

## Planting 'Improvement': Tea in British India

*Abstract:* This paper provides a critical reflection on the operational logic, ideological inconsistencies, and material fallout of the tea plantation economy of northeastern India, a large-scale commercial enterprise that induced transformative changes to the region's biosocial landscape for a century and more. Unlike existing works on the subject, however, this study focuses on agro-economic ideology – namely the relationship between the crop and its built environment – to highlight the impact of tea on labor, disease ecology, and modernist parables of “progress” in British East India.

*Key Words:* tea, British India, development regimes, agro-economy, plantation history

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The first section of this paper offers a brief overview of historian David Ludden's 1992 article entitled *India's Development Regime*,<sup>2</sup> which establishes the historical and discursive framework for my critique of colonial capital. I will then discuss the history of tea's role as agrarian modernizer in Assam, with the final section focusing on two seemingly unrelated aspects of that enterprise – a long-running tax debate in 1918 as well as the tea mosquito bug, a common *Camellia sinensis* pest – to argue that the developmentalist credo in colonial (and postcolonial) India did not neces-

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Arnab Dey, Department of History, State University of New York (SUNY) at Binghamton, P.O. Box 6000, Binghamton, NY 13902-6000; adey@binghamton.edu

sarily preclude the living conditions it abstracted under an all-knowing language of state and “scientific” rationality. I suggest that challenges to this regime in the form of localized contingencies, inter-species pathogens, and fiscal expediency highlight its inherent instability and variability from one setting to the next.

## Framing the ‘Regime’

The development regime is a child of capitalist empire.<sup>3</sup>

David Ludden theorizes development regime as “an institutionalized configuration of power within a state system ideologically committed to progress that draws its material sustenance from the conduct of development,”<sup>4</sup> laying out the manner and modality through which and with which this institutional environment was set in motion. Tracing its origins to the high imperialist project of the East India Company in mid-eighteenth-century India, he argues that the Company (and later the formal colonial state) took upon itself the task of classifying, categorizing, and codifying heterogeneous local knowledge systems under this mandate of progress. He suggests two broad parameters to understand this process: its discursive maneuvers and practical implications.

Discursively speaking, this development regime was effected by way of three interrelated means: standardization, the erasure of localism, and “cognitive concealment.”<sup>5</sup> Their disparate logic dovetailed neatly into a unitary goal: to provide the colonial state with a maximum of governable knowledge, and thereby authority and legitimacy, over India’s diverse transactional system – its trade, laws, religion, language, and rules of property. Ludden holds that by the end of the nineteenth century, most of the subcontinent’s vastly varied ways of understanding these issues had been normalized under the measurable, empirical gaze of colonial bureaucracy. While his ideas are established historical knowledge by now, two of Ludden’s arguments in this context are worth revisiting. Firstly, he asserts that a related fallout of this development regime’s empiricist logic was the “erasure of localism.”<sup>6</sup> In other words, the extractive and capitalism-driven regime steamrolled and disrupted India’s context-specific cultural and commercial ecologies under a language of “systems.” Monetary policy, bureaucratic methods, esoteric know-how, and “scientific” reform became the buzzwords for personnel and discourse best equipped to put developmentalism into operation: the domain of “experts.” Secondly, Ludden argues that this language of colonial power over knowledge produced an objectively assessable entity “out there” – the colonial economy – that was calculable and measurable. In doing so, the colonial state’s ideological involvement and implication in erecting this econ-

omy for its own purposes was removed and obfuscated. To Ludden, this is the “cognitive concealment” whereby the colonial state

“[hides] its institutional character and interests, its stake in development, and its power to invent development in its own terms...the ‘economy’ and ‘living conditions’ disappear as abstractions substantiated by regimes themselves, to reappear as real objects to be rationally manipulated for their own good, for growth and improvement.”<sup>7</sup>

Nowhere is this approach more practically noticeable than in the colonial (and subsequently the postcolonial) state’s involvement in the production process. Speaking specifically for the British colonial setup in India, Ludden points out that its main driver were productivity-enhancing investments in land, property, agriculture, and commerce. Through this logic of the state’s relation to capital (and capital enhancement), and armed with the discursive power of standardization and “scientific” measurement as indicated above, the Empire became an embodiment of “enlightened” developmentalism. Ludden states that for much of India’s colonial and postcolonial histories, the state’s self-avowed role as a centralized stakeholder in this “progressive” mission has remained unchallenged.

For our purposes, the colonial state’s arrogation of developmentalism in the domain of agriculture remains the most significant. To wit, agrarian relations were the primary site of these discursive and practical maneuvers. As has long since been accepted, separating property as the central target of reformist political economy from other aspects of India’s social landscape was the sine qua non of liberalism’s mission.<sup>8</sup> To that end, the Whig mandate of an improving landlord was crucial to the imperialist development regime. Naturally, the fact that agriculture filled British coffers and satisfied British appetites with a plethora of staple and luxury goods was a closely linked factor. Ludden argues that within this context, capitalist political economy (with tea obviously representing a case in point) “rewrote a new kind of agricultural text,” that is to say formulated a new kind of agricultural semantics.<sup>9</sup> In this manifestation, peasant knowledge became folklore while “experts” began to speak the language of agrarian “science” and modernity. The laboratory and the model farm along with statistics, agricultural data, and efficient agricultural methods were the new gods in this progressive pantheon. As Ludden put it, “agriculture thus became an object for development by being abstracted from society and culture.”<sup>10</sup>

But was this development regime an all-knowing machine? Did its chief agent, the colonial state, and its phalanx of scientists, statisticians, surveyors, and revenue collectors aggregate all aspects of the subcontinent’s inter-social, inter-ecological, and inter-species variations under this mandate? Was “development” a secure category of the modern, as Ludden provocatively puts it?

While Assam's tea plantation economy was undoubtedly part of the discursive and practical framework of an imperial development regime, this paper will show that the regime's "character of calculability"<sup>11</sup> (to use Timothy Mitchell's phrase) was suspect and incoherent. If the numerous tea pests and blights in Assam's tea-growing history are any indication, the dynamic interaction between land, labor, and agro-environments actually forestalled market-driven attempts at standardization. In regard to these large-scale agrarian monocultures, this paper argues that Western scientific "rationality" was often a non-starter to begin with – that it was no more a tool of modernization than an uncertain foray into what the tea industry struggled to understand, or in some cases expediently forsook altogether, in the service of profits.<sup>12</sup> If scientific expertise was the regime's claim to power, I suggest that the gap between esoteric laboratory knowledge and field experience, between ideological beliefs and on-site decisions, between clinical planning and actual outcome was vast and significant.

## Tea as Improvement

"A discovery has been made of no less importance than that the hand of Nature has planted the shrub within the bounds of the wide dominion of Great Britain: a discovery which must materially influence the destiny of nations; it must change the employment of a vast number of individuals; it must divert the tide of commerce, and awaken to agricultural industry the dormant energies of a mighty country [...]"

(George G. Sigmond, *Tea: Its Effects, Medicinal and Moral*, London 1839.)<sup>13</sup>

Assam tea has fabled beginnings. By the 1820s, European travelers to this easternmost province of British India began to take notice of an herb very similar to the *Camellia sinensis* (or tea) growing wild along its Singpho and Muttok belts. Though the exact circumstances surrounding the discovery of tea in Assam remain shrouded in historical mystery,<sup>14</sup> it is well known that C. A. Bruce, commander of a division of gunboats in Sudiya in upper Assam during the First Anglo-Burmese War in 1824, found tea plants growing in abundance in the area. The Singpho chief at the time was reported to have presented Bruce with a large quantity of tea seeds and shrubs. Duly apprehensive of their quality and authenticity, Bruce forwarded some seeds to David Scott, Agent to the Governor-General of what was then known as the North-East Frontier. After Assam formally became part of the British Empire in 1826, Scott dispatched several of the seeds to the Chief Secretary of the Government of India, G. Swinton, and to the superintendent of the Calcutta Botanical Garden, Nathaniel Wallich. Scott's successor Captain Francis Jenkins and Lieutenant Andrew Charlton

were among the first East India officials to press the government of Bengal to give institutional shape to these experiments with the Indian tea plant.<sup>15</sup> In the run-up to the Chinese-English rivalries, time was of the essence and Governor-General Lord William Bentinck set up a twelve-member Tea Committee in 1834 to look into the feasibility of large-scale tea plantations in British India. The first joint stock holding, the Assam Company comprising factions of the Bengal Tea Association and private capitalists in London, was subsequently formed in 1839. The experimental phase nonetheless lasted until about 1854, when the first respectable quantity of Assam tea – over a quarter of a million pounds – was successfully auctioned in London. The stage was thus set for the expansion of the tea enterprise as well as for Assam's absorption into the networks of the colonial capitalist economy and trade.<sup>16</sup> Within the narratives of plant colonialism and imperial botanizing,<sup>17</sup> this represented the triumph of British science and mastery over Assam's allegedly enchanted and savage landscape.

Assam's census commissioner and noted civil servant Sir Edward Gait did not mince his words regarding the purported role of tea for the region when he stated that "the benefits which the tea industry has conferred on the Province have been many and great. The land most suitable for tea is not adapted to the cultivation of rice, and the greater part of it would still be hidden in dense jungles if it had not been cleared by the tea planters."<sup>18</sup> The blueprint for European agrarian colonization centered on the tea plant had already been laid down for the province long before Gait, however. In this pantheon of "improvers," Captain Jenkins's name is among the most noteworthy. Taking over from David Scott as Agent to the Governor-General of the North-East Frontier in 1831, Jenkins used the Charter Act of 1833 to promote his vision of land, taxation, communication, and agrarian progress in Assam. Harping on the newfound promise of tea, Jenkins argued that the current "unpromising state of the country" could be remedied only by introducing European speculators to the vast "wastes" of the region. To that end, he laid out his plan that would inaugurate the scramble for tea to the visiting judge of the Calcutta Sadr Court, A. J. Moffatt Mills, in 1853. Jenkins proposed a comprehensive system of management that would encourage "free intercourse" in trade with other provinces, improve communication through roads and steam, induce the Assamese to use more permanently settled landholdings (then in operation only in the western Goalpara and southern Sylhet districts), and increase revenue by recalibrating taxation for all except *rupit* (wet rice cultivation) lands. Indeed, by recommending a tax on *bari* (homestead) lands earlier in 1836, Jenkins had evinced hope that "these wastes and haunts of wild beasts" would transform into "fruitful fields of sugarcane, mustard, mulberry, lac, tobacco and vegetables."<sup>19</sup> To be sure, these were not European visions alone. Plans for agrarian "reform" centered on tea also resonated with a select group of English-

educated local middle-class individuals who echoed its purported agenda.<sup>20</sup> As historian Jayeeta Sharma observes:

“A range of interlocutors, from British bio-prospectors to American missionaries to Assamese gentry, extolled the Edenic transformations under way, of a jungle into a garden. They conjured up a future ordered landscape of export-producing tea plantations, a stark contrast to the partially cultivated and imperfectly commercialized state of Nature that they saw in the present.”<sup>21</sup>

Among these locals was a young civil servant and publicist by the name of Anandaram Dhekial Phukan, who expressed confidence in the “beneficial” aspects of English rule in Assam and the avenues it opened up for indigenous entrepreneurship, prosperity, and progress. In a lengthy petition to the visiting judge Mills, Dhekial Phukan entreated the British Government to “effect at once a complete [...] change in the agricultural prospects of the country” in order to make her production ten times more abundant.<sup>22</sup> Such was Jenkins’s charm that, in the opinion of noted Assamese historian S. K. Bhuyan, he was nothing short of “a worthy successor of the Assamese *Swargadeos*... (literally, the Ahom god-kings).”<sup>23</sup>

Dhekial Phukan’s hopes were to be dashed, however, for Jenkins soon changed his tone and ambitions. As early as June 6, 1853, the directors of the Assam Company had petitioned with Governor-General Dalhousie for their sedulous efforts to transform uninhabited jungles into “smiling” tea gardens to be granted all legitimate forms of aid.<sup>24</sup> A few days later on June 22, Major H. Vetch, Deputy Commissioner of Assam, urged Judge Mills to offer “even greater benefits” and “bounties” to prospective capitalists by way of generous land grants and remitting their purchase money for three years and upwards.<sup>25</sup> As the Tea Committee’s recommendations gained traction and the Assam Company’s operations began, Jenkins consolidated his peers’ ideas for “accelerating the progress of the Province” by favoring one particular class of people – the European speculators – and one commodity – tea – over all others. Richard Drayton has persuasively argued in this context that the “secular utopia” of the improving agenda depended crucially on the market and had “at its heart the theory that Nature was best used to yield commodities which might be traded widely, rather than to support local subsistence.”<sup>26</sup> In the case in question, Jenkins and Mills used the alibi of tea’s “special” status to design an elaborate land revenue and taxation scheme to “reform” and “modernize” Assam’s agrarian economy. In essence, however, this “god of progress” raised the minimum land grant ceiling, increased the excise duty on opium – a drug allegedly at the root of the Assamese peasant’s “indolence” and reluctance to work<sup>27</sup>, including on the tea plantations – hiked revenue rates on all peasant lands and crops except tea, and doled out large holdings to tea planters without regard for their fiscal health or capacity

to cultivate. Consider, for instance, that although the total government land revenue demand increased from 1 million rupees in 1865–66 to more than 4 million rupees in 1897–98, the growth of cultivated acreage for all crops *except* tea in Assam remained as low as seven percent.<sup>28</sup> Similarly, of the 642,000 acres of land settled with planters between 1839 and 1901, over 85 percent were on concessional or privileged terms. Of the 595,842 acres held by the European planters in 1893, 55 percent were under the revenue-free scheme and 30 percent held at concessional rates far lower than what Assamese peasants paid for lands of similar quality.<sup>29</sup> Not all of Jenkins's original plans took hold in the tea plantations, however. As indicated above, his idea of cajoling or coercing local Assamese peasants into the plantations by raising taxes never really succeeded.

If "improvement" was tea's gift to Assam, it came at a steep price for the local inhabitants and workers, for not everyone was invited to partake of its promised munificence. Jenkins and Mills' land colonization scheme ensured that Assamese stakeholders in tea manufacturing, with their limited capital and purchase money, were effectively held off for a large part of the period under study. For the most part, local participation in the tea enterprise remained at the level of accountants, overseers, clerical employees or petty suppliers to European-controlled tea gardens and agency houses. While these circumstances largely made for a "Planter's Raj," this paper will show that that "empire" was not just an accumulation of all-knowing agents, and that it left much more than socio-economic upheaval in its wake.

## "A Secure Category of the Modern"?<sup>30</sup> Tea's 'Improving' Conundrums

### The Great Tax Debate

"Analysis of agricultural activities in narrow economic terms – as simply a matter of counting bushels and bales, of calculating profits and losses – obscures the more subtle relations between crop and cultivator."<sup>31</sup>

This section examines a long-forgotten episode in the history of tea in British East India. The crop's discovery in Assam in the setting of the First Opium War as well as its long imperial pedigree and subsequent validation as a distinctive commodity of the British Empire were hailed as nothing less than biblical miracles. As historian Carolyn Merchant argues, the "Recovery of Eden" is one of Western culture's oldest myths – a meta-narrative of turning "wilderness into garden, 'female' nature into civilized society, and indigenous folkways into modern culture."<sup>32</sup> Or, as the prominent Canterbury Anglican Henry Sewell put it in the early 1850s, "the first creation

was a garden, and the nearer we get back to the garden state, the nearer we approach what may be called the true normal state of Nature.”<sup>33</sup>

But tough market conditions, operational expediency, and global economic logics often tested the limits of such triumphalism. For the planting community, ideological authority was not an abstraction – it emerged from their purported access to esoteric tea “science,” “expert” horticultural know-how, and direct agricultural involvement in the estates. These proclamations and zealously guarded terrains of power came under considerable scrutiny during a bitterly fought and long-drawn judicial battle between two contending parties – the Indian government on the one hand, and planters and the Indian Tea Association on the other. The war of words lasted from the mid-nineteenth until the early twentieth century, and it emerged from an unlikely source: fiscal policy.

On 19 March 1918, taxation of the income from tea plantations – previously exempt as “agricultural” produce – was officially decreed. While the storm clouds of taxation had been gathering for the enterprise since the 1860s, the Income Tax Act VII of 1918 was the definitive pronouncement. For the government of India, the argument was clear: The tea industry used modern machinery, advanced techniques of manufacture, and mechanical processes to render the raw material “fit to be brought into the market.”<sup>34</sup> No longer could plantations (in our case, Assam) claim immunity from the income tax by invoking specious claims to its agrarian character, and the ramifications for administrators and planters were enormous.

For the two parties involved, arguments for and against taxation were attempts to define the essential character and culture of the enterprise. They sought to identify and legitimize who had the *natural* authority and expertise to do so, and why. I will demonstrate in the following that although connected, the logics invoked for this purpose – discursive, political, and botanical – often led to contradictory conclusions. In the process, it will also become apparent that the tea enterprise’s self-sanctioned ideology of agrarian “improvement” was not only skin-deep and riven with inconsistencies, but that it could also be expeditiously jettisoned in the interests of a profit-driven empire as required.

The plantation sector in British India had traditionally been kept outside of the purview of direct taxation. As an agricultural concern, it paid land revenue to the government, and it was argued that a double impost would be both uncalled for and unjust.<sup>35</sup> Furthermore, an additional income tax would have contravened Cornwallis’ 1793 injunction, especially in permanently settled districts. Act II of 1886 thus ruled in section 5 that:

“Nothing [...] shall render liable to the tax –  
(a) any rent or revenue derived from land which is used for agricultural pur-



poses and is either assessed to land-revenue or subject to a local rate assessed and collected by officials of the Government, as such; or

(b) any income derived from –

(i) agriculture, or

(ii) the performance by a cultivator or receiver of rent-in-kind of any process ordinarily employed by a cultivator or receiver of rent-in-kind to render the produce raised or received by him fit to be taken to market, or

(iii) the sale by a cultivator or receiver of rent-in-kind of the produce raised or received by him, when he does not keep a shop or stall for the sale of such produce.<sup>36</sup>

While reiterating the earlier logic of exempting agriculture from taxation, this bill unwittingly opened up a Pandora's box of questions and paradoxes for the tea and indigo industries among other similar ventures. Were tea planters liable to pay this tax? Could the enterprise be separated into its agrarian and non-agrarian units? For now, the law seemed to have all the answers.

Amidst a barrage of protests from planters and the Indian Tea Association against the tax, the Advocate-General of Bengal, Sir G. C. Paul ruled that tea (and indigo) planters were producers of agricultural items and therefore exempt.<sup>37</sup> Employees of the enterprise who received regular salaries and benefits, on the other hand, were not. Similarly, any “building owned and occupied in the immediate vicinity of the land” or “homestead appurtenant” to the land required for the operation and “necessary for the vocation” mentioned under clause (b) of the law were also exempt. For any other houses, the enterprise was liable to pay an impost.<sup>38</sup> The percentage of income from these portions was not specified, however. In trying to separate the seemingly indivisible, Sir Paul's interpretation only created further incredulity. As newspaper report of 11 May 1886 emphatically stated that “the idea of exempting tea gardens and indigo factory managers, and taxing assistants is neither logical nor does it bear with it even the semblance of sanity.”<sup>39</sup> Accusing the Indian government of having put together the provisions of the act hastily, planters criticized the “ill-considered” and “unbusiness-like blunders” of separating the domains of tea production for purposes of the impost.<sup>40</sup> As one report announced exasperatedly, “either we are agriculturalists, or we are not!”<sup>41</sup> There were even murmurs about bringing a test case in the law courts to settle the matter summarily. The government was reluctant to proceed along these lines,<sup>42</sup> however, and the enterprise was largely left exempt from the income tax until the second decade of the twentieth century. For the time being, the planters' point of view had been confirmed: The tea business was essentially an agrarian venture, superintended under their close, involved watch, and machinery employed in the manufacturing process did not alter this organic bond between cultivator and crop. This was a strange, almost paradoxical legal vision, for it meant that while other employees in the tea industry were liable to the tax (thus declaring

them non-agriculturalists), planters were not. In terms of the law, it did not matter whether assistants, engineers, and accountants simultaneously aided in transforming tea into its marketable state – their services were avowedly mechanical in character and lacked the horticultural immediacy required for exemption. Theoretically, the 1886 act left the enterprise a divided – and divisible – house.

All remained quiet for the next three decades or so. But as the clouds of war gathered on the horizon, the local governments of Bihar and Orissa declared in 1914 that sugar industries in the two regions were no longer exempt. The Indian government agreed and contended that the 1886 act had been applied erroneously in this instance. In making its case, the government and its legal counsel introduced an ontological premise, namely that of “crude” agriculture vis-à-vis “modern manufacturing processes,” into the debate. In other words, it argued that section 5 of the 1886 legislation had only been intended for basic “domestic processes” and not for sugar factories employing “up-to-date lines for the express purpose of making a business.”<sup>43</sup> What was more, the Bengalese government solicited the opinion of Advocate-General G. H. B. Kenrick on similar provisions for the tea industry. As the old feud rekindled, the powerful Indian Tea Association and the tea planters once again found themselves at the center of a power struggle. Kenrick was categorical in his verdict of December 1915:

“In my opinion...[Section 5 of the 1886 Act] contemplates any simple process which is ordinarily undertaken by a cultivator to prepare his agricultural produce for market, but does not contemplate the complex and developed process of manufacture or preparation in modern factories equipped with machinery...a tea factory containing modern scientific machinery or appliances for the preparation of tea for the market [is] liable to be taxed as income accruing and arising in British India.”<sup>44</sup>

As anticipated, this did not go down well with either the Tea Association or the planting community, and a war of words that would last the next six years commenced between them and the government. Although it would take until 19 March 1918 for new legislation, the Income Tax Act VII, to be passed into law, the intervening debate is especially interesting for our purposes.

For one, it introduced the language and parameter of “modernity” in making the manufacturing portion of the tea enterprise liable for taxation. In practice, as we shall see, this was very difficult demarcation to make – and it was not simply an economic matter, either: For planters and the Indian Tea Association, agreeing with Kenrick’s position implied abandoning an elaborate operational arrangement that centered on tea as an organic substance. Nor was the issue an agrarian one alone: The counter-argument to the government’s position drew upon extensive discurs-

sive, scientific, and botanical wisdom on the subject. These protestations were also intimately tied to planter notions of legitimate authority and power – primarily over the tea plant itself, but also over its production space. But the fundamental paradox was almost impossible to overlook, for the tea enterprise had long depicted itself as a champion of social and material progress in an otherwise “backward” region of empire; contravening this ideological position by claiming an essentially agricultural character produced a practical if not theoretical double bind. Planters attempted to circumvent this irony by highlighting the organic indivisibility of the so-called “natural” (agrarian) and “manufactured” (business) aspects of *Camellia sinensis*. Ostensibly a financial issue, the income tax debates between the government of India and the tea enterprise in the early twentieth century simultaneously constituted an ideological and botanical tug-of-war.<sup>45</sup>

But the last had definitely not been heard in the matter. This new characterization of the tea enterprise as industrial struck at the heart of how planters (and their overlords, the Indian Tea Association) saw themselves. After all, for more than seven decades after tea experiments had begun in earnest in Assam, planters, field personnel, tea experts, and scientists (which included entomologists, botanists, and chemists) had harped on expert cultivation as key to the plant’s, and by extension to the plantation’s, success on the international market. Relinquishing this essential trait seemed akin to an ideological defeat in addition to the tax-related economic loss.

The renewed protests against the government’s policy after May 1918 criticized the “simplistic” and “lame” logic of the new act. In a rhetorical move, the Tea Association questioned the administration’s definition of “modernity” and wondered if machinery could indeed be separated between ancient and modern. It lampooned the government’s reasoning by asking if a tea-estate’s tax liability would end if equipment of an “antiquated” type were employed. More to the point, planters and the Tea Association wondered: “does the Government require us to adopt [...] the method of ancient China?”<sup>46</sup> With this question rekindling old debates on tea cultivation practices in eastern India and the contentious use of Chinese hybrids, the key point was to now argue that the enterprise could not be distinguished in terms of its agrarian versus its industrial character. Predictably, the government of Bengal also entered the debate around June 1918 – but this time it sided with the anti-government position. In a letter to the secretary to the finance department of the Bengalese government, the Tea Association contended that despite the use of complex machines in a tea estate, “it cannot be argued by any stretch of reasoning that tea leaves are converted into a different material after undergoing the process of preservation.”<sup>47</sup> To further support its case, the Bengalese administration illustrated how jute and rice underwent similar mechanized processes while retaining their essential agrarian traits. It cautioned the government that taxing the tea enterprise would set a worry-

ing precedent for other agriculturists. An extended report by a special tea commissioner delivered on 7 June 1918 was even more blunt. It reminded the government that factors regulating tea production varied from one district to the next and that a uniform policy of apportioning taxable income would therefore be futile if not foolhardy. Moreover, it argued that the major share of the industry's profits was earned through cultivation – the main elements existing in the leaf before it was brought to the factory.<sup>48</sup> In other words, the commissioner suggested that even if the 1918 Act were to be implemented in letter and spirit and the two parts of the tea enterprise's income divorced, the earnings from its industrial segment represented “so infinitesimal a value that it would not be worthwhile taxing it” at all.<sup>49</sup>

To be sure, the Indian Tea Association's anti-government stance was not about legal logic alone. In the face of stiff international competition from Java, Ceylon (today: Sri Lanka) and China, planters and the Tea Association protested the ruinous economic doctrine of taxing income besides the current export and import duties. More importantly, they pointed out that the government's line of reasoning contravened and contradicted the arguments in the Report of the Indian Industrial Commission likewise tabled in 1918:

“Improvement [of] agriculture was necessary, not only because it forms the basis on which almost all Indian industries must depend, but also for the further reason that the extension among the people of a knowledge of improved agricultural methods, and, in particular, of the use of power or hand-driven machinery, will benefit agriculturalists both by adding to their income and by its educative effect...from the point of view of Indian Industrial development, the necessity for increased efforts for the improvement of agriculture is clear.”<sup>50</sup>

The coincidence of the 1918 Income Tax Act and the Industrial Commission's report was serendipitous in that the report strengthened the position of the opposition to the government's move. In a strongly worded section titled “Reform Penalized,” planters and the Tea Association argued that the new tax regime was “retrogressive” and inconsistent with its avowed proclamations elsewhere.<sup>51</sup> By taxing business income and exempting agriculture, the 1918 bill created an artificial and inequitable breach between these two processes of national growth. As a later report asked wryly: “Is agriculture not a business?”<sup>52</sup> Based on the Industrial Commission's report, planters and the Tea Association targeted the new tax policy for “penalizing improved agricultural methods...and setting back the clock of agricultural progress in the country.”<sup>53</sup> To them, the argument had come full circle – the industrial and agrarian portions of the tea enterprise were not only indivisible, they were also very

much in line with the enlightened wisdom of the government's own body of experts. The paradox was obvious.

But not all the loose ends of this argument had yet been tied up for the anti-government faction. As briefly indicated earlier, the 1886 and 1918 tax acts precipitated a theoretical double bind for planters and the Indian Tea Association. This too was linked to the validation, or at least assertion, of the indigenous plant's alleged supremacy over its Chinese variant. As Indian tea found acceptance among planters, the metropolitan palate, and the market after 1870, an elaborate ideology of refinement was concurrently drawn up. In addition to the racial ("English superintendence") and climatic causes mentioned above, automation was argued to be the cause of Indian tea's alleged purity and "cleanliness." Lieutenant-Colonel Money thus argued in 1884 that "the Tea of Hindustan is now all manufactured by machinery, but in China it is hand-made."<sup>54</sup> In other words, "not being touched by hand at all" during the final stages of production was paradoxically extolled in his idea of *natural* superiority. As far as Money was concerned, this was the decisive advantage of Indian tea over the "dirty" and "hard muscular exertion" still practiced by the Chinese.<sup>55</sup> In the world of Indian tea, machines were not mere objects; they were steeped in ideology, propaganda, and in our case, irony.<sup>56</sup>

The income tax turf wars were ultimately untenable at all levels and on all fronts. As a semantic and operational "return to nature" became expedient for planters and the Indian Tea Association during 1886 and 1918, the history of the enterprise – and the tea plant itself – show that neither of the terms "agricultural" and "industrial" fully summed up its internal distinctions and nuances. The tea experts consciously or unconsciously invoked by planters for their own defense were themselves ambivalent concerning this question. Sometimes, these "authorities" of tea planting spoke with a forked tongue, as Lieutenant-Colonel Money's arguments demonstrate. More importantly – and embarrassingly – denying mechanization's novelty, and indeed modernity, in the tea manufacturing process contravened and contradicted the planting community's own proclamations of advancement and progress.

## Bugs in the garden

"Wherever humans have broken ground, whatever frontiers humans have explored, they have discovered that they are latecomers, following in the six-legged footsteps of insects [...]."<sup>57</sup>

While the fiscal debate on what was to be considered "natural" presents a macro view of the tea industry's agronomic problems, the planters also had other more minute and largely unseen competitors to deal with. For example, tea pests and

blights appeared almost concurrently with the beginning of the Assam plantations. C. A. Bruce, acknowledged pioneer of tea planting and manufacture,<sup>58</sup> remarked on the mole cricket in his famous 1838 account of the Singpho and Muttock tea tracts of upper Assam. Experimenting with tea seeds and young saplings in the hot summer sun, Bruce noticed the depredation caused by this insect, which nipped off the tender leaves and deposited them underground near the plant's root.<sup>59</sup> The tea plant's prospects were observably bleak.

The tea mosquito bug (*Helopeltis theivora*), the red spider or tea mite (*Tetranychus bioculatus*), thrips (*Scirtothrips dorsalis*), tea aphids, looper caterpillars, and blister blight were among the pests and diseases troubling Assam planters in the period under study. Though not an exhaustive list, these were some of the major predators of the tea plant that caused serious damage. In a broad sense, the focus on tea pests and climate in this paper reveals the largely forgotten relationship between this plantation economy and its built environment. Literal and proverbial bugs in the garden, these animals and pathogens gnawed away at profits, notions of scientific control, and expert proclamations of agrarian improvement. None of them were externally induced; instead they originated in the natural conditions of the Assam estates (especially the shade trees and frequent rains) and were eventually dispersed by laborers, winds, picking baskets, birds, and the very structures that supported the industry. In other words, these were not bugs that came from afar.<sup>60</sup> As crop quality, and ultimately profits, dwindled in the face of these unknown – and poorly understood – ecological competitors, planters in Assam experimented with local methods of pest management and eradication, forged alliances with pan-imperial peers on questions of remedy, and balked at pedagogic but mostly ineffectual laboratory “fixes” and metropolitan know-how on the subject. These interactions also allow us to rethink the relationship between human actors and non-human participants in the genesis of one of the British Empire's most coveted objects of desire. If the high incidence of malaria, cholera, and kala-azar (or black fever) deaths among tea laborers show the social ramifications of agronomic manipulation, the continual resurgence of tea pests and blights demonstrates that profits and pathogenicity were fundamentally linked in this commodity's story.

Samuel E. Peal, a planter in the Sibsagar district, was perhaps the first to draw attention to the tea mosquito bug, an arthropod resembling the common mosquito.<sup>61</sup> He presciently cautioned that this pest could become the tea planters' worst enemy in the years to come and had the potential to seriously cripple the industry and reduce yields. The warning was clear: “those who [were] indulging in dreams of thirty and forty percent [would] soon be roused up when they [found] their profits reduced to three or four.”<sup>62</sup> With seven accompanying color plates in the *Journal of the Agricultural and Horticultural Society of India*, Peal recorded his observa-

tions on the pest's physiognomy and its impact on tea leaves and shoots. What worried him more was the bug's eco-biology, a vicious parasitism that allowed it to grow and draw sustenance from the tea plantation habitat. He thus debunked the theory that excessive shade or lack of jungle clearing led to an increase in tea mosquito bug numbers. Drawing on infestation case studies from gardens that were relatively open as well as from ones recently cleared, Peal came to the damning conclusion that the very conditions necessary for successful tea harvests created the host environment for the bug.<sup>63</sup> While Peal was in no position to offer a scientific remedy, he astutely advised against having laborers try to physically remove the pests or treating tea leaves with medicinal decoctions. The futility of these measures was apparent to Peal, who knew that Assam's torrential monsoon rains would regularly wash away such fluids and create the perfect moist environment for the tea mosquito bug's proliferation. With resigned hope, he wrote: "I see no cure till Nature produces her own, in good time; and one is certain to come in the end, though probably not under twenty to fifty years."<sup>64</sup>

The mutually conducive and occasionally harmful ecosystem for tea growth and pest development remains a complex and historically fascinating environmental backdrop for the Assam plantation story. Size and capacity to withstand damage were often inversely proportional. In the case of the tea aphids, for instance, planters often wondered how an insect barely observable with the naked eye could reproduce with such rapidity and inflict widespread destruction at the same time.<sup>65</sup> The question of agency was pressing, and James Wood-Mason, deputy superintendent of the Indian Museum in Calcutta, suggested inter-insect dispersion as being partly responsible for pest occurrence in the Assam estates.<sup>66</sup> The climate and agroecology were not always beneficial allies to these pests, however, and could work against them depending on circumstance. Small tea pests like the aphids were regularly – though not always – washed away by heavy downpours or killed by periods of prolonged drought. More than two thousand miles to the south, a strikingly similar problem befell coffee planters in Ceylon, with several ecological challenges in the form of parasitic fauna coming into focus as the British plantation economy took over the island's central highlands. The coffee rat (*Golundus ellioti*) wreaked havoc, as did the coffee rust. As in Assam, natural allies both impeded and supported bug infestations in the Ceylonese plantations.<sup>67</sup> Extensive burning or "grubbing out" with a type of hoe known as a *mamoty* produced attendant problems of soil erosion and nutrient loss.

Surprisingly, the damage caused by the tea mosquito bug in Assam only caught the attention of the Calcutta scientific establishment a decade after Peal's 1873 article. Wood-Mason was instructed to carry out a detailed field study, and his final report was submitted on 8 June 1881.<sup>68</sup> While repeating some of Peal's observations

verbatim, Wood-Mason's study was based more on laboratory cross-examination of facts. He suggested the vigorous and unremitting removal of blighted portions of the tea plant, an approach that required increasing the already demanding working hours of the laborers on the estates. He also advanced the hypothesis that the olfactory quality of tea juice provided differential immunity from the mosquito bug. The rasping and pungent liquor of the native Assam plant allegedly rendered it immune from attack, while the milder extract of the Chinese variant made it more susceptible to damage.<sup>69</sup> These ideas would be quickly and vehemently disproved by successive waves of tea mosquito bug assault on all species of tea in Assam, however. In hindsight, Wood-Mason's report remained rather inconclusive and haphazard, though it did provide some interesting insights and analyses regarding the tea mosquito bug. But more importantly, his report was also one of the earliest to flag the tea mite (commonly known as the red spider) as a parasite of the Assam tea leaf.

The effects of the red spider on tea growth were reported to be even more devastating than those of the tea mosquito bug.<sup>70</sup> Wood-Mason observed that the mite lived in small "societies" on the upper surface of full-grown leaves, beneath a delicate web that it spun for itself as protection. Providing shelter from the heavy April rains, this web also allowed the spider to go unnoticed. The intriguing relationship between rains and pest control in the Assam gardens commented upon above was even more evident in the case of the tea mite. For instance, long spells of torrential showers could break up the intricate webs and lead to periods of disappearance of the pest. But this was hardly a workable curative strategy. Wood-Mason's report authoritatively demonstrated that the red spider, although of the *Capsidae* genus characteristic of Indo-Malayan fauna, was not an alien import but a species indigenous to the Assam tea country.<sup>71</sup> This discovery also confirmed Peal's initial suspicion of the mutually beneficial host conditions of the tea plant and the mite in the Assam gardens.<sup>72</sup> Peal reiterated in the *Indian Tea Gazette* that the red spider was one of the oldest, most universal and widespread known pests alive – ranging from sea level to the snow-capped mountain ranges of the upper Himalayas.<sup>73</sup> A later study on the bionomics of the red spider showed that it continued to breed during the cold season and could be found at all stages of the tea plant growth.<sup>74</sup> This made it clear that weather conditions were preeminent among the factors influencing the incidence of the mite and the intensity of its attacks.<sup>75</sup> The more insidious aspect of the red spider were its possibilities of dispersion within the tea estates: wind, cattle, goats, birds, and other insects<sup>76</sup> were among the chief agents of circulation. Even laborers working on the plantations were indirectly responsible, as the mite clung unnoticed to their clothing and tea baskets.<sup>77</sup>

At the turn of the century, blister blight proved to be a severe and crippling concern for planters in Assam. A fungal disease, it struck with exceptional virulence in



April and May 1906. Dr. Harold H. Mann, scientific officer to the Indian Tea Association, published a report on the blight that year following his visits to the affected upper Assam districts. He noted that the impact of the fungus was geographically localized but epidemic in character. Commenting on this peculiarity, he observed that the climatic and soil conditions of the affected districts (namely North Lakhimpur, Golaghat, and Jorhat) were directly responsible for the intensity of infection.<sup>78</sup> The relative immunity of the other tea districts to the blister virus scourge of that year only drove home the difficulty of adopting a region-wide approach to pest and disease reduction and control. Interestingly, the mycologist to the government of Madras, W. McRae, who was commissioned to study the outbreak of blister blight in the neighboring Darjeeling district in 1908–09, argued that the fungus was new to the tea region despite having been detected in and confined to the Brahmaputra valley as early as 1895.<sup>79</sup> Adding to the existing knowledge of the restricted nature of the disease, McRae observed that the extent of damage was often dependent on the tea variety (or *jat*), with the high quality Assam and hybrid cultivars being the most susceptible while the Chinese and Manipuri variants were relatively immune. McRae reiterated and confirmed Mann's earlier hypothesis of the relationship between rainfall, pruning, and blister attack: "the greater loss is attributable to wet, unfavourable weather in July and August ... the worst damaged piece of tea was a heavy pruned block."<sup>80</sup> He also suggested provocatively that while the exact cause of the fungus in Darjeeling was not definitively known, it might have been "imported" from the Assam valley by tea-seed transfer among other ecological and human factors.<sup>81</sup>

In addition to the mentioned pest and diseases, thrips also damaged tea plants in Assam and neighboring districts during the period under scrutiny.<sup>82</sup> Reproducing exponentially in the shade of the tea bush, thrips arrested the growth of young leaves and shoots. Their more worrisome feature, however, was that their activity hardened the leaves and made them brittle, thereby leading to a recognizable quality reduction and "loss in flavour."<sup>83</sup> For a commodity that relied on taste as its distinctive hallmark, this was a serious discovery.

Beyond entomological findings and planter reports, the proverbial bug in the empire's garden also found its way into government correspondences, revenue proceedings, and annual tea balance sheets. While many factors including the political climate, seed quality, picking methods, labor, mortality, and machinery contributed to fluctuations in tea production, the trio of pests, rainfall, and climate affected harvests persistently and relentlessly in terms of both quality and volume. Interestingly, while reporting on the ravages caused by hailstorms and red spider blights in 1883, C. J. Lyall, then officiating secretary to Assam's chief commissioner, criticized James Wood-Mason's pest experiments as esoteric laboratory science far removed from the practical and pragmatic challenges planters faced on the ground.<sup>84</sup> Long

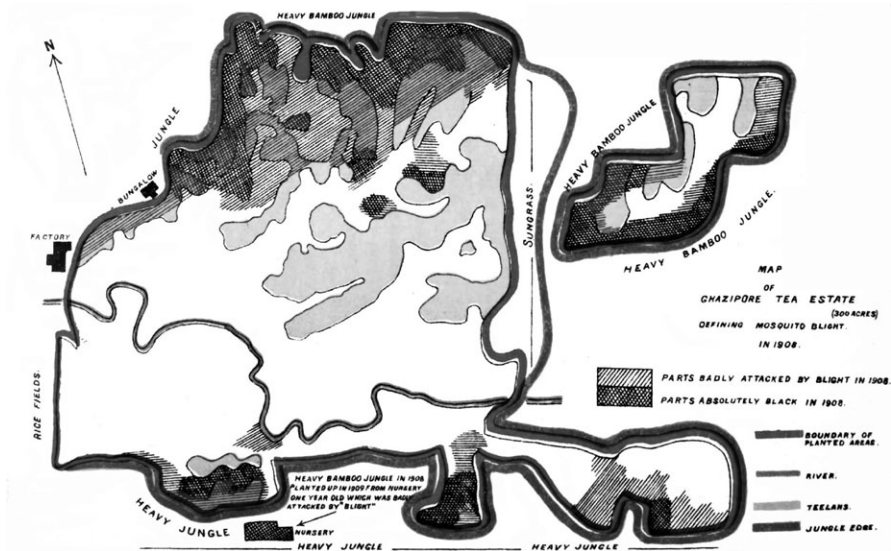


Figure 1: Map showing the effects of tea mosquito blight (*Helopeltis theivora* Waterh.) on the Ghazipore tea estate, 1908. The dark shaded portions indicate affected areas, with the darkest spots representing severe damage. (C. B. Antram, *The Mosquito Blight of Tea: Investigations during 1908–9*, Indian Tea Association Scientific Department, Calcutta 1910 © Cambridge University Press, 2018.)

criticized as unreliable mavericks lacking adequate scientific training, the tea growers in nineteenth-century Assam suffered massively from the pertinacity of various pests and the erratic rainfalls. As indicated, metropolitan intervention in these matters, though robust after 1884, remained ad-hoc and mostly pedagogic.<sup>85</sup> Despite numerous handbooks, manuals, and treatises on the subject, planters in Assam were forced to consolidate and share their practical experience in pest management and control with each other. Local control and eradication measures were often tested or applied, albeit usually unsuccessfully. Correspondence from the period also indicates that managers in Assam regularly exchanged ideas with and sought help from their peers in Java, Kangra, Darjeeling, Ceylon, and even far-flung California. With Peal as a trailblazer, these planter letters, memoirs, and articles demonstrate a keen eye for participant observation and analyses that contributed to and complemented formal know-how on the subject. The latter by no means emerged in isolation as expert entomological science.<sup>86</sup>

As with the other factors of production, pest control measures were often prohibitively expensive or unavailable within specific tea districts. In response to the tea blight ravage in Assam, for example, one Darjeeling planter suggested salt at the rate of two *maunds*<sup>87</sup> per acre to be applied four times during the picking season. Dusting tea plants with lime was also recommended.<sup>88</sup> Though expedient, such meas-

ures were not always practical. In the case of both salt and lime, planters regretted that the expenses restricted experimental trials – salt was priced at nearly a rupee per kilogram. In addition, they were rarely effective as long-term solutions, with pests usually returning after a brief period of absence.<sup>89</sup> The politics of profit dictated that control mechanisms that did not interfere too heavily with the pocket or plantation plan were more likely to be tried. For instance, labor conditions and wages had long been a bone of contention between planters, district officials, and the colonial state – and apart from justifiable notoriety, this had not brought the Assam plantations much else in a highly competitive labor market. Planters were therefore less favorably disposed to pest control methods such as heavy pruning and brush fires that demanded changes to the estate rhythm and an increase in personnel requirements, working hours, or pay. Introducing lethal chemicals that destroyed vermin and plants alike was also a double-edged sword, and its application against the red spider was strongly discouraged by Peal, Wood-Mason, and others.<sup>90</sup> Paradoxically, inter-insect rivalry often contributed to keeping certain pests in check and acted as a natural antagonist to single-species dominance. Commenting on the tea mite, Peal remarked: “If anything eats the spider, it will be another insect, not a bird.”<sup>91</sup> Some advice was decidedly bizarre or outlandish. From California, for example, came the announcement that shrimp shells had been exported to Chinese tea growers as manure and as a remedy against pests. Though unconfirmed in terms of its success rate, this measure was suggested as a possible option.<sup>92</sup> When confronted with advice – helpful or otherwise – planters regularly drew attention to pests that had gone unnoticed or were restricted to specific habitats and estates. Writing from Cachar, one planter sought responses and help from his peers for a particular blight common in his garden, namely a large species of the *Psychida* family that Peal had reportedly forgotten or was ignorant of.<sup>93</sup> A small insect “of the ladybird tribe” that allegedly struck at the pekoe tip and caused it to droop was likewise discussed as a noteworthy omission from existing handbooks and planter accounts of tea pests.<sup>94</sup>

Maintaining an open ear for local pest vernaculars and methods of control was also necessary under the circumstances. Under attack from a “peculiar kind of small insect,” the manager of the sprawling forty-acre Ghyabaree tea estate sprayed his tea saplings with *titapani*, Assamese for a bitter and pungent concoction drawn from the neem tree (*Azadirachta indica*). He reported that the measure, though unsuccessful for his purposes, enjoyed wide local acceptance as an insecticide and was thought to be an effective remedy against tea pests.<sup>95</sup> Pest identification was a complex process, and various local names and signifiers found their way into the plantation vocabulary of nineteenth-century Assam. Commenting on the tea grub that left damaged stems and limbs with a pale brown appearance, one planter mentioned that the Assamese called it *Batea Banda Puk*, meaning “insect that makes

its own house or cocoon.”<sup>96</sup> Planters were periodically compelled to consult with lower-level functionaries, especially Bengali and Assamese clerks, for suggestions and advice. In the deeply entrenched and clearly defined hierarchies of power on the plantations, these exchanges often upended the relationship between patron and client, or master and servant. Harold Maxwell Lefroy, appointed Imperial Entomologist of India in 1905, was not mistaken when he reportedly claimed that “much may be learnt from enquiries pursued by the Mamlatdar or Tahsildar (district revenue collectors) and especially in regard to the attitude of the cultivator towards his pests.”<sup>97</sup> Many indigenous control measures were strikingly innovative and managed to check insect growth. P. R. H. Longley, for example, described how his “native clerk” engineered a clever trick to kill *ghundi pokas* (green beetles) in his estate’s rice fields: the man’s method of deploying dead frogs on stakes, attractive to the insects as food but fatal when consumed, worked beautifully to curb the menace.<sup>98</sup> The case of the *ghundi* beetle – a rice paddy bug – is in fact quite interesting and relevant to our story. For despite being a local staple, the emergence of rice cultivation in and around the tea plantations had to do with significant managerial manipulation. Dotted estate peripheries and often found alongside labor housing areas, rice paddies were encouraged by planters as a cheap food source and viewed as an economic concession to enlist new and contract-expired labor.<sup>99</sup> Its effects on the plantation world were mixed, however: I have discussed elsewhere how this policy led to the unmanageable rise of malarial anopheles mosquitoes, which in turn affected worker health on the estates.<sup>100</sup> The appearance of rice pests further compounded planter problems in dealing with this scourge.<sup>101</sup>

Not everything about tea could be perfected by innovations, agrarian or otherwise. Much was still unknown about Assam’s topography, hydrological patterns, and tea-ecology, even as lands continued to be parceled out to prospective speculators and tea companies. Let us consider the case of Messrs. Duncan Brothers and Co. around the turn of the century, for example: Having invested in enormous swathes of wastelands for tea, they eventually discovered that the area was unsuitable for planting. They petitioned the district administration for the release of around 798 acres in 1901, which was finally granted in April 1902.<sup>102</sup> The company cited unsuitable soil conditions and unexpected flooding as two primary reasons for abandoning the property.<sup>103</sup> In their submission, the Duncan brothers reported that initial costs had not accounted for the extensive drainage works and soil treatment necessary for the tea planting to be successful. Even six decades after its start, tea cultivation remained a flawed science. Harold H. Mann, scientific officer to the Tea Association, reminded planters as late as 1907 that producing good tea depended on a great variety of minute factors and circumstances, with some of them within his control, but most outside his power and even beyond his knowledge. He argued:

“Ours is a unique industry, one in which we are [still] treading untrodden ground... our knowledge [of tea planting] is as yet imperfect beyond measure [...]”<sup>104</sup> To use Carolyn Merchant’s terminology, tea-making was constantly in tension between *natura naturans* – an active, creative and potentially uncontrollable nature and *natura naturata* – the created world purportedly describable through scientific precision and “experimentation.”<sup>105</sup> Whereas the struggle to understand and perfect tea manufacture described by Mann continues to this day,<sup>106</sup> the ecological consequences of the plantation economy highlight the limits of botanical triumph and scientific order that tea set out to impart to eastern India.

### “Agriculture of Legibility?”<sup>107</sup>

To be sure, plantation monocultures were typical examples of what James Scott has termed “high modernist” agronomic science. To that end, they also attempted to simplify and make “legible” the complex register of nature in the interest of production and profit. But as Scott notes, these imperial (and post-imperial) agricultural projects ultimately failed to deliver on their ameliorative promise. This was due in part to the failure of agronomic “experts” to understand the local complexities of crop patterns, soil, hydrology, and the affective and effective vernaculars of agrarian practice. In the interest of profit-driven production goals (a central component of Ludden’s “development regime”), high-modernist agricultural planning pushed aside context-specific, cultivator-tailored, and intrinsic ecological knowledge. This, as Scott argues, was a primary driver of its overall failure to adapt to local circumstances and agronomic conditions. As he puts it: “The very strength of scientific agricultural experimentation – its simplifying assumptions and its ability to isolate the impact of a single variable on total production – is incapable of dealing adequately with certain forms of complexity.”<sup>108</sup>

I bring up Scott’s analysis in conclusion to add to – and critique – Ludden’s perspective of India’s development regime. While I agree with Ludden’s overall assessment of the discursive and practical advent of this expert-driven system around the late eighteenth and early nineteenth century, his conception leaves little room for understanding local, multi-species, and extra-human variations of, and challenges to, its operation. As this paper shows, the mission of bringing improvement to India modified – and was itself modified by – ecologies not wholly within its control or knowledge. The purveyors of this progressive agenda, namely the colonial state and its functionaries, were often at odds about what exactly constituted agrarian modernity and what were valid targets for that project. Sometimes, the regime’s competition came in the shape of minute, nonhuman factors and agents. All this is not

to suggest, however, that developmentalist discourse charted an alternative path in colonial India, nor is it a call for endless relativism. Instead, I argue that disguising the little-known, the unknown, and the imperfectly known was a crucial strategy of the development regime's claim to power. The desire to know "differently" or to expediently forgo what it long claimed to know were also integral to this imperial developmentalist logic. As the tax debate and tea bug cases discussed above show, the ruse was effective: Agnotology and epistemology were two related sides of the regime's empiricist tactic.<sup>109</sup> Ultimately, this paper calls for greater attention to these overlaps and networks.

As it is, the impact of this Whig credo on indigenous agriculture and its practices remains unclear and contested. Using the example of the Agricultural and Horticultural Society of India (AHSI), David Arnold has persuasively questioned the limits of this union of imperialism and improvement in the subcontinent.<sup>110</sup> Ostensibly established to foster evangelical ideas of progress and agrarian innovation, Arnold shows that AHSI's role in horticultural development remained mostly at the level of a "depository of practical information" that rarely translated into matters of policy transformation or into a major force of empirical innovation. He thus concludes that "improvement and imperialism did not operate, as Drayton's argument might lead us to suppose, entirely in tandem."<sup>111</sup> These debates aside, ideological commitment to progress and modernity was often a dispensable pretext for the development regime and invoked or jettisoned as needed.

Commodity networks are rarely self-serving. Beyond the production-circulation-consumption paradigm, cash crops such as tea were steeped in their ideological and ecological contexts and backgrounds, and this paper highlights those overlaps. By looking at two aspects of tea's history – one from its economic sphere, the other from the environmental – it points out some of the many contradictory and unseen conditions that made tea (just like similar commodities such as tobacco, sugar, and coffee) a successful, yet deeply troubling imperial venture in colonial (and postcolonial) South Asia. Indeed, by every measure it was one of the British Empire's most coveted objects of desire – and continues to be a globally recognized drink.<sup>112</sup>

## Notes

- 1 For a more comprehensive treatment, see Arnab Dey, *Tea Environments and Plantation Culture: Imperial Disarray in Eastern India*, Cambridge 2018. I am thankful to Cambridge University Press for permission to reuse material previously published with them. I am also grateful to David Ludden for his comments on an earlier version of this paper, and to the Office of the Dean, Harpur College of Arts and Sciences, SUNY Binghamton, and the South Asia Program at Cornell University for intellectual and professional support for this project. All errors are mine alone.

- 2 See David Ludden, *India's Development Regime*, in: Nicholas B. Dirks (ed.), *Colonialism and Culture*, Ann Arbor 1992, 247–288; see also David Ludden, *Development Regimes in South Asia: History and the Governance Conundrum*, in: *Economic and Political Weekly* 40/37 (10–16 Sept. 2005), 4042–4051.
- 3 Ludden, *India's Development Regime*, 1992, 252.
- 4 *Ibid.*
- 5 See Ludden, *India's Development Regime*, 1992, especially 252–258.
- 6 *Ibid.*, 258.
- 7 *Ibid.*, 252.
- 8 See also David Ludden, *An Agrarian History of South Asia*, *The New Cambridge History of India*, IV.4, Cambridge 1999.
- 9 Ludden, *India's Development Regime*, 1992, 270.
- 10 *Ibid.*, 271.
- 11 See Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity*, Berkeley/Los Angeles/London 2002.
- 12 The thorny relationship between scientific “expertise” and imperial exploration has frequently been commented upon. For a stimulating discussion of this overlap in the African context, see Helen Tilley, *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870–1950*, Chicago 2011.
- 13 George G. Sigmond, *Tea: Its Effects, Medicinal and Moral*, London 1839, 144.
- 14 See Jayeeta Sharma, *Empire's Garden: Assam and the Making of India*, New Delhi 2012, especially Part I; Amalendu Guha, *Planter Raj to Swaraj: Freedom Struggle and Electoral Politics in Assam, 1826–1947*, New Delhi 1977; Sir Percival Griffiths, *The History of the Indian Tea Industry*, London 1967; and Hinson A. Antrobus, *A History of the Assam Company, 1839–1953*, Edinburgh 1957.
- 15 Colonel Jenkins was also the first to propose the large-scale initiation of a plantation economy in Assam using sugarcane, mustard, mulberry, and indigo among others. It is recorded that Jenkins had claimed that “the first duty of the Government [...] is to make monopoly impossible [...] that the great national tea-trade in Assam (should be) open to all, as the indigo trade in Bengal,” quoted in H. K. Barpujari, *Assam: In the Days of the Company 1826–1858*, Gauhati 1963, 223.
- 16 See Jayeeta Sharma, *British Science, Chinese Skill and Assam Tea: Making Empire's Garden*, in: *Indian Economic and Social History Review* 43/4 (2006) 429–455.
- 17 For an interesting history of the imperial culture of botany, see Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World*, Cambridge 2004.
- 18 Sir Edward Gait, *A History of Assam*, Calcutta 1967, 413.
- 19 Barpujari, *Assam*, 1963, 215.
- 20 For a study of the Assamese middle class, see Hiren Gohain, *Origins of the Assamese Middle Class*, in: *Social Scientist* 2/1 (1973), 11–26.
- 21 Sharma, *Empire's Garden*, 2012, 3.
- 22 See *Observations on the Administration of the Province of Assam*, by Baboo Anundaram Dakeal Phookun, in: A. J. Moffatt Mills, *Report on the Province of Assam*, Calcutta 1854, Appendix J, xxxviii.
- 23 S. K. Bhuyan, *Early British Relations with Assam: A Study of the Original Sources and Records Elucidating the History of Assam from the Period of Its First Contact with the Honourable East India Company to the Transfer of the Company's Territories to the Crown in 1858*, Assam 1949, 31.
- 24 *Memorial of the Assam Tea Company to the Marquis of Dalhousie*, Governor General of India, 6 June 1853, reproduced in Mills, *Report*, 1854, Appendix E, xix–xxi.
- 25 Quoted in Mills, *Report*, 1854, Appendix C, xiv.
- 26 See Richard Drayton, *Nature's Government: Science, Imperial Britain, and the 'Improvement' of the World*, New Haven 2000, 87.
- 27 On the opium question, see Amalendu Guha, *Imperialism of Opium in Assam 1773–1921*, in: *Calcutta Historical Journal* 1/2 (1977), 226–245; Shrutidev Goswami, *The Opium Evil in Nineteenth Century Assam*, in: *Indian Economic and Social History Review* XIX/3&4 (1982), 365–376.
- 28 Cited in the note by Chief Commissioner J. H. Cotton to the Government of India, dated 1898, reproduced in *The Colonization of Wastelands in Assam* and reprinted in Amalendu Guha, *Assamese Agrarian Relations in the Later Nineteenth Century: Roots, Structure and Trends*, in: *The Indian Economic and Social History Review* XVII/1 (1980), 35–94, 51.



- 29 Guha, *Assamese Agrarian Relations*, (1977), 53.
- 30 Ludden, *India's Development Regime*, 1992, 247–287.
- 31 See Timothy H. Breen, *Tobacco Culture: The Mentality of the Great Tidewater Planters on the Eve of Revolution*, Princeton 1985, 21.
- 32 Carolyn Merchant, *Reinventing Eden: The Fate of Nature in Western Culture*, New York 2003, 2; see also John Prest, *The Garden of Eden: The Botanic Garden and the Recreation of Paradise*, New Haven 1981.
- 33 Cited in W. David McIntyre, (ed.), *The Journal of Henry Sewell, 1. February 1853 to May 1854*, Christchurch 1980, 427.
- 34 This language was first used in the Income Tax Act of 1886, see William H. Grimley, *An Income Tax Manual Being Act II of 1886, With Notes*, Calcutta 1886, 7.
- 35 See Griffiths, *The History of the Indian Tea Industry*, 1967, 557.
- 36 See Grimley, *Income Tax*, 1886, 6–7.
- 37 *Ibid.*, 7.
- 38 *Ibid.*, 7–8.
- 39 *The Indian Planters' Gazette and Sporting News*, 11 May 1886, Microfilm Collection MFM.MC1159, Asian and African Studies, British Library, London.
- 40 *The Indian Planters' Gazette and Sporting News*, 14 September 1886, 277.
- 41 *Ibid.*, 7 September 1886, 248.
- 42 Griffiths, *The History of the Indian Tea Industry*, 1967, 558.
- 43 Quoted in letter from Secretary to the GOI (Finance Department) to Secretary, ITA, in *The Indian Planters' Gazette and Sporting News*, August 3, 1918, 115–116, National Agricultural Library (hereafter NAL), United States Department of Agriculture (USDA), Beltsville, Maryland.
- 44 *Ibid.*, 116.
- 45 On this topic, see also Prakash Kumar, *Plantation Indigo and Synthetic Indigo: European Planters and the Redefinition of a Colonial Commodity*, in: *Comparative Studies in Society and History* 58/2 (2016), 407–431; Kristin Adal, *The Problematic Nature of Nature: The Post-Constructivist Challenge to Environmental History*, in: *History and Theory* 42/4 (2003), 60–74; William Cronon, *Nature's Metropolis: Chicago and the Great West*, New York/London 1991; Leo Marx, *Machine in the Garden: Technology and the Pastoral Ideal in America*, Oxford 1964.
- 46 *The Indian Planters' Gazette and Sporting News*, 18 May 1918, 555, NAL.
- 47 See *The Indian Planters' Gazette and Sporting News*, 8 June 1918, 635, NAL.
- 48 See *A Surprise Attack. And a Vigorous Counter Offensive*, in: *ibid.*, 635, NAL.
- 49 *Ibid.*, 635, NAL.
- 50 See Report of the Indian Industrial Commission, 1916–1918, His Majesty's Stationery Office, 1919, especially 52–57, Command Papers 51, House of Commons.
- 51 See *The Indian Planters' Gazette and Sporting News*, 3 August 1918, 109, NAL.
- 52 *The Indian Planters' Gazette and Sporting News*, 25 January 1919, 104, NAL.
- 53 *Ibid.*, 3 August 1918, 109, NAL.
- 54 Lieutenant-Colonel Edward Money, *The Tea Controversy*, London 1884, 9.
- 55 *Ibid.*
- 56 To be sure, tea publicity went beyond simple market rivalry. For colonial administrators, the Indian Tea Association, and planters, the enterprise had bestowed upon Assam and British India its gift of “progress” and modernity in a horticultural, social, and material sense. The introduction of mechanization was a necessary, indeed celebratory step in this march of “improvement”. Claiming indivisible agrarian status for the tea enterprise belied and contradicted these other ramifications of tea's supposed modernity.
- 57 May Berenbaum, *Bugs in the System: Insects and Their Impact on Human Affairs*, Reading 1995, Preface, xii.
- 58 Antrobus, *A History of the Assam Company*, 1957, 22.
- 59 Charles A. Bruce, *An Account of the Manufacture of the Black Tea as now Practiced at Sudeya in Upper Assam, By the Chinamen Sent Thither for that Purpose, with Some Observations on the Culture of the Plant in China and its Growth in Assam*, Calcutta 1838, 15.
- 60 See William Cronon, *The Uses of Environmental History*, in: *Environmental History Review* 17/3 (1993), 1–22, 10.



- 61 Samuel E. Peal, *The Tea Bug of Assam*, in: *Journal of the Agricultural and Horticultural Society of India (New Series)* 4/1 (1873), 126–132.
- 62 *Ibid.*, 126. Peal is also reported to have written on the blister blight of tea as far back as 1868, but this source remains untraceable; quoted in Harold H. Mann, *The Blister Blight of Tea*, in: *Indian Tea Association Circulars*, No. 3, Calcutta 1906, 1; MSS EUR/F 174/11, *Asian and African Studies*, British Library, London. It is also important to note here that entomology and empire are closely connected. In fact, J. F. M. Clark argues: Economic entomology achieved professional respectability between 1880 and 1914 through the creation of specialist educational programmes and acknowledged posts in the field. The identification of insects as vectors of disease – the emergence of medical entomology within the rubric of tropical medicine – provided a further strong rationale for the study of applied entomology. Experience of insect control and eradication in empire shaped the careers, knowledge and practices of British entomologists. As an institution or discipline, applied entomology in Britain was forged from agricultural science and tropical medicine, under the umbrella term of economic entomology, in: John F. M. Clark, *Bugs and the Victorians*, New Haven 2009, 188.
- 63 Peal, *The Tea Bug of Assam*, (1873), 128.
- 64 *Ibid.*, 130.
- 65 Reprinted in the section on “Tea Blights and Pests” in: *The Tea Cyclopaedia: Chapters on Tea, Tea Science, Blights, Soils and Manures, Cultivation, Buildings, Manufacture Etc.*, With Tea Statistics, London 1882.
- 66 *Ibid.*, 38.
- 67 See James L. A. Webb, jr., *Tropical Pioneers: Human Agency and Ecological Change in the Highlands of Sri Lanka, 1800–1900*, Athens, OH 2002.
- 68 James Wood-Mason, *Report on the Tea-Mite and the Tea-Bug of Assam*, London 1884.
- 69 *Ibid.*, 18.
- 70 For a scientific study on the red spider and its relationship to the tea plant, see G. M. Das, *Bionomics of the Tea Red Spider, Oligonychus Coffeae (Nietner)*, in: *Bulletin of Entomology* 50/2 (1959), 265–274.
- 71 Wood-Mason, *Report*, 1884, 13.
- 72 A recent scientific study reiterates this by suggesting a further correlation between age, acreage and pests. It demonstrates that the microclimate of the monoculture tea crop provides a continuous food source for various kinds of “phytophagous arthropods,” reaching a saturation level after 35 years of growth. Statistically, the findings show that northeast India harbours the largest number of tea pest species (250), which directly corresponds to area (361,663 acres in 1981) and tea age (138 years). The research suggests that most tea pests are recruited “locally”, with only about three per cent being common across regions. See Barundeb Banerjee, *An Analysis of the Effects of Latitude, Age and Area on the Number of Arthropod Pest Species of Tea*, in: *Journal of Applied Ecology* 18/2 (1981), 339–342.
- 73 Reprinted in the section on Tea Blights and Pests in: *The Tea Cyclopaedia: Chapters on Tea, Tea Science, Blights, Soils and Manures, Cultivation, Buildings, Manufacture Etc.*, With Tea Statistics, London 1882, 38.
- 74 Das, *Bionomics of the Tea Red Spider*, (1959).
- 75 *Ibid.*, 272.
- 76 Wood-Mason disagreed with this widely held notion of inter-insect agency by planters. In his report, he claimed somewhat emphatically that “mites do not commonly occur parasitically on the outside of the bodies of the most diverse group of insects,” in: Wood-Mason, *Report*, 1884, 10.
- 77 Das, *Bionomics of the Tea Red Spider*, (1959), 272.
- 78 Harold H. Mann, *The Blister Blight of Tea*, in: *Indian Tea Association Circular No. 3/1906*, MSS EUR/F/174/11, *Asian and African Studies*, British Library, London.
- 79 W. McRae, *The Outbreak of Blister-Blight on Tea in the Darjeeling District in 1908–1909*, in: *ITA Circular No. 3/1910*, MSS EUR/F/174/1517, *Asian and African Studies*, British Library, London; interestingly, McRae does not mention the 1868 chapter on the blister blight by Samuel E. Peal.
- 80 *Ibid.*, 6.
- 81 *Ibid.*, 7.
- 82 C. B. Antram, *The ‘Thrips’ Insects of Tea in Darjeeling: Investigations During the Season 1908*, in: *ITA Circular No. 3/1909*, MSS EUR/F/174/1516, *Asian and African Studies*, British Library, London

- 83 Ibid., 1.
- 84 Cited in the Annual Report on Tea Culture in the Province of Assam for 1882, no. 1207, 5, IOR/V/24/4278, British Library, London.
- 85 Among these, Wood-Mason's Report, 1884; Montague K. Bamber's *A Textbook on the Chemistry and Agriculture of Tea: Including the Growth and Manufacture*, Calcutta 1893; E. C. Cotes' *An Account of the Insects and Mites Which Attack the Tea Plant in India*, Calcutta 1895; David Crole, *Tea: A Text Book of Tea Planting and Manufacture*, London 1897; Sir George Watt, *The Pests and Blights of the Tea Plant*, Calcutta 1898; Claud Bald, *Indian Tea: Its Culture and Manufacture*, Calcutta 1908; E. A. Andrew, *Factors Affecting the Control of the Tea Mosquito Bug [Helopeltis theivora-Waterh.]*, Calcutta, ITA, reprint 1910 are some of the most important scientific investigations; a more recent contribution is L. K. Hazarika/M. Bhuyan/B. N. Hazarika, *Insect Pests of Tea and their Management*, in: *Annual Review of Entomology* 54 (2009), 267–284.
- 86 Even Sir George Watt, MB, FLS, CIE, Member, Royal Horticultural Society of England and later Reporter on Economic Products to GOI (1887–1903) remarks that among his many sources of information and assistance was the large circle of planters “whom it was my good fortune to meet during my tours.” He also mentions that “interest may be said to have been first prominently aroused in the subject of pests and blights by the late Mr. Samuel E. Peal's paper on ‘Mosquito’ or, as he loved to call it, the ‘Tea Bug’.” Prior to the appearance of Mr. Peal's paper it had been vaguely designated ‘Blight’ and was viewed as a mysterious visitation. Mr. Peal showed that it was caused by an insect,” quoted in Watt, *The Pests and Blights of the Tea Plant: Being a Report of Investigations Conducted in Assam and to some Extent Also in Kangra*, Superintendent of Government Printing 1898, 180.
- 87 One maund was approximately 37.32 kilograms, with forty seers to a maund.
- 88 See the section on “Tea Blights and Pests” in: *The Tea Cyclopaedia: Chapters on Tea, Tea Science, Blights, Soils and Manures, Cultivation, Buildings, Manufacture Etc., With Tea Statistics*, London 1882, 34–66.
- 89 Ibid., 40.
- 90 Though beyond the scope of this paper, it is noteworthy that pesticide use in Assam tea and its contemporary impact on local habitats and ecology is a matter of much scientific debate and public concern. See B. Bhuyan/H. P. Sharma, *Public Health Impact of Pesticide Use in the Tea Gardens of Lakhimpur District, Assam*, in: *Ecology, Environment and Conservation* 10/3 (2004), 333–338 for an example.
- 91 *The Tea Cyclopaedia: Chapters on Tea, Tea Science, Blights, Soils and Manures, Cultivation, Buildings, Manufacture Etc., With Tea Statistics*, 39.
- 92 Ibid., 45.
- 93 Ibid., 40–42.
- 94 Ibid., 50–52.
- 95 Letter to the Editor, *The Indian Planters' Gazette and Sporting News*, 21 September 1886, *Asian and African Studies*, British Library, London.
- 96 Lady B. Scott Papers, Box II, p. 55, Center for South Asian Studies, Cambridge University.
- 97 Quoted in Clark, *Bugs and the Victorians*, 187–215.
- 98 Longley writes: “I can only advance the hypothesis that the carnivorous diet, though tasty, is poison to the ghundi beetle,” in: P. R. H. Longley, *Tea Planter Sahib: The Life and Adventures of a Tea Planter in North East India*, Auckland 1969, 108. The depredations caused by the red slug and the looper caterpillar are also mentioned.
- 99 Peal also comments on the green beetle in his chapter on the tea mosquito bug, writing that “I have searched in vain for cures, and the natives say that when ‘Gandhi’ (the rice bug) attacks the paddy, nothing can save the crop,” in Peal, *The Tea Bug of Assam*, 130.
- 100 See Arnab Dey, *Diseased Plantations: Law and the Political Economy of Health in Assam, 1860–1920*, in: *Modern Asian Studies*, 52/2 (2018), 645–682.
- 101 On the paddy bug, see Department of Agriculture, *Eastern Bengal and Assam Bulletin*, no. 17, IOR/V/25/500/229, *Asian and African Studies*, British Library, London.
- 102 Letter No. Rev/831/4375 dated 1 April 1902, Revenue Files, Jorhat District Record Room, Jorhat, Assam.

- 103 Petition No. 1334, dated 26 August 1901, Court of the Collector and Deputy Commissioner of Sibsagar, Revenue Files, Jorhat District Record Room Archives, Jorhat, Assam.
- 104 Harold H. Mann, The Factors Which Determine the Quality of Tea, in: Indian Tea Association Bulletin No. 4 (1907), 2, 29, Mss Eur. F/174/1515, British Library, London.
- 105 See Carolyn Merchant, *Autonomous Nature: Problems of Prediction and Control from Ancient Times to the Scientific Revolution*, London 2016, 164–165.
- 106 Consider the numerous headlines pertaining to tea over the past seven years from the leading English daily of the region, *The Assam Tribune*: “Super Bugs Threaten to Eat into Vitals of the Industry” (21 March 2011); “Tea Industry Passing Through Critical Times” (1 November 2015); “Adaptation to Climate Change in Tea Mooted” (28 May 2016); “Rains to Impact Tea Output in State” (29 July 2016); “All is Not Well with Tripura Tea Industry” (5 August 2016); “Irregular Gas Supply Hits Tea Factories” (1 September 2016).
- 107 This is, of course, an extension of James Scott’s critique of state-led high modernism and his chapter title “Taming Nature: An Agriculture of Legibility and Simplicity,” in: James Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*, New Haven 1998.
- 108 *Ibid.*, 264.
- 109 See Robert N. Proctor/Londa Schiebinger, *Agnotology: The Making and Unmaking of Ignorance*, Stanford 2008.
- 110 See David Arnold’s critique of Richard Drayton in David Arnold, *Agriculture and ‘Improvement’ in Early Colonial India: A Pre-History of Development*, in: *Journal of Agrarian Change* 5/4 (2005), 505–525. See also Richard H. Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600–1860*, Cambridge 1995.
- 111 Arnold, *Agriculture and ‘Improvement’*, (2005), 516.
- 112 For a recent global history of the links between tea and consumer culture, advertising history, and imperial politics, see Erika Rappaport, *A Thirst for Empire: How Tea Shaped the Modern World*, Princeton 2017.