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# Nineteenth-Century Museums and the Shaping of Disciplines: Potentialities and Limitations at Kew's Museum of Economic Botany

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Nineteenth-century museums have long been recognized as sites for the formation of a range of disciplines from archaeology to art history. This formation process occurred, more often than not, in advance of attempts by universities to establish disciplinary boundaries and conventions. Taking the example of the Museum of Economic Botany at the Royal Botanic Gardens, Kew, this article examines the process by which the field of knowledge known as economic botany was rendered as a discipline at Kew from the mid-nineteenth century. But as well as demonstrating the potential of museums to undertake such epistemological acts, by following the life of a particular object — the Tasmanian Timber Trophy — what also becomes clear are the limits of museums' disciplinary authority.

**KEYWORDS** economic botany, museum, discipline, international exhibitions, Kew Gardens, Tasmanian Timber Trophy

'Economic Botany', wrote Edmund Dixon in *Household Words* in 1856, 'has been totally neglected as a branch of popular education'.<sup>1</sup> He went on: 'Young gentlemen destined to travel [...] would find it just as useful to be able to recognize the foliage of the teak and mahogany-trees, the berry of the coffee, or the stem of the Peruvian bark.'<sup>2</sup> Dickens's *Household Words*, a periodical ever-sensitive to the preoccupations of its time and place, had hit on a new focus of institutional and public interest. At the time the article was written, the Museum of Economic Botany at the Royal Botanic Gardens, Kew, had been open for nine years and the term 'economic botany' was in wide circulation in a new, state-funded context which had particular implications for botanic gardens, herbaria, and museums.

This short extract from Dixon's article contains a number of themes which became increasingly pertinent to the field of economic botany during the

nineteenth century: educational reform, in which subjects like economic botany were to appear on school curricula; the importance of botanical knowledge to explorers, colonizers, and settlers; and utilitarian attitudes to scientific knowledge. It is the Museum of Economic Botany which lies at the heart of the article's subject matter, however, and in introducing it, Dixon introduced another key theme — the role of the museum in public education.

The economic-botanical knowledge produced in the Museum at Kew was described by Dixon using the example of the newly 'discovered' Paraguayan tea, maté: 'Economic Botany tells us whither to send for it, presents us with a woodcut of the foliage, and exhibits to us maté cups and tubes, used in drinking the infusion.'<sup>3</sup> So the display, with its botanical specimens accompanied by textual inscriptions, illustrations, and ethnographic artefacts, furnished the botanist, the grower, the importer, the retailer, and the general public with the botanical, geographical, commercial, and cultural knowledge necessary to translate a hitherto unknown South American shrub into an imperial opportunity.

The advantage of knowledge acquired in a museum was one of scientific authority; in the Museum of Economic Botany merchants might find 'what hitherto they had often sought in vain — at least a truthful clue to, and some reliable information respecting, the raw materials used or useable in their respective trades'. The Kew Museum itself, on this view, was ostensibly impartial and disinterested; its role was to disseminate knowledge whereas previously knowledge on useful plants had been jealously guarded by those in possession of it. Thus, the Museum, in making its knowledge available to 'all the world', took a stand against 'the aggressions and intolerance of all sorts of selfish mystification and humbug'.<sup>4</sup>

The *Household Words* article introduced another feature of the Museum of Economic Botany, one which may come as a surprise to early twenty-first-century readers. It was a surprisingly interactive space in the way it appealed to the visitor to provide 'missing' knowledge and specimens. The sense one receives is of a science still in its infancy, and of a 'still adolescent' museum,<sup>5</sup> acting as both a space of knowledge exchange and a dynamic site of knowledge production. Knowledge deficits co-existed alongside knowledge narratives in the authoritative context of the Museum. It articulated a structure of knowledge in which gaps had their place like boxes to be filled with the 'right' kind of knowledge — knowledge 'of which we should yet have remained in utter ignorance but for the formation of this garden and museum'. And it is with 'this museum' — this 'happy Hookerian idea'<sup>6</sup> — that this article is concerned.

Like Dixon, I consider economic botany in the nineteenth century as a field of knowledge promoted as a means of furthering imperial prosperity and of creating an imperial citizenry. At its core is Kew's Museum of Economic Botany. The first section offers a history of how, by bringing together spaces, objects, texts, and people, the Museum became a major force in the production and circulation of new economic-botanical knowledge and in the creation of economic botany as a discipline in the long nineteenth century. Here there are two key points to bear in mind: first, that economic botany was not a new subject in the mid-nineteenth century, but at that time, and due to the confluence of a number of factors, it took

on a specific form and operated in specific ways. Second, the Museum of Economic Botany preceded a range of institutions in creating economic botany as a discipline and thus shaped the way it was approached by subsequent botanists.

The second section is a biography of a particular object displayed in the Museum — the Tasmanian Timber Trophy — and by following its trajectory from Tasmania to Kew, particular emphasis is laid on the effect of space in processes of meaning-making. Here I adopt Bernard Lightman's approach in considering 'the places of power' — those sites where scientific knowledge is produced, and how they are fashioned and re-fashioned in order to produce epistemic systems.<sup>7</sup> Museum No. 3 at Kew, the final resting-place of the Trophy, will itself be considered as a site which underwent a process of refashioning at a number of critical points in the epistemic history of Kew and its museums, and this might be considered what Lightman terms a 'site biography'.<sup>8</sup> Refashioning museum space in response to shifts in thinking may involve changes in architectural iconography and scale, and new technologies of interpretation, but it inevitably involves objects — the type of objects selected, their spatial disposition, and, in extremis, their physical reconfiguration — in order to accommodate and illustrate new 'ways of knowing'.<sup>9</sup> The result, we will see, of successive epistemic changes is a somewhat layered effect which can render museum displays difficult for visitors to decode. What I argue here is that the limit of curatorial authority lies in the gap between curatorial intentions and visitor understandings.

### Economic botany: the making of a discipline

It has been said that botany was always economic.<sup>10</sup> Certainly the oldest surviving botanic gardens were founded in the mid-sixteenth century as 'herb gardens', the primary purpose of which was to grow the plants necessary to contemporary medical science.<sup>11</sup> And European voyages of reconnaissance and conquest from the sixteenth century onwards were concerned with, among other matters, the quest for new plants which subsequently formed the basis of new economies.<sup>12</sup> The term 'economic botany' has its origins in Enlightenment science. The first published work in which economics and botany were explicitly associated was Linnaeus's *Flora Oeconomica* of 1748. This work, with its focus on the economic uses of Swedish plants, may be seen as a manifesto of Linnaeus's botanical cameralism,<sup>13</sup> and in its turn it spawned a series of 'floristic catalogues' by northern European botanists, describing the uses of plants in the authors' homelands.<sup>14</sup>

Meanwhile at Kew, Sir Joseph Banks, under the patronage of George III, was looking beyond his native shores for useful plants. His plan was to make of Kew 'a great botanical exchange house for the empire'<sup>15</sup> through the accumulation of specimens from distant territories for evaluation and their dispatch thence to British colonies for cultivation.<sup>16</sup> However, Kew's new function as an experimental garden was interrupted by the deaths of Banks and the King in 1820. In 1838 the Lindley Report recommended Kew's transfer from royal patronage to the public purse 'for the promotion of Botanical Science throughout the Empire'. Under William Hooker, who became the first director of the new, state-funded

Kew in 1841, Kew was once again involved with voyages of exploration which brought back new plant specimens and derivatives and, in a sense, ‘kick-started’ economic botany at this time. Already by the first decade of the mid-nineteenth century — an era characterized as much by free trade and state-funded science as the Banksian era was by mercantilism and royal patronage — the link between economic botany and imperial expansion appeared inextricable.

In looking at the resurgence of economic botany as a term and sub-field of botany in mid-nineteenth century Britain, it is essential to consider the spaces in which it was constructed, the actors who moved to ‘colonize’ it, and the practices by which they made of it a scientific discipline. Writers on nineteenth-century science have discerned distinct phases in the creation of disciplines: amassing and displaying collections; identifying disciplinary content and methods of study; defining the discipline’s relation to other knowledges, but also delineating its specificity; forging a subject-specific language for a defined community of practice; producing ‘objective’ data through the use of instruments; establishing paid subject-specialist posts; publishing in dedicated journals; issuing statements of authority and credibility; demarcating spaces for observation and demonstration; imagining consumer communities; and creating representational strategies.<sup>17</sup> And others have demonstrated how disciplines are formed in museums in quite specific ways.<sup>18</sup> Stephanie Moser argues that museums provide contexts for the ‘visual consumption’ of objects and the disciplines they represent through distinctive conventions of classification and display or interpretative frameworks.

### The Museum of Economic Botany

In the summer of 1846 William Hooker requested permission of Kew’s governing department, the Commissioners of Woods and Forests, for a museum dedicated to the needs of scientific and commercial audiences.<sup>19</sup> Permission was granted and the ‘Museum of Vegetable Products’ opened to the public on 20 September 1847. It was not until 1852 that it was dubbed the more familiar ‘Museum of Economic Botany’.<sup>20</sup> The name may have been inspired by the Museum of Economic Geology, established at Craig’s Court, Whitehall in 1835 by Henry de la Beche. The very existence of the Kew Museum appeared to act as a magnet for further acquisitions ‘from all quarters’ to the extent that the building was soon filled beyond its capacity and visitors circulated with difficulty. So in 1853 funding for a second museum building was applied for.<sup>21</sup> From the opening in 1857 of Museum No. 1, as it immediately became known, taxonomy was fully represented across the two Kew Museums with Museum 1 dedicated to dicotyledons and gymnosperms, and Museum No. 2 (the original Museum) to monocotyledons and cryptogams. To walk through the Museums in the prescribed order was in effect to perform the ‘natural’ system of Swiss botanist Augustin Pyrame de Candolle. In Museum No. 3 (Timbers), opened in 1863, Hooker opted to reflect the geographic principle employed in the 1862 London International Exhibition from which the majority of the exhibits were acquired. This catered better to the needs of the commercial visitor whose systematic botanical knowledge may have been slight and who was more interested in the geographical provenance of

particular species. On the opening of Museum No. 4 (British Forestry) in 1910, the British specimens were separated off, leaving Museum No. 3 as a museum of colonial timbers. Museum No. 4 had its own, thematic layout which reflected the differing needs of forestry practitioners and scientists. Thus, by 1910, with four museums embodying three different display principles and catering to a number of discrete audiences, Kew had a museum complex: a single institution, the Museum of Economic Botany, comprehending a number of interconnected parts, or, to paraphrase Tony Bennett, a series of linked sites for the development and circulation of economic botany.<sup>22</sup>

But knowledge is produced in museums through the disposition in space of concrete objects, and in order to better understand the interplay between space, objects, and disciplinary formation, I now turn to the biography of a particular object.

### The Tasmanian Timber Trophy

The 1862 International Exhibition took place in South Kensington, on a site now occupied by the Natural History Museum. Within its walls, the Tasmanian Court displayed wool, minerals, agricultural produce, and products of the whaling industry, but it was dominated by ‘a noble trophy, rising 90 or 100 feet, made of its native woods’.<sup>23</sup> Since Tasmania was settled by the British in 1803, its merchants had sought to export its natural products in order to import the range of goods required by the new colony.<sup>24</sup> Timber, however, had proved difficult to market. Most of the Tasmanian trees were hardwoods and grew to massive dimensions, but took a long time to season, splitting, cracking, and warping if prepared too quickly. Whilst this did not diminish the strength of the wood, it could adversely affect its appearance,<sup>25</sup> and the story of Tasmanian woods abroad in the nineteenth century became characterized by efforts to demonstrate their strength and durability, and thus to overcome resistance to any deficiencies in their appearance. The International Exhibition of 1862, therefore, offered Tasmanians a major chance to present their wares in a more positive light to a global market. There were political as well as economic issues at stake; convict transportation to the colony had ceased in 1852 and Tasmania was now a self-governing state in search not only of export markets, but also of investors and an immigrant population. Twenty-four leading Tasmanian citizens from administrative, commercial, and scientific backgrounds were appointed as commissioners to organize the Tasmanian Court. Timber was to occupy ‘the most conspicuous position’ and, inspired by the Canadian Timber Trophy at the 1851 Exhibition (Figure 1), a timber trophy was designed by the Secretary to the Tasmanian Commissioners, George Whiting.<sup>26</sup> In order to execute the considerable task of preparing the materials for the Trophy, the remaining convicts at the Port Arthur Penal Settlement were set to work cutting planks and other cuts of timber.<sup>27</sup>

The Trophy consisted of an octagonal tower formed of planks of blue gum, stringy bark, white gum, silver wattle, blackwood, and sassafras woods of up to 100 ft in length. This structure rested on a parallelogram-shaped pedestal measuring 30 × 20 ft across and 12–15 ft in height. The pedestal was hollow and entered by a doorway atop two short flights of steps. There was a spiral staircase



FIGURE 1 The Tasmanian Timber Trophy at the International Exhibition, London, 1862.

*Photograph by London Stereoscopic and Photographic Company; image reproduced courtesy of State Library of Victoria.*

rising through the centre of the tower made of Huon pine, which visitors could climb to gain a commanding view of the Exhibition. In the supporting literature great emphasis was placed on the durability of the woods; those selected for the Trophy were 'shown in every variety of kind and condition',<sup>28</sup> from the 'green' woods which had been affected by 'shakes' and 'sun-cracks',<sup>29</sup> to fully-seasoned specimens, and timbers taken from the oldest public buildings of the colony. These included door-posts and window-lintels from the Old Gaol and the Old Court House of Hobart Town, posts from the town's wharves, sleepers from its railways, and ships' timbers which had experienced many years of active service. In short, the Trophy itself was a 'Museum of the more useful Tasmanian Woods'.<sup>30</sup> Whilst doubtless intended as a scientific exercise, the physical fragments of the former penal colony must have excited the curiosity of metropolitan audiences, providing opportunities for urban imaginaries of antipodean crime and punishment.

### The Trophy and the Kew gaze

William Hooker visited the Exhibition and described the woods of the Timber Trophy as 'magnificent collections'.<sup>31</sup> These were species hitherto unrepresented in

the Kew Museums and exciting from both a botanical and a commercial viewpoint. Curator John Reader Jackson also visited and described what he saw as ‘a fine series of woods, all very large specimens, many polished and named, some exceedingly beautiful specimens of Huon Pine’.<sup>32</sup> William’s son, Joseph, also played a role in this story as juror for the woods of the British Colonies. The involvement of scientists of the status of Joseph Hooker imbued not only the displayed products, but also the exhibition as a whole, with scientific authority. Scientists at exhibitions helped develop standards and conventions of display and classification which facilitated the circulation of specimens between exhibitions and museums. Joseph Hooker’s role as juror, therefore, added weight to Kew’s requests for specimens at the exhibition’s close.

In November, Frederick Du Croz, one of the London-based commissioners for Tasmania, arranged to meet William Hooker at the Tasmanian Court ‘to arrange whether and how any portion of our present trophy can be erected at Kew’.<sup>33</sup> In 1862 the Kew Museum’s role as first destination for plant materials dispersed at the closure of international exhibitions was neither stable nor uncontested. Du Croz had seemed quite non-plussed by Kew’s interest, informing Hooker that:

It will afford us much pleasure to carry out those instructions but as you have already a large Tasmanian collection from the Paris Exhibition of 1855 we should esteem it a favour if you would send to the court, or otherwise designate such specimens as would be desirable. We are anxious to disseminate as much as possible the productions of the Colony and your decision would enable us to decide what further distribution we can make.<sup>34</sup>

The Trophy — or some part of it — arrived at Kew in mid-December. For reasons unknown, no details were entered in the Museum’s accession register. It was displayed in Museum No. 3, a new museum opened partly to house the vast number of timbers that Kew acquired from the 1862 Exhibition. However, this new museum was designated as a polyvalent space, ‘devoted chiefly to specimens of Timber and large articles unsuited for exhibition in the cabinets of the other Museums’.<sup>35</sup> In 1866 these included cork models, wooden toys, and other sundry objects. This display principle, based on object size, was to affect the kind of knowledge produced there. The sheer variety of the objects offered up to the public gaze leads one to suspect that it may have been encountered as something of a cabinet of curiosities.

A conflicted image of the Trophy within the setting of Museum No. 3 emerges from contemporary accounts. On the one hand William Hooker was able to say in his 1863 annual report, that among the various displays, ‘Tasmania holds the most conspicuous place for the magnitude and beauty of its specimens’.<sup>36</sup> On the other hand, there appear to have been difficulties in displaying the Trophy, or that portion of it which came to Kew, to general satisfaction. In 1864, only one year after the opening of Museum No. 3, the central timber trophy was ‘re-arranged’;<sup>37</sup> and in 1865, the ‘great central timber trophy’ was ‘taken down and greatly improved, and many of the large specimens polished’.<sup>38</sup> Although there are no close-up images of the base of the Timber Trophy, by referring to the Canadian Timber Trophy of 1851 which had inspired it, the nature of the problem becomes

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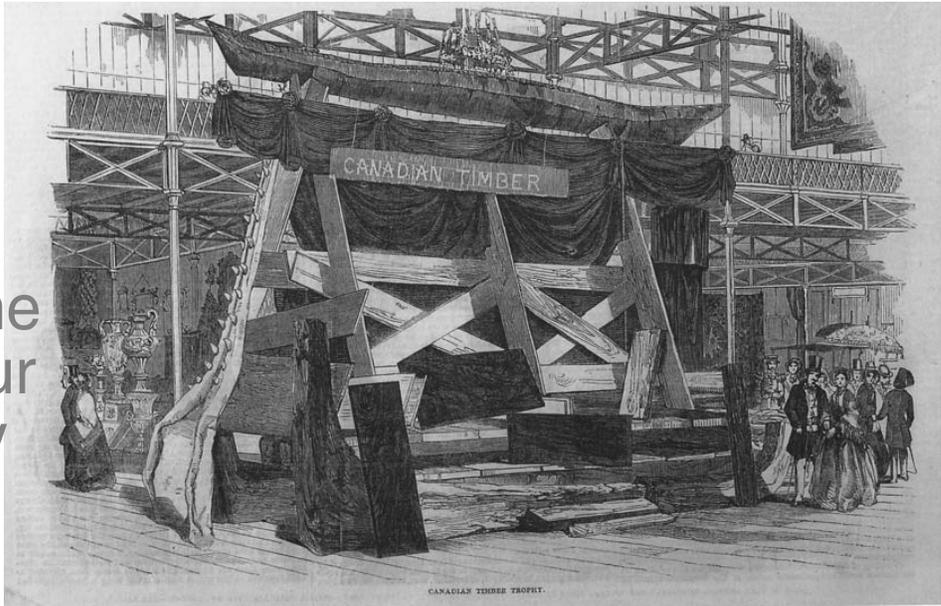


FIGURE 2 The Canadian Timber Trophy at the Great Exhibition, London, 1851.

Source: *Illustrated London News* June 21, 1851. Public domain.

more evident (Figure 2). The latter was a loosely-arranged structure, which would conceivably be difficult to re-construct satisfactorily in a museum. The *Illustrated London News* had called it ‘an uncouth sort of pile’;<sup>39</sup> perhaps the Tasmanian Trophy base appeared similarly uncouth.

In the 1866 *Official Guide*, we have the first tantalizing glimpse of the Tasmanian Trophy, positioned in the centre of Museum No. 3 (Figure 3). Its rectangular shape suggests it was the pedestal of the original monument, but frustratingly no detail is given in the supporting text. Individual Tasmanian wood samples were displayed against the northern wall of the Orangery, adjacent to woods from other Australian states, so it is they which were used to fashion the Museum as a collection of colonial timbers. The Trophy, conversely, from its position in the centre of the Museum alongside models and other miscellanea, was more identifiable as another of the ‘large articles unsuited for exhibition in the glazed cases of the other Museums’,<sup>40</sup> and the ‘historic’ woods from gaols and court houses which were part of the structure, may well have added to it an air of curiosity.

### Kew and the ‘new botany’

However contemporary audiences read and understood the Trophy during its life in Museum No. 3, that life proved to be short-lived. In his 1876 annual report, Joseph Hooker announced that all the Museums were ‘in a most crowded condition’ and that Museum No. 3 could take no more exhibits. To provide accommodation for new objects, and also to ‘more strictly define the scope of the

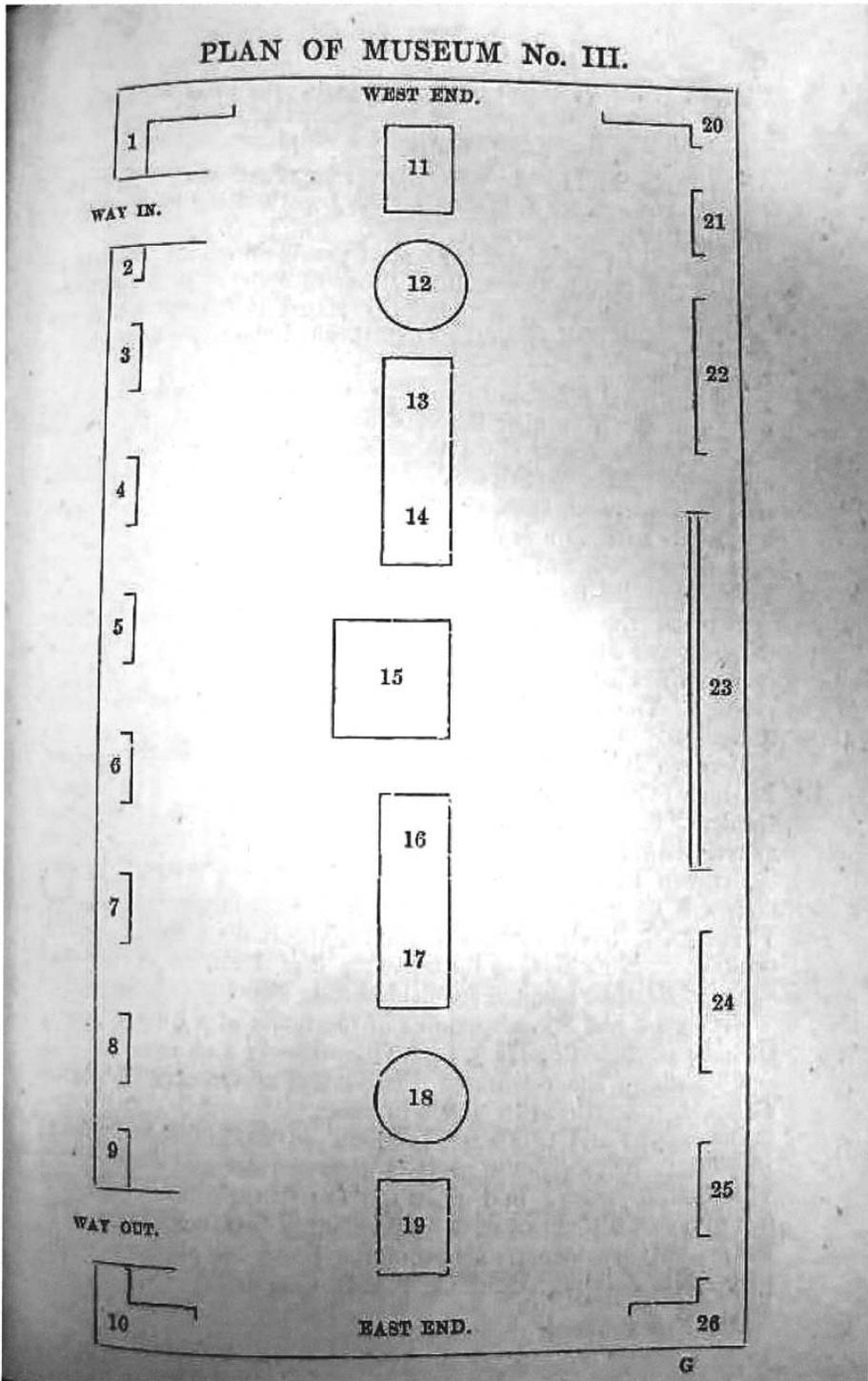


FIGURE 3 Plan of Museum No. 3, 1866.

**Key to case numbers:** 15. Tasmanian Timber Trophy. 19. New South Wales and Victoria. 20. Queensland. 21. New Zealand. 22. Natal. 23. Tasmania. 24, 25 & 26. New South Wales.; *Source:* D. Oliver, *Official Guide to the Kew Museums. A Handbook to the Museums of Economic Botany of the Royal Gardens, Kew. Third Edition. With Additions and Corrections by John R. Jackson (London: Reeve, 1866).*

collections'<sup>41</sup> the Curator, Jackson, and Assistant Director, Thiselton-Dyer, had begun a systematic revision of the entire collection. There was to be no duplication of specimens; objects would only be retained on grounds of 'usefulness throughout the vegetable kingdom' or 'structure', introducing a new emphasis on plant physiology. Separate collections 'of merely technological interest' were to be broken up and re-distributed.<sup>42</sup> Examples of objects dispersed under this new order included 'three sectional models of boats' which had been acquired from the Vancouver Island Court at the 1862 Exhibition, and which were transferred to the South Kensington Museum.

By 1878 Hooker was able to report that 'the contents of No. 3 Museum have also been carefully revised, and an immense number of duplicate and useless specimens withdrawn. Great improvements have also been effected in the display of the larger objects, especially the fine specimens of the stems of palms and tree ferns'.<sup>43</sup> The displays were taking a decidedly physiological turn. It seems likely that the Timber Trophy was removed at this point. It was in the Museum Guide of 1875 but by the revised edition of 1886 it had disappeared and the Tasmanian woods were to be found 'distributed on the front, back, and end walls of the building, as well as in the galleries'.<sup>44</sup>

In the material evidence borne by some of the 1862 Tasmanian woods still held in the Economic Botany Collection at Kew, there is a suggestion that the Trophy had been dismantled and reconstituted as individual elements of the larger collection. At least two specimens in the current collection bear a series of holes and wooden pegs along their edges, implying they were originally slotted together as part of a larger structure (Figure 4). A further specimen is stamped with the words 'Port Arthur', connecting it unmistakably with the woods prepared for the trophy at the former penal colony (Figure 5). Under the new criteria, the Trophy had been redefined as a separate collection of mere technological interest. Its new value was as a data series, but in order to move from one epistemic state to the other, it had literally to be reconstituted as individual specimens.

The dismantling of the Timber Trophy is reflective of an epistemic shift in nineteenth-century botany which originated in Germany and was observable in British botany from the early 1870s. Aside from economic botany, botany at Kew had hitherto consisted of systematics — the practices of identifying, naming, and classifying plants. With the mass-production of more powerful microscopes from the 1850s came a new interest in plant physiology, a branch of botany which concerned itself with the functions of plant organisms and their parts.<sup>45</sup> This new way of knowing concerned the substitution of 'anatomy for classification, organism for structure, internal subordination for visible character, the series for tabulation'.<sup>46</sup> A contemporary described it as 'the description of functioning organisms and the comparative treatment of their parts'.<sup>47</sup>



FIGURE 4 *Specimen of Acacia dealbata*, Linn. (Silver wattle) presenting series of holes and pegs.

Photograph by Caroline Cornish.

A key figure in the dissemination of this new approach in Britain was Thomas Henry Huxley. Huxley introduced microscopy into his classes at the Normal School of the Royal College of Science, South Kensington in 1872,<sup>48</sup> thus refashioning the Department of Science and Art as a space of ‘scientific naturalism’ — a concern with the secularization of nature, the professionalization of science, and the promotion of expertise.<sup>49</sup> After Huxley’s morning lecture, student teachers worked in the afternoons with microscopes under the guidance of demonstrators. One such demonstrator was to become a key figure in the spread of physiological botany to Kew: William Thiselton-Dyer. When he moved to Kew in June 1875, he was permitted to continue his teaching work at South Kensington alongside his new duties.<sup>50</sup>

Thiselton-Dyer’s appointment as Assistant Director at Kew in 1875 marked the reinstatement of a post which had been suppressed when Joseph Hooker became Director in 1865. Joseph Hooker was now 10 years into his directorship, and all the activities of the Royal Botanic Gardens — collecting, corresponding, and



FIGURE 5 Specimen of *Notelaea ligustrina* Vent. (Ironwood) displaying Port Arthur stamp.  
 Photograph by Caroline Cornish.

consulting — had increased greatly over the period.<sup>51</sup> At Kew, Hooker and Thiselton-Dyer were to effect their own ‘minor revolution’.<sup>52</sup> As we have seen, this was achieved partly through objects. Collections of structural interest, such as the cryptogamic plants, were afforded more display space; that this decision was structure- rather than utility-led is indicated by Hooker’s comment that these were ‘objects of increasing interest to the large numbers of persons who make the study of some branch of natural history their recreation’.<sup>53</sup> New collections were formed. A separate collection illustrating vegetable pathology was commenced in 1874 and by the following year it had grown to 300 specimens. As Hooker reported, it promised to be ‘one of the most interesting features of the museums, no

public collection having hitherto been formed to illustrate the diseases and the transformations of the organs of plants'.<sup>54</sup> This 'physiological' episteme was also associated with the construction of new scientific spaces at Kew. The Fourth Report of the Devonshire Commission in 1874 had recommended that 'opportunities for the pursuit of investigations in Physiological Botany should be afforded at Kew'.<sup>55</sup> However, as no government funding was forthcoming, Hooker and Thiselton-Dyer approached the scientific benefactor Sir Phillip Jodrell, who agreed to fund a physiological laboratory at Kew. With Thiselton-Dyer in charge, scientific research began there in 1876.<sup>56</sup>

This series of events must also be set against the background of what is often referred to as the 'Ayrton Controversy' — the exchanges from 1870 to 1873 between Joseph Hooker and Acton Smee Ayrton, the First Commissioner of Works — 'the technocrat clashing with the bureaucrat'.<sup>57</sup> Ayrton saw an opportunity of reducing public spending by transferring Kew's scientific research function to the British Museum (BM), leaving the Royal Botanical Gardens as a public recreation park.<sup>58</sup> He had gone so far as to procure the services of Richard Owen, then Superintendent of the BM's Natural History Department, to pen a statement dismissing Kew's scientific work as concerned 'mainly in economical relations', and pronouncing the need for a museum of natural history in a public garden as mere 'delusion'.<sup>59</sup> The addition of a physiological laboratory at Kew, particularly one which did not depend on government funding, was, therefore, a matter of political and scientific import. As Lightman argues, the addition of the Jodrell Laboratory helped to preserve Kew as a site where research continued to be one of its defining activities.<sup>60</sup> I would add that the new physiological approach implemented in the Kew Museums also served to further shore up Kew's claims to recognition as a research centre of the first order, and acted as the public face of this new order of knowledge. This approach not only concerned new collections and the revision of the existing collections according to their structural interest, but also featured the latest images of plant physiology from German wall-charts to photomicrographs (Figures 6–8). Under Thiselton-Dyer, the Museums were refashioned to accommodate and communicate the new botany, and the Tasmanian Timber Trophy was similarly reworked from a former exhibition attraction to a series of separate specimens in a scientific collection. It had moved 'from icon to datum'.<sup>61</sup>

### **Conclusion: mind the gap: the limits of curatorial authority**

The epistemic shift of the 1870s wrought the most significant changes on the Kew Museums since the opening of the first Museum of Economic Botany in 1847. However, it was by no means the final turn, and in this concluding section I begin by considering the refashioning of Museum No. 3 over the remainder of its lifespan in response to a series of intellectual and administrative transformations and go on to suggest the limitations of the Museum's curatorial authority.

As Carla Yanni argues, museums presenting a single master-narrative are rare. They are much more likely the result of a number of co-existing approaches, which render museum displays 'surprisingly resistant' to epistemic analysis.<sup>62</sup> The



FIGURE 6 Physiological diagrams suspended from the balcony of Museum No. 2 c.1900. *Lilium martagon* (see Figure 7) can be seen third from the left.

Photograph by E. J. Wallis; © RBG, Kew.

acquisition of the woods from the 1862 International Exhibition forced the issue of an additional museum, and Museum No. 3 was devoted to timber specimens and large articles — an awkward juxtaposition with scale as the common denominator. What the new Museum offered was the space for larger ‘show’ specimens; the museum guide boasted, ‘Here, their full diameter is shown, and the magnitude of many of our Colonial trees becomes the more striking.’<sup>63</sup> Museum No. 3 was fashioned in the likeness of international exhibitions, and was no doubt intended to reproduce the popular appeal of those sites to commercial and general audiences alike. Its genesis was the joint creation of William Hooker, whose stated aim was to popularize the science of botany, and to ‘render it generally available’,<sup>64</sup> and curator John Reader Jackson, who was not a scientist and whose interests lay in the visual appeal of display objects, and the practical applications of plants. It was Hooker senior and Jackson who, in 1862, had both singled out the Tasmanian Timber Trophy on their lists of desiderata.

I have described the changes implemented in the Kew Museums in the late 1870s by Joseph Hooker and Thiselton-Dyer as a refashioning process in the likeness of the ‘new botany’. But physiology was not about to overshadow taxonomy at Kew. Commencing in 1877 at precisely the time that the collections were being revised along structural lines, the objects were relabelled and re-arranged according to the

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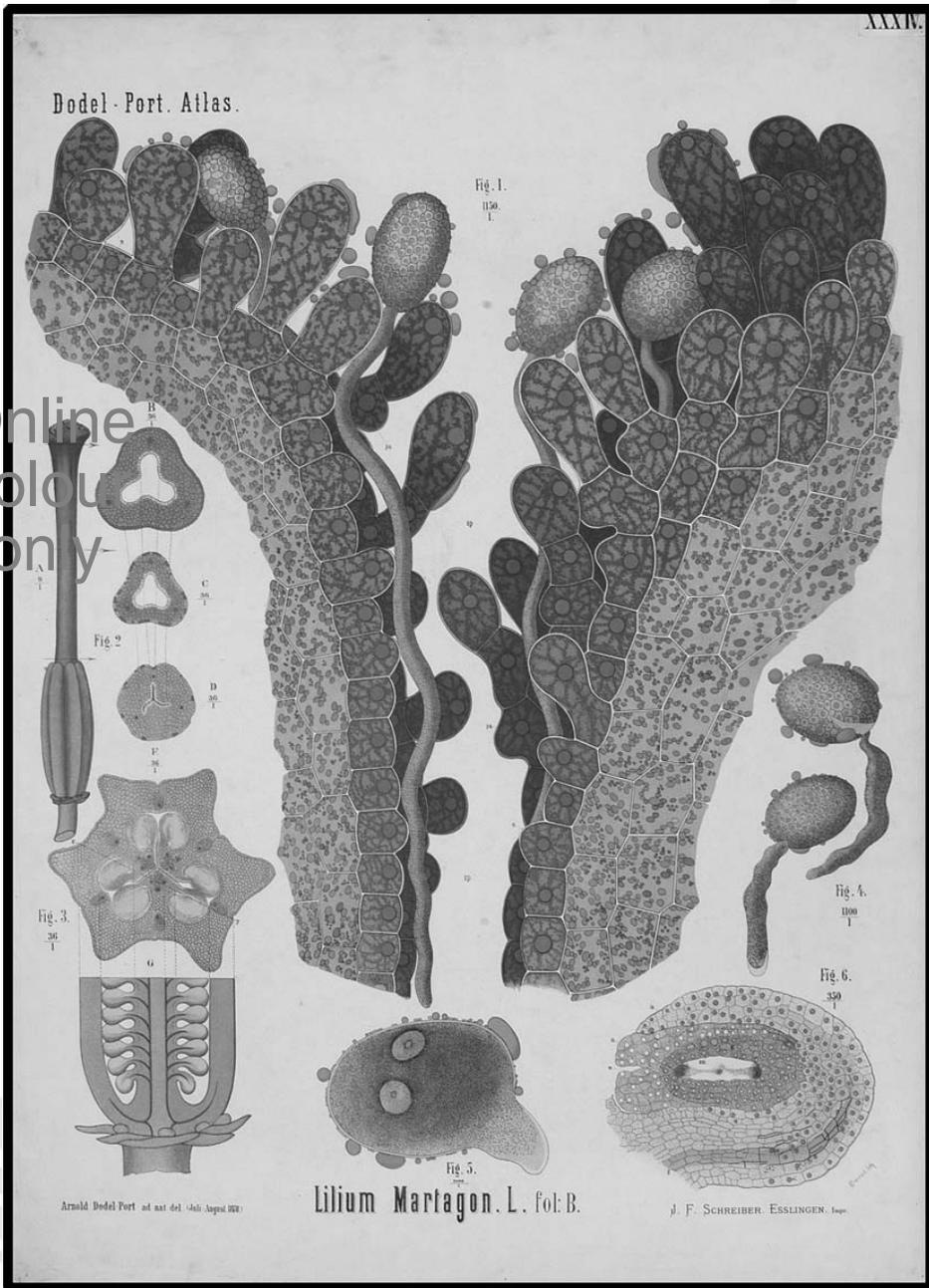


FIGURE 7 *Lilium martagon* L.

Source: A. Dodel-Port, Anatomical and Physiological Atlas of Botany for Use in Schools and Colleges in Forty-Two Coloured Plates and Eighteen Special Supplementary Sheets (Edinburgh and London: W. & A. K. Johnston, 1880); © Delft School of Microbiology Archives, Department of Biotechnology, Delft University of Technology.

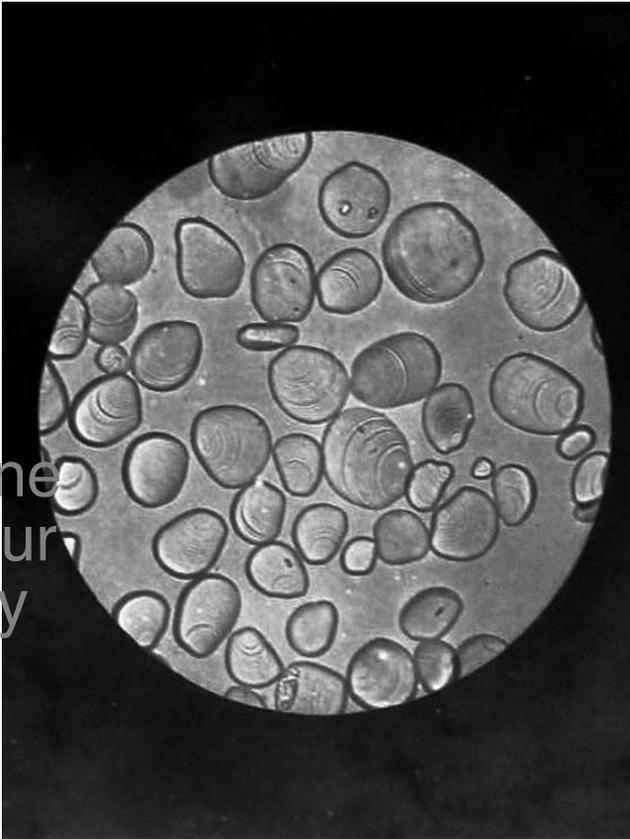


FIGURE 8  
Photomicrograph of  
magnified grains of starch  
from *Canna indica*.  
Photograph by Edward Kinch,  
1888; © RBG, Kew.

sequence of orders and genera in the *Genera Plantarum*. This new taxonomy was the work of Joseph Hooker and George Bentham, and was published in three volumes between 1862 and 1883; it was the most comprehensive systematic survey at the time of the ‘higher’ plants. So with the latest developments in both systematic and physiological botany reflected in its museums, Joseph Hooker was clearly positioning Kew as the primary botanical authority in Britain. As ‘eyewitness’ Frederick Bower succinctly put it, ‘Few at that time held a balance between both: but Sir Joseph Hooker, like a Colossus, had a foot down in either camp’.<sup>65</sup>

The following decade Museum No. 3 underwent a number of further spatial interventions. In 1883 iron galleries were added for smaller specimens, indicating a zoning of the Museum into the reference collection above — for scientific researchers and commercial enquiries — and the exhibited collection, for the general public, on the ground floor. This was a response to the ‘new museum idea’ advocated by William Henry Flower,<sup>66</sup> signalling on the one hand a further move towards serving the needs of specialists whilst at the same time producing more effective pedagogical displays for the visiting public. In the new guide to Museum No. 1, published in the same year, Joseph Hooker was still affirming that the primary object of the Kew Museums was to show ‘the practical applications of

Botanical Science', but he also introduced a new intention, that they should demonstrate 'the variety in form and structure presented by plants', and whilst they displayed plants of value as food, in construction, the arts, and medicine, they could also serve to satisfy scientific curiosity.<sup>67</sup>

After the rupture in collecting and botanical science imposed by the First World War, there was again a shift in the fortunes of Museum No. 3: in 1926 the collections were re-arranged, as a result of the accession of new specimens and the disposal of old ones. Due to space limitations, it was no longer possible to display the woods in a strictly geographical order. Each exhibited specimen was, therefore, given a number from 1 to 601 and a corresponding entry in the Guide.<sup>68</sup> The usages attributed to the woods were updated using a series of texts, many of which had been published within the previous 20 years. In the introduction to the 1927 guide, Director Arthur Hill also signalled that there were timbers in the Museum that were not of 'general commercial significance', 'some through scarcity and others through lack of knowledge on the part of manufacturers outside the countries where the trees are found'.<sup>69</sup> By 1927, then, the Museum was assuming a new role as an archive of disappearing woods. As regards manufacturers' lack of knowledge, since the re-avowed purpose of the Kew Museums in 1927 was to be 'as valuable as possible to manufacturers and others engaged in trade', there is some sense here of Kew losing its hold on the commercial sector. Furthermore, with the new layout Kew had thrown off the old geographical categories of nineteenth-century international exhibitions — just as imperial geographies were themselves undergoing radical changes — and forged an arrangement better suited to its spatial propensities, loosely based on a biogeographical principle. Some entries in the revised museum guide had scarcely changed from 1886, revealing the Museum as a heterodox space with traces of former epistemologies co-existing alongside subsequent ones. There were, for example, vestiges of those species selected in 1876 for their structural significance. In 1862 as exhibition juror Joseph Hooker had written:

Two ferns, *Dicksonia antarctica* and *Alsophila Australis*, are both remarkable for the very peculiar markings of the wood when divested of the brown matted rootlets and bases of the leaf-stalks. Though not apparently adapted to any special purpose, they could no doubt be introduced into cabinet-work with great effect.<sup>70</sup>

By 1927, they had not been adopted as cabinet woods, and survived as botanical curiosities and as evidence of 'salvaged' indigenous knowledge:

No. 5. — Tree Fern, *Dicksonia antarctica* Lab. (*Filices*).

This giant fern is a native of Australia, Tasmania and New Zealand [...] It is of little economic use, but the soft, starchy centre of the upper part of the stem is used, raw and roasted, as an article of food by the aborigines [...]

No. 8. — *Alsophila australis* Br., a tree fern from Tasmania, ornamental when growing but of little economic value.<sup>71</sup>

There were no further editions of museum catalogues, and by 1958 Eric Ashby and his visiting group had circulated their landmark report on the future of the Royal Botanic Gardens. This recommended the closure of Museums No. 2 and No. 3,

and pronounced that the only scientific value of the museum collections was as a reference resource. Accordingly it was argued that they should be ‘drastically reduced in size and completely reorganised’.<sup>72</sup> The woods from Museum No. 3 were either stored or merged with the British wood collections in Museum No. 4 to become the Wood Museum. By 1987 the latter was also closed, and the woods, in line with the rest of the collection, were data-based and transferred to a purpose-built store in the Banks Building.

Currently the wood collection has a number of recognized uses at Kew: as a means for wood anatomists of identifying woods referred to Kew; as a teaching collection for students of wood anatomy from the Jodrell Laboratory; and as a resource for researchers of imperial, museological, and environmental histories and geographies. Wood structure is still central to the collection’s continued existence, but the collection no longer acts as an assemblage of ‘useful’ timbers in the nineteenth-century sense of the word, but rather as an archive of those woods which were once available in ‘unlimited’ supply.

In the light of the above account, it is clear that the Kew Museums can certainly be seen as the ‘malleable spaces’ described by Lightman.<sup>73</sup> Simon Naylor has likewise argued for the role of ‘biographies of place’ in the research of the practices of science,<sup>74</sup> and such a perspective complements and complicates the object biography approach advocated in much current literature on museum collections. From William Hooker’s original vision in which economic and systematic botany were synthesized, through the exhibitionary geographies of Museum No. 3, to the physiological botany of Thiselton-Dyer, the Museums were variously fashioned and refashioned to communicate and embody successive epistemologies. It was implemented largely through the type and spatial disposition of those objects exhibited, and through interpretative techniques. And it was also effected through the spaces of print culture — through museum guide-books and labels, scientific reports, and the popular press. The case of the Timber Trophy demonstrates that neither the meanings nor the forms of objects are fixed once they enter the museum. Both objects and the spaces they occupy can be quite literally refashioned to embody new ways of knowing. But this refashioning process was inevitably a selective one, in which elements of earlier systems survived, producing a palimpsest effect. This article has striven to show that this opened up a gap between curatorial intent and visitor reception, a gap which marked the limits of curatorial authority regarding epistemological definition of the museum space.

## Acknowledgements

Figures 3–6 and 8 reproduced with the kind permission of the Director and the Board of Trustees of the Royal Botanic Gardens, Kew.

## Notes

<sup>1</sup> E. S. Dixon, ‘Economic Botany’, *Household Words*, 13 (1856), 374–380.

<sup>2</sup> *Ibid.*, p. 375.

<sup>3</sup> *Ibid.*, p. 377.

<sup>4</sup> *Ibid.*, p. 378.

<sup>5</sup> *Ibid.*, p. 378.

- <sup>6</sup> Ibid., p. 379.
- <sup>7</sup> B. Lightman, 'Refashioning the Spaces of London Science', in *Geographies of Nineteenth-Century Science*, ed. by D. N. Livingstone and C. W. J. Withers (Chicago and London: University of Chicago Press, 2011), pp. 25–50.
- <sup>8</sup> Ibid., p. 27.
- <sup>9</sup> J. Pickstone, *Ways of Knowing: A New History of Science, Technology and Medicine* (Manchester: Manchester University Press, 2011).
- <sup>10</sup> Kapil Raj, pers. com., August 2011.
- <sup>11</sup> S. M. Walters, *The Shaping of Cambridge Botany* (Cambridge: Cambridge University Press, 1981), p. 1.
- <sup>12</sup> R. Drayton, *Nature's Government: Science, Imperial Britain, and the 'Improvement' of the World* (New Haven, CT and London: Yale University Press, 2000).
- <sup>13</sup> L. Koerner, 'Purposes of Linnaean Travel: A Preliminary Research Report', in *Visions of Empire: Voyages, Botany, and Representations of Nature*, ed. by D. Miller and P. Reill (Cambridge: Cambridge University Press, 1996), p. 138.
- <sup>14</sup> G. E. Wickens, 'What is Economic Botany?', *Economic Botany*, 44 (1990), 12–28.
- <sup>15</sup> Banks, 1787, cited in Drayton, *Nature's Government*, p. 108.
- <sup>16</sup> D. Miller, 'Joseph Banks, Empire, and "Centres of Calculation" in late Hanoverian London', in *Visions of Empire: Voyages, Botany, and Representations of Nature*, ed. by D. Miller and P. Reill (Cambridge: Cambridge University Press, 1996), pp. 21–37.
- <sup>17</sup> N. Dias, 'The Visibility of Difference: Nineteenth-Century French Anthropological Collections', in *The Politics of Display: Museums, Science, Culture*, ed. by S. Macdonald (London and New York: Routledge, 1998), pp. 36–52.
- <sup>18</sup> C. Yanni, *Nature's Museums: Victorian Science and the Architecture of Display* (New York: Princeton Architectural Press, 1999); S. Moser, *Wondrous Curiosities: Ancient Egypt at the British Museum* (London and Chicago: Chicago University Press, 2006); Whitehead, 2009; S. J. M. M. Alberti, *Nature and Culture: Objects, Disciplines and the Manchester Museum* (Manchester and New York: Manchester University Press, 2009); 'The Status of Museums: Authority, Identity, and Material Culture', in *Geographies of Nineteenth-Century Science*, ed. by D. N. Livingstone and C. W. J. Withers (Chicago and London: University of Chicago Press, 2011), pp. 51–72.
- <sup>19</sup> R. Desmond, *The History of the Royal Botanic Gardens, Kew* (Kew RBGK: Kew Publishing, 2007), p. 184.
- <sup>20</sup> Ibid., p. 185.
- <sup>21</sup> W. J. Hooker, 'Kew Garden Museum: Or, a Notice of the Origin and Some of the Contents of the Museum of Economic Botany Attached to the Royal Gardens of Kew', *Hooker's Journal of Botany and Kew Garden Miscellany*, 5 (1853), 330.
- <sup>22</sup> T. Bennett, *The Birth of the Museum: History, Theory, Politics* (London and New York: Routledge, 1995), p. 59.
- <sup>23</sup> International Exhibition, *Official Illustrated Catalogue of the International Exhibition London 1862. Vol. I: British Division* (London, 1862), p. 102.
- <sup>24</sup> J. Dargavel, 'Timber Inspection and the State: The Tasmanian Experience', *Journal of Forest History*, 31 (1987), 164.
- <sup>25</sup> Ibid., p. 165.
- <sup>26</sup> G. Whiting, *The Products and Resources of Tasmania as Illustrated in the International Exhibition, 1862: With an Appendix containing Papers on the Vegetable Products exhibited by Tasmania* (Hobart Town, 1862), p. 4.
- <sup>27</sup> Dargavel, 'Timber Inspection and the State', p. 166.
- <sup>28</sup> Whiting, *The Products and Resources of Tasmania*, p. 4.
- <sup>29</sup> Ibid., p. 11.
- <sup>30</sup> Ibid., p. 11.
- <sup>31</sup> W. J. Hooker's notes on the 1862 Exhibition; Royal Botanic Gardens, Kew (RBGK) Archives, QX 92-053 Miscellaneous.
- <sup>32</sup> J. R. Jackson, 'Notes on the Collections in the International Exhibition'; RBGK Archives QX 92-053 Miscellaneous.
- <sup>33</sup> Letter from Du Croz 28 November 1862 to Hooker; RBGK Archives, International Exhibition 1862.
- <sup>34</sup> Letter to Hooker from Du Croz 20 October 1862; RBGK Archives, International Exhibition 1862.
- <sup>35</sup> D. Oliver, *Second Edition. Official Guide to the Kew Museums. A Handbook to the Museums of Economic Botany of the Royal Gardens, Kew* (London: Lovell Reeve & Co., 1863), p. 1.
- <sup>36</sup> W. J. Hooker, *Report on the Progress and Condition of the Royal Gardens of Kew for 1863* (London, 1864), p. 3.
- <sup>37</sup> W. J. Hooker, *Report on the Progress and Condition of the Royal Gardens of Kew for 1864* (London, 1865), p. 4.

- <sup>38</sup> W. J. Hooker, *Report on the Progress and Condition of the Royal Gardens of Kew for 1865* (London, 1866), p. 5.
- <sup>39</sup> Anon, 'The Canadian Timber Trophy', *Illustrated London News*, 21 June 1851; Great Exhibition (Supplement), p. 597.
- <sup>40</sup> Oliver, *Second Edition. Official Guide to the Kew Museums*, p. 1.
- <sup>41</sup> J. D. Hooker, *Report on the Progress and Condition of the Royal Gardens at Kew during the Year 1876* (London, 1877), p. 27.
- <sup>42</sup> *Ibid.*, pp. 26–7.
- <sup>43</sup> J. D. Hooker, *Report on the Progress and Condition of the Royal Gardens at Kew during the Year 1877* (London, 1878), p. 44.
- 2** <sup>44</sup> RBGK, p. 60.
- <sup>45</sup> G. Gooday, '"Nature" in the Laboratory: Domestication and Discipline with the Microscope in Victorian Life Science', *British Journal for the History of Science*, 24 (1991), 321.
- <sup>46</sup> M. Foucault, *The Order of Things: An Archaeology of the Human Sciences* (London and New York: Routledge, 2002), p. 150.
- <sup>47</sup> F. O. Bower, *Sixty Years of Botany in Britain (1875–1935): Impressions of an Eyewitness* (London: Macmillan & Co. Ltd, 1938), p. 75.
- <sup>48</sup> Gooday, '"Nature"', pp. 308–09.
- <sup>49</sup> Lightman, 'Refashioning the Spaces of London Science', p. 36.
- <sup>50</sup> K. Jones, 'The Jodrell Laboratory of the Royal Botanic Gardens, Kew', *Biologist*, 35 (1998), 278.
- <sup>51</sup> J. D. Hooker, *Report on the Progress and Condition of the Royal Gardens at Kew during the Year 1875* (London, 1876), p. 1.
- <sup>52</sup> Bower, *Sixty Years of Botany in Britain*, p. 27.
- <sup>53</sup> Hooker, *Report on the Progress and Condition of the Royal Gardens 1877*, p. 27.
- <sup>54</sup> Hooker, *Report on the Progress and Condition of the Royal Gardens 1876*, p. 12.
- <sup>55</sup> *Fourth Report of the Royal Commission on Scientific Instruction and the Advancement of Science* (London: George Edward Eyre and George Spottiswoode, 1874), p. 10.
- <sup>56</sup> Jones, 'The Jodrell Laboratory', pp. 277–80.
- <sup>57</sup> Drayton, *Nature's Government*, p. 212.
- <sup>58</sup> 'Memorandum of the First Commissioner on the Management of Kew Gardens by the Office of Works, and the Changes therein, 15 July 1872', *Kew Gardens. Copies of papers relating to changes introduced into the administration of the Office of Works affecting the direction and management of the gardens at Kew; and of correspondence between the Treasury and Dr. Hooker on the same subject* (London, 1872).
- <sup>59</sup> 'Statement Relative to the Botanical Departments Respectively Under the Trustees of the British Museum and the Commissioners of Works' (London, 1872), *Kew Gardens*, Appendix III.
- <sup>60</sup> Lightman, 'Refashioning the Spaces of London Science', p. 38.
- <sup>61</sup> S. J. M. M. Alberti, 'Objects and the Museum', *Isis*, 96 (2005), 567.
- <sup>62</sup> Yanni, *Nature's Museums*, p. 8.
- <sup>63</sup> Oliver, 1866, p. 78.
- 3** <sup>64</sup> W. J. Hooker, *Sir W. J. Hooker's Report on Kew Gardens, &c.* (London, 1856), p. 2.
- <sup>65</sup> Bower, *Sixty Years of Botany in Britain*, p. 102.
- <sup>66</sup> W. H. Flower, 'Modern Museums. Presidential Address to the Museums Association. London Meeting, 3rd July 1893', in *Essays on Museums and Other Subjects Connected with Natural History* (London: Macmillan & Co, 1898), pp. 30–53.
- <sup>67</sup> RBGK, *Official Guide to the Museums of Economic Botany. No. 1. Dicotyledons and Gymnosperms* (London: HMSO, 1883), p. 3.
- <sup>68</sup> RBGK, *Official Guide to the Museums of Economic Botany. No. 3. Timbers and Gymnosperms. Third Edition, revised and augmented* (London: HMSO, 1927), p. 3.
- <sup>69</sup> RBGK, 1927, p. 4.
- 4** <sup>70</sup> Royal Society of Arts (RSA), *International Exhibition 1862. Reports of the Juries on the Subjects in the Thirty-Six Classes into which the Exhibition was Divided* (London, 1862), p. 36.
- <sup>71</sup> RBGK, 1927, p. 6.
- 5** <sup>72</sup> Ministry of Agriculture, Fisheries and Food (MAFF), *Report of a Visiting Group to the Royal Botanic Gardens, Kew (Chairman: Sir Eric Ashby) [in March 1957]* (London, 1958) para 18; para 20, ii.
- <sup>73</sup> Lightman, 'Refashioning the Spaces of London Science', p. 44.
- <sup>74</sup> S. Naylor, 'Introduction: Historical Geographies of Science: Places, Contexts, Cartographies', *BJHS*, 38 (2005), 11.

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