



Branche d'un Arbre -à -pain avec des Fruits.

Bonard Del.

Courtesy of the John Carter Brown Library at Brown University.

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Fig. 1. Europeans first encountered breadfruit in the south Pacific. This image shows one variety: from John Hawkesworth, *Voyages autour du monde entrepris par ordre de Sa Majesté britannique*, Amsterdam and Rotterdam, 1774.³

Food, Colonialism and the Quantum of Happiness

by *Rebecca Earle*

Among all the labours of life, if there is one pursuit more replete than any other with benevolence, more likely to add comforts to existing people, and even to augment their numbers by augmenting their means of subsistence, it is certainly that of spreading abroad the bounties of creation, by transplanting from one part of the globe to another such natural productions are likely to prove beneficial to the interests of humanity.

Bryan Edwards, *The History, Civil and Commercial, of the British Colonies in the West Indies*, 1793.¹

In 1799 a group of wealthy women in Madrid began a decade-long experiment aimed at discovering the best substitute for breast milk. The ladies, members of the Junta de Damas affiliated with Madrid's Royal Economic Society, had taken over the management of the city's foundling hospital, which provided motivation for their investigation and a ready supply of infants on whom to test their experimental formulas. Unable to find enough wet-nurses for the hundreds of babies now in its charge, the Junta explored substitutes, including goat's milk, goat's milk mixed with fennel, and donkey's milk drunk directly from the animal's teat. Members kept notes on the outcome of their tests and discussed the results with doctors from the Royal Academy of Medicine. Disappointingly, almost all the babies died. The Junta was therefore eager to try a new substance that came highly recommended as an infant feed. *Maranta arundinacea*, or arrowroot, originated in Cuba, where it was reportedly used to great effect. The powder was tested on twenty-two babies. After twenty deaths the trial was halted. The surviving infants were handed over to a wet-nurse and the Junta's medical team concluded that despite the fanfare this Caribbean root was not a suitable baby food.²

The Junta's arrowroot experiment was one example of the hundreds of investigations undertaken across eighteenth-century Europe to assess the nutritive qualities of extra-European plants. Many substances – sweet potatoes, quinoa, peanuts, wild rice – were evaluated as possible supplements or

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staples.⁴ Although schemes to popularize these foods stressed their universal appeal, the ambition was usually to increase consumption by – as one promoter put it – ‘a poor man with a large family’, or by foundlings.⁵

The transformative impact of new-world foods on old-world diets is of course well known. Alfred Crosby’s pioneering works, together with more recent studies, have deftly charted the ways in which global eating practices were revolutionized by the ‘Columbian exchange’ – the transfer of plants, animals, culture, human populations, technology, and ideas between the Americas and the Old World in the fifteenth and sixteenth centuries. The eighteenth-century quest for new foods to feed Europe forms part of this larger history, while at the same time reflecting central aspects of enlightened science, as the Junta’s careful experiments suggest. A growing corpus of research indeed points to the importance of food in framing eighteenth-century debates about knowledge and health.⁶ The promotion of novel staples in Europe ran parallel to eighteenth-century efforts to identify new commercial crops, edible or otherwise, that might profitably be exploited in European colonies. A rich scholarship has documented the sustained efforts by European states to discover such commodities, and where possible to relocate production to their own colonial orbits. Research has amply demonstrated the close links between natural history, colonialism and commerce.⁷

These better-known efforts at commercial botany, and at discovering new foods for the peoples of Europe, were accompanied by a third enterprise that formed part of this larger assemblage of eighteenth-century food transfers. This was the search for new staples to feed labouring populations not in Europe but its colonies. This article explores two foods that were persistently advocated as ideal staples for ‘workers and black people’ from Cuba to Calcutta: breadfruit and potatoes.⁸

These endeavours rarely succeeded in their ostensible aim of transforming subaltern eating practices, but they reveal much about the role of food in the eighteenth-century imagination. Ample supplies of nutritious foods were viewed as crucial to building the healthy and energetic populations that formed the basis for agricultural, commercial and industrial wealth. The close associations between strong populations, nourishing foods, and enlightened governance meant that interventions in colonial diets were rarely concerned solely with practical matters of supply. Ultimately, for botanists, colonial officials and settlers, the appeal of schemes to disseminate breadfruit in Guatemala or potatoes in Bengal lay in their ability to encapsulate a complex of enlightened desiderata about benevolence, improvement, and public happiness. These links between the provision of food and the pursuit of happiness fuelled and legitimated enlightened promotion of new foods in the eyes of their advocates, and explain why colonial elites were so enthusiastic about such plant transfers, despite their limited success in modifying popular diets.

These stories reflect the global nature of the Enlightenment. While scholars once viewed the Enlightenment as a fundamentally European phenomenon that either naturalized or withered in other parts of the world, recent research has stressed the central role of extra-European dialogue in the construction of European knowledge. As Sebastian Conrad suggests, scholars should perhaps focus less on the origin of ideas and practices, and more on their interconnections.⁹ The global circulation of breadfruit plants or recipes for potato bread illustrates precisely these connected histories. It was the breadfruit's movements, across empires and islands, that made it a powerful symbol of enlightenment. Potatoes resonated differently in Lima, Paris and Calcutta, but in all three locations discussion of their merits formed part of a body of ideas whose central themes were the relationships between nutritious food, good governance and happiness. Examining these histories helps concretize our understanding of the simultaneously mobile and localized nature of enlightened projects and imaginaries.

Let us begin by taking a closer look at the Junta de Damas' infant formula.

HOW MANY LABOURERS! HOW MANY HONEST GRENADIERS!

As the Junta's sourcing of the root from Havana indicates, arrowroot grew in Meso-America and the Caribbean. Its significance in precolonial culture is unclear, but from the seventeenth century Europeans reported that Caribbean islanders employed it to treat wounds, especially those caused by poisoned arrows. French and English settlers, attracted by the root's medicinal qualities, endorsed its utility and widened the range of conditions for which it was considered effective. Once converted into flour, moreover, it made a smooth jelly recommended for those with delicate digestions. By the mid eighteenth century it was cultivated in the West Indies for local use and as a commodity exported (on a very small scale) to Europe.¹⁰ At the time of the Junta's experiments arrowroot was represented in a number of European botanical gardens, and was recognized as a suitable food for infants and the infirm.¹¹ The Junta's interest in the root, therefore, was not prompted by its recent appearance on the European scene.

Rather, it reflected the quest for foodstuffs which would facilitate the social, political and economic transformations desired by enlightened thinkers across Europe. A central concern, embraced by the Junta, was the creation of a substantial population of healthy and active workers. As Spanish ministers affirmed, echoing a widely shared conviction, 'a large population that is usefully employed is the greatest treasure a state can possess, the foundation of its true power'.¹² Were sickly foundlings transformed into healthy adults, rhapsodized one writer, 'how many individuals – which we now lack – would we have for public works! How many labourers! How many honest grenadiers!'.¹³ The conversion of Madrid's orphans into productive members of society was therefore a patriotic act. Similar efforts were underway in other European cities, where the shocking mortality rates

at founding hospitals attracted increasing attention for reasons both philanthropic and economic.¹⁴ Writers across Europe insisted that a flourishing economy depended on a well-nourished and vigorous population. While philosophers disputed whether large populations were invariably preferable to smaller ones, all agreed that to be productive the existing population needed to be well fed. For this reason, a nation's strength was closely correlated with its possessing 'the greatest possible quantity of foodstuffs', as the economic theorist Jean-François Melon noted. An adequate supply of affordable and nourishing food was thus essential for the 'security, wealth and glory of a state'.¹⁵

Since a nation's wealth depended on the vigour of its population, public-minded individuals diligently examined ways not simply to prevent famine, but to provide the healthy and agreeable food necessary to create this energetic workforce. Identifying more nourishing sources of food therefore constituted a topic 'worthy of the meditations of philosophers and the protection of government', in the view of Antoine-Augustin Parmentier, one of the century's great potato promoters.¹⁶ The search for nourishing new foodstuffs, and the promotion of efficient ways to prepare them, were not simply responses to shortages, but rather reflected new ways of thinking about governance, and new debates about the sources of wealth and economic prosperity.

What, however, constituted a nourishing food? Was arrowroot such a substance, for instance? Although some British enthusiasts insisted that it could form the basis of an improved diet for 'natives' in India and 'our new African settlements', the root's status as a food for babies and invalids militated against its promotion as a staple.¹⁷ Before the nineteenth-century invention of the calorie, which provided a numerical scale for ranking putative energy value, assessment of a food's nourishing qualities did not rely on a single indicator.¹⁸ Claims that a food was nutritive were usually linked to a perception that it was sustaining, in that it enabled a lengthy period of work. Working people often evaluated a food's ability to nourish in this way. In 1790s England, for instance, labourers in the southern counties considered barley and potato soup 'washy stuff, that affords no nourishment', which would not allow them to do a day's work. Peasants in the Vaud made the same complaints about potato bread. Labourers in various regions seem to have viewed meat as particularly nourishing.¹⁹

For many scientists, nourishing foods were those that contained a greater quantity of starch. The physician James Clark made this clear in a 1797 report on the starchy qualities of various West Indian roots. Clark, who practised for many years in Dominica, conducted experiments on manioc, eddoes, arrowroot, and a number of other common foodstuffs, with a view to determining how much starch each yielded, and thereby how nutritious each was. Sweet manioc, for instance, proved to be more nutritious than the bitter variety because it contained more starchy matter. Guinea yam and sweet potato contained equal quantities of starch, and so were equally

nourishing. Other plants such as plantain proved more difficult to reduce to a starch through chemical experimentation, but Clark was certain that their reputation as a 'hearty food for hard working people' meant that they must contain a great deal of starch. Indeed, he declared that all these commonly consumed foods 'contain starch, and are looked upon to be very nutritious'.²⁰ Starchy foods were highly nourishing, and therefore suitable for labourers. It was fortunate for the enslaved population of the West Indies that this was so, since, as Clark happily noted, starchy substances formed their principal food. He therefore felt confident in concluding that their diet was wholesome and nourishing.²¹ Working people required hearty, nourishing food and a growing (if not unanimous) scientific consensus agreed that starch was a particularly nourishing substance. As Emma Spary has observed, 'it was over the question of nourishing the poor that administrators and savants first began to collaborate in generating new definitions of dietary requirements and experimenting with new nutritional resources'.²²

This equation of nutritive value with starchiness explains why the many efforts to identify new foods for colonized populations focused almost exclusively on starchy substances. While arrowroot was being recommended as a food for colonized Africans, colonial official Robert Kyd, founder of the Calcutta Botanical Garden, was encouraging the introduction of sago palms from the Malay Peninsula to India – sago being another supremely starchy substance, to which arrowroot was often compared.²³ Writing a decade after the devastating Bengal famine (exacerbated, if not indeed caused, by British policies), Joseph Banks, President of the Royal Society, imagined the multiple benefits which would accrue from Kyd's proposals. The introduction of sago, Banks believed, would not only provide an immensely wholesome food for 'natives', but would also lead these natives to 'revere the name of their British Conquerors', whom they would thank for delivering them from 'famine, the most severe scourge with which Providence had afflicted them'. Banks thereby endorsed the dissemination of sago while simultaneously disavowing British responsibility for the circumstances that prompted its introduction.²⁴ These eighteenth-century dreams of beneficent starchy foods for natives were thus inherently connected to European ideals of good governance, which justified such interventions in the eating practices of ordinary people, and obscured, at least to the dreamers, the structures of power and coercion that made them appear necessary.

THE CELEBRATED BREADFRUIT

Advocates of sago and arrowroot often alluded to the century's most sensational act of nutritional botany: the transfer of breadfruits from the south Pacific to the Caribbean. The story of the breadfruit's journey from Tahiti to the West Indies is as well known now as it was at the time, as is the spectacular fate of the *Bounty*, the ship which transported the original cache of seedlings. Fletcher Christian's 1789 mutiny against Captain Bligh was provoked in part by the demands imposed on the crew by the delicate

cargo, which monopolized much of the ship's space and water supply. On seizing the vessel the mutineers promptly tossed the saplings overboard. This setback did not deter the British government from funding a second expedition, again under Bligh, which in 1792 succeeded in bringing the trees to the Caribbean.²⁵

Breadfruit promoters stressed two features: that the fruit was nutritious, and that it offered a highly suitable food for enslaved people. John Ellis, a colonial agent for Dominica, stated pithily in a 1775 pamphlet why the plant merited attention. Breadfruit, he explained, 'affords a great deal of nourishment, and is very satisfying, therefore proper for hard-working people'. For this reason, it 'might be easily cultivated in our West India islands, and made to supply an important article of food to all ranks of their inhabitants, especially to the Negroes'.²⁶ The breadfruit, insisted another planter, 'would be of infinite importance to the West India Islands' because it would afford 'a wholesome & pleasant food to our Negroes'.²⁷

The conviction that the West Indies needed breadfruit seems to have originated with Joseph Banks. During his voyage to the South Pacific with James Cook, Banks identified the plant as an almost limitless source of nutrition. Because they subsisted effortlessly on the bountiful breadfruit, the young Banks recorded, Tahitians 'may almost be said to be exempt from the curse of our forefather; scarcely can it be said that they earn their bread with the sweat of their brow'.²⁸ As David Mackay observed, for Banks the breadfruit represented not so much a foodstuff as 'a symbol of a simple and idyllic life free from worries about work or property'.²⁹ Banks therefore lobbied vigorously for their transfer to the Caribbean. For Banks's Caribbean interlocutors, too, the prospect of a food source that required no labour whatsoever was tantalizing. The West Indian plantation system depended on the enslaved to grow most of their own food in kitchen gardens and provision grounds. This necessarily diverted labour from commercial to subsistence agriculture. The tree offered the possibility of converting enslaved bodies yet more efficiently into sugar. The time required to cultivate food, for planters a tiresome distraction from the business of profit, could perhaps be redirected wholly into sugar cane. The breadfruit thus lay at the potent convergence of the capitalist logic of the plantation system and an enlightened fantasy of a life without labour.³⁰

As various scholars have remarked, there is a deep irony in the expectation that breadfruits, representatives of a paradisiacal world without toil, should serve as food for the enslaved. That enslaved people displayed little enthusiasm for them further illustrates the marginal place of the subaltern eater within these schemes of nutritional generosity; colonial writers complained that through 'some unaccountable indifference' these 'valuable acquisitions obtained by the munificence of our King' were shunned by their intended beneficiaries.³¹ At the same time, new-world plantations were a natural location for such experiments, given the associations of productive labour and nourishing foods with the kindly governance that eighteenth-

century planters insisted, loudly, was characteristic of the plantation system.³²

Imperial interest in the breadfruit derived from these associations far more than from practical concerns about food supply in the Caribbean. During the same years that it underwrote the breadfruit voyages the British state explicitly rejected claims that the West Indies was suffering a food shortage such as might necessitate the introduction of a new staple. When the West India lobby urged Parliament to lift an embargo on trade with the United States, alleging that without food imports the enslaved population faced starvation, Pitt's government stated repeatedly that food provisions were adequate.³³ The British state did not fund the transportation of thousands of breadfruits from Tahiti to solve a subsistence crisis whose very existence it denied. Rather, the enterprise was framed as a demonstration of altruism and commitment to the public good. As Bligh insisted, 'if a man plants ten [breadfruit trees] in his life-time, which he may do in about an hour', he would instantly fulfil 'his duty to his own and future generations'.³⁴ Breadfruits signalled beneficence, regardless of whether anyone ate them.

The British were not alone in viewing breadfruit as an almost talismanic agent of enlightenment. The celebrated German anatomist Johann Friedrich Blumenbach reported excitedly on the arrival in Göttingen of a single specimen of this 'inestimable benefit' to mankind, and colonial officials and naturalists elsewhere laboured to disseminate the tree in their own empires.³⁵ Bligh's efforts were in fact preceded by a French mission to naturalize breadfruits, which successfully transported the plant from the south Pacific to Martinique. Agronomists later advocated its cultivation in France's north African colonies.³⁶ Like Banks, French naturalists viewed the plant as a highly symbolic food that encapsulated nature's bounty. French celebration of the breadfruit resonated with British writings to help establish the fruit as a transformative foodstuff whose mere possession would not simply banish hunger, but also increase human happiness. The man who succeeded in bringing the plant to France's colonies, stated the head gardener of the Jardin du Roi, will 'have done more for the happiness of mankind than all the savants of the world'.³⁷ By the 1790s breadfruits were growing in British and French botanical gardens in the East and West Indies, where they demonstrated commitment to benevolent governance, without serving as a significant source of food.³⁸ Indeed, within a few years of the tree's arrival in the Caribbean, planters had lost interest in its dietary potential. 'The fact is', stated the superintendent of the St Vincent botanical garden in 1806, 'planters hate giving it a place on their estates, as they regard it as an intruder on their cane land, and they dislike any other object but canes.' 'For to say he had such a thing', he noted, a planter might 'make a negro plant it', but after that he would accord it no more attention.³⁹ In this context the tree was less a solution to a provisioning dilemma than a sign of Europe's commitment to its colonies and an emblem of enlightenment.

Spanish officials and botanists watched these developments with interest. Peninsular newspapers reported the efforts by rival colonial powers to disseminate the tree, and in 1779, after reading English and consular reports, the director of Madrid's botanical garden concluded that the introduction of breadfruit to Spanish America would be 'extremely useful ... because it is highly nourishing for workers and black people'.⁴⁰ As with the proposal to introduce arrowroot to 'our new African settlements' or breadfruit to Martinique, this assertion was not motivated by a particular moment of dearth. Neither was it a response to a recent encounter with breadfruit. Spanish explorers and missionaries in the Pacific had long been familiar with the plant, which they had not hitherto regarded as a particularly promising food source. Indeed, a group of Franciscans stationed in Tahiti in the early 1770s clashed repeatedly with locals when the missionaries began felling breadfruit trees for use as timber.⁴¹ The new-found enthusiasm rather reflected the breadfruit's recent elevation to wonder-food within the republic of letters.

The fruit's status as an agent of enlightenment may be glimpsed in a satirical essay published in a Spanish literary journal in 1788.⁴² After reporting British plans to transport the fruit to the Caribbean, the journal observed that its readers would doubtless welcome the discovery of 'a healthy and plentiful foodstuff, which the earth spontaneously offers to mankind, and which multiplies so rapidly that effort is required not to encourage but rather to contain it'. The breadfruit, in short, seemed the very fruit of paradise. Doubtless, the journal continued, readers would admire 'the activities of an enlightened nation' in disseminating this bountiful food. But, the journal warned, readers must not be seduced by the breadfruit's apparent attractions. All too often enterprises guided by 'charitable and humane instincts' had led to disaster. Warning to its theme, the journal insisted that popularizing the breadfruit would deal a fatal blow to monopoly trade, unjust privilege and inequality, because its immense nutritive qualities would enable colonies to be self-sufficient. What a threat to tyranny the innocent breadfruit posed! It might spell the end of colonialism itself. Perhaps, the journal concluded, it would be wise to start a war to prevent its reaching the Americas. The author of this sardonic essay captured neatly the near-miraculous qualities ascribed to the exotic fruit.

As in Britain and France, in Spain the state encouraged its dissemination, ordering botanists in the Philippines to experiment with growing breadfruit, and arranging for samples to be sent to Mexico.⁴³ These imperial directives were accompanied by more local efforts, which demonstrate both the global relevance of the language of enlightened governance, and the ways in which this language was inflected through local contexts. One such effort was championed by the Royal Economic Society of Guatemala, one of the many patriotic organizations in Europe and the Americas devoted to disseminating useful knowledge.⁴⁴ Improved agricultural practices featured largely in their concerns, since (in the words of a Chilean merchant) no

nation 'that encourages agriculture has not enjoyed a large population, or improved industry, or failed to establish an advantageous commerce'.⁴⁵ The Guatemalan Society accordingly stressed that its remit was 'the perfecting of agriculture and the mechanical arts'. Most of its attention was focused on commercial agriculture; the 'decay' of cacao cultivation was a topic of persistent concern, as were efforts to develop the linen industry.⁴⁶ The Society moreover experimented with new fodder crops such as Guinea grass, for which it sought out seeds and published guides to cultivation.⁴⁷

The Society was also concerned with the kingdom's food supply. Its newspaper, the *Gazeta de Guatemala*, echoed the views of Spanish economic theorists that it was impossible for arts and industry to flourish when food was expensive or scarce. It monitored the availability and cost of basic foodstuffs such as maize, and was indignant when critics suggested it was not doing enough to address particular moments of shortage. In its publications the Society insisted that it had a long history of promoting new varieties of food plants.⁴⁸ Its practical activities in this direction were in fact limited, but this did not deter it from celebrating its efforts to disseminate an iconic foodstuff: the breadfruit.

In 1801, Alejandro Ramírez, the *Gazeta's* editor, announced that he was in possession of a supply of exotic seeds and plants – 'many of them unusual, all useful, and most unknown in this kingdom' – which he and a Guatemalan merchant had obtained on a visit to Jamaica.⁴⁹ Among the seedlings were several varieties of breadfruit. This was not the first time that visitors to Jamaica from the Spanish circum-Caribbean had returned home with horticultural treasures. In 1795 officials in Cuba reported that they had acquired specimens of various modish plants, including breadfruit, from Jamaica. After reviewing the miserable fate of the *Bounty*, they observed with satisfaction that Cuba had freely acquired these Jamaican plants, 'which constitute part of that island's wealth', and for which Britain had paid such a high price.⁵⁰ Botany and science were never disconnected from competition over imperial power. At the same time, local networks of exchange made possible collaborations that worked across such jealousies of trade. Cuban botanists and the Guatemalan Society obtained their breadfruits from a neighbouring British colony. Officials in Madrid, in contrast, were obliged to design a complex trans-oceanic programme to import the plants from the Philippines which ultimately failed to deliver a single live specimen.⁵¹ If breadfruits represented enlightenment, then the new world was no less enlightened than the old.

The Guatemalan Society had established a small acclimatization garden in Truxillo, on the Caribbean coast, and it was there that the plants were raised. The agents of the transfer, Alejandro Ramírez and Francisco Sosa, congratulated themselves that through their efforts the kingdom's families would in the future subsist on breadfruit, a hyperbolic statement that did not reflect any serious ambition to promote breadfruit consumption, but which captured well the era's breadfruit-discourse.⁵² The experiment

however went poorly. By 1802 the reportedly superior Tahitian variety had died, and other plants were attacked by disease, insects and cattle. Labels became detached from the specimens, which meant that the gardener was no longer certain of the identity of some of the plants in his care. He subsequently left Truxillo under a cloud; by the time a new gardener took over many of the plants had perished. The Society however considered the experiment a success because the ‘celebrated’ breadfruit remained alive, its reputation untainted by its failure produce a single fruit.⁵³

For the Society the breadfruit was less a plausible replacement for maize, the kingdom’s staple, than an emblem of Guatemala’s participation in a global conversation about botany, acclimatization and enlightenment. As scholars have repeatedly observed, colonial botany embraced far more than the practical quest for useful or exotic plants. It also constituted a symbolic display of legitimate governance.⁵⁴ In this spirit the presence of even a single breadfruit tree was heralded in Guatemala, the West Indies, New Granada, Brazil, Tenerife and other corners of the Atlantic world, not because it provided a significant source of food but because it represented a commitment to enlightenment, political economy, and the public good.⁵⁵ This is why in 1825 the newly formed Republic of Bolivia incorporated a breadfruit tree into its official shield. Its designers explained that the ‘prodigious’ breadfruit symbolized Bolivia’s natural wealth, just as the liberty tree they included on the coinage clearly proclaimed the new state’s enlightened, republican ambitions.⁵⁶ For such statesmen, as for Joseph Banks and the Guatemalan Society, the breadfruit’s appeal lay less in its practical utility as a source of food, than in its powerful ability to encapsulate, underneath its wrinkled skin, enlightenment, and, in the words of the Jardin du Roi’s head gardener, ‘the happiness of mankind’.

THE VALUABLE POTATO

Discussions of breadfruits often compared them to the plant that in Europe was the object of the most intense promotion during the eighteenth century: the potato. John Ellis’s pro-breadfruit pamphlet in 1775 likened the fruit to ‘the potatoe-bread made in the West of England’. In his assessment of the quantity of starch yielded by West Indian tubers the physician James Clark carefully compared each to potatoes, which he treated as a bench-mark for nutrition.⁵⁷ Breadfruit, its advocates hoped, might come to play a role in Africa or the Caribbean comparable to that of the potato in Europe. But might not the potato itself fulfil this role? Why make recourse to distant, unfamiliar plants when a suitable food was already close to hand?

The potato’s journey from the Andean highlands around the globe mostly predated its intense promotion in Europe in the late eighteenth century, when it was widely touted as an ideal food.⁵⁸ By the early seventeenth century potatoes were cultivated and eaten in many parts of Europe; British, Iberian and French navigators moreover left a trail of potatoes as they voyaged across the globe.⁵⁹ By the eighteenth century potatoes were

completely naturalized in many parts of the extra-European world; both the Iroquois in upstate New York and ladies in New England consumed potatoes, while visitors to Botany Bay were astonished by the settlement's flourishing potato plots.⁶⁰ To a significant degree, the potato established itself as an important global staple independently of the vigorous eighteenth-century pro-potato propaganda. This propaganda nonetheless suited enlightened savants in Spanish America and British India eager to demonstrate their commitment to the pursuit of useful knowledge and the public good. Their own potato schemes helped to articulate a colonial vision of paternalist improvement, even if they had little effect on local diets.

The potato was the object of a sustained propaganda campaign in eighteenth-century Spain. Local economic societies investigated the potato's qualities, experimented with new varieties, offered premiums for the largest harvest, and edited treatises on approved horticultural techniques. Newspapers printed recipes for potato bread.⁶¹ Charles III issued orders encouraging potato cultivation, and sponsored the publication of an entire book extolling the tuber, which was into its fourth edition by 1804.⁶² All this was accompanied by a patriotic insistence that the rest of Europe was indebted to Spain; newspapers recorded with pride that it was 'our conquistadors' who had brought this 'precious fruit' to Europe.⁶³

Organizations such as the Guatemalan Society were familiar with the potato's lofty reputation in Spain. The Society subscribed to Spain's principal agricultural journal, which reported regularly on the potato's merits and its promotion by states and economic societies across Europe.⁶⁴ The Society's own publications translated extracts from the essays of the celebrated Count Rumford, famous for his low-cost potato soup. Likewise the *Gazeta de Guatemala* reprinted Spanish recipes for economical potato bread, although in Guatemala potatoes were in short supply and hardly provided a useful substitute for wheat flour.⁶⁵ At no stage however did the Society make any effort to increase potato consumption, a major aim of analogous European organizations. As with its celebration of the breadfruit, the Society's enthusiasm for the potato reflected its commitment to an Atlantic conversation about enlightenment. It did not form part of a practical project of dietary reform, but rather demonstrated the Society's fluency in the language of improvement, public happiness and good governance.

The separation of the potato's importance as an emblem of enlightenment from its local relevance as a foodstuff is particularly clear in the case of Peru, where Spaniards had first encountered the potato in the sixteenth century. The Peruvian analogue of the Guatemalan Society was the Academic Society of the Friends of Lima, whose members enthusiastically embraced the rhetoric of utility, reason and enlightenment. Their journal, the *Mercurio peruano*, returned repeatedly to the need to promote agriculture, commerce and industry, and displayed a keen awareness of the importance of natural history, in particular, to wealth and improvement. As the botanizing bishop of Trujillo observed in a letter reprinted in the *Mercurio*,

knowledge of natural history and geography was vitally important to governance.⁶⁶ The journal likewise detailed the useful and unusual plants cultivated in Lima's botanical garden and drew pointed comparisons between Britain's ill-fated efforts to transport 'the prodigious breadfruit' to Jamaica, and Spain's numerous state-funded botanical expeditions around the world. Like its counterparts in the Peninsula, the Peruvian Society lauded Spain's role in introducing the potato to Europe, which in its view helped to disprove hostile assertions that Spain's colonization of the Americas had contributed nothing to the advancement of humanity. Viewed from this perspective, the potato was evidence of Peru's, and Spain's, contribution to knowledge and its participation in the community of enlightened states.⁶⁷

At the same time, enlightened Peruvians could not have been less enthusiastic about potatoes when it came to eating them. In the Andes the potato had long been regarded by Europeans as a distinctly indigenous foodstuff. In one of the earliest descriptions it was called 'a certain food eaten by Indians'.⁶⁸ Potatoes were moreover important in Inca religion; the Jesuit naturalist and theologian José de Acosta noted in his 1590 chronicle that Amerindians venerated certain oddly-shaped potatoes, 'which they call *llallahuas* and kiss and worship'.⁶⁹ Potatoes were thus strongly linked to the indigenous world, and therefore, in the eyes of colonial elites, to poverty and incivility. The *Mercurio's* discussion of the tuber largely reproduced this set of associations. 'Paltry' and 'miserable' were the words most closely linked to potatoes in its pages.⁷⁰

Worse, some Peruvian writers suspected that potatoes were actually unhealthy. In the thesis that earned him a medical degree from the University of Montpellier, the Limeño José Manuel Davalos attributed the ailments typically afflicting Lima's residents to their overuse of local foodstuffs, most notably heavily seasoned pork, manioc and potatoes. Citing Linnaeus, Davalos noted that the potato 'is a true species of *Solanum*, and hence it is easy to judge it to be suspect. If used frequently it produces a harmful effect even in small quantities'.⁷¹ The *Mercurio* likewise published warnings about the lethal effects of excessive potato consumption by travellers, especially when it was accompanied by spicy foods and alcohol. At best travellers could hope for indigestion, but a fatal dysentery was more likely.⁷² Far from promoting potato consumption, Peru's community of patriotic savants discouraged its use, because of its links to poverty and indigeneity.

In fact, potatoes were a significant commercial crop in eighteenth-century Peru. As the *Mercurio* itself documented, they were an important item of commerce within the viceroyalty and between neighbouring colonies. Grown by indigenous and non-indigenous farmers alike, potatoes were traded up and down the Andes and along the Pacific coast, providing a handsome profit for those able to develop large-scale trade. They were not a miserable substance associated solely with deprivation.⁷³ Within the pages of the *Mercurio*, then, 'potato' was at once a commodity, a despised food, and an example of Hispanic enlightenment.

The promotion of the potato in British India provides a final example of the potato's ability to index good governance, independent of its uptake as a dietary staple. As in Spanish America, colonists in India established local societies intended to promote good agricultural practice and general improvement. The Agricultural and Horticultural Society of India, for instance, was formed in 1820 to effect the 'general amelioration of the agricultural condition of India'. The Society made a sustained effort to encourage potato cultivation, alongside its commitment to developing new commercial crops.⁷⁴ Its founding prospectus stated clearly that one 'object to be pursued by an Agricultural Society is, *the introduction of new and useful Plants*'. Already, its first president insisted, the promotion of the potato by a few colonists demonstrated the merits of this ambition. 'How much more then', he continued, 'might be accomplished by the joint efforts of a number of persons arduously engaged in the same pursuit!'⁷⁵ To this end the Society established an acclimatization garden in which members grew potatoes alongside tobacco, apples, Seville oranges, nectarines, cherimoyas and avocados. They also imported seed potatoes from Europe and distributed them to members, who experimented with the effect of different manures and soils on the productivity of 'this valuable vegetable'.⁷⁶

The Society's ambitions were not satisfied by gentlemanly pottering. It wanted Indians too to grow European vegetables. Using a long-established technique the Society sponsored prizes for the cultivation of potatoes, peas, cauliflowers and other plants by 'native farmers'. While such incentives were aimed in part at remedying the 'deplorable lack of good produce' in the markets that provisioned their own kitchens, their goal was to induce Indians not simply to grow but also to eat potatoes and cauliflowers. The Society therefore conducted questionnaires on the tuber's reception among India's different religious communities, and was pleased when particular villages embraced the potato.⁷⁷ It regarded these enterprises as an uphill struggle against the 'ignorance or mistaken ideas of the natives relative to those things which concern their own interests', but was confident overall that it was working to increase happiness and improve the well-being of India's rural population. For the Indian Society, efforts to encourage potato consumption provided vivid evidence of the beneficent intentions of colonists, and also of the obstinate refusal of 'native farmers' to embrace enterprises so clearly in their own interest.⁷⁸

As David Arnold has shown, the Society could count some modest successes in its agricultural programme, but the dissemination of the potato was not one of them. Well before it embarked on its promotional scheme 'this salutary and useful root' had already attained the status of a commercial crop in Calcutta, the western Deccan and elsewhere, spread in part by the tastes of the British troops garrisoned there. The Society's activities did little to alter this situation.⁷⁹ Far more lasting was its local articulation and development of the discourse of improvement, and the construction of India as a derelict region in need of agricultural renewal. Its promotion of the potato,

and conviction that through such actions Indian peasants would experience a ‘happiness till now unknown in India’, in turn reflect both the global reach of fascination with the potato, and also the strong conviction that dissemination of such staples was a privileged means of promoting public happiness.⁸⁰

WHAT COMFORT FOR THEM! WHAT HAPPINESS FOR THE NATION!

Promoters of new foods often observed that their schemes would result in an increase in public happiness. If poor people were to eat more potatoes, commented a French advocate, their healthier bodies could better contribute to the glory and prosperity of the state: ‘what comfort for them! What happiness for the Nation!’.⁸¹ Since root vegetables were a superior foodstuff, their greater consumption in Spain would bring every possible benefit, insisted the country’s leading agricultural journal. ‘What a simple means of promoting national happiness!’, it concluded.⁸² Discussing George III’s support for the breadfruit venture, the superintendent of the St Vincent botanical garden waxed lyrical: no undertaking, he proclaimed, was ‘more pregnant with benevolence’ than that which ‘while it increased the comforts and means of subsistence, multiplied, at the same time, the happiness and numbers of mankind’.⁸³ Happiness both individual and public was thus enhanced by the introduction of these foods.

That it was everyone’s duty to promote happiness – the ‘great goal of the century’ – was virtually a truism during the Enlightenment.⁸⁴ Indeed, the promotion of public happiness was not only an obligation incumbent on individuals but also constituted the highest aim of government. ‘It is undeniable, or at least I have reason to believe that in this enlightened century it is a universally recognised truth, that the first object of any government is to make its people happy’, stated the Marquis de Chastellux in a treatise on happiness.⁸⁵ In short, to disseminate better foods was to spread happiness, the fundamental aim and purpose of existence, in the view of many philosophers of all political stripes.

The power of this assemblage linking nutritious food, good governance and happiness is reflected in the persistent eighteenth-century efforts to quantify it. Quantification, that ‘quintessential form of modern thought’, which spread rapidly across many areas of eighteenth-century life from cookbooks to forestry, offered an authoritative new language for analysing the world.⁸⁶ Presenting the components of happiness mathematically underscored the importance of their interconnections, as well as adding precision. The Irish philosopher Francis Hutcheson for instance produced a complicated arithmetical formula for measuring the relationship between virtue, evil and happiness, expressed as a series of equations. Jeremy Bentham’s ‘felicific calculus’ likewise sought to provide a mathematical basis for evaluating pleasure and woe. The quantifying spirit enabled the Marquis de Chastellux to construct an ‘index of happiness’, which demonstrated that

the inhabitants of regions with an abundant supply of wholesome food were the happiest.⁸⁷ Plentiful food led, mathematically and philosophically, to happiness.

Just as the new discipline of political economy oscillated between the individual and the nation as its points of reference, so happiness was theorized as an individual condition that occurred within a nation-state. The Scottish agronomist John Sinclair's 'quantum of happiness' for instance measured the happiness of a state by adding up the happiness of its inhabitants.⁸⁸ In their small way, even the Junta's foundlings formed part of the population; their individual happiness therefore contributed to their country's overall happiness, because happiness was both a personal and a national good. This did not mean that philosophers disdained the well-being of foreigners, or that public-spirited individuals did not dream of increasing the happiness of all mankind. The natural unit of measure for public happiness, however, was rarely the entire globe. Rather, whether an action increased happiness was generally determined by considering its impact on the population of an individual country. The New England Congregationalist minister Timothy Dwight indeed treated the terms 'public happiness' and 'national happiness' as synonymous in his own attempts to calculate levels of felicity.⁸⁹ The public of *félicité publique* was the population of the nation-state, not the whole world.

What place did colonies occupy in this felicific framework? Were they part of the public whose well-being statesmen and philosophers championed? In the cold logic of colonialism the answer was probably no. Modern colonies, explained the *Encyclopédie*, 'are established solely to benefit the metropole'.⁹⁰ From this perspective, metropolitan happiness contributed to – indeed, constituted – the nation's quantum of happiness, but colonial happiness did not. Colonies could perhaps be seen as happiness 'ghost acres' – extra-territorial regions that supplied essential commodities to the metropolis, whose own needs were not taken into account. Critics of mercantilism such as James Mill made precisely this point when they argued against the colonial system. Because it failed to account for the well-being of colonists, colonialism in reality diminished the net 'quantity of happiness', in his estimation. Advocates of colonial reform in turn reminded ministers that because colonies were in fact 'part of the metropolis', the state was responsible for ensuring happiness in both zones. The geography of happiness, and the happiness entitlement of colonists, thus formed part of the larger debate about the benefits of colonialism.⁹¹

The communities of enlightened colonial writers considered here did not doubt that they, and their homelands, were entitled to happiness. Writers from across the colonial world composed treatises, drafted proposals and discussed among themselves the ways in which they might promote *félicité publique*. The Guatemalan Society insisted that its principal aim, underpinning all its activities, was 'the happiness of the nation', by which it meant the kingdom of Guatemala.⁹² Such organizations were less certain about the

happiness entitlement of the 'workers and black people' who attracted the attention of breadfruit and potato promoters. Did their well-being contribute to the aggregate happiness of Guatemala or India? Colonial writers equivocated, sometimes insisting, in the words of the Indian Society, that their efforts were directed at augmenting the 'general happiness' of native peoples, while at the same time displaying scant interest in matters far more likely to improve well-being than the distribution of seed potatoes. Indeed, the experimental potato-plots of the Calcutta botanic garden were constructed on lands confiscated from locals.⁹³ Ultimately, it was the Society's well-being that mattered to India's overall index of happiness, not that of 'natives'. For these colonial writers, the enthusiastic celebration of nutritious foods was a way to affirm their own place within the geography of happiness, regardless of the practical impact of their gestures of nutritional largesse.

In his writings on population Thomas Malthus insisted that food was closely linked to 'human happiness'. Colonial spaces, Alison Bashford and Joyce Chaplin have shown, were central to his analysis, because neither Malthus nor his critics believed it was possible to assess the relationship between food, population growth and public happiness without addressing colonial spaces, and colonial peoples.⁹⁴ Breadfruits, potatoes, political economy and happiness were indeed entangled in the enlightened imagination in ways that both reflected and transcended food's actual ability to nourish. It was perhaps for this reason that posterity's most famous proponent of the pursuit of happiness, Thomas Jefferson, was so enthusiastic about his own role in disseminating new foodstuffs. Looking back on his contributions to the nation he helped to found, he concluded with satisfaction that his efforts had not been negligible. In his list of achievements he recorded the promotion of new foods, and concluded: 'the greatest service which can be rendered any country is to add an useful plant to its culture; especially a bread grain'.⁹⁵ Jefferson's comments reflect the wider faith in the transformative effects of new foods on the body politic. These effects were best measured not through actual changes in eating practices, but rather in the nation's quantum of happiness, which was destined to rise even if, through 'some unaccountable indifference', these new foods did not enjoy the reception to which their immense nutritional qualities entitled them. The British government's 2010 embrace of gross national happiness should remind us of the enduring power of these eighteenth-century shell games.⁹⁶

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NOTES AND REFERENCES

It is a pleasure to thank Kenneth Banks, Betsy Cazden, Elizabeth Earle, Gretchen Henderson, Dennis Landis, Cinthia Otto, Ana Maria Proserpio, Elena Serrano, Cristobal Silva and Carmen Soares for advice and assistance in tracking down documents. I am also immensely grateful to the John Carter Brown Library for providing the fellowship, and stimulating ambiance, that led me to breadfruits.

1 Bryan Edwards, *The History, Civil and Commercial, of the British Colonies in the West Indies*, 2 vols, London, 1793, vol. 1 p. 13.

2 Pascual Mora to Junta de Damas [Madrid], 20 Sept. 1817, Archivo Regional de la Comunidad de Madrid, Madrid, box 8342/7; Pascual Mora, *El hombre en la primera época de su vida*, three vols, Madrid, 1827, vol. 1, pp. 239–44; Joan Sherwood, *Poverty in Eighteenth-Century Spain: the Women and Children of the Inclusa*, Toronto, 1988, pp. 197–210; Elena Serrano, 'Science for Women in the Spanish Enlightenment 1753–18', *Universitat Autònoma de Barcelona*, D.Phil. 2012, pp. 49–63.

3 Hawkesworth likened its flavour to 'wheaten bread mixed with a Jerusalem artichoke': *Account of the Voyages Undertaken by the Order of the Present Majesty, for Making Discoveries in the Southern Hemisphere*, 3 vols, London 1773, vol. 2, p. 81.

4 For peanuts, etc., see Francisco Tabáres de Ulloa, *Observaciones prácticas sobre el cacahuete, o maní de América*, Valencia, 1800; Antonio Targioni-Tozzetti, *Cenni storici sulla introduzione di varie piante nell'agricoltura ed orticoltura Toscana*, Florence, 1853, p. 46; Joseph Dombey: *Médecin, naturaliste, archéologue, explorateur du Pérou, du Chili et du Brésil*, ed. Ernest-Théodore Hamy, Paris, 1905, p. 42; Lisbet Koerner, *Linnaeus: Nature and Nation*, Cambridge, 1999; Anya Zilberstein, 'Inured to Empire: Wild Rice and Climate Change', *William and Mary Quarterly* (henceforth *WMQ*) 72: 1, 2015.

5 William Buchan, *Observations Concerning the Diet of the Common People*, London, 1797, p. 32.

6 Alfred Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492*, Westport, 1972; Sucheta Mazumdar, 'The Impact of New World Food Crops on the Diet and Economy of China and India', *Food in Global History*, ed. Raymond Grew, Boulder, 1999; Judith Carney, *Black Rice: the African Origins of Rice Cultivation in the Americas*, Cambridge, 2001; James McCann, *Maize and Grace: Africa's Encounter with a New World Crop, 1500–2000*, Cambridge, 2005; Judith Carney and Richard Rosomoff, *In the Shadow of Slavery: Africa's Botanical Legacy in the Atlantic World*, Berkeley, 2009; Emma Spary, *Eating the Enlightenment: Food and the Sciences in Paris, 1670–1760*, Chicago, 2012; Emma Spary, *Feeding France: New Sciences of Food, 1760–1815*, Cambridge, 2014.

7 J. H. Galloway, 'Agricultural Reform and the Enlightenment in Late Colonial Brazil', *Agricultural History* 53: 4, 1979; *Visions of Empire: Voyages, Botany, and Representations of Nature*, ed. David Philip Miller and Peter Hanns Reill, Cambridge, 1996; James McClellan III and François Regourd, 'The Colonial Machine: French Science and Colonization in the Ancien Regime', *Osiris* 15, 2000; Richard Drayton, *Nature's Government: Science, Imperial Britain, and the 'Improvement' of the World*, New Haven, 2000; Emma Spary, *Utopia's Garden: French Natural History from Old Regime to Revolution*, Chicago, 2000; Julien Touchet, *Botanique & Colonisation en Guyane française (1720–1848)*, Cahors, 2004; Santiago Castro-Gómez, *La hybrid del punto cero: ciencia, raza e ilustración en la Nueva Granada (1750–1816)*, Bogotá, 2005; *Colonial Botany: Science, Commerce and Politics in the Early Modern World*, ed. Londa Schiebinger and Claudia Swan, Philadelphia, 2005; Paula de Vos, 'Natural History and the Pursuit of Empire in Eighteenth-century Spain', *Eighteenth-Century Studies* 40: 2, 2007; Londa Schiebinger, *Plants and Empire: Colonial Bio-prospecting in the Atlantic World*, Cambridge, 2009.

8 Casimiro Gómez Ortega, *Instrucción sobre el modo más seguro y económico de transportar plantas vivas por mar y tierra a los países mas distantes*, Madrid, 1779, pp. 41–2.

9 Sebastian Conrad, *What is Global History?*, Princeton, 2016, p. 76. See also James McClellan III and François Regourd, 'The Colonial Machine'; Kapil Raj, 'Colonial Encounters and the Forging of New Knowledges and National Identities: Great Britain and India, 1760–1850', *Osiris* 15, 2000; Jorge Cañizares-Esguerra, *Nature, Empire and Nation: Explorations of the History of Science in the Iberian World*, Stanford, 2006; James McClellan III, *Colonialism and Science: Saint Domingue in the Old Regime*, Chicago, 2010; Lissa Roberts,

'Situating Science in Global History: Local Exchanges and Networks of Circulation', *Itinerario* 33: 1, 2009; Sebastian Conrad, 'The Enlightenment in Global History: a Historiographical Critique', *American Historical Review* 117: 4, 2012.

10 Jean Baptiste du Tertre, *Histoire générale des isles de Christophe, de la Guadeloupe, de la Martinique, et autres dans l'Amérique*, Paris, 1654, pp. 151–2; Hans Sloan, *A Voyage to the Islands Madera, Barbados, Nieves, S. Christophers and Jamaica*, 2 vols, London, 1707, vol. 1, pp. 253–4; William Wright, 'An Account of the Medicinal Plants Growing in Jamaica', *London Medical Journal* 8: 3, 1787, pp. 269–70; Martín de Sessé y Lacasta and José Mariano Mocino y Losada, *Plantae Novae Hispaniae*, c.1804, Mexico City, 1893, p. 1; Robert Richardson, *Some Account of the Indian Arrow-Root, Produced and Manufactured on the Islands of Bermuda*, London, 1809; J. S. Handler, 'The History of Arrowroot and the Origin of Peasantries in the British West Indies', *Journal of Caribbean History* 2, 1971.

11 For arrowroot in invalid and infant feeding see for instance Michael Underwood, *A Treatise on the Disorders of Childhood and Management of Infants from the Birth*, three vols, London, 1797, vol. 1, p. 153. For botanical description see Charles Plumier, *Nova Plantarum Americanarum Genera*, Paris, 1703, p. 16; Philip Miller, *The Gardener's Kalendar*, London, 1739, p. 296; Carl Linnaeus, *Species Plantarum*, Stockholm, 1762, vol. 1, p. 203; Sessé y Lacasta and Mocino y Losada, *Plantae Novae Hispaniae*, p. 1; and for its presence in botanical gardens, Isaac Rand, *Horti Medici Chelseiani*, London, 1739, p. 125; Johan Nowodworsky, *Elenchus Plantarum*, Prague, 1804, p. 39; Augustin P. de Candolle, *Catalogus Plantarum Horti Botanici MonsPELLIENSIS*, Montpellier, 1813, p. 41.

12 Pedro Rodríguez de Campomanes, *Discurso sobre el fomento de la industria popular*, Madrid, 1774, p. 136 (quote); Bernardo Ward, *Proyecto económico, en que se proponen varias providencias, dirigidas á promover los intereses de España*, Madrid, 1779, pp. 70, 196; José del Campillo y Cosío, *Nuevo sistema de gobierno económico para la América*, Madrid, 1789, p. 17. On populationist discourse see Michel Foucault, *Security, Territory, Population: Lectures at the Collège de France, 1977–1978*, ed. Michel Senellart, transl. Graham Burchell, New York, 2009; James Riley, *Population Thought in the Age of the Demographic Revolution*, Durham, 1985; Yves Charbit, *The Classical Foundations of Population Thought from Plato to Quesnay*, London, 2011; Alison Bashford and Joyce Chaplin, *The New Worlds of Thomas Robert Malthus: Rereading the Principle of Population*, Princeton, 2016.

13 Joaquín Xavier de Uriz, *Causas prácticas de la muerte de los niños expósitos en sus primeros años*, two vols, Pamplona, 1801, vol. 1, p. 85.

14 Marie France Morel, 'Théories et pratiques de l'allaitement en France au XVIII^e siècle', *Annales de démographie historique* 1976: 1, 1976; Sherwood, *Poverty in Eighteenth-Century Spain*; Donna Andrews, *Philanthropy and Police: London Charity in the Eighteenth Century*, Princeton, 1989; Isabel dos Guimarães Sá, 'Circulation of Children in Eighteenth-Century Portugal', in *Abandoned Children*, ed. Catherine Panter-Brick and Malcolm Smith, Cambridge, 2000.

15 Jean-François Melon, *Essai politique sur le commerce*, n.p., 1736, p. 12; Claude-Marc-Antoine Varenne de Béost, *La cuisine des pauvres*, Dijon, 1772, p. 50.

16 Antoine-Augustin Parmentier, *Les pommes de terre, considérées relativement à la santé & à l'économie*, Paris, 1781, pp. 3–4.

17 West-India Planter, *Remarks on the Evidence Delivered on the Petition presented by the West-India Planters and Merchants*, London, 1777, p. 35; Thomas Ryder, *Some Account of the Maranta, or Indian Arrow-Root*, London, 1796, pp. 18–19 (quote).

18 On nineteenth-century evaluations of food energy see Anson Rabinbach, *The Human Motor: Energy, Fatigue and the Origins of Modernity*, Berkeley, 1992; Kenneth Carpenter, *Protein and Energy: a Study of Changing Ideas in Nutrition*, Cambridge, 1994.

19 Antoine Augustin Parmentier, *Traité sur la culture et les usages des pommes de terre, de la patate, et du topinambour*, Paris, 1789, p. 257; Frederick Morton Eden, *The State of the Poor, or a History of the Labouring Classes in England, from the Conquest to the Present Period*, three vols, [1797], Cambridge, 2011 vol. 1, p. 533 (quote); Bertie Mandelblatt, 'A Transatlantic Commodity: Irish Salt Beef in the French Atlantic World', *History Workshop Journal* 63, 2007; Craig Muldrew, *Food, Energy and the Creation of Industriousness: Work and Material Culture in Agrarian England*, Cambridge, 2011.

20 James Clark, 'An Account of Some Experiments Made with a View to Ascertain the Comparative Qualities of Amylaceous Matter, Yielded by the Different Vegetables Most Commonly in Use in the West Indian Islands', *Medical Facts and Observations* pp. 7–8, London, 1797, pp. 304–7. Carpenter, *Protein and Energy*, reviews scientific debates over nutritiveness.

21 Clark, 'An Account of Some Experiments', pp. 305–7.

22 Spary, *Feeding France*, p. 23; Dana Simmons, *Vital Minimum: Need, Science and Politics in Modern France*, Chicago, 2015.

23 Proceedings of the governor general ...relative to the establishment of a botanical garden in Calcutta, 1786, British Library, London (henceforth BL) IOR H/Misc/799; Robert Kyd to the Court of Directors, 1786, *The Indian and Pacific Correspondence of Sir Joseph Banks, 1768–1820* (henceforth *IPCJB*), ed. Neil Chambers, five vols, London, 2008, vol. 2, pp. 113–6; David Mackay, *In the Wake of Cook: Exploration, Science and Empire, 1780–1801*, New York, 1985, p. 177; Drayton, *Nature's Government*, pp. 118–20.

24 Joseph Banks to Henry Dundas, 1787, *IPCJB*, vol. 2, p. 205. On the Bengal famine see David Arnold, 'Hunger in the Garden of Plenty: the Bengal Famine of 1770', in *Dreadful Visitation: Confronting Natural Catastrophe in the Age of Enlightenment*, ed. Alessa Johns, London, 1999.

25 William Bligh, *A Voyage to the South Sea for the Purpose of Conveying the Bread-fruit Tree to the West Indies* (1792), Cambridge, 2013; Greg Denning, *Mr Bligh's Bad Language: Passion, Power and Theatre on the Bounty*, Cambridge, 1992; Emma Spary and Paul White, 'Food of Paradise: Tahitian Breadfruit and the Autocritique of European Consumption', *Endeavour* 28: 2, 2004.

26 John Ellis, *A Description of the Mangostan and the Bread-Fruit*, London, 1775, pp. 11, 13. 'From the health & strength of whole nations whose principal food it is, I don't scruple to call it one of the most useful vegetables in the world', noted the botanist Daniel Solander: Solander to John Ellis, 1776, *Daniel Solander: Selected Correspondence, 1753–1782*, ed. Edward Duyker and Per Tingbrand, Melbourne, 1995, pp. 363–4.

27 Hinton East to Joseph Banks, 1784, *IPCJB*, vol. 2, pp. 62–3. The Kingston *Royal Gazette*, 9 Feb. 1793, likewise predicted that the plants would come to provide 'the chief article of sustenance for our negroes'.

28 Joseph Banks, *The Endeavour Journal, 1769–1770*, ed. J.C. Beaglehole, two vols, Sydney, 1962, vol. 1, p. 341. See also George Vancouver to Joseph Banks, 1787, *IPCJB*, vol. 2, pp. 218–20.

29 David Mackay, 'Banks, Bligh and Breadfruit', *New Zealand Journal of History* 8: 1, 1974, p. 63; Spary and White, 'Food of Paradise'.

30 See Woodville Marshall, 'Provision Ground and Plantation Labor in Four Windward Islands', in *Cultivation and Culture: Labor and the Shaping of Slave Life in the Americas*, ed. Ira Berlin and Philip Morgan, Charlottesville, 1993; Beth Tobin, *Colonizing Nature: the Tropics in British Arts and Letters, 1760–1820*, Philadelphia, 2004, for provision grounds; *Slavery's Capitalism: a New History of American Economic Development*, ed. Sven Beckert and Seth Rothman, Philadelphia, 2016, for capitalist logics.

31 Alexander Anderson to Joseph Banks, 1793; James Wiles to Joseph Banks, 1793; Alexander Anderson to Joseph Banks, 1796; all in *IPCJB*, vol. 4, pp. 132, 181, 371–2; David Collins, *Practical Rules for the Management and Medical Treatment of the Negro Slaves in the Sugar Colonies*, London, 1803, pp. 111–12; John Stewart, *An Account of Jamaica and its Inhabitants*, London, 1808, pp. 99–101; Landsdown Guilding, *An Account of the Botanic Garden in the Island of St. Vincent from its Establishment to the Present Time*, Glasgow, 1825, pp. 13, 32; Denning, *Mr Bligh's Bad Language*, p. 77.

32 Spary and White, 'Food of Paradise'; Elizabeth DeLoughrey, 'Globalizing the Routes of Breadfruit and Other Bounties', *Journal of Colonialism and Colonial History* 8: 3, 2008, for irony; David Lambert, *White Creole Culture, Politics and Identity During the Age of Abolition*, Cambridge, 2005, for the 'planter ideal'.

33 Richard Sheridan, 'The Crisis of Slave Subsistence in the British West Indies During and After the American Revolution', *WMQ* 33: 4, 1976.

34 Bligh, *A Voyage to the South Sea*, p. 12.

35 Johann Friedrich Blumenbach to Joseph Banks, 1794, *IPCJB*, vol. 4, p. 214.

36 *Affiches américaines*, Port-au-Prince, 1 March 1788, p. 107, 18 Oct. 1788, p. 522, 18 Dec. 1788, p. 628; *Supplément aux Affiches américaines, Feuille du Cap-François*, 22 Nov. 1788, p. 1,006; Médéric Louis Elie Moreau de Saint Méry, *Description topographique, physique, civile*,

politique et historique de la partie française de l'isle Saint-Domingue, Philadelphia, 1797, vol. 1, p. 653; McClellan, *Colonialism and Science*, p. 158; Spary and White, 'Food of Paradise', pp. 79–80. For North Africa see *Annales de la colonisation algérienne*, Paris, 1854, vol. 5, p. 173.

37 *Le Jardin des Plantes a la croisée des chemins avec André Thouin*, ed. Yvonne Letouzey, Paris, 1789, p. 234; Spary, *Utopia's Garden*, pp. 128–30.

38 List of trees & shrubs in garden of East India Company, 1789; William Ramsay to Joseph Banks, 1792; William Urban Buée to Joseph Banks, 1796; James Wiles, 1799; and William Urban Buée to Joseph Banks, 1799; all in *IPCJB*, vol. 3, pp. 82–4, 386, vol. 4, p. 425, vol. 5, pp. 57, 92–3; Thomas Dancer to Samuel More, Bath, Jamaica, 20 July 1794, Royal Society of Arts, London, PR/MC/104/10/240; Dancer to More, 1 Feb. 1796; Guilding, *An Account of the Botanic Garden*, p. 34; Mackay, *In the Wake of Cook*, p. 177; Touchet, *Botanique & Colonisation*, pp. 63–4, 160, 188–90, 200.

39 Guilding, *An Account of the Botanic Garden*, p. 32 (first quote); Alexander Anderson to Joseph Banks, 1793, *IPCJB*, vol. 4, p. 132 (second quote). See also James Wiles to Joseph Banks, 1793; Alexander Anderson to Joseph Banks, 1796; both in *IPCJB*, vol. 4, pp. 181, 371–2. Whether from 'ignorance or incredulity' planters in Jamaica likewise viewed the plant as useless, complained the curator of the Bath Botanic Garden: Dancer to More, 20 July 1794.

40 Casimiro Gómez Ortega to Marqués de Sonora, Madrid, 17 April 1787, Archivo General de Indias, Seville (henceforth AGI), Indiferente, 1546; Gómez Ortega, *Instrucción sobre el modo más seguro*, pp. 41–2; María Belén Bañas Llanos *Una historia natural de Filipinas: Juan de Cuéllar*, Barcelona, 2000, pp. 338–48. Spanish papers reported extensively on the breadfruit's progress; see for instance *Mercurio de España*, Madrid, April 1790, pp. 304–6.

41 Pedro Fernández de Quiros, *Historia del descubrimiento de las regiones australes*, c.1607, ed. Justo Zaragoza, two vols, Madrid, 1876, vol. 1, pp. 50–1; *The Quest and Occupation of Tahiti by Emissaries of Spain in 1772–76, told in ... contemporary documents*, transl. and ed. Bolton Glanville Corney, three vols, London, 1913–18. The tree-felling conflicts are recorded in 'Daily Narrative kept by the Interpreter Máximo Rodríguez at the Island of Amat, otherwise Otahiti, in the Year 1774', *The Quest and Occupation of Tahiti*, vol. 3, pp. 23–9.

42 *Espíritu de los mejores diarios*, Madrid, 8 Sept. 1788, pp. 349–51.

43 Real Compañía de Filipinas to Conde de Revillagigedo, Manila, 10 July 1789; Conde de Revillagigedo to Antonio Valdes, Mexico City, 10 Jan. 1790; Marqués de Branciforte to Diego de Gardoqui, Mexico City, 12 Jan. 1795; all in AGI, Indiferente, 1546; Juan de Cuellar to Antonio Porlier, Manila, 27 June 1791; Juan de Cuellar to Pedro de Acuña, Manila, 22 July 1794; both in AGI, Filipinas, 723; and Bañas Llanos, *Una historia natural de Filipinas*, pp. 338–48.

44 On the Society see Sophie Brockmann, 'Surveying Nature: the Creation and Communication of Natural-Historical Knowledge in Enlightenment Central America', D.Phil., Cambridge, 2013.

45 Gabriel Paquette, 'State-Civil Society Cooperation and Conflict in the Spanish Empire: the Intellectual and Political Activities of the Ultramarine *Consulados* and Economic Societies', *Journal of Latin American Studies* 39, 2007, p. 280. For patriotic societies in the Hispanic world see Gabriel Paquette, *Enlightenment, Governance, and Reform in Spain and its Empire, 1759–1808*, Houndsmill, 2008; more generally, *The Rise of Economic Societies in the Eighteenth Century*, ed. Koen Stapelbroek and Jani Marjanen, Basingstoke, 2012.

46 *Periódico de la Sociedad Económica de Guatemala* (henceforth *PSEG*), Nueva Guatemala, 1 May 1815. See also *Noticia de la pública distribución de los premios aplicados a las mejores hilanderas al torno*, Nueva Guatemala, 1796; *Gazeta de Guatemala* (henceforth *GG*), Nueva Guatemala, 2 April 1798, p. 56; 21 April 1798, p. 88; Antonio García Redondo, *Memoria sobre el fomento de las cosechas de cacao y de otros ramos de agricultura*, Nueva Guatemala, 1799; and the annual reports on the Society's *Juntas Públicas* published from 1796 to 1811.

47 *GG*, supplement no. 57, 1798, 28 Feb. 1803, pp. 39–40; 7 March 1803, p. 45; *PSEG*, 15 Nov. 1815, p. 219; 1 Feb. 1816, pp. 298–9.

48 Nicolás de Arriquibar, *Recreación política: reflexiones sobre el amigo de los hombres en su tratado de población*, Vitoria, 1779, pp. 150–61; *GG*, 28 Feb. 1803, p. 33; 18 July 1803, pp. 286–7.

49 *Correo mercantil de España y sus Indias*, Madrid, 10 Aug. 1801, p. 506; *GG*, 28 Feb. 1803, pp. 39–40; 7 March 1803, p. 47; Sophie Brockmann, 'Sumatran Rice and "Miracle" Herbs: Local and International Natural Knowledge in Late-Colonial Guatemala', *Colonial Latin American Review* 24: 1, 2015, p. 96.

50 *Correo mercantil de España y sus Indias*, Madrid, 2 Nov. 1795, p. 698.

51 Conde de Revillagigedo to Antonio Valdes; Luis de la Concha to Marqués de Branciforte, Mexico City, 10 Jan. 1795, AGI, Indiferente, 1546; Marqués de Branciforte to Diego de Gardoqui; Bañas Llanos, *Una historia natural de Filipinas*, pp. 338–48. Spain had rejected an earlier offer from the British to co-operate in transporting the breadfruit: Samuel More to [Juan de Virio], London, 4 Nov. 1786, Royal Society of Arts, London, PR/MC/104/10/72; Gómez Ortega to Marqués de Sonora.

52 *Correo mercantil de España y sus Indias*, Madrid, 10 Aug. 1801, pp. 506–8, 13 Aug. 1801, pp. 514–5.

53 *Octava junta pública de la Real Sociedad . . . de Guatemala*, Nueva Guatemala, 1811, pp. 17–18; *PSEG*, 1 Feb. 1816, pp. 299–300.

54 Mackay, *In the Wake of Cook*; Michael Osborne, *Nature, the Exotic, and the Science of French Colonialism*, Bloomington, 1994; *Visions of Empire*, ed. Miller and Reill; Spary, *Utopia's Garden*; Drayton, *Nature's Government*; Mauricio Nieto, *Remedios para el imperio: historia natural y la apropiación del nuevo mundo*, Bogotá, 2001; Touchet, *Botanique & colonisation; Colonial Botany*, ed. Schiebinger and Swan; McClellan, *Colonialism and Science*; Helen Cowie, *Conquering Nature in Spain and its Empire, 1750–1850*, Manchester, 2011; Daniela Bleichmar, *Visible Empire: Botanical Expeditions and Visual Culture in the Hispanic Enlightenment*, Chicago, 2012.

55 *Semanario del Nuevo Reyno de Granada*, 1809, Bogotá, 1942, vol. 3, pp. 15–20; Alexander von Humboldt and Aimé Bonpland, *Personal Narrative of Travels to the Equinoctial Regions of the New Continent during the Years 1799–1804*, London, 1814, vol. 1, pp. 128–30; Henry Koster, *Travels in Brazil*, London, 1816, p. 36; Robert Southey, *History of Brazil*, 3 vols, London, 1810–19, vol. 3, p. 742; Guilding, *Account of the Botanic Garden*, p. 13.

56 *Colección oficial de leyes, decretos, ordenes, & de la República Boliviana*, La Paz [1834], vol. 1, p. 24.

57 Ellis, *A Description of the Mangostan*, p. 14; Clark, 'An Account of Some Experiments', p. 308.

58 For potato-promotion see Redcliffe Salaman, *History and Social Influence of the Potato* (1949), ed. J. G. Hawkes, Cambridge, 2000; Ilmar Talve, 'The Potato in Finnish Food Economy', *Food in Perspective: Proceedings of the Third International Conference on Ethnological Food Research*, ed. Alexander Fenton and Trefor Owen, Edinburgh, 1981; Juan Piqueras Haba, 'La difusión de la patata en España (1750–1850): El papel de las Sociedades Económicas y del clero rural', *Eria: revista cuatrimestral de geografía* 27, 1992; Eszter Kisbán, 'The Beginnings of Potato Cultivation in Transylvania and Hungary: Government Policy and Spontaneous Process', in *The Origins and Development of Food Policies in Europe*, ed. John Burnett and Derek Oddy, London, 1994; David Gentilcore, *Italy and the Potato: a History, 1550–2000*, London, 2012; Spary, *Feeding France*.

59 Carolus Clusius, *Rariorum Plantarum Historia*, Antwerp, 1601, p. 80; Olivier de Serres, *Le theatre [théâtre?] d'agriculture et message des champs*, Paris, 1603, pp. 513–4; Gaspar Bauhin, *Prodromus theatri botanici*, Frankfurt, 1620, p. 89; John Parkinson, *Paradisi in Sole Paradisus Terrestris*, London, 1629, pp. 516–18; Johann Royer, *Eine gute Anleitung wie man . . . Garten-Gewächse . . . nützen solle*, Braunschweig, 1651, pp. 104–5; Philip Gidley King to Joseph Banks, Norfolk Island, 24 May 1793, *IPCJB*, vol. 4, p. 129; Christian Vandenbroeke, 'Cultivation and Consumption of the Potato in the 17th and 18th Century', *Acta Historiae Neerlandica* 5, 1971; *Le Jardin des Plantes*, ed. Letouzey, pp. 177–8, 213–4, 228–9; J. G. Hawkes and J. Francisco-Ortega, 'The Early History of the Potato in Europe', *Euphytica* 70, 1993; Alan Frost, 'The Antipodean Exchange: European Horticulture and Imperial Designs', in *Visions of Empire*, ed. Miller and Reill; Mazumdar, 'The Impact of New World Food Crops'; Salaman, *History and Social Influence of the Potato*; Michael Bravo, 'Mission Gardens: Natural History and Global Expansion', *Colonial Botany*, ed. Schiebinger and Swan, p. 50; Gentilcore, *Italy and the Potato*.

60 *Agreeable to an Act of Assembly of the State of Connecticut, for Regulating the Prices of Labour*, New London, 1778; Anonymous manuscript cookbook, c.1780, Schlesinger Library, Radcliffe, Harvard University (henceforth SL); Belinda Clarkson, manuscript receipt book, c.1793, SL; Frost, 'The Antipodean Exchange'; Jane Mt. Pleasant, 'The Paradoxes of Plows and Productivity', *Agricultural History* 85: 4, 2011, p. 473.

61 On the potato's promotion by Spanish economic societies see Luis Riera Climent and Juan Riera Palmero, 'Los alimentos americanos en los *Extractos de la Bascongada* (1768–1793): el maíz y la patata', *Llull* 30, 2007; J. David Palanca Cañon, 'Introducción y Generalización del Cultivo y Consumo Alimentario y Médico de la Patata en el País Vasco', D.Phil., Universidad del País Vasco, 2011, pp. 42–3, 64; Piqueras Haba, 'La difusión de la patata en España'.

62 Henrique Doyle, *Instrucción formada de orden del Consejo por D. Enrique Doyle, para el cultivo y uso de las patatas*, Madrid, 1785; Henrique Doyle, *Tratado sobre el cultivo, uso y utilidades de las patatas ó papas, é instrucción para su mejor propagación*, Madrid, 1797.

63 Guillermo Bowles, *Introducción a la historia natural y de la geografía física de España*, Madrid, 1775, p. 231; *Memorial literario, instructivo y curioso de la corte de Madrid* 121, Madrid, 1790, pp. 362–5; *Semanario de agricultura y artes* 17, Madrid, 1805, p. 199. Writers elsewhere often attributed its introduction to Walter Raleigh.

64 On the *Semanario de agricultura y artes dirigido a los párracos*, launched with state support in 1797, see Isabel Larriba, ‘Un intento de reforma agraria por y para las clases productoras: el *Semanario de agricultura y artes dirigido a los párracos*’, *Brocar* 23, 1999. The Guatemalan Society subscribed the following year: *Quarta junta pública de la Real Sociedad ... de Guatemala*, Nueva Guatemala, 1798.

65 *GG*, 14 June 1802, p. 145 (Rumford soup), 7 Feb. 1803, p. 10 (potato bread); *Octava junta pública*, p. 23. On Rumford soup see also Benjamin Thompson, ‘Of Food, and Particularly of Feeding the Poor’, *Essays, Political, Economical and Philosophical*, three vols, London, 1797–1803, vol. 1, pp. 189–299; Fritz Redlich, ‘Science and Charity: Count Rumford and his Followers’, *International Review of Social History* 16: 2, 1971.

66 Baltasar Jaime Martínez Compañón to Charles IV, *Mercurio peruano de historia, literatura, y noticias públicas* (henceforth *MP*) 11, Lima, 1794, p. 3; Emily Berquist Soule, *The Bishop's Utopia: Envisioning Improvement in Colonial Peru*, Philadelphia, 2014.

67 Francisco González Laguna, ‘Memoria de las plantas extrañas que se cultivan en Lima’, *MP* 11, Lima, 1794, pp. 165, 168–70, 171–7. Such claims attracted contempt elsewhere in Europe. ‘How dare you try to balance the scales with the cochineal insect, the potato, and the precious metals that we have found in the Americas?’, complained the Scientific Academy of Lyon: *Coup d'oeil sur les quatre concours*, Lyon, 1791, p. 14; Jeremy Caradonna, *The Enlightenment in Practice: Academic Prize Contests and Intellectual Culture in France*, Ithaca, 2012, pp. 158–9.

68 Domingo de Santo Tomás, *Grammatica, o Arte, que ha compuesto de la lengua general de los indios, del Perú*, Valladolid, 1560, 159v. See also Pascual de Andagoya, ‘Relación’, 1545, *Relación y documentos*, ed. Adrian Blázquez, Madrid, 1986, pp. 138–9; Pedro de Cieza de León, *Parte primera de la crónica del Perú*, Seville, 1553, book 1, chap. 40; *Relaciones geográficas de las Indias: Perú*, ed. Marcos Jiménez de la Espada, three vols, Madrid, 1965, vol. 1, pp. 156, 234, 586; José de Acosta, *Natural and Moral History of the Indies* (1590), transl. Frances López-Morillas, Durham, 2002, pp. 148, 201–2.

69 Cristóbal de Molina, *Relación de las fábulas y ritos de los incas*, c.1573, ed. Paloma Jiménez del Campo, Madrid, 2010, pp. 62–3; Acosta, *Natural and Moral History*, p. 262; Gregorio García, *Origen de los indios del Nuevo Mundo* (1607), ed. Franklin Pease, Mexico City, 1981.

70 ‘Idea general del Perú’; ‘La Province of Caxatambo’; and ‘Descripción de la Provincia de Chachapoyas’; all in *MP* 5, Lima, 1792, pp. 6, 190, 194, 225; Alonso Carrió de la Vandra, *El lazarrillo de ciegos caminantes desde Buenos Aires, hasta Lima* [1773], Cervantes Virtual, pp. 301, 335; Joseph Ignacio Lequanda, ‘Descripción de Caxamarca’, *MP* 10, Lima, 1794, p. 202; Francisco López, ‘Descripción de Porco’, *MP* 11, Lima, 1794, pp. 19, 29–30, 37–8, 63, 68–72, 77, 87–9, 92.

71 José Manuel Davalos, *De morbis nonnullis Limae, grassantibus ipsorumque therapeia*, Montpellier, 1787, pp. 11–12. Davalos was obliged to matriculate in France because Peruvian universities would not accept those who like Davalos were classified as mulattoes.

72 Panacio Montano, ‘Medicina práctica’, *MP* 1, Lima, 1791, pp. 45–7; Hipólito Unanue, *Observaciones sobre el clima del Lima y sus influencias en los seres organizados*, Lima, 1806, p. 153.

73 López, ‘Descripción de Porco’, pp. 101–2; Manuel Espinavete López, ‘Descripción de la Provincia de Abancay’, *MP* 12, Lima, 1795, pp. 131, 137, 145–6, 156–7.

74 Richard Temple, ‘The Agri-Horticultural Society of India’, *The Calcutta Review* 22, 1854, pp. 341, 342–50.

75 William Carey, ‘Prospectus of an Agricultural and Horticultural Society in India, 1820’, *Transactions of the Agricultural and Horticultural Society of India* (henceforth *TAHSI*), Calcutta, 1838, vol. 1, pp. 211–21 (quotations on pp. 216, 219).

76 *TAHSI*, vol. 2, pp. 23, 27, 36, 81, 175 (quotation), 253, 264, 265.

77 *TAHSI*, vol. 1, pp. 21, 235 (quotation), 237–8, vol. 2, pp. 30ff, 81, 253, 264, 265; Temple, ‘The Agri-Horticultural Society of India’, pp. 356–8.

78 *TAHSI*, vol. 1, p. 8; Temple, 'The Agri-Horticultural Society of India', pp. 354–8. On the discourse of improvement see Drayton, *Nature's Government*; and David Arnold, 'Agriculture and "Improvement" in Early Colonial India: a Pre-History', *Journal of Agrarian Change* 5: 4, pp. 505–6, 2005.

79 Joseph Banks to the Court of Directors, 1789; George Sinclair, 1798; both in *IPCJB*, vol. 2, p. 396, vol. 5, p. 24; 'Bazaar prices in Calcutta', June 1791, Robert Kyd papers, BL MSS EUR/F95/2, 193b; Minute of William Bentinck, 12 Nov. 1803, BL IOR F/4/179, 5r–6r (quote); Benjamin Heyne to William Bentinck, Bangalore 21 Jan. 1805, BL IOR P/242/73, pp. 684–8; Whitelaw Ainslie, *Treatise on the edible vegetables of India*, 12 Sept. 1810, BL IOR/F/4/379/9495; Arnold, 'Agriculture and "Improvement"', p. 519.

80 *TAHSI*, vol. 1, p. 8.

81 Varenne de Béost, *La cuisine des pauvres*, p. 11; Spary, *Feeding France*, p. 181.

82 'Carta de un médico de París sobre la sopa económica del Conde de Rumford', *Semanario de agricultura y artes* 8, Madrid, 1800, pp. 120, 141. Or see Doyle, *Tratado sobre el cultivo, uso y utilidades de las patatas*, p. 5.

83 Guilding, *Account of the Botanic Garden*, p. 12.

84 On the eighteenth-century pursuit of happiness see Luigino Bruni and Pier Luigi Porta, 'Economia civile and pubblica felicità in the Italian Enlightenment', in *Oeconomies in the Age of Newton*, ed. Margaret Schabas and Neil de Marchi, Durham, 2003; Till Wahnbaeck, *Luxury and Public Happiness: Political Economy in the Italian Enlightenment*, Oxford, 2004; Darrin McMahon, *Happiness: a History*, New York, 2006, p. 200; Paquette, *Enlightenment, Governance, and Reform in Spain and its Empire*, pp. 56–92.

85 Marqués de Chastellux, *De la félicité publique, ou Considérations sur le sort des hommes*, two vols, Amsterdam, 1772, vol. 1, p. 15.

86 On the quantifying spirit see Michel Foucault, *Discipline and Punish: the Birth of the Prison*, transl. Alan Sheridan, London, 1991; The Quantifying Spirit in the Eighteenth Century, ed. Tore Frangmyr, J. L. Heilbron, and Robin Rider, Berkeley, 1990, p. 2.

87 Francis Hutcheson, *Inquiry into the Original of Our Ideas of Beauty and Virtue*, London, 1725, pp. 163–78; Marquis de Chastellux, *De la félicité publique*, vol. 2, pp. 97–144; Jeremy Bentham, *An Introduction to the Principles of Morals and Legislation*, London, 1789, pp. 26–7; McMahon, *Happiness*, pp. 205–22.

88 John Sinclair, *The Statistical Account of Scotland* 20, Edinburgh, 1798, pp. xiii–iv.

89 Timothy Dwight, *The True Means of Establishing Public Happiness*, New Haven, 1795.

90 François Véron de Forbonnais, 'Colonie', *Encyclopédie ou Dictionnaire raisonné des sciences, des arts et des métiers* vol. 3, Paris, 1753, p. 650. 'The purpose of the colony is to benefit the patria, to whom it owes its being': Campillo y Cosío, *Nuevo sistema de gobierno económico*, p. 24.

91 James Mill, 'Colony', *Supplement to the Encyclopaedia Britannica*, London, 1825, p. 22 (first quote); Francisco Cabarrús, 'Discurso sobre la libertad de comercio', 1778, in Santos Manuel Coronas González, 'Espíritu ilustrado y liberación del tráfico comercial con Indias', *Anuario de historia del derecho español*, 1992, pp. 109–10 (second quote). On the debate over colonies see Donald Winch, *Classical Political Economy and Colonies*, London, 1965; Steve Pincus, 'Rethinking Mercantilism: Political Economy, the British Empire, and the Atlantic World in the Seventeenth and Eighteenth Centuries', *WMQ* 69: 1, 2012.

92 *Quinta Junta pública de la Real Sociedad ... de Guatemala*, Nueva Guatemala, 1799, pp. 1, 19, 26. Elisa Alcaide, in *La Sociedad Económica de Amigos del País de Guatemala*, Seville, 1962, studies the Society's embrace of happiness, 'that magic word' (p. 134).

93 Proceedings of the governor general and council, pp. 59–169; *TAHSI*, esp. vol. 1, pp. 8, 31, 130, 220, 225.

94 Bashford and Chaplin, *The New Worlds of Thomas Robert Malthus*.

95 Thomas Jefferson, Summary of Public Service, 1800, *The Papers of Thomas Jefferson Digital Edition*, ed. Barbara Oberg and J. Jefferson Looney, Charlottesville, 2008–16, vol. 32, p. 124. On Jefferson's concept of happiness: Gary Wills, *Inventing America: Jefferson's Declaration of Independence*, Boston, 1978, esp. pp. 149–64, 229–55.

96 David Cameron, 25 Nov. 2010, <https://www.gov.uk/government/speeches/pm-speech-on-wellbeing>.