

Calcutta Botanic Garden and the colonial re-ordering of the Indian environment

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ABSTRACT: This article examines three hand-painted colour maps that accompanied the annual report of the Calcutta Botanic Garden for 1846 to illustrate how the Garden's layout, uses and functions had changed over the previous 30 years. The evolution of the Calcutta Botanic Garden in the first half of the nineteenth-century reflects a wider shift in attitudes regarding the relationship between science, empire and the natural world. On a more human level the maps result from, and illustrate, the development of a vicious personal feud between the two eminent colonial botanists charged with superintending the garden in the 1840s.

KEY WORDS: colonial botany – India – Nathaniel Wallich – William Griffith – maps.

BOTANY AND EMPIRE

Today Calcutta's botanic garden is a haven of peace – a green sanctuary from the pollution and noise of the city. But the tranquillity of the contemporary garden belies the dramatic origins of the institution and the passions that arose around plant collecting in the early part of the nineteenth-century. Two hundred years ago the identification and classification of plants was at the forefront of scientific enquiry. Underpinning botanical science's pre-eminence was the extension of European power around the world: the activities of plant collectors were intimately tied into colonial expansion, facilitating rule practically and ideologically. In India those who practised botany could find themselves implicated in political intrigue and environmental espionage. Gardens of science were also the nurseries of Empire.

This paper examines three maps intended to accompany the annual report of the Calcutta Botanic Garden for 1846 and illustrating the contemporary arrangement of the garden in contrast to 1816 and 1843. At a scale of two inches to one furlong (1 : 3960), the maps show how the layout, uses and utility of the garden was altered over a 30-year period. From a wider perspective the maps demonstrate the significant developments that occurred in the relationship between science, state and environment over the first half of the nineteenth-century. Finally, on a more human level, these maps result from, and illustrate, a vicious feud between two eminent men of science. Nathaniel Wallich and William Griffith shared a genius for botany. Separated in age by 24 years, these two giants in the history of colonial science held different ideas about nature and about how the world around them should be ordered. In their respective (and overlapping) tenures as superintendents of the Calcutta garden, Wallich and Griffith personify the shifts taking place in the relationship between botany and empire and the conflicts occurring at the heart of colonial science. Plant collecting in nineteenth-century India could be a dangerous business. The argument between

Wallich and Griffith reached its apogee when the former was laid low by serious illness and ended only with the premature death of the latter.

ESTABLISHMENT OF THE BOTANIC GARDEN AT CALCUTTA

The first in the series of maps (Figure 1, p. 154) shows the lakes and trees, pathways, plantations and nurseries of the Calcutta Botanic Garden as they were organized in 1816.¹ To the south is the Hooghly River while on the other three sides the garden is bounded by walls. Against these walls four small collections of native houses have been built up from which a workforce of gardeners and labourers could be drawn. A simple line drawing of a plant has been sketched around the title. The state of the garden illustrated by this map is almost exactly that which would have confronted Nathaniel Wallich on his appointment as Superintendent in February 1817. Before describing Wallich's tenure as the East India Company's chief botanist in India, we should first review how the garden came into being and the connections between science and empire in late eighteenth- and early nineteenth-century India.

The Company's Botanic Garden was established at Sibpur near Calcutta in 1787 by Colonel Robert Kyd (Thomas 2006). Necessarily, the initial request for financial support made by Kyd appealed directly to the mercantile interests of the East India Company:

I take this opportunity of suggesting to the Board the Propriety of establishing a botanical Garden, not for the Purpose of collecting rare Plants (altho' they also have their use) as things of mere curiosity or furnishing articles for the Gratification of Luxury, but for establishing a stock for the disseminating such articles [as] may prove beneficial to the Inhabitants [of India], as well as Natives of Great Britain and ultimately may tend to the Extension of the National Commerce and Riches.²

While the new garden included a teak plantation to support ship-building and repair, its primary function lay in the introduction and acclimatisation of exotic plants for dissemination across the Company's Indian possessions. Aside from the commercial imperative, Kyd recognized a strong humanitarian justification for the garden: it was hoped that the promotion of new crop varieties along with improved techniques and technologies of agriculture would serve to avert the "dreadful visitations" of what Kyd termed "the greatest of all calamities, that desolation [caused by] Famine and Subsequent Pestilence".³

Kyd was a military man whose considerable organization and promotional abilities were required for the establishment of the new institution. But it was under the superintendentship of William Roxburgh, a true disciple of natural history, that the garden found its place as a premier scientific institution. Recognising a utilitarian role for botanical science, the documentation of India's flora was heavily promoted by Roxburgh after he succeeded Kyd as Superintendent in 1793. To Roxburgh botany could assist commerce by identifying and locating plants to be used as dyes, or timber suited to construction or fibres for sacking and cordage. Thus the garden's original great practical and commercial functions were entwined with the advancement of scientific understanding – namely the collection and classification of India's diverse flora. Under Roxburgh the Calcutta Botanic Garden developed as a centre for knowledge: plant collectors throughout India would send their discoveries to Calcutta for identification, visitors could be instructed in the latest systems of taxonomy.

In these varied aims and the means by which they were attained, the garden under the leadership of Kyd and Roxburgh was closely aligned to the political situation in India and

reflect the way in which science was practised in the colony. As Governor General, Warren Hastings was known for his positive interest in Indian religion and culture. Hastings' orientalism typified the attitudes of many Europeans as they attempted to understand their new Indian environment. In the late eighteenth-century scientific investigations into the Company's expanding sub-continental possessions were carried out by an array of gentlemen amateurs, company surgeons, surveyors and travellers of varying degrees of official status. Whether employed directly by the East India Company, or submitting their findings to various learned societies either in India or Europe, these men offered report after report on the vast array of new phenomena that they encountered. The wide sweep of their intellectual interests was efficiently summarized by the motto of the Asiatic Society of Bengal founded by Sir William Jones in 1783: "Man and Nature; whatever is performed by the one or produced by the other" (see Keay 1989: 26). The orientalism of Jones and Hastings promoted a broad and humane understanding that encompassed history and the humanities alongside the natural sciences. In this liberal atmosphere scientific investigation took care to include the broader contexts in which natural phenomena existed. And, as a brief review of botanical investigations shows, this wide spread of interests was by no means exclusively monopolized by any one ethnic group or epistemological tradition. Modern botany in India had its genesis in the researches of Johann Gerhard König, a former student of Linnaeus (King 1899: 905; Desmond 1992: 39). Though König brought Linnaean taxonomy to India in 1773, his employment as naturalist to the Nawab of Arcot demonstrates, from the start, the extent to which botanical research was a cross-cultural project. Other early botanists followed this pattern, readily collaborating with native experts and drawing on indigenous plant lore to establish the names of plants, define their properties and their uses. Similarly, and more enduringly, native artists trained in Indian courtly painting styles were brought in to document botanical discoveries. The resulting illustrations, painted in what has become known as the Company style (Archer 1992), effectively dissolve the boundaries between Indian art and the western scientific imperative.

The standard depiction of individuals trained in the latest understanding of taxonomy and Western scientific method needs to be leavened by an acknowledgement of the effects of their distance from the scientific institutions of Europe and their appreciation of Indian knowledge and culture. Far from being a one-sided, top-down affair, science in late eighteenth-century India reflected the practices of trade on which the Company's fortunes were founded. Though not an equal relationship, the collaborative role of Indian intermediaries, interpreters, artists and assistants was of vital importance. For a time Calcutta was a contact zone in which different knowledge traditions combined and advanced one another in a brief flowering of intercultural creativity.

But things were changing. In the 20 years after the foundation of the Botanic Garden, the East India Company went from being a trading organisation (albeit one which already controlled a significant amount of territory) to being the pre-eminent political and military power in south Asia. The Anglo-Mysore wars and campaigns against the Marathas extended the Company's hegemony over much of the south and as far north as Delhi and the foothills of the Himalaya.

This transformation from trade to governance would stimulate wide-ranging changes in the role and practice of science in the subcontinent. The institutional forms required to maintain territorial control are markedly different from those of commercial enterprise. It was into this world that Nathaniel Wallich arrived. Between setting sail for India in 1807 and

his final departure nearly four decades later, a series of dramatic transformations would occur in the way that India was governed and understood.

NATHANIEL WALLICH

Wallich was born in Copenhagen in 1786, leaving at the age of 20 to take up employment as a surgeon at the Danish settlement of Serampore in Bengal. Part of his commission entailed the collection of plants and seeds for the botanical garden in Copenhagen. He would have had limited opportunity to pursue his new duties before, in 1808, the English East India Company annexed Serampore, and Wallich and his fellow countrymen found themselves prisoners of war. Fortunately, his talents as a botanist were recognized and William Roxburgh campaigned for his release so he could be employed at Calcutta Botanic Garden. Wallich was thus well placed to fill the void left by Roxburgh's final departure from India, and in 1815 the Dane was appointed Acting Superintendent. This temporary appointment was made permanent in February 1817, and but for two furloughs of leave, he held onto this important post for the next 30 years. As we shall see, over the span of his stay in India, Wallich straddled an intellectual fault line regarding the application of science and the understanding and exploitation of nature.

Like all men of science in the early nineteenth-century Wallich benefited from the close and mutually constituted relationship between science and empire. By easing access for European travellers the extension of territorial control was accompanied by an expanding frontier of knowledge. Opening up new geographical areas to analysis meant new data and new case studies. Increasing the span for analysis allowed for wider comparisons to be made, thereby extending understanding and allowing more far-reaching conclusions to be arrived at. But if empire promoted science then the reverse is also true: science played a crucial role as a facilitator of empire. The East India Company supported science for the material benefits it was expected to bring and as an aid to conquering, administering and raising revenue from its territories. As the Company's Empire expanded, the need to understand in order to rule promoted a massive programme of documentation, collection and categorisation that exploded across India. The connection between agricultural prosperity and buoyant revenues, which were the tax base for any administration in India, did not go unrecognized. The task appointed to colonial botany was to improve Indian agriculture by introducing new food crops and developing commercial products such as cotton and tea that might stimulate trade and raise profits.

Throughout his Indian career Wallich was an assiduous pursuer (and dispenser) of patronage (Arnold 2008). His close links with metropolitan science and the Royal Botanic Gardens at Kew are demonstrated by Sir Joseph Banks' early support and the extensive correspondence which he later maintained with Sir William Hooker.⁴ However, as the Danish son of a Jewish merchant, Wallich would be expected to struggle to gain acceptance among the elite of Calcutta society. His status as an outsider may explain the policy of opening up the garden to visitors. During Wallich's tenure the Calcutta Botanic Garden became a public pleasure ground – an elegant space for the instruction and entertainment of the growing European population of the capital of British India, a place to picnic and to promenade.

If empire and science shared a mutually supportive relationship, it should be recognized that the balance between the two was neither equal nor stable. Nathaniel Wallich's career



Figure 1. Plan of the Botanic Garden, September 1816.

was a long one which saw many changes and during which he made many enemies. Wallich's efforts to please his superiors were often in sharp contrast to his argumentative nature and the harsh treatment he could meet out to employees of the garden (Desmond 1992: 82). When Wallich was afflicted by serious illness in 1842 his opponents were waiting to take their chance.

By 1843, the Calcutta Garden had been extended with the addition of the former teak plantation to the east. This change was echoed by the establishment of a network of botanical institutions across India all subordinate to Calcutta and its Superintendent. Now gone from the map (Figure 2) is the elaborate illustration around the title; by losing this piece of unnecessary fancy the garden's aesthetic function is downplayed – it is presented here as an altogether more serious place. Gone too are the native houses that previously bordered its walls: the garden stands alone, separated from its wider environment. And the representational scheme has changed also: the drawings of trees used in the 1816 map have been replaced by abstract symbols, a bird's-eye view of green dots. To understand why these changes were made we need to follow the career of William Griffith from his arrival in India.

WILLIAM GRIFFITH

Born in 1810, William Griffith was, in the words of one contemporary, “the greatest botanist that ever set foot in India” (Wight 1846).⁵ While “his botanical predecessors were men of ability and devotion, Griffith was a man of genius” (King 1899: 908). Not only was Griffith the possessor of formidable intellectual and artistic talent, but he was also gifted with great stamina and energy. Over the 13 years after his arrival in Madras in 1832, his tours of botanical discovery took him “from the banks of the Helmund and Oxus to the Straits of Malacca”⁶; he was rumoured to have been assassinated in Burma and managed to conduct botanical investigations in Afghanistan while travelling alongside the invading Army of the Indus (Griffith 1847). His collection of “not under” 9,000 species from Assam, Bhutan, Bengal, Sind, Afghanistan, Burma and the Malay Peninsula represented “by far the largest number ever obtained by individual exertions” (Hooker and Thomson 1855: 61).⁷

But if Griffith was the most exceptional botanist in India in this period, he shared an uneasy relationship with Nathaniel Wallich – the most powerful and well connected. Griffith had studied under John Lindley at University College London, and it was here that he was initially introduced to Wallich who was then enjoying a period of furlough among the scientific elite in London. When Griffith sailed for India in 1832 Wallich was well placed to actively promote the “extraordinary abilities” of his “young friend” (Wallich 1832: 11). But Griffith did not easily slip into the role of a junior to a patron whose scientific abilities he judged clearly inferior to his own. The mutual antipathy, even hatred, which was to develop between the two men had its origins in a shared expedition to Assam which took place in 1835. The country had fallen into the possession of the East India Company following the recent Burmese war. Keen to establish the veracity of reports that tea was to be found growing in the new territory, Wallich and Griffith were despatched to locate any plants and establish their utility. Accompanying them was John McClelland, “a persevering Scotchman, without much ability, or power of perception [and] blinded by Griffith's extraordinary ability” (according to Joseph Hooker (Desmond 1992: 115)). At first

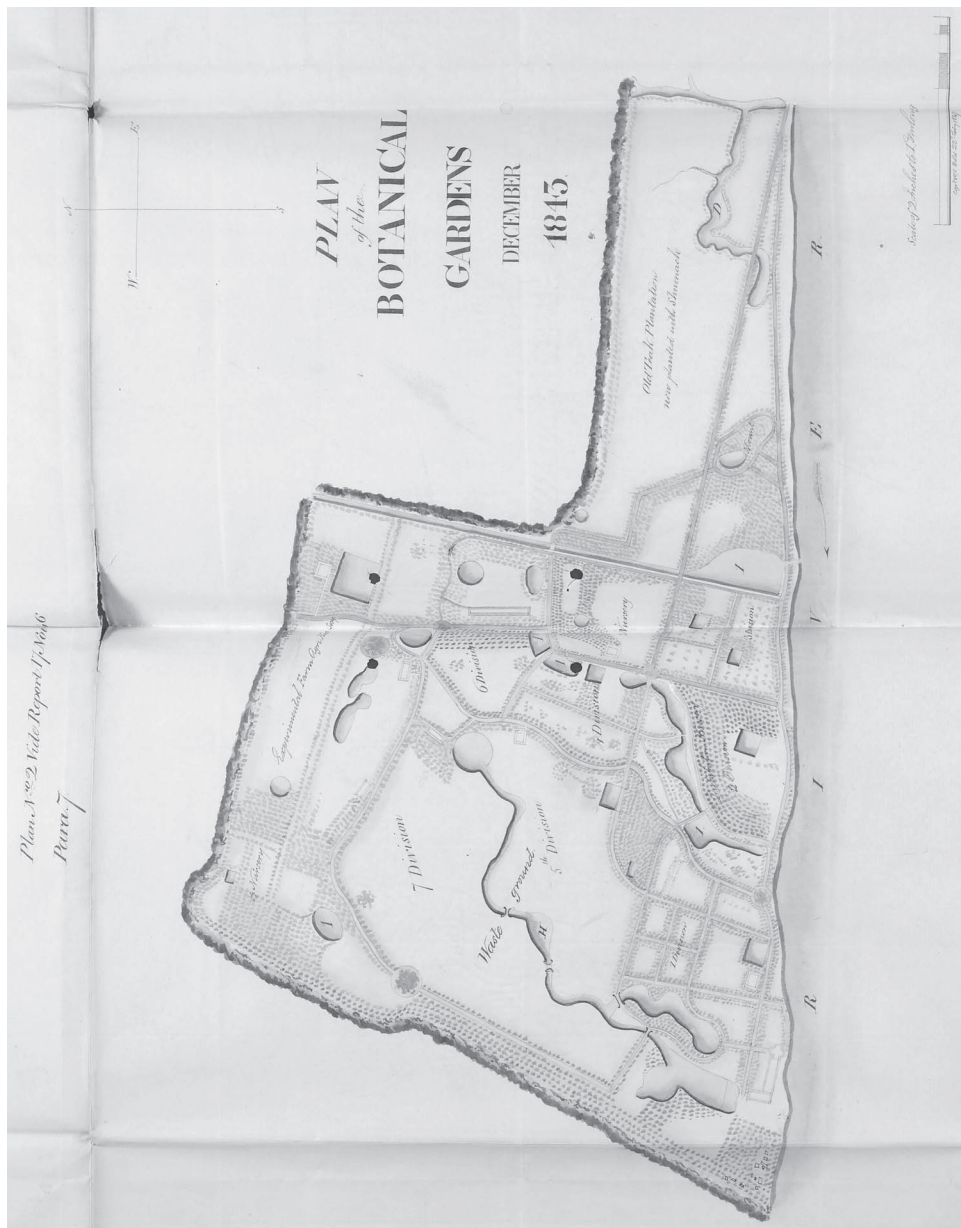


Figure 2. Plan of the Botanical Gardens, December 1843.

Wallich, now approaching 50, managed to maintain cordial relations with his two much younger colleagues. But friction developed as Wallich allegedly became jealous over Griffith's greater ability as a plant collector. According to McClelland⁸, Wallich accused Griffith of concealing some of the plants that he had found and insisted that their collective efforts should be brought together in a single official collection. Griffith confided in his private journal (see Desmond 1992: 92) that Wallich was a compound of "weakness, prejudice and vanity": it was, he concluded "utterly impossible to pull well with such a man".

Resentment was to linger between these three men for the next ten years⁹, no doubt fuelled by the generational gap with the aging Wallich blamed for blocking the advancement of younger men and new ideas and techniques.¹⁰ Criticized¹¹ (Anonymous 1840, 1841) in the *Calcutta journal of natural history* (edited by John McClelland), it must have been galling for Wallich to sit in his garden in Calcutta while the new leading light of Indian botany crisscrossed the subcontinent making dramatic new discoveries.

By 1842 Wallich was feeling worn down: he wrote to his friend William Hooker: "I am so old in India – my powers of mind as well as of body are so feeble after 34 years of Indian career" (see Desmond 1992: 93). The only thing that Wallich wanted more than to retire to Europe was to qualify for a full Company pension: and to do that he had to remain in India for just a few more years. By April, Wallich's health had become so bad that he was forced to leave Calcutta for the healthier climate of the Cape of Good Hope where he was to spend the next two years convalescing. In Wallich's absence, and much against his wishes, Griffith was appointed Acting Superintendent of the Calcutta Botanic Garden. After inspecting the site, Griffith informed William Hooker that, with its plants "scattered indiscriminately over the large area", his new charge was "not a Botanical Garden at all, but a pleasure ground, and not very ornamental either" (see Arnold 2006: 174). Accusing Wallich of having left the garden in a neglected, unorganized state, Griffith immediately seized the opportunity to make changes he saw as long-overdue.

Over the 50 years since the establishment of the garden, the practice of science had developed rapidly. Out of the broad 'natural philosophy' practised at the turn of the nineteenth century there emerged discrete and specialized interests, most obviously zoology, geology and, of course, botany. This specialisation of interests was accompanied by the increased professionalism of practitioners, with the orientalist scholars, gentlemen amateurs and company surgeons of earlier years replaced by dedicated experts. A shift towards greater empiricism and direct observation required that objects be abstracted away from the wider environmental and social contexts in which they existed. Significantly, in the colonial setting the separation of observer and subject reinforced a growing racial divide with the practice of science itself increasingly used as an ideological justification for colonial rule. Increasingly confident in their technological superiority, supporters of empire asserted that 'science' separated the rational, active and progressive British and Europeans from the irrational and passive natives of India (Edney 1997: 33). Wild nature would no longer be dominant in India: intervention in the form of railways and irrigation works, vaccination programmes, and even hunting expeditions could be presented as serving to tame nature and promote its productive virtues. Through the application of science, and the better understanding and use of natural resources, India would be 'improved' to the benefit of both colonialist and native. These changes, and particularly the idea of improvement, are apparent in the manner in which Griffith approached his task of re-ordering the Calcutta Botanical Garden.

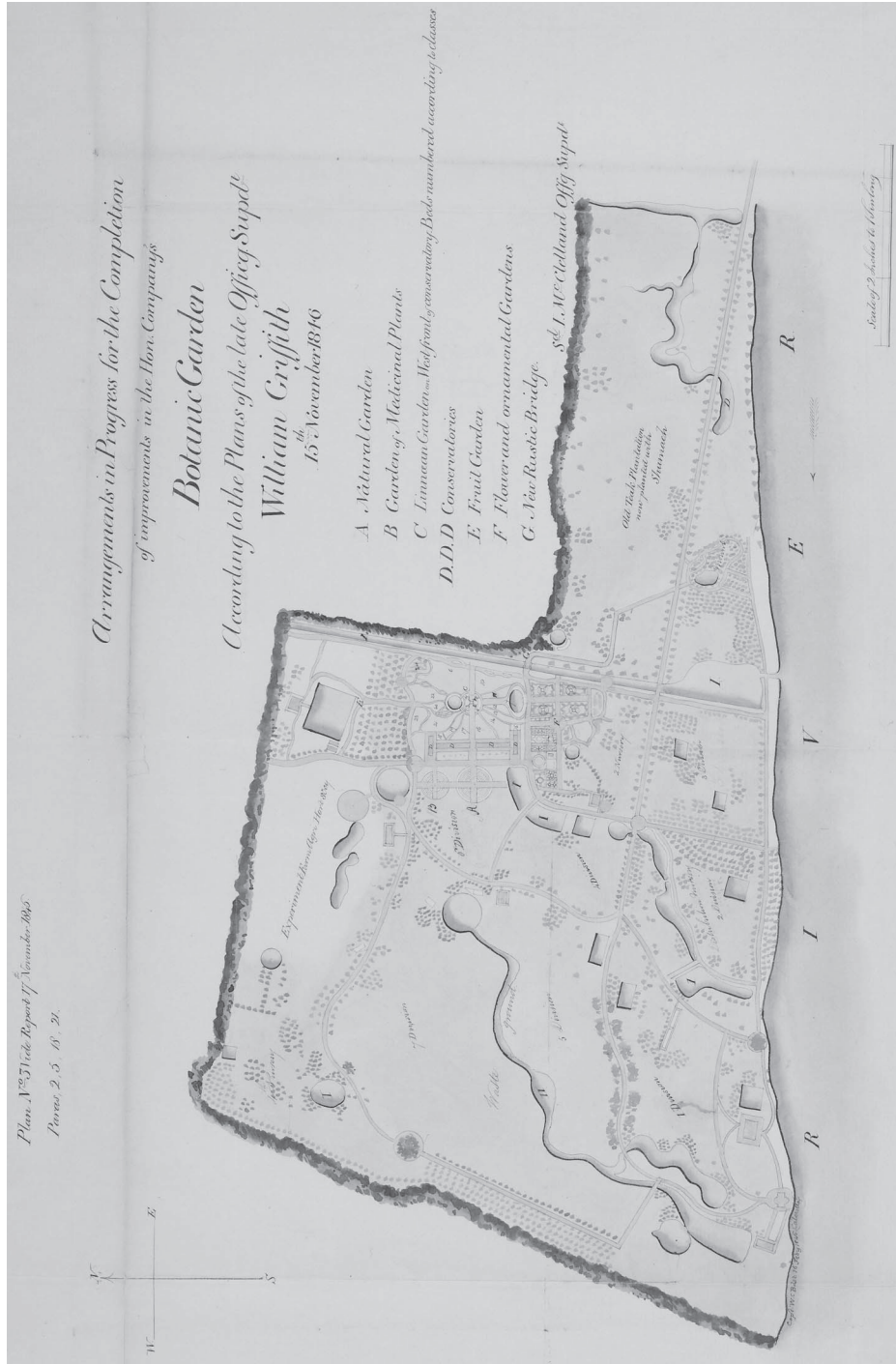


Figure 3. "Arrangements in Progress for the completion of improvements in the Hon. Company's Botanic Garden according to the Plans of the late Offg. Supdt. William Griffith, 15th November 1846."

THE RE-ORDERING OF THE GARDEN

Drawn-up on the orders of Griffith's great ally John McClelland, the timing of the three maps described here is quite deliberate. The first (Figure 1, p. 154) shows the garden at Calcutta as it was immediately prior to Wallich assuming charge. The second (Figure 2, p. 156), from 1843, documents the garden as Griffith found it when he took up the post of acting Superintendent. A comparison of the two maps is intended to illustrate McClelland's view that, over nearly 30 years under Wallich's charge, "no material change would seem to have taken place in the Garden".¹² In its appearance – demonstrating abstraction and objectivity – Griffith clearly intended the 1843 map to conform to scientific principles. And if a map could change to conform to a higher ideal, then as the third map in the series demonstrates, so too could the garden which it illustrates.

Among the first thing one notices about the 1846 map (Figure 3) is that the space occupied by the title is almost as big as the garden it introduces. The intention here is to signpost the progress of the "improvements in the Hon. Company's Botanic Garden" proposed by Griffith during his short spell in charge – a sharp contrast to his rival and senior Wallich. On taking control of the garden, Griffith described its neglected state. The garden was overgrown with trees many of which were in poor condition; plants had been left unlabelled, and the library and the herbarium were a disordered mess. One section of Griffith's 1844 report is subtitled "useless nature of many of the Books placed in the Library by Dr Wallich".¹³ Griffith went on to compare the annual average of botanical drawings produced for the library during the term of superintendence of Dr Roxburgh (149) and Dr Wallich (87): "I beg to point out that if Dr Roxburgh's average had been kept up and the drawings . . . kept in the Institution, the total number would have been 5622 instead of 3094".¹⁴ Griffith added that this deficiency was particularly surprising given that the Government grant given for such a purpose "has increased four fold since Dr Wallich assumed charge".¹⁵ But Griffith and McClelland reserved their greatest scorn for the absence of a single educational or scientific element to the garden, upon which "the character, and much of the utility of a Botanic Garden depends".¹⁶ Joining in the criticism, McClelland wrote:

The disappearance of a Linnaean Garden which would seem formerly to have existed (vide map 1816) is scarcely to be regarded, from whatever cause it arose, in any other light than a retrograde movement contrasting disadvantageously with the improvement of the times and the advancement of science during an interval of 30 years.¹⁷

The report made by Griffith for the Bengal Government was so critical of Wallich that when copies reached the East India Company's Court of Directors in London they reacted by stating that it "contained strictures on Dr Wallich which ought not to have been circulated and which have therefore been struck out of the copies which we have distributed".¹⁸

What is interesting is that Griffith's objections stemmed from more than simple personal animosity. The informal, casual layout of Wallich's garden was offensive to Griffith's conception of ordered rational science. He now proposed a radical reorganization of the garden, the completion of which would give it the same character as those Griffith rated the best in Europe: "viz: uniformity of design, adaptation of particular parts to particular purposes, including those of science and instruction".¹⁹ The first victim of Griffith's purge was "the un garden-like mixture of herbaceous, shrubby plants of all sizes, and trees in the borders".²⁰ Griffith then determined, with reference to the objects of the institution, "to form a series of separate Gardens, each having its own definite purpose".²¹ Three separate

scientific gardens were planned, the first illustrating Indian botany (“i.e. exclusively limited to Indian Plants, in which the Gardens are curiously deficient”), the second arranged according to “Natural Classification”²² and the third a Linnaean one²³: “until these, especially the two first, are completed the Gardens will not be Botanic Gardens”.²⁴ Griffith was also keen to ensure that all the plants were properly labelled: “those in the scientific Gardens in black letters on zinc tallies painted white, the rest of Bamboo Slips”.²⁵ Having instigated these changes Griffith concluded “the Gardens therefore are now for the first time since 1817, in some measure gardens of science and instruction”.²⁶ By citing the year in which Wallich assumed control, the target of Griffith’s criticism is made explicit.

In an attempt to render the garden “a botanical class book” (see Desmond 1992: 96) its contents were organized into distinct compartments demonstrating systematic botany and the classification of plants. Writing several years later, Joseph Hooker described how “the avenue of *Cycas* trees (*Cycas circinalis*) once the admiration of all visitors . . . had been swept away by the same unsparing hand which had destroyed the teak, mahogany, clove, nutmeg and cinnamon groves” (see Desmond 1992: 96). Trees were felled and the floral borders flanking the paths were dug up while the only visible concession made by Griffith to aesthetic virtue was the creation of a “new rustic bridge”. The objective pursued by Griffith in his time as Acting Superintendent was to realign the layout of the Calcutta Botanic Garden so that it might conform to the shifts taking place in botanical science that had been promoted by colonial expansion.

At the time of Jones, Kyd, Hastings and Roxburgh, science as practised in India was not materially inferior or subordinate to the practice of science in London or any of the other European capitals. But Griffith and his contemporaries in the mid-nineteenth century embodied new scientific understandings that were born out of the global access that empire increasingly provided. Over the first half of the nineteenth century a hierarchical organization of knowledge becomes increasingly apparent, with the metropolitan centre asserting its superiority over the colonial periphery. Attempts to achieve global comprehension of physical phenomena necessarily abstracted them away from their specific geographical locations.²⁷ A shift in attitude – from seeking to understand and learn from India, to seeing it as a place lacking in civilized virtue and needing to be properly ordered – accompanied the centralization of scientific activity in the metropolis. Only the centre had the knowledge to understand nature globally, and this knowledge was accompanied by the belief that the centre could and should attempt to refashion the world according to its understandings.

Wallich was by no means insulated from the changing scientific climate.²⁸ But it was Griffith who went much further in writing these changes into the landscape of the Calcutta Botanic Garden. The increased recognition of botany as a global rather than a local science informed the alterations that Griffith set about making. In his radical restructuring of the garden, plants were re-arranged according to both metropolitan scientific practice and the priorities of imperialism.

But as with imperialism, so too with botany. Attempts to force change from above inevitably provoke a negative reaction or fail to conform to plans. Griffith’s attempt to bend Calcutta’s natural ecology to fit into abstract classificatory arrangements provides a fine example of imperial and scientific hubris. With trees serving as “the natural clothing of the land in a climate as that of Calcutta” (Burkill 1965: 69), their sudden removal exposed plants to the full force of the sun: ferns died in the absence of shade, roots became exposed in thinning soil. A devastating cyclone brought down many of the trees that survived the

original cull. On his return to India from his period of sick leave, Wallich was horrified at what he found. He asked his friend William Hooker:

where is the stately, matchless garden that I left in 1842? It this the same as that? Can it be? No–no–no! Day is not more different from night than the state of the garden as it was from its present utterly ruined condition . . . My heart bleeds at what I am impelled daily – hourly to witness.²⁹

There can be little doubt who he blamed for the destruction of his garden. In the final part of this letter Wallich declaimed:

If I have ever deserved from them, the smallest portion of their increasing and fierce persecution – if on any occasion whatsoever, I have given cause for any feeling except of obligation and thankfulness – aye gratitude in the fullest sense of the word – then let me be visited, if possible, with ten-fold torture and agony then I have sustained from them these many years.³⁰

But by the time Wallich wrote these lines the main object of his anger was beyond his reach. On 11 December 1844, Griffith quit Calcutta having recently married Miss Emily Henderson. The newly-wed couple arrived in Malacca by 9 January 1845. Griffith suffered an attack of hepatitis on 31 January, dying ten days later, aged 34. Tired and broken, Wallich stayed in India for just long enough to qualify for his pension before retiring “home”³¹ to London where he lived for another seven years. In a final insult, on Wallich’s departure it was McClelland who was put in temporary charge of the garden providing him with the opportunity to continue the changes initiated by Griffith and to produce the self-justifying maps³² around which this story has been woven.

ACKNOWLEDGEMENTS

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NOTES

¹ In the annual report of the Calcutta Botanical Gardens for 1843–1844 (British Library, London, India Office Records – hereafter BL IOR – F/4/2128 no100725) Griffith writes of possessing “a private manuscript plan very lately purchased . . . It bears date 1819 and is valuable for exhibiting the Hon’ble Company’s Gardens as left by Dr Roxburgh”. This manuscript plan of 1819 may be the basis of the map of the garden as it was arranged in 1816 that was submitted by McClelland with his 1846 annual report.

² Extract of Bengal General Consultations, 16 June 1786, letter from Lieutenant Colonel R Kyd to Government of Bengal; BL IOR H/799.

³ Extract of Bengal General Consultations 26 April 1786, letter from Lieutenant Colonel R Kyd to Government of Bengal; BL IOR H/799.

⁴ The Director’s correspondence in the Royal Botanic Gardens Library, Kew (hereafter RBG Kew), contains numerous letters between Wallich and Hooker.

⁵ Noltie (2007) provided an excellent account of Robert Wight’s life, his Indian career and his relationship with both Wallich and Griffith.

⁶ As described on the memorial erected to Griffith in Madras cathedral (see Noltie 2007: 1: 156).

⁷ Sir George King (1899: 908) repeated this figure: “no Botanist ever made such extensive explorations, nor himself collected so many species (9,000), as Griffith did”.

⁸ J. McClelland, June 1848, “Memorandum Regarding the Differences Between Dr Wallich and the Late W. Griffith”; RBG Kew.

⁹ In a letter to his father Joseph Hooker described Wallich, Griffith and McClelland as “the 3 most ill-tempered fellows in all India & most sure to quarrel, that could anywhere be found.” Joseph Hooker to William Hooker, 10 March 1849; J. D. Hooker: Indian Letters, 1847–1851, RBG Kew.

¹⁰ Wallich continued to employ the Linnaean system of classification long after it had been superseded by the natural system of classification used by Griffith.

¹¹ “We have no wish to undervalue the institution, but if Dr W. will mention a single useful plant for which India is indebted to the Garden under his management, we shall gladly notify the circumstance to our readers” (Anonymous 1841: 291).

¹² J. McClelland to Government of Bengal, Report on the Hon’ble Company’s Botanic Garden at Calcutta, 1846; BL IOR F/4/2219 no110061.

¹³ W. Griffith, Report on the Calcutta Botanic Garden 1843–1844; BL IOR F/4/2128 no100725.

¹⁴ W. Griffith, Report on the Calcutta Botanic Garden 1843–1844; BL IOR F/4/2128 no100725.

¹⁵ W. Griffith, Report on the Calcutta Botanic Garden 1843–1844; BL IOR F/4/2128 no100725.

¹⁶ J. McClelland, Report on the Hon’ble Company’s Botanic Garden at Calcutta, 1846–1847; BL IOR F/4/2219 no110061.

¹⁷ J. McClelland, Report on the Hon’ble Company’s Botanic Garden at Calcutta, 1846–1847; BL IOR F/4/2219 no110061.

¹⁸ East India Company to Government of Bengal, 3 January 1845; BL IOR E/4/781, ff 771–2.

¹⁹ W. Griffith, Report on the Calcutta Botanic Garden 1843–1844; BL IOR F/4/2128 no100725.

²⁰ W. Griffith, Report on the Calcutta Botanic Garden 1843–1844; BL IOR F/4/2128 no100725.

²¹ J. McClelland, Report on the Honble Company’s Botanic Garden at Calcutta, 1846–1847; BL IOR F/4/2219 no110061.

²² Griffith’s appreciation of Macleay’s Quinarian “circular” method of Natural Classification is demonstrated by the circular arrangements evident in the map of the Calcutta Botanic Garden in 1847 reproduced by Desmond (1992: 94). I am grateful to Henry Noltie for this insight.

²³ The inclusion of a Linnaean garden suggests that Griffith was interested in showing the development of systems of classification.

²⁴ W. Griffith, Report on the Calcutta Botanic Garden 1843–1844; BL IOR F/4/2128 no100725.

²⁵ W. Griffith, Report on the Calcutta Botanic Garden 1843–1844; BL IOR F/4/2128 no100725.

²⁶ W. Griffith, Report on the Calcutta Botanic Garden 1843–1844; BL IOR F/4/2128 no100725.

²⁷ Arnold (2004) used the example of the friendship which developed between Brian Houghton Hodgson and Joseph Hooker during the latter’s visit to Darjeeling in 1848 to illustrate the difference between science in the metropolis and the periphery. While Hodgson employed straightforward geographical terms (“eastern Tibet”, “western Nepal”) in his work, Hooker “made much freer use of a universalizing terminology which saw the entire globe divided into tropical, temperate and alpine or arctic zones and readily fitted Himalayan India into this classificatory scheme” (Arnold 2004: 198).

²⁸ Having earlier depended on younger colleagues to help with classification, Wallich did later learn to apply the Natural System and used it in preference to Linnaean classification in his list of plants contained within the Calcutta Botanic Garden in 1840 (BL IOR F/4/1949 no84700).

²⁹ N. Wallich to W. J. Hooker, 8 February 1845; RBG Kew.

³⁰ Wallich to W. J. Hooker, 8 February 1845; RBG Kew.

³¹ Arnold (2008) pointed out that, despite his Danish origins, by 1828 Wallich was following Anglo-Indian convention by referring to England as “Home”.

³² The maps of the Calcutta Garden described in this paper came to light during the production of a new navigational guide (Axelby and Nair 2008) to the mass of material pertaining to science and environment that is to be found within the India Office Records. Though the maps were intended to illustrate the changes wrought by Griffith, and thus are clearly related to the annual report of the Calcutta Botanic Garden submitted by McClelland in

1846 (BL IOR F/4/2219 no110061), they were somehow misfiled and attached to a collection of correspondence on investigations into “the existence of silver ore deposits in Tenasserim province” (BL IOR F/4/2219 no110051).

REFERENCES

- ANONYMOUS, 1840 Review of G. T. Frederic Speede’s *Indian hand book of gardening*. *Calcutta journal of natural history* **1**: 302–303.
- ANONYMOUS, 1841 Review of report on the Botanic Garden of Calcutta by Dr Wallich, superintendent. *Calcutta journal of natural history*, **2**: 288–294.
- ARCHER, M., 1992 *Company paintings: Indian paintings of the British period*. London: Victoria and Albert Museum.
- ARNOLD, D., 2004 Hodgson, Hooker and the Himalayan frontier, 1848–1850, pp 189–205 in WATERHOUSE, D., *The origins of Himalayan studies, Brian Houghton Hodgson in Nepal and Darjeeling 1820–1858*. London: Routledge Curzon.
- ARNOLD, D., 2006 *The tropics and the travelling gaze – India, landscape and science 1800–1856*. Seattle: University of Washington press.
- ARNOLD, D., 2008 (in press) Plant capitalism and company science: the Indian career of Nathaniel Wallich. *Modern Asian studies*.
- AXELBY, R. and NAIR, S. P., 2008 *Science and the changing environment in India, 1780–1920: a guide to records*. London: British Library.
- BURKILL, I. H., 1965 *Chapters on the history of botany in India*. Delhi: Government of India Press.
- DESMOND, R., 1992 *The European discovery of Indian flora*. Oxford: Oxford University Press.
- EDNEY, M. H., 1997 *Mapping an empire: the geographical construction of British India, 1765–1843*. Chicago: University of Chicago Press.
- GRIFFITH, W., 1847 *Journal of travels in Assam, Burma, Bootan, Affghanistan and the neighbouring countries*. Calcutta: Bishops College Press.
- HOOKER, J. D., & THOMSON, T., 1855 *Flora indica: being a systematic account of the plants of British India*. London: W. Pamplin.
- KING, G., 1899 A sketch of the history of Indian botany. *British association for advancement of science* **69**: 904–919.
- KEAY, J., 1989 *India discovered*. Calcutta: Rupa & Co.
- NOLTIE, H. J., 2007 *Robert Wight and the botanical drawings of Rungiah and Govindoo*. Edinburgh: Royal Botanic Garden, Edinburgh.
- THOMAS, A. P., 2006 The establishment of Calcutta Botanic Garden: plant transfer, science and the East India Company, 1786–1806. *Journal of the Royal Asiatic Society* **16**: 165–177.
- WALLICH, N., 1832 *Plantae asiaticae rariorae, or descriptions and figures of a select number of unpublished East India plants*. Volume **3**. London: Trettel, Wurtz & Richter.
- WIGHT, R., 1846 The late Mr William Griffith. *Calcutta journal of natural history* **6**: 300–306.

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