

## Many Beautiful Things: Colonial Botanists' Accounts of the North Queensland Rainforests\*

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Colonial botanists played an important role in both elucidating and reshaping the nature of the North Queensland rainforests between 1860 and 1915. The Government Botanist of Victoria, Ferdinand von Mueller, was the first to begin to document the plant life of North Queensland. In 1859, on separation from New South Wales, Queensland's first Colonial Botanist was appointed to the Brisbane Botanic Gardens; this role was filled initially by Walter Hill, then by Frederick Manson Bailey. They were based at a distance from the northern rainforests and largely relied on local collectors to supply them with specimens that they would then identify, name and describe. They were also part of a network that assisted in the introduction of plants to North Queensland from other tropical locations for acclimatization purposes, and they worked to promote the development of tropical agriculture in the region. Colonial botanists not only promoted the settlement of rainforest areas and utilization of rainforest species, they also recorded and commented on the associated processes of environmental change that they observed.

### Introduction

In his work *Ecological Imperialism*, Alfred Crosby reenvisioned the history of the extension of European settlement and empire throughout the world and argued that imperialism was, in a fundamental sense, ecological.<sup>1</sup> More recently, historians have focused on the two-fold nature of this process of ecological imperialism, and have explored the ways in which—along with the physical transformations associated with European empire—both radical changes and deep continuities can be traced in settlers' perceptions and understandings of nature. In this essay I consider the work of the colonial botanists<sup>2</sup> in Queensland, whose official role placed them at the forefront of both the physical and cultural processes of ecological imperialism. While ornamental and recreational gardens began to be established in North Queensland in the nineteenth century, such as in Cooktown in 1878 and Cairns in

1886, the scientific study of botanical specimens and the production of herbaria and botanical texts took place primarily outside the region. Through the framework of botanical science, the colonial botanists, with the assistance of wide-ranging botanical collectors, elucidated the nature of the lands they worked in both to their local governments and public, and to the scientific authorities of Europe. They were responsible for exploring and documenting the existing plant-life of their region; and they assisted in, and promoted, the environmental transformations that made possible the continuing extension of European settlement of indigenous lands.

### Ferdinand von Mueller and John Dallachy: Early Visions and High Hopes

For botanical studies to be undertaken of the rainforests of North Queensland, botanists had either to visit the region themselves with sufficient resources to

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collect and transport quantities of specimens, or to cultivate local correspondents who would collect for them. Many Queensland botanists managed to do both. Initially, however, botanical description of the rainforest flora required the resources of more established scientists and scientific institutions than could be found in Queensland. Of particular importance was the Melbourne Herbarium, which had been established in 1853 by the Government Botanist of Victoria, Ferdinand von Mueller, and which, by the close of the nineteenth century, housed the largest and most extensive collection of botanical specimens in Australia.<sup>3</sup> Mueller collected widely during his travels, and also maintained numerous correspondents throughout Australia who regularly sent him specimens. When the port of Cardwell, the first township situated in close proximity to the tropical rainforests of North Queensland, was founded in the mid-1860s, Mueller sent a collector—John Dallachy—to work there, in anticipation of the many valuable and unknown species that he expected would be found. While Dallachy would not be Mueller's only North Queensland correspondent, he was certainly the most consistent and prolific collector in the region.

Dallachy was a Scottish gardener who had trained at Kew Gardens and had been head gardener at Haddo House at a time when 'the grounds at Haddo were noted as the finest and most extensive in Scotland... and rare plants from all over the world were cultivated, those from New Holland being a special feature'.<sup>4</sup> Like a number of others who found their way to North Queensland in the second half of the nineteenth century, Dallachy came with prior experience of the tropics: he had travelled to Australia after a period managing a coffee plantation in Ceylon. In 1849 he was appointed Curator of the Melbourne Botanic Gardens, a post he held until Mueller took over the Directorship in

1857.<sup>5</sup> From his arrival in Cardwell in 1864 until his death from fever in his tent at Herbert Vale in 1871, Dallachy ranged extensively through the largely unexplored region surrounding Cardwell. He collected in areas of rainforest that would eventually fall to timber cutters, or be cleared to make way for plantations of sugar cane and other tropical produce.

Although Dallachy and Mueller must have had a long correspondence (Mueller mentions 'thousands of letters'<sup>6</sup>), unfortunately almost none of it seems to have been preserved.<sup>7</sup> A single letter to Mueller attributed to Dallachy has been located, stored with a specimen sheet in the Melbourne Herbarium.<sup>8</sup> However slight, it offers some impression both of the conditions in which Dallachy was collecting and of the relationship between himself and Mueller:

Herbert River, November 1868.

My Dear Sir,

I was up on Mount Grahame of Saturday and returned to station last night I have inclosed a fragment of a tree Fern—the stem of the tree is from 12 to 14 feet high Clothed with dense Brown hairs at the base of the fronds the stem is rough—about 2 inches in diameter it I suppose is an *Alsophila* but think that I have not sent it to you before on the tope of the above mountain is covered with the most dense scrub and high trees some of them 150 to 200 feet in hight. I could not get to the highest Point of the mountain on account of the scrub—there are miles of it here and this mountain and scrub no white man has ever been in it but myself—I have got the *Bowenia spectabilis* in flower for you—it grows in a bundance on the tope in Scrub; I saw a tree of *Dailingia* [eds note: *Darlingia*?] a hundred feet or more in hight there was no traces in [eds note: an unknown amount of text is missing].<sup>9</sup>

Although it is, sadly, only a single and incomplete document, the letter is suggestive: it indicates the physical difficulties Dallachy faced, and hints at the sense of wonder he might have experienced as the

first European to explore such a botanically rich region. His description of the density, abundance, and extent of the vegetation reflects the belief of many early observers that the scrub was 'endless'. The letter also shows the importance of his ongoing relationship with Mueller in guiding his choices as to what to collect and, despite the unconventional spelling, suggests that his activities were shaped by careful observation and a degree of botanical knowledge.

In the absence of detailed documentary evidence, stories of Dallachy and his time in Cardwell have developed an air of mythology. While discussing the violent conflicts that occurred there between Aborigines and the white invaders in the 1860s and 1870s, Dorothy Jones writes:

John Dallachy seems to have been the only settler who could roam the swamps and the jungles with impunity. The native police were at his disposal should he need them but he never was in a position to have to call upon their assistance as he carried his own protection more dependable than any snider rifle. Concealed blacks had doubtless often watched him and their universal opinion was that he was quite mad. As such he was sacrosanct. He always wore a white panama hat on his grey head and carried a small type of gun which he used to shoot down specimens from high trees. To shoot at nothing but trees was curious enough, but to pick up a fallen leaf or berry, study it and carefully stow it in a box full of similar 'game' was convincing proof that the elderly white man was far from normal. So he was left severely alone according to the aboriginal code.<sup>10</sup>

Whatever the provenance of such an account, it does reveal the strangeness of a lone, elderly Scottish gardener quietly attempting to catalogue the plant life near Cardwell, while around him other Europeans were more concerned with the immediate requirements of survival in a new land, and Aborigines with the consequences of the invasion of their country.

Figures such as Dallachy occupy an ambiguous place in histories of coloniza-

tion. While intimately involved in the first settlement of the region, he was nonetheless at a remove from the historical processes of colonization taking place around him. Dallachy travelled alone to places no other European had seen, not with the aim of finding trails or opening up the land, but to see what was there and to bring back just a fragment of what he saw. In doing so, however, and in collecting and shipping specimens to the waiting and distant Mueller, he was in fact taking part in a process fundamental to the colonial endeavour. Through his work, he helped to construct the rainforest as an object of scientific interest and value—a notion radically alien to the Aborigines who lived there<sup>11</sup>—and enabled its plant life to be drawn into the universal classificatory framework of taxonomy, allowing it to be compared systematically with the botanical products of distant lands, and burdened with Latin binomials.

Mueller held great hopes for the results of Dallachy's endeavours. It had been Mueller's ambition throughout his career as government botanist to 'work up' the flora not just of Victoria, but of the whole of the Australian continent, and beyond to the lands of New Guinea also. North Queensland was important to this project, as it was an area that was climatically distinctive, and that was regarded in Mueller's time as supporting a foreign, Asiatic element within the flora of Australia. On 25 October 1863, before Dallachy had even reached Cardwell, Mueller wrote to a waiting correspondent:

I have a collector in the high mountain areas of northern Australia who will bring back many beautiful things, which will also be of value for comparison with the vegetation of India or the islands of the Pacific Ocean, and of which I shall be happy to send a portion to you.<sup>12</sup>

Again, in a letter in 1864 to the Munich-based botanist Carl von Martius, famous for his exploits as a young man in Brazil

and founder and editor of the *Flora brasiliensis*, Mueller wrote:

I would have liked very much to accede to your wish to sort my notes for a paper covering the whole phytogeography of Australia, if the work were not too voluminous to be completed quickly. I must reserve such a work for a later date for a communication for your venerable academy, [editors' note: Royal Bavarian Academy of Sciences] and in the meantime hope to acquire important supplementary material from the mountain ranges and jungle gorges of north-eastern Australia now accessible to my collector. Very likely that area still hides unknown palms, which are evidently sparsely represented in Australia, even though this noble family of plants reaches its southern limit here at the southern latitude of 37°30'.<sup>13</sup>

At the time he established the Melbourne Herbarium, Mueller had expressed his intention to write a universal 'Flora of Australia', and when Kew Gardens announced that such a work would be commenced, Mueller made every effort to gain authorship.<sup>14</sup> This task ultimately went to a British botanist, George Bentham, who had direct access to the most valuable collections from the eighteenth- and early nineteenth-century voyages, held at Kew and at the British Museum. However Dallachy's specimens, which were collected while the *Flora* was being compiled (a process begun in 1861), were also included, along with the rest of Mueller's extensive herbarium.<sup>15</sup> As Mueller wrote, regarding work on the *Flora of Australia*, to Bentham in 1863: 'Occasionally some novelties will come in, especially as we have a collector in N.E. Australia...'.<sup>16</sup> And 'come in' they did. Testament to Dallachy's efforts are the many specimens recorded from 'Rockingham Bay', some of which researchers believe actually came from up to 220 miles from their specified location.<sup>17</sup> Thirty species have been named for Dallachy, and thousands of sheets of his specimens are held in the Melbourne Herbarium.<sup>18</sup>

In 1870, shortly before Dallachy's death, Mueller wrote somewhat sourly to Bentham:

Mr Dallachy's plants, as you remark, are always, or at least often instructive and frequently completer than those of other collectors. But I wish to point out in justice to others, that *no one* ever in Australia enjoyed such facilities to explore a jungle district, than Mr Dallachy. He is now half a dozen years quietly, and *purposely* settled at Rockingham's Bay and his plants cost me from that district alone over 1000 pounds sterling! He has nothing in the world else to do, then [sic] to collect, as he is a kind of pensioner of my department. As he is no botanist in the true sense of the word, he incurs no loss of time in any minute examinations. Besides he is stationary at R's B., has a *cottage* to dry and keep his collections in, and commands the sea-port & the dense forest in one hours walk.

Look how I was placed for years. Sleeping under the canopy of heaven, I had to shelter myself and my plants with a bid [eds note: bit?] of light calico, and often had to carry my collections for *thousands* of miles on pack horses! Passing through a country I could only take a few specimens of any plant just as I found it at a time, while Mr Dallachy could comfortably watch the same trees for years, until he finally found flowers and fruit of most. I have ordered him to move to Cape York. Let us not *discourage amateur collectors* like Bowman, O'Shanesy &c., who first must toil for their daily bread, in cattle driving or gardening &c., & who deserve far higher praise for what they do without remuneration and under greater difficulty, than what a paid collector carries out as his daily routine work and under special Local advantages...

Mueller continued in the postscript: 'In the *thousands* of letters written to Dallachy I always directed him to what flowers & what fruits in each special wanting case to look!'.<sup>19</sup>

Without the infrastructure of settlement, basic though it was—without postal steamers, stations, tracks, huts, horses and a regular supply of writing and drying paper—Dallachy could not have undertaken the work he did. This infrastructure

allowed him, as Mueller pointed out, to collect methodically, regularly, all year round; to collect as resident not explorer, and to gain a view of the botany of the region deepened by the passing of time. As someone who worked as a paid collector and in no other capacity, Dallachy was almost unique in the early history of the botanical study of North Queensland.<sup>20</sup> The expense of his upkeep, as well as the cost of transporting specimens, was repaid by the quantity and quality of new plant species he made accessible to botanists throughout the world. Centres such as Melbourne and Kew gained their scientific authority to a considerable extent through the work of 'non-scientific' collectors such as Dallachy, whose collecting of specimens was guided and interpreted by colonial botanists with greater scientific training and access to taxonomic literature. Dallachy's collecting, enabled as it was by the process of colonization, also stands now as a record of the plant life of the region at a time when the impact of colonization was still minimal, before the spread of introduced species and the extensive clearing of land.

### Queensland's Settlement

In the late nineteenth and early twentieth centuries, there was much debate about the form that future settlement in Queensland should take. Large areas of land had been taken up as pastoral leases from the 1860s—in fact, 'by 1885 Queensland carried a greater number of cattle than any other Australian colony'.<sup>21</sup> However, liberal politicians initially saw pastoralism as a primitive and therefore temporary form of settlement that should be replaced as soon as possible by the development of agriculture and more intensive utilization and occupation of the land.<sup>22</sup> These calls for 'closer settlement' were not based on the immediate economic value of a particular type of land use so much as on a vision of morally sound and politically

stable rural communities. Debates about the form of society to be aimed for revealed that governments were by no means hoping simply to replicate the social structures of 'home' in a new land—though some aspects of the discourse about yeoman farmers seems to suggest this—but, rather, were intending to provide opportunities for material success and access to land that could not be found in Britain.<sup>23</sup> The geographically dispersed character of pastoralism, in which individuals or families amassed leasehold over large areas to the exclusion, many believed, of the 'smaller man', did not meet such moral or political criteria. Similarly, it was widely hoped that the transitory communities formed around extraction of mineral and timber wealth, however lucrative such endeavours might be, would ultimately provide the nucleus of permanent, viable agricultural settlements. Successive governments' actions, in promoting the colony of Queensland to potential immigrants from Great Britain and in regulating the use of land through the *Crown Lands Act* and other laws intended to encourage closer settlement, were directed towards realising this vision.<sup>24</sup>

However, despite the popular rhetoric of closer agricultural settlement, Glen Lewis argues that in the late nineteenth century, 'colonial agriculture barely managed to get off the ground. In 1884 Queensland cultivated less acreage per head of population than any other Australian colony. Agriculture in the colony managed to confine itself almost entirely to the South; the South's share of production between 1860 and 1885 on a quinquennial basis varied between 92 per cent and 98 per cent.'<sup>25</sup> Lewis continues:

There was no shortage of explanations for failure. High transport costs, a shortage of markets, comparative capital disadvantages, and technological difficulties were the obstacles to agricultural success. Lacking navigable rivers, let alone an efficient road and rail system, the farmer faced

insurmountable problems. When a transport network began to function creakily in the eighties the capital structure was tied to the pastoral and construction industries and, to a lesser extent, to mining... Queenslanders were also hampered by the novelties of a tropical climate. By the end of the period [i.e. 1885] the early agrarian ideals were beginning to wear thin.<sup>26</sup>

This uneven development was worsened by the uncertain financial situation of Queensland governments that, during the late nineteenth century, largely depended on borrowed overseas capital to construct public works such as railways, ports and other infrastructure. According to Donald Denoon, by 1890:

the Australasian colonies had accumulated more debts per head than anywhere else in the world... The *Bankers' Magazine*, torn between awe and alarm, calculated that the Australasian colonies had public debts of over £50 per head, Queensland leading the way with nearly £70...<sup>27</sup>

As well as operating in circumstances of sometimes crippling financial vulnerability, Queensland governments were also attempting to come to grips with an unfamiliar tropical environment. While the latter ensured that scientific examinations of plant and animal life, soils and climate would be important in informing both the Government and settlers about the varied lands encompassed by the colony, the former necessitated that Queensland's colonial botanists, and other scientific workers and societies, would provide such information with minimal financial support from the Government.

### **Walter Hill: A One-man Department of Agriculture**

The Queensland Government appointed its first colonial botanist on separation from New South Wales in 1859. Walter Hill, like Dallachy, was a Scottish gardener: Hill had trained at the Royal Botanic Gardens at Edinburgh, and held an appointment at Kew from 1843 to 1851. As well as being

Colonial Botanist, Hill was also Director of the Brisbane Botanic Gardens, Selector of Agricultural Reserves from 1863 to 1868, and in charge of the Forest Nursery Reserves from 1877 to 1881. Hill had neither the scientific ambitions nor the resources and connections enjoyed by Ferdinand von Mueller. However, as a participant in George Elphinstone Dalrymple's North-East Coast Expedition in 1873, and on later official visits to the north, he had the opportunity both to see and to collect for himself specimens of the botanical life of the rainforest. From his first encounter with the North Queensland rainforest, he maintained a great enthusiasm for it—both on account of its scientific interest and for what he regarded as its rich potential for development. While giving evidence to a Select Committee of the Queensland Parliament, he declared the Daintree his 'favourite river', and he continued wholeheartedly to promote the whole region as a site for tropical agriculture, throughout his long career in Queensland.<sup>28</sup>

As his annual reports reveal, Hill's botanical ambitions were continually frustrated by both the lack of financial support provided him by the Government and the ever-increasing demands of his job. Hill lamented bitterly the limited resources available to him in comparison to those allowed by other colonies for botanical pursuits: expenditure by the Queensland Government on the Botanic Garden and Colonial Botanist during the 1860s and 1870s had been on average £1400–£1600 per annum, compared with the Melbourne Botanic Garden's budget of £10,000–£12,000, or Adelaide's of £6050. His continuing requests went unheeded; in the inquiry surrounding the circumstances of his dismissal from the Garden, it became clear that during his term as Director and Colonial Botanist, Hill substantially subsidized his official activities from his own income.<sup>29</sup>

Alongside the Queensland Acclimatisation Society and the private network of

nurserymen and seedsmen, the Colonial Botanist, with the Brisbane Botanic Garden at his disposal, played a key role in the 1860s and 1870s in materially assisting the transformation of the Queensland landscape. According to D. A. Herbert, under the administration of Walter Hill, the Garden 'functioned as a sort of Department of Agriculture for the colony'.<sup>30</sup> The astounding quantities and varieties of plants received by and despatched from the Garden bear that assessment out. The bulk of the exchange was made up of economic plants—particularly varieties of sugar cane, tropical fruit, textiles such as jute and hemp, medicinal plants such as cinchona, and timber species. If experimental plantings proved successful, seeds or plants would be made available wherever possible to be distributed to settlers in geographically appropriate parts of the colony. Over time, indigenous Queensland species were also drawn into the networks of exchange. Queensland plants—from timber trees to indigenous grasses, from the macadamia to ferns, palms and orchids—were sought for their economic, ornamental, or curiosity value by botanic gardens and nurserymen around the world. There was also internal exchange within Queensland—shade trees and ornamental trees from the northern districts were particularly sought after for planting around Brisbane and other southern settlements, and a number were grown in the Botanic Garden itself and in Bowen Park, the garden of the Acclimatisation Society of Queensland.<sup>31</sup>

After his participation in the North-East Coast Expedition in 1873, Walter Hill's efforts towards acclimatization were aimed in particular at tropical northern Queensland.<sup>32</sup> Despite the limited governmental support he received, the work he undertook was monumental. In his Annual Reports, as well as through his personal correspondence, Hill promoted the potential of the rainforest lands for tropical horticulture: he listed coffee and cocoa,

coconuts and cassava, indigo and hemp, tropical fruits, sugar and tea and spices as all suitable for cultivation, particularly in the vicinity of the Daintree and Johnstone Rivers. As well as fanning the demand for tropical plants, he also attempted to meet it. At the height of applications for plants to be supplied by the Brisbane Botanic Gardens, in 1880, Hill recorded that:

Upwards of twenty tons weight of twenty-five varieties of sugar-cane have been distributed, and I have sent out, in compliance with applications, 12,000 plants [tropical fruit listed]... 2,000 suckers of twenty-six varieties of Pineapples; 400 Coconuts; 4,000 roots [including ginger, yam, turmeric and arrowroots]... 18,000 plants of timber trees... 2,000 ornamental trees; 200 Stag-horn ferns; 900 of Queensland trees and shrubs... also numerous packages of grass seeds...

He concluded that 'Should there be any cultivators endeavouring to introduce new economic plants who have not derived a direct benefit from the existence of the Botanic Garden, it must be owing to their not having made application for what they wanted.'<sup>33</sup>

In the longer term, Hill saw the role of the Brisbane Botanic Gardens in attending to the requirements of the North receding. He envisaged a series of managed reserves and regional botanic gardens being established in Cardwell, on the Johnstone and Daintree Rivers, and in Cairns, for the



**Figure 1.** Fern Island, Brisbane Botanic Garden, ca 1878. (Source: Courtesy Pictures Queensland.)

acclimatization and exchange of both indigenous and introduced species to and from the region.<sup>34</sup> In 1877 Hill attempted to assist that process directly. He visited Cairns to determine the site for a botanic garden there and wrote:

I took with me a most valuable collection of tropical plants selected with great care and attention, and I think it may be said without exaggeration that it exceeded both in number and value, and probably usefulness, any collection that up to the present date has left any Botanical Garden at one time. These I have planted for the present in the Custom House Reserve, Cairns, under the charge of Mr Sub-Collector Spence, to whom my thanks are due for the care and attention he has bestowed upon them.<sup>35</sup>

While there is no mention of Mr Sub-Collector Spence's success or otherwise with his intimidating horticultural responsibility, two years later Hill was complaining that despite the large number of tropical plants he had raised at the Gardens and freely sent to those who had requested them, very few were tended with sufficient care to ensure beneficial results. Again he promoted his idea of

entrusting to the willing superintendence of capable and respectable persons in the Northern districts... a special collection of seeds and plants... these persons would, I am assured, undertake the distribution of plants raised, up to a certain period, to those who applied for them for acclimatisation purposes only... there are numerous agriculturalists who have applied to me for general information, and who have signified their wish to settle on the Johnstone and Daintree rivers; both places being specially suitable for the initiation of this mode of action.<sup>36</sup>

The orderliness of Hill's vision of 'capable and respectable persons' raising and distributing plants was set against the reality of a rapidly shifting, often rootless northern population during this period. The lure of the goldfields proved too strong for small settlements such as Cardwell, which in the 1870s lost many of its citizens to promising finds further north.<sup>37</sup> Those who attempted to stay were

thwarted by the spread of disease, isolation, economic cycles of boom and bust, and the unpredictable climate—major cyclones struck Cardwell and the surrounding coastline in 1867, 1870 and 1882, each time devastating buildings, crops, ships and roads. Aborigines strongly resisted the invasion of their lands throughout North Queensland, and conflict was particularly fierce in the 1870s. And despite Hill's enthusiasm, rainforest selection had little appeal to most settlers due to the work involved in clearing the land.<sup>38</sup> It was against this backdrop that the first sugar plantation to be conceived on the soils of Far North Queensland, at Bellenden Plains near the Herbert River, failed to produce even a single harvest.<sup>39</sup>

Not only did the proper cultivation of tropical plants require order, however, it could also—in the view of Hill and others—promote it. The distribution of ornamental and shade trees to public institutions and establishments was intended, by beautifying the surroundings, to add a sense of permanency, on which a 'civilized' society could be based, in place of the often raw environment of early settlement.<sup>40</sup> In the words of the Liberal politician, Henry Jordan, 'to till the ground is properly to possess it'.<sup>41</sup> When proposing his system of reserves or 'botanic gardens', to be included whenever a new township was surveyed, Hill declared that by leaving some 'noble forest trees' standing and by cultivating the ground, 'no great period would elapse before there would really be afforded the results for which such reserves must be intended—the means of recreation, instruction, and health of the people'.<sup>42</sup>

### **Frederick Manson Bailey and the Queensland Flora**

The focus on economic botany was to continue and deepen after Hill's retirement, through the work of Frederick Manson Bailey. In evidence given before the Select



Committee into Forest Conservancy in 1875, six years before Bailey was appointed to the post of colonial botanist, the eminent Queensland scientist Joseph Bancroft described him as

the only botanist here who is really acquainted with our *flora*; and to whom has been referred all difficult points for the last ten years. If there was any new plant it always came into his hands before any opinion was given; and he would work it up and find out the name, or something about it, and the information would all be supplied by Mr Bailey.<sup>43</sup>

Bancroft's description of Bailey served to highlight Walter Hill's comparative lack of competence in taxonomic botany. Certainly, Bailey reinvigorated the position of colonial botanist, to which he was appointed in 1881, with an enthusiasm for taxonomic botany that eventually led him to publish the six-volume *Queensland Flora*, and even to vie with Mueller over authorship of a supplement to Bentham's *Flora Australiensis*.<sup>44</sup> While Hill's time had been primarily taken up with large-scale exchanges of seeds, cuttings and plants, Bailey's main focus was on maintaining a steady flow of publications. He published his work in a range of forums: privately at his own expense, through the (often unreliable) Government Printer, and via the periodicals of scientific organizations such as the Linnean Society of New South Wales and the Royal Societies of Queensland and Tasmania.<sup>45</sup> Bailey's great ambition was to systematize the diverse and extensive flora of Queensland. While the majority of his publications were concerned with taxonomic botany, he also offered general advice on horticulture and on the study of botany as a popular pastime. During his time as colonial botanist he not only continued to expand the Queensland Herbarium, mostly on the basis of specimens received from correspondents throughout the colony, but he also set up and maintained a Botanic Library and a Museum of Economic Botany.

Bailey came from a family of botanists and nurserymen, and was trained in that work from a young age. As a child he moved from England to South Australia, where in 1839 his father briefly held the position of Government Botanist and Curator of the Botanic Gardens before entering the nursery trade. Bailey later took part in establishing the Hackney Nursery, a family business in Adelaide and, on moving to Brisbane in 1861, opened an unsuccessful seed store and began to trade in botanical specimens with British and other foreign botanical museums and herbaria. Although he did not gain an official position until 1875, Bailey collected botanical specimens around Brisbane from the time of his arrival, and undertook his first collecting trip to North Queensland in 1873. As early as 1874 he funded the publication of a monograph on the Queensland ferns, a topic for which he had a particular passion, shared at that time by other members of the Queensland public.<sup>46</sup> He returned to the north again in 1877, to explore Cairns and the ranges around the Barron River. It was probably during these two early expeditions that Bailey made contact with a number of local residents with whom he later corresponded, some of whom supplied him with specimens for many years to come.<sup>47</sup>

One of Bailey's first tasks as colonial botanist was to construct exhibits of Queensland timber, first for the Colonial and Indian Exhibition held in London in 1886 and then, in 1888, for the Centennial International Exhibition in Melbourne. For the latter, he collected, prepared and displayed almost 600 specimens of Queensland woods, which he described as 'probably the most extensive collection of woods ever exhibited from a single colony'.<sup>48</sup> Bailey suggested that at least 300 species of Queensland woods probably remained undescribed, and that the total range of timber in the colony might equal that found in India, and certainly exceeded

any other colony in Australia. On this basis, he wrote:

I would urge upon the Government the desirability of devoting some small vote towards the expense of carrying on the work of collecting and preparing as full a collection as possible of our indigenous woods... and also that experiments might be carried out to prove their adaptability for various kinds of work.<sup>49</sup>

Many of the unknown species of wood, Bailey argued, were to be found in the northern scrubs, an area still largely unexplored.

While Bailey expressed both scientific curiosity and aesthetic appreciation for the natural world, the fundamental force driving his work was a strong sense of the importance of the link between human and plant life. Bailey wrote:

No other branch of natural history is so essential to man's existence. From plants man obtained his earliest food, material for his habitation, his utensils, as well as weapons and materia medica. And now in our advanced state of civilisation, if one looks into the matter, it will be seen that nearly all the necessaries of life are derived from the same source—the vegetable kingdom.<sup>50</sup>

It was the breadth of this connection between plants and people that Bailey attempted to highlight in the Museum of Economic Botany. The Museum primarily displayed the indigenous plants of Queensland that had been found useful for production of timber or edible fruits, oils and gums, grasses and cereals, medicinal products, fibres and dyes, and so on. The knowledge of which plants were edible, which provided useful fibres, and which had medicinal properties was often based on Aboriginal usage of plants, a topic on which Bailey always sought to gain information from his many correspondents.

In 1889 Bailey took part in what he considered to be his most important collecting trip: the Bellenden Ker Expedition with Archibald Meston. The Bellenden Ker Expedition's primary goal was scientific, and participation in the expedition pro-

vided Bailey with his most extensive opportunity to collect and observe at first hand the flora of North Queensland. Meston, Bailey, the Queensland Museum's zoological collector Mr Broadbent, and a group of Pacific Islanders, left Cairns on 14 June 1889 and ascended the Bellenden-Ker Range over the course of about a week. They followed Aboriginal paths some of the way, and at times utilized Aboriginal campsites for their own camping grounds.<sup>51</sup> At other times the group hacked their way, first through lawyer-vine and stinging-tree and then, at altitudes above 2000 feet, through 'a thick wiry undergrowth which places track-cutting outside the pale of amusement'.<sup>52</sup> After ascending to the central peak, Meston reported that 'Mr Bailey thought we had collected all, or nearly all, of the plants flowering or fruiting at that time of year...'

During their travels Meston made an effort to find out the Aboriginal names for the geographical features they encountered, and in his report 'respectfully suggest[ed] their adoption, not only for unnamed places, but to supersede many of the utterly meaningless names already conferred by surveyors and local residents'.<sup>53</sup> Bailey followed his advice and chose to use Aboriginal words for the specific names of a number of the new species that he described. However, as Bailey did not know the words that referred to the plants themselves, he instead attached to them the geographical names published by Meston. He named one new species *Melicope choooreechillum*, from the Aboriginal name for Bartle Frere, and another *Leptospermum wooroonoran*, from the Aboriginal name for Bellenden-Ker; both names remain in use today.<sup>54</sup> Meston similarly spiced his own report with the scientific names of plants identified by Bailey—which included 'splendid masses of *Bulbophyllum Baileyi* with unusually large leaves'.<sup>55</sup> In his Annual Report for 1890, Bailey stated:

My trip to the Bellenden-Ker Range brought a very large addition to the herbarium of specimens of indigenous plants. Up to the present I find that about sixty of the species are new to science; this of course is very satisfactory, and more than one could well have expected to have obtained considering the difficulty of preserving and carrying specimens in so rough a country.<sup>56</sup>

Twenty-five of these new species were published immediately with full descriptions as an appendix to the report of the expedition.<sup>57</sup> A further nine vascular species that required more extensive determination were jointly authored with Ferdinand von Mueller and these appeared with brief descriptions, along with twenty-two new species of fungi, mosses and liverworts named (though without description) by other botanists, in Bailey's Annual Report of 1890.<sup>58</sup> The lichens were forwarded to the Swiss expert Jean Müller, and in the Annual Report of 1891 a Final Supplement was provided to the Report of the Botany of the Bellenden-Ker Expedition in which five new species of lichen were named by Müller, again without descriptions, bringing the total of new species named from specimens collected on the Bellenden-Ker expedition to sixty-one.<sup>59</sup> In 1893 Bailey was still seeking assistance to determine some specimens he had collected on the expedition.<sup>60</sup>

As important as Bailey's own collecting expeditions to North Queensland were the correspondents he maintained there. In the 1880s Bailey received numerous specimens—particularly of orchids—from W. R. Kefford from the Johnstone River and from J. W. R. Stuart, a surveyor who collected as he worked in the vicinity of Herberton, as well as from many other occasional correspondents. Phenomena such as new growth associated with continuing heavy rains or outbreaks of pest species could lead to Bailey being inundated with specimens to examine and where possible to identify.<sup>61</sup> Bailey also received occasional specimens from the

northern goldfields, including from the renowned prospector, explorer and bushman, Christie Palmerston.<sup>62</sup> In the 1890s, Bailey maintained a regular correspondence (often receiving a number of parcels of specimens each month) with Ebenezer Cowley, overseer at the Kamerunga State Nursery near the Barron Falls, who collected prolifically, methodically and with intense curiosity in the district around Cairns and north to the Daintree.<sup>63</sup> While Bailey sometimes had to complain of the damaged or incomplete state in which specimens reached him, it is clear from their correspondence that Cowley was—under Bailey's continual guidance—an attentive and persistent observer with some knowledge of botany.

Bailey publicly recorded his gratitude to his many correspondents.<sup>64</sup> As well as praising them, however, he also emphasized the professional difficulties caused by his having to rely on the often ad hoc work of unpaid amateur collectors for the majority of his new botanic materials:

From a few the specimens thus received, and the notes by which they are accompanied, are quite sufficient for determination, or, if new, to allow of a full description being drawn up for publication. By far the greater number of correspondents, however, seem to think that it is quite sufficient to forward fruit picked up from under the trees, the only effect of which is to cause a waste of time in useless conjecture as to the plant from which they fell being an undescribed species or not. Specimens of this nature are being constantly received from Northern scrubs, where a large proportion of the trees are but little understood. Even the timbers of these localities which are in use are in many cases unknown scientifically, and one often finds glowing accounts of their value, as well as the excellency of the indigenous fruits, in the newspapers. It is time, therefore, that some careful, intelligent collecting was carried out. This would be required to be done at least twice during the year, so that both the flowers and the fruit would be available for examination. Large sums of money are voted annually for developing

the mineral wealth of the Colony without a murmur, surely, then, some small vote might be afforded for making known the riches of the Colony's vegetation, which is of much more importance to man's well-being!<sup>65</sup>

Bailey's pleas for governmental assistance were to continue to be largely ignored. Queensland's colonial scientists worked not only in a society that did not value abstract thought or inquiry, but also in an economy that was often in crisis. During the economic depression of the 1890s, for instance, the budget for education in Queensland was reduced by 12.5%,<sup>66</sup> and in the same period Bailey's position as Colonial Botanist was abolished for four months, during which he continued to work without pay.<sup>67</sup> He wrote at this time to Ebenezer Cowley: 'I have faithfully done my work for the colony and been shamefully treated by the Government. No man in my position could expect that they would be turned out of office at a moment's notice without a pension.'<sup>68</sup> Bailey was eventually reinstated, in large part because of the public support he received from his many correspondents, but his pay was cut from £350 to £200 per annum.<sup>69</sup>

It was largely through work outside office hours that Bailey produced his *Queensland Flora*. This was published in seven volumes (six volumes and an index), between 1899 and 1905. The work was based primarily on Bentham's *Flora Australiensis* but also brought together the scattered taxonomic publications of Queensland species made by Ferdinand von Mueller and Bailey himself. It included over 250 species of Queensland plants authored by Bailey. Further, Bailey wrote that 'a considerable amount of trouble has been taken in obtaining the correct aboriginal names, and in all instances where such are recorded the locality and authority for same are given'. He noted elsewhere that in many regions

the Aboriginal names were of much utility for botanical collectors, who were often assisted by Aboriginal guides.<sup>70</sup> Bailey also listed any known economic properties and Aboriginal usage of the plants. The work contained both indigenous and naturalized species. In a letter to the Department of Agriculture in Sydney, Bailey wrote:

I think it of as much importance that these introductions should be given, as the really indigenous ones, for many are so common that, except by the botanist, they are thought to be indigenous. You will remember the plate of 'Queensland Wild Flowers' given with the Town and Country Journal of 1889, out of the six plants illustrated, three were introductions.<sup>71</sup>

He concluded: 'I have borne in mind throughout that the work is principally intended for Queenslanders, but, at the same time, I fully believe there will be a demand for copies beyond Australia'.<sup>72</sup> His comment was prescient, as by the early twentieth century, the flora of Queensland had begun to attract the attention of botanists in Europe and the United States.<sup>73</sup>

Other than bringing together into a single publication Bailey's own taxonomic work, and providing indigenous names for species where available, the *Queensland Flora* was almost entirely unoriginal. It replicated exactly the arrangement and style of Bentham's *Flora Australiensis* and reproduced Bentham's notes 'either entire or slightly altered to agree with our present knowledge'. The *Flora* was an act of deference by Bailey to those whom he clearly saw as the leading lights of botanical science; it was also an attempt to locate himself amongst them.

As well as producing the *Queensland Flora*, Bailey, driven by his desire to assist members of the public interested in the study of botany, also published a number of more generally accessible works. The *Lithograms of the Ferns of Queensland* (1892) was prepared not for the 'scientific

pteridologist. It is for that far more numerous class, lovers and cultivators of our indigenous ferns, who, while having a desire for their names, find a difficulty in determining them from published descriptions, be such ever so plain and devoid of technicalities.<sup>74</sup> *A Companion for the Queensland Student of Plant Life* (1893, 1897) and *Botany Abridged* (1894) were both published as textbooks suitable for use in Queensland and were, to Bailey's satisfaction, utilized in schools. The *Comprehensive Catalogue of Queensland Plants both Indigenous and Naturalised* (1890, 1909) contained numerous figures drawn by Bailey's grandson and assistant C. T. White, as well as coloured plates of some rare and interesting species, and was composed for those with 'an eye for the beauties of Flora's Kingdom'.<sup>75</sup>

While Frederick Manson Bailey's efforts as an enthusiastic promoter of the study of botany in Queensland cannot be doubted, his taxonomic work has been greatly overshadowed by that of his contemporary, Ferdinand von Mueller. Nonetheless, of the descriptions of plants published by Bailey, 166 still stand today as Bailey originally published them, while a further 117 names have been transferred to other genera due to subsequent changes in classification, but continue to stand with Bailey as the original author. In total, 283 names for which Bailey was an author continue to be currently accepted.<sup>76</sup> Bailey was a committed and competent scientific worker, who enjoyed minimal governmental support and limited scientific resources, and who found himself contemporary to one of the most prodigious botanists in Australia's history. Bailey's work, with the assistance of his collectors, contributed to the massive output of von Mueller, and beyond that stands in its own right as a valuable early contribution to scientific knowledge of the plant life of a region which, a century later, would still be known only incompletely.

While Bailey had taken the opportunity to travel through the rainforest and to see it at first hand on collecting expeditions, his primary contact with the 'Northern scrubs' came through the specimens of plants sent to him in Brisbane. A number of the plants he studied were described from specimens grown from seeds or cuttings in the Bowen Park Acclimatisation Gardens, rather than from observations in the field. The distance from Brisbane to the north, a family of six children to support and meagre government funding all limited his options for field research. In his official and personal writings, Bailey described the North Queensland rainforest as a rich and little-explored source of new species: of beautiful ferns, fungi and orchids, of valuable and unknown timber species, of shade and ornamental trees and fruits with potential for cultivation. Bailey's interest in the rainforests—that 'most interesting locality', as he wrote to Cowley<sup>77</sup>—was primarily economic, not however in the sense of being narrowly concerned with profits, but rather



38. *GARCINIA MESTONI*, Bail.  
(a) Leaves, (b) fruit, (c) calyx, (d) the eight stigmatic lobes, (e) seed with its integument. All nat. size.

**Figure 2.** *Garcinia Mestoni*, 'Meston's Mangosteen', collected by Archibald Meston on the Bellenden-Ker Expedition. Drawn by C. T. White. (Source: F. M. Bailey, *Comprehensive Catalogue of Queensland Plants*.)

of being focused on human well-being.<sup>78</sup> His view of the value of the rainforests encompassed the wide range of human needs they could meet: he saw the diversity of the rainforest environment as corresponding to the diversity of human industry and interest. This was reflected in his continual attempts to draw attention to the range of uses of indigenous plants by both Aborigines and settlers. Through his often brief and scattered notes on plant usage included in the *Queensland Flora* and other writings, a picture emerges of the rainforest as a lived-in environment, a region that has for a long time met all the needs of its Aboriginal inhabitants. While, like Hill, Bailey was certainly interested in tropical horticulture, he had a fascination for the potential of the indigenous flora that far outshone that of his predecessor. It was a view that perhaps reflected his religious beliefs—in his own words he ‘saw in all nature the work of an Almighty hand’.<sup>79</sup> In this view, Bailey stood firmly in a long line of natural historians who viewed ‘Nature [as] an order expressive of God’s kindness toward his creatures, and especially toward man, for whom the creation primarily exists’.<sup>80</sup>

### Conclusions

The accounts and reports of the Queensland colonial botanists were shaped above all by the distance between the north and the south—whether from the Barron River to Brisbane, or from Cardwell to Melbourne. Over the second half of the nineteenth century, particularly as the gold rushes attracted increasing numbers of people to the northern districts, this distance was gradually bridged by postal steamers, telegraphs and the expansion of settlement and infrastructure within North Queensland itself. However, opportunities for botanists to work in and write from direct experience of North Queensland continued to be limited. What knowledge

colonial botanists held of the region was largely refracted through the work of their North Queensland-based collectors. While the collectors may have written about what they saw around them, on the whole they were not systematic or trained observers. They were confronted with a complex and challenging physical and social environment, and their work was shaped by the circumstances of early settlement. While the official correspondence and writings of the colonial botanists can be accessed to varying degrees, most of the letters written by their collectors have not been preserved. In examining what can be found of the correspondence between Mueller and Dallachy, or Bailey and Cowley, essentially only half of a vibrant two-way conversation is being heard.

The Queensland colonial botanists were only precariously supported by the government. Their own official writings must, therefore, be read with the awareness that such writings occupied a place on a continually moving spectrum between objective report and desperate plea. While Walter Hill held great hopes for the agricultural future of Queensland, and the tropical north in particular, the sheer quantity of plants transported during his tenure from the Brisbane Botanic Garden to the northern ports did not translate quickly or simply into a landscape transformed to tropical agriculture. While acclimatizers such as Hill are now most often remembered for their introductions that flourished too well and spread as uncontrollable and damaging weeds, an even more common result of their work, though one less evident now, was the failure of introduced plants to survive at all in a new environment.<sup>81</sup> Their many failures were one of the reasons why such massive quantities and such a wide range of species and varieties were exchanged and experimented with. Similarly, Bailey’s assertions of the importance and value of his work to the colony of Queensland were made in the

face of government indifference and, sometimes, government hostility; in his later years, his annual reports became increasingly shorter and more formulaic, perhaps as he succumbed to the realization that his work would not receive the understanding or support from the Government that he felt it deserved.

The colonial botanists worked at the forefront of the processes of settlement, and attempted to both understand and to transform the lands they encountered. As Dunlap writes:

The settlers destroyed and recreated, appreciated the beauties of the land, and sought to bring it closer to their own ideal, and they did it on a grand scale... The settlers saw all this as the march of civilization, but that considerably overstates the orderliness of the process. It was a frantic rush.<sup>82</sup>

The orderliness required by the careful, methodical practices of botanical science was often lost in that rush.

By the early twentieth century, the Queensland Department of Agriculture, in which Bailey remained until his death in 1915, increasingly employed a range of specialists. In 1900 the Department consulted experts in viticulture, fruit culture, coffee-growing, tobacco-growing and other fields of agriculture. The days of the generalist, when Walter Hill could form a one-person Department of Agriculture based at the Brisbane Botanic Gardens, were gone.<sup>83</sup> The increasing institutionalization and specialization of science, the shift of focus to experimental rather than descriptive botany, and the growing historical distance from early settlement of the region, combined to transform the ways in which the North Queensland rainforests would be approached and understood by scientists in the twentieth century.

The most fundamental changes, however, would not be institutional but conceptual. The work of the colonial botanists was based on the practices and worldview of taxonomy. As Dunlap writes:

'They saw the world around them as made up of separate parts—the various species—interacting on the apparently neutral backdrop of the land by processes that could be understood by observation.'<sup>84</sup> This view of nature fitted closely the early requirements of colonization. However the sometimes destructive and unexpected consequences of these efforts to remake the natural world would, in the first half of the twentieth century, play an important role in the emergence of ecological science, and would lead to an investigation of the rainforests that went beyond simple observation and commonsense interpretation. Although taxonomy would remain important to this effort, it would lose its place as the primary framework for understanding the rainforests.

## References

1. A. W. Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900–1900* (Cambridge, 1986).
2. The term as I am using it is not simply a descriptor for a botanist of the colonial period, but rather 'Colonial Botanist' or 'Government Botanist' was the title of an official scientific appointment of colonial or state governments in Australia. In order to avoid floating capitals, however, I shall use the lowercase form except when doing otherwise seems strictly necessary.
3. Mueller was Government Botanist of Victoria from 1853 to 1896 and Director of Melbourne's Botanic Garden from 1857 to 1873. R.W. Home *et al.* (eds), *Regardsfully Yours: Selected Correspondence of Ferdinand von Mueller, Vol. 1* (New York, 1998), p. 9.
4. D. Jones, *Cardwell Shire Story* (Brisbane, 1961), p. 89.
5. Home *et al.*, *Regardsfully Yours, Vol. 1*, p. 34.
6. F. von Mueller to G. Bentham, 20 March 1870; Home *et al.*, *Regardsfully Yours, Vol. 2*, p. 535.
7. Much of Mueller's correspondence was lost or destroyed after his death; Home *et al.*, *Regardsfully Yours, Vol. 1*, pp. 38–45.
8. Home *et al.*, *Regardsfully Yours, Vol. 2*, p. 11.
9. The letter was attributed to Dallachy by the editors, as Mueller annotated the letter 'Alsoiphila Woollsii' and later described that

- species as discovered by Dallachy at Mt Graham. *Ibid.*, pp. 479–80.
10. Jones, *Cardwell Shire Story*, p. 93.
  11. This point also comes through clearly in Lumholtz's description of his time collecting zoological specimens in North Queensland. C. Lumholtz, *Among Cannibals: Account of Four Years Travels in Australia, and of Camp Life with the Aborigines of Queensland* (Sussex, 1979). Facsimile reprint of 1st edn, London, 1889.
  12. F. Mueller to E. Fenzl, 25 October, 1863; in Home *et al.*, *Regardfully Yours*, Vol. 2, pp. 223–224. Mueller's usage of the term 'India' in this context may be read as referring not only to India proper but to south-east Asia more broadly, including Indonesia, which was often described as the 'Indies' during this period.
  13. F. Mueller to Carl von Martius, 25 March 1864; *ibid.*, pp. 250–251.
  14. J. B. Webb, *The Botanical Endeavour: Journey towards a Flora of Australia* (Chipping Norton, 2003), p. 236.
  15. Home *et al.*, *Regardfully Yours*, Vol. 2, pp. 21–22.
  16. *Ibid.*, p. 189.
  17. S. T. Blake, 'Some Pioneers in Plant Exploration and Classification', *Proceedings of the Royal Society of Queensland*, 66 (1954), 13.
  18. Jones, *Cardwell Shire Story*, p. 90.
  19. F. Mueller to G. Bentham, 5 February 1866; in Home *et al.*, *Regardfully Yours*, Vol. 2, pp. 532–535.
  20. Certainly, the Queensland colonial botanists could not provide that sort of support for any of their collectors.
  21. G. Lewis, *A History of the Ports of Queensland: A Study in Economic Nationalism* (St Lucia, 1973), p. 25.
  22. W. H. Richmond, 'Government and Economic Development in Queensland 1883–1914: A Study of Policy Making,' PhD thesis, University of Queensland, 1987, pp. 25–27. While this view came in and out of favour, it continued to be reiterated by Queensland politicians into the twentieth century. See *ibid.*, p. 70, for example.
  23. G. Lewis, *A History of the Ports of Queensland*, pp. 30–31.
  24. W. H. Richmond notes that 'There was a high degree of consensus among political groupings about both the ends and means of immigration policy', which was primarily to enable settlement of land by 'yeoman farmers and their families, settlement at this time still being conceived largely in terms of the development of agriculture'. However, the degree of enthusiasm for promoting European immigration proved to be highly vulnerable to swings in the labour market caused by sporadic economic depression. Richmond, 'Government and Economic Development in Queensland', pp. 115–123.
  25. Lewis, *A History of the Ports of Queensland*, pp. 25–26.
  26. *Ibid.*, p. 26.
  27. D. Denoon, *Settler Capitalism: The Dynamics of Dependent Development in the Southern Hemisphere* (Oxford, 1983), p. 52.
  28. 'Report from the Select Committee on Forest Conservancy; together with the Proceedings of the Committee and the Minutes of Evidence', Queensland Legislative Assembly Votes and Proceedings (hereafter V&P), 1875, Vol. 2, p. 1253.
  29. 'Mr Walter Hill, Late Curator of the Botanic Gardens, Brisbane. (Papers Relating to Charges Against)', V&P, 1881, Vol. 2, pp. 945–946.
  30. D. A. Herbert, 'A Story of Queensland's Scientific Achievement, 1859–1959', *Proceedings of the Royal Society of Queensland*, 72(1) (1959), 6.
  31. F. M. Bailey, *Catalogue of Plants in the Two Metropolitan Gardens: The Brisbane Botanic Garden and Bowen Park* (The Garden of the Queensland Acclimatisation Society) (Brisbane, 1885).
  32. In reports from the 1860s, Hill makes little mention of North Queensland and almost none of particular localities there. However, from the early 1870s Hill enthusiastically promotes the virtues of the Johnstone and Daintree Rivers, Cairns, Cardwell, and Port Douglas for tropical agriculture.
  33. Hill, 'Brisbane Botanic Gardens. (Report from the Director)', V&P, 1880, Vol. 2, p. 1292.
  34. Hill, 'Report on the Brisbane Botanic Gardens', V&P, 1875, p. 1199.
  35. Hill, 'Report on the Brisbane Botanic Gardens', V&P, 1877, Vol. 3, p. 986.
  36. Hill, 'Report on the Brisbane Botanic Garden', V&P, 1879, Vol. 2, p. 975.
  37. Jones, *Cardwell Shire Story*, p. 139.
  38. T. G. Birtle, 'A Survey of Land Use, Settlement and Society in the Atherton-Evelyn District, 1880–1914', MA thesis, University of Sydney, 1967, p. 131.
  39. Jones, *Cardwell Shire Story*, p. 112.
  40. See Hill, 'Report on the Brisbane Botanic Gardens', 1873, p. 1322; and Hill, 'Brisbane



- Botanic Gardens. (Report from Director)', 1880, p. 1292.
41. Henry Jordan, quoted in Richmond, 'Government and Economic Development in Queensland', p. 26.
  42. Hill, 'Report on the Brisbane Botanic Gardens', V&P, 1874, Vol. 2, p. 868.
  43. 'Report from the Select Committee on Forest Conservancy', p. 1246.
  44. Gail Clements, 'Colonial Science: F. M. Bailey and the Proposed Supplement to Flora Australiensis', *Historical Records of Australian Science*, 12 (2) (1998), 149–162.
  45. For a bibliography of Bailey's published writings, see *Proceedings of the Royal Society of Queensland*, 28 (1916), 7–10.
  46. His work on algae and fungi, about which he was equally enthusiastic, never sold as well.
  47. Biographical details from C. T. White, 'F. M. Bailey: His Life and Work', *Proceedings of the Royal Society of Queensland*, 61(8) (1949), 105–114; C. T. White, 'The Bailey Family and Its Place in the Botanical History of Australia', *Journal of the Royal Historical Society of Queensland*, 3 (1945), 362–368; and T. Harvey Johnston, 'Presidential Address', *Proceedings of the Royal Society of Queensland*, 28 (1916), 3–10.
  48. Bailey to Undersecretary for Agriculture, V&P, 1888, Vol. 3, p. 779.
  49. Bailey to Undersecretary for Agriculture, V&P, 1889, Vol. 4, p. 453.
  50. Bailey, 'Report of the Colonial Botanist', V&P, 1892, Vol. 4, p. 617.
  51. A. Meston, Report on the Government Scientific Expedition to the Bellenden-Ker Range (Wooroonooran), North Queensland (Brisbane, 1889), p. 2.
  52. *Ibid.*, p. 3.
  53. *Ibid.*, p. 2.
  54. Bailey, *A Synopsis of the Queensland Flora, containing both Phaenogamous and Cryptogamous Plants*, Vol. 3 (Brisbane, 1890), p. 27. For current usage see the Australian Plant Name Index, available at <http://www.anbg.gov.au/cpbr/databases/apni.html>, accessed (Date)
  55. Meston, 'Report', p. 2.
  56. Bailey, 'Annual Report, Colonial Botanist', V&P, 1890, p. 749.
  57. Bailey, 'Report of the Botany of the Bellenden-Ker Expedition', *Annual Report of the Department of Agriculture for the Year 1889–1890* (Brisbane, 1890), pp. 27–80. Almost all these specific names are still accepted.
  58. Bailey, 'Annual Report, Colonial Botanist', V&P, 1890, Vol. 3, pp. 751–752. The botanists consulted were Franz Stephani on liverworts, V. F. Brotherus and Carl Müller on mosses, and Mordecai Cooke on fungi.
  59. Bailey to Undersecretary for Agriculture, V&P, 1891, Vol. 4, pp. 639–640.
  60. Bailey to J. H. Maiden, Letterbooks of Frederick Manson Bailey [hereafter LFMB], held in the Queensland Herbarium Library, 15 May 1893, p. 412.
  61. Bailey to Undersecretary for Agriculture, V&P, 1891, Vol. 4, p. 638.
  62. Bailey to J. H. Maiden, LFMB, 15 May 1893, p. 412.
  63. Their correspondence, some of which is legible, is found in Bailey's letterbooks, held on microfiche at the Queensland Herbarium Library. Unfortunately, it seems that the more excited Bailey got, the more difficult – often impossible – it is to read his handwriting. The formulaic official correspondence is quite often legible, the more personal and passionate correspondence usually descends very quickly into illegibility.
  64. Bailey, 'Report of the Colonial Botanist', V&P, 1892, Vol. 4, pp. 616–617.
  65. *Ibid.*, p. 617.
  66. M. Thomas, *A Place of Light and Learning: The University of Queensland's First Seventy-five Years* (St Lucia, 1985), p. 10.
  67. Bailey, 'Report of the Colonial Botanist', V&P, 1894, Vol. 3, p. 1499.
  68. Bailey to Cowley, LFMB, Book 2, Sheet 5, n.d., 1893, p. 523.
  69. LFMB, Book 2, Sheet 5, 6 January 1894, p. 593.
  70. Bailey, *Comprehensive Catalogue of Queensland Plants*, p. 9.
  71. Bailey to Mr Turner, Department of Agriculture, Sydney, LFMB, 7 March 1893, Book 2, No. 7, p. 337.
  72. Bailey, 'Report of the Colonial Botanist', V&P, 1899, Vol. 2, p. 603.
  73. A. D. Chapman, 'Domin and Dane in Java and Australia 1909–1910', in P. S. Short (ed.), *History of Systematic Botany in Australia: Proceedings of a Symposium held at the University of Melbourne, 25–27 May 1988* (Melbourne, 1990), pp. 159–163.
  74. F. M. Bailey, *Lithograms of the Ferns of Queensland* (Brisbane, 1892), p. 3.
  75. Bailey, *Comprehensive Catalogue of Queensland Plants*, p. 15.
  76. I am grateful to Laurence Jessup, principal botanist of the Queensland Herbarium, for his assistance in determining Bailey's continuing taxonomic legacy.

77. Bailey to E. Cowley, LFMB, Book 2, Sheet 5, 14 November, 1894, 'Hoping to receive further specimens from your most interesting locality'; p. 861.
78. See Donald Worster, *Nature's Economy: A History of Ecological Ideas*, 2nd edn (Cambridge, 1994), p. 37, for an examination of the etymology of 'oeconomy' that traces its use through the sense of 'household management', 'political administration of all the resources of a community' and 'divine dispensation' to 'nature's oeconomy'.
79. C. T. White, 'F. M. Bailey: His Life and Work', p. 114.
80. Worster, *Nature's Economy*, p. 44. See also Janet Browne, *The Secular Ark: Studies in the History of Biogeography* (New Haven, 1983), p. 17.
81. T. R. Dunlap, *Nature and the English Diaspora: Environment and History in the United States, Canada, Australia and New Zealand* (Cambridge, 1999), pp. 55, 57.
82. *Ibid.*, p. 46.
83. 'Annual Report of the Department of Agriculture, 1900', V&P, 1900, Vol. 2, p. 727. This was a process that occurred not just within Queensland but is identified by Dunlap as a widespread shift. According to Dunlap, increasing specialization in the late nineteenth century was the result of the accumulation of information and the development of new theories and research methods. Dunlap, *Nature and the English Diaspora*, p. 94.
84. Dunlap, *Nature and the English Diaspora*, p. 87.