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RESEARCH ARTICLE

Science 'subservient to profit'? William Jackson Hooker and the first Glasgow Botanic Gardens (1817–1841)

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Abstract

This article examines the scientific legacy of the first Glasgow Botanic Gardens and the part they played in the global circulation of botanical knowledge, from their creation in 1817 to their relocation to the West End of Glasgow in 1841. Located in a thriving industrial city with strong commercial ties to the British Caribbean, the gardens stood at an important crossroads of political and economic interests, scientific discovery, cultural innovation and imperial motives. They were managed by the talented English botanist William Jackson Hooker, who strove to transform them into a training ground for prospective botanists and a leading scientific institution. Yet, like many other botanical establishments of similar stature at the time, the gardens encountered many financial setbacks that hampered their success and threatened the scientific ambitions of Hooker and his peers. This article discusses the extent of the gardens' scientific contribution within and beyond the borders of Britain and seeks to determine the degree to which science in these gardens was constrained by economic factors.

On 8 April 1817, at the Tontine Hotel, located in the thriving commercial area of Glasgow, a committee of twenty-two men – including the city's lord provost, James Black, as well as several members of the landed gentry and mercantile community – gathered to discuss the formal establishment of a botanical garden, with the aim of showcasing the economic success of their city. The meeting followed a smaller one convened a fortnight previously by Thomas Hopkirk of Dalbeth – son and grandson of wealthy tobacco merchants. At that earlier meeting, it had been agreed by those present that the absence of a botanical garden was putting Glasgow at a great disadvantage compared with cities of equal standing and ambition (such as Dublin and Edinburgh), already in possession of botanical institutions. Since the mid-eighteenth century, Glasgow, later to be known as the second city of the empire, had been playing a central role in Britain's colonial trade in tobacco, sugar and rum. The growth of this trade had been accompanied by the emergence of a powerful class of merchants and planters in the city, making fortunes on the backs of enslaved labourers, first with tobacco in the North American colonies and then with sugar in the Caribbean.[1] Beyond their economic importance for the development of Glasgow,

[1] John M. Mackenzie, '"The second city of the Empire": Glasgow – imperial municipality', in Felix Driver and David Gilbert (eds.), *Imperial Cities: Landscape, Display and Identity*, Manchester: Manchester University Press, 1999, pp. 215–37; Tom Devine, *The Tobacco Lords: A Study of the Tobacco Merchants of Glasgow and Their Trading Activities,*

these 'tobacco lords' and 'sugar lords', as they were known, made a lasting impact on the architectural development of the city, profoundly reshaping its urban landscape.[2] And yet, at the beginning of the nineteenth century, the city could not boast any garden of botanical significance. There was the university garden – the College Physic Garden – which had been in use for more than a century, but it had slowly fallen into disrepair and the site had been officially sold in November 1813.[3]

In April 1817, following the committee's formal agreement that 'the establishment of a Public Botanic Garden … would be highly conducive to the benefit of Science, to the embellishment of the City and to the recreation of the Inhabitants', a suitable location for a botanical garden was found near the Dumbarton and Sandyford roads in the western part of Glasgow.[4] The founding members expressed the wish that the gardens become a staple institution of the city, a public place 'where every person may at a small expense partake of a natural and innocent enjoyment, the observation of nature in her fairest and most lovely forms'.[5] Funding was made available with the sale of shares to hundreds of individuals, who became joint owners of the gardens, allowing construction work to start in May 1817. The eight-acre site was completed by December that year. The new botanic gardens would become home to several thousand plants from Thomas Hopkirk's personal collection as well as donations from botanical collections in Dublin, Liverpool and Edinburgh.[6] The next few years would be momentous ones for the gardens. In September 1818, the gardens were granted a royal charter that led to the creation of the Royal Botanic Institution of Glasgow, and in April 1820 William Jackson Hooker was appointed Regius Professor of Botany at the University of Glasgow, following the resignation of his predecessor, Robert Graham.[7] Hooker was an English botanist from Norwich and one of Sir Joseph Banks's protégés, and as a privilege granted to his new academic status in the city he was automatically appointed one of the directors of the gardens.[8] Upon his arrival, he was duly impressed by the gardens, calling them 'a noble establishment … admirably planned'.[9] Within a few decades and under the authority and tutelage of the professor, they became an integral part of the fabric of the city, just as the combined effects of the Industrial Revolution and the inflow of colonial capital supported by the merchant community were ushering in a new era of urban development. Yet the initial dreams of scientific and cultural grandeur were to prove costly. The gardens were faced repeatedly with worrying financial setbacks that burdened the institution for decades. The headaches linked to high running costs tended to take precedence over long-term development, leading to a short-term mindset that served the individual

c.1740–90, Edinburgh: John Donald Publishers, 1975; Stephen Mullen, *The Glasgow Sugar Aristocracy: Scotland and Caribbean Slavery, 1775–1838*, London: University of London Press, 2022.

[2] Stephen Mullen, *It Wisnae Us: The Truth about Glasgow and Slavery*, Edinburgh: The Royal Incorporation of Architects in Scotland, 2009.

[3] Arthur D. Boney, *The Lost Gardens of Glasgow University*, London: Christopher Helm Publishers, 1988, p. 251.

[4] 'Meeting of numerous gentlemen held within the Tontine Hotel at Glasgow', 8 April 1817, Minute Book of the Royal Botanic Institution of Glasgow (subsequently MBRBIG), Mitchell Library Special Collections, Glasgow, Scotland, DTC 11-1(1), pp. 7–8.

[5] Royal Botanic Institution of Glasgow, *Companion to the Glasgow Botanic Garden, or Popular Notices of Some of the More Remarkable Plants Contained in It*, Glasgow: John Smith & Son, 1818, p. 6.

[6] 'Meeting of subscribers', 30 April 1817, MBRBIG, DTC 11-1(1), p. 14.

[7] 'Translation of the charter of the Royal Botanic Institution of Glasgow', *Statement of the Affairs of the Royal Botanic Institution of Glasgow*, Glasgow: James Hedderwick, 1821, p. 16; 'Diplomas awarded to William Jackson Hooker, c.1813–1863', Papers of Sir William Jackson Hooker (subsequently WJH), Kew's Library and Archives, London, WJH/8/1.

[8] The Royal Botanic Institution of Glasgow was managed by a president, a vice president and nine members, or directors, among whom the professor of botany was the only one to hold a permanent seat.

[9] William J. Hooker to Dawson Turner, 3 May 1820, WJH, WJH/2/1, ff. 301–2.

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interests of the proprietors, rather than the establishment's scientific goals. The year 1841 would prove a turning point in this respect. After working in Glasgow for more than twenty years, fulfilling a life-long ambition, William J. Hooker left the city for the Royal Botanic Gardens at Kew. Around the same time, in an attempt to find a more suitable and larger parcel of land close to a water supply, the Glasgow gardens were relocated to the western part of the city, near Great Western Road along the bank of the Kelvin river. This new chapter in the history of the gardens was much less successful than anticipated, and the Royal Botanic Institution of Glasgow remained bogged down with financial issues until its incorporation into the Parks and Gardens of the Glasgow Corporation in 1891. The ideals of scientific progress and urban improvement would thus ultimately be compromised by the harsh reality of economics.

This article focuses on the first phase of the gardens: from their foundation in 1817 to their relocation to the West End of Glasgow in 1841, a period which extends slightly at both ends beyond William J. Hooker's twenty-one-year association with the establishment. Although the latter's departure and the movement across town represented a significant break in the history of the Gardens – with the former professor decamping to Kew with most of his network of corresponding botanists and plant collectors – Hooker's influence in Glasgow would remain important in the ensuing decades. Thus the key aim of this article is to determine whether the scientific ambitions stated by the founding members when the gardens were first laid out in 1817 materialized in the following years, and whether the result was indeed an 'establishment [that] far surpasse[d] in usefulness and splendeur many others of the kind of greatly longer standing'.[10] Further, did the gardens truly benefit science, or rather, as their founder Thomas Hopkirk put it in 1826, had science been made 'subservient to profit'?[11] And finally, how successful was William J. Hooker in articulating the scientific and imperial pursuits of the Glasgow Botanic Gardens?

Part of the answer to these questions may be found by examining the financial situation of the Royal Botanic Institution of Glasgow during the period up to 1841. It will be argued here that the funding system of the Glasgow Botanic Gardens partially hindered their development and oriented their policies when it came to public and scientific outreach, seemingly giving priority to short-term financial goals. Yet this should not be understood as the whole story. At times, science may indeed have been 'subservient to profit' in the Glasgow Botanic Gardens, but this article will also argue that the establishment's scientific contribution was substantial, as was Hooker's during his tenure as professor and director, more particularly in the training of the next generation of botanists and in the circulation of specimens and botanical knowledge both at home and abroad.

Gaps in the historiography

The Glasgow committee's decision to establish a botanical garden in their city was not born in a vacuum. Throughout the nineteenth century, the rise of public curiosity in all matters botanical, as well as the growing political attention paid to the economic and commercial potential of new agricultural crops, was triggered by an unabated scientific interest in the novel field of botany, heavily supported by imperial conquest. Dozens, if not hundreds, of scientific explorations – sponsored by learned societies, such as the Horticultural Society of London and the Royal Society; by official bodies, including the Royal Navy and the Colonial Office; and by merchant companies, notably the East India Company – went well beyond the borders of Britain's growing imperial power. The result

[10] 'Third annual meeting of the proprietors of the Royal Botanic Institution', 12 December 1819, MBRBIG, DTC 11-1(1), p. 60.

[11] 'Meeting of the directors', 8 September 1826, MBRBIG, DTC 11-1(6), p. 82.

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was the (re)discovery and circulation of botanical knowledge in Britain and throughout Europe.[12] Plant collectors and botanists had a lasting and nefarious impact on the lands they explored – and on the peoples that inhabited them.[13] Additionally, the introduction and acclimatization on British soil of thousands of new botanical specimens – some very rare and exotic – also transformed the fields of agriculture and horticulture at home, irremediably linking the nation to its colonized territories. As historian Richard Drayton has remarked, by the beginning of the nineteenth century, 'Political and economic circumstances made necessary this marriage of science and British imperial power, to which botany was to be central'.[14] This unflagging pursuit of botanical knowledge echoed the gradual emergence of a new imperial ideology centred on progress and improvement, justifying colonization and territorial expansion.

While a renewed interest in the links between botany and empire(s) has been a key feature of recent research in the field, the history of the Glasgow Botanic Gardens has been surprisingly absent from the academic literature, with scholars of British history tending to concentrate on the better-known case of the Royal Botanic Gardens at Kew.[15] Arthur D. Boney devoted a short chapter to the first botanic gardens in his 1988 work on the University of Glasgow gardens, but it was predominantly statistical in nature, and neither the scientific, nor the political or imperial aspects were thoroughly addressed.[16] Another book covering their history from 1817 to the present was published in 2006 by the former curator of the gardens, Eric Curtis. Although a highly informative work, and addressing a few critical milestones in their development, it was aimed above all at a popular audience, and lacked a detailed historical and historiographical contextualization.[17] There still remains, therefore, no in-depth academic study of the gardens' origins and history. The contention here is that this gap in the historiography needs to be filled, for it will be seen that the Glasgow Botanic Gardens stood at an important crossroads of political and economic interests, scientific discovery, cultural innovation and imperial motives.

Historians have also tended to downplay Hooker's twenty-one-year residency in Glasgow and focused on his later directorship at the Royal Botanic Gardens at Kew. Indeed, they often only mention Glasgow in the briefest of terms, explaining how Hooker was merely biding his time in the city, dreaming of Kew and itching to leave

[12] See, for instance, Lucile Brockway, *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens*, New York and London: Academic Press, 1979, p. 113; Janet Brown, 'Biogeography and empire' in Nicholas Jardine, James A. Secord and Emma C. Spary (eds.), *Cultures of Natural History*, Cambridge: Cambridge University Press, 1996, pp. 305–21; Ray Desmond, *Sir Joseph Dalton Hooker: Traveller and Plant Collector*, Woodbridge: Antique Collectors' Club, 1999, pp. 19–34; Winston G. McMinn, *Allan Cunningham: Botanist and Explorer*, Melbourne: Melbourne University Press, 1970; David P. Miller and Peter H. Reill (eds.), *Visions of Empire: Voyages, Botany, and Representations of Nature*, Cambridge: Cambridge University Press, 2011.

[13] Alfred Crosby, *Ecological Imperialism: The Biological Expansion of Europe, 900–1900*, Cambridge: Cambridge University Press, 1986.

[14] Richard Drayton, *Nature's Government: Science, Imperial Britain, and the 'Improvement' of the World*, New Haven, CT and London: Yale University Press, 2000, p. 116.

[15] For the links between botany and empire see, for instance, Hélène Blais, *L'empire de la nature: Une histoire des jardins botaniques coloniaux (fin XVIIIe siècle-années 1930)*, Ceyzérieu: Champ Vallon éditions, 2023; Nuala C. Johnson, *Nature Displaced, Nature Displayed: Order and Beauty in Botanical Gardens*, 2nd edn, London: Bloomsbury Academic, 2020; Arthur MacGregor (ed.), *Naturalists in the Field: Collecting, Recording and Preserving the Natural World from the Fifteenth to the Twenty-First Century*, Leiden: Brill, 2018; Donal McCracken, *Gardens of Empire: Botanical Institutions of the Victorian British Empire*, Leicester: Leicester University Press, 1997. Regarding the history of Royal Botanic Gardens at Kew see Ray Desmond, *The History of the Royal Botanic Gardens, Kew*, London: The Harvill Press with the Royal Botanic Gardens, Kew, 1995; Drayton, op. cit. (14).

[16] Boney, op. cit. (3).

[17] Eric W. Curtis, *The Story of Glasgow's Botanic Gardens*, Glendaruel: Argyll Publishing, 2006.

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Scotland. In *The Hookers of Kew* (1967) by Mea Allan, the only comprehensive (if flawed) biography to date of the whole Hooker family, the Glasgow years are largely reduced to three short chapters.[18] The result of such summary treatment can be seen in works like Ray Desmond's *The History of the Royal Botanic Gardens Kew* (1999), where the emphasis is firmly placed on Hooker's eagerness to leave: 'Only two years after his arrival in Glasgow, Hooker enquired about posts in the south of England, the centre of Britain's scientific life. He desperately wanted to be part of it'.[19] Even Richard Drayton, in his seminal 2000 work *Nature's Government*, did not linger on Hooker's life in Glasgow, only alluding to his achievements in relation to his future position at Kew.[20] For many historians of botany, then, it seems that the Glasgow years of William J. Hooker deserve little more than a footnote. Yet the work that Hooker undertook during the two decades he spent in the Scottish city proved to be of considerable significance, both for his scientific career and for the prominence of the gardens. As a professor at the University of Glasgow, Hooker became extremely popular. His lectures were scientifically challenging, but they drew an ever-increasing crowd of eager students, which helped to popularize botany. Hooker also greatly benefited personally from his position, expanding his scientific and diplomatic networks in Europe, North America and the colonies. He was also very keen to promote the gardens, which flourished under his tutelage, boasting a remarkable plant collection, which attracted many visitors in the 1820s and 1830s.

The Glasgow Botanic Gardens and their imperial roots

The principal aim of the Glasgow Botanic Gardens was to collect, grow and acclimatize new species of plants. Their initial success in that respect owed much to the colonial connections of the gardens' director, William J. Hooker, and certain of their proprietors. Anchored in a local context informed by the industrial and commercial development of the city, the gardens were indeed, from the very beginning, shaped by global concerns and benefited from Britain's colonial expansion.

When established, the Glasgow Botanic Gardens housed around three thousand plants, many of them originating from the personal collection of Thomas Hopkirk.[21] In the following years, hundreds more plants were introduced and catalogued in the collections. Many were donated by other British or European botanical establishments, especially in the wake of a visit by the curator, Stewart Murray, to the Horticultural Society of London in 1821 and 1824 and to other public and private British gardens in 1827.[22] At the time, the success of botanical gardens rested primarily on the principle of reciprocity, and exchanges of plant specimens without any financial component were the norm – one of the reasons being the limited funds of many of these gardens.[23] Jim Endersby explains in *Imperial Nature*, 'Friendship was often the glue that held informal networks together'.[24] In that context, Hooker's many personal acquaintances played a key role in the growth of the Glasgow Botanic Gardens' plant collection, as the vast majority of the new plants that were added to the gardens between 1820 and 1841 can be solely attributed to his exertions. Hooker was truly the driving force behind the gardens. As exemplified both in

[18] Mea Allan, *The Hookers of Kew 1785–1911*, London: Michael Joseph, 1967, pp. 76–111.

[19] Desmond, op. cit. (15), p. 151.

[20] Drayton, op. cit. (14), pp. 144–6.

[21] Curtis, op. cit. (17), p. 23.

[22] 'Annual report of the directors', 13 December 1824, p. 9, and 'Annual report of the directors', 10 December 1827, MBRBIG, DTC 11-1(2), p. 49.

[23] See, for instance, Jodi Frawley, 'The deep roots of reciprocity at the Botanic Gardens, Sydney', *Australian Garden History* (2016) 28(1), pp. 9–12.

[24] Jim Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science*, Chicago: University of Chicago Press, 2008, p. 107.

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his correspondence and in his published works, he regularly acknowledged the assistance of fellow British botanists in collecting many of the specimens that either grew in the gardens or became part of his personal herbarium. It was through such connections that, over time, some of his correspondents, such as the systematic botanist George Bentham, became close friends.

The Glasgow Botanic Gardens therefore functioned as a dynamic site for the accumulation of botanical knowledge.[25] During one of his public lectures in around 1830 (delivered before a lay audience interested in the field of botany), Hooker noted,

> It is far from being my wish to draw an invidious comparison between our Establishment & those of other parts of the Kingdom; but this I will say without fear of contradiction, that, thanks to those entrusted with its management & to the merchants & friends, both at home & abroad, it is second to none in regard to usefulness & the number of plants it contains, & which are now estimated at 12,000 species.[26]

Hooker's mention here of 'friends … abroad' indicates that his professional network was not solely rooted in Britain, as several of his correspondents scoured remote foreign territories. A certain Oliver Adamson, for example, sent him a rare specimen of the *ipecacuanha* – whose dried root was used as an emetic – from Pernambuco in Brazil, and John Tweedie, a Scottish botanist who explored parts of Argentina, corresponded with him for decades, sending many specimens to the Glasgow Botanic Gardens, such as the seeds of a variety of *Solanum* (*Solanum tweedieanum*), which flowered there in 1833.[27] Prominent foreign botanists – such as the Swiss Augustin-Pyramus de Candolle, and the Americans John Torrey and Asa Gray – also sent Hooker packets of seeds and information related to newly discovered specimens. The majority of botanical specimens sent to him from abroad, however, came from his ever-growing scientific network of professional and amateur plant hunters – a group of varied employment and social standing, scattered across the British Empire. The specimens found by David Douglas, Thomas Drummond, John Scouler and George Gardner are well documented in Hooker's publications, but there were many others who would contribute to the Glasgow Botanic Gardens' collections.[28] For instance, Charles Sandbach Parker dispatched seeds of the small-flowered cuphea (*Cuphea parviflora*) from Demerara in 1824, and the Reverend Lansdown Guilding sent specimens of the *Taenitis* from Saint Vincent in 1825.[29] Women also participated in these exchanges as amateur collectors.[30] Among them, Lady Dalhousie, living in Quebec and married to the governor general of British North America, sent valuable botanical information that Hooker used in his *Flora Boreali-Americana*.[31]

[25] Johnson, op. cit. (15), p. 141.

[26] William J. Hooker, 'Lecture Notes on Botany', WJH, WJH/4/1, p. 291.

[27] 'Annual report of the directors', 10 December 1838, MBRBIG, DTC 11-1(3), p. 63; Benjamin Maund, *The Floral Register: Containing Figures and Descriptions of Nearly All Tender and Hardy Plants Which Have Been Lately Introduced to and Cultivated in Great Britain*, London: Simpkin, Marshall, and Co., 1850, p. 6.

[28] Drayton, op. cit. (14), p. 139; Jack Nisbet, *The Collector: David Douglas and the Natural History of the Northwest*, Seattle and New York: Sasquatch Books, 2009; John Davies, *Douglas of the Forests*, Seattle: University of Washington Press, 1973.

[29] William J. Hooker, *Exotic Flora, Containing Figures and Descriptions of New, Rare or Otherwise Interesting Exotic Plants*, vol. 1, Edinburgh: William Blackwood, 1823, Plate 161; Lansdown Guilding to William J. Hooker, 27 July 1825, Directors' Correspondence (subsequently DC), Kew's Library and Archives, London, vol. 43, f. 70.

[30] Ann Shteir and Jacques Cayouette, 'Collecting with "botanical friends": four women in colonial Quebec and Newfoundland', *Scientia Canadensis* (2019) 41(1), pp. 1–30.

[31] Hooker described her as 'the lady of his Excellency the Governor, whose rank and influence, no less than her superior acquirements and great love of science, entitle us to hope for much from her in the promotion of our wishes'. William Jackson Hooker, 'On the botany of America', *Edinburgh Journal of Science* (1825) 2, pp. 108–29, 126.

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While Hooker and the other directors of the Glasgow Botanic Gardens focused mainly on the outcome of these exchanges – the successful arrival of seeds (and sometimes live plants) in Glasgow – they never fully acknowledged the colonial context in which many of these botanical specimens were acquired. In countless instances, the collection of specimens amounted to an appropriation of knowledge to the detriment of indigenous populations. Plant collectors like Douglas, Tweedie and Drummond were trained botanists, but the flora of the countries they criss-crossed was often quite foreign to them. Consequently, they often had to rely on local knowledge for their discoveries. Jim Endersby has defined this local knowledge as having

> three distinct facets: detailed knowledge of plants' locations and habitats and of the colony's geography (*topographic knowledge*); familiarity with living plants, which allowed colonists to identify their country's unique species (*endemic knowledge*); and contact with groups like the Maori or Aborigines, which allowed some colonial naturalists to learn their plant lore (*indigenous knowledge*).[32]

Travelling across long distances, Douglas, Tweedie and Drummond had partial 'topographic' and 'endemic knowledge', as there had been previous European explorations of some of the regions they crossed, but 'indigenous knowledge' was also crucial to the success of their botanical missions.

Evidence of the use of indigenous knowledge was manifest, for example, during David Douglas's botanical expedition along the Columbia river in the Pacific Northwest in 1826, an exploration sponsored jointly by Hooker and the Horticultural Society of London.[33] Douglas was intent on finding the sugar pine, a conifer he called the 'most princely of the genus – perhaps the grandest specimen of American vegetation'.[34] He had heard of its existence while conversing with members of the Kalapuya nation.[35] A few indigenous people were willing to assist him in his quest, but many others were either reluctant or openly hostile, as his subsequent account revealed:

> I had only crossed a low hill when I came to abundance of *Pinus Lambertiana*. I put myself in possession of a great number of perfect cones, but circumstances obliged me to leave the ground hastily with only three – a party of eight Indians endeavoured to destroy me. I returned to the camp, got the horses saddled, and made a speedy retreat.[36]

Douglas also tried to steal a number of tobacco plants (*Nicotiana pulverulenta*) from a garden plot, thinking that his theft would go unnoticed. Stumbling upon the angry 'owner' of the plot, he gave the man 'two-finger lengths of tobacco from Europe' (a type of tobacco of lesser quality) to appease his wrath, while also calling him a 'savage'.[37] Having tried to rob the man, Douglas bargained his way out of trouble by knowingly offering something of significantly lower value than the specimen he had just seized. This example illustrates the imbalance of power in botanical transfers, especially in colonial contexts. Alongside his theft, Douglas perpetuated a colonialist vision of ownership of land: he called the man that he met the 'owner' of the plantation, dismissing his own deliberate trespassing,

[32] Endersby, op. cit. (24), p. 89, original emphasis.

[33] Half of his findings went to William Jackson Hooker, who had trained him and acted as his mentor. Many of the seeds Douglas sent to him were germinated in the Glasgow Botanic Gardens.

[34] David Douglas to William J. Hooker, 24 March 1826, DC, vol. 44, f. 62.

[35] David Douglas, *Journal Kept by David Douglas 1823–1827*, London: William Wesley & Son, 1914, p. 59.

[36] Douglas, op. cit. (35), p. 68.

[37] Douglas, op. cit. (35), p. 141.

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while being simultaneously unaware that indigenous peoples did not view land as a commodity. In fact, Douglas only apprehended the natural environment surrounding him with regard to its potential as a valuable resource. This case offers a blatant example of extractive colonialism: Douglas considered that this specimen of *Nicotiana pulverulenta* was there for the taking, completely ignoring and disrespecting the cultural and spiritual value ascribed to tobacco, a plant considered sacred by many indigenous peoples in North America.[38]

Conflictual encounters such as these often occurred in regions nominally under British control, but whose sovereignty was disputed by indigenous peoples. These regions were 'contact zones', which Mary Louise Pratt has defined as 'the space in which peoples geographically and historically separated come into contact with each other and establish ongoing relations, usually involving conditions of coercion, radical inequality and intractable conflict'.[39] As Douglas's actions demonstrate, more often than not botanizing took an exploitative form, exemplifying how colonial oppression could manifest in multiple ways. Colonists robbed indigenous peoples not only of their lands but also – as Douglas's theft from indigenous tobacco cultivators demonstrates – of something more intangible, pertaining to ancestral and cultural knowledge. Often seized in 'contact zones' in wanton acts of biopiracy, the specimens were then shipped to Europe, where they were grown and propagated in the greenhouses of botanical gardens, including those in Glasgow. Among the many seeds and plants that David Douglas, John Scouler and fellow collectors dispatched to Hooker from North America in the 1820s and that went on to thrive in the Glasgow Botanic Gardens, were the *Gaultheria shallon* ('salal' in vernacular language), whose fruit was 'much esteemed by the natives [Chinook nation], and made into cakes, which keep for a great length of time'. In his *Flora Boreali-Americana*, Hooker noted that it was 'a great acquisition, bearing copious blossoms and abundant fruit'.[40] This appropriation of botanical knowledge had a further exploitative dimension, as it also represents a form of linguistic imperialism. Native plants were often named after the plant hunters who collected them, thereby erasing their previous indigenous names and reinforcing their disconnection from indigenous cultural landscapes. Such was the case, for example, of *Phlox drummondii*, a flower collected by Thomas Drummond in Texas in the 1830s, added to the Flower Garden section of the Glasgow Botanic Gardens, and later widely distributed by nurseries throughout Europe.[41] The flower still bears his name to this day. Another case in point is *Solanum tweedieanum*, mentioned above, a species found in Argentina and named after John Tweedie. Both plants owe their name to William J. Hooker.

On an individual level, then, botanists, professional plant collectors and amateurs were key contributors to the gardens' collections. Alongside the activities of these collectors, the gardens' collections also grew in size and variety thanks to institutional exchanges with gardens elsewhere in the British Empire. These were not one-way exchanges, however, as many seeds transited through Hooker back to the colonies or to other botanical centres in Britain and Europe. In the 1820s, Nathaniel Wallich, superintendent of the Calcutta Botanic Gardens, sent Hooker many specimens, as did Charles Telfair, deputy curator of the Royal Gardens at Pamplemousses (Mauritius), and Charles Fraser, colonial

[38] Marcy Norton, *Sacred Gifts, Profane Pleasures: A History of Tobacco and Chocolate in the Atlantic World*, New York: Cornell University Press, 2008.

[39] Marie Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation*, London: Routledge, 1991, pp. 6–7. Londa Schiebinger built on this concept, calling them 'biocontact zones' in the Caribbean context of the eighteenth century. Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World*, Cambridge, MA: Harvard University Press, 2004, p. 83.

[40] William J. Hooker, *Flora Boreali-Americana*, vol. 2, London: Henry G. Bohn, 1840, p. 36.

[41] In this case, the genus is *Phlox* and the species *drummondii*, according to Linnaeus's binomial nomenclature in Latin. 'Annual report of the Directors', 14 December 1835, MBRBIG, DTC 11-1(2), p. 175.

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botanist of New South Wales – all of whom were honorary members of the Glasgow Botanic Gardens.[42] To ensure the successful acclimatization of such 'tropical' specimens, several buildings were erected in the gardens, such as a conservatory facing west in the mid-1820s. In December 1830, the directors remarked,

> since last year they have erected at the East end of the range of Hothouses a very neat house of 40 feet long by 18 feet inside, for the purpose of preserving and growing that beautiful family of plants – the African Heaths. This house is admirably adapted for the purpose ...[43]

The central role played by the gardens in providing the specimens featured in many of Hooker's publications, including his *Exotic Flora* (1823–7), was mentioned by the author himself: '[my] chief recourse has been the collection of the Royal Botanic Garden of Glasgow'.[44] Among other plants, the *Flora* featured a specimen of *Pholidota imbricata*, collected in Nepal and sent by Nathaniel Wallich to Hooker, and a new species of *Catasetum*, which was sent by Baron De Shack of Trinidad and 'blossomed in the stove of [the] Botanic Garden in November 1824'.[45] This *Exotic Flora* also revealed how the gardens were part of a national network of botanical gardens thriving on the discovery of new plants in colonized territories, as it listed numerous 'tropical' specimens sent as gifts by Henry Shepherd, sub-curator of the Liverpool Botanic Garden; William Townsend Aiton, superintendent at Kew; and Robert Graham, Regius Keeper of the Royal Botanic Garden Edinburgh.[46]

From the 1820s onwards, the Glasgow Botanic Gardens thus became increasingly connected to British imperial expansion. This was not in the least surprising, as the gardens had always been closely entangled with colonial politics. This is best exemplified by the career of James Ewing: Ewing was a founding member of the gardens in 1817, and also a powerful sugar merchant and founding secretary of the Glasgow West India Association, a political lobby created in 1807 to promote mercantile and slave-owning interests in the British Caribbean.[47] Ewing is not alone in this regard, as many other proprietors of the gardens had financial or mercantile ties with the British colonies, such as Mungo Nutter Campbell, both lord provost of the city between 1824 and 1826 and an absentee planter and a slave owner in Demerara (a British colony in the Guianas).[48] As a result of such ties, colonial capital consistently funded the Glasgow Botanic Gardens in the first decades of their existence. The contributions of these wealthy and powerful colonial merchants and planters were not only pecuniary, however, as their personal and professional connections also greatly facilitated the importation of plants and seeds from the British colonies. The *Literary Gazette* remarked in 1818 that 'hardly a ship now arrives

[42] For instance, Telfair sent seeds of *Castanopermum australe* from the island of Mauritius to the gardens. William J. Hooker (ed.), *Botanical Miscellany*, London: J. Murray, 1830, vol. 1, p. 242; 'Annual report of the directors', 13 December 1830, MBRBIG, DTC 11-1(2), p. 97.

[43] 'Annual report of the directors', 13 December 1830, MBRBIG, DTC 11-1(2), p. 98.

[44] 'Annual report of the directors', 10 December 1827, MBRBIG, DTC 11-1(2), p. 53.

[45] William J. Hooker, *Exotic Flora, Containing Figures and Descriptions of New, Rare or Otherwise Interesting Exotic Plants*, vol. 2, Edinburgh: William Blackwood, 1825, Plates 138, 151.

[46] See, for instance, Hooker, op. cit. (29), Plates 8, 14, 20, 73. This became a general and global trend by the end of the nineteenth century, as Katja Kaiser notes that 'exchange of duplicates ... took on the form of institutional politics in national and international contexts that served to redistribute material and knowledge'. Katja Kaiser, 'Duplicate networks: the Berlin botanical institutions as "clearing house" for colonial plant material, 1891–1920', *BJHS* (2022) 55(3), pp. 279–96, 286.

[47] Mullen, op. cit. (1), p. 36.

[48] Royal Botanic Institution of Glasgow, op. cit. (5), p. 10; 'Mungo Nutter Campbell', *Centre for the Study of the Legacies of British Slavery*, at www.ucl.ac.uk/lbs/person/view/41620 (accessed 2 June 2023).

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in the Clyde from foreign parts without bearing rare seeds or plants for the Establishment'.[49] This particular fact was acknowledged numerous times in the minutes of the Botanical Institution: 'To the Owners and Captains of vessels and their agents, the Institution continues to lie under many obligations for their zealous attention, which has been above all estimation in promoting the interests of the Garden; and for their Valuable services, which have been frequently bestowed gratuitously.'[50] While the institution's minutes seem to imply that the proprietors were first and foremost interested in supporting scientific progress, the fact that a large proportion of them were involved in colonial pursuits in the British Caribbean points to another motive. Since 1807 and the abolition of the British slave trade, many Glaswegian merchants and absentee sugar planters (among whom were a number of the gardens' proprietors) had been fighting a propaganda war to win over public opinion.[51] By the 1820s, the tide was turning, and abolitionist campaigners calling for the end of chattel slavery in the British colonies were slowly gaining ground. Thus the gardens may have acted as a medium for many proprietors to seek to restore a tarnished reputation in a fast-evolving political landscape – and potentially to explore new avenues of income and influence. Yet, for all the hard work conducted by Hooker, the gardens played a more significant role in accumulating and circulating botanical knowledge and plants from colonized territories throughout Europe than in actively participating in the mass production of commercial botanical specimens from these regions. Hooker did receive specimens that would later transform European forestry and agriculture – a case in point being the *Pseudotsuga menziesii* tree (or Douglas fir, from the Pacific Northwest) grown in the gardens from seeds sent by Douglas and one of the first Douglas firs to be successfully acclimatized in Europe at the time. However, because of the modest size of the gardens and the limited funds available to him, Hooker did not spearhead any botanical production scheme on a large scale during his tenure in Glasgow.

Botany in theory and in practice

Although influenced by the imperial context, the Glasgow Botanic Gardens never relinquished their role as a centre for scientific education intended to popularize botany. This was by no means a straightforward task – even for a man of William J. Hooker's talents. As Richard Drayton remarks, in the nineteenth century, 'among those involved in shaping the idea of science in Britain, botany did not receive the respect as a profound and serious discipline which it had enjoyed one hundred years before. Where the touchstone for scientific pride remained Newton's physics and Herschel's astronomy, taxonomy seemed a lesser discipline.'[52] Yet Hooker took his academic position seriously and taught prospective botanists a rigorous scientific method, encouraging them to develop their knowledge and skills both in the classroom and outdoors, either in the gardens or in the more distant Highlands. He regularly presented his students with the latest discoveries in the scientific field while firmly grounding the latter in the theories of natural theology. He trained many young men who went on to become active participants in the development of botany in the British colonies, a development which would also prove beneficial to the gardens and one that underlines the close relationship between science and colonial expansion.

[49] Henry Colburn (ed.), *The Literary Gazette and Journal of Belles Lettres* (19 December 1818) 2(100), pp. 801–16, 809.

[50] 'Annual report of the Directors', 12 December 1836, MBRBIG, DTC 11-1(3), p. 3.

[51] Stephen Mullen, 'Proslavery collaborations between British outport and metropole: the rise of the Glasgow–West India interest, 1775–1838', *Journal of Imperial and Commonwealth History* (2023) 51(4), pp. 601–43; Iain Whyte, *Scotland and the Abolition of Black Slavery, 1756–1838*, Edinburgh: Edinburgh University Press, 2006.

[52] Drayton, op. cit. (14), p. 138.

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As in other botanical gardens, such as the Glasnevin Royal Botanic Gardens in Dublin, where the educational purpose was paramount from the outset, the Glasgow Botanic Gardens had always been intended as a teaching establishment, with a lecture room included in the original plans.[53] Access to the gardens for students of medicine was indeed made a prerequisite for the University of Glasgow's financial contribution to the creation of the gardens in 1817. First with Robert Graham (1818–20), then from 1820 onwards with Hooker, medical students at the University of Glasgow had to attend classes on botany – the Regius Chair of Botany being part of the Faculty of Medicine.[54] Hooker was quite an inexperienced academic when appointed to his post, but over time, as noted earlier, his lectures proved extremely popular. They were held every year for twenty years, one hour a day, five days a week at eight o'clock in the morning. The lecture series ran from the beginning of May to mid-July for the first fifteen years of his tenure, with a course of lectures in late winter (from February to April) added for the remaining five years.[55] In the 1830s, more than a hundred students attended his classes; he also gave public lectures to an enthusiastic lay audience.[56] His university curriculum was divided into sixty lectures and broached various topics, from the history of botany to systematics – which he called the 'grammar of botany' and considered quite tedious, yet essential.[57]

Both in the classroom and in professional circles, Hooker defended botany tenaciously, considering it a science with a noble tradition that should rightly be associated with medicine but also studied as a discipline in its own right.[58] He fought in particular against the misconception that the possession of theoretical botanical knowledge alone (such as knowing the Latin names of plants) made one a botanist. Botany was a science, Hooker maintained, that had to be studied in the classroom and in the field, and he made no effort to conceal his contempt for armchair botanists who never set foot outside. While he relied for his academic lectures on his own work, *Flora Scotica* (1821), and on colourful drawings of plants on display, he also encouraged observation *in situ*.[59] He was well known for organizing field trips with his students to the countryside outside Glasgow and to the Highlands, and considered botanical gardens an essential component in the education of prospective botanists. This view was shared by his colleague John Stevens Henslow, professor of botany at the University of Cambridge from 1831 onwards, who regarded them, according to Nuala Johnson, 'as a training ground for sharpening the senses, focusing on what was significant, and engaging in the critical task of comparison'.[60] Hooker would thus have wholeheartedly agreed with the opinion expressed in a meeting of the

[53] Nuala C. Johnson, 'Grand design(er)s: David Moore, natural theology and the Royal Botanic Gardens in Glasnevin, Dublin, 1838–1879', *Cultural Geographies* (2007) 14(1), pp. 29–55, 32.

[54] Johanna Geyer-Kordesch and Fiona Macdonald, *Physicians and Surgeons in Glasgow: The History of the Royal College of Physicians and Surgeons of Glasgow 1599–1858*, London and Rio Grande: The Hambledon Press, 1999, p. 207.

[55] Joseph D. Hooker, 'A sketch of the life and labours of Sir William Jackson Hooker', Kelvin Pamphlets, Special Collections, Glasgow University Library, Glasgow, Scotland, xxxi; University of Glasgow, *Inaugural Addresses by Lords Rectors of the University of Glasgow*, Glasgow: David Robertson, 1839, pp. lxii–lxiii; 'University Calendar 1826–1827', Records of the Senate Office, Special Collections, Glasgow University Library, Glasgow, Scotland, GUA SEN10/1, p. 28.

[56] James Coutts, *A History of the University of Glasgow: From Its Foundation in 1451 to 1909*, Glasgow: James Maclehose & Sons, 1909, p. 532; Hooker, op. cit. (26).

[57] Hooker, op. cit. (55).

[58] 'It has (indeed) been the misfortune of Botany, that in the early ages of the Science, it was considered valuable only inasmuch as it indicated properties that were of use in medicine, whilst the means of knowing with certainty the plants themselves were almost wholly neglected.' Hooker, op. cit. (26), p. 411.

[59] See 'Botanical teaching charts', GLAHA:58148, GLAHA:58149, GLAHA:58150, GLAHA:58151, the Hunterian Collections, University of Glasgow, Glasgow, Scotland.

[60] Hooker, op. cit. (26), p. 287; John Stevens Henslow, *Questions on the Subject Matter of Sixteen Lectures in Botany*, Cambridge: Deighton, Macmillan & Co., 1851, p. iv; Johnson, op. cit. (15), p. 64.

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gardens' directors in 1830 that his establishment was 'so important to the education of young men in Scotland from being in a state of great perfection, and [their] utility being universally acknowledged not only in this country but by all scientific men and students of Botany in Europe'.[61] His students were therefore encouraged to spend many hours in the gardens and observe the natural world closely.

Two areas of the gardens were specifically devoted to a scientific display of plants. One was arranged according to Carl Linnaeus's classification method, presenting his sexual method for herbaceous plants and his natural method for medical plants, while the other larger plot was arranged to illustrate the 'Natural Method of [Antoine-Laurent de] Jussieu'.[62] Jussieu's natural method had been prevalent in Paris at the Jardin du roi since the end of the eighteenth century but it was met with much resistance in Britain.[63] It was, however, later popularized by botanical textbooks and gradually became accepted as a valid method by the mid-nineteenth century.[64] In Glasgow, this dual organization was jointly decided on before Hooker's time (the first reference dates to 1818) by Thomas Hopkirk, then the vice president of the Royal Botanic Institution; Robert Austin, one of the proprietors and a nurseryman; and curator Stewart Murray.[65] While Hooker favoured Jussieu, he acknowledged the scientific legacy of Linnaeus during his public lectures.[66] Thus he seemingly carried on with this organization as the plant collection grew in size, as attested by John Claudius Loudon's 1827 plan of the gardens in his *Encyclopædia of Gardening* (Figure 1).[67] In its display of various taxonomy systems, the Glasgow Botanic Gardens' layout was on a par with that of several British botanical gardens at the time, such as the Edinburgh Botanic Garden, which presented both a Linnaean and Jussieuan arrangement, and the Glasnevin Botanic Gardens in Dublin, which displayed two sections, called Hortus Linnæensis and Hortus Jussieuensis in 1818.[68] The general organization of the Glasgow Gardens was also quite similar to these botanical gardens, offering visitors a representation of the geographical division of plants. The plants were arranged in distinct categories, such as 'British plants', 'American borders', 'Alpine plants', 'Medical plants' and 'Plants used in agriculture and commerce', and a small space was dedicated to 'rare plants' (Figure 2).[69] The hothouses harboured the more fragile 'tropical' plants which required heat to thrive.

[61] 'Meeting of the Directors', 22 February 1830, MBRBIG, DTC 11-1(6), p. 128.

[62] Royal Botanic Institution of Glasgow, op. cit. (5), pp. 3, 10.

[63] Franklin Ginn, 'Colonial transformations: nature, progress and science in the Christchurch Botanic Gardens', *New Zealand Geographer* (2009) 65, pp. 35–47, 42; Paul Elliott, Charles Watkins and Stephen Daniels, '"Combining science with recreation and pleasure": cultural geographies of nineteenth-century arboretums', *Garden History* (2007) 35, pp. 6–27, 15.

[64] Jim Endersby, 'Classifying sciences: systematics and status in mid-Victorian natural history', in Martin Daunton (ed.), *The Organisation of Knowledge in Victorian Britain*, London: British Academy and Oxford University Press, 2005, pp. 61–85.

[65] John C. Loudon, *An Encyclopædia of Gardening; Comprising the Theory and Practice of Horticulture, Floriculture, Arboriculture, and Landscape-Gardening ...*, London: Longman, Rees, Orme, Brown, and Green, 1827, pp. 1089–90.

[66] Hooker, op. cit. (26), p. 169.

[67] The only map of the gardens before their relocation in 1841 dates back to 1818 and was published in Royal Botanic Institution of Glasgow, op. cit. (5). It was reissued in the *Catalogue of Plants* published in 1825: William J. Hooker, *Catalogue of Plants Contained in the Royal Botanic Garden of Glasgow in the Year 1825*, Glasgow: Andrew & John M. Duncan, 1825. The map published in Loudon's *Encyclopædia of Gardening* in 1827 appears to be almost identical but reveals two new alterations: a stove and a conservatory (n°27) and the under-gardener's rooms and potting sheds (n°35): Loudon, op. cit. (65). No other later plan seems to have been drawn, and the construction of new buildings, as well as improvements in certain parts of the gardens, is only attested in the minutes of the Royal Botanic Institution of Glasgow. For instance, in late 1833, the erection of two new nursery stoves as well as a 'Substantial Greenhouse 50 feet long by 20 wide' was mentioned in the annual report of the directors, 'Report of the directors', 9 December 1833, MBRBIG, DTC 11-1(2), p. 147.

[68] 'Gardens of Scotland', Loudon, op. cit. (65), p. 1087; Johnson, op. cit. (15), p. 45.

[69] See 'Mutlow's map of the Glasnevin Botanic Gardens in 1818' in Johnson, op. cit. (53), p. 37.

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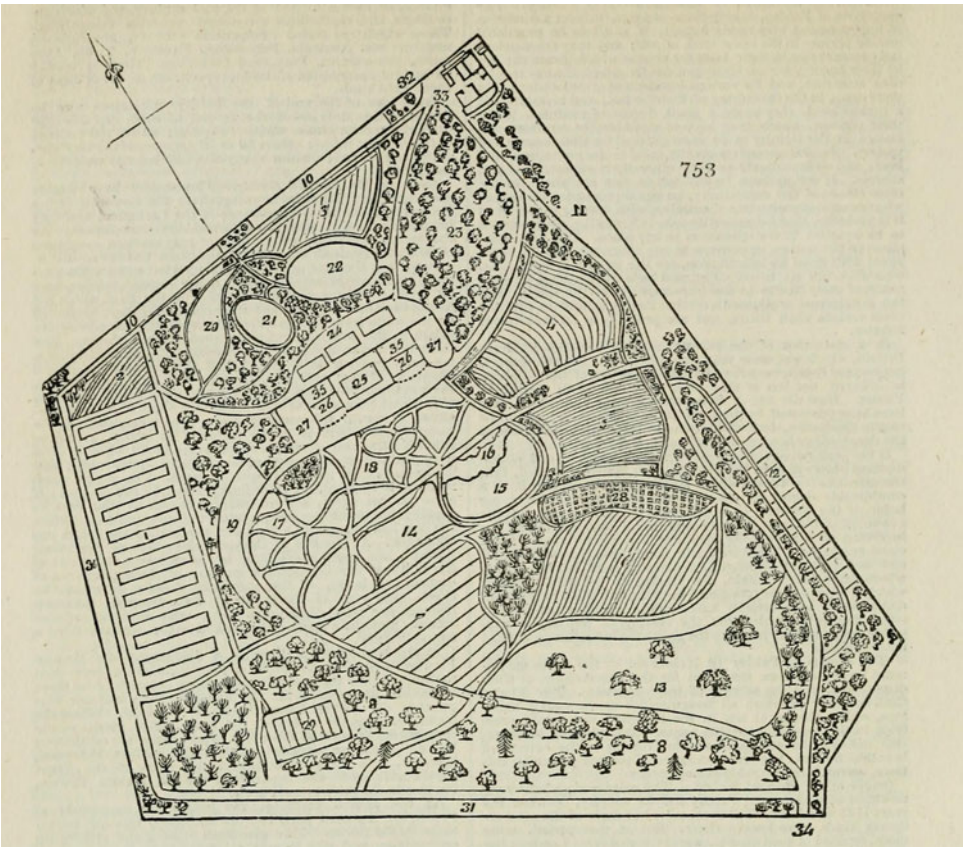

Figure 1. Plan of the Glasgow Botanic Gardens, in John C. Loudon, *An Encyclopædia of Gardening*, London: Longman, Rees, Orme, Brown, and Green, 1827, p. 1090.

While a keen professor, Hooker was perfectly aware that many of his students did not share his all-consuming passion for botany and were not likely to pursue a career in the field. This was especially true after 1831, when it became compulsory for surgeons who wished to enlist in the army or the navy to attend botany classes as part of their training.[70] For this reason, he made sure that his lectures were lively. He also emphasized the practical aspects of plant collecting and herbarium techniques, as some of his students would be posted to the colonies, and were expected to collect new exotic specimens for metropolitan botanical gardens like Glasgow's. In this way, Hooker's teaching proved instrumental in launching the careers of many former students, among them John Scouler (mentioned above) and James Macfadyen, who tried to establish a botanical garden in Bath in Jamaica in the 1820s and sent many specimens to the Glasgow Botanic Gardens.[71] Closer to home, Daniel Ferguson, curator of the Belfast Botanic Gardens from 1836 until his death in 1864, was trained in the Glasgow Botanic Gardens in the 1820s and maintained a good professional relationship with Hooker.[72]

[70] James Cleland, *Enumeration of the Inhabitants of the City of Glasgow and County of Lanark for the Government Census of 1831*, 2nd edn, Glasgow: John Smith & Son, 1831, pp. 58–9.

[71] Hooker, op. cit. (26), p. 417.

[72] Johnson, op. cit. (15), p. 165; letters from Daniel Ferguson to William Jackson Hooker, 1838–44, DC, vols. 10, 12, 16, 19, 21.

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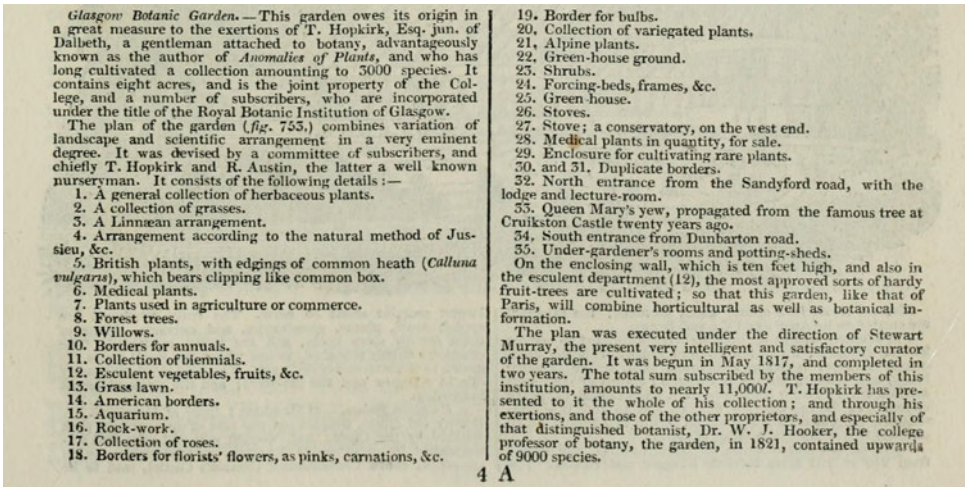

Glasgow Botanic Garden.—This garden owes its origin in a great measure to the exertions of T. Hopkirk, Esq. jun. of Dalbeth, a gentleman attached to botany, advantageously known as the author of *Anomalies of Plants*, and who has long cultivated a collection amounting to 3000 species. It contains eight acres, and is the joint property of the College, and a number of subscribers, who are incorporated under the title of the Royal Botanic Institution of Glasgow.

The plan of the garden (*fig.* 753.) combines variation of landscape and scientific arrangement in a very eminent degree. It was devised by a committee of subscribers, and chiefly T. Hopkirk and R. Austin, the latter a well known nurseryman. It consists of the following details:—

1. A general collection of herbaceous plants.
2. A collection of grasses.
3. A Linnæan arrangement.
4. Arrangement according to the natural method of Jussieu, &c.
5. British plants, with edgings of common heath (*Calluna vulgaris*), which bears clipping like common box.
6. Medical plants.
7. Plants used in agriculture or commerce.
8. Forest trees.
9. Willows.
10. Borders for annuals.
11. Collection of biennials.
12. Esculent vegetables, fruits, &c.
13. Grass lawn.
14. American borders.
15. Aquarium.
16. Rock-work.
17. Collection of roses.
18. Borders for florists' flowers, as pinks, carnations, &c.
19. Border for bulbs.
20. Collection of variegated plants.
21. Alpine plants.
22. Green-house ground.
23. Shrubs.
24. Forcing-beds, frames, &c.
25. Green-house.
26. Stoves.
27. Stove; a conservatory, on the west end.
28. Medical plants in quantity, for sale.
29. Enclosure for cultivating rare plants.
30. and 31. Duplicate borders.
32. North entrance from the Sandyford road, with the lodge and lecture-room.
33. Queen Mary's yew, propagated from the famous tree at Cruikston Castle twenty years ago.
34. South entrance from Dunbarton road.
35. Under-gardener's rooms and potting-sheds.

On the enclosing wall, which is ten feet high, and also in the esculent department (12), the most approved sorts of hardy fruit-trees are cultivated; so that this garden, like that of Paris, will combine horticultural as well as botanical information.

The plan was executed under the direction of Stewart Murray, the present very intelligent and satisfactory curator of the garden. It was begun in May 1817, and completed in two years. The total sum subscribed by the members of this institution, amounts to nearly 11,000*l*. T. Hopkirk has presented to it the whole of his collection; and through his exertions, and those of the other proprietors, and especially of that distinguished botanist, Dr. W. J. Hooker, the college professor of botany, the garden, in 1821, contained upwards of 9000 species.

4 A

Figure 2. List of sections in the Glasgow Botanic Gardens, in Loudon, op. cit., p. 1089.

During his public and academic lectures, Hooker was determined to prove how essential botany was to the understanding of the world. He did not consider this objective to be purely a matter of science, for his passion for botany was deeply intertwined with his personal faith. For him, as for many of his contemporaries, the botanical world was part of divine creation, and understanding it was one way of bringing men closer to God. This conception of botany was not novel; it had been the *raison d'être* behind the first botanical gardens founded in Italy during the Renaissance, as John Prest explains:

> Reading in the book of God's works, the value of a Botanic Garden was that it conveyed a direct knowledge of God. Since each plant was a created thing, and God had revealed a part of himself in each thing that he created, a complete collection of all the things created by God must reveal God completely. Given the supposed relation between the macrocosm and the microcosm, the man who knew nature best knew most about himself.[73]

Relying on a non-literal interpretation of Genesis rather than discarding it altogether, Hooker viewed botany as a necessary and fundamental key to understanding divine creation. Classifying new botanical specimens and adding them to an ever-expanding list were thus a means to honour the Almighty.[74] In this context, it is telling that his concluding remarks at the end of his last public lecture mentioned God as 'He who clothes the Lilies of the Field, and who takes thought even for the Grass', an indirect quote from Matthew 6:28.[75] Hooker's strong belief in natural theology was shared by many fellow botanists, and this take on the natural world was only beginning to be challenged in Britain in the 1850s, more particularly in the wake of the publication of Darwin's *On the Origin of Species*.[76]

[73] John Prest, *The Garden of Eden: The Botanic Garden and the Recreation of Paradise*, New Haven, CT and London: Yale University Press, 1981, pp. 54–5.

[74] Hooker, op. cit. (26), p. 430.

[75] Hooker, op. cit. (26), p. 465.

[76] Johnson, op. cit. (53), p. 33.

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By the 1830s, the gardens were slowly becoming a landmark in Glasgow, and their scientific reputation by this point had reached far beyond the city limits. This was partly thanks to William J. Hooker's prolific publishing career. The English botanist was not solely motivated by scientific ambition in this matter. With his salary as professor of botany (a meagre fifty-pound emolument per annum at first, plus class fees) quite insufficient to sustain a whole family, he took on the additional position of editor of *Curtis's Botanical Magazine* in 1826, and also published an impressive body of work to supplement his income, including *Flora Scotica* (1821), *British Flora* (1833, 1838), *Exotic Flora* (1823, 1827) and *Flora Boreali-Americana* (1829–40).[77] His dedication to advancing his career and social status consequently benefited the Glasgow Botanic Gardens. The latter became known in the scientific community and beyond as a repository for some of the rarest botanical specimens (re)discovered by European plant collectors during the nineteenth century, and Hooker regularly cited the gardens in his writings.[78] In 1825, he published a catalogue of the plants in the Glasgow Botanic Gardens, updating the previous list that had been drawn up in 1818.[79] While it was understandably not exhaustive – the collection included several thousand plants – its aim was both to publicize the botanical diversity of the gardens and to provide an inventory to other botanists so that they could request duplicates or send new specimens.[80] It was, however, not destined for the general public and no generalized guide seems to have been issued at the time – the first known guide of the Glasgow Botanic Gardens (those located in the West End) was published in 1902.[81]

Hooker gradually became well known and universally praised for his scientific liberality, placing him at the centre of a dense network of scientific study and relationships. This is exemplified by the staggering number of letters he received during his tenure in Glasgow – around 6,500 – the majority of them requesting his scientific insight and professional opinion.[82] His generosity attracted many enthusiastic botanists who wished to see and study rare plants at the gardens. In 1824, for example, visitors included 'Dr Fischer, of the Imperial Garden, S. Petersburgh; Mr Burchell the celebrated African traveller; [and] Mr Nuttal[l] the no less celebrated American Botanist'.[83] Additionally, Hooker opened the doors of his own house on Woodside Crescent in the West End of Glasgow to show eager botanists the treasures contained in his personal herbarium, considered by the American botanist Asa Gray as the world's greatest herbarium in private hands.[84] The gardens also gradually began to welcome the general public, though emphasis was placed on attracting the 'right' kind of visitor. Yet educating these visitors does not seem to have been much of a priority in the 1820s and 1830s, as no mention of the popularization of science can be found in the minutes of the Royal Botanic Institution of Glasgow from this period. Similarly, there is no indication of how botanical information was displayed in the gardens, whether there were labels or other information provided, for example. While, in their first phase, the gardens were used above all as a teaching

[77] Letter to William Jackson Hooker, from Exchequers Chamber, Edinburgh, 9 October 1820, in 'Diplomas awarded to William Jackson Hooker, c.1813–1863', WJH, WJH/8/1.

[78] See for instance Hooker, op. cit. (29), plates 23, 35, 59.

[79] Hooker, op. cit. (67).

[80] Dr Lehmann sent a catalogue of plants in his possession and requested the gardens' catalogue, noting that he did not 'know exactly what might be agreeable for [Hooker] to receive'. Dr Johann Lehmann (Hamburg) to William Jackson Hooker (Glasgow), 23 April 1824, DC, vol. 43, f. 22.

[81] Christopher Sherry, *The Glasgow Botanic Gardens: Its Conservatories, Greenhouses, Etc.*, Glasgow: David Bryce & Son, 1902.

[82] George Bentham and Marion Filipiuk (ed.), *Autobiography 1800–1834*, Toronto and London: University of Toronto Press, 1997, p. xxxv; DC, vols. 1–76.

[83] 'Report of the directors', 13 December 1824, MBRBIG, DTC 11-1(2), p. 9.

[84] Asa Gray, 'Notices of European herbaria', *American Journal of Science & Arts* (1840) 40(1), pp. 1–18, 12.

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resource for Hooker's students, they appear to have been advertised as a recreational space rather than an educational one when it came to public outreach.[85]

In essence, the Glasgow Botanic Gardens' scientific reputation at home and abroad owed much to Hooker's personal aura. It is undeniable that without his professorship at the University of Glasgow and directorship of the gardens, he would probably not have been given the same opportunities and acquired the same social and professional status. Yet his work in publishing, in educating many young men and in developing an intricate network of international correspondents versed in botany all contributed to making the Glasgow Botanic Gardens stand out as a dynamic centre of imperial botany in the 1820s and 1830s. Evaluating the scientific contribution of the gardens in the first decades of their existence is a complex task, as it is very much tied up with their director. At first glance, there is little room for equivocation: the sheer number of Hooker's publications and the growing number of specimens in the plant collections (including some very rare ones) would seem to leave little doubt that the endeavour was a resounding success. And yet, as successful and ground-breaking as those achievements appeared at the time, they were continually threatened by a catalogue of financial pressures that dogged the Glasgow Botanic Gardens during the whole duration of Hooker's tenure.

Science subservient to profit?

In the nineteenth century, botanical gardens were more often than not ephemeral sites of knowledge. Burdened by logistical and financial issues, many were abandoned or underwent radical transformation.[86] The first phase of Glasgow's Botanic Gardens was no exception. Although shaped by imperial ambition, they were very much grounded in a local context that often hampered their development. They fell victim to economic circumstances and were forced to adapt. This purportedly scientific establishment gradually segued into a more capital-oriented venture, with mixed results.

From the time of the gardens' inception in 1817, its founding members were keenly aware of the costs incurred by the establishment of a botanical garden, and therefore set out a financial plan intended to guarantee its smooth development. Yet this plan proved utterly inadequate, and the Royal Botanic Institution of Glasgow was placed under considerable financial strain in the years that followed. Initial funding came from a variety of sources, mainly donations and the sale of shares. In a very short period during the spring of 1817, the institution received grants and donations of almost £6,000; enough to buy a tract of land for £1,600 which became the garden grounds. However, the financial situation became increasingly unsustainable over time, as the money donated for the initial land purchase was spent and not renewed. The main grant came from the University of Glasgow, which contributed the princely sum of £2,000. Yet this was a one-off donation. Surprisingly, perhaps, the university was not expected to make any further contributions, despite the fact that its members were given unlimited access to the gardens (but no voting rights at general meetings). A further sum of £2,000 was donated a year later in 1818 by royal charter. This provided welcome additional funds, but again it was a one-off payment. The remainder of the initial funds were collected through the sale of shares, which offered shareholders the title of 'proprietors', access to the gardens and voting rights at general meetings. In April 1817, a committee of management was specially appointed to look into the establishment's finances. The committee chose to set the price of shares at ten guineas each. Because of the eminence and good

[85] There is much to say about the ambivalent status of the Glasgow Botanic Gardens as a place of public recreation and entertainment, but this would deserve a stand-alone study, and cannot be addressed in satisfactory detail within the scope of the present article.

[86] Blais, op. cit. (15), p. 326.

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reputation of many of the founding members and new proprietors, early shares sold quickly. That initial success proved deceptive, however. The directors were soon confronted with an unanticipated rise in running costs, as a result of the wages of the curator and gardeners, repairs to the greenhouses, insurance, coal and water supplies, and so on. True, acquiring new plants was rarely costly, as many were exchanged or donated, yet the logistics of accommodating and caring for them were expensive, especially in the damp and cold Scottish climate. One proprietor thus remarked as early as 1823 that the gardens had 'the appearance of premature decay from want of funds'.[87]

The gardens' precarious finances were the result, first, of the initial decision to fund the institution mainly via shares. This had become evident as early as 1819, when the management committee remarked, 'It is with extreme regret that your Committee have to point out in this statement, a great falling off of the funds.'[88] The reasons behind that fall were both conjunctural and structural. First, there had been a short recession in 1819 and consequently a period of inflation. Second, the gardens' regulations adopted in 1817 did not require proprietors who had bought shares to make an annual payment as well. As a result, although the institution boasted six hundred proprietors in 1822, and new proprietors were added each year – many of whom held multiple shares – the revenue stream did not increase as fast as the expenditure.[89] This situation was by no means uncommon as other botanical gardens often struggled to balance the books. Founded in 1827, the Belfast Royal Botanic Gardens also relied on the sale of shares, with incremental voting and access rights depending on the number of shares held by subscribers. Annual subscriptions were available as well. As they were not financially supported by a university – like other sites such as Cambridge – they faced mounting economic pressure. Thomas Drummond, who took the post of head gardener in 1828 before being dismissed in 1831 for inadequate work, lamented to Hooker that the limited funds prevented him from employing qualified assistants and from creating a garden with suitable infrastructures such as a glasshouse.[90]

As time went by, the Glasgow Botanic Gardens' finances thus became a recurring and increasingly alarming leitmotif. Reliable and regular income had to be found and this dire situation dictated many of the choices made by the directors. They managed to navigate some of the difficulties of the 1820s by petitioning the British government for pecuniary assistance. At first this was to no avail, but then in 1824 they received a government grant of £2,000. That same year, the books were finally balanced, but the new funds offered only a momentary respite, and debts soon began to pile up again. In 1832, the directors applied to Glasgow Union Bank for a loan of £1,000. The question of asking proprietors to make annual payments was raised multiple times, and many often lamented that omission in the 1817 regulations:

> The first of these [measures] is that which must be considered the most simple and if carried into full effect unquestionably the most advantageous and that too which in the opinion of Your Directors should have been adopted at the commencement of the Institution: – for every proprietor of the Garden to pay an annual guinea.[91]

Despite such comments, the management committee consistently shied away from imposing a compulsory annual payment, and left it to the goodwill of proprietors, with

[87] 'Special meeting of the directors', 1 October 1823, MBRBIG, DTC 11-1(1), p. 159.

[88] 'Fifth report of the committee of management', 13 December 1819, MBRBIG, DTC 11-1(1), p. 64.

[89] 'Tenth meeting of the directors', 9 December 1822, MBRBIG, DTC 11-1(1), p. 129.

[90] Johnson, op. cit. (15), pp. 78–9; Thomas Drummond to Hooker, 13 June 1829, DC, vol. 44, f. 74; Thomas Drummond to Hooker, 12 February 1830, DC, vol. 44, f. 78.

[91] 'Tenth meeting of the directors', 9 December 1822, MBRBIG, DTC 11-1(1), p. 129.

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predictably disappointing results.[92] Other options were also considered. As early as December 1819, annual subscriptions at one guinea were proposed for those who did not want to buy shares. And in June 1822, tickets for ladies who were not married to proprietors were sold at the price of five guineas, granting them life admission to the gardens but no other privileges (such as voting rights at general meetings). Another source of income came from sales of duplicate plants, which were regularly advertised in the local press. Minutes of the Royal Botanic Institution of Glasgow reveal that, year after year, proprietors were vigorously encouraged by the directors to find new potential proprietors and annual subscribers, and constantly pressured to contribute an additional annual payment (half a guinea in 1827) and to publicize the sale of duplicate plants among their personal acquaintances.[93] Their 'indifference … to encourage this object' was decried by the directors in 1831.[94] Yet the sale of duplicates was never a satisfactory solution because the profits made were low at best.[95] These plants crowded the gardens, and were costly in terms both of space and of coal, being housed in glasshouses. The directors remarked in 1837 that 'the extra profit arising from this source will be more than counterbalanced by the excess of the expenditure for coals occasioned partly by the long and severe winter of 1836–7 but chiefly by the high price of that essential article of consumption'.[96]

In the light of the heavy financial burden borne by the Glasgow Botanic Gardens, the directors repeatedly explored other ways of generating revenue. In their annual report for 1838, for example, it was stated,

> But there is another point of view in which your Directors wish this Garden to be considered; and that is in connection with … the means it has afforded of introducing so many ornamental plants to our Gardens, a great property of which, from their striking beauty and easy cultivation have become articles of commerce.[97]

Driven by economic interest, the proprietors and directors increasingly favoured the purchase of plants they thought would appeal to the visiting public, without paying much heed to their scientific value. Such priorities were clearly visible in an 1825 reference to the 'department of Fancy Flowers … a department perhaps generally interesting to the majority of the Proprietors', and the cultivation of the hyacinth 'in a portion of the Garden set apart for that purpose' so as to 'render [them] less dependent on Holland for an annual supply of this beautiful flower'.[98] Similarly, in 1836, the curator and the gardeners were instructed to grow camellias because the flowers were sold for balls and private parties.[99] As the gardens were becoming too small for the growing plant collection, the directors and Stewart Murray were often faced with difficult choices, such as considering sacrificing rare specimens to make more space available for duplicate plants for sale. This issue was raised as early as 1826:

> One of two things therefore it seems imperative on the Directors to resolve, either to provide such additional accommodation [for tropical plants] as may be necessary, or to decree the destruction of a considerable part of a very valuable Collection, and in

[92] 'Annual meeting of the proprietors', 18 December 1820, MBRBIG, DTC 11-1(1), p. 75.
[93] 'Annual general meeting of the proprietors', 10 December 1826, MBRBIG, DTC 11-1(2), p. 42.
[94] 'Annual report of the directors', 12 December 1831, MBRBIG, DTC 11-1(2), pp. 119–20.
[95] 'Annual report of the directors', 8 December 1834, MBRBIG, DTC 11-1(2), pp. 159–60.
[96] 'Annual report of the directors', 11 December 1837, MBRBIG, DTC 11-1(3), p. 24.
[97] 'Annual report of the directors', 10 December 1838, MBRBIG, DTC 11-1(3), p. 60, original emphasis.
[98] 'Annual report of the directors', 12 December 1825, MBRBIG, DTC 11-1(2), pp. 23–4.
[99] 'Annual report of the directors', 12 December 1836, MBRBIG, DTC 11-1(3), p. 4.

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> the event of the latter alternative being chosen, it will be necessary for them to consider whether the scientific collection should be kept up, & part of the duplicates raised for sale, destroyed, or whether science shall be made subservient to profit.[100]

There was, therefore, a literal spatial struggle between ornamental plants grown for public enjoyment and financial return and those grown for scientific study. This tension was also potentially damaging for the public perception of botany. Although botanists in general were striving not to be confused with horticulturalists, the fact of selling duplicate plants and cut flowers to the public – thus presenting plants as commodities – meant that the gardens did in reality blur the line between botany and horticulture. In this way, for all the avowed scientific purpose of the gardens defended by staunch botanists, a more mercantile conception of botany was always present in the background. The broader context is important here. In a city where the Industrial Revolution was in full swing and where the profit motive reigned supreme, the gardens became increasingly torn between, on the one hand, the pursuit of scientific progress, often slow, unrewarding and costly, and, on the other, short-term considerations of productivity and profitability. To ensure their survival, the gardens needed to place botany in an economic framework and demonstrate its pecuniary potential. As such, the plants that seemed to hold pride of place in the reports of the Royal Botanic Institution were those considered useful, and that could turn a profit. This tension between the economic and the scientific value of plants was evidenced during the 1838 annual general meeting of the proprietors:

> The Directors have on former occasions alluded to the scientific value of the collection of plants possessed by the Garden, containing as it does, specimens of very many rare kinds, which are useful in the arts, in commerce, medicine or Domestic economy, and these are continually on the increase. It is, for example, only lately that we have become possessed of those precious vegetable productions of South America which are the envy of so many of our visitors: the famous cow tree of La Guayra whose milky juice afford to the natives a beverage quite analogous to the lacteal fluid of the Cow; and the well-known mate or Paraguay Tea exclusively cultivated in the district of that name by the Tyrant and Dictator Dr Francia.[101]

These examples highlight how the development of botany was envisioned in terms of its political, economic or cultural contribution, and was heavily influenced by the demands of the agricultural sector, both at home and abroad. As Franklin Ginn remarks: 'By the 19th century, botanic gardens had evolved from havens for the abstract contemplation of God's wondrous creation, to economic and scientific laboratories where botanists brought the natural world under rational scrutiny and attempted to provide new products for colonial economies'.[102] The directors believed that the work of the gardens could reap benefits for the agricultural sector, potentially opening very profitable new markets, and thus they pushed constantly in that direction, seemingly unaware that the size of the gardens and the economic situation were too limiting for such ambitions. In the end, then, despite Murray's and Hooker's best efforts at placing the emphasis on the diversity and rarity of the plant collection, science seems indeed to have become less of a priority than financial solvency in the Glasgow Botanic Gardens.

By the 1830s, the gardens' debts had increased yet again and new sources of income had to be found urgently. Besides the sale of duplicates, annual tickets, proprietors' shares

[100] 'Adjourned meeting of the directors', 8 September 1826, MBRBIG, DTC 11-1(6), pp. 81–2.
[101] 'Annual report of the directors', 10 December 1838, MBRBIG, DTC 11-1(3) pp. 59–60, original emphasis.
[102] Ginn, op. cit. (63), pp. 34–5.

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and annual payments from proprietors, it was decided in 1830 that 'strangers' (defined as those residing farther than five miles from Glasgow) could obtain a one-day entrance ticket for the price of one shilling.[103] Thousands of visitors flocked to the gardens each year, either invited by the proprietors and granted free entrance or, from 1830 onwards, as paying visitors: there were 4,000 in 1827, 3,000 in 1830 and 2,300 in 1837 (548 of whom were paying visitors that particular year).[104] This greatly contributed to the reputation of the gardens, but only partially alleviated the establishment's financial woes. Expenditure remained high in the years leading to the sale of the garden grounds in 1841, with inevitable mounting maintenance costs. The botanical institution also fell victim to external circumstances. The economic crisis that struck the mercantile class in 1825 had a direct knock-on effect on the number of annual subscriptions and the sale of shares, as did a devastating outbreak of cholera that swept through the city in 1832, considerably limiting the number of paying visitors that year. Despite the management committee's best efforts, the financial situation never improved. When the garden grounds in Sandyford were sold in 1841 for £12,000, the institution was still more than £4,000 in debt and faced new challenges with the establishment of a new and larger botanical garden.[105]

Conclusion

Thus, as Thomas Hopkirk feared, was science ultimately made 'subservient to profit' in the first phase of the Glasgow Botanic Gardens? There is no straightforward answer to that question. As an emerging discipline, botany still had to prove its value to society and to the economy. The fact that it was constrained by several external factors – time, money and often the vagaries associated with obtaining and perpetuating specimens – ran counter to the period's single-minded focus on productivity and profitability. This was all the more striking in Glasgow, a thriving industrial city with strong colonial interests. By 1841, the directors and proprietors still had not managed to reconcile the different purposes of the gardens: they were a scientific establishment with a strong international reputation, but were also designed as a place of public entertainment that could bolster the power and prestige of the proprietors, many of whom belonged to the mercantile colonial elite of the city. It is also undeniable that the lack of solvency of the gardens greatly hampered their scientific goals, which seemed to become less of a priority over time. Yet the Glasgow Botanic Gardens were not the only ones struggling to survive. The Belfast Botanic Gardens were created with limited funds that restricted their expansion for years. Even the Royal Botanic Gardens at Kew were left in a state of disarray by the 1830s and would have been transformed into a public park had it not been for the successful exertions of the botanist John Lindley in 1838, who paved the way for William J. Hooker's revitalizing efforts in the ensuing decades.[106] In such an adverse context, the first Glasgow Botanic Gardens were thus not as failing as they appeared to be at first glance. Aided by the connections of Hooker and the proprietors of the gardens, it remains the case that this establishment undoubtedly did help place Glasgow on the map as a booming botanical hub, albeit one locked firmly into the city's (and Britain's) imperial project.

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[103] 'Annual report of the directors', 13 December 1830, MBRBIG, DTC 11-1(2), p. 99.

[104] This testifies to the public's interest as the Glasnevin Gardens in Dublin welcomed a little more than 7,000 visitors in 1834 but access to the grounds was free, albeit regulated by the gardens' personnel.

[105] 'Contract of sale between Messrs Clarke and Sloan and Messrs Houston and Potter', Minute Book, Botanic Garden, 1840, Special Collections, Glasgow University Library, Glasgow, Scotland, MS Murray 577, p. 14.

[106] Drayton, op. cit. (14), pp. 155–7.

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