruit thrives (if possible) better than in its native soil.” Noting that his trees had been bearing fruit “constantly” for the past eighteen months, Anderson thought that three or four trees would provide enough fruit for

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187 Ibid.
188 Ibid, 59-60.
one person throughout the year. He also praised the quality of the fruit, claiming “they are exceedingly good boiled or sliced & toasted the same as Bread, and they make the finest pudding I ever tasted.” Attempting to bring the breadfruit plan to full circle, Anderson said, “I give the fruit to everyone here, and sent them to the different Islands, but strange to tell, there are some people who undervalue such a valuable acquisition, & say they prefer a plantain or Yam.” He called those who did not care for breadfruit “self conceited & prejudiced Creoles.” Anderson finished by telling Banks that he found “everyone exceeding anxious to get plants of it…I use every means in my power to disperse them as much among the Islands as possible…they are prospering exceeding well in the Bahama Islands.” The Royal Gazette’s predictions had not been too far off the mark. Breadfruit as a plant thrived on Jamaica, St. Vincent, and the Bahamas.

Unfortunately, breadfruit as a foodstuff was not very popular. According to Anderson, “everyone” wanted at least one of the plants but none of the “Creoles” for whom it was intended wanted to eat the fruit. This may have been due to cultural and symbolic taste differences between the British (whites) and the indigenous and slave populations (non-whites) of the West Indies.

A study published in 2008 asserts that, “a person compares the human values symbolized by a food…to his or her own values and self-concept.” The authors claim that, although taste is objective (bitter, sweet, sour, salty), it is also subjective (fatty/fattening food = tastes good, healthy food = tastes bad). That subjectivity is based upon cultural and symbolic messages through what is called “self-congruity theory.”

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189 Alexander Anderson, quoted in Frost, Sir Joseph Banks and the Transfer of Plants, 60.
suggests that consumers’ prefer foods “with symbolic meanings that are congruent with their self-concept.” Further, the authors argue that, “people strive for consistency in their beliefs and behaviors because inconsistency produces feelings of unpleasantness and tension…. Product choice results from the self-concept, not the other way round.” The authors conclude that, “a [food] that symbolizes a value that [consumers] reject results in an unfavorable attitude and a lower probability” of choosing that particular food.¹⁹¹ In this case, breadfruit was the symbol that represented the English and slavery and oppression, something the non-whites all surely agreed produced “feelings of unpleasantness and tension.” Breadfruit was slave food. To like breadfruit was to like the English and slavery and to admit submission to British authority. In order to maintain a sense of dignity and self, the non-whites – those “self conceited & prejudiced Creoles” – refused to accept the newly introduced symbol of slavery. One researcher claims that, “more than 40 years passed” before breadfruit became “popular to local taste.” Of course by that time, “in 1834, emancipation had been declared in the British Empire” and no food carried the stigma of “slave food.”¹⁹²

Regardless of breadfruit’s popularity among its target group, the second breadfruit expedition was a success in terms of transplantation. The second expedition also set the stage for worldwide plant transportation and refined techniques for successful plant transport. For example, Banks realized that continued use of the great cabin (the captain’s cabin) for plant storage was untenable. Lack of space for the captain placed him in too close proximity to the rest of the crew, compromising his authority. Giving the great cabin back to the captain meant losing transport space. To compensate, Banks commissioned a small greenhouse to be

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built on the deck of ships.\textsuperscript{193} Greater access to air and sunlight (and ease of care) increased plant survival rates, provided the crew and caretakers were diligent. By the 1820s plant transportation technology inspired the invention of the Wardian case. The case was a sealed glazed glass box that acted like a terrarium, allowing moisture to recycle and replenish the plant within the enclosed atmosphere. The device also required less manual labor on the part of the crew. As a result, “plant transportation exploded from this point.”\textsuperscript{194} The introduction of the steam engine into shipping in the early nineteenth century also allowed for quicker transportation, exponentially increasing plant survival rates. Being a hardy plant, breadfruit quickly took root.

Breadfruit grew so well in the Caribbean that it became firmly established there – biologically, if not preferentially – by the end of the eighteenth century. However, the fruit garnered little popularity until the British bestowed emancipation. Historian David Mackay blamed the lack of popularity on the improved circumstances in Jamaica by the time breadfruit arrived in the islands in the 1790s and on planters who had “overstressed the need for relief.”\textsuperscript{195} This was probably partially true, although the implication of breadfruit as a slave symbol surely carried more weight with the target consumer. At any rate, by the time of breadfruit’s arrival in 1791, the natural crises of the 1780s had been overcome, crop conditions on Jamaica had recovered, and imports once again flowed into the islands from the United States.\textsuperscript{196} Local and imported resources had rebounded, negating the need for a

\textsuperscript{193} Rigby, Seaborne Plant Transportation,” 95-96.  
\textsuperscript{194} Ibid, 97.  
\textsuperscript{195} David Mackay, “Banks, Bligh and Breadfruit,” \textit{Science, Empire and the European Exploration of the Pacific}, 155.  
\textsuperscript{196} Ibid.
new food source. Today, however, the fruit is so well liked that Jamaica and St. Vincent have annual breadfruit festivals commemorating the arrival of the tree in the islands.

Breadfruit is widely consumed in the Caribbean today and continues to be popular in the Pacific. It can also be found as part of the Congolese (Africa) diet, apparently having been introduced by missionaries in the 1840s.197 An internet search for breadfruit recipes calls up more than 75,000 entries. In addition to its use as a healthy foodstuff – low in fat, high in fiber, and a good source of potassium, calcium, iron, thiamine, magnesium, antioxidants, and carotenoids – breadfruit provides material for a variety of other purposes.198 It can be used for construction materials, medicine, fabric, animal feed, and glue. Breadfruit wood is resistant to marine worms and termites, making it ideal for canoes and home building.199 Breadfruit leaves can be used to wrap food for cooking.200 Breadfruit trees are also used to support sustainable agriculture and can be inter-planted with a variety of other plants. The trees provide food and homes for seed dispersers and pollinators such as birds, fruit bats, and bees.201 Despite its early lack of popularity, breadfruit did not fade into obscurity.

201 Breadfruit Institute, “Uses.”
Conclusion

This court finds that the seizure of His Majesty’s Armed Vessel Bounty was an act of mutiny by Fletcher Christian and others of her crew, and that her captain Lieutenant William Bligh is, in the opinion of this court, to be exonerated of all blame on this occasion. Indeed in the matter of his command of the Bounty’s open launch we commend Lieutenant Bligh for his courage and exemplary seamanship.\(^{202}\)

So said Admiral Hood during the Royal Navy court martial that cleared Bligh of all charges related to the *Bounty* mutiny. Most of the mutineers, however, suffered violent deaths. Only three of them were hanged for their part in the mutiny, while others would drown in a shipwreck after their capture. Two of the captured mutineers who made it back to Great Britain were pardoned. The mutineers who evaded capture died in brutal island altercations (including Fletcher Christian). Only one mutineer survived on Pitcairn Island.\(^{203}\)

Bligh, on the other hand, faired rather well. After his acquittal, the Admiralty sent him out again to finish the job he had been assigned to do on the *Bounty* – gather and return breadfruit to Jamaica – a task he accomplished with great success.\(^{204}\)

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\(^{202}\) Hough, *The Bounty*.


\(^{204}\) Curiously, Bligh continued to exhibit managerial ineptitude, yet consistently rose through the naval ranks. He was involved in the Spithead and Nore mutinies in 1797 (more labor disputes than actual mutinies). Joseph Banks also made Bligh governor of New South Wales in 1805. In 1808 the colonists there rebelled against Bligh in what became known as the Rum Rebellion. During that incident, he was confined to the *Porpoise* from 1808-1810 before being sent back to Great Britain to face yet another court martial for his loss of colonial control. Bligh faced a total of three courts martial during the course of his career, finally retiring as a Vice Admiral. Herman, *To Rule the Waves*, 329; Pitcairn Islands Study Center,
Hurricanes, volcanoes, and wars threatened the British food supply. Hurricanes devastated the British West Indian ability to grow and maintain sustainable crops. Fallout from the Laki volcano fissure eruption poisoned the land in Great Britain and throughout northern Europe, drying up food exports from that region. The American Revolution imposed import and export embargoes on foodstuffs from the American colonies. French Revolution added similar woes, although the French had food shortages of their own and likely would not have exported much had they not been at war. The identification of breadfruit as the solution to the sugar islands’ food problem did not suddenly make the situation better. The mere logistics of moving breadfruit to the West Indies provided its own set of unique challenges.

Once the decision was made to pursue breadfruit, several issues arose. The plan to initiate the first breadfruit voyage from the New South Wales settlement of Botany Bay was quickly, and wisely, abandoned. Joseph Banks believed that provisioning an expedition from the New South Wales would put too much strain on the new colony and he was right. Defiant convicts and lack of agricultural knowledge nearly destroyed the settlement early in its establishment. Other problems with the plant transport process also came into play.

Even with its vast store of institutional knowledge, financing, and technology, the Royal Navy itself proved to be a temporary barrier to plant transportation. Argumentative and bullying naval captains hindered the timely delivery of foodstuffs to the West Indian labor force. Captain Cook, an extremely proficient sailor, eventually let his temper and the Hawaiian islanders’ customs get the better of him. His brusque treatment of the Hawaiians led not only to his death, but also encouraged William Bligh to extend that same lack of

civility to his own crewmen. Bligh’s abusive manner caused the failure of the first breadfruit expedition. As a result, the bad behavior exhibited by both of these men delayed the transport of breadfruit by almost ten years. Despite these setbacks, the pursuit of breadfruit and plant transportation resulted in a number of successes for the British, thanks in no small part to Joseph Banks, and surprisingly, Bligh himself.

Banks, an ardent botanist and supporter of eighteenth-century scientific expeditions, and the British West Indian planters and government, doggedly pursued breadfruit transplantation. Through their insistence, breadfruit was successfully transported and transplanted into Jamaica. Even with Bligh’s failure on his first breadfruit voyage, Banks and the Admiralty maintained enough faith in his sailing and gardening acumen to assign him to lead the second trip. Bligh’s second trip to Tahiti proved a resounding success and saw the transport of not only breadfruit but more than thirty other species of plants to the West Indies. Although the first breadfruit expedition failed, the second was an unqualified triumph. By the time breadfruit arrived in the British West Indies, however, Jamaica had recovered from the hurricanes of the 1780s, the war with the Americans was over, the food situation on the sugar plantations had stabilized, and the fruit was ultimately no longer the lifesaving sustenance originally intended. But to their credit, the endeavor allowed the British to perfect transoceanic plant transportation techniques and to significantly expand its borders.

During this venture, discoveries of new islands and colonization of existing lands allowed the British Empire to enlarge beyond its existing lands. The late eighteenth century saw the British Empire lay claim to colonies in the Pacific, so that by the mid-nineteenth century the British had nearly unlimited access to worldwide botanical specimens and thus
botanical superiority over their European counterparts and the Americans. The British successfully colonized Australia, New Zealand, Fiji, Tonga, Western Samoa, the Solomon Islands, India, Burma, Singapore, and Hong Kong, securing the Empire’s control of goods and food products around the world. By the early part of the nineteenth century, the British could say that the sun never set on the British Empire.

Global political competition and regional West Indian economic competition facilitated the introduction of breadfruit to the Caribbean. Improved plant transportation techniques also contributed to increased coffee and spice cultivation in the Western Hemisphere, reducing the need for global circumnavigation for these products. In the process of achieving what could only be describes as near total global domination in terms of empire, the British established a flourishing sustainable breadfruit crop in the West Indies. The British had learned that, “Plant power means world power.” They were no one’s slaves and they had the plant power to prove it.

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### Appendix A

#### Chronology

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1728</td>
<td>James Cook born, October 27</td>
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<tr>
<td>1754</td>
<td>William Bligh born Sept. 9</td>
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<tr>
<td>1757</td>
<td>Cook turns 29, assigned as ship's master of 60-gun <em>Pembroke</em>, October 29</td>
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<tr>
<td>1763</td>
<td>Treaty of Paris ends Seven Years War</td>
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<td>1764</td>
<td>Sugar Act</td>
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<tr>
<td>1767</td>
<td>Samuel Wallis (<em>Dolphin</em>) discovers Tahiti; claims island for Britain</td>
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<tr>
<td>1768</td>
<td>Louis-Antoine de Bougainville lands at Tahiti April 2; claims island for France</td>
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<tr>
<td>1768</td>
<td>James Cook’s first voyage (<em>Endeavour</em>) to plot the transit of Venus, accompanied by Joseph Banks, August 18</td>
</tr>
<tr>
<td>1769</td>
<td>Cook lands at Tahiti; Banks first experiences breadfruit; departs Tahiti July 13</td>
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<tr>
<td>1770</td>
<td>Cook becomes the first to chart New South Wales, April 19</td>
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<tr>
<td>1770</td>
<td>Bligh enters active service as A.B. (able-bodied seaman) on the <em>Hunter</em>, a 10-gun sloop, July 27</td>
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<tr>
<td>1771</td>
<td>Bougainville's journal first published</td>
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<tr>
<td>1771</td>
<td><em>Endeavour</em> arrives home, July 12</td>
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<tr>
<td>1772</td>
<td>Cook’s second voyage (<em>Resolution</em>) to south Pacific to search for <em>Terra Australis</em>, July 13</td>
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<tr>
<td>1774</td>
<td>American First Continental Congress</td>
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<tr>
<td>1775</td>
<td>Cook returns to England, July 30</td>
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<tr>
<td>1775</td>
<td>Standing Committee of West Indian Planters and Merchants offers reward for bringing live breadfruit plants to Jamaica</td>
</tr>
<tr>
<td>1775</td>
<td>American Revolutionary War begins, April 19</td>
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</tbody>
</table>
1776  Cook’s third voyage (*Resolution* again), July 12; mission to map the Northwest Passage; William Bligh assigned to this mission

1779  Cook is killed in Hawaii, February 14

1780  Hurricane in Jamaica, October 3

1780  *Resolution* returns to England, October 4,

1781  Bligh promoted to lieutenant

1781  Hurricane in Jamaica

1783  Laki fissure eruption begins (Iceland), June 8

1783  American Revolutionary War ends, September 3

1784  Laki eruption finally subsides, February 7

1784  Hurricane in Jamaica, July 30

1785  Hurricane in Jamaica

1786  Hurricane in Jamaica

1786  West Indian emissary again petitions for trip to Tahiti for breadfruit

1787  First shiploads of prisoners depart for New South Wales, May

1787  Bligh sails for Tahiti (*Bounty*) on first breadfruit expedition, December 23

1788  First shiploads of transported prisoners land at Sydney Cove in Port Jackson, NSW

1788  Governor Arthur Phillip (NSW) writes to Pitt Administration

1788  *Bounty* anchors at Tahiti October 26

1789  *Bounty* leaves Tahiti April 3

1789  Mutiny on the *Bounty* April 28, Bligh and officers set adrift

1789  Bligh and castaway crew land in Timor, mid-June
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
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<tr>
<td>1789</td>
<td>French Revolution begins, May</td>
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<tr>
<td>1789</td>
<td><em>HMS Guardian</em> hits an iceberg and sinks on way to re-provision NSW colony, December 24</td>
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<tr>
<td>1791</td>
<td><em>HMS Gorgon</em> finally arrives at NWS colony with supplies</td>
</tr>
<tr>
<td>1791</td>
<td>Bligh sails for Tahiti (<em>Providence</em> and <em>Assistant</em>) on second breadfruit expedition, nearly two years after landing in Timor after mutiny, August 3</td>
</tr>
<tr>
<td>1793</td>
<td>Bligh returns to Jamaica with breadfruit, February 5</td>
</tr>
<tr>
<td>1799</td>
<td>French Revolution ends</td>
</tr>
</tbody>
</table>
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