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German Natural History Collectors in Southern Africa, 1815-1867

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Abstract

In the early nineteenth century, most of the commercial natural history collectors in southern Africa were Germans. They were imperfectly integrated into the (white) social fabric of the region and are now rendered marginal in popular conceptions of the British Empire. For too long, historians have overemphasized Susanne Zantop's analytical approach in *Colonial Fantasies* to discuss German imperial desire in the pre-nation-state period without thoroughly investigating cases representative of German complicity in imperialism prior to their period of formal colonialism. While they were not first and foremost interested in subverting British control in the Cape, this thesis will show how these Germans certainly embraced the role of the colonizer through their commercial mentality. The pursuit of specimens encouraged ambition and risk-taking: the collector's search was inherently tied to networks that encouraged increasing physical and intellectual control over African peoples, and which facilitated an uninhibited extraction of flora, fauna, and human remains from colonial environments. Due to their familial and professional ties to the German states, these collectors sold their specimens throughout central Europe, giving Germans-speaking botanists privileged access to these collectors and their herbaria, rather than British botanists in the imperial center, to begin the process of classifying and determining the unique flora of southern Africa. Challenging many of the traditional spatial understandings which govern interpretations of a "homogenous" British Empire, this thesis extends this argument by visualizing German cities as crucial nodes of imperial knowledge production beyond the Empire's well-established boundaries. Thus, it contributes to revisionist assessments of the ways in which global exploration and empire were part of a common European project.

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Terminology

This project has required me to wrestle with terminology that is derogatory and racist in nature, and with descriptions that are harrowing and potentially traumatic for some readers. Terms such as ‘native’, ‘Hottentot’, ‘Kaffir’, and ‘Bushman’ are reproduced only in direct quotations, reflecting the actors’ (or other scholars’) categories from whom I wish to distance myself or problematize. Likewise, the names of several South African cities or regions in this thesis have changed. While I use the historical names, as these designate regions and boundaries which no longer exist, I also (where possible) alert the reader to contemporary names.

It is important to also define the terms native and indigenous in reference to local vegetation. Brett M. Bennett uses ‘indigenous to refer to a plant that comes from a specific place or region whereas native refers to a plant that comes from within the geographic boundaries of the nation’.¹ Using the term ‘native’ plant usually refers to one found within the boundaries of a nation-state (rather than a biogeographic region), and they are ‘often used or planted for symbolic purposes rather than to reconstruct an indigenous ecosystem’.² Because of the highly mobile nature of the collectors in question, ‘indigenous’ is used throughout this thesis to describe the flora of southern Africa.

A final note is on the use of the word ‘science’, which is used rather loosely in this thesis. Many historians now avoid it for periods before the words ‘science’ and ‘scientist’ became common in English (in the nineteenth century), and some have a tendency, somewhat anachronistically, to project modern notions of science onto what should properly be described as ‘natural philosophy’ or ‘natural history’. But even ‘natural philosophy’ is too confining, omitting many other kinds of natural investigation that should be studied in conjunction.³ Thus ‘science’ is typically used when talking about a multitude of scientific disciplines under a larger umbrella, whereas ‘natural history’ is described mainly as a discipline.

¹ Brett M. Bennett, ‘Decolonization, Environmentalism and Nationalism in Australia and South Africa’, *Itinerario*, 41:1 (2017), 30-31.

² *Ibid.*, 31.

³ Harold J. Cook, ‘Closing Comments’ in Dupré and Lüthy, eds., *Silent Messengers: The Circulation of Material Objects of Knowledge in the Early Modern Low Countries* (Berlin: Lit Verlag, 2011), 329; Mark Harrison, ‘Science and the British Empire’, *Isis*, 95 (2005), 56.

Introduction

Scientia imperii decus et tutamen

‘Scientific knowledge, the crowning glory and safeguard of the empire’
Former Motto of Imperial College London (1908)

In 1660, Georg Friedrich Wreede landed at the Cape of Good Hope. Having abandoned a degree in philology at the University of Helmstedt, he entered the service of the *Vereenigde Oostindische Compagnie* (VOC) as a midshipman. From the outset, the expanding enclave of the Dutch Cape Colony interacted with, and came to depend upon, the inhabitants of the hinterland, the Khoekhoe, then called “Hottentots”. The VOC’s board of directors in Amsterdam, the Heren XVII, expressed no particular interest in linguistics, believing that the Khoekhoe should learn Dutch, rather than the Dutch investing time in learning Khoekhoegowab. Nor had Wreede set out with the intention of conducting philological inquiries. However, perhaps unsurprisingly, he soon developed an interest in the languages of the people he encountered. His studies made comparatively rapid progress, so much so that by 1663, German Governor of the Cape, Zacharias Wagenaar, had not only employed him as an official interpreter and messenger to the Khoekhoe, but he had also sent Wreede’s manuscript of Khoekhoe vocabulary to Amsterdam. Wagenaar noted:

he also has now also endeavoured to put to paper a vocabulary or compendium as he calls it, comprising the Dutch and Hottentotic language (which he for the time being is expressing with Greek letters), which work he is now respectfully dedicating to your honours, trusting that if your honours consider this good and useful – you will then have the same printed and published and will send some copies over.⁴

Wreede, unfortunately, never saw his work in print. In 1672, having been promoted to the command of the VOC outpost in Mauritius three years earlier, he went sailing while intoxicated and drowned. While it does appear that his manuscript was printed, it did not arrive in the Cape and is now thought lost. Yet, the value of Wreede’s vocabulary lies not so much in whatever the lost manuscript contained, but rather the circumstances of its creation and curious afterlife.

⁴ Quoted in Hans den Besten, ‘A Badly Harvested Field: The Growth of Linguistic Knowledge and the Dutch Cape Colony until 1796’ in Huigen, de Jong and Kolfin (eds.), *The Dutch Trading Companies as Knowledge Networks* (Leiden: Brill, 2010), 272.

Hans den Besten posits that the book was either forgotten and stayed in the Netherlands, went down in a shipwreck, was taken as a prize by privateers, or was delivered in error to one of the VOC's other far-flung outposts.⁵ There seems to be no trace of a writing system for Khoekhoe words or clicks involving the use of Greek characters amongst the papers of any subsequent travelers or VOC employees. The ultimate recipient of the original manuscript was likely to have been German linguist Job Ludolf, who was sent Khoekhoe material in the 1690s by Nicholaas Witsen, mayor of Amsterdam and one of the Heren XVII, an ardent advocate for and patron of the natural sciences.⁶ Some Khoekhoe material was certainly published as an Appendix to the 1710 biography of Ludolf.⁷ This in turn was republished in 1916 by Dutch historian Godée Molsbergen under the title '*C.F. Wreede's Hottentotse Woordelijst*'.⁸ Wreede's authorship was further underscored when the Van Riebeeck Society, named for the revered Dutch founder of the VOC settlement at the Cape, commissioned South African scholar Isaac Schapera to edit a volume of early historical descriptions of the Cape Khoekhoe. In this collection, published in Cape Town in 1933, Schapera remarked that the anonymous materials were by then 'universally attributed to Wreede'.⁹ This attribution was challenged, first by South African linguist G.S. Nienaber, and in recent years by den Besten. They assert that the vocabularies, when judged against other Khoekhoe material sent by Witsen to German philosopher Gottfried Wilhelm Leibniz, appeared to be the work of another Dutch administrator at the Cape, J.G. de Grevenbroek.¹⁰ The loss of the manuscript and ensuing debate notwithstanding, den Besten rightly considers Wreede one of the luminaries of early research on Khoekhoe linguistics.

Yet it is not only for his linguistic experience that Wreede has been invoked as an authority on the Cape and its inhabitants. George McCall Theal, the father of South African historiography, was

⁵ Ibid., 272-273.

⁶ Ibid., 276-279.

⁷ Christian Juncker, *Commentarius de vita scriptisque ac meritis illustris viri Jobi Ludolfi [...]. In appendice adiectae sunt tum epistolae aliquot clarorum virorum, tum etiam specimen linguae Hottentotticae, nunquam alias ad notitiam Germanorum perlatate* (Leipzig-Frankfurt: Johann Friedrich Braun, 1710).

⁸ Godée Molsbergen E.C., *Reizen in Zuid-Afrika in de Hollandse tijd*, vol. 1: *Tochten naar het Noorden 1652-1686* (The Hague: Nijhoff, 1916), 215.

⁹ Isaac Schapera (ed.), *The Early Cape Hottentots: Described in the Writings of Olfert Dapper (1668), Willem ten Rhyne (1686) and Johannes Gulielmus de Grevenbroek (1695)* (Cape Town: Van Riebeeck Society, 1933), 3.

¹⁰ Gerald Groenewald, 'To Leibniz, from Dorha: A Khoi Prayer in the Republic of Letters', *Itinerario*, 28:1 (2004), 29-48; den Besten, 'Harvested Field', 267-294; Hans den Besten, 'Isaac de Long's German Version of Grevenbroek's Khoekhoe Glossaries as Published by Juncker in 1710', *Werkwinkel*, 5:1 (2010), pp. 7-45; G.S. Nienaber, *Hottentots* (Pretoria: J.L. Van Schaik Beperk, 1963).

the first to suggest Wreede as the Cape informant for Olfert Dapper's *Naukeurige Beschrijvinge der Afrikaensche Gewesten* (1668), published two years later in English and a year thereafter in German.¹¹ Dapper, despite being a physician and "armchair geographer" who had never left the Netherlands, produced the first work in any European language which compiled all available information about Africa, regarded as one of the most authoritative early accounts of the continent well into the eighteenth century.¹² However, he was not entirely reliant on published sources for this monumental work; he also made extensive use of accounts supplied to him through a network of informants who had traveled in, or were connected to, Africa. On this basis, Theal, and following him Schapera, believed that there was enough evidence in his account of the Cape 'to suggest that the source upon which Dapper drew was written about the time that Wreede's vocabulary was compiled, i.e. 1662-1663'.¹³ This assertion has been tentatively taken up by British historian Adam Jones, who considers Wreede 'certainly a plausible candidate'.¹⁴ Though other scholars have suggested alternative sources for Dapper's Cape material, Jones remains convinced through close textual analysis that these ought to be discounted. For want of evidence to exclude, he must therefore remain 'at least a possibility'.¹⁵

Ultimately, Wreede's significance to this thesis lies not in his role as the progenitor of southern African linguistics, nor whether he was erroneously identified as the author of someone else's vocabulary or as Dapper's crucial Cape witness. His story hints to an historical pattern and an historiographical problem. Early scholars of the Cape asserted Wreede's significance to early European knowledge of Africa and the networks through which it traveled. One of the first European scientific exchanges devoted to Cape linguistics emanated from the research of Wreede, passed through the hands of a German governor in Africa, to the most influential Dutch man of letters in the intellectual and commercial hub of Amsterdam, who then distributed it to two German intellectuals for processing and publishing. From roughly the early modern period into the

¹¹ George McCall Theal, *History and Ethnography of Africa South of the Zambesi*, vol. 3 (London: 1910), 376. Olfert Dapper, *Naukeurige Beschrijvinge der Afrikaensche Gewesten* (Amsterdam: Jacob van Meurs, 1668); John Ogilby (ed. and trans.) and Olfert Dapper, *Africa* (London, 1670); Olfert Dapper, *Umbständliche und Eigentliche Beschreibung von Africa* (Amsterdam: Jacob von Meurs, 1670).

¹² John E. Wills, Jr., 'Author, Publisher, Patron, World: A Case Study of Old Books and Global Consciousness', *Journal of Early Modern History*, 13 (2009), 399.

¹³ Schapera, *Cape Hottentots*, 3.

¹⁴ Adam Jones, 'Decompiling Dapper: A Preliminary Search for Evidence', *History in Africa*, 17 (1990), 184.

¹⁵ *Ibid.*, 185.

nineteenth century, circuits of scientific exchange like this example offers were not uncommon. The VOC, much more than just a trading company, was crucial in facilitating and shaping the emergence of those intellectual and material networks as the first multi-national corporation: global in its reach and cosmopolitan in its makeup. From the very first years of VOC rule, Germans were at the heart of this kind of observation, description, and study of the natural world, influential both in the metropole and the VOC's other colonial domains. As Chapter One will explore in depth, Germans were often the brokers of the knowledge, material, and power that constituted some of the earliest exchanges of Western natural history, becoming integral to intersecting local and global scientific networks.¹⁶

Moreover, while the case of Wreede clearly suggests the fundamentally heterogeneous position of Germans within early modern European empires, this surely cannot be true only of the seventeenth century and the VOC. Recent literature focusing on international migration in the context of the early modern Netherlands has increasingly recognized the multi-national character of the VOC and the critical role that indigenous intermediaries and white, non-Dutch Europeans played in the knowledge produced therein.¹⁷ Yet, the literature on European non-nationals in the exploratory and intellectual pursuits of both the English East India Company and the British Empire has been sporadic at best.¹⁸ The example of the Cape, too, was not necessarily historically unique but does provide an inimitable historiographical opportunity to understand the ways in which this kind of heterogeneity persisted, adapted, and transformed in more than one imperial context. After all, the history of the Cape did not simply restart when the British occupied it in 1795. This thesis,

¹⁶ Kerry Ward, *Networks of Empire: Forced Migration in the Dutch East India Company* (Cambridge: Cambridge University Press, 2008); Fokko Jan Dijksterhuis, Andreas Weber and Huib J. Zuidervaat (eds.), *Locations of Knowledge in Dutch Contexts* (Leiden: Brill, 2019), especially Alette Fleischer's chapter, 107-136.

¹⁷ Jelle van Lottum is an essential read for international migration within the Dutch Empire. Jelle van Lottum, *Across the North Sea: The Impact of the Dutch Republic on International Labour Migration, c. 1550-1850* (Amsterdam: Aksant, 2007); Jan Lucassen, 'A Multinational and Its Labor Force: The Dutch East India Company, 1595-1795', *International Labor and Working-Class History*, 66 (2004), 12-39; Jelle van Lottum, Jan Lucassen and Lex Heerma van Voss, 'Sailors, National and International Labour Markets and National Identity 1600-1850' in Unger (ed.), *Shipping and Economic Growth 1350-1850* (Leiden: Brill, 2011), 309-351.

¹⁸ Some examples of work that discusses this impact of non-nationals: John R. Davis, Stefan Manz and Margit Schulte Beerbühl (eds.), *Transnational Networks: German Migrants in the British Empire, 1670-1914* (Leiden: Brill, 2012); Stephen Conway, *Britannia's Auxiliaries: Continental Europeans and the British Empire, 1740-1800* (Oxford: Oxford University Press, 2017); Moritz von Brescius, *German Science in the Age of Empire: Enterprise, Opportunity and the Schlagintweit Brothers* (Cambridge: Cambridge University Press, 2019), 5; Ulrike Lindner, *Koloniale Begegnungen: Deutschland und Großbritannien als Imperialmächte in Afrika 1880-1914* (Frankfurt a.M.: Campus Verlag, 2011); Ulrike Kirchberger, *Aspekte deutsch-britischer Expansion: Die Überseeinteressen der deutschen Migranten in Großbritannien in der Mitte des 19. Jahrhunderts* (Stuttgart: Franz Steiner Verlag, 1999).

therefore, aims to critique a central issue in the historiographies of both central Europe and the British Empire – that they produce histories written in isolation from one another. Echoing Jan Rüger’s arguments, the new imperial history has readily embraced the global turn, but the integration of Europe and Europeans into this trajectory has been conspicuous by its absence.¹⁹ Moving beyond the style set out in Moritz von Brescius’s recent work *German Science in the Age of Empire*, this thesis untangles some of these threads through an analysis of German natural history collectors in southern Africa.²⁰

In shifting the focus of inquiry onto these German actors, and by visualizing European cities like Berlin, Hamburg, or Stuttgart as crucial nodes beyond the well-established boundaries of the British Empire, it is possible to draw historical comparisons which overcome many of the traditional spatial barriers that constrict our historical imagination. These German collectors were vital links in the chains of communication between metropolitan, European, and colonial scientific actors and interests. Not only did they influence Britain’s knowledge of, and power over the Cape, they helped to construct many of the botanical, but also some of the zoological, medical, ethnographic, and philological discourses that informed the European imagining of southern Africa in the nineteenth century. Their transmission of an increasingly encyclopedic knowledge of the Cape’s peoples and its natural environment often amplified British administrative and coercive power in the colony, demonstrating their own participation in the wider project of European imperialism. A particular reputation in the sciences served to enhance the position of German expertise within the scientific communities of the Cape, Britain’s wider dominions, and across Europe. Long considered marginal in popular understandings of the Empire, Germans are here placed at the forefront of the analysis.²¹ This reorientation offers new interpretative possibilities to further undermine the image of the British Empire as a monolith: ‘internally self-contained and

¹⁹ Jan Rüger, ‘Writing Europe into the History of the British Empire’ in Arnold, Hilton and Rüger (eds.), *History after Hobsbawm: Writing the Past for the Twenty-First Century* (Oxford: Oxford University Press), 37; Jan Rüger, *Heligoland: Britain, Germany, and the Struggle for the North Sea* (Oxford: Oxford University Press, 2016). See also: Patricia Clavin, ‘Time, Manner, Place: Writing Modern European History in Global, Transnational and International Contexts’, *European History Quarterly*, 40:4 (2010), 624-640.

²⁰ von Brescius, *German Science*.

²¹ James Belich, *Replenishing the Earth: The Settler Revolution and the Rise of the Angloworld* (Oxford: Oxford University Press, 2009), 62-66.

internationally antagonistic', impervious to any outside influence.²² Rather, this thesis will demonstrate how the empire's internal workings, including local circumstances in the British Cape, were unquestionably shaped by external participation. But before such a reorientation can be undertaken, we first need to tentatively reflect on the position and composition of this largely overlooked group as a way of situating Germans in European and global history from the seventeenth century onwards.

Germans in the Pre-Nation-State Period and the British Empire

Regardless of whether one traces continuity from Charlemagne's assumption of an imperial title in 800, or in Otto I's 'renovation' of it in 962, the Holy Roman Empire predates most other European states.²³ In addition to being one of the oldest, the Empire was also among Europe's largest states, consisting of hundreds of political sub-units. Its importance was magnified by its central location at the heart of Europe and by the extensive international connections of its leading families, with borders expanding and contracting throughout its nearly 1000-year history. Yet, following Austria's disastrous defeat by Napoleon's France in December 1805, sixteen middling and minor princes renounced the Empire in favor of the 'dubious security' of the new French-led Confederation of the Rhine in 1806.²⁴ Eventually, they joined Austria and Prussia in forming the German Confederation in 1815. Thus, discerning "German" identity in the Holy Roman Empire and its aftermath is a difficult task. Again, Wreede serves a good example for dissecting these complicated geographical constructions. He was born in Uetze, a small provincial town in the Hannover region during the second half of the Thirty Years' War (1618-48), one of the most destructive conflicts in European history fought largely within the Holy Roman Empire. It is widely acknowledged that there were several economic, social, and intellectual developments spawned in the aftermath of the Reformation in central Europe, particularly in the German states.²⁵

²² John Darwin, *Unfinished Empire: The Global Expansion of Britain* (New York: Bloomsbury, 2012), 29-30; von Brescius, *German Science*, 5.

²³ R.J.W. Evans and Peter H. Wilson, 'Introduction' in Evans and Wilson (eds.), *The Holy Roman Empire, 1495-1806: A European Perspective* (Leiden: Brill, 2012), 1. See also: Jason Philip Coy, Benjamin Marschke and David Warren Sabean (eds.), *The Holy Roman Empire, Reconsidered* (New York: Berghahn, 2010).

²⁴ Evans and Wilson, 'Introduction', 7-8.

²⁵ Daniel H. Nexon, *The Struggle for Power in Early Modern Europe: Religious Conflict, Dynastic Empires, and International Change* (Princeton: Princeton University Press, 2009); Benjamin J. Kaplan, *Divided by Faith*:

It is not known from his own hand how he would have described himself but, given the history of the region, it is likely he would have spoken what is today considered *Plattdeutsch*. Perhaps he would have identified himself either with his city or kingdom, or said he was from *Neddersassen*.²⁶ Before the emergence of contemporary European states, he would have had far more in common with his relatively near neighbors in what is now the northern Netherlands, northern Germany, and southern Denmark (i.e., Frisia, Hamburg, Schleswig-Holstein) than he would with a Prussian, Bavarian, or Silesian. They spoke mutually intelligible dialects, shared a common orientation toward the sea and trade, and were as likely, if not more so, than other European peoples to migrate elsewhere seeking new opportunities or freedoms.²⁷ It would be, therefore, something of an historical distortion to call Wreede a “German”. Nevertheless, the concept is used throughout this dissertation for the sake of clarity and simplicity, rather than a term like “German-speaking”.

The modern imagination struggles to grasp, and thus explicate, the considerable number of overlapping sovereignties and subjectivities extant in central Europe during this period. Like all concepts of national belonging, “Germans” and “Germany” were, and are, constructs. In both a domestic sense and as seen from the outside, Germans were nonetheless part of an imagined community of shared cultural, political, intellectual, and linguistic affinities recognizable from the fifteenth and sixteenth centuries.²⁸ Without a natural center like the French had in Paris, the “Germans” of central Europe managed to maintain difference within unity, which is visible even after Germany became a nation-state in 1871. In the context of this thesis, what is important to remember is that early nineteenth-century scientific Germans were quite clear about the fact that science was a cosmopolitan project, even if it might be made to serve the cause of national revival. As Denise Phillips highlights, some thought that the nation ‘represented only one dialectic moment between the poles of pure individuality and pure cosmopolitanism’, opposing principles that any

Religious Conflict and the Practice of Toleration in Early Modern Europe (Harvard: Harvard University Press, 2007); Carter Lindberg, *The European Reformation*, 2nd ed. (Malden: Blackwell, 2010).

²⁶ What *Niedersachsen* is rendered in modern *Plattdeutsch*. The term *Niedersachsen* has been in use since the fourteenth century; from this point forward in the thesis, an attempt will be made to identify important German subjects with their birth city, kingdom, or region.

²⁷ There are a number of émigré communities where Low German was, and still is, spoken in the Western Hemisphere, particularly among Mennonite groups in the United States, South America, and Canada.

²⁸ Christine R. Johnson, *The German Discovery of the World: Renaissance Encounters with the Strange and Marvelous* (Charlottesville: University of Virginia Press, 2008), 11; Benedict Anderson, *Imagined Communities* (London: Verso, 1983); Helmut Walser-Smith, *Germany: A Nation in Its Time: Before, During, and After Nationalism, 1500-2000* (New York: Liveright, 2020), Part One.

true practitioners of *Wissenschaft* would jointly embody.²⁹ The ramshackle assortment of kingdoms, free cities, principalities, and statelets meant that Germans in the Holy Roman Empire, and later the German Confederation, lived alongside a diverse array of other peoples, languages, and cultures, helping to crystallize their certain cosmopolitanism. Not only were the administrative structures flexible enough to allow its citizens to take part in relatively free overland travel and overseas expansion, but they were also highly fluid geo-political, religious, and linguistic structures; in a sense, transnationality was already encoded into their worldview. However, the loose federal structure of the Holy Roman Empire precluded the possibility of imperial support for participation in exploratory endeavors.³⁰

A lack of state support and the absence of a formal empire forced Germans to seek opportunities under the aegis of nations with established maritime and imperial networks, i.e. Britain and the Netherlands, thus operating as transnational and trans-imperial actors.³¹ When they left the German states, they often adopted multiple, hybrid identities in order to navigate the overlapping networks in which they participated, rendering Germans comparatively neutral: unlikely to pose a threat to economic or political objectives, or to disrupt the socio-cultural order. If scholars wish to construct a more fluid history of Germany, even within the tradition of methodological nationalism, they cannot ignore everything before the creation of the nation-state.³² Scholars, Rüger and David Blackbourn have argued, should reflect on the interconnected nature of the pre-nation-state period to help illuminate Germany's ineluctable ties to an exceptionally mobile past. The conceptual approach taken here represents a significant departure from the orthodoxy and fundamentally 'complicates our understanding of "Europe" and "empire"' by taking a polycentric

²⁹ Denise Phillips, 'Francis Bacon and the Germans: Stories from When "Science" Meant "*Wissenschaft*"', *History of Science*, 53:4 (2015), 387.

³⁰ Johnson, *German Discovery*, 12.

³¹ Germans also participated in a variety Russian, Danish, and Swedish exploratory expeditions. For works on transnational history, see: Micol Seigel, 'Beyond Compare: Comparative Method after the Transnational Turn', *Radical History Review*, 91 (2005), 62–90; Sebastian Conrad, 'Doppelte Marginalisierung: Plädoyer für eine transnationale Perspektive auf die deutsche Geschichte', *Geschichte und Gesellschaft*, 28 (2002), 145–69; Sebastian Conrad and Jürgen Osterhammel, *Das Kaiserreich Transnational: Deutschland in der Welt 1870–1914* (Göttingen: Vandenhoeck & Ruprecht, 2004); C.A. Bayly, Sven Beckert, Matthew Connelly, Isabel Hofmeyr, Wendy Kozol, and Patricia Seed, 'AHR Conversation: On Transnational History', *American Historical Review* (2006), 1440–1464; Jan Rüger, 'OXO: Or, the Challenges of Transnational History', *European History Quarterly*, 40 (2010), 656–668; Patricia Clavin, 'Defining Transnationalism', *Contemporary European History*, 14 (2005), 421–39.

³² David Blackbourn, 'Germans Abroad and "Auslandsdeutsche": Places, Networks and Experiences from the Sixteenth to the Twentieth Century', *Geschichte und Gesellschaft*, 41:2 (2015), 323.

approach to German history.³³ Thus, this thesis will demonstrate the ways in which Germans participated in European imperial expansion and analyze the ways in which they applied the numerous identities they adopted.

The concept of *Auslandsdeutsche* (Germans abroad) has gained purchase in recent years amongst historians in the service of revisionist assessments of the ways in which global exploration and empire were part of a common European project.³⁴ Blackbourn has denounced the invisibility of Germans in new literature on the Atlantic World and British imperial history, particularly in the Anglophone world, claiming that the flow of Germans through the arteries of world trade, and their subsequent habitation in settler colonial societies, has seemingly fallen through the historical net.³⁵ While there have been some attempts to ratify this, including the works of von Brescius and Christine R. Johnson, what is becoming clear is that Germans had an increasingly apparent global presence from the eighteenth century, particularly in the fields of science, missionary work, and mercantile relations.³⁶ By the nineteenth century, émigré subjects who had engaged in an active, century-long diaspora were imagined as belonging to a global *Deutschtum*, a move intended to bind them culturally and biologically back to “Germany”.³⁷ This was to prevent their becoming *Völkerdünger*, or ‘fertilizer of other people’ – a neologism coined by Heinrich von Treitschke –

³³ von Brescius, *German Science*, 5; Rüger, ‘Writing Europe’, 47.

³⁴ von Brescius, *German Science*; Bernhard C. Schär, *Tropenliebe: Schweizer Naturforscher und niederländischer Imperialismus in Südostasien um 1900* (Frankfurt a.M.: Campus Verlag, 2015); Bernhard C. Schär, ‘Introduction. The Dutch East Indies and Europe, ca. 1800-1930. An Empire of Demands and Opportunities’, *BMGN – Low Countries Historical Review*, 134:3 (2019), 4-20; David Arnold, *The Tropics and the Travelling Gaze: India, Landscape, and Science, 1800-1856* (Seattle: University of Washington Press, 2006), 126.

³⁵ Blackbourn, ‘Auslandsdeutsche’, 333.

³⁶ Sebastian Conrad, *Globalisation and the Nation in Imperial Germany* (Cambridge: Cambridge University Press, 2004); Bradley D. Naranch, ‘Inventing the *Auslandsdeutsche*: Emigration, Colonial Fantasy, and German National Identity, 1848-71’ in Ames, Klotz and Widenthal (eds.), *Germany’s Colonial Pasts* (Lincoln: University of Nebraska Press, 2005); Jeremy Best, *Heavenly Fatherland: German Missionary Culture in the Age of Empire* (Toronto: University of Toronto Press, 2021); Lars Maischak, *German Merchants in the Nineteenth-Century Atlantic* (Cambridge: Cambridge University Press, 2013); Hartmut Lehmann, Hermann Wellenreuther and Renate Wilson (eds.), *In Search of Peace and Posterity: New German Settlements in Eighteenth-Century Europe and America* (University Park: Pennsylvania State Press, 2000); James D. Boyd, ‘An Investigation in to the Structural Causes of German-American Mass Migration in the Nineteenth Century’, PhD diss, Cardiff University, 2013.

³⁷ Stefan Manz, *Constructing a German Diaspora: The “Greater German Empire”, 1871-1914* (London: Routledge, 2014), 261; Stefan Manz, ‘Diaspora and Weltpolitik in Wilhelmine Germany’ in Panayi (ed.), *Germans as Minorities during the First World War. A Global Comparative Perspective* (London: Routledge, 2016), 27-46; Krista O’Donnell, Renate Bridenthal and Nancy Reagan (eds.), *The Heimat Abroad: The Boundaries of Germanness* (Ann Arbor: University of Michigan Press, 2005).

through assimilation into foreign societies.³⁸ Although any territorial notion of “Germany” in the nineteenth century was undoubtedly vague and ambiguous, such a biological imagination of Germanness meant that German nationality became even more deterritorialized.³⁹ This thesis aims to further complicate the understanding of *Auslandsdeutsche* to better understand feelings of “national” belonging amongst expatriate communities from the early nineteenth-century German states. Similarly, the Cape provides an unusual case with which to examine German identity. While most Germans had settled and readily assimilated into the local Dutch community during VOC administration, the onset of British control alters citizenship and belonging. More often than not, they felt an affinity toward the Dutch Boers on the frontier than any British colonist, signaling perhaps how “foreign” Britain and British values were to Germans in this period. An assessment of these Germans’ positionality is important in grasping to what extent they managed to integrate into a British colony and helps to explain their strong almost kin-like connection to the Boers.

A resurgent interest in the history of late nineteenth-century German colonialism has reinterpreted this earlier period as one of fantasy where, confronted by a lack of real political power, the dreams of nation and empire became intertwined.⁴⁰ For too long, though, historians have overemphasized Susanne Zantop’s analytical approach in *Colonial Fantasies* to discuss German imperial desire in the pre-nation-state period without thoroughly investigating cases representative of German complicity in European imperialism, settler colonialism, resource extraction, and knowledge production outside of Europe.⁴¹ An exception to this is perhaps the ongoing debate about whether German intellectual and cultural investment in *Orientalistik* extended to include overt political and economic motives.⁴² Postcolonial studies and new appeals to “decolonize” museums and natural

³⁸ Moritz von Brescius, ‘When was the Postcolonial in Germany History? Ernst Fickendey, Imperial Careering and Plantation Cultures Between Europe and the Tropics’, unpublished article draft reviewed by the CHSTM ‘Colonial Science and the German Empire’ Working Group, April 2021, 17-18.

³⁹ Ibid.

⁴⁰ Sara Friedrichsmeyer, Sara Lennox and Susanne Zantop, *The Imperialist Imagination: German Colonialism and Its Legacy* (Ann Arbor: University of Michigan Press, 1998), 19; Edward Ross Dickinson, ‘The German Empire: An Empire?’, *History Workshop Journal*, 66 (2008), 129-162.

⁴¹ Susanne Zantop, *Colonial Fantasies: Conquest, Family, and Nation in Precolonial Germany, 1770-1870* (Durham: Duke University Press, 1997).

⁴² Forthcoming: Katherine Arnold, ‘Fashioning an Imperial Metropolis at the 1896 *Berliner Gewerbeausstellung*’, *Historical Journal* (2021), 4. Suzanne Marchand has argued that German Orientalism was not ‘primordially or perpetually defined by imperialist relationships’, while others, like Nina Berman and Stefan Niles Illich, contend that the Orient was the site upon which, and through which, German national and imperial visions were articulated. Suzanne Marchand, *German Orientalism in the Age of Empire: Religion, Race, and Scholarship* (Cambridge: Cambridge University Press, 2010), xx; Nina Berman, ‘Orientalism, Imperialism, and Nationalism: Karl May’s

history collections make a re-examination of Zantop's work critical in understanding German involvement in collective and nationally-bound imperial and colonial control. This study aims at a revision of the historiographical consensus, adding another pre-colonial case which sometimes falls in line with, but more often refutes, Zantop's "fantasies". While they were not first and foremost interested in subverting British control in the Cape, these German collectors certainly embraced the role of the colonizer. Much like their British and Dutch counterparts, they performed violent intellectual and physical acts on the Africans they encountered, and their commercial mentality toward the natural world led to a devastating extraction of flora, fauna, human remains, and resources from the environment.

Paradigm-shifts breaking down some of the more conventional wisdoms of British imperial history have followed two major theoretical shifts which this thesis intends to enhance, advance, and reshape. Firstly, the "new imperial" history has increasingly been influenced by the insights and parallel emergence of postcolonial, global, and transnational history. These approaches, as 'both a process and a perspective, subject matter and methodology', have profoundly shaped, and indeed made possible, a thesis of this kind.⁴³ While the scholarship of the "new imperial" history does not factor hugely into this work, it deserves mention primarily for its radical spatial conceptions of empire and emergent cultural approaches.⁴⁴ A focus on nation-state driven narratives in imperial history has proved a constraint on the historical imagination in the same way that metropolitan-focused narratives, whether of the "official mind" or "gentlemanly capitalism", limited the scope of potential research.⁴⁵ National borders and the boundaries of European empires have always been porous; the ability to disengage from the nation-state construct has allowed historians in recent

Orientzyklus' in Friedrichsmeyer, Lennox and Zantop (eds), *The Imperialist Imagination*, 52-53; Niles Stefan Illich, 'German Imperialism in the Ottoman Empire: A Comparative Study', PhD diss, Texas A&M University, 2007, 4-5.

⁴³ Sebastian Conrad, *What Is Global History?* (Princeton: Princeton University Press, 2017), 11; See also, Sebastian Conrad, *Globalgeschichte: Eine Einführung* (München: C.H. Beck, 2013).

⁴⁴ For example: Catherine Hall, *Civilising Subjects: Metropole and Colony in the English Imagination, 1830-1867* (Chicago: University of Chicago Press, 2002); Linda Colley, *Britons: Forging the Nation, 1707-1837* (New Haven: Yale University Press, 1992); David Cannadine, *Ornamentalism: How the British Saw their Empire* (London: Allen Lane, 2001); Elizabeth Buettner, *Empire Families: Britons and Late Imperial India* (Oxford: Oxford University Press, 2004); Catherine Hall and Sonya O. Rose (eds.), *At Home with the Empire: Metropolitan Culture and the Imperial World* (Cambridge: Cambridge University Press, 2006); Emma Rothschild, *The Inner Life of Empires: An Eighteenth-Century History* (Princeton: Princeton University Press, 2011); works by John M. Mackenzie.

⁴⁵ Douglas M. Peers, 'Is Humpty Dumpty Back Together Again?: The Revival of Imperial History and the Oxford History of the British Empire', *Journal of World History*, 13 (2002), 456; Ronald Robison and John Gallagher, *Africa and the Victorians: The Official Mind of Imperialism* (London: I.B. Tauris, 1961); P.J. Cain and A.G. Hopkins, *British Imperialism: 1688-2000* (New York: Longman, 1993).

years to focus instead on connections, exchanges, and mobilities across time and space.⁴⁶ As Gary Magee and Andrew Thompson have argued,

the growth and integration of markets relied on a plethora of dense, everyday social networks that straddled national borders, linked migrants in their places of settlement to their places of origin, generated trust and solidarity, improved the quality and quantity of information flows, and combined cultural and economic pursuits'.⁴⁷

The various mobilities explored in this thesis, whether that be human, intellectual, or material, were mostly voluntary, traveling to and from destinations that were not always London (or Britain), and often functioned without interference by the British state. These kinds of social networks that Magee and Thompson highlight, aspects championed by the “new imperial” history and “network theory”, still require further treatment.⁴⁸ This thesis will help to enrich and remodel our thinking about these mobilities through the case study of German natural history collectors.

Center-periphery models employed in British imperial historiography have only helped to exacerbate the power asymmetries that the Empire was built upon, rejecting the possibility that relationships between metropole and colony could be complex and co-constituted or interact with other spaces within the empire’s boundaries, let alone outside of them. Instead, this thesis views the British Empire and the German states as intricate, yet flexible webs of interdependence and exchange which continuously constricted and expanded in response to local and global events. While there are several conceptual frameworks available to visualize the truly global nature of empire and imperial natural history, the three-dimensional nature of Tony Ballantyne’s web seems

⁴⁶ Stephen Howe, ‘British Worlds, Settler Worlds, World Systems, and Killing Fields’, *The Journal of Imperial and Commonwealth History*, 40 (2012), 10.

⁴⁷ Gary Magee and Andrew Thompson, *Empire and Globalisation: Networks of People, Goods, and Capital in the British World, c. 1850-1914* (Cambridge: Cambridge University Press, 2010), 243. Their work, however, focuses mainly on Britons in the ‘British World’. For more, see: Saul Dubow, ‘How British was the British World? The Case of South Africa’, *The Journal of Imperial and Commonwealth History*, 37:1 (2009), 1-27; Rachel K. Bright and Andrew R. Dilley, ‘After the British World’, *Historical Journal*, 60:2 (2017), 547-568; Tamson Pietsch, ‘Rethinking the British World’, *Journal of British Studies*, 52:2 (2013), 441-463; Gregory A. Barton, ‘The British World Model of World History’, *Britain and the World*, 5:1 (2012), 1-11; Dane Kennedy, *The Imperial History Wars: Debating the British Empire* (London: Bloomsbury, 2018), ch. 5.

⁴⁸ Moreover, Magee and Thompson also acknowledge how imperial networks could harm as much as help, some evidence of which is also visible throughout this thesis. This is also acknowledged by Emily Rosenberg, who points out that although transnational networks superseded geographical boundaries, they often created ‘registers of difference’ of their own; the ‘connected’ world was not necessarily an egalitarian one. They were fraught with exclusivity and denied accessibility to others. Emily Rosenberg, ‘Transnational Currents in a Shrinking World’, in Rosenberg (ed.), *A World Connecting 1870-1945* (Cambridge: Harvard University Press, 2012), 819.

to allow for all potential spatial and connective possibilities.⁴⁹ In the history of science, Jim Endersby also rejects the center-periphery language implicit in Bruno Latour's "centers of calculation", suggesting instead a web-like model in his investigation of the elaborate and reciprocal negotiations required to make successful specimen arrangements and transfers.⁵⁰ But, as Alan Lester reminds us, the British Empire did not "invent" the networks that facilitated these mobilities; rather colonists (or the German collectors at the heart of this study) brought with them, or created their own, networks within and outside the empire.⁵¹ Imperial networks of knowledge were fashioned, shaped, and maintained by ordinary individuals at the local level as much as by the state itself. In following these rather ordinary collectors, this thesis will demonstrate the ways in which transversal connections, flows, and exchanges help us to understand how experiences, knowledges, and practices moved between contexts, territories, and people on a global scale.

Secondly, this thesis seeks to discount claims of empire as 'externally competitive and internally homogeneous', sadly accentuated in recent years by the *Oxford History of the British Empire* and work on the "British World", as well as the excrescences of a particularly volatile strain of populist nationalism.⁵² In these interpretations, 'the British identity of the Empire is assumed to be paramount', almost always to the exclusion of alternative or external influence.⁵³ However, as Antoinette Burton has reflected, the field of empire is 'a choppy, irregular terrain', both historically and historiographically, on which a diverse range of historical actors collaborated and collided, both with one another and with forces 'of their making and beyond their control'.⁵⁴ Germans certainly made up a large proportion of non-British actors within the Empire, as 'reinforcements'

⁴⁹ Alan Lester, *Imperial Networks: Creating Identities in Nineteenth-Century South Africa and Britain* (London: Routledge, 2001); David Lambert and Alan Lester (eds.), *Colonial Lives Across the British Empire: Imperial Careering in the Long Nineteenth Century* (Cambridge: Cambridge University Press, 2006).

⁵⁰ Jim Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science* (Chicago: Chicago University Press, 2008), 3; Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge: Harvard University Press, 1987), ch. 6.

⁵¹ David Lambert and Alan Lester, 'Introduction: Imperial Spaces, Imperial Subjects' in Lambert and Lester (eds.), *Colonial Lives Across the British Empire: Imperial Careering in the Long Nineteenth Century* (Cambridge: Cambridge University Press, 2006), 25.

⁵² David Arnold, 'Globalization and Contingent Colonialism: Towards a Transnational History of "British" India', *Journal of Colonialism and Colonial History*, 16:2 (2015). Potter and Saha have also referred to these interpretations of empire as 'a singular, hermetically-sealed world-system'. Simon J. Potter and Jonathan Saha, 'Global History, Imperial History and Connected Histories of Empire', *Journal of Colonialism and Colonial History*, 16:1 (2015).

⁵³ Arnold, 'Globalization'.

⁵⁴ Antoinette Burton, *The Trouble with Empire: Challenges to Modern British Imperialism* (Oxford: Oxford University Press, 2015), 13.

of the Anglo-World as James Belich memorably terms it, or the ‘third hull of the Anglo-trimaran’, alongside the British and Irish.⁵⁵ He maintains that Germans might not have fully assimilated into British colonial contexts, but they did integrate quite readily – certainly economically and to some extent politically – which, in the Cape context, signals a departure from the large-scale assimilation that occurred during VOC rule. All of this suggests that we cannot understand these Germans’ place in the Cape without taking a global approach to imperial history. By acknowledging the varied experiences of these non-British participants in the ideologies, epistemologies, and arrangements of the British Empire, this thesis hopes to advance a challenge to these unreasonable claims to homogeneity. The multiple contexts in which these German collectors realized their ambitions offers rich and unique opportunities for the historical examination of major themes in the study of the British Empire, European imperialism, and the histories of science and collecting.

The Histories of Collecting and Natural History in Europe and Southern Africa

Following the postcolonial and global turns, exploration, science, and the environment have emerged as the foci of work on empire, particularly in the British context. Since the seventeenth century, the (Western) scientific and intellectual movements that have shaped our modern world ‘do not just touch upon empire: empire stands at the centre of their deliberations’.⁵⁶ The symbiotic relationship between science and empire often allowed eased access for European travelers and naturalists and made territorial control part and parcel of an increasing frontier of knowledge.⁵⁷ The activities of natural history collectors are thus deeply entangled in both the development of Western scientific knowledge and in the physical and environmental violence that accompanied imperial expansion, facilitating alleged (white) European intellectual superiority and colonial rule both practically and ideologically.⁵⁸ But that process of was not always clear or straightforward, as natural history collections, and sometimes objects themselves, could defy simple transfer into

⁵⁵ Belich, *Replenishing the Earth*, 62.

⁵⁶ John M. Mackenzie, ‘The British Empire: Ramshackle or Rampaging? A Historiographical Reflection’, *Journal of Imperial and Commonwealth History*, 43:1 (2015), 109.

⁵⁷ Richard Axelby, ‘Calcutta Botanic Garden and the Colonial Re-Ordering of the Indian Environment’, *Archives of Natural History*, 35:1 (2008), 153.

⁵⁸ Lucile H. Brockway, *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens* (New York: Academic Press, 1979), 6. See also: Richard Drayton, *Nature’s Government: Science, Imperial Britain, and the ‘Improvement’ of the World* (New Haven: Yale University Press, 2000).

our supposed “universal” Western science, as will be seen in Chapters Four and Five. While historians of science may be in regular disagreement about the methodologies of their practice, ‘everyone recognizes in some way or other that [knowledge] is not the sole property of individuals – that it “circulates”’.⁵⁹ Much like Ballantyne’s “web” and Lester’s “network” offered new ways of visualizing the interconnectedness of the British imperial past, “circulation” has helped historians of science to situate globally extensive flows and locally intensive theatres of intellectual and material exchange, none of which were clear or direct.⁶⁰ The German collectors in question, and their botanical and zoological material, also circulated between Britain, Europe, the Cape, and sometimes around the world which, in some cases, later became canonized into the realm of the “universal” sciences. They offer a new case study with which to understand the nature of collecting in the Cape, a locality often excluded from much of the work on the history of science, helping to conceptualize how knowledge produced about the Cape was packaged, repurposed, and disseminated. Likewise, it also discusses the supreme importance of their commercial priorities, and the (sometimes) global ambitions of these collectors, offering a rich social history of science.

The period in question is a difficult one to conceptualize in this discipline for several reasons. The structural and cultural conditions for modern rational science – as distinctive forms of knowledges, practices, and institutions – were in the process of being constituted and stabilized.⁶¹ It falls between the reorganization of the German universities and the publication of Darwin’s theories on natural selection, significant events which revolutionized the way the natural sciences were conceived and practiced in Europe. Additionally, it straddles the two high points of sustained focus on economic botany in Britain: between the European voyages of discovery and the escalation of

⁵⁹ James A. Secord, ‘Knowledge in Transit’, *Isis*, 95:4 (2004), 655.

⁶⁰ Lissa Roberts, ‘Situating Science in Global History: Local Exchanges and Networks of Circulation’, *Itinerario*, 33:1 (2009), 24. For early modern circulation of knowledge and natural objects, see: Daniela Bleichmar, *Visible Empire: Botanical Expeditions and Visual Culture in the Hispanic Enlightenment* (Chicago: University of Chicago Press, 2012); Jill Casid, *Sowing Empire: Landscape and Colonization* (Minneapolis: University of Minnesota Press, 2005); Claudia Swan and Londa Schiebinger (eds.), *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (Philadelphia: University of Pennsylvania Press, 2005); Harold Cook, *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age* (New Haven: Yale University Press, 2007); Anne Goldgar, *Tulipmania: Money, Honor, and Knowledge in the Dutch Golden Age* (Chicago: University of Chicago Press, 2007); Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge: Harvard University Press, 2004); and Emma Spary, *Utopia’s Garden: French Natural History from Old Regime to Revolution* (Chicago: University of Chicago Press, 2000).

⁶¹ Zaheer Baber, ‘The Plants of Empire: Botanic Gardens, Colonial Power and Botanical Knowledge’, *Journal of Contemporary Asia*, 46:4 (2016), 660.

colonial agricultural projects emanating from Kew Gardens. A focus on this period, rather than the favored late eighteenth century or late nineteenth century, offers a departure from the traditional focus on “useful” plants, advancing a fresh perspective on how commerce and economy played a role in natural history. I would suggest that the “decline”, or stagnation, of Kew Gardens gave botanists a certain freedom to focus on the taxonomic and morphological determinations of more unusual plants.⁶² This enables us to highlight the depth and complexity of the actual collections held in botanic gardens, herbaria, and museums around the world which captured the nineteenth-century botanical imagination in entirely anti-utilitarian ways. The twenty-year “absence” of Kew also created a space in which the German states could act as the metropolitan receiving end of colonial specimen exchanges, rather than London or Britain. Ties to colonialism therefore did not necessarily emanate from the state, but rather the German states participated in colonialism through the practice of natural history: they maintained relationships to German collectors in colonial domains and organized new scientific societies with the express purpose of obtaining “foreign” botanical and zoological material. It was a unique break that has been studied in relatively little detail temporally, let alone outside of the British Empire.

Histories of natural history have prioritized cultural and social history, posing rich questions of who could practice, where they gathered, and how they interacted with each other.⁶³ Building on David Elliston Allen’s now-classic model, scholars have pointed to the incredible diversity of practitioners working in the field, the herbarium, the museum, and the garden, marking a shift away from ideas and theories to one that incorporates a new appreciation of practice.⁶⁴ Presently, this emphasis casts a different net over the traditional subjects of natural history research, widening our concern toward the collection and analysis of natural objects and embracing a more complex picture of the labor and diversity of actors involved in natural history pursuits.⁶⁵ For several decades, Mary Louise Pratt’s “contact zone” has provided a framework for historians of science

⁶² Drayton, *Nature’s Government*.

⁶³ N. Jardine, J.A. Secord and E.C. Spary (eds.), *Cultures of Natural History* (Cambridge: Cambridge University Press, 1996); H.A. Curry, N. Jardine, J.A. Secord and E.C. Spary (eds.), *Worlds of Natural History* (Cambridge: Cambridge University Press, 2018); 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).

⁶⁴ David Elliston Allen, *The Naturalist in Britain: A Social History* (New York: Penguin, 1976); Anne Secord, ‘Science in the Pub’ and Anne Secord, ‘Corresponding Interests’.

⁶⁵ Jane Camerini, ‘Remains of the Day: Early Victorians in the Field’ in Lightman (ed.), *Victorian Science in Context* (Chicago: University of Chicago Press, 1997), 354.

to consider the multiplicity of natural history and fieldwork, helping to situate the local within the global.⁶⁶ Pratt's idea of "contact" emphasizes the relations between colonizer and colonized in terms of their 'co-presence, interaction, interlocking understandings and practices' rather than 'separateness or apartheid'.⁶⁷ When knowledge and experience, both about and derived from the local encounter, were transmitted back to Europe, they often served as the basis for claims to 'modern science's apparently universal validity and its historical link to material progress'.⁶⁸ However, Lissa Roberts has argued that we must see contact zones as spaces in which the uneven dynamics of the encounter 'might be (at least temporarily) suspended or modified' in favor of more local economies of dependence and interest.⁶⁹ Daniela Bleichmar has also observed how the local context often mattered more to collectors in the field than international exchange.⁷⁰ Clearly much of the knowledge which these German collectors transmitted back to Europe was not merely the result of their own observations. While this introduction has so far not engaged in any depth with the place of Africa and Africans in the contact zone, these will go on to be of growing importance. However, this thesis represents a shift away from new narratives that stress a more dynamic and fluid interdependence between white Europeans and indigenous intermediaries, as these German collectors often disregarded African social, political, and religious contexts for the sake of their own success.

The point here is to establish that, in many ways, these collectors were themselves mediators of a social experience, "go-betweens" without whom encounters and knowledge creation in the contact zone could not have been sustained.⁷¹ As defined in *The Brokered World*, the go-between is 'not just a passer-by or a simple agent of cross-cultural diffusion, but someone who articulates

⁶⁶ Fa-Ti Fan's concept of 'cultural borderlands' has also helped to capture the historical complexities of local sites of exchange: Fa-Ti Fan, 'Science in Cultural Borderlands: Methodological Reflections on the Study of Science, European Imperialism, and Cultural Encounter', *East Asian Science, Technology and Society: An International Journal*, 1 (2007), 213-231. This method is employed in his *British Naturalists in Qing China: Science, Empire, and Cultural Encounter* (Cambridge: Harvard University Press, 2004). A similar concept has been developed by Richard White: Richard White, *The Middle Ground: Indians, Empires, and Republics in the Great Lakes Region, 1650-1815* (Cambridge: Cambridge University Press, 1991).

⁶⁷ Mary Louise Pratt, *Imperial Eyes: Travel Writing and Transculturation* (London: Routledge, 1992), 6-7.

⁶⁸ Roberts, 'Situating Science', 11.

⁶⁹ *Ibid.*, 21.

⁷⁰ Daniela Bleichmar, 'Atlantic Competitions: Botany in the Eighteenth-Century Spanish Empire' in Delbourgo and Dew (eds.), *Science and Empire in the Atlantic World* (London: Routledge, 2008), 239.

⁷¹ See: Simon Schaffer, Lissa Roberts, Kapil Raj and James Delbourgo (eds.), *The Brokered World: Go-Betweens and Global Intelligence, 1770-1820* (Sagamore Beach: Science History Publications, 2009).

relationships between disparate worlds or cultures by being able to translate between them'.⁷² Imperial contexts were multicultural zones, both remote and urbanized, brimming with a uniquely complex set of characters, both white and non-white. Prompted by the postcolonial turn, the intermediary or “go-between” has recently, and rightly, emerged in a new literature which foregrounds the role of non-European individuals or groups who were indispensable to knowledge production, whether voluntary, coerced, or somewhere in between.⁷³ As we shall see, these Germans were certainly not without their African counterparts. While the *de facto* dynamics of power which underpinned those relationships were undoubtedly unequal, in the realm of Western knowledge these Germans were often junior partners. This is not to assert a parity or equality of power or experience between these Germans and the peoples amongst whom they lived and worked, but it is interesting to consider the ways in which degrees of marginality, belonging, and foreignness serve to complicate any simple understanding of the African past.

Southern Africa is the historical and historiographical crossroads of this thesis.⁷⁴ Its historical trajectory is as distinct as the flora and fauna for which it has long been famed, and as diverse as the oceanic, imperial, and scientific networks of which it was a hub. Much as the early history of the Cape is not erased by the British in 1795, it did not begin in 1652 with the appearance of the VOC nor in 1488 with Portuguese navigator Bartolomeu Dias. The Dutch intruded, sometimes forcefully, into a world they little understood but which had been in existence long before their arrival.⁷⁵ Dutch expansion initiated a series of complex and often contested relationships with the

⁷² Ibid., xiv.

⁷³ Michelle R. Moyd, *Violent Intermediaries: African Soldiers, Conquest, and Everyday Colonialism in German East Africa* (Athens: Ohio University Press, 2014); Cassandra Mark-Thiesen, ‘The “Bargain” of Collaboration: African Intermediaries, Indirect Recruitment, and Indigenous Institution in the Ghanian Gold Mining Industry, 1900-1906’, *International Review of Social History*, 57:20 (2012), 17-38; Benjamin N. Lawrance, Emily Lynn Osborn, and Richard L. Roberts (eds.), *Intermediaries, Interpreters, and Clerks: African Employees in the Making of Colonial Africa* (Madison: University of Wisconsin Press, 2006); Felix Driver and Lowri Jones, *Hidden Histories of Exploration* (London: Royal Holloway University of London, 2009); Dane Kennedy, ‘Introduction: Reinterpreting Exploration’, in Kennedy (ed.), *Reinterpreting Exploration: The West in the World* (Oxford: Oxford University Press, 2013), to name a few.

⁷⁴ Kerry Ward, ‘“Tavern of the Seas”? The Cape of Good Hope as an Oceanic Crossroads during the Seventeenth and Eighteenth Centuries’ in Bentley, Bridenthal and Wigen (eds.), *Seascapes: Maritime Histories, Littoral Cultures, and Transoceanic Exchanges* (Honolulu: University of Hawai’i Press, 2007), 137-52.

⁷⁵ See: Carolyn Hamilton, Bernard K. Mbenga and Robert Ross, ‘The Production of Preindustrial South African History’ in Hamilton, Mbenga and Ross (eds.), *The Cambridge History of South Africa*, vol. 1 (Cambridge: Cambridge University Press, 2009), 1-62 and Simon Hall, ‘Farming Communities of the Second Millennium: Internal Frontiers, Identity, Continuity and Change’ in Hamilton, Mbenga and Ross (eds.), *The Cambridge History of South Africa*, vol. 1 (Cambridge: Cambridge University Press, 2009), 112-167; John Wright, ‘Thinking beyond

Khoekhoe living close to Table Bay, and later with peoples beyond the limits of the Cape peninsula like the San, Xhosa, Zulu, Tswana, Nama, and Herero as they increasingly developed a colonial society ‘on the land of the dispossessed Khoesan, and on the labor’ of the Khoekhoe, San, and imported slaves from throughout the VOC world.⁷⁶ While the Dutch exploited the labor of enslaved and indentured peoples, seized in Africa and other VOC possessions, the languages and cultures of the free and unfree would fundamentally shape Cape Dutch society, emerging as one of the most ethnically diverse in the Dutch imperial world. Since the 1980s, a revision of the place and production of knowledge in the VOC period has increased, emphasizing ‘the violence of colonial incursions, the imposition of colonial systems of authority and knowledge, [and] the growth of a slave-holding society’.⁷⁷ These complex and violent aspects of the VOC’s protectionist mercantile principles came to shape Cape Dutch society, even as it morphed into a profoundly colonial system in the British context, making the period in question a unique mix of the two colonial styles.

Located ‘at the southernmost end of a great commercial and information highway’, the Cape was enveloped by a range of commercial, political, military, and intellectual networks that connected Europe to the Indian and Atlantic Ocean worlds.⁷⁸ Under Dutch rule it became a meeting point for ships and crews of all nationalities, where they shared scientific and practical advice, and collected

“Tribal Traditions”: Reflections on the Precolonial Archive’, *South African Historical Journal*, 62:2 (2010), 268-286.

⁷⁶ Robert Ross, ‘Khoesan and Immigrants: The Emergence of Colonial Society in the Cape, 1500-1800’ in Hamilton, Mbenga and Ross (eds.), *The Cambridge History of South Africa*, vol. 1 (Cambridge: Cambridge University Press, 2009), 168; Richard Elphick, *Kraal and Castle: Khoikhoi and the Founding of White South Africa* (New Haven: Yale University Press, 1977); Robert Ross, *Cape of Torments: Slavery and Resistance in South Africa* (London: Routledge, 1983); Nigel Worden, *Slavery in Dutch South Africa* (Cambridge: Cambridge University Press, 1985); Susan Newton-King, *Masters and Servants on the Cape Eastern Frontier, 1760-1803* (Cambridge: Cambridge University Press, 1999); Nigel Penn, *The Forgotten Frontier: Colonial and Khoisan on the Cape Northern Frontier in the 18th Century* (Athens: Ohio University Press, 2006); Clifton Crais, *White Supremacy and Black Resistance in Pre-Industrial South Africa: The Making of the Colonial Order of the Cape, 1770-1865* (Cambridge: Cambridge University Press, 1992); Tim Keegan, *Colonial South Africa and the Origins of the Racial Order* (Cape Town: David Philip, 1996); Richard Elphick and Hermann Giliomee (eds.), *The Shaping of Southern African Society* (London: Longmans, 1979), chapters 1-6.

⁷⁷ William Beinart, *The Rise of Conservation in South Africa: Settlers, Livestock, and the Environment, 1770-1950* (Oxford: Oxford University Press, 2003), 28-29; Nigel Worden, ‘New Approaches to VOC History in South Africa’, *African Historical Journal*, 59:1 (2007), 3-18.

⁷⁸ Keletso Atkins, ‘The “Black Atlantic Communication Network”: African American Sailors and the Cape of Good Hope Connection’, *Issue: A Journal of Opinion*, 24 (1996), 23. See also: John McAleer, *Britain’s Maritime Empire: Southern Africa, the South Atlantic and the Indian Ocean, 1763-1820* (Cambridge: Cambridge University Press, 2017).

and exchanged specimens and instruments. As a multi-national corporation, the VOC itself was already peopled by immigrants, many escaping the trauma of war-torn continental Europe during and after the Thirty Years' War. On the eve of British acquisition an estimated twenty-eight percent of *vrijburghers* were of German origin, and perhaps many more who had not yet attained "burgher" status.⁷⁹ Their transnationality, engendered by the disjointed history of the German states, translated seamlessly into the Cape Dutch context. They assimilated at remarkable speed because of religious and linguistic affinities, alongside a great deal of intermarriage.⁸⁰ In the mind of the British, although seen as culturally cognate, there was a historical, and is a historiographical, tendency to subsume the geographically disjointed German states within a wider European socio-political identity. In southern Africa there is a similar tendency to subsume them within Cape Dutch identities. One of the consequences of this has been that, in the context of the history of the Cape Colony under the British, German identity disappears as a category of historical analysis after 1795. Knowledge of both English and Dutch (or *Plattdeutsch*) allowed Germans a flexible and tacit identity, both able to blend in with Boer frontier families and participate in British Cape civic society. Not only did they have German, Dutch (or Boer), and British cultural affiliations, but they also had a scientific one, one which had formerly been "universal" but now was becoming more separate and distinct throughout the nineteenth century. Thus, conventional readings of Cape history become a narrative that marginalizes the survival and adaptation of pre-existing German entanglements within the borders of a widening British settler colony.

This perhaps, in some small way, helps to dispel thoughts that there is a "bias" toward Germans in this dissertation. Germans appear so frequently in histories of the Dutch Cape it warranted the publication of a *Personalia of Germans at the Cape*.⁸¹ The only other white ethnic group to rival

⁷⁹ Nigel Worden, Elizabeth van Heyningen and Vivian Bickford-Smith, *Cape Town: The Making of a City* (Cape Town: David Philip, 1998), 76.

⁸⁰ These Germans did not always necessarily integrate with the Dutch Reformed Church. See: Olga Witmer, 'Clandestine Lutheranism in the Eighteenth-Century Dutch Cape Colony', *Historical Research*, 93:260 (2020).

⁸¹ Presently this is undergoing a reassessment by Olga Witmer. J. Hoge, *Personalia of Germans at the Cape, 1652-1806* (Pretoria: Government Printer, 1946). Other works on Germans in the Cape: Gisela Lesley Zipp, 'A History of German Settlers in the Eastern Cape, 1857-1919', MA thesis, Rhodes University, 2013; Eduard Moritz, *Die deutsche Einwanderung in die niederländische Kapkolonie, 1652-1806* (Ludwigsburg: Kallenberg, 1943); Johannes Prinz, *Das Württembergische Kapregiment, 1786-1808: die Tragödie einer Söldnerschar* (Stuttgart: Strecker & Schroder, 1932). J.F. Schwär and B.E. Pape, *Deutsche in Kaffraria* (Pinetown: ROBPRINT, 1958); E.L.G. Schnell, *For Men Must Work: The Story of German Immigration to the Cape with Special Reference to the German Military Settlers of 1857 and the German Immigrants of 1858* (Cape Town: Maskew Miller, 1954); Werner Schmidt, *Deutsche Wanderung nach Südafrika im. 19 Jahrhundert* (Berlin: D. Reimer, 1955).

German contribution in the Cape are either the French Huguenots, who escaped France after the Edict of Fontainebleau in 1685, or the Scots, who are long famed for their influence on the development of Cape liberalism and civic society.⁸² From a scientific perspective, Leigh Davin Bregman has detailed how, in the first half of the nineteenth century, Germans were among the most common *commercial* natural history collectors in the Cape, which he distinguishes as separate from gentlemanly or salaried collectors.⁸³ The former, more so than the latter, will be the primary focus of this analysis. The Dutch mercantile system, alongside growing British middle-class influence, meant that the Cape was uniquely open to commercial pursuits in a way that the British metropolitan establishment might not have been. This sets the Cape apart from colonies like India, where the British ruling elite presided over political and commercial matters. An important addition to the literature would be to explore these circumstances in other colonies to explain why commercial collecting, versus gentlemanly or salaried collecting, flourished in the Cape and the roles that non-British nationals played in natural history collecting in other British colonies.

Literature on science and knowledge production in southern Africa and the Cape Colony has primarily focused on themes of early exploration, the expansion of colonial scientific institutions, race, and the environment, much of which has been directed by Saul Dubow and William Beinart, among others. Yet, even in their recently co-authored *The Scientific Imagination in South Africa*, the Germans at the heart of this thesis receive almost no recognition.⁸⁴ These collectors have often been relegated to rehashed prosopography and “positivist” narratives of South African history, making this a timely intervention.⁸⁵ The long life of literature on early exploration was inspired partly by the extensive historical work conducted by George McCall Theal in the late nineteenth

⁸² Maurice Boucher, *French Huguenots at the Cape: The European Background* (Pretoria: University of South Africa, 1981); Patricia W. Romero, ‘Encounter at the Cape: French Huguenots, the Khoi and Other People of Color’, *Journal of Colonialism and Colonial History*, 5:1 (2004); Johan Fourie and Dieter von Fintel, ‘Settler Skills and Colonial Development: The Huguenot Wine-Makers in Eighteenth-Century Dutch South Africa’, *The Economic History Review*, 67:4 (2014), 932-963; John M. Mackenzie (ed.), *The Scots in South Africa: Ethnicity, Identity, Gender and Race, 1772-1914* (Manchester: Manchester University Press, 2013).

⁸³ Leigh Davin Bregman, “‘For Sale’: Botanists and the Commercial Trade in Botanical Specimens at the Cape of Good Hope”, *Archives Internationales d’Histoire des Sciences* 56 (2006), 247-263.

⁸⁴ William Beinart and Saul Dubow, *The Scientific Imagination in South Africa, 1700 to the Present* (Cambridge: Cambridge University Press, 2021).

⁸⁵ Mary Gunn and L.E. Codd, *Botanical Exploration of Southern Africa* (Cape Town: A.A. Balkema, 1981). A reason for this may be inability or unwillingness to read German *Kurrentschrift* or German language documents.

and early twentieth century, and likely encouraged by the establishment of the Van Riebeeck Society in 1918, which aimed to make historical primary sources available to the average reader.⁸⁶ For the most part, this scholarship emanated out of South Africa, but in the same vein as other disciplines elsewhere, emphasis was placed on “great men” of exploration. The “positivistic” approach, coined by Sigfried Hugien, emanated from this work and is underpinned by a belief that colonial travelers ‘heralded the coming of European civilization’ or were ‘great men of science’.⁸⁷ This has seen reconsideration, most notably by Huigen, who has attempted to place early Cape ethnography conducted by some of these “great men” during VOC administration into critical analysis.⁸⁸ However, historians who turned their attentions to the nineteenth and twentieth centuries have instead concentrated on the role of science in the development of the Cape’s (white) civic society and the origins of the racial order that would later underpin extreme colonial violence and the institution of apartheid.⁸⁹ Similarly, environmental regulation, attempts to control deforestation and hunting, drought and irrigation, and the spread of plant and livestock diseases, all of which triggered as intense a concern in the colonial Cape as it does in the present, have been a lively source of attention and debate.⁹⁰ The work of Helen Tilley deserves mentioning, too. In

⁸⁶ For this kind of material, see: Vernon S. Forbes, *Pioneer Travellers of South Africa: A Geographical Commentary upon Routes, Records, Observations and Opinions of Travellers at the Cape 1750-1800* (Cape Town: A.A. Balkema, 1965); Clement H. Notcutt, *Pioneers: The Men Who Opened Up South Africa* (Cape Town: Maskew Miller, 1924); Mia C. Karsten, *The Old Company’s Garden at the Cape and Its Superintendents* (Cape Town: Maskew Miller, 1951); Edward C. Tabler, *Pioneers of Natal and Southeastern Africa* (Cape Town: A.A. Balkema, 1977); Edward C. Tabler, *Pioneers of South West Africa and Ngamiland, 1738-1880* (Cape Town: A.A. Balkema, 1973); A.C. Brown (ed.), *A History of Scientific Endeavour in South Africa* (Rondebosch: Royal Society of South Africa, 1977); E.E. Mossop, *Old Cape Highways* (Cape Town: Maskew Miller, 1931).

⁸⁷ Siegfried Huigen, *Knowledge and Colonialism: Eighteenth-Century Travellers in South Africa* (Leiden: Brill, 2009), 26-27.

⁸⁸ Huigen, *Knowledge and Colonialism*.

⁸⁹ Saul Dubow, *A Commonwealth of Knowledge: Science, Sensibility, and White South Africa, 1820-2000* (Oxford: Oxford University Press, 2006); Martin Lengwiler, Nigel Penn and Patrick Harries (eds.), *Science, Africa and Europe: Processing Information and Creating Knowledge* (London: Routledge, 2019); Saul Dubow (ed.), *Science and Society in Southern Africa* (Manchester: Manchester University Press, 2000); Helen Tilley and Robert J. Gordon, *Ordering Africa: Anthropology, European Imperialism and the Politics of Knowledge* (Manchester: Manchester University Press, 2007); Saul Dubow, *Scientific Racism in Modern South Africa* (Cambridge: Cambridge University Press, 1995); Andrew Bank, ‘Of “Native Skulls” and “Noble Caucasians”’: Phrenology in Colonial South Africa’, *Journal of Southern African Studies*, 22 (1996), 387-403; Lindsay Frederick Braun, *Colonial Survey and Native Landscapes in Rural South Africa, 1850-1913: The Politics of Divided Space in the Cape and Transvaal* (Leiden: Brill, 2014); Patrick Harries, ‘Warfare, Commerce and Science: Racial Biology in South Africa’ in Bancel, David and Thomas (eds.), *The Invention of Race: Scientific and Popular Representations* (London: Routledge, 2014), 170-184; Maano Ramutsindela, Giorgio Miescher and Melanie Boehi (eds.), *The Politics of Nature and Science in Southern Africa* (Basel: Basler Afrika Bibliographien, 2016).

⁹⁰ Beinart, *Rise of Conservation*; Jane Carruthers, ‘Towards an Environmental History of Southern Africa: Some Perspectives’, *South African Historical Journal*, 23:1 (1990), 184-195; Jacob A. Tropp, *Natures of Colonial Change: Environmental Relations in the Making of the Transkei* (Athens: Ohio University Press, 2006); John M. Mackenzie,

confronting the conventional idea of the laboratory as an isolated box for experiments in Europe, she designates the field as the laboratory: a space, and sometimes the only space, where certain types of phenomena could truly be investigated and co-opted.⁹¹ These themes become increasingly apparent in Chapter Four, as the difficulties in studying the *Hydnora africana* manifested in debates on whether botanists should name and order plants purely from *in situ* observations. Nonetheless, while the German collectors in question weave their way in and out of these dominant themes in literature on science in southern Africa, their lives, relationships, and work have not been given their due consideration.

Sources and Outline

This thesis incorporates a wide range of personal testimonies, diaries, and correspondence, much of which is fragmentary. This often leaves incomplete narratives composed by someone other than the collectors themselves. Likewise, because many of the protagonists had a wide network of correspondents and buyers for their material, written records and specimens are scattered throughout Europe, if not the world, making any attempt at reconstructing their lives and the impact of their work truly a global undertaking.⁹² To offset this, and to provide a structured narrative of this particular moment in the history of collecting, this thesis engages with an extensive collection of source material and has sought to draw out the broad themes that emerged from within. Particularly exciting are the chapters that engage with cutting-edge fields, like the language of trust and object-centered, nonhuman narratives. However, there have been some particularly illuminating sets of personal documents which helped to shed light on the social life of natural

The Empire of Nature: Hunting, Conservation, and British Imperialism (Manchester: Manchester University Press, 1988); William Beinart and Lotte Hughes, *Environment and Empire* (Oxford: Oxford University Press, 2007); David Anderson and Richard H. Grove (eds.), *Conservation in Africa: Peoples, Policies and Practice* (Cambridge: Cambridge University Press, 1987); Lance van Sittert, 'Review: The Nature of Power: Cape Environmental History, the History of Ideas and Neoliberal Historiography', *Journal of African History*, 45:2 (2004), 305-313; William Beinart, 'Vets, Viruses and Environmentalism at the Cape' in Griffiths and Robin (eds.), *Ecology and Empire: Environmental History of Settler Societies* (Edinburgh: Keele University Press, 1997), 87-101.

⁹¹ Helen Tilley, *Africa as a Living Laboratory: Empire, Development, and the Problem of Scientific Knowledge, 1870-1950* (Chicago: University of Chicago Press, 2011), 12.

⁹² Sebastian Conrad, *What is Global History?* (Princeton: Princeton University Press, 2016), ch. 10; Richard Drayton and David Motadel, 'Discussion: The Futures of Global History', *Journal of Global History*, 13:1 (2018), 1-21.

history and fieldwork. For example, the diary of Carl Friedrich Drège, held at the National Library of South Africa, has been a wholly neglected source for far too long. The same could be said of the correspondence of Ludwig Krebs held at the *Museum für Naturkunde* in Berlin, which was compiled into a monograph with a “positivistic” approach in the 1970s. Despite the problematic perspective of the narrative, it nonetheless details Krebs’ social history chronologically through his letters, with transcriptions from the German *Kurrentschrift*, which I double-checked with his documents held at the *MfN* in Berlin. Yet, these personal documents, while incredibly illuminating, only make up two of the chapters of the larger whole.

Correspondence from the Berlin *MfN*, the *Geheimes Staatsarchiv Preußischer Kulturbesitz*, the Stuttgart *Museum für Naturkunde*, the *Hauptstaatsarchiv* Stuttgart have also made clear the actions, exchanges, and mobilities of these collectors, either through more official institutional channels or in their private communications to family and friends which ended up in local archives. The Berlin *MfN* in particular holds materials like specimen and auction lists, which is significant for tracing material histories. The correspondence held in the Royal Botanic Gardens at Kew, while often written by third parties, demonstrates how they were spoken about by metropolitan and colonial patrons and the extent to which they harnessed their local knowledge and expertise for the collection of *desiderata*. Documents from the Western Cape Archives are more official in nature, highlighting their movements within the Cape that were fed through the colonial administration. Importantly, parts of this dissertation relied heavily on contemporary scientific journals published in English, German, and Latin, consulted to better understand how the collections were marketed, how their personalities and reputations were publicly portrayed, and to ascertain to what extent their collections were used in taxonomic and morphological classification. Taken as a whole, these sources have offered a varied and balanced portrait of their lives and connections both in the Cape and in Europe.

However, there are deep silences present in this dissertation, too. Ghosts ‘are a haunting reminder of an ignored past’, reasons Banu Subramaniam, which must be rendered visible by ‘confront[ing] the past, or [else] the dead never go away, history never sleeps, the truth can never be erased,

forgotten, or foreclosed’.⁹³ While a heavy toll was placed on the colonized through labor and resource extraction, Arjun Appadurai argues that, in fact, the colonized suffered the most in the realm of knowledge, ‘where colonial subjects were classified as the other in the empire of reason’.⁹⁴ Material which would make this study more well-rounded, i.e. details about slave societies, the experiences of enslaved and indentured peoples, narratives of the African assistants who accompanied the German collectors, and of the men and women who offered ethnobotanical and ethnozoological knowledge, cannot be known ‘because the archives are subject to the power relationships of the community that produced them’.⁹⁵ Through textual analysis, a mindset *about* Africans becomes apparent; less clear are the infrequent voices that emerge from African experience and resistance. Chapters Three and Four attempt to include these voices, but the evaluations are borne purely from the writings of the colonizer and not from their own oral or written perspective. As a historian who focuses on the impact of European imperialism and settler colonialism on colonized peoples, I acknowledge these gaps but hope to restore some humanity and agency to those who undoubtedly shared their skill and expertise, and sometimes gave their lives and skeletons, in the pursuit of Western knowledge.⁹⁶

Likewise, there is very little in this thesis that deals with women or gender history, although there are some small reflections on the role of masculinities in shaping values and behavior.⁹⁷ Most of the protagonists in question did not marry – either they died too young or remained devoted entirely

⁹³ Tanja Hammel, *Shaping Natural History and Settler Society: Mary Elizabeth Barber and the Nineteenth-Century Cape* (Basingstoke: Palgrave Macmillan, 2019), 1; Banu Subramaniam, *Stories for Darwin: The Science of Variation and the Politics of Diversity* (Urbana: University of Illinois Press, 2014), 23.

⁹⁴ Arjun Appadurai, ‘Beyond Domination: The Future and Past of Decolonization’, *The Nation*, accessed 9 June 2021, <https://bit.ly/3ivi4Ce>.

⁹⁵ J’Nese Williams, ‘Plantation Botany: Slavery and the Infrastructure of Government Science in the St. Vincent Botanic Garden, 1765-1820s’, *Berichte zur Wissenschaftsgeschichte*, 44:2 (2021), 140; Michael Moss and David Thomas (eds.), *Archival Silences: Missing, Lost, and Uncreated Archives* (London: Routledge, 2021); Some examples include: Andrew Bank, ‘The “Intimate Politics” of Fieldwork: Monica Hunter and Her African Assistants, Pondoland and the Eastern Cape, 1931-1932’, *Journal of Southern African Studies*, 34 (2008), 557-574; William Beinart and Karen Brown, *African Local Knowledge and Livestock Health: Diseases and Treatments in South Africa* (Johannesburg: Wits University Press, 2013); Elizabeth Green Musselman, ‘Plant Knowledge at the Cape: A Study in African and European Collaboration’, *International Journal of African Historical Studies*, 36 (2003), 367-392; Sekibakiba Lekgoathi, ‘Colonial Experts, Local Interlocutors, Informants and the Making of an Archive on the Transvaal Ndebele, 1930-1989’, *Journal of African History*, 50 (2009), 61-90.

⁹⁶ Marwa Elshakry, ‘When Science Became Western: Historical Reflections’, *Isis*, 101 (2010), 98-109.

⁹⁷ Erika Milam and Robert A. Nye (eds.), ‘Scientific Masculinities’, *Osiris*, 20 (2015); Christopher Lawrence and Steven Shapin (eds.), *Science Incarnate: Historical Embodiments of Natural Knowledge* (Chicago: Chicago University Press, 1998).

to natural history collecting – and therefore we have few possibilities for women, who would have typically assisted with the assembling, sorting, describing, or illustrating of their work, to enter the story.⁹⁸ Historians like Ann Shteir have argued that white middle- and upper-class women developed their own genre of botanical literature based upon observation of the natural world in the maternal tradition.⁹⁹ Thus, hundreds of women published prolifically about everything from gardening to taxonomy, communicating their work in relatively accessible language. Many more women worked as botanical illustrators, developing financial independence and social and scientific status through their visual culture, much like example of Maria Sibylla Merian in Chapter One. As Elaine Ayers argues, their contributions complicate, if not obliterate, the historiographic line between “professional” and “popular” science, ‘even as the sciences of sexuality and reproduction worked to medicalize and control women’s bodies and minds’.¹⁰⁰ The intersection of gender, settler colonialism, and science in the Cape context is best encapsulated by Tanja Hammel’s recent work on the life of Mary Elizabeth Barber.¹⁰¹ More could certainly be done to highlight the role of women in the scientific imagining of southern Africa.

⁹⁸ See: Elaine Ayers, ‘Strange Beauty: Botanical Collecting, Preservation, and Display in the Nineteenth Century Tropics’, PhD diss, Princeton University, 2018, ch. 2; Kate Law, ‘Making Marmalade and Imperial Mentalities’: The Case of a Colonial Wife’, *African Research and Documentation*, 113 (2010), 19-27.

⁹⁹ See: Ann Shteir, *Cultivating Women, Cultivating Science: Flora’s Daughters and Botany in England, 1760-1860* (Baltimore: Johns Hopkins University Press, 1996); Ann Shteir and Bernard Lightman, *Figuring it Out: Science, Gender, and Visual Culture* (Hanover: Dartmouth University Press, 2006); Ann Shteir, ‘Botany in the Breakfast Room: Women in Early Nineteenth-Century British Plant Study’ in Abir-Am and Outram (eds.), *Uneasy Careers and Intimate Lives, Women in Science, 1789-1979* (New Brunswick: Rutgers University Press, 1987), 31-43; Marina Benjamin, (ed.), *Science and Sensibility: Gender and Scientific Enquiry, 1870-1945* (Oxford: Blackwell, 1991); Ludmilla Jordanova, *Nature Displayed: Gender, Science, and Medicine, 1760-1820* (New York: Addison Wesley Longman, 1999); Barbara Gates, *Kindred Nature: Victorian and Edwardian Women Embrace the Living World* (Chicago: University of Chicago Press, 1998); Sam George, *Botany, Sexuality, and Women’s Writing, 1760-1830: From Modest Shoot to Forward Plant* (Manchester: Manchester University Press, 2007); Tina Gianquitto, ‘Good Observers of Nature’: *American Women and the Scientific Study of the Natural World, 1820-1885* (Athens: University of Georgia Press, 2007); Eadaoin Agnew, ‘“An Old Vagabond”: Science and Sexuality in Marianna North’s Representations of India’, *Nineteenth-Century Gender Studies*, 7 (2011), 1-7.

¹⁰⁰ Ayers, ‘Strange Beauty’, 13; Ludmilla Jordanova, *Sexual Vision: Images of Gender in Science and Medicine Between the Eighteenth and Twentieth Centuries* (Madison: University of Wisconsin Press, 1989); Londa Schiebinger, *The Mind Has No Sex? Women in the Origins of Modern Science* (Cambridge: Harvard University Press, 1991).

¹⁰¹ Hammel, *Mary Elizabeth Barber*; Andrew Bank, *Pioneers of the Field: South Africa’s Women Anthropologists* (Cambridge: Cambridge University Press, 2016); Tanja Hammel, ‘Thinking with Birds: Mary Elizabeth Barber’s Advocacy for Gender Equality in Ornithology’, *Kronos*, 41 (2015), 85-111; William Beinart, ‘Men, Science, Travel and Nature in the Eighteenth and Nineteenth-Century Cape’, *Journal of Southern African Studies*, 24:4 (1998), 775-799.

This thesis is divided into six chapters, organized thematically and semi-chronologically. Chapter One serves as a prelude to the following five chapters, covering the period from the establishment of the Dutch settlement at the Cape (1652) to Britain's first occupation of it (1795). Using travel narratives, scientific texts, and secondary sources, it offers an introductory look at four main points: how Germans used the established transnational and trans-imperial networks of the Dutch East India Company to realize their overseas ambitions, meanwhile building their own personal scientific reputations, as well as a wider 'national' one; to determine how modes of economic exchange became inherently intertwined with the development of natural knowledge in the Dutch world; how the German gardeners of the Company Garden came to play a particularly significant role in the dissemination of knowledge about the region's indigenous flora; and, finally, as the Dutch lost influence in global commerce, how Germans then exploited the rising networks of the British Empire for the same purpose, becoming central to its scientific undertakings.

Chapter Two explores what the disintegration of social relations between the Prussian state, the Berlin Zoological Museum, and their salaried Cape collectors can tell us about trust, emotions, and power in histories of science. Strengthening the scientific link between the German states and the Cape in the first decades of the nineteenth century, this chapter also focuses on how Hinrich Lichtenstein came to embody the ultimate commercial naturalist and personified the two opposing poles of scientific endeavor in this period, reinforcing the themes of Chapter One. The language embedded in the correspondence that traveled between Prussia and the Cape reveals a complete collapse of trust on several social levels, showing how metropolitan naturalists and colonial collectors used the language of trust to display shifts to mistrust or distrust. However, a desire for reliability and the necessity of being economical inevitably helped to fashion the 'entrepreneurial' naturalist, a new way of collecting specific to the German states in the early nineteenth century.

The next three chapters form an arc which presents, through different methods, a challenge to the idea that competition drives progress; rather, the new mode of collecting in Cape natural history introduced in the previous chapter was more destructive than it was progressive. The third chapter demonstrates this through an analysis of these collectors' small, independently organized (and financed) collecting parties and natural history businesses in the 1820s and 1830s. The need to be economical and the threat of competition influenced every consideration of their enterprise: where

they collected, preservation techniques, relationships with both Boer frontier farmers and African assistants, and their perception of the environment. These factors reveal how local circumstances and “the field” itself dictated the quality of their specimens and the success of their ventures, allowing us to better understand their individuality (or equivalence) as collectors, their approach to collecting, and to make sense of their experience in the contact zone.

After understanding *how* these Germans harnessed their commercial objectives and put them to practice in the field, Chapter Four will shift onto *what* they collected and how the agency of objects could fundamentally shape the trajectory of Western knowledge production. While human remains were readily dehumanized, catalogued, and transferred into European museums and institutions, the materiality of the parasitic *Hydnora africana* made it difficult for European botanists to visualize and comprehend such a plant, let alone to place it within Eurocentric classification schemes. However, a declaration of desire encouraged these already ambitious collectors into ever more imaginative forms of risk-taking, pushing geographical, intellectual, and moral boundaries in the process. The pursuit of these objects reveals the collector’s logic: that plucking a botanical specimen from the earth was no different than skinning the flesh from a human skull. Building on the argument from Chapter Three, taking an object-centered approach exposes the rather sadistic mentality of the collector through a material lens and indicates what objects they saw as significant to their financial and reputational prosperity.

However, *Hydnora* would not be the first, nor the last time that European naturalists’ intellectual limits would be tested while attempting to understand Cape flora. Chapter Five rounds out the narrative arc on “progress” by demonstrating how the material overload of the Ecklon-Zeyher and Drège collections fundamentally disrupted the intellectual project of naming and ordering the flora of southern Africa. While the stagnation of Kew Gardens created an opportunity for the German states to play a significant role in the classification of Cape flora (rather than the imperial center), the established commercial competition caused several problems for European botanists in their attempts to do so. The collectors’ insistence on selling, and publishing on, their collections separately resulted in a botanical polemic in the 1840s which halted all taxonomic work stemming from the use of their specimens. The qualitative and quantitative chaos that ensued helps to dispel any preconception that processes of Western knowledge production were simple, straightforward,

or friendly, offering an alternative to the sometimes-unconscious acceptance of certain narratives about the advance of Western science.

Finally, Chapter Six focuses on the effort to establish a botanic garden in the Cape Colony in the first half of the nineteenth century. As a space to foster the growth and study of Cape flora, the project suffered under the weight of settler indifference to indigenous plant life, lack of financial support from the Cape colonial government, and competing notions about the role of a botanic garden in Cape civic life. This suggests the powerful role of apathy in the “progress” of natural history, both in the Cape and in Britain itself, as it affected not only the formation of a botanic garden, but also the compilation of William Henry Harvey’s *Flora Capensis* and the many other botanical pursuits attempted within the Colony. Moreover, this chapters illustrates how the garden, both in idea and reality, became the site which united the aspirations and ambitions of the various scientific Germans who formed the heart of this analysis. Their failure, however, to play any major role in the garden’s development or administration, or to persuade local and metropolitan authorities of the value of the Cape’s indigenous flora, only serves to reinforce their rather ambiguous legacy.

Chapter One

An Economy of Curiosity: German Expertise and the Emergence of Global Natural History Networks, 1652-1795

‘The sight of this southern point of Africa, with its own peculiar form of high coast, with the Devil's Peak, Table Mountain, Lion's Head and Rump, makes an impression on everybody, which, as it is said, cannot be described but must be felt’.¹⁰²

Georg Krebs (1834)

Maria Sibylla Merian, born in the Free Imperial City of Frankfurt in 1647, was the consummate early modern naturalist and artist.¹⁰³ Her father, Matthäus Merian, was a Swiss-born engraver and publisher; upon his death when she was just three years old, her talent was then fostered by her stepfather, still-life painter Jacob Marrel of Frankenthal.¹⁰⁴ Perhaps inspired by the natural history books that passed through her family's firm, she began raising moths and butterflies through metamorphosis. Her unique training led her to create her own books on the insects she studied, resulting in a work on caterpillars that broke the long-standing tradition of isolating organisms from their environs, depicting them on their host plants along with their metamorphic stages.¹⁰⁵ After decades of experience capturing, raising, and painting organisms from European fields and gardens, she traveled to Dutch Surinam and attempted to replicate her methods from the tropical organisms she had observed in the curiosity cabinets of her contacts in Amsterdam and the German

¹⁰² Georg Krebs to Lichtenstein, 13 December 1834, translated in Pamela Ffolliott and Richard Liversidge, *Ludwig Krebs: Cape Naturalist to the King of Prussia, 1792-1844* (Cape Town: A.A. Balkema, 1971), 83.

¹⁰³ Kay Etheridge, ‘The History and Influence of Maria Sibylla Merian's Bird-Eating Tarantula: Circulating Images and the Production of Natural Knowledge’ in Manning and Rood (eds.), *Global Scientific Practice in the Age of Revolutions, 1750-1850* (Pittsburgh: University of Pittsburgh Press, 2016), 56.

¹⁰⁴ For Merian's biography see: Florence F.J.M. Peters and Diny Winthagen, ‘Maria Sibylla Merian, Naturalist and Artist (1647-1717): A Commemoration on the Occasion of the 350th Anniversary’, *Archives of Natural History*, 26:1 (1999), 1-18; Ella Reitsma and Sandrine Ulenberg, *Maria Sibylla Merian and Daughters: Women of Art and Science* (Amsterdam: Rembrandt House Museum, 2008); Natalie Zemon Davis, *Women on the Margins: Three Seventeenth-Century Lives* (Cambridge: Harvard University Press, 1995), ch. 3. For a critical account, see: Elizabeth Polcha, ‘Breeding Insects and Reproducing White Supremacy in Maria Sibylla Merian's Ecology of Dispossession’, *Lady Science* (2019), accessed 14 June 2021, <https://bit.ly/2RQTqkm>; Elizabeth Polcha, ‘Redacting Desire: The Sexual Politics of Colonial Science in the Eighteenth-Century Atlantic World’, PhD diss, Northeastern University, 2019.

¹⁰⁵ Maria Sibylla Merian, *Der Raupen wunderbare Verwandlung und sonderbare Blumen-Nahrung* (Nuremberg: J.A. Graaff, 1679); Kay Etheridge (ed.) and Maria Sibylla Merian, *The Flowering of Ecology: Maria Sibylla Merian's Caterpillar Book* (Leiden: Brill, 2020).

states.¹⁰⁶ Her *Metamorphosis insectorum Surinamensium* (1705) depicted South American insects and plants in a way never before seen, much like her caterpillar book years before.¹⁰⁷ As Kay Etheridge claims, Merian was the first to illuminate, both verbally and visually, what we now think of as food chains and interactions within ecological communities.¹⁰⁸

While her remarkable observations and artwork earned her status in the world of European scholars and collectors interested in natural history, her gender prevented her from being invited to join major European scientific societies.¹⁰⁹ Thus, she relied on the cultivation of informal networks to gain access to the male-dominated world of natural history. Although she had secured the respect and admiration of this community, she was also an entrepreneur who wholly depended on the sale of her drawings, specimens, and books for her livelihood.¹¹⁰ Not only did her artisanal, craft background offer her an inspired way to interpret and process the natural world, but it also taught her how to display and sell it. This allowed her to transform nature into commercial objects through specimen preparation and long-term preservation, a move which violated the so-called ‘codes of the collecting community’.¹¹¹ While she was sharply attuned to the commercial possibilities the natural world offered, understanding the market for exotic specimens as exceptionally lucrative, ‘the capital of the Republic [of Letters] was never money’.¹¹² For this reason, as Janice Neri has argued, Merian occupied an ‘ambiguous and sometimes problematic position’, and ‘remained a somewhat unstable commodity’ herself, within the ‘cultural economy’ of early modern natural history networks.¹¹³

¹⁰⁶ The most famous of these are perhaps her illustrations of pineapples. Dániel Margócsy, ‘The Pineapple and the Worms’, *KNOW: A Journal on the Formation of Knowledge*, 5:1 (2021), 53-81; Megan Baumhammer and Claire Kennedy, ‘Merian and the Pineapple: Visual Representations of the Senses’ in Hacke and Musselwhite (eds.), *Empire of the Senses: Sensory Practices of Colonialism in Early America* (Leiden: Brill, 2017), 190-222.

¹⁰⁷ Maria Sibylla Merian, *Metamorphosis insectorum Surinamensium* (Amsterdam: M.S. Merian, 1705); See: André Krebber, ‘Metamorphosen des Subjekts: Naturerkenntnis und jenseits Maria Sibylla Merians (1647-1717) Surinam-Buch’, *Tierstudien*, 4 (2013), 76-86.

¹⁰⁸ Kay Etheridge, ‘Maria Sibylla Merian and the Metamorphosis of Natural History’, *Endeavour*, 35:1 (2010), 21.

¹⁰⁹ Tomimi Kinukawa, ‘Natural History as Entrepreneurship: Maria Sibylla Merian’s Correspondence with J.G. Volkamer II and James Petiver’, *Archives of Natural History*, 38:2 (2011), 314.

¹¹⁰ Kinukawa, ‘Entrepreneurship’ and Tomimi Kinukawa, ‘Learned vs. Commercial? The Commodification of Nature in Early Modern Natural History Specimen Exchanges in England, Germany, and the Netherlands’, *Historical Studies in the Natural Sciences*, 43:5 (2013), 589-618.

¹¹¹ Janice Neri, *The Insect and the Image: Visualizing Nature in Early Modern Europe, 1500-1700* (Minneapolis: University of Minnesota Press, 2011), 166.

¹¹² Tomimi Kinukawa, ‘Art Competes with Nature: Maria Sibylla Merian (1647-1717) and the Culture of Natural History’, PhD diss, University of Wisconsin, 2001, 217-246.

¹¹³ Neri, *Insect and the Image*, 166.



Fig. 1.1: A pepper plant (*Capsicum annum*) with the life cycle of a Carolina Sphinx moth (*Manduca sexta*) from: Merian, [*Metamorphosis insectorum Surinamensium*](#), 55.

Although the Cape is absent from Merian's story, her experience is nonetheless emblematic of one of the main threads of this thesis: how did naturalists and collectors understand the explicit, yet tense relationship between science and commerce? This chapter will attempt to piece together the intricate relations between the learned world and the commercial world, so pervasive in early modern natural history, despite its contemptuous status. Likewise, it will examine how German merchants, physicians, apothecaries, and naturalists cultivated a specific reputation and expertise in the early modern origins of transnational, trans-imperial networks of scientific exchange and knowledge production. Both elements are perfectly exemplified by the brief example of Merian, a German who made use of the VOC's web of overseas domains and shipping routes to realize her ambitions and whose controversial commercial activities made it difficult for her to navigate the complex social interactions and cultural practices of the European learned world. In unraveling a network of Germans who were essential to the growth of natural history in the VOC world, it will then focus on the Cape of Good Hope and how, although it had always been a site for multicultural European endeavor (co-produced with Khoekhoe, San, and others), Germans were an integral part of the fabric of early scientific knowledge in southern Africa. The themes that emerge in this chapter did not simply disappear when Britain overtook the Netherlands as the dominant European colonial power, nor after the British assumed responsibility for the Cape, but rather they persist well into nineteenth century.

While the work of Christine R. Johnson has fundamentally shaped the methodology of this chapter, her analysis is taken a step further to ascertain how Germans continued to be well-positioned to generate knowledge about the expanding VOC world, beyond her examination of German involvement in the Spanish and Portuguese "discoveries".¹¹⁴ As she argues, Germans persistently and successfully used existing techniques of knowledge and established areas of expertise to make sense of the overseas world. Without advancing German exceptionalism, she manages to offer a well-documented 'case study for broader European patterns of interaction', of which this chapter and thesis aim to contribute to.¹¹⁵ Thus, Germans are merely a lens with which to better understand early modern webs of mobility and knowledge production. Incorporating European expansion into prevailing structures of knowledge was of immediate political, commercial, intellectual, and moral

¹¹⁴ Johnson, *German Discovery*.

¹¹⁵ Ibid., 2-3; 15.

relevance, permitting Germans to exert a mediated form of control over new peoples and territories they encountered.¹¹⁶ Already, we see Susanne Zantop's "colonial fantasies" and Nina Berman's "nonoccupational imperialism" present, as Germans displayed 'structural and functional similarities to ... representations generated by the culture of colonial powers'.¹¹⁷ Significantly, Johnson makes the case that while the flourishing of humanist scholarship in the German states called for the extension of ancient categories to new situations, the robust entrepreneurial drive of German merchant bankers produced an ongoing assessment of the commercial potential of those situations.¹¹⁸ As she claims, these concerns filtered the incoming information into 'engaged representations' characteristic of the German states but derived from European frameworks.¹¹⁹ While it is too sweeping an argument to forward that weaving together scientific and commercial interests was perhaps uniquely German (as the Dutch were well versed in this, too), in Johnson's view, these two components always seemed to exist hand-in-hand with one another.

The dynamism of natural history in the early modern period has made it a popular subject amongst historians of science, art historians, and historians of religion and religious movements, as ancient scholarship gave way to the rise of a modern new philosophy and experimental science. While this chapter will touch on much of the essential literature in this field, the most important is the 'paradigm-changing trend' of the role of commerce in the global development of science, which has expanded alongside the growth of both global history and a new emphasis on "circulation".¹²⁰ Harold Cook's *Matters of Exchange*, which features heavily in this chapter, is essential for understanding how commerce in natural goods was central in the creation of new modes of valuing objects of nature and information about nature.¹²¹ He therefore makes clear the ways in which

¹¹⁶ Ibid., 6-7.

¹¹⁷ Zantop, *Colonial Fantasies*. Nina Berman, 'Karl May's *Orientzyklus*', 52-53.

¹¹⁸ Johnson, *German Discovery*, 6-7.

¹¹⁹ Stephen Greenblatt, *Marvellous Possessions: The Wonder of the New World* (Oxford: Oxford University Press, 1991), 12-13; Johnson, *German Discovery*, 14.

¹²⁰ For an overview, see: Pamela H. Smith, 'Science on the Move: Trends in the History of Early Modern Science', *Renaissance Quarterly*, 62:2 (2009), 368; Sachiko Kusukawa and Ian Maclean (eds.), *Transmitting Knowledge: Words, Images, and Instruments in Early Modern Europe* (Oxford: Oxford University Press, 2006); Margaret C. Jacob and Larry Stewart, *Practical Matter: Newton's Science in the Service of Industry and Empire, 1687-1851* (Cambridge: Harvard University Press, 2004); Pamela H. Smith and Paula Findlen, (eds.), *Merchants and Marvels: Commerce, Science and Art in Early Modern Europe* (New York: Routledge, 2002). Schiebinger, *Plants and Empire*; Schiebinger and Swan, *Colonial Botany*; Antonio Barrera-Osorio, *Experiencing Nature: The Spanish American Empire and the Early Scientific Revolution* (Austin: University of Texas Press, 2006).

¹²¹ Cook, *Matters of Exchange*.

natural knowledge was involved in modes of economic exchange. Similarly, a renewed interest in the global encounters of the early modern period, a complex process of negotiation, assimilation, and co-production between colonizer and colonized, have emerged as part of this literature.¹²² This has altered the popular view that science developed in Europe and diffused outward to the rest of the world. Rather, Europe's importance to these endeavors should be viewed more critically: as a site of publication and redistribution, not as the sole locus of knowledge production.¹²³ As seen in the first section of this chapter, and demonstrated by Matthew Sargent, officials and naturalists stationed in Dutch colonial outposts created their own cross-cultural networks and research infrastructure within the VOC system separate from the Netherlands.¹²⁴ This enabled the development and stabilization of knowledge abroad rather than being centered in the metropole.¹²⁵ This chapter offers an introduction to what could certainly be a much larger examination of the role of Germans in scientific networks across the VOC overseas domains. This collective production of knowledge, and the assimilation of a wide range of information, techniques, and ideas, would also come to reinforce the new social, epistemic, and racial hierarchies that defined the colonial experience in the eighteenth century and beyond.¹²⁶

Undoubtedly, one of the primary scientific centers in the Dutch imperial world was the Cape of Good Hope. But historians have had a rather internalist view of scientific endeavor in the region, focusing on VOC officials who traveled into the interior to surmise the economic potential of the

¹²² See Kapil Raj, 'Colonial Encounters and the Forging of New Knowledge and National Identities: Great Britain and India, 1760–1850', in MacLeod (ed.), *Nature and Empire: Science and the Colonial Enterprise* (Chicago: Chicago University Press, 2001), 119–34 and Kapil Raj, *Relocating Modern Science: Circulation and the Construction of Knowledge in South Asia and Europe, 1650–1900* (Basingstoke: Palgrave Macmillan, 2007); Benjamin Elman, *On Their Own Terms: Science in China, 1550–1850* (Cambridge: Harvard University Press, 2005); George Saliba, *Islamic Science and the Making of the European Renaissance* (Cambridge: Harvard University Press, 2007); Jorge Cañizares-Esguerra, *How to Write the History of the New World: Histories, Epistemologies, Identities in the Eighteenth-Century Atlantic World* (Stanford: Stanford University Press, 2001); Jorge Cañizares-Esguerra, *Nature, Empire, and Nation: Explorations of the History of Science in the Iberian World* (Stanford: Stanford University Press, 2006); David Arnold, *Science, Technology, and Medicine in Colonial India* (Cambridge: Cambridge University Press, 2001). Many of the essays in James Delbourgo and Nicholas Dew (eds.), *Science and Empire in the Atlantic World* (New York: Routledge, 2008) show the marks of this approach.

¹²³ Matthew Sargent, 'Recentering Centers of Calculation: Reconfiguring Knowledge Networks within Global Empires of Trade' in Findlen (ed.), *Empires of Knowledge: Scientific Networks in the Early Modern World* (New York: Routledge, 2019), 313.

¹²⁴ Ibid., 308.

¹²⁵ Ibid., 313. For centers of calculation, see: Bruno Latour, *Science in Action* (Cambridge: Harvard University Press, 1987), ch. 6.

¹²⁶ Smith, 'Science on the Move', 372.

unfamiliar territory and peoples they set out to govern, or on the slew of scientific travelers who dropped in and out of the region in the last quarter of the eighteenth century.¹²⁷ In literature on the VOC world, the Cape is often seen as merely an ‘obligatory passage point’ for transoceanic voyages between the East and West Indies, and has only recently begun to receive more sustained attention for its crucially significant geographical position on a major commercial network and its central role in intellectual networks of European thought.¹²⁸ Further scholarship needs to take into account the Cape’s scientific and administrative connections across Dutch colonial outposts, like that of Sargent mentioned above, rather than direct connections between Europe and the Cape. Where possible, more could be done to highlight the role of Khoekhoe knowledge, which, as William Beinart maintains, visiting travelers sometimes recorded in admiration, affirming ‘how useful it could be to them and the colonists’.¹²⁹ This chapter, while focusing on the role of commerce, also seeks to offer a reappraisal of the older, internalist scholarship on the Cape. By concentrating on Germans who were vital to the development of science in the Cape and wider VOC world, a new narrative emerges which allows us to see beyond the well-known scientific travelers famed for their Cape accounts. Instead, we see scientific work which took place outside of libraries and lecture halls, instead recorded and disseminated by relatively ordinary men. To understand what was occurring the European scientific world, it is essential to look at the commercial enterprises of the Dutch overseas empire.

Germans and Scientific Expansion in the VOC World

In 1667, upon the death of the head of the VOC medical shop at the Castle of Batavia, Andreas Cleyer of Kassel was appointed in his place and assumed the titles of physician to the castle and head of surgery.¹³⁰ Cleyer, who had sailed to the VOC’s possessions in the East Indies in 1661 as

¹²⁷ Sigfried Huigen, *Knowledge and Colonialism*. Beinart and Dubow, *The Scientific Imagination*, ch. 1; Beinart, *Rise of Conservation*, ch. 1.

¹²⁸ Raj, *Relocating Modern Science*, 65; Nigel Penn and Adrien Delmas, ‘Peter Kolb and the Circulation of Knowledge about the Cape of Good Hope’, in Lengweiler, Penn and Harries (eds.), *Science, Africa and Europe: Processing Information and Creating Knowledge* (London: Routledge, 2019), 36; Kerry Ward, *Networks of Empire: Forced Migration in the Dutch East India Company* (Cambridge: Cambridge University Press, 2009), 10-11.

¹²⁹ Beinart, *Rise of Conservation*, 29.

¹³⁰ Cook, *Matters of Exchange*, 307. For more on Cleyer’s early life, see: Eva Kraft (ed.) and Andreas Cleyer, *Tagebuch des Kontors zu Nagasaki auf der Insel Deshima* (Bonn: Bonner Zeitschrift für Japanologie, 1985), 34-40

an *adelborst* (gentleman soldier), found himself responsible for supplying all the medical chests to the VOC's factories and ships. Perhaps unsurprisingly, the Heren XVII had taken an economic interest in botany, believing that with enough attention and energy local medicinal plants supplied by the medical shop could alleviate the necessity and expense of sending medicines out from Amsterdam.¹³¹ Cleyer initiated a letter-writing campaign in pursuit of such plants and remedies from across the VOC possessions, most significantly the new garden at the Cape of Good Hope. He wrote in 1668 to the commander of the Cape and again a year later, in return receiving garden seeds, artichoke plants, and medicinals. Similar consignments from Ceylon, Coromandel, and Bengal followed and demonstrate the existence of a network of trans-imperial exchange which prompted large-scale botanical work across the VOC settlements.¹³² Cleyer's work influenced one of the great botanical examinations of the century, Hendrik Adriaan van Reede tot Drakenstein's *Hortus Malabaricus* (1678), 'by which a new world was in a manner laid open to the botanists of Europe'.¹³³ Not only did this remarkable compendium depend almost entirely upon his consultations with local experts and his sincere regard for the medical knowledge possessed by the doctors he consulted, van Reede is said to have initiated a scheme similar to Cleyer's from Malabar.¹³⁴ He requested that all governors in the VOC's western quarters – Bengal, Surat, Persia, and the Cape – send 'annually by the homeward-bound ships ... all kinds of seeds, bulbs, or roots of the trees, plants, herbs, flowers, etc., which each of you is able to collect in his district for a whole year'.¹³⁵ Cleyer's campaign precipitated a growing exchange of plant specimens and indigenous medical knowledge. The Company Garden at the Cape not only supplied indigenous

and Frits de Haan, 'Uit oude notarispapieren, II: Andries Cleyer', *Tijdschrift voor Indische Taal-Land- en Volkenkunde*, 46 (1903), 426-431.

¹³¹ Sargent, 'Centers of Calculation', 302-303.

¹³² Richard Grove, *Green Imperialism: Colonial Expansion, Tropical Island Edens and the Origins of Environmentalism, 1600-1800* (Cambridge: Cambridge University Press, 1995), 137.

¹³³ Hendrik Adriaan van Reede tot Drakenstein, *Hortus Indicus Malabaricus* (Amsterdam: Johannis van Someren and Joannis van Dyck, 1678); James Edward Smith, 'Introductory Discourse on the Rise and Progress of Natural History', *Transactions of the Linnean Society of London*, 1 (1791), 21.

¹³⁴ Because of the great importance of the work of local experts in the compiling of botanical information for van Reede, it has been argued that the *Hortus* was 'far from being inherently European', since it was 'actually compilations of Middle Eastern and South Asian ethnobotany, organized on essentially non-European precepts'. Richard Grove, 'Indigenous Knowledge and the Significance of South-West India for Portuguese and Dutch Constructions of Tropical Nature', *Modern Asian Studies*, 30:1 (1996), 126, 134, 136-137; Deepak Kumar, 'Botanical Explorations and the East India Company: Revisiting "Plant Colonialism"' in Damodaran, Winterbottom and Lester (eds.), *The East India Company and the Natural World* (Basingstoke: Palgrave, 2015), 21.

¹³⁵ J. Heniger, *Hendrik Adriaan van Reede tot Drakenstein (1636-1691) and Hortus Malabaricus: A Contribution to the History of Dutch Colonial Botany* (Rotterdam: A.A. Balkema, 1986), 269; Schiebinger, *Plants and Empire*, 27.

flora and medical material to Cleyer and van Reede, but received, and began to cultivate specimens from across the VOC world.

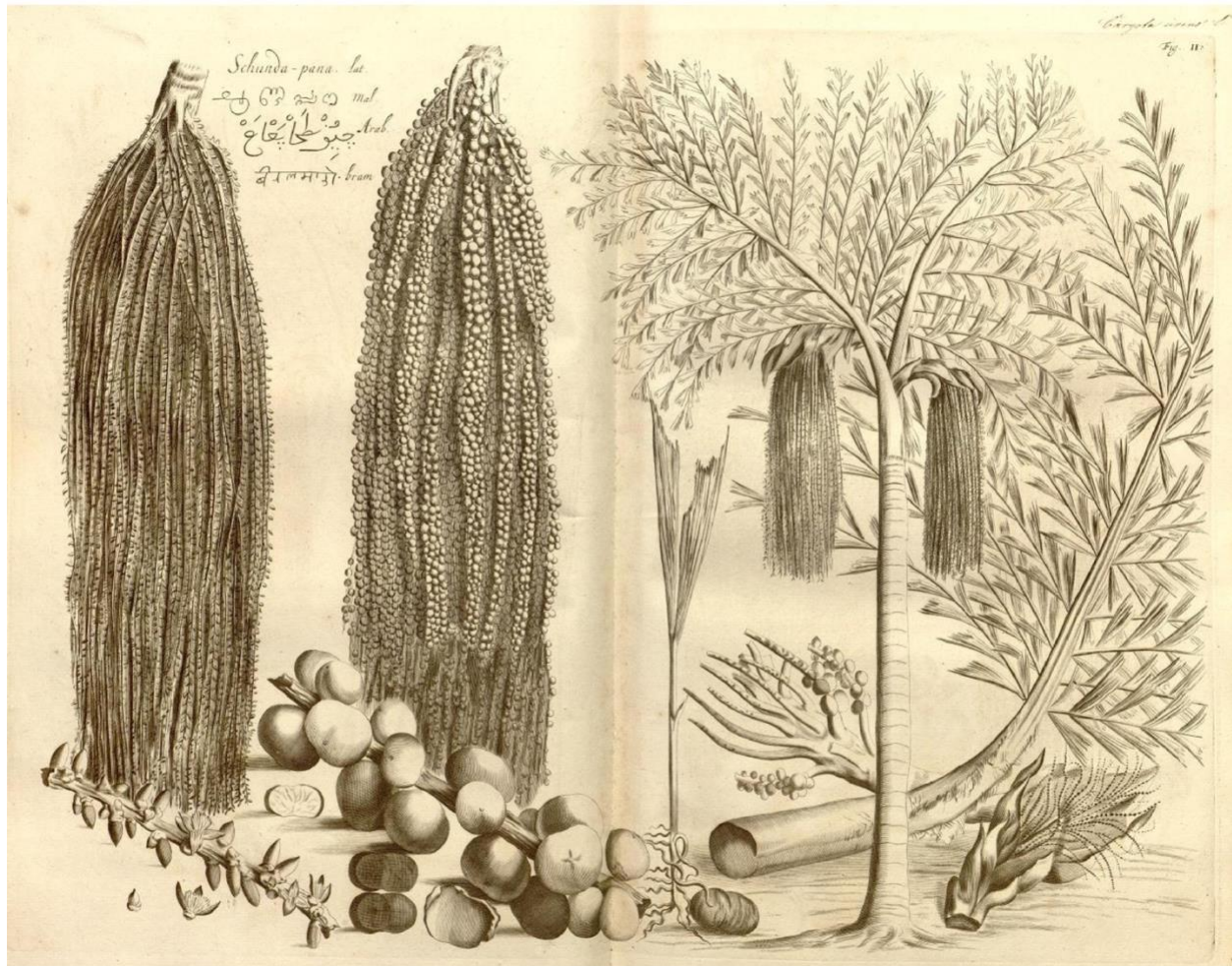


Fig. 1.2: A Schunda-pana (today part of the *Caryota* genus) from the *Hortus Malabaricus*. Drakenstein, [Hortus Indicus Malabaricus](#), 15-16.

The instructions given to Jan van Riebeeck, the first governor of the Cape Colony, were to trade for cattle raised by the Khoekhoe and to lay out a large garden and orchard to grow fresh fruits and vegetables for the resupply of arriving and departing ships.¹³⁶ The mild climate and fertile soil meant that tropical and European plants could grow successfully there, making it the ideal location to nurture seeds and live plants. When French Jesuits visited the Colony in 1685, they noted that

¹³⁶ Simon Pooley, 'Jan van Riebeeck as Pioneering Explorer and Conservator of Natural Resources at the Cape of Good Hope (1652-62)', *Environment and History*, 15:1 (2009), 8; See: Karsten, *Company's Garden*, 1-66.

there were lemon, orange, pomegranate, apple, pear, quince, and apricot trees along with other fruits from Europe; pineapples, bananas, and several other kinds of rare fruits obtained through plant exchange; roots like carrots and turnips; herbs and ‘esteemed flowers of Europe’, besides others unknown to the narrator but which were ‘of a peculiar fragrance and beauty’.¹³⁷ In fact, it was remarked that the ‘Company’s Garden at the Cape are the noblest and most beautiful Curiosities in all Africa’, and it was questioned ‘whether there is a Garden in Europe, so rich and beautiful in its Productions’.¹³⁸ The need to maintain the Cape as a victualling station, and to sustain the physical and biological viability of the whole colony, required considerable effort. Acute attention was also paid to the wider environment, leading to ‘the first well-developed awareness of [the] ecological constraints’ of Dutch colonization.¹³⁹ Within a few years, the garden was sending specimens of botanical and medicinal interest back to the Netherlands and was already becoming the epicenter for foreign plant material in the Dutch imperial world. This success encouraged the Heren XVII to believe that the garden could form part of a larger effort to make VOC outposts more autonomous from the metropole. In the same way that Cleyer was instructed to expand the medical stores at Batavia, the Cape governors became responsible for a garden of ever-increasing size and strategic significance.

¹³⁷ Guy Tachard, *A Relation of the Voyage to Siam performed by Six Jesuits Sent by the French King, to the Indies and China, in the Year, 1685*, vol. 2, (London: Thomas Barrett, 1688), 51.

¹³⁸ Peter Kolb, *The Present State of the Cape of Good Hope*, trans. Guido Medley, vol. 1 (London: W. Innys, 1731), 351.

¹³⁹ Grove, *Green Imperialism*, 128, 93.

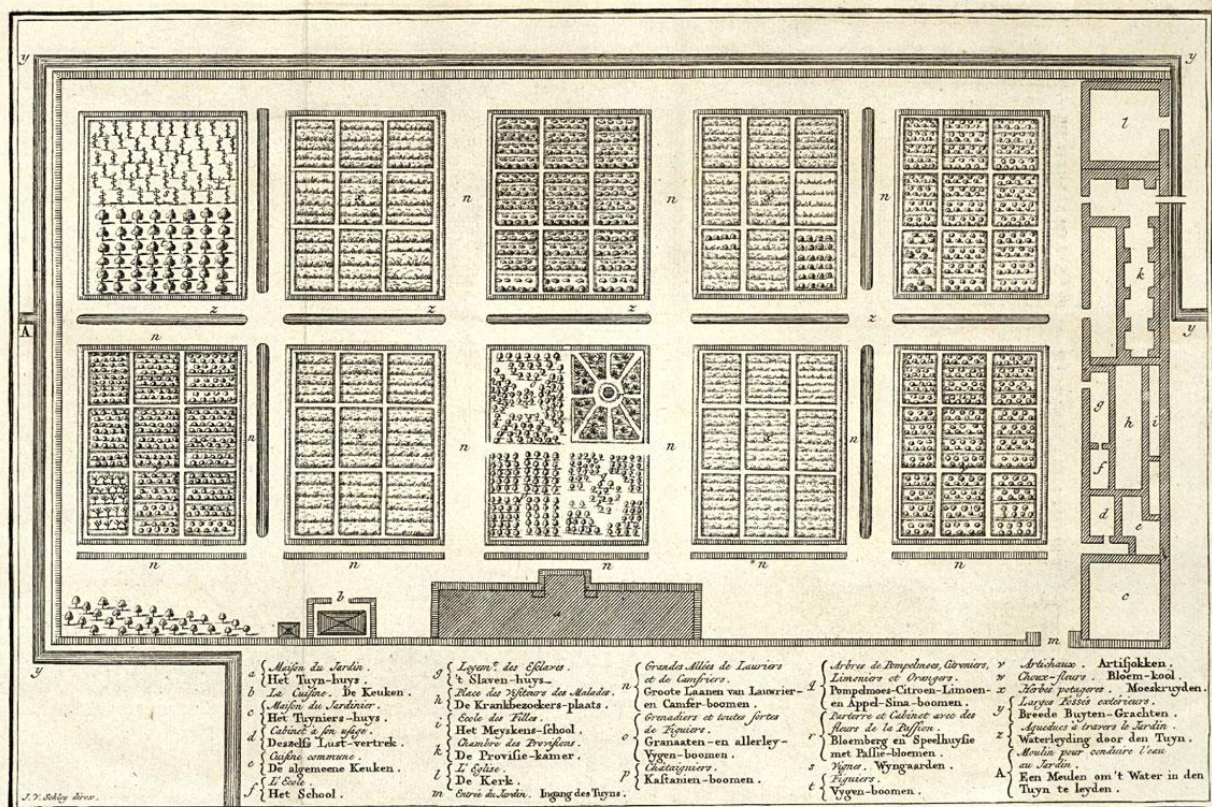


Fig. 1.3: A plan of the Company Gardens from Peter Kolb's *Naaukeurige en uitvoerige Beschryving van die Kaap de Goede Hoop* (1727).¹⁴⁰

The search for exotic and medicinal plants in Ceylon led its governor to request that the Heren XVII appoint and dispatch a qualified physician. In 1671, Paul Hermann of Halle, a man well-traveled in the medical faculties of Europe, having earned a medical doctorate from Padua and working for some months in the botanic garden at Leiden, was awarded the post. Stopping at the Cape en route to Ceylon, Hermann collected information, drawings, and dried specimens with the intention of publishing on Cape botany. He was thus the first genuine pupil of natural history to touch at the Cape, sparking an early curiosity in the region across the natural history networks of Europe. As Linnaeus later remarked, Hermann was the ‘...the first Botanist who saw with his own

¹⁴⁰ Nigel Worden, Elizabeth van Heyningen and Vivian Bickford-Smith, *Cape Town: The Making of a City* (Cape Town: David Philip, 1998), 45.

eyes the plants of the Cape of good hope on his journey to the island of Ceylon'.¹⁴¹ While at Ceylon, he made a major contribution to the production of van Reede's *Hortus*, so significant in fact that after the Heren XVII were presented with the first volume, they expressed great interest in knowing what might be done with the information to improve medicines and medical supplies of the VOC. They suggested that Hermann be sent from Ceylon to Malabar to lead further investigations after the conclusion of his contract. However, Hermann's thorough botanical studies of Ceylon had already become well known and he had by this point obtained the position of Professor of Botany in the medical faculty at Leiden, where he greatly expanded the exotic specimens held in the university's garden. Ultimately, the Ceylon and Cape collections assembled by Hermann represent some of the first contributions to European botanic knowledge of the East Indies and Africa.

Meanwhile, Cleyer, hoping to build a reputation of his own amongst the naturalists of Europe and governors of the VOC, and probably due to his own curiosity, began to invest large sums of his own money in the pursuit of horticulture in Batavia and elsewhere. He engaged the chemist Heinrich Claudius of Breslau to travel to Africa to draw and paint Cape plants, start a catalogue, and to collect minerals, drugs, and other *naturalia* at Cleyer's expense. While at the Cape, Claudius entered the service of Simon van der Stel, Governor from 1679 to 1699, who himself had obtained training in botany prior to his posting and was keenly interested in natural history. By 1685, the Heren XVII had summoned van Reede out of retirement to examine their affairs in the hope of rooting out corruption. He obtained, and was much impressed by, Claudius's work, writing that 'He hath compleated two great Volumes in Folio of several Plants, which are drawn from life, and he hath made a Collection of all the kinds which he hath pasted to the Leaves of another Volume'.¹⁴² As a representative of the Heren XVII, van Reede also organized a four-month overland expedition, in which Claudius served, to explore the copper mountains in Namaqualand. He executed watercolor paintings, wrote descriptions of the plants, animals, reptiles, and insects he observed, and drafted a map, all of which marked important advances in the gathering of local

¹⁴¹ Carl von Linné and Carolus Henricus Wännman, *Flora Capensis* (Uppsala, 1759) quoted in Karsten, *Company's Garden*, 71.

¹⁴² Tachard, *Voyage to Siam*, vol. 2, 63.

natural and geographical information.¹⁴³ The French Jesuit Tachard believed that van Reede intended to publish Claudius's work as a *Hortus Africus* and when the Jesuits paused at the Cape on their way back to Europe from Siam (Thailand), Claudius freely communicated his knowledge with them. In Tachard's account, he admitted that:

it is from him that we got all the knowledg[e] we have of that Country, of which he gave us a little Map made with his own hand, with some Figures of the inhabitants of that Country, and of the rarest Animals, which are here inserted. The most remarkable things we learnt are what follow [...].¹⁴⁴

When a copy of this book came into the possession of Governor van der Stel in 1687, Claudius' actions were held to be treasonable, and he was banished from the Cape.¹⁴⁵

Only recently has the place of knowledge within the structures of the VOC begun to attract scholarly attention. While some have suggested that the Company itself was largely unsupportive of scientific investigation, others have stressed the key role that was played by dynamic individuals within the system despite that lack of support.¹⁴⁶ The Company certainly employed men who produced extraordinary scientific work and painted itself as a mighty patron of natural history, but it was also convinced that every piece of knowledge produced within the Company was the legal property of the Company. Anything that might hurt the VOC's reputation, threaten its trading interests, or undermine its regime of secrecy was hidden away in its archives and withheld from scientific publication.¹⁴⁷ The *Herbarium Amboinense* (1741-50), the manuscript of another passionate botanist and VOC employee in Ambon, Georg Eberhard Rumphius of Wölfersheim, was for a period considered a secret document by the VOC.¹⁴⁸ Similar to van Reede's *Hortus*, it recorded indigenous plant names in Malay, Latin, Dutch, and Ambonese, and sometimes in

¹⁴³ Elri Liebenberg, 'Unveiling the Geography of the Cape of Good Hope: Selected VOC Maps of the Interior of South Africa' in Liebenberg and Demhardt (eds.), *History of Cartography. International Symposium of the ICA Commission, 2010* (Berlin: Springer, 2012), 216. The drawings of plants, insects, reptiles, and animals made by Claudius still count amongst South Africa's most valuable historical artifacts and are kept at the National Library of South Africa, Cape Town.

¹⁴⁴ Tachard, *Voyage to Siam*, vol. 2, 63.

¹⁴⁵ Heniger, *van Reede*, 28.

¹⁴⁶ Penn and Delmas, 'Peter Kolb', 16-17.

¹⁴⁷ Susanne Friedrich, 'The Importance of Being a Good Employee: Georg Everhard Rumphius, the Dutch East India Company, and Knowledge in the Late Seventeenth Century', *Early Modern Low Countries*, 3:2 (2019), 184-186.

¹⁴⁸ Johannes Burman (ed.) and Georg Eberhard Rumpf, *Herbarium Amboinense* (Amsterdam: Fransicum Changuion, J. Catuffe, H. Uytwerf, 1741-1750).

Makassarese and Chinese, and was considered remarkable enough to ‘vie with the Hortus Malabaricus’.¹⁴⁹ Cleyer, on the other hand, as a member of the German *Academia Naturae Curiosorum*, had penned articles and observations on the natural world of the Dutch East Indies for the journal of that society. It was through his mediation that Rumphius also became a member, publishing thirteen of his letters between 1683 and 1698, and sending material to other members. The inconsistency with which the VOC guarded its perceived interests is immediately apparent in the dismissal of Claudius for his crime of liberality, and the fact that there is no evidence that Rumphius was ever reprimanded for sharing information on the natural history of Ambon.¹⁵⁰



Fig. 1.4: An effigy of Georg Eberhard Rumphius from the opening pages of his *Herbarium Amboinese*.

¹⁴⁹ Smith, ‘Introductory Discourse’, 26.

¹⁵⁰ Friedrich, ‘Good Employee’, 194.

Ultimately, while the VOC attempted to establish a regime of secrecy, they lacked the ability to control either publishers or mail ships. Although the VOC did not promote scientific projects *per se*, it was certainly in favor of accumulating knowledge, particularly geographical, navigational, and medico-pharmaceutical, for the purposes of commerce. There was, undeniably, ‘a tension between the VOC’s attitude to keep knowledge to itself and the Republic of Letters’ attitude of sharing it’.¹⁵¹ This aligns with Dániel Margóscy’s assertion that entrepreneurial rivalries, secrecy, and marketing strategies transformed the honorific, gift-based exchange system of the early modern Republic of Letters into a competitive marketplace; trade brought about a culture of scientific debate in the Netherlands and throughout Europe.¹⁵² Margóscy’s claim will remain an important point throughout this thesis. The Germans portrayed in this section offer a lively example of those tensions, showing how the VOC dealt with the production of knowledge about the foreign world and drawing out the scientific connections that existed across the VOC’s overseas outposts beyond the metropole. There is space in the literature to expand upon the latter. However, beyond this economy of ideas, what united the opposing parties is what the VOC brought to the market, the Republic of Letters wanted to buy.

The Economy of Curiosity

After the establishment of the VOC in 1602, the Netherlands had merged mercantile finance and state policy to such an extent that they used it to break the Portuguese commercial monopoly of the Indian Ocean world. From source to market, the VOC came to dominate much of the world’s trade and virtually the entirety of trade with Asia. By the middle of the seventeenth century, the Dutch seaborne empire had become the most extensive in the world. Wealthy merchants flocked to the port cities of Amsterdam, Delft, and Rotterdam, nodes of exchange networks connecting the Netherlands to material, cultural, and intellectual resources of that empire. Not least because of the efforts of men like Claudius and Rumphius in the employ of the VOC, those who took advantage

¹⁵¹ Friedrich, ‘Good Employee’, 195.

¹⁵² Dániel Margóscy, *Commercial Visions: Science, Trade, and Visual Culture in the Dutch Golden Age* (Chicago: University of Chicago Press, 2014), 6. For more on secrecy, see: Daniel Jütte, *The Age of Secrecy: Jews, Christians, and the Economy of Secrets, 1400-1800* (New Haven: Yale University Press, 2015).

of the web became the acknowledged leaders in many areas of medicine and natural history. More than just masters of trade and ideas, the VOC became one of the primary conduits for the transport of medically and commercially valuable plant material and natural exotica of all types. Physicians like Cleyer and Hermann not only attended to the health of the Company's agents, but also assembled pharmaceutical recipes and herbaria, compiling the best botanical handbooks of the early modern period.¹⁵³ Their sincere interest, both personal and professional, in not only planting gardens but assembling cabinets of curiosities, played a large role in the Dutch state and VOC's inclinations towards careful observation and ostensible protection of the natural world.¹⁵⁴ Dutch trading cities thus became centers of accumulation, distribution, and management in which Dutch representatives negotiated with a wide range of culturally distinct foreign counterparts.¹⁵⁵ The transnational nature of the VOC as an arm of the state helped the Dutch Republic to become the center of the 'first modern economy'.¹⁵⁶

The emergence of a mercantilist global economy transformed the relationship between people, ideas, and things, changes explicitly and self-consciously recognized by contemporaries to be at the root of a new science.¹⁵⁷ The disposable income that came with the expansion of European mercantile networks from the sixteenth century was often spent on luxury items, from spices or lavish clothing, to antiquities, books, manuscripts, and strange, exotic *naturalia*.¹⁵⁸ The idea of "good taste" became synonymous with a certain type of knowledge and education - the knowledge and education those with good taste wished to signal. Increasingly their ability to command intellectual and mercantile capital, in order to make nuanced and often expensive discriminations, was one way of setting themselves apart from those who might command one or the other, but not both. Thus, goods returning from foreign worlds 'embodied not only particular moral attributes,

¹⁵³ Steven J. Harris, 'Networks of Travel, Correspondence, and Exchange' in Park and Daston (eds.), *The Cambridge History of Science. Volume 3: Early Modern Science* (Cambridge: Cambridge University Press, 2008), 358.

¹⁵⁴ Grove, *Green Imperialism*, 127.

¹⁵⁵ Lissa Roberts, 'Re-Orienting the Transformation of Knowledge in Dutch Expansion: Nagasaki as a Centre of Accumulation and Management' in Friedrichs, Brendecke and Ehrenpreis (eds.), *Transformations of Knowledge in Dutch Expansion* (Berlin: De Gruyter, 2015), 19-42.

¹⁵⁶ Jan de Vries and Ad van der Woude, *The First Modern Economy: Success, Failure, and Perseverance of the Dutch Economy, 1500-1815* (Cambridge: Cambridge University Press, 1997). Anne Goldgar suggests that this claim to the first modern economy is controversial. Goldgar, *Tulipmania*, 12.

¹⁵⁷ Cook, *Matters of Exchange*, 68.

¹⁵⁸ *Ibid.*, 14.

but particular kinds of knowledge, giving pride of place to the knowledge of the tangible world'.¹⁵⁹ This economy of curiosity, the accumulation of *objet* as both hobby and science, was not solely the preserve of the aristocracy or urban merchant class. Extraordinary economic growth, and the increasing affordability of exotica in Dutch cities, meant that distinctions between scholar and craftsman, so prominent elsewhere in Europe, were less marked. The practice of collecting provided a social nexus where noble, scholar, merchant, sailor, soldier, or craftsman could participate in the same realm.¹⁶⁰ What distinguished a collector was his ability to discriminate, and the foremost collectors of *naturalia* were physicians, apothecaries, and natural philosophers, professions which the main protagonists of this thesis all held.¹⁶¹ These groups were the inside traders of the Republic of Letters. The expansion of European merchant-banking in the sixteenth century, and the VOC in the seventeenth and eighteenth, had given them direct or tangential connections with, and access to, travel and travelers. This not only 'created a steady flow of exotics', but the opportunity for inspecting *naturalia* in other major cities where commerce and natural history were flourishing, like Lisbon or Danzig.¹⁶² One could hope for no better embodiment of this early modern intersection of commerce, nature, travel, and collecting than the *Wunderkammer* (curiosity cabinets), most notably that of Hans Jacob Fugger of Augsburg.¹⁶³ To display exotic material demonstrated one's connection with, and knowledge of, the wider world, and what collectors found most appealing often had a direct connection with the commercial value of nature.¹⁶⁴

¹⁵⁹ Ibid., 15.

¹⁶⁰ Mark A. Meadow, 'Merchants and Marvels: Hans Jacob Fugger and the Origins of the Wunderkammer' in Smith and Findlen (eds.), *Merchants and Marvels: Commerce, Science, and Art in Early Modern Europe* (London: Routledge, 2002), 184.

¹⁶¹ Valentina Pugliano, 'Natural History in the Apothecary's Shop' in Curry et al, *Worlds of Natural History* (Cambridge: Cambridge University Press, 2018), 44-60.

¹⁶² Lorraine Daston, 'The Factual Sensibility', *Isis*, 79:3 (1988), 455.

¹⁶³ Hans was part of the German mercantile and banking dynasty that dominated European business in the 15th and 16th centuries. There is already enough literature on this subject that further detail isn't necessary. See: Paula Findlen, 'Inventing Nature: Commerce, Art, and Science in the Early Modern Cabinet of Curiosities' in Smith and Findlen (eds.), *Merchants and Marvels: Commerce, Science, and Art in Early Modern Europe* (London: Routledge, 2002), 297-323; Paula Findlen, *Possessing Nature: Museums, Collecting, and Scientific Culture in Early Modern Italy* (Berkeley: University of California Press, 1994); Marjorie Swann, *Curiosities and Texts: The Culture of Collecting in Early Modern England* (Philadelphia: University of Pennsylvania Press, 2001); Arthur MacGregor, *Curiosity and Enlightenment: Collectors and Collections from the Sixteenth to the Nineteenth Century* (New Haven: Yale University Press, 2007); Oliver R. Impey and Arthur MacGregor (eds.), *The Origins of Museums: The Cabinet of Curiosities in Sixteenth- and Seventeenth-Century Europe* (Oxford: Clarendon Press, 1985).

¹⁶⁴ Paula Findlen, 'Anatomy Theaters, Botanical Gardens, and Natural History Collections' in Park and Daston (eds.), *The Cambridge History of Science. Volume 3: Early Modern Science* (Cambridge: Cambridge University Press, 2008), 287; See: Lorraine Daston and Katharine Park, *Wonders and the Order of Nature, 1150-1750* (New



Fig. 1.5: An illustration of Italian apothecary Ferrato Imperato's *Wunderkammer*, believed to be one of the first natural history research collections, containing as many as 35,000 specimens. Ferrato Imperato, *Dell'istoria Naturale* (Naples: Constantino Vitale, 1599).

This economy of curiosity, the value placed on the knowledge that came from acquaintance with objects, began to dominate every facet of natural philosophy. As the paleography and philology of ancient manuscripts became more developed, attempts were made to reconstruct Pliny the Elder's *Historia naturalis*, from which we derive the notion of 'natural history' as 'an account of nature based on information acquired by the investigation of natural things'.¹⁶⁵ The discovery of

York: Zone Books, 1998); Findlen, *Possessing Nature*; Claudia Swan, 'Collecting *Naturalia* in the Shadow of Early Modern Dutch Trade' in Schiebinger and Swan (eds.), *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (Philadelphia: University of Pennsylvania Press, 2005), 396-420.

¹⁶⁵ Cook, *Matters of Exchange*, 21.

corrupted versions of Pliny's manuscripts, and of errors made by Pliny himself, led scholars to what they believed was the urgent task of reassessing everything that was then known in the natural world.¹⁶⁶ As the defenders of Cartesianism held that Descartes had excised theology from philosophy, liberating thought from religious strictures and scriptural literalism, so natural history was seen as an exploration of the world in a way that was no longer overtly heretical.¹⁶⁷ In order to avoid speculation, careful and exacting attention, and the assiduous collection of specimens, was therefore necessary to understand the "truth" of natural things. Ancient texts were scrutinized to test the veracity of the Greeks and Romans, physicians described the signs and symptoms of disease with greater care, botanicals were investigated in greater depth both for use and pleasure, and the ingredients of compound medicines were meticulously proportioned. Apothecaries, in particular, advanced both of these emerging techniques and the collection of *naturalia* simultaneously. As merchants who traded in increasingly valued and valuable produce, they 'collected nature to make a living'.¹⁶⁸ They often displayed their collections as a means of reassuring customers that their wares derived from a profound knowledge of the natural world. Many became expert gardeners, growing common and rare plants, both native and acclimatized. As esteem for the knowledge of plants grew, physicians were also stimulated to try and keep ahead of apothecaries and others who were benefitting, both commercially and intellectually, from the connections made possible by early modern global trade. In consequence, natural history, the practices of medicine, and commerce were already enmeshed by the end of the sixteenth century.

In the Italian cities of Rome, Pisa, Bologna, and Padua, the growing appreciation for botanicals led medical faculties to construct botanic gardens as living repositories of nature, 'the natural world in microcosm'.¹⁶⁹ The design of these gardens was two-fold: to demonstrate medicinal plants for teaching purposes and to propagate new exotics arriving from abroad.¹⁷⁰ These needs were fulfilled both by living plants, but also by the introduction of the *herbarium* or *hortus siccus* ('dry garden')

¹⁶⁶ Paula Findlen, 'Natural History', in Park and Daston (eds.), *The Cambridge History of Science. Volume 3: Early Modern Science* (Cambridge: Cambridge University Press, 2008), 437-442.

¹⁶⁷ Pooley, 'Jan van Riebeeck', 6.

¹⁶⁸ Findlen, 'Anatomy Theaters', 287; For the suggestion of the centrality of medical practitioners in the scientific revolution, see: Harold J. Cook, 'The Cutting Edge of a Revolution? Medicine and Natural History on the Shores of the North Sea' in Field and James (eds.), *Renaissance and Revolution: Humanists, Scholars, Craftsmen, and Natural Philosophers in Early Modern Europe* (Cambridge: Cambridge University Press, 1993), 45-61.

¹⁶⁹ Ibid., 281.

¹⁷⁰ Swan, 'Collecting *Naturalia*', 405.

in the first half of the sixteenth century. As Luca Ghini, creator of the first *hortus siccus*, had advocated, naturalists not only needed to observe nature *in situ* but also ‘to take nature home’.¹⁷¹ By placing leaves, flowers, and other parts of plants between sheets of paper to be dried, it created a permanent record of the living plant, providing naturalists with a convenient tool with which to organize specimens. Thus, the herbarium became the cabinets of curiosity for botanists. These Italian examples inspired the University of Leiden and the *Athenaeum Illustre* in Amsterdam, both relatively young and thoroughly modern institutions. Both deemed it crucial that botanic gardens be established for medical instruction and as herb gardens. The Dutch universities, and their gardens, attracted large numbers of students from abroad, in part due to their remarkable religious tolerance in light of the turbulence of the Thirty Years’ War, but also because of the quality of their academic instruction.¹⁷² By the seventeenth century, although the underlying rationale of the gardens was pharmaceutical, the collections at Leiden and Amsterdam became rich repositories for both specimens and knowledge obtained in outposts by employees of the VOC, giving Dutch gardens ‘a decided superiority over those of other nations’.¹⁷³ Clearly connected to the expansion of European economic systems, they were a key indicator of the expansion of European knowledge of global ecologies.¹⁷⁴ Moreover, they became the largest hubs for rare live plants and herbaria, at the intersection of the commercial and intellectual study of natural history in Europe.

This determination to accumulate knowledge about the natural world and the objects within it inspired new identities and new institutional bases. This is popularly known as the Scientific Revolution, although few historians of science would argue that this was really a revolution, let alone a revolution in science.¹⁷⁵ What is generally agreed is that fundamental changes in the perception of the natural world had taken place.¹⁷⁶ Physics, mechanics, optics, astronomy, anatomy, and chemistry have long been placed at the forefront of histories of this period, but there are good grounds for arguing that medicine, botany, and the other branches of natural history,

¹⁷¹ Findlen, ‘Natural History’, 447.

¹⁷² Klaas van Berkel, ‘The Dutch Republic. Laboratory of the Scientific Revolution’, *BMGN – Low Countries Historical Review*, 125:2-3 (2010), 95.

¹⁷³ Smith, ‘Introductory Discourse’, 9.

¹⁷⁴ Grove, *Green Imperialism*, 73.

¹⁷⁵ Van Berkel, ‘The Dutch Republic’, 81.

¹⁷⁶ Thomas Leng, ‘Epistemology: Expertise and Knowledge in the World of Commerce’ in Stern and Wennerlind (eds.), *Mercantilism Reimagined: Political Economy in Early Modern Britain and Its Empire* (Oxford: Oxford University Press, 2014), 98-99.

rather, should be the focus of analysis due to their significant relationships with commerce.¹⁷⁷ Francis Bacon's advocacy of natural history as a common enterprise based upon interdisciplinary research facilities, and Isaac Newton's promotion of a science rooted in facts derived from experimental verification, profoundly transformed the meaning and practice of observation.¹⁷⁸ The establishment of empiricism in science was seen as the means through which 'the mechanism of the natural world [could be] made intelligible and submit to rational laws'.¹⁷⁹ To understand and control nature most effectively for the public good required collaboration and capital. This came in many guises, almost universally through the patronage of the wealthy, but in certain cases from the ongoing sponsorship of the state.¹⁸⁰ When states were neither politically nor economically viable enough to support scientific endeavor, or simply failed to take an interest, the universities and new scientific societies took the reins of patronage. Universities offered employment for the practitioners of these new sciences, embodying the ideals of a systematic education and, at a time when disciplines were radically shifting, providing at least some semblance of intellectual stability.¹⁸¹ However, it was between the poles of patron, state, and university that the most significant development in the institutionalization of scientific investigation and dissemination emerged across Europe. The Royal Society, founded in London in 1662, the *Académie Royale des Sciences* of Paris in 1666, and in the German states the *Academia Naturae Curiosorum* (1652) and the *Akademie der Wissenschaften* (1700), became forums where new discoveries were aired, discussed, and published.¹⁸² Alongside the rise of scientific societies, museums, too, became part and parcel of a new institutional culture of science; scientific collections accumulated by their

¹⁷⁷ Cook, *Matters of Exchange*. The foregoing suggests that at a minimum we ought to incorporate philology amongst these branches.

¹⁷⁸ Findlen, 'Natural History', 465, 467; David Mackay, 'A Presiding Genius of Exploration: Banks, Cook, and Empire, 1767-1805' in Fisher and Johnston (eds.), *Captain Cook and His Times* (Seattle: University of Washington Press, 1979), 26.

¹⁷⁹ David Mackay, *In the Wake of Cook: Exploration, Science, & Empire, 1780-1801* (London: Croom Helm, 1985), 5-6.

¹⁸⁰ John Gascoigne, *Science in the Service of Empire: Joseph Banks, the British State and the Uses of Science in the Age of Revolution* (Cambridge: Cambridge University Press, 1998), 16-17.

¹⁸¹ van Berkel, 'The Dutch Republic', 98.

¹⁸² See: Mordechai Feingold and Giulia Giannini (eds.), *The Institutionalization of Science in Early Modern Europe* (Leiden: Brill, 2020); Toby E. Huff, *The Rise of Early Modern Science: Islam, China, and the West*, 3rd ed. (Cambridge: Cambridge University Press, 2017), 172-200; James E. McClellan III, *Science Reorganized: Scientific Societies in the Eighteenth Century* (New York: Columbia University Press, 1985), chaps. 1-2; Ayval Ramati, 'Harmony at a Distance: Leibniz's Scientific Academies', *Isis*, 87:3 (1996), 430-452; R.J.W. Evans, 'Learned Societies in Germany in the Seventeenth Century', *European Studies Review*, 7 (1977), 129-151; Bettina Dietz, 'Making Natural History: Doing the Enlightenment', *Central European History*, 43 (2010), 25-46.

patrons began to emphasize the whole of nature rather than its rarest and most unusual elements.¹⁸³ In this new institutional culture, the curiosity cabinets of private collectors were being transformed into *Wunderkammer* of the world.

Of Plants and Publication

The burgeoning demand for *naturalia* in Europe at first excited, then irritated, the Heren XVII. On the one hand, they sent out instructions to their various stations, including Ceylon, the Cape, and Malabar, grandiosely ordering that in the name of William III they collect birds, plants, bulbs, and seeds. On the other, they then complained of the clutter and obstruction caused by the quantity of boxes of natural material on returning ships and threatened to prohibit such shipments in future.¹⁸⁴ As inconsistent as this may appear, the VOC's growing interest in natural history is clear in the appointment of Simon van der Stel as Governor of the Cape. Due to his extensive contacts amongst naturalists in the Netherlands, he was given the post on the understanding that he would send a continuous stream of *naturalia* back to Amsterdam.¹⁸⁵ The seriousness with which van der Stel took this commission, and his belief that the interests of the Company should take precedence, subsequently brought him into conflict with Claudius. And while Claudius was banished, a belief in the universality of natural history would continue to animate the history of the Cape.

¹⁸³ Findlen, 'Anatomy Theaters', 288.

¹⁸⁴ See: Christopher M. Parsons and Kathleen S. Murphy, 'Ecosystems under Sail: Specimen Transport in the Eighteenth-Century French and British Atlantics', *Early American Studies*, 10:3 (2012), 503-539.

¹⁸⁵ Heniger, *Van Reede*, 20.

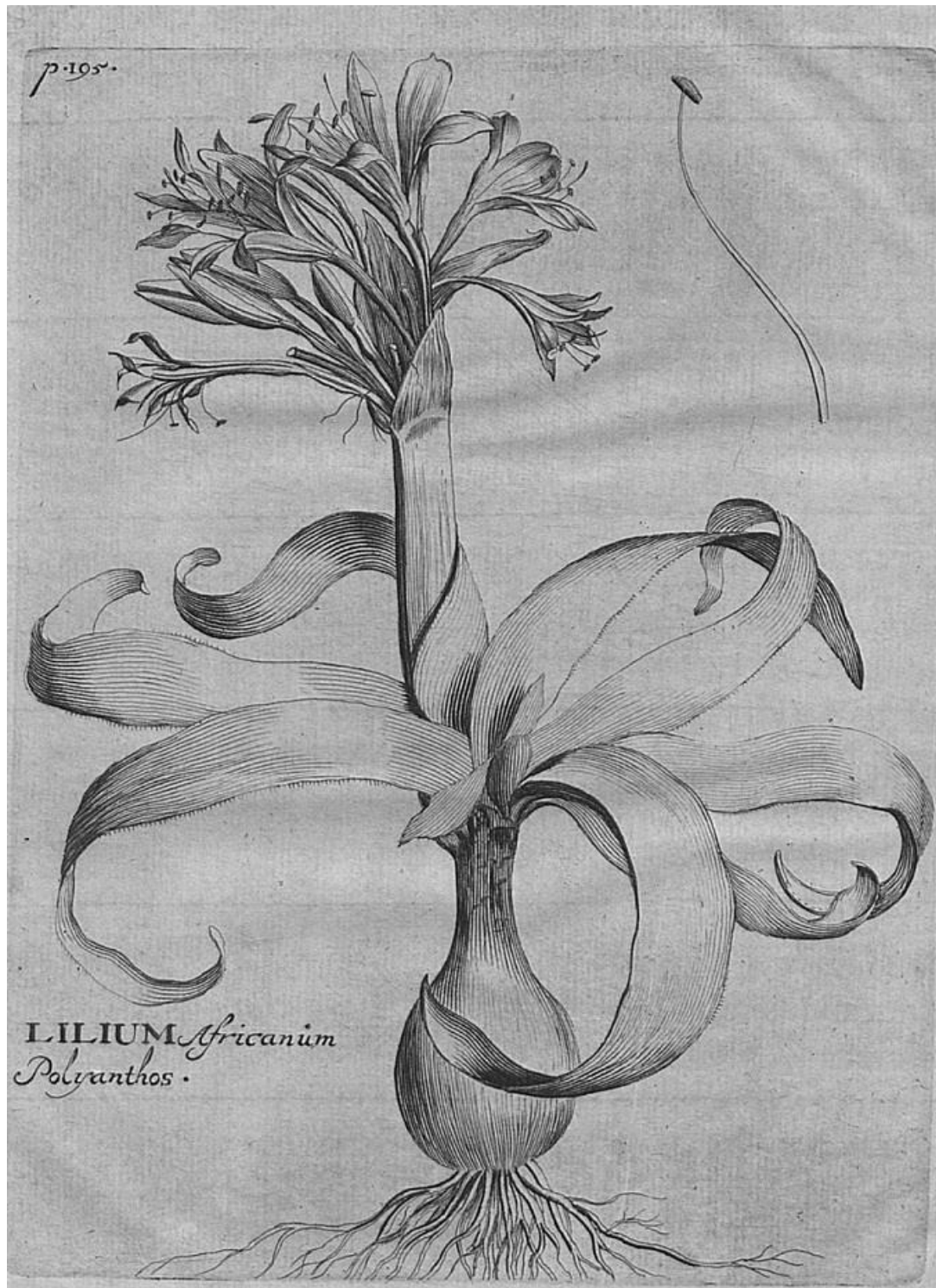


Fig. 1.6: The *Lilium Africanum Polyanthos* of Paul Hermann's *Paradisus Batavus* (1698). Today it is referred to as the *Amموcharis longifolia*.

Following Claudius's departure, van der Stel received a letter from the Heren XVII recommending the appointment of Henrich Bernhard Oldenland of Lübeck and Jan Hartog of Aachen for service at the Cape. Oldenland had studied medicine under Hermann in Leiden, where like his teacher he had worked in the botanic garden prior to joining the VOC. The Heren XVII had advised van der Stel that he would 'do well by appointing and employing him to grow and collect any medicinal herbs and plants which might be found or discovered ... and which could be made use of, so that Batavia and Ceylon could be supplied with them to meet their requirements'.¹⁸⁶ Oldenland's predecessor had been a medical botanist, and the Heren XVII were keen to have a man of his background to further the institutionalization of medical expertise and natural history within the Cape.¹⁸⁷ Hartog was to assist him in his role as master gardener of the Company Garden and would go on to be his successor. Following their appointment in 1687, Oldenland and Hartog took an acute interest in the indigenous vegetation of the area, elevating the garden beyond a site solely for provisions. They introduced Hermann's taxonomic and nomenclatural views in botany, compiled a voluminous herbarium, and threw themselves into the cultivation of medicinal, indigenous, and exotic plants.¹⁸⁸ In collaboration with van der Stel, they began to familiarize the wider world with a growing variety of South African indigenous plants, which became 'the main preoccupation of European gardens for many years'.¹⁸⁹

Much as the economy of curiosity had drawn exotica from across the globe to the salons of Europe, by the end of the seventeenth century, plants, bulbs, seeds, and descriptions began to find their way into the hands of wealthy or learned men in the Republic of Letters. Rather than simply put them in their cabinets and gardens, these recipients began to assemble, publish, and disseminate botanical knowledge in printed form. Not long after taking up a professorship of botany at Leiden, Hermann visited England to arrange an exchange between the Chelsea Physic Garden and that of Leiden, in the process striking up a friendship with William Sherard, an enthusiastic botanist and Fellow of St. John's College, Oxford.¹⁹⁰ Hermann's *Horti academici Lugduno-Batavi Catalogus*

¹⁸⁶ Karsten, *Company's Garden*, 72.

¹⁸⁷ Grove, *Green Imperialism*, 137.

¹⁸⁸ Heniger, *van Reede*, 29

¹⁸⁹ H.F. Glen and G. Germishuizen, *Botanical Exploration of Southern Africa*, 2nd ed., (Pretoria: South African National Biodiversity Institute, 2010), 45.

¹⁹⁰ Sherard set the first example of employing European naturalists to work in gardens in Britain. He hired Darmstadt-born Johann Jakob Dillen (Dillenius) in 1721. Dillenius published his *Hortus Elthamensis* (1732), a

(1687) was published as a result of exchange and collaboration with Sherard and included 24 Cape plants.¹⁹¹ After Hermann's death in 1695, Sherard edited and published *Paradisus Batavus* (the "Dutch paradise"), a complete descriptive catalogue of all the plants in the Leiden garden which appeared in 1698.¹⁹² Many of the Cape species in the *Paradisus* Hermann acknowledged were grown from seeds sent to him by Oldenland. In 1711 a London apothecary, James Petiver, was commissioned by Sir Hans Sloane, Irish patron of the natural sciences, to acquire part of Hermann's herbarium.¹⁹³ This was likely done with the assistance of Sherard, but even at the time of his death in 1728, the inventory of Cape and Ceylon plants remained almost entirely unpublished. It was only in 1737 that Johannes Burman, Professor of Botany of the *Athenaeum Illustre*, added an appendix to his *Thesaurus Zeylanicus* entitled '*Catalogus plantarum africanum*', 'listing 791 items collected at the Cape by Hermann'.¹⁹⁴ Now credited as the father of modern taxonomy, Carl Linnaeus was, in fact, also indebted to Hermann's work in the construction of his *Flora Zeylanica*. He could not help but exclaim 'Oh, Lord, how many, how rare and how wonderful were the plants that on this single day presented themselves to Hermann's eyes! In a few days Hermann simply and solely discovered here more new African plants than all Botanists who ever before him made their appearance in the world'.¹⁹⁵ Perhaps the first network dedicated solely to Cape plants emanated from Hermann's own work and his collaboration with Oldenland.

description of rare plants in Sherard's brother's garden in Kent, which was often cited by Linnaeus. With Sherard's fortune he had accumulated during his time as British Consul to Smyrna (1703-1716), he endowed the Chair of Botany at Oxford (becoming the Sherardian Professorship) with the explicit instruction that it go to Dillenius. See: W.L. Tjaden, 'William and James Sherard and John James Dillenius: Some Errors in the Biographies', *Journal of the Society of the Bibliography of Natural History*, 8:2 (1977), 143-147. It was also remarked by James Edward Smith that 'the removal of Dillenius to England ... seemed to promise the establishment of the botanic sceptre in this country [England]'. Smith, 'Introductory Discourse', 28.

¹⁹¹ Paul Hermann, *Horti Academici Lugduno-Batavi Catalogus* (Leiden: Cornelium Boutesteyn, 1687).

¹⁹² Glen and Germishuizen, *Explorations*, 26; William Sherard (ed.) and Paul Hermann, *Paradisus batavus* (Leiden: Abrahamum Elzevier, 1698); Johannes Burman, *Thesaurus Zeylanicus* (Amsterdam, 1737).

¹⁹³ Richard Coulton, "'The Darling of the Temple-Coffee-House Club': Science, Sociability and Satire in Early Eighteenth-Century London", *Journal for Eighteenth-Century Studies*, 35:1 (2012), 43-65.

¹⁹⁴ Burman, *Zeylanicus*.

¹⁹⁵ Carl von Linné, *Flora Zeylanica* (Uppsala: Holmiæ, 1747), 17.

Pag. 1

C A T A L O G U S P L A N T A R U M A F R I C A N A R U M,

Quas *Paulus Hermannus* Botanices Professor, ad Caput
Bonae Spei olim observavit.

- ABROTANOIDES* Africana, vermiculato folio, crassiori, magis incano.
 ————— vermiculato folio, tenuiori, minus incano.
 ————— folio brevi, capitulis globosis. Frutex cineraceus muscosus
 Capitis Bonae Spei *Breyn.*
 ————— *Ericae* foliis incanis, capitulis majoribus, villosis.
 ————— *Ericae* folio. Cupresso-pinulus *Breyn.*
 ————— *Ericae* foliis tenuissimis. Frutex corymbiferus Africanus,
Chrysanthemuli Ericoidis facie, flore globulariae. *Breyn. fasc.*
 ————— *Ericae* foliis tomentosis, acutis.
 ————— foliis tenuissimis, tomentosis, capitulis bombaciferis.
 ————— foliis angustissimis, incanis, floribus luteis, capitulis ar-
 genteis.
ABSINTHIUM Africanum, Absinthii Pontici folio. Absinthio Seriphio similis. Capi-
 tis Bonae Spei. *Breyn. fasc.*
 ————— tenuifolium, odoratissimum, Monomotapense. *Breyn. Cent. 1.*
 ————— Ponticum, tenuifolium, incanum. *C. B.*
 ————— Idem odoratum.
 ————— maritimum, Lavendulae folio. *C. B.*
ACACIA Africana, latifolia, spinis majoribus.
 ————— angustifolia, spinis majoribus, flore odoratissimo. *Acacia* Africana,
 spinis candicantibus horrida. *Plukn.*
 ————— angustifolia, spinis minoribus.
ACONTIPHORA Africana, belgice *Affagai-boom*, ex qua Hottentotti tela *Affagai* dicta
 conficiunt.
ADIANTHUM Africanum, Capilli Veneris facie.
AGERATUM Africanum, Elichrysoideis, umbellatum, Abrotani folio.
 ————— Idem foliis tenuioribus. *In Hort. Beaumont.*
 ————— foliis Tithymali Paralii angustioribus.
AIZOIDES folio triangulo, lato, glauco.
 ————— viridi, spinoso.
 ————— *Ericae* folio.
 ————— mamillaris, viridis, summitate foliorum spinis coronata.
 ————— folio triangulari, glauco, brevi.
 ————— erectus, foliis brevibus, triangulis, flore albo.
 ————— Idem flore luteo. Mesembrianthemum, sive flos meridianus, Africanus, triar-
 gulari folio, frutescens, maximus, procumbens, fructu turbinato, eduli. *Breyn. pr. 2.*
 ————— Idem flore purpureo. *Breyn. pr. 2.*

Fig 1.7: Johannes Burman's *Catalogus Plantarum Africanarum* included as an appendix to his *Thesaurus Zeylanicus* (1737).

In the midst of preparing his own catalogue of South African indigenous plants, in 1697 Oldenland suddenly died. When his wife and her new husband discovered the immense value of his collections, in high demand from European naturalists visiting the Cape, they began to extract exorbitant fees to view them. Dutch traveler François Valentijn managed to inspect the collection, known as the '*Kruid Boek*', or Book of Herbs, in 1714 and remarked that 'the plants were unusually

fine, exceedingly well dried, and still of such a lovely colour that it was a treat to see them'.¹⁹⁶ Both Oldenland, and later his widow, sent seeds to Petiver, many of which were published in his *Hortus Siccus Capensis*.¹⁹⁷ Ultimately, the material received by Petiver ended up with that of Hermann in the Sloane Herbarium. The remainder of Oldenland's herbarium eventually made its way back to the Netherlands, where it came into the hands of Burman. This appeared alongside Hermann's material as part of the appendix to his *Thesaurus Zeylanicus*.¹⁹⁸ Both the Hermann and Oldenland herbaria were later taken by Burman's son, Nicholaas Laurens Burman, for inspection by Linnaeus at Uppsala. While in the possession of Linnaeus, his student produced a dissertation where Burman is described as possessing 'the most complete collection of Cape plants in the Botanical world' which he procured 'through the kind offices of friends and Governors of the Cape of Good Hope'.¹⁹⁹ Key amongst these governors was Willem Adriaan van der Stel, the son and successor of Simon at the Cape from 1699 to 1707. He was credited for sending large numbers of specimens by Caspar Commelin, botanist of the *Hortus Botanicus* in Amsterdam, who published them in *Horti Medici Amstelaedamensis* (1701) and again in his *Plantae Rariores* (1706).²⁰⁰ It is likely, however, that this material was gathered not by van der Stel, but by Oldenland's assistant and successor, Hartog. Thus, it was three Germans in the employ of the VOC, Hermann, Oldenland, and Hartog, who were essential in establishing a transnational discourse about Cape botanical material between the Netherlands, Britain, Sweden, the Cape, and wider VOC world in the early eighteenth century.

¹⁹⁶ François Valentijn, *Oud en Nieuw Oost Indien* (Amsterdam: Van Wijnen, 1726), quoted in Karsten, *Company's Garden*, 76.

¹⁹⁷ Glen and Germishuizen, *Explorations*, 45; James Petiver, *Hortus siccus Capensis: Plants gathered at the Cape of good hope by Mr Oldenland and sent to Mr Petiver and disposed by him*. Hans Sloane bound herbarium volumes, H.S. 156:36 (BM), Sloane Herbarium, Natural History Museum, London.

¹⁹⁸ Glen and Germishuizen, *Explorations*, 45; Burman, *Zeylanicus*.

¹⁹⁹ Carl von Linné and Jacob Printz, *Plantae Rariores Africanæ* (Uppsala, 1760), 80.

²⁰⁰ Karsten, *Company's Garden*, 97; Caspar Commelin, *Horti Medici Amstelaedamensis* (Amsterdam, 1701); Caspar Commelin, *Plantae Rariores* (Amsterdam, 1706).

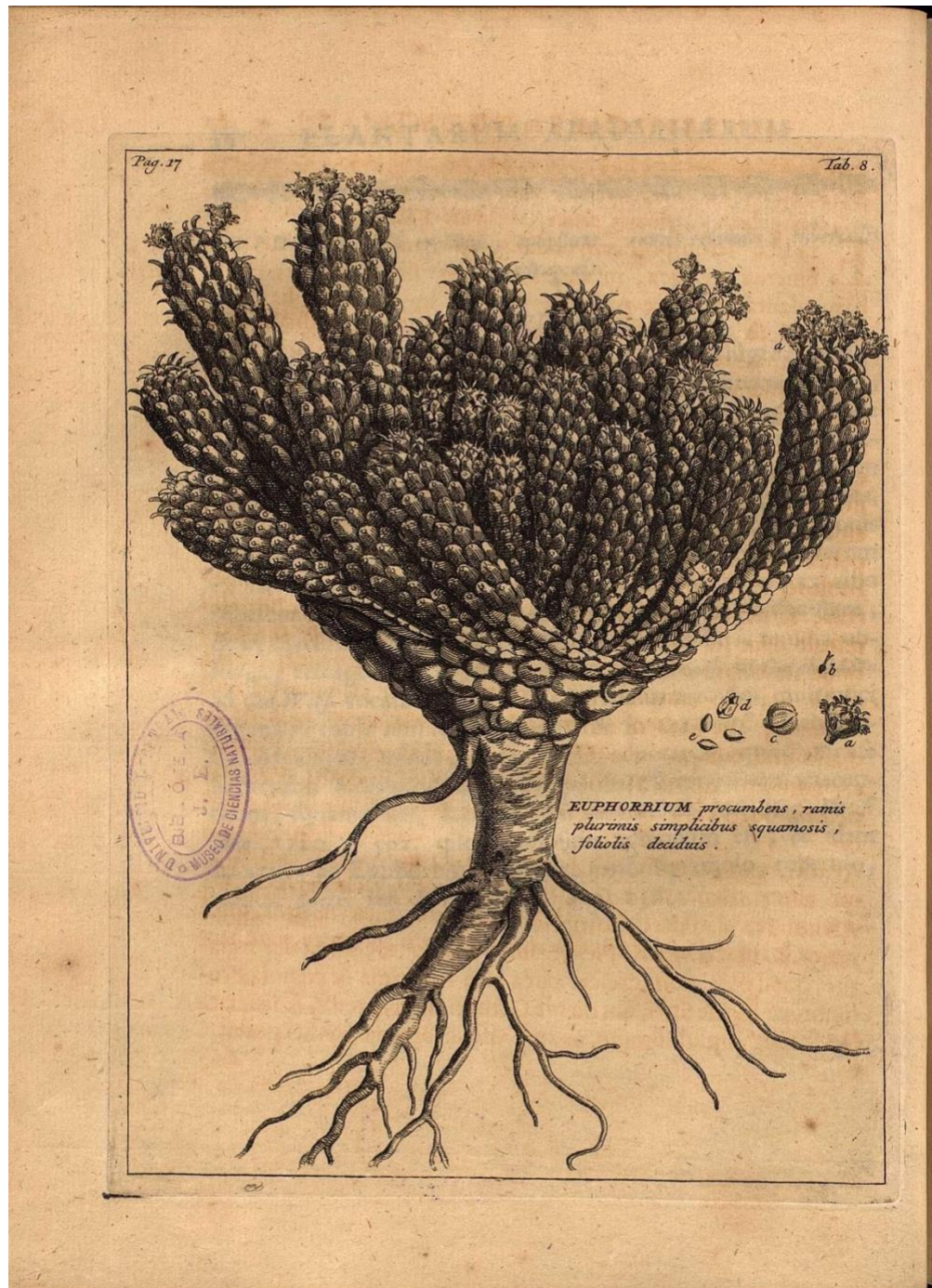


Fig 1.8: A *Euphorbia* from Johannes Burman's *Rariorum Africanarum Plantarum*, vol. 1 (Amsterdam: Apud Henricum Boussierre, 1738-39), Tab. 8.

While using the national marker of “Germans” is problematic, their role in the formation and expansion of networks of knowledge is apparent. In dealing with the global dimensions of these networks, the VOC, economies of ideas and curiosity, and the idea of the new science, it has been

possible to conceive of these subjects of naturalists of no nation. In her assessment of the concept of “*Wissenschaft*”, Denise Phillips illustrates how many German theorists of *Wissenschaft* were clear about the fact that science was a cosmopolitan project. She offers the example of Friedrich Jacobi, who openly scoffed at the idea that *Wissenschaft* could belong to any individual state or nation.²⁰¹ Perhaps the amalgamation of learned and commercial was more abhorrent in the scientific community than national boundaries, real or imagined. To this point, this chapter has largely been a history of these Germans in the context of wider European economic, social, and intellectual networks. But a crucial point to be made is that whilst these networks were in the throes of receiving, cataloguing, and disseminating specimens collected by these employees of the VOC, Germans were also traveling as part of expeditions concerned with exploring the economic potential of southern Africa.

As overland expeditions increased in number as the eighteenth century wore on, Germans played important roles in these, contributing to the cartographical and ethnographical knowledge about the northern and eastern Cape which would eventually be published in travel narratives. Many of these have gone on to become part of the folklore of the Dutch period at the Cape. Yet, territorial expeditions of this sort were not easily undertaken which is why, as Dane Kennedy argues, oceanic expeditions figured more prominently in institutionalizing eighteenth-century exploration as a scientific enterprise.²⁰² As early as 1685, and before his fall from grace, Claudius had accompanied Simon van der Stel on the expedition organized by van Reede to Namaqualand. In 1689, Oldenland had acted as naturalist and surveyor to Isaak Schrijver’s mission to barter for cattle with the Inqua “Hottentots”. By 1752, Cape Governor Ryk Tulbagh ordered Ensign August Frederik Beutler of Dinkelsbühl to lead an expedition to the eastern Cape to investigate the region’s potential for trade and report on the indigenous groups living there.²⁰³ He was accompanied by an official diarist, Carel Albrecht Haupt of Berlin, a surveyor and cartographer, Carel David Wentzel of Dresden, and a botanist, Hendrik Beencke of Celle. This was quite a substantial expedition, outfitted with ‘thirty-seven petty officers, and soldiers, twenty-five waggon drivers and leaders, a superintendent

²⁰¹ Denise Phillips, ‘Francis Bacon and the Germans: Stories from when ‘Science’ meant ‘*Wissenschaft*’, *History of Science*, 53:4 (2015), 387.

²⁰² Dane Kennedy, *The Last Blank Spaces: Exploring Africa and Australia* (Cambridge: Harvard University Press, 2013), 31.

²⁰³ Hazel Crampton, Jeffrey B. Peires, Carl Vernon (eds.) and August Friedrich Beutler, *Into the Hitherto Unknown: Ensign Beutler’s Expedition to the Eastern Cape, 1752* (Cape Town: Van Riebeeck Society, 2013).

of the train, a botanist, a blacksmith, and a waggonmaker', as well as someone to record latitudes and distances, a surgeon, eleven wagons to transport baggage, presents for Khoekhoe and Xhosa leaders, and a boat in case of river passage.²⁰⁴ Beutler's expedition, however, was undoubtedly fundamental in the institutionalization Kennedy details, as the resulting data on the topography, climate, vegetation, and inhabitants of the eastern Cape soon replaced vague rumors and reports; prior to Beutler's expedition, information about the region had relied entirely on hearsay.²⁰⁵ The importance of the expedition meant that the journal kept by Haupt, route maps and descriptions by Wenzel, and botanical notes and drawings by Beencke were all meticulous. They provided the first reliable corroborated European accounts of this area, ultimately suggesting that the eastern Cape was perhaps even more bountiful than the land in the vicinity of Cape Town. Siegfried Huigen suggests that although such expeditions 'increased their knowledge of the area they had to govern', it did not necessarily encourage the VOC to expand their colony.²⁰⁶ They merely wanted to know more about the land that was already considered a part of it, or where resources could be found just outside its borders. Yet, the VOC flag was planted by Beutler on the shore of Algoa Bay, signaling to the British and French that they should desist in attempts to establish a colony there, thereby asserting the VOC's dominion at least as far east as that point.²⁰⁷

Less than a decade later, Tulbagh had been informed by a *vrijburgher* that there was an African group living north of the Orange River, which, it was believed, had not yet been crossed by Europeans. He organized an expedition under the command of Captain Hendrik Hop, who was to be accompanied by the naturalist Jan Andreas Auge of Stolzberg-am-Harz and Carl Friedrich Brink of Berlin as surveyor and official diarist.²⁰⁸ Auge's departure for the Cape in 1747 had been inspired by Oldenland's collection of Cape flora, and he came with letters of recommendation from Hermann's successor as Professor of Botany at Leiden, Herman Boerhaave. Tulbagh's enthusiasm for natural history, like the van der Stels before him, led to a second renaissance in the history of the Company Garden. Once more the governor was sending plants, bulbs, and seeds back to Europe into the hands of Linnaeus at Uppsala, Burman in Amsterdam, and Professor

²⁰⁴ George McCall Theal, *History and Ethnography of Africa South of the Zambesi* (London: Allen & Unwin, 1907), 82.

²⁰⁵ Forbes, *Pioneer Travellers*, 4.

²⁰⁶ Huigen, *Knowledge*, 210.

²⁰⁷ Forbes, *Pioneer Travellers*, 24; Liebenberg, 'Unveiling', 219.

²⁰⁸ Brink's map was likely the first land map to depict a part of what is now southern Namibia.

Adriaan van Royen at Leiden. According to the naturalist Hinrich Lichtenstein of Hamburg, Auge employed ‘the utmost diligence to store the garden with every sort of rare African plant, so as to convert it into a true botanic garden’.²⁰⁹ Auge’s reputation was soon so preeminent that in the 35 years in which he was the master gardener at the Cape, few visiting naturalists did not make his acquaintance or undertake expeditions into the interior without his knowledge or assistance.²¹⁰ Indeed, Auge was so influential that Swedish traveler Carl Peter Thunberg asserted that ‘we are almost solely indebted to him for all the discoveries which have been made since the days of Hermannus, Oldenlandus and Hartogius, in this part of Africa’.²¹¹ People like Hermann, Oldenland, Hartog, and Auge, to whose work we can trace the origins of the European system of classification and taxonomy on which the apparent universal validity of modern science depends, helped to construct the Cape in the European botanical imaginary and nurtured the Cape Company Garden to be one of the finest in the Dutch imperial world.

The European Voyages of Discovery

By the mid-eighteenth century, the work of Linnaeus was beginning to establish an ordered language for the organization and publication of science, providing the means through which an international scientific discourse and community could become further interconnected.²¹² In the same period, the Scientific Revolution gave way to another profound intellectual shift in Europe, the Enlightenment.²¹³ A general decline in the Dutch universities meant that the center of intellectual activity moved eastward towards the countries of central Europe, particularly the German states, stable once more in the wake of the Thirty Years’ War.²¹⁴ The defining feature of the Enlightenment in those states, as Thomas Ahnert has argued, was the rise of an increasingly

²⁰⁹ Hinrich Lichtenstein, *Travels in Southern Africa in the years 1803, 1804, 1805 and 1806*, trans. A. Plumtre, vol. 2 (London: Henry Colburn, 1815), 134.

²¹⁰ Ibid.

²¹¹ Carl Peter Thunberg, *Travels in Europe, Africa and Asia, performed between the years 1770 and 1779*, vol. 1 (London: W. Richardson, 1794), 105.

²¹² Hannah Hodacs, Stéphane van Damme and Kenneth Nyberg, eds., *Linnaeus, Natural History and the Circulation of Knowledge* (Oxford: Voltaire Foundation, 2018). See also the extensive works of Staffan Müller-Wille for wide-ranging work on Linnaeus.

²¹³ See Sebastian Conrad, ‘Enlightenment in Global History: A Historiographical Critique’, *The American Historical Review*, 117:4, (2012), 999-1027 for a refutation of ‘the Eurocentric account of the “birth of the modern world”’.

²¹⁴ van Berkel, ‘The Dutch Republic’, 99.

proactive professoriate at the universities, which proliferated as a result of the religious divisions and political fragmentation of the Holy Roman Empire.²¹⁵ This superabundance of intellectual centers increased the number of posts for scholars and the opportunities for official patronage. In the face of a growing trend toward the consolidation of state structures, these thinkers began to undertake the comparison of different societies and cultures, striving to observe such phenomena from an objective, detached perspective, training a critical eye even toward the societies to which they themselves belonged.²¹⁶ Animated by the thinking of like-minded scholars in Scotland, they were guided principally by Hume's maxim that 'the science of man is the only sound foundation for the other sciences'.²¹⁷ Their primary concern, therefore, became the stages of human development and the ways in which man interacted with the political, social, economic, cultural, and religious structures within society.²¹⁸ Following the Seven Years' War, a global conflict in which many began to first recognize the repercussions of European contact with non-European cultures, new ways of thinking about the science of man emerged. From the university at Göttingen emanated the new fields of "*Ethnographie*" and "*Völkerkunde*", ethnography and ethnology.²¹⁹ The *Königliche Sozeietät der Wissenschaften* regularly discussed and debated the ramifications of these encounters, which were then reproduced in print by the *Göttingischen Anzeigen von gelehrten Sachen*.²²⁰ Africa and the Pacific became the intellectual playgrounds of German thinkers as they debated the nature of human development and shared their reservations about the impact of Europeans on the societies they encountered.²²¹

The model of humanist and scientific education evolving amongst the academies in the German states, particularly at Göttingen and Halle, was in turn celebrated and reciprocated by scholars at

²¹⁵ Thomas Ahnert, Iwan-Michaelangelo D'Aprile, Elisabeth Décultot, Simon Grote and Avi Lifschitz, 'Forum: The German Enlightenment', *German History*, 35:4, (2017), 593

²¹⁶ Gascoigne, *Service*, 149.

²¹⁷ Martin Fitzpatrick, 'Enlightenment', in Ian McCalman, ed., *An Oxford Companion to the Romantic Age: British Culture 1776-1832* (Oxford: Oxford University Press, 1999), 304.

²¹⁸ Fitzpatrick, 'Enlightenment', 304.

²¹⁹ John Gascoigne, 'The German Enlightenment and the Pacific' in Wolff and Cipolloni (eds.), *The Anthropology of the Enlightenment* (Stanford: Stanford University Press, 2007), 144. For more, see: Katherine M Faull, *Anthropology and the German Enlightenment* (Lewisburg: Bucknell University Press, 1995); Michael Harbsmeier, 'Towards a Prehistory of Ethnography: Early Modern German Travel Writing as Traditions of Knowledge' in Vermeulen and Roldán (eds.), *Fieldwork and Footnotes: Studies in the History of European Anthropology* (London: Routledge, 1995), 19-38; Han F. Vermeulen, *Before Boas: The Genesis of Ethnography and Ethnology in the German Enlightenment* (Lincoln: University of Nebraska Press, 2015).

²²⁰ *Royal Society of Sciences and Göttingen Newspaper on Scholarly Affairs*; Grove, *Green Imperialism*, 144.

²²¹ Grove, *Green Imperialism*, 312.

the Scottish universities and amongst dissenting English academics at a time when the English universities were largely moribund.²²² Oxford and Cambridge, predominantly clerical and relatively marginal, offered no more than three professorial positions in natural history well into the nineteenth century.²²³ Like William Sherard before them, London's scientific elite looked abroad for the talent to assist in the "discovery" of the as-yet unknown world. As a culmination of the scientific and intellectual movements of the previous two centuries, the voyages of James Cook embodied the radical change that had taken place. The importance of these changes in the success of these voyages cannot be understated. Their state-of-the-art navigational tools made it possible to chart locations with exceptional precision. Their ships were floating laboratories, tracking temperatures, tides, winds, and currents. The acute attention to documentation and verification of observations, and the inclusion of naturalists, artists, surgeons, and various other specialists, were inspired by the Scientific Revolution.²²⁴ In the Baconian spirit of state-sponsored scientific endeavor, the Pacific offered a "virgin territory" where naturalists could apply Newtonian methods of close observation and experimental verification, and attempt to organize the natural world they encountered within the system of classification devised by Linnaeus. Thus, the achievements of the botanical network fashioned by the VOC in the seventeenth century laid the intellectual base for the methods which the British and French empires later sought to emulate.²²⁵

This spirit was fostered by Sir Joseph Banks, who, along with Swedish naturalist Daniel Solander, served as naturalists on Cook's first voyage on the *Endeavour* (1768-71). Banks would later become President of the Royal Society and is still regarded as the 'presiding genius of exploration' in the English-speaking world.²²⁶ Yet, this spirit was best *embodied* by the lives and work of Johann Reinhold Forster and his son Georg, the German naturalists on Cook's second voyage aboard the *Resolution* (1772-75). According to Richard Grove, the employment of non-English

²²² Ibid., 322.

²²³ Gascoigne, 'Enlightenment', 143; D.E. Allen, 'The Early Professional in British Natural History' in Wheeler and Price (eds.), *From Linnaeus to Darwin: Commentaries on the History of Biology and Geology* (London: The Society for the History of Natural History, 1985), 6.

²²⁴ Kennedy, *Last Blank Spaces*, 25.

²²⁵ Ibid., 91.

²²⁶ Mackay, 'Presiding Genius', 23; See: R.E.R. Banks, et. al., *Sir Joseph Banks: A Global Perspective* (London: The Royal Botanic Gardens, 1994); John Gascoigne, *Joseph Banks and the English Enlightenment: Useful Knowledge and Polite Culture* (Cambridge: Cambridge University Press, 2003); Patrick O'Brian, *Joseph Banks: A Life* (London: Harvill, 1987).

naturalists was notable for two reasons: it helped to separate ‘the naturalist from a direct connection with mercantile interests’ (not an unusual interjection considering the tension between science and commerce), and allowed for the embrace of what was considered a particularly German ‘detached kind of social empiricism’, which would ultimately influence future generations of naturalists within the British Empire and Europe.²²⁷ Not only did the Cook voyages set the precedent for how a naturalist should conduct their researches, they also fundamentally shaped Britain’s conceptualization of the role of a professional naturalist.

Although the Forster’s fame throughout Europe rested upon their scientific work on Tahiti and New Zealand, their Cape material was never published in full, despite Johann Reinhold’s wishes ‘to put [his] remarks on the Cape of Good Hope all together’ into a single account.²²⁸ This is not to say that the Forsters’ were not seeking to disseminate their work on Africa. In 1773, the Royal Society received from Johann Reinhold ‘a paper full of Descriptions ... with many new birds & a new animal ... several birds & animals in spirits & a box of skins of birds & stuff’d ones’.²²⁹ Seven years later, he approached Banks for permission to submit a series of papers on South African zoology to the Society. His paper, suggesting the need to revise the African mammalian taxonomy, was read on the 9 November 1780 as *A Natural History and Description of the Tyger-cat of the Cape of Good Hope*.²³⁰ His profound insight was that rather than devising new genera to accommodate this new feline species, he proposed ‘making great divisions in each genus, comprehending those species which, on account of some relation or character, have a greater affinity to one another’.²³¹ The Cape material that ultimately found its way into print was quite literally marginal, though far from insignificant. Johann Reinhold translated and published an edited series of travel accounts entitled *Magazin von merkwürdigen neuen Reisebeschreibungen aus fremden Sprachen übersetzt*, some of which focused on southern Africa.²³² In the second of

²²⁷ Grove, *Green Imperialism*, 312.

²²⁸ Hoare, *Resolution*, 102. See: Madhubanti Karyekar, ‘Comparative Anthropology in Travel Literature: Georg Forster’s <O-Taheiti> (1779)’, *Colloquia Germanica*, 46:3 (2013), 211-228; Chunjie Zhang, ‘Georg Forster in Tahiti: Enlightenment, Sentiment and the Intrusion of the South Seas’, *Journal for Eighteenth-Century Studies*, 36:2 (2013), 263-277; Harry Liebersohn, ‘A Radical Intellectual with Captain Cook: George Forster’s World Voyage’, accessed 5 September 2021, <https://bit.ly/3DOdGpZ>.

²²⁹ Forster to Pennant, 19 November 1772, Mitchell Library, Sydney, ML.Doc.489.

²³⁰ Johann Reinhold Forster, ‘A Natural History and Description of the Tyger-cat of the Cape of Good Hope’, *Philosophical Transactions*, 71:1 (1781), 1-7.

²³¹ *Ibid.*, 2.

²³² *Magazine of Strange New Travel Accounts Translated from Foreign Languages*.

these volumes, recounting the Cape travels of François le Vaillant, one gets a sense of the material Johann Reinhold possessed on South Africa in his frequent footnotes and comments referring to his own scientific findings. While the reception of these volumes is not well understood, Michael Hoare believes Forster's notes form 'a scattered valedictory address to the world of natural history', revealing many descriptions, observations, and drawings that at that point had not been published and may never see publication.²³³ Though Johann Reinhold intended to assemble his Cape findings, all that can be found beyond the *Magazin* and *Description of the Tyger-Cat* is some information on South African fauna in his posthumous *Descriptiones animalium*, edited by Hinrich Lichtenstein.²³⁴ There is likewise a paucity of publications on the part of Johann Reinhold's son. It has been suggested that Joseph Banks, through the purchase of many of Georg's drawings, sought to monopolize the material generated by the voyage.²³⁵ Whatever the case may be, two things are certain. First, the Forster's ample knowledge of Cape natural history ranked them amongst the foremost authorities on southern Africa once they returned to Europe.²³⁶ And second, that British knowledge has assumed a disproportionate and anachronistic position in our understanding of the emergence of science in the Cape.

²³³ Michael E. Hoare, *The Tactless Philosopher. Johann Reinhold Forster (1729-1798)* (Melbourne: Hawthorn Press, 1976), 290.

²³⁴ Hinrich Lichtenstein (ed.) and Johann Reinhold Forster, *Descriptiones animalium* (Berlin, 1844).

²³⁵ Edwin D. Rose, 'Publishing Nature in the Age of Revolutions: Joseph Banks, Georg Forster, and the Plants of the Pacific', *The Historical Journal*, 63:5 (2020), 1132-1159.

²³⁶ Hoare, *Philosopher*, 128. In the British context, Banks would have been consulted on anything dealing with South Africa; however, continental scholars would have reached out to the Forsters or Thunberg for information regarding South Africa.



Fig.1.9: An illustration of Forster's Tyger-Cat, today's Serval (*Leptailurus serval*).

By the end of the eighteenth century, the British had thoroughly colonized the empire of knowledge that the Dutch had established. The primary consequence of this has been the anachronistic tendency, noted by Schiebinger and Swan, to begin the narration of the history of early modern botany with the rise of standardized nomenclature, taxonomy, and abstract systems of classification.²³⁷ But, as this chapter has made clear, before the Linnaean system was introduced and widely accepted, employees of the VOC were essential in supporting the earlier movement of knowledge and material through the structures of the Dutch world upon which the emergence of the Linnean system depended. There is a similarly archaic tendency towards locating the origins

²³⁷ Londa Schiebinger and Claudia Swan, 'Introduction' in Schiebinger and Swan (eds.), *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (Philadelphia: University of Pennsylvania Press, 2005), 3

of South African botany, conservation, and natural history in the research of the Cook voyages and those of the travelers that followed them. This historical amnesia set in early. Francis Masson, a collector sent to the Cape to collect seeds and plants for Kew Gardens after the *Endeavour* voyage, claimed in his 1796 work that, ‘the curious productions of the Cape had been too much neglected until the year 1771, when Captain Cook returned from his first voyage round the globe, and landed the Naturalists who accompanied him at Cape Town’.²³⁸ The above history of the Dutch in the Cape has demonstrated that there was, in fact, a great deal of scientific information circulating about the region before this time.²³⁹ It was obvious to the British that, just as the Dutch had neglected the economic development of their African possession, so too must they have been unable to develop any understanding of its natural potential. It can be no coincidence that the erasure of earlier natural historical work in the Cape by the arrival of the Cook voyages virtually coincides with the British occupation of that colony some two decades later.

²³⁸ Masson, *Stapelia*, vi.

²³⁹ The travelers usually considered in this type of understanding are: Francis Masson; the Swede Carl Peter Thunberg, known as ‘the father of South African botany’, was sponsored by Johannes Burman; Swede Anders Sparrman became employed as a tutor for a wealthy VOC administrator and was recruited by the Forsters to accompany the *Resolution* voyage; William Paterson, a Scotsman, was sponsored by the Countess of Strathmore to collect plants for her garden; John Barrow, an Englishman, accompanied Lord Macartney as part of the British embassy to China (1792-1794) and later followed him to the Cape when he became its first governor under British rule; and, the autodidact Col. Robert Jacob Gordon, who commanded the Cape garrison between 1780 and 1795 and undertook more individual expeditions than anyone else in eighteenth-century Cape exploration.

The Dutch, although celebrated as lovers of Natural History and Botany, had possessed the Cape near 130 years before any considerable number of plants from thence were introduced into their European gardens, a few geraniums and succulent plants excepted. Even the zoology of this interesting spot seems to have been very little studied by them.

The curious productions of the Cape had been too much neglected until the year 1771, when Captain Cook returned from his first voyage round the globe, and landed the Naturalists who accompanied him at the Cape Town; they were much gratified by the treasures they met with, and in consequence of the observations they then made, Sir Joseph Banks, on his return to England, suggested to his Majesty the idea of sending a person, professionally a gardener, to the Cape, to collect seeds and plants for the Royal Botanic Gardens at Kew: his Majesty

Fig. 1.10: Francis Masson's interpretation of Dutch attention to Cape natural history in the preface of his *Stapelia Novæ* (1796), vi.

As the power and wealth of the VOC began to steadily decline, the Cape began to facilitate French and British shipping, which helped spark renewed European interest in the region. Changes in the world of which the VOC's decline formed only a part offered opportunities for Britain to take a more active interest not only in the Cape, but elsewhere. This resulted in the formation of the Africa Association by Sir Joseph Banks in 1788. Initially, no real attempts were made to explore locations inland from the Cape. Thomas Fitzgerald, a keen explorer, submitted a proposal to the Association for a series of travels directed eastward from the Cape towards present-day Mozambique. The Committee, however, thought this expedition 'of but a partial and secondary interest, in reference to the great objects of enquiry which should engage your more immediate attention'.²⁴⁰ The travels of Mungo Park along the Niger and Friedrich Hornemann in Egypt and

²⁴⁰ Royal Geographical Society, *Proceedings of the Association for Promoting the Discovery of the Interior Parts of Africa*, vol. 2 (London: W. Bulmer, 1810), 333.

Libya had already ‘opened a scene of so great and leading interest, that we cannot permit our attention to be suddenly diverted from it’.²⁴¹ It seems, then, that British interest in the Cape, after its ostensible “discovery” by the Cook voyages, no longer merited further exploration.

Banks’s vision for the Africa Association, and the nature of the scientific endeavors British science would pursue, was fundamentally shaped by the Forsters’ participation in the *Resolution* voyage, which had four principal consequences for the future of German scientific participation in British imperialism. First, the preeminence of university-based scientific thought, which led to both a growing professionalization of natural history and explains the extent to which British science became ‘dominated by German scientific thought’.²⁴² Second, Banks admired the thoroughness of German natural history (and conceived of it in national terms as “German”), exemplified in the observations and material collected and brought back by the Forsters, which he recognized was a direct product of their training and philosophical background at the University of Halle. Indeed, Banks recommended to the East India Company that preference ought to be given to ‘naturalists trained in the universities of northern Europe’.²⁴³ Yet, he appointed only a small handful of non-British naturalists in imperial scientific posts and British expeditions until his death in 1820. Third, as Johann Reinhold outlined in his *Observations*, naturalists ought to be stationed in overseas territories to conduct long-term empirical observation, a process which Banks initiated in the British Empire. Finally, the Forsters’ climatic and sociological concerns were important to the evolution of German and Scottish thinking on environmentalism, particularly on the development of Alexander von Humboldt, upon whom both Johann Reinhold and Georg exercised a great deal of influence. As Patrick Anthony has argued, Humboldt used the word ‘smelted genius [*verschmelzendes Genie*]’ to describe the way in which Georg Forster’s supposedly unique German cultivation fused together ‘poesy, profound philosophy, [and] thorough erudition’.²⁴⁴ Although Banks did not necessarily follow through with his visions, it nonetheless influenced the perception of German scientific thinking throughout the British Empire into the nineteenth century.

²⁴¹ RGS, *Proceedings*, 333-334.

²⁴² Grove, *Green Imperialism*, 329.

²⁴³ RBGK, Banks Letters, 22 Feb 1787, 133-7.

²⁴⁴ Patrick Anthony, ‘Mining as the Working World of Alexander von Humboldt’s Plant Geography and Vertical Cartography’, *Isis*, 109:1 (2018), 53.

Conclusion

Between the entrepreneurship of Maria Sibylla Merian to the networks of exchange emanating from the German gardeners in charge of the Cape Company Garden, it is perhaps possible to say that ‘Germans themselves were everywhere’, as David Blackbourn has claimed.²⁴⁵ While it may seem as though the Germans in this chapter have been selectively chosen to write a particular narrative, their life histories are illustrative rather than comprehensive.²⁴⁶ Much like Christine R. Johnson has maintained, Germans are only a lens through which to better understand wider patterns of mobility and knowledge production in the early modern period. In Europe, there were certainly many more Germans who utilized the global structures of the VOC to realize their ambitions in a variety of occupational capacities, or who were involved in commercial pursuits related to the natural world. In the Cape, however, the actors given attention in this chapter are who we owe much of our early knowledge on Cape natural history (botany especially), aside from the famous eighteenth-century travelers who have already seen great scholarly attention, and to the relatively neglected Khoekhoe, San, and others who made the transfer of that knowledge possible. Thus, they are relatively unnoticed practitioners who were central to the story of how the Cape was translated into Western frameworks of knowledge. While they are overlooked historiographically, their utility was seen as essential to the scientific success of the British Empire. Although Sir Joseph Banks did not really carry out his assertion that preference should be given to German-trained naturalists, his invocation is a crucial one, expressing a particular desire for German expertise in British imperial scientific pursuits which would have a lasting impact on Britain’s scientific understanding of itself in relation to the continent, as will be seen in Chapter Five.

Through the example of Merian, among others, placing Germans within this early modern mercantilist frame offers a way to understand how they came to view the potential of the natural

²⁴⁵ Blackbourn, ‘German Scientists as 18th-Century Globalists’, accessed 5 May 2020, <https://www.theglobalist.com/german-scientists-as-18th-century-globalists/>.

²⁴⁶ This is exemplified by the fact that both Peter Kolb (1675-1726), perhaps the most famous scientific German to travel to the Cape, was omitted from this chapter. Peter Kolb, *Caput Bonae Spei Hodiernum* (Nürnberg: Peter Conrad Monath, 1719). See: Huigen, *Knowledge and Colonialism*, ch. 2; Penn and Delmas, ‘Peter Kolb’.

world from an increasingly commercial perspective. Harold Cook has convincingly shown how methods of exchange in the Dutch mercantile economy had fundamental implications for establishing the value of certain kinds of knowing, turning things and information into knowledge.²⁴⁷ The extent to which the German states were embedded within that same kind of economy also profoundly affected their relationship with natural history. This offers an explanation as to why, in the next chapter, Hinrich Lichtenstein, Director of the Berlin Zoological Museum, referred to his collectors as *mercantilisch* extensions of the Museum's natural history trade and how he was able to turn a scientific institution into a commercial clearing house for exotic specimens. It also presents an opportunity to situate the German collectors who appear in the forthcoming chapters, many of whom were apothecaries and horticulturalists actively involved in the business of nature. While the often-antagonistic relationship between science and commerce could be damaging to the lives and reputations of those who attempted to rise to more than a mere apothecary or natural history dealer, it also oscillated, presenting opportunities to actors who might have otherwise been excluded from the elite practice of science, like Merian herself. Historians should work to build on Cook and Margóscy's masterful examples to develop a more intricate picture of the connection between science and commerce in the early modern and modern periods.

Although the Cape played a somewhat marginal role in this chapter, allowing room to expand on wider commercial and scientific developments in Europe and the VOC world, it will become more prominent as an active site which allowed for, and influenced, knowledge production in Chapters Two, Three, Four, and Six. Yet, historians of science have continually neglected the Cape and southern Africa for reasons which are entirely unclear, despite its pivotal position on an intellectual, commercial, and material highway for both the Dutch and British empires. In the context of this dissertation, the Cape's singular ecosystem and complex racial dynamics make for an important case study on the role of science in contemporary discussions on race and the environment. Not only are there unique stories to be told about its flora and fauna, but it also provides a setting by which we can examine the active role Germans played in European imperialism, illustrating that Susanne Zantop's "fantasies" were closer to colonial realities. In so doing, this complicates our understanding of German involvement in imperialism stretching back to the early modern period, the direct connection of which has seen very little treatment. The

²⁴⁷ Cook, *Matters of Exchange*, 42.

analysis applied in this chapter could be extended and expanded, to offer a more all-encompassing narrative which links a wider range of German actors and their colonial pursuits across the Dutch imperial world, as well as one that links the Dutch colonial outposts across its overseas territories rather than simply as exchange and transfer between metropole and periphery.

Chapter Two

Negotiating Trust in Natural History Partnerships: The Collectors of the *Berlin Zoologisches Museum*, 1815-1827

‘For, must it not hurt men who, in the unselfish way of showing themselves willing to serve the King's Prussian state and to contribute to the advancement of science, have taken on this arduous business -- to see themselves stripped from the trust they had enjoyed by suddenly withdrawing the orders given, without waiting for their report, and to be placed in a doubtful position as to what should now be done?’²⁴⁸

Karl vom Stein zu Altenstein (1824)

In a letter dated 22 June 1820, Director of the Berlin Zoological Museum, Hinrich Lichtenstein, and Prussian Education Minister, Karl vom Stein zum Altenstein, yielded power of attorney to Lutheran minister F. Kaufmann and apothecary Pieter Heinrich Polemann in Cape Town. Two years had passed since Lichtenstein had last heard from the natural history collectors J.L.L. Mund and L.A. Maire of Berlin, who had been sent to southern Africa to collect natural curiosities for the Museum in 1816. By this point the matter had taken an ominous turn: Altenstein recalled the two collectors to Prussia and sternly reminded them that their collections were not their personal property, but rather that of the Prussian state.²⁴⁹ As authorized representatives of the state, Kaufmann and Polemann were ‘particularly honored by the trust’ which the two high-ranking officials had placed upon them to take possession of the collection.²⁵⁰ While Mund and Maire had allegedly put together a decent botanical and zoological assemblage, they had also accumulated significant debt within the Colony to finance their travels, and their creditors were demanding repayment. However, Altenstein did not assign Kaufmann and Polemann enough cash to pay off the extent of the debt, which, as far as they knew, amounted to between 8,000 and 9,000 Cape Rixdollars. If Mund and Maire continued to delay, the creditors might not have allowed their departure until all debts were paid in full, entitling them to seize the collection as compensation in lieu of liquid payment. After receiving instructions from Lichtenstein, Kaufmann and Polemann

²⁴⁸ Geheimes Staatsarchiv Preußischer Kulturbesitz (GStAPK), I. HA, Rep. 76, Vc Sekt. 1 Tit. XII, 35 Bd. 2, Altenstein to Kaufmann and Polemann (K&P), 31 March 1824.

²⁴⁹ Ibid., K&P to Mund and Maire (M&M), 20 December 1820.

²⁵⁰ Ibid., K&P to Altenstein, 22 June 1820.

stressed to the collectors that it would be in their best interest to achieve the purpose of their original mission, to make themselves ‘worthy of the lost favor of the high ministry’ in Prussia.²⁵¹

The language of trust, social capital, and power was often applied when two parties experienced a breakdown in social relations, like in the rather unsavory situation alluded to in this brief example.²⁵² This chapter analyzes how the disintegration of trust in collaborations between metropolitan naturalists and colonial collectors, and the increasing prominence of commercial considerations in natural history, helped to fashion a new way of collecting specific to the German states in the early nineteenth century. What were the expectations of the collectors and patrons involved in these relationships? How did metropolitan naturalists exert power and privilege over their collectors? How did the metropole deal with rogue collectors? Did the cash nexus *actually* render these relationships socially unambiguous? As the previous chapter argued, ‘the modern economy and modern science ... were co-produced and interdependent phenomena’, despite the negative social consequences that contemporary naturalists placed on the role of “commerce” in natural history.²⁵³ It also discussed the extent to which Germans were fundamental to the development of early modern natural history and the circulation of knowledge between Europe, the Cape, and the wider VOC world. This chapter will strengthen the German connection to the Cape, highlighting the multifarious layers and levels of trust in the relationships that emerged between the Prussian state, the Berlin Zoological Museum, and the collectors they sent to southern Africa. This dysfunction inspired a new form of collecting which pushed financial accountability away from metropolitan patrons, instead placing increasing pressure on collectors to spend less and produce more to be considered successful. This shift in responsibility forced collectors to commodify the natural world in such a way that natural objects were thought of in terms of value, which would have destructive consequences for the flora, fauna, and peoples of southern Africa. By focusing on the failure of trust in natural history partnerships, a great deal can be gleaned about the function of power and class in the shifting parameters of early nineteenth-century natural history and illuminates how trust was intrinsically at the center of science.

²⁵¹ Ibid., K&P to M&M, 20 December 1820.

²⁵² On social capital, see: Robert I. Rotberg (eds.), *Patterns of Social Capital: Stability and Change in Historical Perspective* (Cambridge: Cambridge University Press, 2001); David Sunderland, *Social Capital, Trust and the Industrial Revolution* (London: Routledge, 2007).

²⁵³ Harold J. Cook, ‘Moving About and Finding Things Out: Economics and Sciences in the Period of the Scientific Revolution’, *Osiris*, 27:1 (2012), 102; Kapil Raj, *Relocating Modern Science*, 16.

In recent years, Lewicki and Brinsfield have argued that trust is a heuristic decision, allowing humans to deal with complexities that would require unrealistic effort in rational reasoning.²⁵⁴ Thus, it is a crucial strategy for dealing with an uncertain and uncontrollable future, one in which humans must act in spite of doubt and risk.²⁵⁵ In situations of relative uncertainty, trust provides assurance that implicit and explicit expectations will produce a desirable course of events realized in an unknown person or in the unknowable future. As Niklas Luhmann claims, by reducing complexity, trust discloses possibilities for action which would have remained unattractive and improbable without it, and which would not have been pursued otherwise.²⁵⁶ In a world in which there was more uncertainty than certainty – between choosing dependable collectors, the hazards involved in the preservation of material, and the risky overland and oceanic shipment of specimens – the social capital derived from a trusting relationship helped to strengthen ties and ensure a mutually beneficial outcome in social, financial, or material terms.

Taking inspiration from sociology, economics, and psychology, the work of Ute Frevert and Geoffrey Hosking has encouraged historians to make trust an independent topic of research, which is now being given broad geographical, thematic, and chronological treatment.²⁵⁷ Unsurprisingly, one of the primary fields in which notions of trust have been applied is in mercantile relations, useful in this chapter to consider how historical actors made contact, maintained connections, and handled money in increasingly global and interconnected trade networks.²⁵⁸ The language of trust

²⁵⁴ Roy Lewicki and Chad Brinsfield, 'Framing Trust: Trust as a Heuristic' in Donohue, Rogan and Kaufman (eds.), *Framing Matters: Perspectives on Negotiation Research and Practice in Communication* (New York City: Peter Lang, 2011), 35.

²⁵⁵ Piotr Sztompka, *Trust: A Sociological Theory* (Cambridge: Cambridge University Press, 2000), 25.

²⁵⁶ Tom Burns, Gianfranco Poggi (eds.), and Niklas Luhmann, *Trust and Power*, trans. Howard Davis, Johan Raffan and Kathryn Rooney (Cambridge: Polity Press, 2017), 25. Originally published 1979.

²⁵⁷ Ute Frevert, 'Vertrauen: Eine historische Spurensuche' in Frevert (ed.), *Vertrauen: Historische Annäherungen* (Göttingen: Vandenhoeck & Ruprecht, 2003), 7-66; Ute Frevert, *Vertrauensfragen: Eine Obsession der Moderne* (Munich: C.H. Beck, 2013); Ute Frevert, 'Vertrauen. Historische Annäherungen an eine Gefühlshaltung' in Benthien, Fleig and Kasten (eds.), *Emotionalität. Zur Geschichte der Gefühle* (Cologne: Böhlau Verlag, 2000), 178-197; Geoffrey Hosking, 'Review: *Why We Need a History of Trust* (review no. 287a)', accessed: 27 May 2021, <https://reviews.history.ac.uk/review/287a>; Geoffrey Hosking, 'Trust and Distrust: A Suitable Theme for Historians', *Transactions of the Royal Historical Society*, 16 (2006), 95-115; Geoffrey Hosking, *Trust: A History* (Oxford: Oxford University Press, 2014); Justyna Wubs-Mrozewicz, 'The Concept of Language of Trust and Trustworthiness: (Why) History Matters', *Journal of Trust Research*, 10:1 (2020), 91-107.

²⁵⁸ Cátia Antunes and Amélia Polónia (eds.), *Beyond Empires: Global, Self-Organizing, Cross-Imperial Networks, 1500-1800* (Leiden: Brill, 2016); Ricardo Court, 'The Language of Trust: Reputation and the Spread and Maintenance of Social Norms in the Sixteenth Century', *Rime*, 1 (2008), 77-96; Ricardo Court, "'Januensis Ergo

was a highly utilitarian tool, which reminded the partners and employees of obligations, or which could give extra weight to expectations.²⁵⁹ Information sharing was also a way to build trust; it encompassed business updates and political and social news, but also focused on the reputation of agents and partners, helping them to make decisions regarding who to employ and with whom to engage in trade.²⁶⁰ These factors also played a role in metropolitan naturalists' decision-making when selecting reliable collectors to send overseas, a decision which required a great deal of trust to ensure the success of what was certainly a precarious endeavor.

These considerations were important in the formulation of Steven Shapin's *The Social Life of Truth*, one of the first historical monographs to fold the social aspects of trust into the history of science.²⁶¹ Focusing on claims developed by Robert Boyle and other seventeenth-century English men of science during the Scientific Revolution, Shapin argues that even the most individualistic men relied heavily on the testimony of others whom they trusted. This largely depended on the existence of co-operative norms and networks, offering working solutions to problems of credibility and trust which presented themselves at the core of the new empirical science.²⁶² In the case of this chapter, personal testimony was essential in bridging the class divide between naturalists and collectors. Collectors of lower social status who had been endorsed by a gentleman or established merchant could earn their credibility with other influential elite patrons through correspondence. 'Correspondence ... had to satisfy the same criteria of reliability as other aspects of scientific practice', Anne Secord maintains, and problems of credibility arose when the moral status of correspondents was unknown, or the nature of the social interaction was ambiguous.²⁶³ Developing an almost formulaic mode of correspondence served to establish the trustworthiness

Mercator": Trust and Enforcement in the Business Correspondence of the Brignole Family', *The Sixteenth Century Journal*, 35:4 (2004), 987-1003. See also on friendship: Jütte, *The Age of Secrecy*; Tania M. Colwell, 'Friendship and Trust between Medieval Princes: Affective Strategies for Navigating Intercultural Difference across the Mediterranean', *Emotions: History, Culture, Society*, 4:2 (2020), 348-373.

²⁵⁹ Francesca Trivellato, *The Familiarity of Strangers: The Sephardic Diaspora, Livorno, and Cross-Cultural Trade in the Early Modern Period* (New Haven: Yale University Press, 2009).

²⁶⁰ Sebouh Aslanian, 'Social Capital, "Trust" and the Role of Networks in Julfan Trade: Informal and Semi-Formal Institutions at Work', *Journal of Global History*, 1:3 (2006), 383-402; Sebouh Aslanian, "'The Salt in a Merchant's Letter': The Culture of Julfan Correspondence in the Indian Ocean and the Mediterranean', *Journal of World History*, 19:2 (2008), 127-188.

²⁶¹ Steven Shapin, *A Social History of Truth: Civility and Science in Seventeenth-Century England* (Chicago: University of Chicago Press, 1994).

²⁶² Ibid., xxi.

²⁶³ Anne Secord, 'Corresponding Interests', 384.

of a writer proposing an exchange.²⁶⁴ On the other hand, where there was a wide social discrepancy between correspondents, as in the case of a gentleman employing a collector or negotiating the price of specimens from a dealer, she argues that the interaction was rendered socially unambiguous by the cash nexus.²⁶⁵ Thus, economic considerations had the potential to factor heavily into, or altogether influence, interpersonal trust relationships in natural history.

However, not all relationships were declared “unambiguous” by the cash nexus. The ‘underlying distrust between the code of reciprocity in the learned world and the code of profit in the commercial world’ continued in a tense interrelationship, even as commercial considerations became more apparent the European scientific system.²⁶⁶ One would think that the development of the natural history “trade” or “market” would help to, in a sense, equalize those class dynamics.²⁶⁷ Yet rather than making social relations “unambiguous”, the introduction of economic factors intensified the social divide and placed heightened, and uncertain, expectations on collectors. While determining credibility through testimony and experience was still crucial, the material, spatial, and intellectual considerations of collecting also began to factor into, and fundamentally influence, trust. This included the variable quality of specimens, their complex monetary and scientific value, disagreements over specimen identification and taxonomic assignment, and the degradation and damage experienced in transport.²⁶⁸ Likewise, naturalists could not monitor the collecting process from the metropole, nor verify the veracity of the information about a specimen’s provenance.²⁶⁹ These myriad elements, which rested with the collector, determined both the scientific and market value of a particular specimen and, in a trusting

²⁶⁴ Anne Larsen, ‘Not Since Noah: The English Scientific Zoologists and the Craft of Collecting, 1800-1840’, PhD diss, Princeton University (1993), 307-340. The most usual way this was done was by a separate letter of introduction from a naturalist known to both sender and recipient or by the correspondent mentioning the name of a mutual scientific acquaintance.

²⁶⁵ Secord, ‘Corresponding Interests’, 384.

²⁶⁶ Anne Coote, Alison Haynes, Jude Philp and Simon Ville, ‘When Commerce, Science, and Leisure Collaborated: The Nineteenth-Century Global Trade Boom in Natural History Collections’, *Journal of Global History*, 12 (2017), 320. For literature on distrust, see Alexey Tikhomirov, ‘The Regime of Forced Trust: Making and Breaking Emotional Bonds between People and State in Soviet Russia, 1917-1941’, *The Slavonic and East European Review*, 91:1 (2013), 78-118.

²⁶⁷ A dissertation recently submitted by Anne Greenwood-MacKinney (Humboldt University) analyzes the natural history trade that emerged from the Berlin Zoological Museum in the early nineteenth century.

²⁶⁸ Simon Ville, ‘Researching the Natural History Trade of the Nineteenth Century’, *Museum History Journal*, 13:1 (2020), 11.

²⁶⁹ Ibid.

relationship, reduced the ‘transaction costs’ of trading.²⁷⁰ Nevertheless, the metropolitan naturalist could always wield privilege and power over the collectors; because they were considered “disinterested”, they were inherently reliable and could thus dictate both the market and the course of the partnership.²⁷¹ Although collectors had strategies to mitigate risks and build social capital, this chapter will demonstrate that trust was inherently impartial and that these factors led to an economization of social relations in natural history.

Hinrich Lichtenstein and the Berlin Zoological Museum

Although naturalists like Sir Joseph Banks and Johann Reinhold and Georg Forster spent a transient moment in the Cape during the eighteenth-century Cook voyages, they nonetheless became some of the foremost authorities on southern Africa in Britain and the German states. The same could be said of Hinrich Lichtenstein, who spent a productive four-year period in the Cape Colony as the tutor to the son of the Cape’s Batavian Governor, Jan Willem Janssens, between 1803 and 1806.²⁷² He spent the following years between Braunschweig, Göttingen, and Jena organizing his collection, preparing the manuscript of his travel account, and assisting Johann Christian Ludwig Hellwig and Johann Karl Wilhelm Illiger with the systematization of Johann Centurius von Hoffmannsegg’s entomological collection.²⁷³ Hoffmannsegg, meanwhile, was in Berlin urging Wilhelm von Humboldt and Carl Ludwig Willdenow – founders of the city’s first university – to establish a Zoological Museum that would unite the diverse natural historical

²⁷⁰ Coote et al., ‘Trade Boom’, 329.

²⁷¹ Secord, ‘Corresponding Interests’, 384; For gentlemanly science, see: Jack Morrell and Arnold Thackray, *Gentlemen of Science: Early Years of the British Association for the Advancement of Science* (Oxford: Oxford University Press, 1981); Jan Golinski, *Science as Public Culture: Chemistry and Enlightenment in Britain* (Cambridge: Cambridge University Press, 1992); James A. Secord, *Controversy in Victorian Geology: The Cambrian-Silurian Dispute* (Princeton: Princeton University Press, 1986); Martin Rudwick, *The Great Devonian Controversy: The Shaping of Scientific Knowledge among Gentlemanly Specialists* (Chicago: University of Chicago Press, 1985).

²⁷² Lichtenstein also later served as the governor’s personal physician, a report writer on official expeditions, and as a military physician for the so-called Hottentot Light Infantry. See: Sandra Näf-Gloor, ‘A Naturalist’s Career: Hinrich Lichtenstein (1780-1857)’ in Lengwiler, Penn and Harries (eds.), *Science, Africa and Europe: Processing Information and Creating Knowledge* (London: Routledge, 2019), 47-65.

²⁷³ See: Heidi Muggelberg, ‘Leben und Wirken Johann Karl Wilhelm Illigers (1775-1813) als Entomologe, Wirbeltierforscher und Gründer des Zoologischen Museums der Humboldt-Universität zu Berlin’, *Mitteilungen des zoologischen Museums zu Berlin*, 51:2 (1975), 275-279.

cabinets in Berlin and serve as essential study materials for students and scholars.²⁷⁴ Although Illiger was initially offered the double position of Professor of Zoology and Director of the Zoological Museum, his long-standing ill health meant that the offer was then extended to Lichtenstein in 1811.²⁷⁵ As a sign of gratitude and commitment to the institution, Lichtenstein donated the specimens he had collected during his travels in South Africa to the newly founded Museum.²⁷⁶ Indeed, it became a common practice around 1810 for incoming scholars beginning their tenure at the university to renounce ownership of their private collections, whether through sale or donation.²⁷⁷ This, at least superficially, ensured that the scholarly overseers of the university's collections served the interests of science and the state, rather than making personal advantage of their high position.²⁷⁸ Lichtenstein's collection, expertise, and network of contacts gained from his time in southern Africa transformed Berlin into the new European hub for botanical and zoological material arriving from the region.

²⁷⁴ Ilse Jahn, 'Zur Vertretung der Zoologie und zur Entwicklung ihrer Grundlagen an der Berliner Universität zu Berlin', *Mathematisch-Naturwissenschaftliche Reihe*, 34:3 (1985), 260-263. On the reform of the German university, see: Thomas Becker and Uwe Schaper, *Die Gründung der drei Friedrich-Wilhelms-Universitäten: Universitäre Bildungsreform in Preußen* (Berlin: DeGruyter, 2013); Charles E. McClelland, *State, Society and University in Germany, 1700-1914* (Cambridge: Cambridge University Press, 1980); Charles E. McClelland, 'The Emergence of Modern Higher Education: The German University and Its Influence' in Rury and Tamura (eds.), *Oxford Handbook of the History of Education* (Oxford: Oxford University Press, 2019), 275-288.

²⁷⁵ Erwin Stresemann, 'Hinrich Lichtenstein. Lebensbild des ersten Zoologen der Berliner Universität' in Göber and Herneck (eds.), *Forschen und Wirken. Festschrift zur 150-Jahr-Feier der Humboldt-Universität zu Berlin. 1810-1960*, Vol. 1 (Berlin: Deutscher Verlag der Wissenschaften, 1960), 75.

²⁷⁶ GStAPK, I. HA Rep. 76 Kultusministerium Va Sekt. 2 Tit. X Nr. 15 Bd. 1 Bl. 133, Lichtenstein to *Sektion für den Kultus und öffentlichen Unterricht*, May 1811; MfN HBSB, Zool. Mus., S I, Illiger I: Innere Einrichtung des zoolog. Museums 1810-13, Bl. 109.

²⁷⁷ Anne MacKinney and Matthias Glaubrecht, 'Academic Practice Par Excellence: Martin Hinrich Lichtenstein's Role in Adelbert von Chamisso's Career as Naturalist', *Internationales Archiv für Sozialgeschichte der deutschen Literatur*, 42:2 (2017), 327.

²⁷⁸ Ibid.

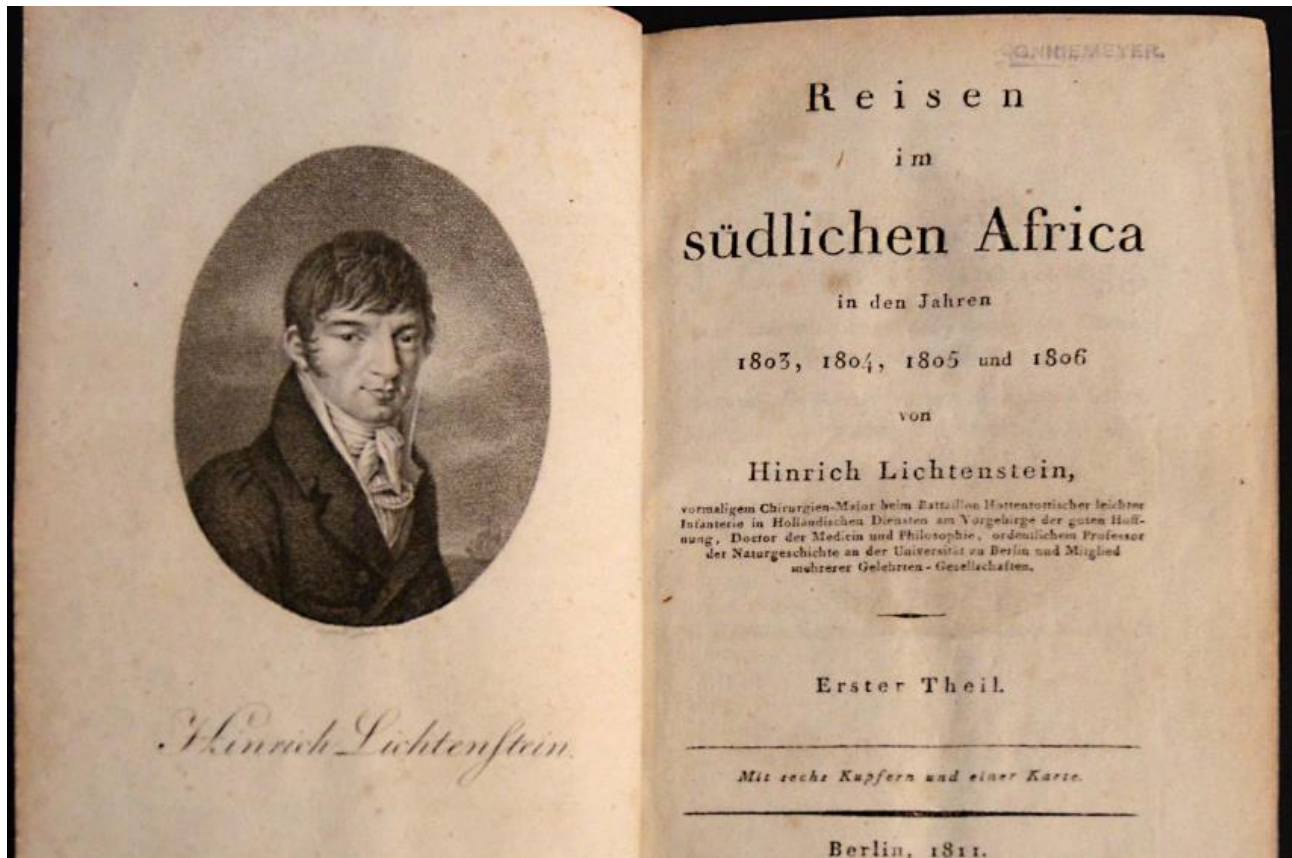


Fig. 2.1: A portrait of Hinrich Lichtenstein from the title page of his travel narrative, *Reisen im südlichen Africa*.

Patrick Harries has argued that Lichtenstein ‘marks the bridge between old and new ways of collecting and ordering nature’.²⁷⁹ He became an eminently successful patron in the new world of academic science in Berlin, using his network of scholarly, state, and noble contacts to help his protégés find employment overseas or positions on expeditions funded by wealthy aristocrats.²⁸⁰ This would, in turn, help to expand not only the Museum’s collection, but also that of the Berlin Botanic Garden, the Mineralogical Cabinet, and the Anatomical/Zootomical Museum. However, his colleagues considered him more an administrator of science than a naturalist in his own right, lacking the proper zoological training to prepare him for the demands of a rapidly changing and

²⁷⁹ Patrick Harries, ‘Warfare, Commerce, and Science: Racial Biology in South Africa’ in Bancel, David and Thomas (eds.), *The Invention of Race: Scientific and Popular Representations* (New York: Routledge, 2014), 171.

²⁸⁰ MacKinney and Glaubrecht, ‘Academic Practice’, 328.

expanding scientific world.²⁸¹ He openly recognized these deficiencies in a letter to Alexander von Humboldt, where he reflected,

what I failed to accomplish in scholarly research and innovation – perhaps due to a lack of tenacity as well as to insufficient intellectual capacity – I have tried to make up for with zeal, orderliness, and exactingness in my administrative duties.’²⁸²

Rather than engaging in research, Lichtenstein fashioned himself as a business-savvy naturalist, making up for his lack in scientific ability in his commercial understanding of the natural history trade and how to market specimens. He sent his collectors abroad with instructions which often stressed commercial imperatives over scientific research or accurate detail.²⁸³ By auctioning his collectors’ duplicates to create revenue for the chronically under-funded Museum, he transformed it into a clearing house for natural history objects. Through Lichtenstein’s coordination efforts and the ambition of his collectors, the Berlin collections grew at an unprecedented rate and accumulated extra capital through the sale of *naturalia*.²⁸⁴ In an attempt to raise his own standing and that of the Museum amongst the scientific elite in Europe, he came to embody the ultimate commercial naturalist, personifying the two opposing poles of scientific endeavor in this period. Carefully treading the thin line between science and commerce, he integrated and normalized the two rather seamlessly into the German scientific world. Much like Berlin had become a new epicenter for material arriving from southern Africa, the city also became the site by which natural history was commercialized and commodified in the German states.

Despite criticisms, Lichtenstein’s esteemed status and *mercantilisch* outlook allowed him to determine the value of incoming specimens, which gave him some control over the natural history

²⁸¹ Patrick Grogan, ‘“Nothing but love for natural history and my desire to help your Museum”? Ludwig Krebs’s Transcontinental Collecting Partnership with Hinrich Lichtenstein’ in Lengwiler, Penn and Harries (eds.), *Science, Africa and Europe: Processing Information and Creating Knowledge* (London: Routledge, 2019), 68.

²⁸² Quoted from MacKinney and Glaubrecht, ‘Academic Practice’, 330.

²⁸³ GStAPK, I. HA Rep. 76 Kultusministerium Va Sekt. 2 Tit. X Nr. 15 Bd. 2, Lichtenstein to *Sektion für den Kultus und öffentlichen Unterricht*, 21 October 1814, Bl. 69; N.A. ‘Hinrich Lichtenstein: Instructionen für die auswärtigen Reisenden und Sammler (1815)’ in Moritz, Pufelska and Zischler (eds.), *Vorstoß ins Innere – Streifzüge durch das Berliner Museum für Naturkunde* (Berlin: Alepheus Verlag, 2010), 27-45. This had some negative implications for the Museum’s scientific reputation, with claims that Lichtenstein sold many rare specimens – falsely identified as duplicates of other species already in the Museum’s possession, including a number of soon-to-be-extinct southern African mammals – to foreign museums for profit. On duplicates, see the forthcoming special issue of the *British Journal for the History of Science* entitled, ‘The Issue of Duplicates: Political, Economic and Epistemic Figurations of Object Collections’.

²⁸⁴ See: Nils Güttler and Ina Heumann (eds.), *Sammlungsökonomien* (Berlin: Kulturverlag Kadmos, 2016).

market and allowed him to generate trust for himself and the Zoological Museum as a commercial outlet for specimens. He used this acquired trust to influence the Prussian state and the public to invest in his overseas ambitions. Anne MacKinney has analyzed how Lichtenstein's collation of *Verzeichnisse*, or directories, of natural objects from his salaried collectors played an important role in securing trust. From the perspective of the Prussian state, not only did the *Verzeichnisse* reveal the tangible monetary value of a particular collection, but they also proved a safe way to gauge the efficiency and productivity of the collectors who served Prussian science.²⁸⁵ To the lay public, the directories were meant to serve those beyond the confines of noble and intellectual circles, auctioning the collectors' duplicates for cheaper prices to different socio-professional groups. Lichtenstein hoped that this would have an educational purpose, disseminating new knowledge and taxonomic assignments amongst a wider sub-section of the population who had an interest in procuring natural history material. This will be seen again in Chapter Five, revealing how the German states had a more flexible approach to class and status in natural history. He assured 'that the announcement of the auction prices is extremely welcome to the public and the trust, which has been won by our Museum, is much increased'.²⁸⁶ 'Similar to merchant's books, which testified to the sincerity of the merchant', Lichtenstein published the price lists for the Museum as a tool to build trust with the public, reinforcing its dominant role in the market.²⁸⁷ Because he had secured the trust of the state and the public, Lichtenstein was able to wield a significant amount of power, both in his command of the market and in his relationships with collectors, dictating their future trajectories based on the language of power and trust.

²⁸⁵ Anne MacKinney, 'Objekte und Objektverzeichnisse in naturkundlicher Sammelpraxis. Das Beispiel des Berliner Zoologischen Museums von 1810 bis etwa 1850' in Seidl, Steinheimer and Weber, eds., *Materielle Kultur in universitären und außeruniversitären Sammlungen* (Berlin: Gesellschaft für Universitätssammlungen, Humboldt Universität zu Berlin, 2017), 25.

²⁸⁶ GStAPK, I. HA Rep. 76 Kultusministerium, Va Sekt 2. Tit. X Nr. 15, Bd. 4, Bl. 156, Lichtenstein to Altenstein, 24 January 1819.

²⁸⁷ Mackinney, *Objektverzeichnisse*, 26.

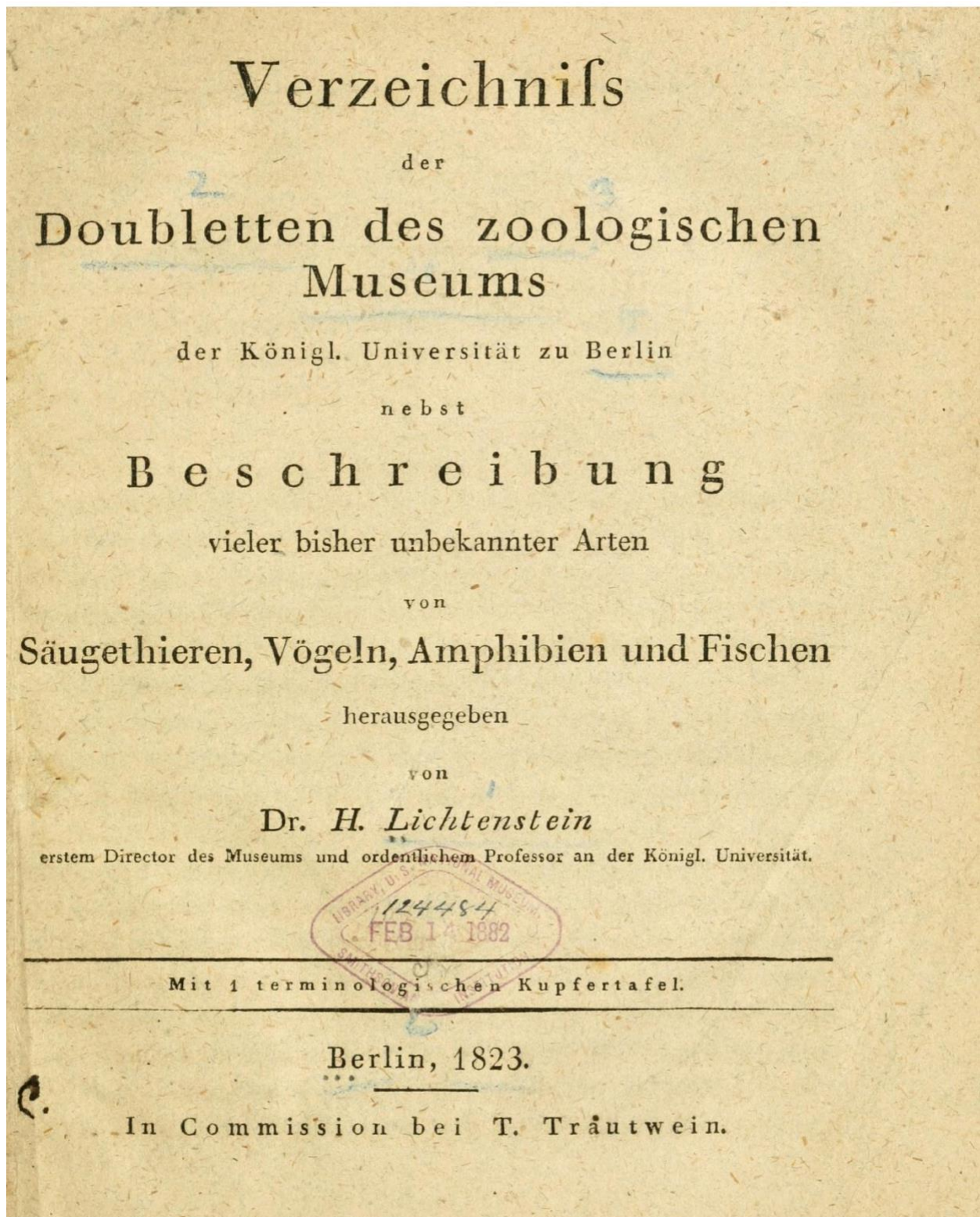


Fig. 2.1: The title page of one of Lichtenstein's *Verzeichnisse*. Hinrich Lichtenstein, *Verzeichniß der Doubletten des zoologischen Museums der Königl. Universität zu Berlin* (Berlin: T. Trautwein, 1823).

Lichtenstein's First Cape Collector: Heinrich Bergius

While in the Cape, Lichtenstein befriended the apothecary Pieter Heinrich Polemann, the co-owner of the successful Pallas & Polemann pharmacy in Cape Town, who played a considerable role in the production of natural history knowledge in the region. Every Sunday, 'in the company of my pupil and faithful friend Polemann', the two would collect on Table Mountain and in the vicinity of the city together.²⁸⁸ In Lichtenstein's travel narrative, Polemann could have been easily omitted in favor of other more ethnographic, geographical, linguistic, or political observations. His inclusion, albeit brief, indicates the high esteem with which Lichtenstein held him. Likewise, this public declaration of loyalty, and therefore trust, signified to German (and European) audiences that an agreeable agent could be found in Cape Town through the auspices of Polemann on Lichtenstein's personal recommendation, conferring his cultivated power and trust onto Polemann as well. Their relationship grew to such an extent that, nearly ten years later, Lichtenstein was able to secure an assistant's position for Karl Heinrich Bergius, a promising young apothecary and collector from Berlin.²⁸⁹ He hoped that Bergius would not only gain practical experience in the pharmacy, but that he would also collect for the Museum in his spare time. Arriving in 1815, Bergius could not have been more pleased with his treatment by the Polemann family; his 'reception in the house is of such a kind that I could never have had better expectations, for I find it rather surpassed in many respects'.²⁹⁰ At least at this point, there was no reason to assume the agreed expectations of his position had not been met, nor that trust was somehow misplaced.

By the time of Bergius's second letter in April 1816, trust wavered on two levels: not only did he complain of silence from Lichtenstein, but relations between Bergius and Polemann had begun to sour. 'In vain I would now try, as I have done so far, to excuse your more than a year's silence', Bergius wrote. Reminding Lichtenstein of the 'seclusion' one feels in Cape Town, separated 'from all political and scientific intercourse', he pleaded, 'would you like to sacrifice a quarter of an hour from time to time to keep me in some connection with the cultivated world'?²⁹¹ Here, Bergius

²⁸⁸ Hinrich Lichtenstein, *Reisen im südlichen Africa in den Jahren 1803, 1804, 1805 und 1806*, vol. 2 (Berlin: C. Salfeld, 1812), 180-181.

²⁸⁹ MfN HBSB, Zool. Mus. S I, Bergius, C.H., Bl. 3-4.

²⁹⁰ Ibid., Bergius to Lichtenstein, 24 August 1815, Blatt 51.

²⁹¹ Ibid., Bergius to Lichtenstein, 1 April 1816, Blatt 53.

seemed to believe that one of Lichtenstein's implicit obligations to him was information sharing and regular contact, one of many ways to build trust elaborated in the introduction. Yet, it was not an explicitly stated obligation that Lichtenstein *had* to share information, let alone respond to letters during his tenure at the pharmacy, perhaps assuming Polemann served as a fine proxy in alleviating Bergius's immediate concerns. But the breakdown in relations with Polemann was more overt, beginning simply with what appears to be disenchantment arising from unclear expectations. 'How much the business has increased' was visible in the fact that all four of the assistants had 'their hands full from morning to night'. He continued,

Instead of otherwise delivering the medicaments to the doctors in quantities which they further dispensed, we now have to dispense them ourselves according to the doctors' instructions. Over-the-counter sales, which were insignificant in your day, also take up a lot of time now...²⁹²

He used this complaint to lament the fact that he and Polemann had not yet had a single botanical excursion together, perhaps another implicit (or even explicit) expectation of his arrangement in the pharmacy. Trying not to abandon the gentlemanly code of correspondence, or even merely general social convention, he digressed: 'in order to protect your friend, I will not complain any further'.²⁹³ While there is no evidence with which to assess the expectations set out by either Lichtenstein or Polemann, likely made in casual conversation rather than formal documentation, these initial appraisals suggest that the experience Bergius was sold by Lichtenstein, and what actually materialized at the pharmacy, did not correspond.

Bergius's discontent continued. Beyond the pharmacy, he became embittered by the change in his domestic circumstances in the Polemann household, which had deteriorated since his arrival. In the same letter, his complaints against the family are already quite serious:

The unbearable lust for domination and the crude language of the enormous housewife and the large, overgrown daughters ... cause some unpleasant moments for an educated European in such circumstances as I am here. My colleague, Herr Matthießen puts up with that with his all too great temperament; but I cannot submit to it, and must not ... I am not able to keep myself completely within the bounds of tolerance.²⁹⁴

²⁹² Ibid., Bergius to Lichtenstein, 1 April 1816, Blatt 54.

²⁹³ Ibid.

²⁹⁴ Ibid.

Unpleasant moments quickly shifted to severe charges. ‘With the best will in the world and with the greatest possible indulgence, I could not win the satisfaction of the family here’, he said regretfully.²⁹⁵ In revealing his intentions to travel across southern Africa to collect, he claimed he patiently put up with gossip, frank remarks, and attacks of ‘the most impudent malice’ because said plans had not yet come to fruition; ‘to this I must ascribe the abhorrent hatred of the two daughters and mother’.²⁹⁶ More insultingly, however, was that Polemann eventually forbade Bergius to continue to dine at the table with the family: ‘should I now humiliate myself ... or should I, even more miserably, submit to the will of the more wretched to be fobbed off like a dog in my room?’.²⁹⁷ Complaints he had previously withheld out of courtesy were now deemed serious enough to relay to Lichtenstein - ‘I could not and should not withhold this unpleasant and outrageous matter from you’ - perhaps signaling his desire that Lichtenstein use his powerful position to intervene in the matter.²⁹⁸ Although Bergius’ criticisms first emerged from the female members of the family, his “maltreatment” eventually extended to include Polemann himself.

In July 1817, Bergius resigned from his position at the pharmacy, intimating “tyrannical” behavior from Polemann toward both himself and Mathießen and suggesting that Polemann’s actions were part of a wider pattern of harm toward his assistants. Bergius took an opportunity to explain the situation to Lichtenstein:

This Herr Matthießen, who has been serving the house for more than 10 years (unfortunately!) with servile skills and incomparable diligence, who ... is admittedly weak in character and devoted to drinking, came to me some time ago, extremely indignant about the treatment of Herr Polemann, who had beaten him for a fact because he had (perhaps while drunk) overpoured a kettle of syrup.²⁹⁹

Not only did Polemann supposedly physically abuse his assistants if he deemed it necessary, but he made use of his own position of power to obstruct Bergius from receiving the remaining wages owed from his work at the pharmacy prior to his resignation. Initially, Polemann had refused to sign Bergius’ contract because of a few small technicalities. Yet when Bergius attempted to go to the authorities to be formally relinquished from his contract and to be reimbursed for wages owed,

²⁹⁵ Ibid., Bergius to Lichtenstein, 1 April 1816, Blatt 56.

²⁹⁶ Ibid.

²⁹⁷ Ibid.

²⁹⁸ Ibid.

²⁹⁹ Ibid., Bergius to Lichtenstein, 28 December 1817, Blatt 62.

the tax authorities said they would not touch his case unless the contract was formally signed by Polemann. In a curious manipulation of trust, Polemann claimed that ‘among honest people no contract was necessary’.³⁰⁰ Unable to claim his wages, Bergius felt it was impossible to go forth with his intended plan to conduct a collecting expedition, because ‘such collections ... are associated with a lot of expenses and risk’.³⁰¹ Thus, he chose not to engage in what he perceived as a precarious transaction, in an attempt to alleviate himself from future distrust or mistrust for sending a disappointing collection to Berlin that may not be reimbursed.

Though it seems obvious that he did not want to be perceived as untrustworthy or unreliable, he criticized the Prussian government for the lack of trust (and money) given to its Cape collectors in comparison to other European collecting outfits. He remarked,

in truth, I feel very small in the Prussian heart when I compare the remittances of the French and English ... [who have] all the latest scientific works, instruments of all kinds, and I believe 30 large boxes with glasses for things in spirits, of which the largest could hold a whole monkey of the largest kind, and who have a thousand other necessary things in great abundance ... and if such aids are also at hand in such a world, then one can imagine the happy success of such a mission.³⁰²

Bergius saw his own position, and perhaps the future of other sponsored collectors, to be a frustration, if not an assured failure, should no more material or financial support be granted from the Zoological Museum and the Prussian state. Again, Lichtenstein’s lack of response did not offer much faith. As Bergius noted, ‘shall I now complain about the lack of news from you and my family? You will be able to gauge my grief over this when I tell you that my most recent letters are still those of May 1816 ... and no answer yet! Is everything dead at home? All sunk? Forgotten everything far away?’.³⁰³ Much like he had previously criticized, Lichtenstein again did not uphold his obligation to stay connected to the suffering Bergius. It is possible Lichtenstein understood Bergius’s 1816 letter to be in poor taste and therefore in opposition to Anne Secord’s analytical assessment of scientific correspondence? What could be inferred is that Lichtenstein perhaps felt he, quite early on, realized he mistakenly misplaced his trust, despite it being based on positive testimony, by sending Bergius to the Cape.

³⁰⁰ Ibid.

³⁰¹ Ibid., Blatt 64-65.

³⁰² Ibid.

³⁰³ Ibid., Bergius to Lichtenstein, 28 December 1817, Blatt 65.

Aside from the unpleasantness in his work and domestic life, ‘more than one cause compels me to leave my present situation as soon as possible, but especially my health, which in this climate I have to guard with more care than is possible now’, Bergius wrote in early 1817.³⁰⁴ He was afflicted with hemoptysis, coughing up of blood or blood-stained mucus when the airway bleeds. Before relinquishing his contract at Pallas & Polemann, Bergius claimed that Polemann thought his affliction simply ‘an empty excuse’ for leaving his so-called contract.³⁰⁵ As much as Polemann allegedly cared little for Bergius’s health complaints, Bergius likewise believed him to be an ‘unworthy and ungrateful counterpart’ considering his ‘loyal and hardworking service’.³⁰⁶ It had been suggested that he travel to Plettenberg Bay to recover, if unable to afford to sail back to the German states. Thus, Bergius took up his previous plan to collect, earlier criticized by the female members of the Polemann family, with the other salaried collectors recently sent by the Zoological Museum, J.L.L. Mund and L.A. Maire.³⁰⁷ This would have given him some financial security, being partially supported by the Prussian state via funds directed to Mund and Maire, and might have allowed him to recover any favor he lost with Lichtenstein. However, within a month of his final letter in December 1817, he met his untimely end from tuberculosis at 28 years old.³⁰⁸

With such a graphic depiction of the social and occupational life of an apothecary-collector, how can we conceptualize the malfunction or deterioration of trust? Because the full picture more than likely does not exist in the archival record, it is impossible for historians to “place blame” on any one actor. But Lichtenstein certainly did so. On reflection in 1823, he lamented,

the poor Bergius who (I could not expect after the favourable testimonials given to me about his practical experiences) was not at all suited for service in Polemann's business, and became a victim of his zeal for natural history. If I had not been so conscientious and careful before engaging him, I would always have had a bad conscience about his early death, and the thousands of unpleasant things experienced by Mr Polemann and his family.³⁰⁹

³⁰⁴ Ibid., Bergius to Lichtenstein, 20 January 1817, Blatt 59.

³⁰⁵ Ibid., Blatt 62.

³⁰⁶ Ibid.

³⁰⁷ Ibid., Blatt 57-58.

³⁰⁸ Ibid., Bergius to Lichtenstein, 28 December 1817.

³⁰⁹ Lichtenstein to Krebs, 3 March 1820, translated in Ffolliott and Liversidge, *Ludwig Krebs: Cape Naturalist to the King of Prussia, 1792-1844* (Cape Town: A.A. Balkema, 1971), 16.

Although Lichtenstein acknowledged his position in the breakdown of relations, despite positive testimony (trust) offered by his peers or acquaintances, Lichtenstein discounts self-blame. Rather, it seems to have shifted onto an apparent mistrust of the allegedly disagreeable Bergius, whereas Lichtenstein's friendly relations with Polemann remained secure. Here, the collector suffered under the weight of an imbalanced trust relationship, but not for the reasons mentioned in the previous section. Although he showed a good aptitude for natural history, and perhaps would have been a good collector under the right circumstances, he was unable to prove himself trustworthy through an accrument of social capital and affirmative interpersonal relations with Polemann, and thus Lichtenstein by proxy. On the other hand, Lichtenstein and Polemann remained relatively unaffected by the deterioration of their situation with Bergius, as power and influence spared both from any reputational or financial damage as a result. The implicit and explicit expectations which seem obvious in his language suggest that trust was perhaps an unwritten contract which underwrote their relationship. In this sense, however, Bergius is simply one casualty in the volatile social and economic worlds of natural history.

Prussia's Salaried Collectors: Mund and Maire

The lugubrious circumstances of Bergius's pharmaceutical employment with Polemann and specimen exchange with Lichtenstein at the Zoological Museum would not be the only headache experienced with Prussia's Cape collectors. Arriving in 1816 via England, high hopes were placed on Mund and Maire in light of the negative updates received by Lichtenstein from the suffering Bergius.³¹⁰ Although they had already shipped two moderate consignments, by 1819 there was some reason to suspect that they were not meeting even the most basic requirements. James Bowie, a botanical collector sent to the Cape by Kew Gardens, intimated that the two Prussian collectors were not fulfilling their duties, suggesting that 'the European garden will benefit little or nothing from their labours'.³¹¹ He also observed that the two collectors had not sent any material to Europe at all in the previous year, a statement which the Museum and the Prussian government recognized,

³¹⁰ Mund and Maire's official instructions. GStAPK, VI. HA, NI Altenstein, K.S.v., A V, 20 (1815), 1-12.

³¹¹ A.M.L. Robinson, 'James Bowie, Botanical Collector, Reports to Sir Joseph Banks', *Quarterly Bulletin of the South African Library*, 20 (1965-66), 91.

too. In the situation that unfolded, it is safe to say that trust was fractured at three levels: between Polemann and the collectors, and between Mund and Maire themselves, and finally between Lichtenstein/the Prussian government and the collectors. For Lichtenstein, these complications could be considered a moral hazard, a term used in economics to discuss a risky collaboration.³¹² Once in an established relationship, one party will not keep their side of the negotiated or presumed bargain and assume action that maximizes their own interests to the detriment of the collaborator. It was clear that Mund and Maire were not satisfying the implicit expectations set out by Lichtenstein, let alone their legal, contractual responsibilities to Prussia, but they were, for a short while, protected from the risks of their engagement, as the Prussian government was held financially accountable for them. While it would be too lengthy to explain the sequence of events in their entirety, a short narrative structure, much like the one given in the case of Bergius above, will be employed to attempt to convey the emotions this situation elicited and to demonstrate how trust faded, and then collapsed entirely.

Frustrations are first detectable in correspondence between Polemann and the collectors. By December 1820, after being granted power of attorney by the Prussian government, Kaufmann and Polemann became the mediators of Mund and Maire's substantial outstanding debt, and liable for the delivery of the collection being prepared for shipment to Prussia.³¹³ Reasoning that the two collectors should do their best to comply with the new directives with 'cooperation and courtesy', otherwise, Polemann threatened, they 'would be embarrassed and deprived of the means of maintenance'.³¹⁴ They also stressed the essential objective of taking best possible care packing the collection so that everything would arrive to Berlin in good condition, 'since the size and beauty of the collection will be your own best legitimation'.³¹⁵ Finally, Kaufmann and Polemann emphasized that no new debts should be accrued without the prior knowledge of Polemann and the Prussian government. Two months later, a lack of response (despite proof of receipt) forced Kaufmann and Polemann to threaten the two collectors: 'because of your silence, we feel compelled to ask you again in the most serious manner to answer our letters. It can only be extremely unpleasant for us and become detrimental to you if you remove the friendly relationship

³¹² Sunderland, *Social Capital*, 1.

³¹³ Ibid., K&P to M&M, 20 December 1820.

³¹⁴ Ibid.

³¹⁵ Ibid.

under which we wish to deal with this matter'.³¹⁶ Between February and May 1821, the eventual responses from Mund and Maire did not inspire much hope that the issue would be resolved quickly or efficiently, with Polemann stating that the 'matter causes us a lot of trouble without foreseeing a conceivable return'.³¹⁷ They complained of a shortage of money (particularly Maire, who had been separated from Mund since October 1819), lack of clothing, and insufficient materials for preserving and packing the collection.³¹⁸ Their varied responses calling for more time and capital incensed Kaufmann and Polemann, who believed their letters had put them 'in great embarrassment and many doubts' about the incomplete details on both the scope of the debt and the extent of the collections.³¹⁹ It seems that Polemann himself had little faith that the two collectors could be trusted to deliver on their explicit, legal obligations to him and the Prussian government.

By June 1821, the lack of confidence that these responses elicited caused Kaufmann and Polemann to 'doubt ... what we should do in this fatal situation', as the instructions expressly stated that no further debts should be incurred until the collection was in hand. Likewise, Polemann quickly recognized that the sum they were given by the Prussian government to satisfy Mund and Maire's creditors would not even cover half of the debt they had accrued, especially after receiving a 4,100 Rixdollar bill from Cape Town merchant George Thomas.³²⁰ Despite attempts by both to ensure they could still be counted on to amass a sizeable (and profitable) collection despite the depressed state of the situation, they both claimed that with more time in the Cape, 'you can be convinced that [we] will do all possible hard work to increase the collection'.³²¹ Yet, this was directly contrary to the instructions stated by the Prussian government, who had officially recalled the collectors, and would only deplete the already minimal capital given to pay off their debts. Polemann reminded the collectors that 'how far the value of your collections stands in relation to the sum of money spent ... it is up to you to justify this to your government' in order to legitimize themselves

³¹⁶ Ibid., K&P to M&M, 1 February 1821.

³¹⁷ Ibid., K&P to M&M, 24 August 1821.

³¹⁸ Ibid., Mund to K&P, 15 February 1821; Mund to K&P, 3 March 1821; Maire to K&P, 30 March 1821; Mund to K&P, 23 April 1821; Mund to K&P, 3 May 1821.

³¹⁹ Ibid., K&P to M&M, 10 June 1821.

³²⁰ Ibid., K&P to M&M, 24 August 1821; Thomas to Polemann, 21 July 1821.

³²¹ Ibid., Maire to K&P, 30 March 1821.

and to avoid being sent to trial both in the Cape and upon their return to the German states.³²² Instead, Polemann booked passage for Maire to accompany the collection on the *Antilope* from Plettenberg Bay, bringing to an end what had become a ‘troublesome, uncomfortable and time-consuming’ business for Polemann, Lichtenstein, and the Prussian government.³²³ Perhaps correct in doubting that this situation would come to any reasonable end, it is clear that that trust was rapidly deteriorating. In his role as the authorized liaison between the collectors and the Prussian government, however, he seemed to still hold out some hope that the collectors would ship the collections on the *Antilope* for Cape Town, either in fear of the threat of legal action or a sort of reinvigorated duty to the state.

Yet, neither Maire, the collection, nor any correspondence came with the *Antilope* in November 1821, ‘so that everything promised disappeared into empty words’.³²⁴ A series of letters from Maire to Polemann suggest that ‘Mund’s negligence and exaggerated thrift’ was actually the primary disadvantage to ‘the collection and which causes more costs than is necessary’.³²⁵ Maire claimed that Mund had left him without money (only 20 Rixdollars per month for maintenance), with no boxes to pack the collection, and with few supplies for preservation, to the extent that much of the collection was being destroyed by beetles, moths, and vermin, threatening to spoil the collection entirely.³²⁶ He complained that when he had ‘to wait so long for money’, he was ‘obliged to cover everything by borrowing’, explaining to Polemann why he personally had accrued such a significant debt.³²⁷ Allegedly in a very depressed state, he pleaded to Polemann: ‘I urge you to make a change here otherwise I cannot exist’. He continued a few months later, even more desperate than before, writing, ‘if you do not want to send me money ... I can do nothing more and have to change my life and seek maintenance. Just free me from this bad life – then I can collect without suffering’.³²⁸ While it is difficult to ascertain how exactly things deteriorated between Mund and Maire themselves, an insight from Scottish missionary George Thom raises suspicion that both were flagrant in their responsibilities. He wrote to Professor of Botany at the

³²² Ibid., K&P to M&M, 10 June 1821.

³²³ Ibid.

³²⁴ Ibid., K&P to Altenstein, 12 July 1822, 5.

³²⁵ Ibid., Maire to K&P, 7 November 1821, 65.

³²⁶ Ibid.

³²⁷ Ibid.

³²⁸ Ibid., Maire to K&P, 22 January 1822, 71.

University of Glasgow, William Jackson Hooker, that ‘the collectors from Prussia ... spent their time in sloth and gaiety in Town’.³²⁹ Polemann believed that the mutual complaints were derived from the fact that their relationship was not precisely defined in their first instructions from Lichtenstein. This interesting point suggests that historians need to move beyond patron-collector relations to instead consider power dynamics between collectors within collecting partnerships.

By July 1822, Polemann felt the need to be completely transparent with the Prussian government about the complicated situation that had unraveled and to justify his own course of action in the matter: ‘even the longest letter cannot give a complete insight into this matter’.³³⁰ Firstly, he explained why he had not forced the issue through judicial proceedings in the Cape. Because his directive was to obtain *sole* possession of the collection, taking Mund and Maire to trial would only publicize the situation, allowing the creditors to make claims upon the collection in repayment for outstanding debt.³³¹ Secondly, Polemann also claimed he was unsure how to handle the incoming information about Maire’s apparent mistreatment by Mund. The two had both complained bitterly about the other’s negligence in such a way that Polemann remained uncertain of how much to believe of Maire’s claims of destitution. After nothing had arrived in the *Antilope*, Polemann seemed to feel almost spiteful toward the two collectors, after having already sent extra funds and supplies, only to be appealed to with renewed demands for more, proving to Polemann that he had been ‘duped’.³³² He went on to say, ‘since they did not come we had to fear that the more we satisfied the demands, the longer the packing of the collection and departure from there would be delayed’, defending his decisions to the Prussian government.³³³ Finally, although he was calm when speaking to Altenstein in retrospect, his letter to Maire was rather less than sympathetic. It was to their ‘greatest annoyance and sorrow’ that nothing had appeared in the *Antilope*, causing Polemann to ask, ‘who can be patient? Who would not tire of doing more under these circumstances?’.³³⁴ Although he freely confessed ‘that Mund is largely to blame for the fact that the collection did not’ arrive in the *Antilope*, it did not stop Polemann from reprimanding

³²⁹ Glen and Germishuizen, *Exploration*, 309.

³³⁰ Ibid., K&P to Altenstein, 12 July 1822, 8.

³³¹ Ibid., 2-3.

³³² Ibid., 7.

³³³ Ibid.

³³⁴ Ibid., K&P to Maire, 30 May 1822, 73.

Maire using the language of trust.³³⁵ ‘You have already experienced how much depends on maintaining the trust of the public and of acquaintances through love of truth and gratitude’, he claimed, suggesting that if Maire ‘had worked diligently, [he] would have acquired the confidence of the Prussian government but also people would have seen [him] as hardworking and industrious’.³³⁶ Instead, Maire’s ‘wicked tongue’ was the main reason that he was ‘cut off the support of most of the people there and for whom everyone was afraid’.³³⁷ In a separate letter, Polemann likewise admonished Mund acting ‘irresponsibly’ against Maire, claiming that he ‘left Maire completely alone so far without support! Without an order of what to do! What and how to pack!’ and blamed him personally for the delay in receiving the collection.³³⁸ Polemann’s statement shows explicitly how the cultivation of trust directly affected a collector’s reputation, but also that Polemann knew he held the power to influence that reputation.

After making as much of the situation known to Altenstein as was in his power, by August 1822 Polemann was placed in a ‘critical position’ by the Prussian government, who found Mund and Maire completely disobedient and were upset that they had ‘allowed [them]selves to be ... fooled’ by the promises made by the collectors.³³⁹ Affirming that their mission in the Cape was ‘absolutely ... without any success’, the Prussian government resolved to leave Mund and Maire ‘to their own fate’, leaving them wholly responsible to their creditors to satisfy any and all contracted debts.³⁴⁰ Moreover, if they failed to deliver the collection to Prussia, they would publish an announcement which threatened to discredit them entirely: a warning to the public exposing Mund and Maire’s noncompliance and a deterrent against buying their collections should they attempt to sell it.³⁴¹ ‘We are sorry to seize them, but it is your own fault and you have to ascribe your condition to none other than yourself’, they continued, piling on the further threat of legal action upon their return to the German states for all the trouble they had caused. The Prussian government made sure to condemn, both publicly and privately, Mund’s character: ‘he has given new evidence of his

³³⁵ Ibid., 74.

³³⁶ Ibid., 75.

³³⁷ Ibid., K&P to Maire, 30 May 1822, 75.

³³⁸ Ibid., 88-89.

³³⁹ Ibid., Altenstein to M&M, 10 August 1822.

³⁴⁰ Ibid., Polemann to Rex, 16 August 1822.

³⁴¹ Ibid., Altenstein to M&M, 10 August 1822.

carelessness, which transcends all limits, and of his insensitivity...'.³⁴² Much like a disappointed parent, Altenstein wrote: 'it is lamentable that a man like you, Herr Mund, whom nature has endowed with so distinctive goodnesses, leaves them so unused for his own good and that of his fellow men; your talents lay fertile ground that will not be atoned for!'.³⁴³ Not only were their reputations blemished in Prussia, but George Thom insinuated that they were 'now sunk lower than any Colonist' in the Cape, as well.³⁴⁴ By proving themselves untrustworthy collectors, and for putting Polemann and the Prussian government through such a dilemma, Mund and Maire's reputation was thus annihilated.

Without a thorough rendering of Mund and Maire's movements and actions between 1818 and 1820, or more accurate receipts with proof of their spending, it is difficult to ascertain their own opinions or what exactly they were doing alongside collecting, forcing us to see this situation through the lens of Polemann and the Prussian government, i.e., positions of power. Yet again, neither Polemann nor Lichtenstein's reputations seem to have suffered from what was certainly a well-known scandal in the Colony, although it is entirely possible to conceive that the situation caused damage to Prussia's scientific reputation in the Cape. What is surprising is the continued trust that the Prussian government had in Lichtenstein after such a financially and emotionally draining state of affairs, as they renewed funds for him to send salaried collectors to other parts of the world under the same scheme. Though with Bergius it was unclear what expectations Lichtenstein had and whether he was fulfilling them, Lichtenstein made it clear that there *were* responsibilities Mund and Maire were not satisfying, when he plainly stated that 'Mund and Maire, of whose knowledge and goodwill I had good hope, have not come up to expectations', indicating that there were some sort of mutually understood obligations between the patron and collector prior to their arrival in the Cape.³⁴⁵ In this case, trust was employed firstly as an obvious and highly utilitarian tool which Polemann applied to remind Mund and Maire (sometimes forcefully) of their obligations, giving extra weight to the expectations placed upon them. Here, trust seemed to have acquired contractual traits. Similarly, Polemann's act of transparency in handing over the entirety of correspondence to the Prussian government ensured the security of his reputation, as regular,

³⁴² Ibid., Altenstein to K&P 31 March 1824.

³⁴³ Ibid., Altenstein to M&M, 10 August 1822.

³⁴⁴ Glen and Germishuizen, *Botanical Exploration*, 309.

³⁴⁵ Lichtenstein to Krebs, 3 March 1820, *Ludwig Krebs*, 16.

formulaic, and systematic organization of correspondence all contributed to the promotion of trust.³⁴⁶ Finally, the language of trust (or mistrust) was used consciously and skillfully in this episode, particularly because there were clear hierarchies and insecurities, like in the deterioration of relations between Mund and Maire themselves. While the events of these two brief anecdotes are obvious examples of declining relations, looking at the language of trust allows us to see the richness and changeability of trust in this scientific milieu, as well as what these historical actors considered as essential in natural history partnerships, historical moments which are often taken at face value.

Introducing the ‘Entrepreneurial’ Collector: Ludwig Krebs

After the complications with Bergius and the misadventures of Mund and Maire, Lichtenstein had given up hope of another collecting enterprise in the Cape, sending no further collectors to the region. However, a new chance at obtaining natural history specimens was made possible when Ludwig Krebs of Wittingen offered his services. To replace Bergius after his withdrew from his contract, Krebs came to the Cape in 1817 as an assistant at Polemann’s pharmacy, likely recommended through the Hamburg apothecary Versmann.³⁴⁷ Although Krebs had no formal botanical or zoological training, he collected in his spare time with people like Polemann, Bergius, Mund and Maire, Bowie, Clemenz Wehde mann, and Carl Ludwig (later Baron von Ludwig). In planning for permanent employment after the termination of his contract in 1821, he implored his brother Georg, a physician in Berlin, to send Lichtenstein a letter with a small, selected collection of insects and birds in the hope of being taken on as a collector.³⁴⁸ Positive testimonials about his work ethic and character were offered by Polemann, which inspired ‘unusual confidence’ in Lichtenstein that, finally, he may have a successful venture in the Cape.³⁴⁹ ‘You know yourself how much bad luck I had with my plans to obtain nature products from a country where I spent

³⁴⁶ Michael Jucker, ‘Trust and Mistrust in Letters: Late Medieval Diplomacy and Its Communication Practices’ in Schulte, Mostert and van Renswoude (eds.), *Strategies of Writing: Studies on Text and Trust in the Middle Ages* (Turnhout: Brepols, 2008), 213-236.

³⁴⁷ This became particularly vital after the pharmacy secured a contract to supply all civilian medical institutions in the Colony in 1827, ensuring a relatively secure stream of business, WCARS, KAB, A 2395, 53.

³⁴⁸ Ffolliott and Liversidge, *Ludwig Krebs*, 15.

³⁴⁹ Lichtenstein to Krebs, 3 March 1820, *Ludwig Krebs*, 15-16.

four happy years in its rich nature’, Lichtenstein admitted, alluding to the ongoing misfortune with Mund and Maire, which was not unknown in the Colony.³⁵⁰ He was thus willing to grant Krebs an official letter of recommendation, appointing him to the grandly titled position of ‘Cape Naturalist to the King of Prussia’, and provided him with a contract to assemble twelve consignments of natural history specimens. Krebs, for whom the only contractual condition was to collect for the exclusive benefit of the Berlin Zoological Museum, was to be paid per specimen collected according to prices drawn up by Lichtenstein.

The situation with Mund and Maire had proved so disappointing that the Prussian government had almost given up the idea to send out collectors from here, and it is preferred to use the available monies to support men, who live in far off countries, in their scientific efforts by taking, against suitable payment, objects collected by them and to safeguard, against their future return, the revenue and wages of their efforts.³⁵¹

It is in this suggestion that we see Krebs, and later Christian Ecklon, Karl Zeyher, and Carl Friedrich and Johann Franz Drège, embracing a new mode of collecting and representing a shift in the way that natural history collecting in foreign and colonial outposts could be conducted. In Karl Presl’s *Botanische Bemerkungen* (1844), he reflected that the peace that accompanied the end of the Napoleonic Wars, the (re)opening of shipping routes, and cheaper travel served as an impetus for the development of the *unternehmenden Botanikern*, or “enterprising botanist”.³⁵² Rather than needing the direct financial support of governments, museums, and private individuals (the kind which Mund and Maire had enjoyed), his remarks point to a decidedly entrepreneurial spirit in collecting, a kind of commercial materialism which, as will be discussed in Chapter Five, led to a number of errors, synonyms, and disputes for those doing the ‘very unpleasant business to compare, confirm, or improve the determinations’ of plants in the herbaria brought back.³⁵³ While Presl refers simply to the botanist, the concept as an analytical tool has been adopted and expanded by Tomimi Kinukawa to include the naturalist writ large. She argues that entrepreneurial naturalists ‘understood the process of commodifying nature at the intersection of the learned world and the commercial world’, boundaries which apothecaries and horticulturalists had been subtly

³⁵⁰ Lichtenstein to Krebs, 3 March 1820, *Ludwig Krebs*, 16.

³⁵¹ Lichtenstein to Krebs, 3 March 1820, *Ludwig Krebs*, 16.

³⁵² Karl Bor. Presl, *Botanische Bemerkungen* (Prague: Gottlieb Haase Söhne, 1844), 3

³⁵³ *Ibid.*, 6.

navigating since the early modern period.³⁵⁴ Thus, Krebs is a transitional figure: well-positioned for this disruptive shift, one which ‘violated the codes of the collecting community’ and actively promoted the commodification and colonization of nature.³⁵⁵ They were not interested in making imperial nature governable, they merely wanted to make it collectable and commercial.

The emergence of the “entrepreneurial” naturalist was a way to stabilize the inherent dangers in interpersonal and economic trust relationships and offered an opportunity for young collectors to establish a reliable reputation both in the metropole and abroad. They often occupied a liminal space; they could sell specimens commercially but also be highly regarded amongst the scientific community for their publications and understanding of local flora. But the injection of money into scientific transactions often placed them into ambiguous and sometimes problematic positions.³⁵⁶ After the receipt of a series of consignments for the Museum in 1822, Lichtenstein cheerfully wrote to Altenstein on the success of his exchange partnership with Krebs, praising the quantity and diversity of specimens sent from the eastern districts of the Cape and suggesting that a line of credit be opened for Krebs, which, in lieu of face-to-face contact, served as an abstract signifier of his trust.³⁵⁷ ‘Up to the moment’, Lichtenstein claimed,

none of our collectors, except Messrs Olfers and Sello, have enriched our Museum as much as Mr Krebs has done. There is a shortage of African objects in our Museum, as well as in the other European collections, and therefore the numerous objects remaining in our museum and those that are to be sold are of double value ... this is the most advantageous manner of increasing the Royal collections, and we have succeeded what was intended in the contracts with Messrs Bergius, Freyreiss, Feldner, Franche, Lotsky, and others that failed.³⁵⁸

He reflected that many of these other relationships failed, like with Mund and Maire, due to ‘the impossibility of covering the costs’.³⁵⁹ But in admiring Krebs’ ‘honesty, punctuality and faithfulness [which] hardly leaves room for suspicion’, the suggestion that there was a dearth of African material also meant that there was a continued market for specimens from southern Africa.

³⁵⁴ Kinukawa, ‘Learned vs. Commercial’, 590. See, Kinukawa, ‘Natural History as Entrepreneurship’.

³⁵⁵ Neri, *Insect and the Image*, 106.

³⁵⁶ *Ibid.*, 166.

³⁵⁷ Shapin, *Social History*, 15. Although Shapin uses this to discuss modern forms of trust shifting from personal contact to trust in systems and abstract capacities, I certainly see credit as a ‘modern’ abstraction of trust.

³⁵⁸ Lichtenstein to Altenstein, 3 February 1823, *Ludwig Krebs*, 47-48. Olfers, Sellow, Freyreiss, and Feldner traveled in Brazil and Uruguay; Franche unknown; and Lhotsky in Australia and Tasmania.

³⁵⁹ *Ibid.*, 48.

In this set-up, the initial financial burden was placed on the “entrepreneurial” collector rather than the patron, resulting in the creation of natural history “businesses” predicated on trust, knowledge, and exploitation, but also on the necessity of collectors thinking of their materials, specimens, and labor purely in terms of value, as will be seen in the next chapter. They were also the last generation of collectors before this liminal socio-economic space closed to allow them access to a scientific career in the mid to late nineteenth century.

Conclusion

The work of sociologists, psychologists, and management scholars has produced an instructive, if sometimes confusing and contradictory, template for interpreting the strategic considerations of trust, which can be applied to the history of science quite readily. As both an expressive and logical act, trust has proved somewhat of an elusive concept in history. While the language of trust was certainly calculated, it could also be emotive, demonstrating that emotions have always been enveloped in feelings of trust, mistrust, and distrust in human relationships across time and space. As much as it could be argued that trust is inherently at the center of science, this chapter has shown how emotions, alongside social capital, class, and power, have played a role in the development of natural history, and yet are almost wholly ignored from both the historiography and our own conceptualizations of Western science. By studying the language of trust more closely, much like some historians have done in fields like mercantile relations, we can get a sense of how scientific practitioners understood, and carried out, the unspoken and contractual obligations expected of them in personal and professional relationships. Likewise, we can begin to piece together how human relationships could both essentially help and hinder the “onward march” of scientific progress, a theme which will emerge again in Chapters Four (with objects) and Five (with collections). To put a face on an intangible concept like trust, narratives like those offered in this chapter thus become analytical tools which allow us to highlight people’s intentions or actions in particular historical situations. This not only allows us to make sense of the way in which these scientific practitioners perceived what was important to them in their everyday social relations, but it offers an unusual opportunity to add depth to the social history of science, particularly in a period in which the boundaries of the scientific world were constantly fluctuating.

Those who have taken on the concept of trust in the history of science have mainly focused on how one could *gain* trust through testimony, credibility, and correspondence. However, social relations were altered by the mounting presence of commercial considerations in the scientific world, despite Anne Secord's claim that wide discrepancies in social relations were declared unambiguous by the cash nexus. This is a continued thread from Chapter One, which argued that interactions between the learned world and commercial world were always tense and fraught with judgment. Thus, trust became more difficult to ascertain, attain, and maintain across the social spectrum, placing increasing pressure on collectors to demonstrate the value of their labor, resulting in an economization of social relations. In the case of Lichtenstein, these elements could be seen in the publication of *Verzeichnisse*, or directories of natural history specimens, which allowed him to determine the efficiency of Prussia's salaried collectors while also gaining the trust of the public through transparency about the price of specimens. The trust Lichtenstein cultivated with both the public and the Prussian state gave him a rather unrestricted power in the German natural history community, privilege which he wielded when relations broke down with his collectors Heinrich Bergius, J.L.L. Mund, and L.A. Maire in southern Africa. While the positive and affirmative aspects of trust are apparent, this chapter illustrates the more negative aspects of how trust broke down and how actors in different social classes both handled, and were impacted by, the disintegration of trust. This presents us with more evidence not only about the relationship between patrons and collectors, which is often the focus in historiography, but also between collecting partners of equal social status. Finally, it uncovers the ways in which the Prussian state became heavily involved in what should be considered "colonial" pursuits prior to German nationhood and its own period of formal colonialism.

Importantly, the relative failure of trust in this situation reveals a new way of collecting which has been all but ignored in the wider historiography on the history of science. The "entrepreneurial" naturalist incorporated features from both the learned and commercial worlds, unleashed new power dynamics in formerly uneven scientific relationships, and stabilized the social and economic dangers inherent in "trust" elaborated in this chapter. It also seems to have been a particularly German development, evidence which helps to reinforce the claim made in Chapter One that Germans and their scientific expertise were poised to play a pivotal role in Cape scientific life and

in the British Empire. The next chapter follows this new generation of German “entrepreneurial” collectors, examining how commercial considerations and local conditions fundamentally shaped the establishment of their natural history businesses and their fieldwork experience. It will show *how* exactly their commercial motivations affected their perception of practice, the people they encountered, and the environment which produced their bounty. This establishes a thread about the destructive nature of the collector’s logic, which will be extended through Chapter Four. While this chapter investigated the social relations between state, museum, and collector, the next chapter will focus on the social and material considerations of the field, where they interacted with, and depended entirely upon, local inhabitants and infrastructures in the contact zone. By analyzing the field, an often-overlooked feature of the process of knowledge production much like the concept of trust in social relations, we can better understand the depth of the social and situated worlds of natural history collecting.

Chapter Three

Competition, Collaboration, and Fieldwork in Southern Africa, 1820-1834

'You must find your own way into the interior of Africa without guide posts or signposts'.³⁶⁰
W.L. Sammons, editor of *Sam Sly's African Journal* (1841)

By the end of August 1832, Eduard Drège had become tired of life in the Cape Colony and was disappointed to hear that his brothers, natural history collectors Carl and Franz Drège, intended to stay in the interior collecting for at least two more years. He wrote to Carl pleading, 'change your mind, so that we can all three return home together? I was ready to leave already in early 1833'.³⁶¹ In a separate letter to Franz, he insisted he would only wait until 1834 to return to the German states, but not later: 'I am thirty-one years old now and it is time that we should enjoy life in Europe'.³⁶² He was planning to wait in England, 'while you and Carl turn your collections into cash', and suggested they meet in France for a walking holiday through Switzerland, Tyrol, and the German states to celebrate the completion of their first collecting enterprise.³⁶³ Only three months later, however, a letter from Eduard warned,

you probably know already that Ecklon has arrived here with a collection of plants in order to take these to Germany early 1833. Zeyher will meanwhile make a trip beyond the borders in order to collect. You will probably see therefore that it would be better not to delay any further but sail over with the whole large collection. Please consider that you might have a stroke of bad luck and the collection might spoil if it stored here for a still longer time. Whereupon all the untold effort and labor would not only have been for nothing, but the reward would also be small.³⁶⁴

Although the brothers had been concerned about the threat Christian Ecklon's competition posed in 1825, their skepticism had developed into friendship when their paths crossed collecting in the interior. As quickly as they had become companions in the field, suspicion returned when

³⁶⁰ Alan F. Hattersley, *An Illustrated Social History of South Africa* (Cape Town: A.A. Balkema, 1969), 107-108.

³⁶¹ NLSA, Drège Family Collection, MSC 61.2.265, 4 August 1832. From here, I will omit 'Drège Family Collection' from the citations which fall under MSC.61.

³⁶² NLSA, MSC 61.2.265, WE to CF/JF Drège, 4 August 1832.

³⁶³ Ibid.

³⁶⁴ NLSA, MSC 61.2.266, WE to CF/JF Drège, 18 October 1832.

pondering the impending sale of their specimens in Europe. Eduard concluded, ‘because of you, I would gladly see him stay another twelve months at the Cape’.³⁶⁵ Even Eduard, who remained relatively detached from his brothers’ natural history business working from his watchmaker’s shop in Cape Town, was concerned for the economic and physical viability of the collections his brothers had spent the last four years assembling.

Within the scientific world and capitalist economic systems, it is often claimed that competition drives innovation and progress; however, it can also be hugely exploitative and damaging to both humans and the natural world. Eduard Drège’s sentiments in the above anecdote allude to themes that form the beginning of an arc spanning the next three chapters of this thesis: that commercial competition in Cape natural history collecting was often more destructive than it was progressive. This chapter will examine some aspects of the inner workings of these German natural history collecting enterprises in “the field” in southern Africa. It asks, what did it mean to be an “entrepreneurial” collector? What were the considerations exacted, and practices employed, to safeguard a successful endeavor? How were the logistics of such an enterprise handled? As the last chapter demonstrated, the adverse lessons learned by the relative failure of the Berlin Zoological Museum’s salaried collectors were fundamental in the shift toward a new generation of Cape collectors of German origin. While Hinrich Lichtenstein’s business-oriented approach left him and the Museum with an ambiguous reputation in continental natural history, he did succeed in establishing the precedent that nature could be made collectable and profitable. It will be argued that this altered the mentality of the collector and the practice of fieldwork conducted in foreign environments, expanding the potential for new forms and methods in the study of natural history. Not only will it highlight a diversity of practitioners and aides who occupied spaces like the field, it will show how places are not neutral stages for scientific activities and directly affect how they are carried out.³⁶⁶ Ultimately, it will reveal a more complex picture of the way in which commercial considerations in natural history were executed in the field in the early years of the nineteenth century.

³⁶⁵ NLSA, MSC 61.2.267, WE to JF Drège, 6 March 1832.

³⁶⁶ Rob Kohler, *Inside Science: Stories from the Field in Human and Animal Science* (Chicago: University of Chicago Press, 2019), 3.

The Cape Colony was an attractive place for aspiring collectors and naturalists, mainly in that it offered hospitable access points to the interior of southern Africa. Not only were there established colonial settlements and mission stations which could provide sufficient equipment and supplies to make long-term overland expeditions possible, the numerous ports also quite readily shipped material internally between places like Plettenberg Bay and Cape Town, or externally on to Europe or other parts of the world.³⁶⁷ As a result of the *trekboer* migrations, reinforced by the British settlers of 1820, there was a relatively underdeveloped but distinguishable infrastructure. Attempts to chart the Colony's boundaries and interior in the early nineteenth century, drawn to help facilitate the colonization and exploitation of the Cape's peoples and resources, did not offer much by way of knowledge or assistance.³⁶⁸ Because of this, it will be argued that there was a strong dependence upon, and affinity toward, the white frontier farmers and settlers who offered accommodation, hospitality, and local knowledge.³⁶⁹ Collectors had to act cautiously to stay in their good graces; over-exploiting the generosity of their Boer hosts could result in a denial of access to critical resources or information. This was equally the case with their African guides and servants, with the added threat of their potential desertion from the scientific outfit.³⁷⁰ As Beinart maintains, the 'amalgam of knowledge and techniques' borne out of contact and collaboration between Europeans and Khoekhoe was essential for facilitating travel and interpreting the social and physical geography of the landscape across a variety of languages.³⁷¹ These exchanges were continuously negotiated, underpinning Cape colonial life well into the nineteenth century.³⁷² What Beinart uncovers resembles the spaces of co-production in new historiography on indigenous

³⁶⁷ Although whether you went by English, Dutch, Danish, or German ship was up for debate. Lichtenstein advised Krebs to avoid sending things via England 'because of the greater expense and the danger of total loss'. Lichtenstein to Krebs, 3 March 1820, in *Ludwig Krebs*, 18; Patrick Grogan, "'Nothing but love for natural history and my desire to help your Museum'"? Ludwig Krebs's Transcontinental Collecting Partnership with Hinrich Lichtenstein' in Lengwiler, Penn and Harries (eds.), *Science, Africa and Europe: Processing Information and Creating Knowledge* (London: Routledge, 2019), 67.

³⁶⁸ Dubow, *Commonwealth of Knowledge*, 19. When hard road was built across the Cape Flats in 1845, Cape Town's gaze was able to turn northward and eastward into the interior 'along new liens of contact, control, and commerce'. Norman Etherington, Patrick Harries and Bernard K. Mbenga, 'From Colonial Hegemonies to Imperial Conquest, 18 f40-1880' in Hamilton, Mbenga and Ross (eds.), *The Cambridge History of South Africa*, vol. 1 (Cambridge: Cambridge University Press, 2009), 329-330.

³⁶⁹ Beinart, *Rise of Conservation*, 30.

³⁷⁰ Ibid.

³⁷¹ Ibid.

³⁷² Robert Ross, 'Khoesan and Immigrants: The Emergence of Colonial Society in the Cape, 1500-1800' in Hamilton, Mbenga and Ross (eds.), *The Cambridge History of South Africa*, vol. 1 (Cambridge: Cambridge University Press, 2010), 168-210.

intermediaries and go-betweens which highlights the mobility and agency of non-European individuals or groups who were indispensable to the processes of imperial knowledge production.³⁷³

However, these collectors also relied on the asymmetrical power structures and human exploitation that were, by that point, built into the fabric of Cape society.³⁷⁴ The period in which these collectors were at the height of their activity was extremely turbulent, both in the northern and eastern Cape, resulting in the displacement and fragmentation of numerous African communities and political units. This forced many into the developing colonial labor market, where they were easily exploited with low wages and manual labor by white farmers in the Western Cape and beyond. Unlike Moritz von Brescius' portrayal of the dynamic and fluid hierarchies which emerged within the Schlagintweit brothers' "establishment" in South Asia, African auxiliaries and their labor should be understood more within the Cape's violent imposition of colonial systems of authority as well as the legacies of slavery during the Dutch period.³⁷⁵ Seen in this context, the collectors' general attitudes toward their African assistants fall into place alongside white farmers' prioritization of control and low wages, as they too often complained about the imbalance between rate of pay and perceived amount of work completed. Their mindset was already economically frugal and commercially motivated, falling neatly into the traditional exigencies of the colonial

³⁷³ Simon Schaffer, et. al., *The Brokered World*; Michelle R. Moyd, *Violent Intermediaries: African Soldiers, Conquest, and Everyday Colonialism in German East Africa* (Athens: Ohio University Press, 2014); Cassandra Mark-Thiesen, 'The "Bargain" of Collaboration: African Intermediaries, Indirect Recruitment, and Indigenous Institution in the Ghanaian Gold Mining Industry, 1900-1906', *International Review of Social History*, 57:20 (2012), 17-38; Benjamin N. Lawrance, Emily Lynn Osborn, and Richard L. Roberts (eds.), *Intermediaries, Interpreters, and Clerks: African Employees in the Making of Colonial Africa* (Madison: University of Wisconsin Press, 2006); Felix Driver and Lowri Jones, *Hidden Histories of Exploration* (London: Royal Holloway University of London, 2009); Shino Konishi, Maria Nugent and Tiffany Shellam (eds.), *Indigenous Intermediaries: New Perspectives on Exploration Archives* (Acton: Australian National University Press, 2015); Dane Kennedy, 'Introduction: Reinterpreting Exploration', in Kennedy (ed.), *Reinterpreting Exploration: The West in the World* (Oxford: Oxford University Press, 2013).

³⁷⁴ See: Tim Keegan, *Colonial South Africa and the Origins of the Racial Order* (Cape Town: David Philip, 1996); Susan Newton-King, *Masters and Servants on the Cape Eastern Frontier, 1760-1803* (Cambridge: Cambridge University Press, 1999); Wayne Dooling, *Slavery, Emancipation and Colonial Rule in South Africa* (Athens: Ohio University Press, 2007); Richard Elphick, *Khoikhoi and the Founding of White South Africa* (Raven Press: Johannesburg, 1985); Robert Ross, *Cape of Torments: Slavery and Resistance in South Africa* (London: Routledge, 1983); Nigel Worden, *Slavery in Dutch South Africa* (Cambridge: Cambridge University Press, 1985); Nigel Worden and Clifton Crais (eds.), *Breaking the Chains: Slavery and its Legacy in the Nineteenth Century Cape Colony* (Johannesburg: Witwatersrand University Press, 1994); Clifton C. Crais, *White Supremacy and Black Resistance in Pre-Industrial South Africa: The Making of the Colonial Order in the Eastern Cape, 1770-1865* (Cambridge: Cambridge University Press, 1992).

³⁷⁵ Moritz von Brescius, *German Science in the Age of Empire: Enterprise, Opportunity and the Schlagintweit Brothers* (Cambridge: Cambridge University Press, 2019), ch. 5.

system; they considered their African labor as simply one further cost or commodity that made up the expenses of the larger enterprise.³⁷⁶ Alcohol, another brutal legacy visible in natural history collecting, was an alleged “problem” in employing African assistants. Ultimately, these collectors’ relationship to African labor offers a path to include natural history collecting into the wider historiography on the violence of the colonial labor market in the Cape Colony and provides a counterpoint to other more fluid racial and professional hierarchies that existed in collecting enterprises across the globe.

Studying the mechanics of small, independently organized (and financed) collecting parties, or studying natural history “businesses” such as the kind undertaken by Ludwig Krebs and the Drège brothers, offers a challenge to traditional ideas of African “exploration” and a fresh way to examine the confluence of social, cultural, and political factors in the early nineteenth-century Cape Colony. Because they were not “explorers” in the conventional sense, nor did they publish travel accounts based on their expeditions, they fall outside of the established boundaries of how historians have typically characterized European exploration of Africa. The historiography tends to focus on large-scale, state-sponsored scientific expeditions, or singularly on the “heroes” that helped to popularize African exploration.³⁷⁷ In studying South African exploration, Siegfried Huigen has argued that existing literature broadly follows two approaches: on the one hand, in older studies, a positivistic reconstruction of the routes followed by expeditions, and on the other, a postcolonial accusation

³⁷⁶ Cornelia Essner, ‘Some Aspects of German Travellers’ Accounts from the Second Half of the 19th Century’, *Paideuma: Mitteilungen zur Kulturkunde*, 33 (1987), 200.

³⁷⁷ This is perhaps due to the wide availability of published source material. For some examples, see: Joanna Lewis, *Empire of Sentiment: The Death of Livingstone and the Myth of Victorian Imperialism* (Cambridge: Cambridge University Press, 2017); Dane Kennedy, *The Last Blank Spaces: Exploring Africa and Australia* (Cambridge: Harvard University Press, 2015); Dane Kennedy (ed.), *Reinterpreting Exploration: The West in the World* (Oxford: Oxford University Press, 2014); Dane Kennedy, ‘Forgotten Failures of African Exploration’, *Public Domain Review* (2015), accessed 26 April 2021, <https://publicdomainreview.org/essay/forgotten-failures-of-african-exploration>; Felix Driver, *Geography Militant: Cultures of Exploration and Empire* (Oxford: Blackwell, 2001); Felix Driver, ‘Distance and Disturbance: Travel, Exploration and Knowledge in the Nineteenth Century’, *Transactions of the RGS*, 14 (2004) 73-92; Felix Driver and Lowri Jones, *Hidden Histories of Exploration: Researching the RGS-IBG Collections* (London: Royal Holloway, 2009); Felipe Fernández-Armesto, *Pathfinders: A Global History of Exploration* (Oxford: Oxford University Press, 2006); Robert A. Stafford, *Scientist of Empire: Sir Roderick Murchison, Scientific Exploration and Victorian Imperialism* (Cambridge: Cambridge University Press, 1989); Robert A. Stafford, ‘Exploration and Empire’ in Winks (ed.), *The Oxford History of the British Empire*, vol. 5 (Oxford: Oxford University Press, 1999), 290-302; Robert A. Stafford, ‘Scientific Exploration and Empire’ in Porter (ed.) *The Oxford History of the British Empire*, vol. 3 (Oxford: Oxford University Press, 1999), 294-320.

against colonial representations.³⁷⁸ While the postcolonial turn has rightly ensured that these “heroes” have received more critical treatment, Huigen, Beinart, and Nancy Jacobs have argued that the postcolonial perspective oftentimes fails to recognize that not all aspects of colonial knowledge production were aimed toward extraction and governmentality.³⁷⁹ By looking away from the “heroes” of exploration, and engaging with these actors from a critical standpoint, this chapter will reveal important insights about the relationships between exploration, collecting, and knowledge production in southern Africa.

These “heroic” figures of science and exploration in European imperial mythology were also, importantly, field naturalists. As scholars in the history of science have shifted emphasis from one that privileged ideas and theories to one that incorporates an appreciation for practice, fieldwork offers a conduit by which to explore how men of different social classes engaged with various individuals, social worlds, and institutions to pursue natural history collecting.³⁸⁰ The field was a critical site in the shaping of scientific knowledge, and the relationships and practices so integral to fieldwork are an often overlooked feature of the process.³⁸¹ From the acquisition of specific skills, advice on instruments and books, introductions to local people, hiring servants, and the practical problems of locating, procuring, preserving, and transporting specimens, many of the conditions of fieldwork were not necessarily about producing knowledge and describing flora and fauna. But, as much as these conditions could be a positive force for collaboration and

³⁷⁸ Huigen, *Knowledge and Colonialism*, 26. The account by Pamela Ffolliott and Richard Liversidge on Ludwig Krebs (published in 1971) also broadly follows the positivist approach that Huigen sets out. Ffolliott and Liversidge, *Ludwig Krebs*.

³⁷⁹ Beinart, *Rise of Conservation*, 30; Siegfried Huigen, ‘Natural History and the Representation of South Africa in the Eighteenth Century’, *Journal of Literary Studies*, 14;1-2 (1998), 68-69; Nancy J. Jacobs, ‘The Intimate Politics of Colonial Ornithology in Colonial Africa’, *Comparative Studies in Society and History*, 48:3 (2006), 564-603. Saul Dubow has also warned that important dimensions of South African history risk being occluded or lost if the role of whites is viewed too narrowly in terms of settler colonialism and exploitation. Saul Dubow, *Commonwealth of Knowledge*, 10.

³⁸⁰ Jane Camerini, ‘Remains of the Day: Early Victorians in the Field’ in Lightman (ed.), *Victorian Science in Context* (Chicago: University of Chicago Press, 1997), 354-355.

³⁸¹ See: Henrika Kuklick and Robert E. Kohler (eds.), *Science in the Field* (Chicago: University of Chicago Press, 1996); Robert E. Kohler, *All Creatures: Naturalists, Collectors, and Biodiversity, 1850-1950* (Princeton: Princeton University Press, 2006), chs. 4 and 5; Dorinda Outram, ‘New Spaces in Natural History’ in Jardine, Secord and Spary (eds.), *Cultures of Natural History* (Cambridge: Cambridge University Press, 1998), 249-265; Anne Larsen, ‘Equipment for the Field’, in Jardine, Secord and Spary (eds.), *Cultures of Natural History* (Cambridge: Cambridge University Press, 1998), 358-377; Jane Camerini, ‘Wallace in the Field’, *Osiris*, 11 (1996), 44-65; Charles W.J. Withers and Diarmid A. Finnegan, ‘Natural History Societies, Fieldwork and Local Knowledge in Nineteenth-Century Scotland: Toward a Historical Geography of Civic Science’, *Cultural Geographies*, 10 (2003) 334-353.

companionship, they also spawned competition and bred distrust, motivating collectors to push further afield toward more violent and extractive methods of collecting to prove their worth, as will be seen in the next chapter. These considerations, both positive and negative, undoubtedly dictated the success of a natural history business venture of any size.³⁸² This allows us as historians to better understand their individuality, their approach as collectors, and to make sense of their participation in the larger social endeavor of natural history.

³⁸² Camerini, 'Remains of the Day', 356.



Fig 3.1: A map of the roads and homesteads on the Cape peninsula and its surroundings from Darling and Malmesbury to Hermanus and Stanford, extending to the Cold and Warm Bokkeveld, Genadendal, and Caledon (1893). Although this is nearly 70 years after the period in question, it demonstrates that the Colony's roads and infrastructure, even in the most densely populated region, was still sparsely connected. UCT African Historical Maps Collection.

Establishing Competition in Entrepreneurial Natural History Collecting

Carl Drège's letters offer some insight into the development of their natural history "business", expanding on the more entrepreneurial considerations of their experience and adding valuable evidence to the literature on natural history collecting in the nineteenth century more generally. Upon Carl's arrival in 1821, he began collecting seeds, bulbs, dried plant material, and insects with a view to making a profit. He sent the insects to his friend, M.C. Sommer in Altona, who offered to act as Carl's natural history dealer, connecting him to a network of potential customers in the German states.³⁸³ Likewise, botanical specimens were sent to his brother Franz, who had received his horticultural training at Göttingen and subsequently worked at gardens in Munich, Berlin, Wernigerode, and St. Petersburg. Invigorated by the specimens sent by his brother, particularly as he had begun to experience a souring in relations with his present employer, Johann Hermann Zigra in Riga, Franz considered the possibility of the brothers starting their own business in selling and trading specimens of natural history.³⁸⁴ In an 1823 letter, he remarked that 'by sending your plants and seeds you bring me on the idea to start a seed and plant business with your help, which will surely bring in more than you can imagine'.³⁸⁵ Animated by the commercial prospect of Carl's position in the Cape, Franz envisioned a profitable venture, and perhaps one by which they could inveigle themselves into higher echelons of the European scientific community than their present standing. The brothers then set to work defining the parameters of their business, considerations not often documented in the historical record.

To keep the business afloat in the German states, they required a dependable agent who could take care of the shipping, distribution, and financial logistics of their business in Europe, likely someone who operated in the port cities of Hamburg or Bremen. Although Carl had been working with Sommer since 1821, he grumbled, 'I do not like Sommer anymore, he wants everything for nothing'; displaying modest and deferential qualities was an essential prerequisite in establishing

³⁸³ NLSA, MSC 61.1.184, Sommer to Drège, 25 November 1825.

³⁸⁴ NLSA, MSC 61.2.254, CF to JF/WE Drège, 5 November 1824: 'previously you praised your good relations with Zigra and now is it just the opposite'.

³⁸⁵ NLSA, MSC 61.1.205, JF to CF Drège, 10/22 November 1823.

trust, as shown in the previous chapter.³⁸⁶ As Carl's interest was primarily in the collection of animal specimens, Franz proposed sending any and all *naturalia* that were easily preserved and could make it through the arduous journey back to the German states relatively successfully, including insects, bird skins, skins of mammals, shellfish, snails, and minerals.³⁸⁷ Franz likewise instructed Carl on how to be savvy while collecting plant material: 'tubers and bulbous plants bring in the most money, but are the first to be spoiled. Seeds, on the other hand, the yield remains the same, and does not spoil so easily'.³⁸⁸ Until he could join Carl in the Cape himself, Franz suggested he team up with a reliable local botanist who could properly identify the plants prior to shipment and who could help provide a continuous stream of fresh seeds for shipment to Europe. However, in the case that he was unable to have the plants identified beforehand, Carl recommended that his brother invest in Thunberg's *Flora Capensis* to categorize it easily and accurately in Europe.³⁸⁹ Because of Franz's wide network of contacts amongst gardeners and naturalists, he warned of a potentially large turnover if they set their prices at a reasonable rate. Understanding that they would have to potentially compete with Lichtenstein's auctioned specimens at the Berlin Zoological Museum, undercutting prices would be essential in challenging his monopoly on Cape specimens in the German states. Although these are only a few of the considerations the Drèges made in setting up their business, collecting with these in mind limited the number of damaged specimens, thus ensuring a profit and allowing them to build their own reputation as thorough, reliable, and fair collectors.

Their decision, and that of their competitors, to remain solely in the Cape helps to shape our interpretation of their fieldwork experiences and scientific activities. Robert E. Kohler's notion of "resident science" is useful in situating these entrepreneurial collectors, despite his analysis focusing on social scientists and animal behavior scientists who lived with their subjects in the mid-twentieth century. According to Kohler, resident science is

strongly observational, and often open-ended and exploratory. It seeks generalities in patterns of observed particulars more than in deductions from abstract "laws" and theories.

³⁸⁶ NLSA, MSC 61.2.254, CF to JF and WE Drège, 5 November 1824.

³⁸⁷ NLSA, MSC 61.1.205, JF to CF Drège, 10/22 November 1823. NLSA, MSC 61.1.207, JF to CF Drège, 12/24 November 1823.

³⁸⁸ NLSA, MSC 61.1.205, JF to CF Drège, 10/22 November 1823.

³⁸⁹ NLSA, MSC 61.2.254, CF to JF Drège, 11 January 1825. This was perhaps a suggestion he had acquired from other Cape naturalists and collectors, demonstrating local knowledge networks and information sharing.

Resident observers treat the contexts and situations in which they and their subjects act, not as stage settings for actions, but as essential elements of phenomena. Resident science is *coresident*. It is situated, in that observers are themselves present in the situations and actions they observe. And it is *situating*, in that subjects are observed in the natural or social contexts in which they normally act.³⁹⁰

This concept, built upon the extensive inquiries into place and practice in science which have become a defining issue in science studies, emphasizes how science and everyday life – often assumed to be different and separate ways of knowing – are in fact overlapping aspects of the human experience. By the end of 1824, Carl had written Franz and their younger brother Eduard, urging them to travel to the Cape to reside permanently so they could begin to set their plans in motion, elaborating his ideas about their future partnership in the trade. Although the original plan was for one of them to travel to Mauritius, Bourbon, or Batavia to widen the scope of their offerings, this never materialized. The choice to focus on the Cape allowed the Drèges to become “residential” collectors, giving them a stronger grasp of the locally specific habits and life cycles of the Cape’s flora and fauna that drop-in visitors, like Sir Joseph Banks or the Forsters, would not have had time to acquire. Thus, they became the new local experts on Cape flora and fauna.

As the infrastructure of the Colony began to change in the 1820s, English steadily replaced Dutch as the language of administration. Carl made it perfectly clear that if their business was going to succeed, ‘one of the most essential requirements here is a knowledge of the English language, which you will have to try and learn’.³⁹¹ He was forced to remind them in a subsequent letter, ‘do not forget to take lessons in English’.³⁹² This was certainly a logical requirement, in order to be able to communicate effectively with the colonial government and with British residents throughout the Colony. However, it is perhaps surprising that he did not also mention the necessity of learning Cape Dutch, to converse with the Cape gentry in town, the Boers scattered throughout the frontier regions, and the local African assistants, slaves, and laborers who had adopted it. As English naturalist William Burchell noted of his travels in the 1810s, ‘the English language may be said to be quite unknown to the natives beyond the colonial boundary, and even within that line

³⁹⁰ Kohler, *Inside Science*, 2. I’d like to thank Lynn Nyhart for bringing this concept to my attention.

³⁹¹ NLSA, MSC 61.2.254, JF to CF Drège, 5 November 1824.

³⁹² NLSA, MSC 61.2.255, CF to JF/WE Drège, February 1825.

it is very little understood'.³⁹³ Even by 1835, the continued and widespread use of Cape Dutch is confirmed in a letter from Baron von Ludwig, a Württemberg apothecary-cum-tobacco merchant. He apologized for writing in 'such a bad english [*sic*] Style', hoping that his correspondent would 'forgive a foreigner who corresponds chiefly in German or Dutch, and although an english settlement, more Dutch is spoken here as english'.³⁹⁴ Of French Huguenot descent, but born and raised in the vicinity of Hamburg, it is likely that the Drège brothers would have been conversant in the Low German dialect of *Plattdeutsch* spoken in the northern regions of the Netherlands and in the northern German states. They would have therefore likely been familiar with Dutch, certainly to a larger extent than English.³⁹⁵

While they likely thought they had an original idea of starting a natural history business at the Cape, others would enter the market who would ultimately become the Drège's friends and collaborators, but also their primary competitors. In the same year they committed to their business, Carl wrote to Franz inquiring about someone by the name of Zeyher.³⁹⁶ Since 1816, Karl Zeyher of Dillenburg had apprenticed to his uncle Johann Michael Zeyher, head gardener at the ducal gardens of Schwetzingen in Württemberg. He became connected to Franz Sieber of Prague who aimed to open a natural history business in Dresden, sending collectors abroad at his own expense. Sieber offered Zeyher an opportunity to become part of his network of global collectors. Yet, once again, trust in natural history collecting partnerships would be challenged. After collecting together in Mauritius in 1822, Sieber continued on to collect in Australia while Zeyher was sent back to the Cape.³⁹⁷ Returning in April 1824, he reconnected with Zeyher and often botanized with Carl Drège in the vicinity of Cape Town. It was customary that visiting naturalists would be taken to botanize on Table Mountain and Constantia by more relatively local collectors and naturalists. Both Zeyher and Drège entrusted Sieber with their collections, which he then

³⁹³ William Burchell, *Travels in the Interior of Southern Africa*, vol. 1 (London: Longman, Hurst, Rees, Orme and Brown, 1822), 13-14. Burchell interestingly continued that 'to be qualified for judging of the character of these inhabitants, it is not enough to have mingled with the better part of society; the Boors must be heard, the Hottentots must be heard, and the slaves must be heard' and by not engaging with every class of the Cape's inhabitants, many 'incorrect and absurd things' have been written about the Colony.

³⁹⁴ RGBK, DC 58/190, Baron von Ludwig to Hooker, 28 February 1835.

³⁹⁵ For some literature on the languages of the sciences, see: Britt-Louise Gunnarsson (ed.), *Languages of Science in the Eighteenth Century* (Berlin: DeGruyter, 2011); Michael D. Gordin and Kostas Tampakis, 'Introduction: The Languages of Scientists', *History of Science*, 53:4 (2015), 365-377.

³⁹⁶ NLSA, MSC 61.1.207, JF to CF Drège, 12/24 November 1823.

³⁹⁷ RGBK, DC 58/190, Baron von Ludwig to Hooker, 28 February 1835.

promised to reimburse either financially or with foreign plant material once he returned to the German states.³⁹⁸ Sieber seemed to think that he would be such a success that he intended to send two more collectors to the Cape to feed his proposed Dresden business.³⁹⁹ A letter from Franz suggested that, through his natural history contacts, the ‘famous or rather infamous’ Sieber was viewed unfavorably in Europe and that it was no surprise that any money or favors had not been returned.⁴⁰⁰ Sieber continually demonstrated odd behavior, as Baron von Ludwig remarked of Sieber’s visit in Cape Town that ‘his mind was so agitated; that he was constantly in fear to be murdered by the Order of the King of Bohemia (Emperor of Austria)...’.⁴⁰¹ Although the material was available at auction in 1825, Drège and Zeyher’s repayments were never fulfilled, another example of empty promises and the importance of engaging with trusted partners in natural history relationships of any caliber.⁴⁰²

While Drège did not comment directly on the threat posed by Zeyher’s presence as a collector, though the query to his brother may suggest a slight concern, the Sieber-Zeyher partnership was not the only competition they would face in the Cape. He certainly became worried by 1825: ‘two gentlemen are affecting my plans without knowing any thing of them, as they think I know nothing of theirs’, he complained upon the discovery that Ecklon, his friend and colleague at Pallas & Polemann, also intended to go into business collecting *naturalia*; ‘the same idea as mine’.⁴⁰³ Work at the Pallas & Polemann pharmacy seemed to inspire the idea in many of its apothecaries, not just Ecklon and Drège. Around this time, Ludwig Krebs, who had preceded Drège as an assistant apothecary, was nearing the end of his contract to produce twelve consignments of natural history material with the Berlin Zoological Museum. Although Austrian botanist Karl Presl had deemed Sieber as the first of the “enterprising botanists”, the arrangement between Krebs and Lichtenstein forged in 1820 straddled the line between traditional patronage and the new form of “entrepreneurial” collecting.⁴⁰⁴ However, with the help of his brother Georg, Krebs launched his

³⁹⁸ NLSA, MSC 61.1.207, JF to CF Drège, 12/24 November 1823.; Percival H. Kirby, ‘Early Professional Museum Collectors in South Africa’, *South African Museums Association*, 16:2 (1942), 396.

³⁹⁹ NLSA, MSC 61.2.255, CF to JF/WE Drège, February 1825.

⁴⁰⁰ NLSA, MSC 61.4.403, JF to CF Drège, 31 January 1824.

⁴⁰¹ RGBK, DC 58/190, Baron von Ludwig to Hooker, 28 February 1835.

⁴⁰² Anon., ‘Nichtamtlicher Theil. Ecklon und Zeyher’, *Bonplandia*, 5, Nr. 24 (1857), 354.

⁴⁰³ NLSA, MSC 61.2.255. CF to JF/WE Drège, February 1825.

⁴⁰⁴ Karl Bor. Presl, *Botanische Bemerkungen* (Prague: Gottlieb Haase Söhne, 1844), 3-4.

own natural history enterprise out of Berlin in 1827. His years of honest work for the Museum garnered the support of the most influential men of natural history in Berlin: Hinrich Lichtenstein, J.C.F. Klug, Adelbert von Chamisso, D.F.L. von Schlechtendal, and Christoph Friedrich Otto, who promoted his first advertisement as benefactors.⁴⁰⁵ By 1825, Krebs had sent his own memorial requesting to settle between the Koonap and Baviaans Rivers to ‘make collections of natural curiosities’, stating his intent on being a lifetime “residential” collector in the region.⁴⁰⁶ With Ecklon, Zeyher, and Krebs all engaging in entrepreneurial natural history collecting in the Cape, the Drège brothers certainly had competition; the key was to produce consistently well-dried, well-reserved, and reasonably priced specimens to cultivate their reputation.

In what was already a very small scientific community, there were small threats of commercial competition from elsewhere in the Colony. James Bowie, the son of a London seed merchant, had been sent to the Cape as a collector for Kew Gardens in 1816. However, when British expenditure on Kew dropped in the years after the death of Sir Joseph Banks in 1820, Bowie was recalled and dismissed from service. He returned to the Colony in 1827 in the employ of CM Villet but remained an ostensible jack-of-all-trades in the natural history community. Villet operated a botanic garden, menagerie, and natural history dealership, the first of its kind in the Cape, which contained stocks of *naturalia* that were sold both locally and overseas. Even the entrepreneurial collectors like Drège utilized Villet’s business to fulfill specific requests or fill conspicuous gaps for seeds, birds, and on one occasion, two bloubok (*Hippotragus leucophaeus*), now extinct.⁴⁰⁷ Rather than being a competitor *per se*, Baron von Ludwig used his collections of Cape *naturalia* to earn himself a prominent position in his home of Württemberg. After sending a stream of specimens, primarily birds, to Stuttgart’s *Königliche Naturalienkabinett* in the 1820s and 1830s, he was awarded the Order of the Crown from the King of Württemberg and the title of ‘Baron’.⁴⁰⁸ Becoming the self-evident patron of natural history in the Cape, he soon sponsored the

⁴⁰⁵ Georg Krebs, August 1827, *Ludwig Krebs*, 61. Lichtenstein to Altenstein, 11 October 1827, in *Ludwig Krebs*, 61. The Drège’s dealer Raeuper in Hamburg also mentioned an announcement in the *Botanische Zeitung* that a considerable shipment of zoological and botanical material would be dispatched by Krebs arriving in April or May 1831, meaning that the business must have been relatively successful. NLSA, MSC.61.2.288, Raeuper to CF/JF Drège, 23 January 1831.

⁴⁰⁶ WCARS, KAB, CO 3928, 351, 8 July 1825.

⁴⁰⁷ NLSA, MSC 61.8.526, 19 May 1826; NLSA, MSC 61.8.526, 18 October 1831.

⁴⁰⁸ See Frank R. Bradlow, *Baron von Ludwig and the Ludwig’s-burg Garden*, (Cape Town: A.A. Balkema, 1965). Discussions of the collections and his award found at Hauptstaatsarchiv Stuttgart (HstAS), E 14 Bü 1574.

entrepreneurial collectors for requests and worked with them to supply rare plants for his Ludwigsburg Garden and international network of contacts. Finally, George Thom, a Scottish missionary who served in various ecclesiastical leadership positions throughout the Colony, began sending Cape plants to William Jackson Hooker. While he was perhaps not a commercial threat, by 1824 he had noticed that ‘Austria, Prussia and France have collectors here and some are still in the Colony’, mentioning Bowie’s position with Kew and that someone from the British Museum had been collecting shells.⁴⁰⁹ He therefore suggested that Hooker employ a ‘clever, steady, moral and persevering young Scotsman as a collector in Natural History’ for both the Glasgow and Edinburgh Museums, urging that ‘Scotland should not be behind’.⁴¹⁰ In Thom’s case, national interests were paramount to any commercial or social benefits that natural history could provide.



Fig 3.1: An illustration of a Bloubok by Robert Jacob Gordon, 1777-86 (Wikimedia Commons).

⁴⁰⁹ RBGK, DC 58/216, Thom to Hooker, 5 March 1824. My guess is that Thom is talking about English collector Hugh Cuming (1791-1865) whose primary interest was conchology.

⁴¹⁰ Ibid.

The push and pull of friendship and rivalry meant that these men readily exchanged ideas and material, botanized and collected in the field with those who they were “competing” against, men who were also “residential” and “entrepreneurial”, and thus could claim the same status and expertise when it came time to sell the collections in Europe. As will be seen in Chapters Four and Five, although their work stimulated a greater understanding of Cape flora and fauna, the drive of competition equally damaged the Cape’s natural environment and caused taxonomic confusion amongst European naturalists. Between logistical complications, attempts to find trustworthy partners in Europe, and relatively large-scale competition in the Cape, it is no wonder Franz was fully prepared for ‘the event that all this remains just a beautiful dream’.⁴¹¹ However, Carl still held out a sense of optimism for their enterprise, stating to his parents, ‘I hope Franz and Eduard arrive here soon and firmly believe we will be able to make good progress’.⁴¹²

Collecting Practices

Often the starting point for research on collecting and natural history is the museum or herbarium, the repositories that form the final resting place for specimens, to be traced backward to the place of origin. But it is important to analyze the processes by which such material – and its associated data – came to be assembled in the field, together with the influences those practices had on the resulting collections and knowledge they produced. It is now widely accepted that all scientific knowledge is initially the product of some particular material and social locale.⁴¹³ This section will discuss the significance of local circumstances in the collection, storage, and preservation of botanical and zoological material, as well as some of the issues that collectors experienced more widely across global collecting locales. When Krebs offered his services to collect natural history specimens for the Berlin Zoological Museum, Lichtenstein provided detailed instructions on what

⁴¹¹ NLSA, MSC 61.1.207, JF to CF Drège, 12/24 November 1823.

⁴¹² NLSA, MSC 61.2.256, CF to IH Drège, 3 September 1825.

⁴¹³ Kohler, *Inside Science*, 2. General treatments of place and science: David N. Livingstone, *Putting Science in Its Place* (Chicago: University of Chicago Press, 2003), chapter 2; Richard W. Burkhardt, Jr., ‘Ethnology, Natural History, the Life Sciences, and the Problem of Place’, *Journal of the History of Biology*, 32 (1999), 489-508. Robert E. Kohler, ‘Place and Practice in Field Biology’, *History of Science*, 40 (2002), 189-210; Sharon Kingsland, ‘The Role of Place in the History of Ecology’ in Billick and Price (eds.), *The Ecology of Place: Contributions of Place-Based Research to Ecological Understandings* (Chicago: University of Chicago Press, 2010), 15-39.

would fetch the most money at auction, how best to preserve different varieties of plant and animal life, and where to acquire high-valued specimens. These recommendations came from his own experience traveling and collecting in the Cape, but also from his contemporaries in botany, zoology, and entomology at the University of Berlin. He was willing to receive anything that Krebs collected. ‘You need not be too anxious to specialize. All branches of natural science are studied here with the same keenness’, he wrote, emphasizing on multiple occasions that mammals, insects, amphibians, fishes, and birds would all offer equally decent returns.⁴¹⁴ His letters, therefore, provide ample evidence of techniques which enhanced the specimens’ value, both financially and scientifically.

His instructions almost always stressed commercial imperatives over scientific research. After establishing their arrangement, he warned Krebs against collecting plants and insects in the vicinity of Cape Town and Table Mountain, as both had been extensively covered by other collectors in previous decades.⁴¹⁵ Within a year, Lichtenstein was forced to remind Krebs against collecting too close to the city: ‘the usual birds, mammals and insects from the surroundings of Cape Town have very much gone down in price, because of the frequent consignments from there’.⁴¹⁶ Lichtenstein advised Krebs, like he had Mund and Maire years earlier, to settle near Plettenberg Bay, Algoa Bay, or Uitenhage, because ‘as soon as you go beyond the Hottentot [Holland] Mountains, everything you collect will have a much higher value’.⁴¹⁷ Not only did locality determine rarity and worth, but also how the specimens were interpreted by the collector *in situ*. The more details a collector could provide, the easier it was for metropolitan naturalists to offer it a taxonomic name, thus increasing its monetary value. Because Krebs had been trained as an apothecary, he had very little formal training in natural history – but what he did have was local knowledge and access to that knowledge. Perhaps a result of rather insufficient training, he had a limited view of his role as a collector in the field: ‘it is not the main work of the collector to classify all the new objects offered by him ... One must therefore limit oneself in most cases to locality, habit, season and the local names (if any)’.⁴¹⁸ Lichtenstein’s directives in this regard were rather contradictory. He wrote

⁴¹⁴ Lichtenstein to Krebs, 3 March 1820, *Ludwig Krebs*, 16-17, 27-28.

⁴¹⁵ Lichtenstein to Krebs, 3 March 1820, *Ludwig Krebs*, 16.

⁴¹⁶ Lichtenstein to Krebs, 21 March 1821, *Ludwig Krebs*, 27-28.

⁴¹⁷ Lichtenstein to Krebs, 21 March 1821, *Ludwig Krebs*, 28.

⁴¹⁸ Krebs to Georg Krebs, 2/3 October 1820, *Ludwig Krebs*, 24.

to Krebs, ‘your collections will be of more value when you add exact notes about location, occurrence, seasons and other simultaneous finds’.⁴¹⁹ Although Krebs followed instructions carefully, Lichtenstein often ignored his lists recording such details, instead assigning his own, often inaccurate labels and descriptions to specimens.⁴²⁰ Despite these inaccuracies, it seems as though Lichtenstein had very little trouble offloading specimens from the numerous consignments sent by Krebs. From a present-day perspective, Lichtenstein’s labeling practices certainly call into question the provenance of all of Krebs’ specimens, but the exact source of specimens sent by the Museum’s other collectors as well.

While birds, mammals, insects, and plants receive the most treatment in academic work on collecting and fieldwork, Lichtenstein’s brief emphasis on packing and preserving fish seems particularly striking.⁴²¹ Peter Davis has argued that the two principal techniques of fish preservation – dry and immersion into alcohol – have, with only minor modifications, remained standard practice for over three hundred years.⁴²² Both wet and dry techniques were applied across the preservation spectrum, more of which will be seen in the next chapter. It is marked that Lichtenstein’s advice for collecting fish was simply to purchase them from local fishermen. He suggested waiting in the Malay Quarter (today’s Bo-Kaap district) until they arrived back with their daily haul and to ‘select the largest and nicest specimens of each type at market prices’.⁴²³ Krebs could thus ‘collect one week of material of 100 mark value, at an expense of not more than 10 marks’, allowing him to save his energy collecting specimens which required more time. As soon as possible after purchase, Krebs was to

throw them immediately, after a light wash in sweet water, - but not cleaned out – in a barrel of knyp, continue this for a few days until the barrel is full and then wrap every fish into a separate rag, pack this into an empty barrel tightly, have the bottom put in and pour in good spirits through the bung hole, very slowly, so that it goes well in and does not trap air inside. When you are convinced that the barrel is quite full, hit in the bung, caulk it and you can be quite sure that it will arrive here very well preserved, particularly if you take

⁴¹⁹ Lichtenstein to Krebs, 3 March 1820, *Ludwig Krebs*, 16.

⁴²⁰ Grogan, ‘Collecting Partnership’, 76; Zool. Mus. SI, Krebs, Mappe IV, Blatt 1, ‘Über die von Ludwig Krebs 1820-1838 in Süd-Afrika gesammelten Vögel von Erwin Stresemann (1954).

⁴²¹ For example, see MacGregor (ed.), *Naturalists in the Field*.

⁴²² Peter Davis, ‘Collecting and Preserving Fishes: A Historical Perspective’ in MacGregor (ed.), *Naturalists in the Field: Collecting, Recording and Preserving the Natural World from the Fifteenth to the Twenty-First Century* (Leiden: Brill, 2018), 152.

⁴²³ Lichtenstein to Krebs, 3 March 1820, *Ludwig Krebs*, 17.

the precaution of fastening thin wooden slats between each layer of fish, which keeps them in position and allows the spirits to penetrate more completely.⁴²⁴

This method of preserving fish could also be applied to amphibians and small mammals, but Krebs had to ensure that all specimens were ‘fresh when they go into spirits, and that they have not started to rot’, spoiling the entire barrel.⁴²⁵ In order to save space, Lichtenstein recommended placing snails, mollusks, and small sea animals between the layers. This method for preserving fish was essential for Krebs. Not only did mastering the craft of packing a barrel properly ensure a high return, but it also formed the basis for preserving other types of specimens

Yet, there were several dangers with this method. Davis is quick to point out that while the limitations of the containers and inadequate seals account for the loss of many collections in this period, the unstable nature of alcohol was also a risk due to its tendency to evaporate, leaving the specimens unprotected.⁴²⁶ Likewise, if the alcohol content was not strong enough, the integrity of the specimens would be compromised, becoming rotten, warped, or dissolving entirely. Lichtenstein recommended “knyp”, the Cape Dutch phrase for Arrack produced in South and Southeast Asia. Its two most popular styles were Ceylon Arrack, made from palm sap, and Batavia Arrack, distilled from molasses, and were a popular “luxury spirit” of the Dutch and British colonies.⁴²⁷ It seems that Arrack and Cape brandy could be used interchangeably as the best method for alcohol preservation due to their high alcohol content, but both were expensive to purchase in Cape Town. ‘It is a pity alcohol is so expensive at your end’, Lichtenstein wrote to Krebs, suggesting the use of Cape brandy, ‘which on account of its bad taste, is not much appreciated otherwise, and yet is fairly strong’.⁴²⁸ The production of Cape brandy was still relatively variable in this period though. After sending a shipment of specimens to Lichtenstein,

⁴²⁴ Ibid.

⁴²⁵ Lichtenstein to Krebs, 3 March 1820, *Ludwig Krebs*, 17.

⁴²⁶ Davis, ‘Fishes’, 160.

⁴²⁷ David Wondrich, *Punch: The Delights (and Dangers) of the Flowing Bowl* (New York: Penguin, 2010), 105-110 and David Wondrich, ‘Rediscovering the World’s First Luxury Spirit: Batavia Arrack’, accessed 30 March 2021, <http://www.bythedutch.com/batavia-arrack-2/first-luxury-spirit/> and David Wondrich, ‘The Rebirth of an Essential Cocktail Ingredient’, accessed 30 March 2021, <http://www.bythedutch.com/essential-cocktail-ingredient/>.

⁴²⁸ Lichtenstein to Krebs, 21 March 1821, *Ludwig Krebs*, 29; Polemann published a treatise which he presented to the Cape Wine Trade Committee entitled *Hints on the making of brandy and the improvement of common Cape Brandy, with some introductory observations* (Cape Town: Government Press, 1826). This strikes me as an interesting intervention from an apothecary (a chemist by trade) who had ideas about how to improve the variability and taste of Cape brandy to make it taste better, and thus more profitable for the Colony. NLSA, GC, A.Dup.2922.

Heinrich Bergius fretted over certain wet specimens he had sent, claiming, ‘I was informed some time ago that our ordinary Cape brandy wine does not have the strength required for conservation’.⁴²⁹ By accident he broke a small jar containing a new fish species, which turned ‘immediately rotten’ when exposed to air. Although there were certainly risks involved in wet preservation, it was nonetheless one of the preferred methods of specimen storage and shipment during this period.

However, the commercial value of fish, amphibians, and small mammals was not nearly as high as the skins of birds and larger mammals. ‘As soon as one has learned to practice the few necessary tricks, nothing is more profitable than such bird skins’, wrote Lichtenstein, with a warning that bird skins must be treated differently and ‘must be skinned scientifically’.⁴³⁰ Krebs had received some advice and training from French naturalist Pierre Delalande, the son of a taxidermist later employed by the *Muséum d’Histoire Naturelle* in Paris to collect in South Africa from 1818 to 1821, who had a special penchant for the skinning and preservation of bird skins.⁴³¹ Although Krebs sent 92 bird skins with his first consignment, Lichtenstein’s response reveals a disappointment with the state of the material, requiring him to send further instructions on ‘how we like things best’.⁴³² It was necessary that

the birds and animals are packed smooth and straight. Each one must be specially wrapped in paper. The best way to do this is to roll it first into a paper cylinder and then pull it forward a little by its beak so that the feathers lie properly backwards. Now you close the roll at either end. Crooked necks and wings are disadvantageous because the feathers get bent and cracked; the marks of which can never be covered up. Therefore the length of the case must be the length of the longest bird, so that it can lie in it fully stretched out. Only storks, flamingoes, etc. can, if necessary, be packed with their legs folded.⁴³³

Lichtenstein recommended using oakum for filling and spacing, as other materials were more difficult to obtain. Oakum served a two-fold purpose in the packing of natural history material, both as the soft filling between the paper-wrapped bird skins, but also for the caulking the joints of the case after it was sealed, painted over with tar.⁴³⁴ His commercial motives resulted in an

⁴²⁹ Zool. Mus. SI. Bergius, C.H., Blatt 58-59, Bergius to Lichtenstein, 20 January 1817.

⁴³⁰ Lichtenstein to Krebs, 3 March 1820, *Ludwig Krebs*, 17.

⁴³¹ Lichtenstein to Krebs, 21 March 1821, *Ludwig Krebs*, 28.

⁴³² *Ibid.*

⁴³³ *Ibid.*

⁴³⁴ Lichtenstein to Krebs, 21 March 1821, *Ludwig Krebs*, 28-29.

ecologically disturbing directive, as Lichtenstein advised Krebs to ‘shoot whatever carries feathers, whether beautiful or ugly, young or old, it makes no difference’.⁴³⁵ These strict instructions ensured that profit and enriching the Museum were prioritized ahead of any sort of environmental or ecological considerations.

While there were always concerns about packing specimens in spirits, and placing those and animal skins into protective cases, the main issues these collectors faced was insect damage. Insect damage could occur both within the cases, where insects destroyed specimens-in-preparation, but also in the wild due to local environmental circumstances. In 1816, Bergius complained of the overwhelming damage that ‘moths, cockroaches, various beetles and other vermin’ had inflicted on the *Bathyergus suillus* (Cape dune mole-rat) and *Hyrax* (Cape dassie) he had been preparing for shipment.⁴³⁶ Carl Drège also suffered at the hand of insects, remarking that after one particular hunt, ‘all large skins were later completely eaten by the moths, so that we had to throw them all away’.⁴³⁷ In one instance he described his method for preventing the ‘black predatory beetles, fond of going for fat, the *dermestes cadaverinus*’ from destroying animal material.⁴³⁸ After the beetles gnawed on a wolf, jackals, wildebeest, and several other animal skins in their possession, he explained:

Since I keep a lot of mercury sublimate from the pharmacy; acts as a poison more violent than arsenic, so it is believed to no longer hold back the predatory insects, I used it with ammonia dissolved in the water, rubbed the skins heavily. On the contrary, arsenic soap is always the best preservative. I never lost a fur rubbed with arsenic through insect caused damage.⁴³⁹

While Drège was experimenting with new techniques for preventing insect damage, Krebs noticed that insects were not merely a problem for the skins already collected, but also for the material yet to be collected. Drought was always a potential problem for collectors in southern Africa, shifting the equilibrium of the natural environment. While collecting along the Orange River, he lamented

⁴³⁵ Lichtenstein to Krebs, 21 March 1821, *Ludwig Krebs*, 28.

⁴³⁶ Zool. Mus. SI. Bergius, C.H., Blatt 54-55, Bergius to Lichtenstein, 1 April 1816.

⁴³⁷ NLSA, MSC.61.8.526, 20 March 1830.

⁴³⁸ At the Natural History Museum in South Kensington, they actually have colonies of these flesh-eating beetles in order to strip meat from new specimens and to clean the skeletons. ‘The Natural History Museum in Lockdown: Flesh-Eating Beetles and Exploding Fossils’, accessed 31 March 2021, ‘<https://www.nhm.ac.uk/discover/the-natural-history-museum-in-lockdown.html>’.

⁴³⁹ NLSA, MSC 61.8.526, 19 November 1829.

to Lichtenstein that ‘the drought in these districts was very severe and the locusts had eaten everything – including a few new types’.⁴⁴⁰ Even though Drège had devised his own system of protection against insects – albeit a potentially lethal one not just for the insects – they were all often left with the hope that they had cleaned, preserved, and packed each crate with precision so as to avoid losing their valuable cargo.

Hospitality, Assistance, and Local Knowledge

Frontier hospitality was essential to the success of small overland collecting parties such as those of Krebs and Drège. In both cases, they blended rather seamlessly into the Cape frontier lifestyle, raising questions about their sensibility and affinity within a widening British settler colony. Naturally, Lichtenstein suggested that Krebs look in on his old acquaintances, von Buchenroder and Knobel, who, ‘out of old friendship towards me, will offer you their assistance’.⁴⁴¹ He also insinuated that a great number of colonists would take an interest in Krebs as Lichtenstein’s protégé because, ‘as an author, [he] defended the moral character of the African Boer against Barrow’s invectives’.⁴⁴² To be given a welcome reception from the frontier Boers was crucial, as they were able to offer accommodation, supplies, and local knowledge in return for medicaments, which both Krebs and Drège sold or bartered on their travels. Drège detailed what a friendly reception looked like as a traveler among a familiar Boer household. Upon encountering the family of Hermanus du Preez, who he often lodged with in the vicinity of the Hex River, he explained that only when the family has accepted you as their own can you confidently refer to younger members as *Neef* (cousin), and the older members as *Oom* (uncle) and *Tante* (aunt), or if they refer to themselves as such first. Remaining foreign to the family, ‘especially English’, a traveler would always be greeted as *Myn Heer* or *Myn Frouw*.⁴⁴³ Even in times of hardship, Krebs was quick to

⁴⁴⁰ Krebs to Lichtenstein, 1 September 1828, *Ludwig Krebs*, 68.

⁴⁴¹ Lichtenstein to Krebs, 21 March 1821, *Ludwig Krebs*, 27.

⁴⁴² Lichtenstein to Krebs, 21 March 1821, *Ludwig Krebs*, 27; John Barrow, *An Account of Travels into the Interior of Southern Africa, in the Years 1797 and 1798* (London: A. Strahan, 1801), 77-78. A short extract of these ‘invectives’ illustrates Barrow’s contempt of the Boers: ‘Unwilling to work, and unable to think; with a mind disengaged from every sort of care and reflexion [*sic*], indulging to excess in the gratification of every sensual appetite, the African peasant grows to an unweildy [*sic*] size, and is carried off the stage by the first inflammatory disease that attacks him’.

⁴⁴³ NLSA, MSC 61.2.258, 20 March 1830.

commend frontier hospitality. Due to a ‘general shortage of money’ in the Colony, he felt it necessary to discuss the state of his finances with Lichtenstein and the high prices he was required to pay for essential items:

After three years of low harvests the whole Colony is very short of food, so that I am compelled to take with me rice, flour, and other necessities of life. The Colonists are still the same hospitable good people, but they cannot do as they wish, their food stocks being almost completely exhausted, and their expected crops will also be unsatisfactory.⁴⁴⁴

Although they sometimes had very little to offer by way of material supplies, a familiar traveler still felt the generous embrace of settler hospitality.

What seems singular about both collectors is the effort they made to name those they encountered of German extraction or ancestry who had assimilated into frontier society. When Krebs moved to his farm “Lichtenstein” in Baviaanskloof, he remarked that he had made some local friends, including ‘a compatriot, and fellow traveler’ C.F. Silberbauer. Silberbauer became a trusted friend who promised to look after shipments of *naturalia* to Cape Town and signed on as security for a wagon and span of oxen that Krebs had been keen to acquire.⁴⁴⁵ In a similar instance, Krebs was able to count on ‘the very friendly Mr Richert, who interests himself with zeal in his Fatherland, particularly in Berlin’, who helped Krebs to forward a case of amphibians and ground moles.⁴⁴⁶ Drège, too, discussed the Germans he met in the Cape with interest. For example, in 1829 he visited Joachim Brehm, previously an apothecary’s assistant with F.L. Liesching in Cape Town, who had a celebrated practice and garden often visited by distinguished travelers passing through Uitenhage. He remarked of this particular social call, ‘I visited the German pharmacist Brehm in Uitenhaag, and Henrik Hitzeroth from Cape Town, whose father was a German’.⁴⁴⁷ While he often discussed Germans in the sense of their “national” affinity, he was also partial to people who could speak German. When Drège came across Scotsman Robert Frier near the Buffeljagsrivier, who visited them that evening to drink punch, he observed that Frier ‘chats about everything scientific and even reads German’.⁴⁴⁸ Perhaps part of the comfort of frontier life was the chance to revisit a

⁴⁴⁴ Krebs to Lichtenstein, 12 October 1822, *Ludwig Krebs*, 45.

⁴⁴⁵ Krebs to Lichtenstein, 24 April 1822, *Ludwig Krebs*, 41.

⁴⁴⁶ Krebs to Lichtenstein, 20 May 1821, *Ludwig Krebs*, 31.

⁴⁴⁷ NLSA, MSC 61.8.526, 30 November 1829.

⁴⁴⁸ NLSA, MSC 61.8.526, 3 February 1830.

familiar cultural and linguistic homeland (Dutch and German) transplanted into a different physical environment. Particularly as British cultural norms and values began to spread out from Cape Town and take hold in the frontier districts, these collectors could escape unfamiliar customs and retreat into recognizable conventions. Regardless, encountering Germans in the Cape was clearly a point of significance for these collectors, and information which they felt compelled to share in their written diaries and correspondence.

In the same way that Drège embraced the Boer frontier lifestyle, where he could intermingle with those of German ancestry, he tended to prefer the hospitality of the German missionaries. One of the more well-known parts of a traveler's experience was a pause at one of the many mission stations set up by the London Missionary Society, the Wesleyan Missionary Society, the *Rheinsche Missionsgesellschaft* and the *Herrnhuter* (Moravians) in southern Africa. Intimately enmeshed with the local landscape and community, missionaries worked side-by-side with African populations in the pursuit of the European civilizing mission but were equally eager to purchase or barter for medicaments, were able to procure willing and skilled African assistants for collectors, and were oftentimes keen to accompany them on excursions in the local area. Missionaries also had a wide range of interests outside of religion, many of which were scientific in nature.⁴⁴⁹ He frequented the Rhenish stations of Wupperthal and Eben Ezer, as well as the Moravians at Genadendal and Enon. Although the Rhenish were in the process of establishing the Wupperthal station near Clanwilliam in 1830, the Drèges were personally invited to make the station their headquarters by resident missionary Baron von Wurmb, who had briefly studied medicine and happened to be a keen natural history enthusiast.⁴⁵⁰ He found enthusiasts among the Moravians at Enon, too. Describing them as 'avid insect collectors and gardeners', he purchased insects for his collection from one of its resident missionaries, Adam Halter, and expressed their generosity as 'true friendship'.⁴⁵¹ As will be discussed in Chapter Six, Irish botanist William Henry Harvey

⁴⁴⁹ See: Thomas Ruhland, *Pietistische Konkurrenz und Naturgeschichte: Die Südasienmission der Herrnhuter Brüdergemeinde und die Dänisch-Englisch-Mission (1755-1802)* (Herrnhut: Herrnhuter Verlag, 2018); Michael T. Bravo, 'Mission Gardens: Natural History and Global Expansion, 1720-1820' in Schiebinger and Swan (eds.), *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (Philadelphia: University of Pennsylvania Press, 2005), 49-65.

⁴⁵⁰ NLSA, MSC 61.8.526, 13 December 1830; Robert Ross, 'Naevii Ukaas: The Cedarberg San in 1830', *Kronos*, 21 (1994), 109.

⁴⁵¹ NLSA, MSC 61.8.526, 3 August 1832. NLSA, MSC 61.8.526, 24 November 1829; NLSA, MSC 61.8.526, 12 September 1836.

would later call on these German missionaries in a similar vein, requesting specimens from sparsely populated districts to help write his *Flora Capensis* in the 1850s. For collectors and metropolitan naturalists alike, missionaries were an accessible pathway to local knowledge and an essential place to collect materials, whether that be those needed for the journey or for local natural history specimens.

In the same way the two collectors discussed frontier hospitality during their travels, they also offered small extracts of their extensive and varied interactions with local Africans. Undertaking these collecting expeditions, many of which spanned several years, involved teams of assistants responsible for skinning, salting, and preserving specimens, as well as numerous others required to perform a range of tasks, including driving wagons, carrying equipment, and preparing food.⁴⁵² William Beinart has shown how knowledge and techniques resulting from contact between Khoekhoe and Europeans was invaluable for eighteenth and nineteenth century farmers and travelers who employed African assistants.⁴⁵³ This extended from their familiarity with ‘routes, geography, water, plants and animals’ to an ability to guide pack oxen, track lost oxen, hunt game, conserve meat, find water holes, and start fire, all crucial skills for collectors on long expeditions by ox-wagon.⁴⁵⁴ When Krebs arrived in the Cape, he managed to “provisionally” employ ‘the same Hottentot Gert Roodezand whom the English explorer Burchell had with him on his journeys’, understanding that Roodezand already possessed these necessary skills and knowledge, saving valuable time and energy on training someone less familiar.⁴⁵⁵ Fundamentally, the work of these collectors would have been impossible without the knowledge and assistance offered by a variety of actors who they employed and came into contact with on their expeditions.

However, the narratives of cooperation and fluidity that von Bressius, and to a certain extent Beinart, describe in the cases of South Asia and South Africa are not reflected in the writings of Krebs and Drège. Firstly, they viewed the labor of their assistants as simply another commodity for purchase amongst their other necessary tools and equipment. Cornelia Essner has argued of

⁴⁵² Beinart, *Rise of Conservation*, 30.

⁴⁵³ Ibid.

⁴⁵⁴ Ibid.

⁴⁵⁵ Krebs to Georg Krebs, 2/3 October 1820, *Ludwig Krebs*, 23-24. See: Malgosia Nowak-Kemp, ‘William Burchell in Southern Africa, 1811-1815’ in MacGregor (ed.), *Naturalists in the Field: Collecting, Recording and Preserving the Natural World from the Fifteenth to the Twenty-First Century* (Leiden: Brill, 2018), 500-549.

reports written by late nineteenth-century German travelers in East Africa that discussions of African labor were ‘dominated by a quasi-capitalist point of view’.⁴⁵⁶ In a different context, Chelsea Davis maintains that certain kinds of laborers were valued merely for their utility in a capitalist system and were largely perceived as disposable.⁴⁵⁷ We get the same sense in the employment of African assistants for natural history enterprises. The cost of employing an assistant always factored into their calculations, particularly when they felt that the work was subpar or inadequate for the price. In 1822, Krebs explained to Lichtenstein, ‘you know yourself how high the price of a wagon is, and the hire charge of the Hottentots, but I must point out that today everything is doubled and that the Hottentots demand 15 marks and more per month’.⁴⁵⁸ He described the situation to his brother, too, stating that ‘the Hottentot, whom, after a lot of trouble I managed to obtain at a monthly wage of 15 Thalers, with free board and lodging, does not pay his way. He has collected very little during the three months, so that I must try to get a better one’.⁴⁵⁹ Here, the relationship is purely a transaction, and an unfavorable one at that in Krebs’ view. Not only is the labor of the assistant seen in a transactional nature (as he ‘collected very little’), but the African as a human is reduced to a transaction, unworthy of a name or any signifying detail, only that ‘a better one’ needed to be found. Even when it came to the death of one of his assistants, Krebs simply moved on: ‘my host, by an unlucky shot, ended the life of my Hottentot. However, the magistrate of Grahamstown was good enough to procure another one for me’.⁴⁶⁰ Although Krebs probably appreciated the labor of his African assistants to an extent, he did not value them enough to sacrifice what he considered to be a large sum and his valuable time, let alone to humanize them by writing down their names.

The transactional nature of these relationships very likely had to do with Krebs’ particularly racist and derogatory views about those in his employ. While not unusual for the time, the combination of racist views and ideas of labor as a commodity illustrate his general disregard for the life and worth of those who assisted him. In the shifting political, economic, and social landscape of the

⁴⁵⁶ Essner, ‘Some Aspects’, 200.

⁴⁵⁷ Chelsea Davis, ‘Fruits of Their Labour: Networks of Migration, Knowledge, and Work in the 19th Century Cape Wine Industry’ in Lachaud-Martin, Marache, McIntyre and Pierre (eds.), *Wine, Networks and Scales: Intermediation in the Production, Distribution and Consumption of Wine* (Brussels: Peter Lang, 2021), 177.

⁴⁵⁸ Krebs to Lichtenstein, 10 October 1821, *Ludwig Krebs*, 33.

⁴⁵⁹ Krebs to Georg Krebs, 1 February 1822, *Ludwig Krebs*, 37.

⁴⁶⁰ Krebs to Georg Krebs, 4 April 1823, *Ludwig Krebs*, 49.

1820s and 1830s, Clifton Crais contends that negative appraisals from white settlers tended to center around ‘violations of private property (“thievishness”) and the unwillingness of Africans to labour for whites (“indolence”)’, both of which were made explicit by Krebs.⁴⁶¹ He was particularly crude in discussing the perceived effects of Ordinance 50 in 1828, which ostensibly gave the Khoekhoe freedom from legal discrimination, removing all civil disabilities from the free people of color in the Colony and affirmed their right to acquire property in land.⁴⁶² The new laws, Krebs argued, gave African citizens ‘a certain sense of freedom ... which makes them obstinate and unwilling to work. My best shots have almost all left me, in order to visit the praised land of the Kat River, where the Government has started a colony of Hottentots and Bastards, or to wander about, spending their lives free and thieving’.⁴⁶³ When discussing African labor, he never failed to comment on their perceived work ethic: ‘one cannot rely at all on Hottentots’ and ‘one cannot achieve anything with the negligent Hottentots’.⁴⁶⁴ In part, Krebs placed this on Ordinance 50, but he was also quick to blame the ‘so-called philanthropist missionaries’ for not having “civilized” Africans properly: ‘one must ask what good the missionaries have been, who have lived among the Hottentots and Kaffirs for so many years’.⁴⁶⁵ This also falls in line with Crais’ argument, as mission stations were commonly viewed as an immoral economy which made it impossible for Africans to learn respect for private property and hard work for white employers.⁴⁶⁶ He could not understand why the missionaries considered the ‘unwilling, lazy, unfaithful and very stupid herdboys and other servants ... as good as white people’.⁴⁶⁷ Georg Krebs wrote at length to Lichtenstein what could be considered an “ethnographic” description of the different African groups with a view to their efficacy as laborers. He had his own ideas of how Africans should be

⁴⁶¹ Clifton C. Crais, *White Supremacy and Black Resistance in Pre-Industrial South Africa: The Making of the Colonial Order in the Eastern Cape, 1770-1865* (Cambridge: Cambridge University Press, 1992), 129.

⁴⁶² See: Martin Legassick and Robert Ross, ‘From Slave Economy to Settler Capitalism: The Cape Colony and Its Extensions, 1800-1854’ in Hamilton, Mbenga and Ross (eds.), *The Cambridge History of South Africa*, vol. 1 (Cambridge: Cambridge University Press, 2009), 272-273; V.C. Malherbe, ‘Colonial Justice and the Khoisan in the Immediate Aftermath of Ordinance 50 of 1828: Denouement at Uitenhage’, *Kronos*, 24 (1997), 77-90; Robert Ross, ‘Missions, Respectability and Civil Rights: The Cape Colony, 1828-1854’, *Journal of Southern African Studies*, 25:3 (1999), 333-345; Robert Ross, ‘James Cropper, John Philip and the Researches in South Africa’ in Macmillan and Marks (eds.), *Africa and Empire: W.M. Macmillan, Historian and Social Critic* (London: Institute of Commonwealth Studies, 1989), 140-152.

⁴⁶³ Krebs to Lichtenstein, 8 July 1830, *Ludwig Krebs*, 71-72.

⁴⁶⁴ Krebs to Lichtenstein, 21 June 1824, *Ludwig Krebs*, 52; Krebs to Lichtenstein, 12 October 1830, *Ludwig Krebs*, 44.

⁴⁶⁵ Krebs to Lichtenstein, 15 December 1834, *Ludwig Krebs*, 90.

⁴⁶⁶ Crais, *White Supremacy*, 130.

⁴⁶⁷ Krebs to Lichtenstein, n.d., *Ludwig Krebs*, 92.

civilized, including separating children from their parents, ‘to protect the youth from the infection of the bad example of their parents’.⁴⁶⁸ These brief descriptions help to illuminate Krebs’ view of the people he lived among and employed, helping us to make sense of how he understood African labor in the context of natural history collecting. Likewise, these themes of “thievishness” and “indolence” gradually underwrote estimations of the African character, which influenced future discussions on imperial expansion and the colonial state in the nineteenth century.

From a similar perspective, Drège also fixated on alleged wrongdoing in his diary, dedicating short lines to issues like drunkenness amongst his assistants. There had already been a long history of distributing wine in return for labor in the western Cape, particularly in the vineyards of Stellenbosch, but this also extended to include white farms of other agricultural products throughout the eighteenth and nineteenth centuries.⁴⁶⁹ As alcohol became a routine form of payment, generations of Khoekhoe became increasingly dependent on it. In 1828, Drège wrote, ‘I still had the unpleasantness that Willem drank’, a comment written after Willem had lost track of the group’s horses and then disappeared.⁴⁷⁰ A little over a month later, Drège recorded that Willem had returned and wanted to take ‘a ‘vomitiëf [*sic*]’, likely tartar emetic, a poisonous chemical called potassium antimony tartrate used to make people vomit.⁴⁷¹ A third time, Willem’s issue with alcohol is mentioned, when Franz chased him away for drunkenness. In the following entry, Drège wrote with brevity Willem’s final payment and then he is no longer mentioned, signifying the likelihood that he had been dismissed from their service.⁴⁷² Sometimes drunkenness was met with physical violence. After hiring an assistant named Wilm, Drège noted, ‘for a few blows I gave Wilm since he was drunk again, he ran to Vreede Richter to accuse me. Wilm was stripped of his

⁴⁶⁸ Georg Krebs to Lichtenstein, 13 December 1834, *Ludwig Krebs*, 86; Krebs to Lichtenstein, n.d., *Ludwig Krebs*, 92.

⁴⁶⁹ Jonathan Crush and Charles Ambler (eds.), *Liquor and Labour in Southern Africa* (Athens: Ohio University Press, 1992), esp. Pamela Scully’s chapter, although most chapters deal explicitly with liquor and mine labor in southern Africa. See: Charles van Onselen, ‘Randlords and Rotgut 1886-1903’, *History Workshop*, 2 (1976), 33-89; Chelsea Davis, ‘Cultivating Imperial Networks: Britain’s Colonial Wine Production at the Cape of Good Hope and South Australia, 1834-1910’, PhD diss, The George Washington University, 2021, ch. 3. For studies on alcohol consumption and colonization, see Paul Nugent, ‘Modernity, Tradition, and Intoxication: Comparative Lessons from South Africa and West Africa’, *Past and Present*, 9 (2014), 126-145; Emmanuel Kwaku Akyeampong, *Drink, Power and Cultural Change: A Social History of Alcohol in Ghana, c.1800 to Recent Times* (London: James Currey Publishers, 1997); Paul Nugent, ‘The Temperance Movement and Wine Farmers at the Cape: Collective Action, Racial Discourse, and Legislative Reform, 1890-1965’, *Journal of African History*, 14:3/4 (2003), 113-130.

⁴⁷⁰ NLSA, MSC 61.8.526, 28 August 1828.

⁴⁷¹ NLSA, MSC 61.8.526, 5 October 1828; Hammel, *Mary Elizabeth Barber*, 51-52.

⁴⁷² NLSA, MSC 61.8.526, 4 February 1829; NLSA, MSC 61.8.526, 7 February 1829.

contract to serve me longer'.⁴⁷³ While there is no further mention of Wilm or this incident, implying that Drège was not charged for his violent outburst, his tone suggests that Wilm (and by proxy all of his assistants) should have been grateful for his employment and that physical violence was a natural punishment for drunkenness. Drège lamented a year later, 'the people plague us a lot with drinking. Hans David chased out of service. Jacob Esau and Johan Cobus Bastert registered in court. Jacob Esau placed in prison because of drunkenness and brutality'.⁴⁷⁴ Because of these myriad disturbances that their assistants supposedly caused, both Krebs and Drège considered the possibility of hiring, or at least relying upon, their farmer friends for shooting rather than hiring African assistants at all. In their view, this would be most cost-effective for their enterprise: they would have 'less annoyance' and more time for insect collecting, in Drège's words.⁴⁷⁵

Thus, they turned to white colonists rather than African assistants to fulfill certain positions within their expedition parties, engaging them in "highly skilled" positions and pushing the African assistants into lower forms of labor within the expedition party. Chelsea Davis makes the argument that, in the context of Western Cape vineyards, "skilled" labor was considered only as skilled *white* hands, whereas "unskilled" was often classified as cheap, non-white labor.⁴⁷⁶ She contends that at the Cape, skilled versus unskilled viticultural labor was a racial construct, which can also be observed in the recruitment of labor in natural history collecting parties. While preparing for one of their journeys, the Drège's 'hired this young Africaner [*sic*] – the father is the tax collector in the Nieuwe Roode Zandkloof – to drive the oxen, to hunt and to have supervision over the Hottentots and oxen'.⁴⁷⁷ Already quite a responsibility, Jan Richter was allocated more specific duties over time like collecting insects, shooting mammals and birds, and adding the skins to their growing collection, allowing him to gain specialized knowledge from the Drèges.⁴⁷⁸ Likewise, Krebs hired a young colonist named Styrdom, 'partly in order to spare [his] health, and also to collect more', who shot nearly 100 of the birds submitted in his seventh consignment to Berlin.⁴⁷⁹ While both Drège and Krebs perhaps felt they could trust their white friends with collecting work

⁴⁷³ NLSA, MSC 61.8.526, 5 May 1830.

⁴⁷⁴ NLSA, MSC 61.8.526, 2 July 1831.

⁴⁷⁵ NLSA, MSC 61.1.103, 7 March 1831.

⁴⁷⁶ Davis, 'Cultivating Imperial Networks', 217.

⁴⁷⁷ NLSA, MSC 61.8.526, 1 May 1829.

⁴⁷⁸ NLSA, MSC.61.2.257, CF to IH Drège, 18 February 1829.

⁴⁷⁹ Krebs to Lichtenstein, 12 October 1822, *Ludwig Krebs*, 44.

more than African assistants, Krebs in particular lamented his bad luck with hiring employees. Even ‘the young colonist’, who was more than likely Styrdom, ‘to whom I paid 300 thalers annually, did not come up to my expectations that is why I have discharged him a short time ago, after two years’ service’.⁴⁸⁰ It is difficult to ascertain what exactly his expectations were, but specialized knowledge, loyalty, and work ethic were apparently hard to come by in the Colony for the overzealous collectors, whether that labor be white or non-white, paid or unpaid.

While African labor was gradually supplanted (although not wholly) by reliance on white frontier farmers, it is clear that Krebs and Drège listened to local knowledge, whether that came from the white settlers or Africans they encountered. This allowed them to field questions from curious family and friends at home in the German states, including Drège’s experience of dispelling incorrect information that had been published in a Hamburg newspaper. Because of the large-scale migration and political fragmentation occurring in the northern and eastern Cape, some of these African groups took advantage of the breakdown and turned to banditry. Groups of this kind, which lived mainly by raiding, were often described by more settled communities as *amazimu*, or people outside the law.⁴⁸¹ The word was later translated into settler literature as “cannibals” and fed into stereotyped stories about the widespread existence of cannibalism south of Thuleka during the time of Shaka.⁴⁸² In 1828, a letter from Drège’s Hamburg dealer Raeuper relayed,

the local newspaper correspondent mentioned that on 9 June Cape Town was threatened by the Kaffir King Schakka with 30000 men. I hope the Cape has sufficient Regulars to keep these savages at bay. People here generally believe that the Kaffirs eat their prisoners....⁴⁸³

All three of the Drège brothers responded rather sarcastically to a letter from their parents, who seem to have read the same article and believed them to be in danger amongst the Zulu. Carl retorted that the author of the article ‘must have been a leg puller or an ignoramus’, stating he knew of ‘no case where South African Natives have eaten human flesh’.⁴⁸⁴ Similarly, Eduard

⁴⁸⁰ Krebs to Lichtenstein, 21 June 1824, *Ludwig Krebs*, 52.

⁴⁸¹ John Wright, ‘Turbulent Times: Political Transformations in the North and East, 1760s-1830s’ in Hamilton, Mbenga and Ross (eds.), *The Cambridge History of South Africa*, vol. 1 (Cambridge: Cambridge University Press, 2010), 232.

⁴⁸² Ibid.

⁴⁸³ NLSA, MSC.61.2.286, 9 November 1828.

⁴⁸⁴ NLSA, MSC.61.2.257, 27 April 1829.

replied, ‘the South African primitives are not gourmets like the Australians and prefer mutton and beef’.⁴⁸⁵ Franz, too, chimed in on the matter, writing that he had not ‘been eaten up by savages ... no cannibals have been seen yet’.⁴⁸⁶ All three continued their quips at the expense of Africans with their descriptions of border defense in the Colony, saying that when border skirmishes or cattle theft took place, that the farmers could be trusted to ‘hit their mark’ and that they were ‘good shots’, as if Africans were wild game being hunted by sportsmen.⁴⁸⁷ However, it is in this interaction that local knowledge helped to shape and inform global understandings of southern Africa, as information passed from colony to metropole.

Ecology and Environment

Lichtenstein’s disturbing advice offered to Krebs in 1821, to ‘shoot whatever carries feathers’, hints to the ecological effect of both uninhibited natural history collecting and settler colonialism, which had already become visible in a relatively short period. Undoubtedly, Africans had been extracting plants and killing wild animals for sustenance since before the arrival of the Dutch. Pre-colonial African societies had to protect themselves, their stock, and their crops from predators, but hunting could also be a critical sphere for the assertion of royal economic control.⁴⁸⁸ Europeans, both in the form of settlers and visiting naturalists, began to appropriate and decimate the natural resources, flora, and fauna of the Colony in increasingly predatory and profligate ways, extracting plants and shooting game for leisure as much as sustenance.⁴⁸⁹ Their presence and subsequent spread displaced communities of animals from their natural habitats, pushing ecosystems further from human activity. Although the rise in natural history stimulated new discourses that addressed complex environmental concerns in colonial domains, science was also

⁴⁸⁵ NLSA, MSC.61.2.257, 27 April 1829.

⁴⁸⁶ Ibid.

⁴⁸⁷ Ibid.

⁴⁸⁸ William Beinart, ‘Review Article: Empire, Hunting and Ecological Change in Southern and Central Africa’, *Past & Present*, 128:1 (1990), 163.

⁴⁸⁹ Tom Griffiths and Libby Robin (eds.), *Ecology and Empire: Environmental History of Settler Societies* (Edinburgh: Keele University Press, 1997); Beinart, *Rise of Conservation*; Ulrike Kirchberger and Brett M. Bennett (eds.), *Environments of Empire: Networks and Agents of Ecological Change* (Chapel Hill: University of North Carolina Press, 2021); Corey Ross, *Ecology and Power in the Age of Empire: Europe and the Transformation of the Tropical World* (Oxford: Oxford University Press, 2017).

exercised to harness natural resources for further exploitation.⁴⁹⁰ But environmental regulation and management, including things like forest protection, game preservation, soil and water conservation, and the control of both human and animal diseases would not develop until the late nineteenth and twentieth centuries.⁴⁹¹ John M. Mackenzie has argued that the rapacious character of settler and imperial hunting catastrophically reduced wildlife and was responsible for the final extermination of some popular mammal species which made southern Africa famous in Europe, like the blaubok and the quagga.⁴⁹² Historians have tended to focus on the significance of hunting and adventure narratives set in Africa, which offered a vision of a vast wilderness waiting to be subjugated, and the ritual significance of imperial hunting on the development of colonial masculinities.⁴⁹³ Equally, others have analyzed the more material concerns of hunting, particularly the impact of the international market for ivory and the development of game-farming.⁴⁹⁴ The collectors in question lie somewhere in between these strands. However, as will be shown, their commercial motives place them closer to Mackenzie's destructive hunters than any sort of inspired conservationists.

Game preservation in the Cape descended from northern Europe where popular access to wild animals was routinely restricted. Yet, in the absence of an established land gentry and farm enclosure system, the Cape variant suffered.⁴⁹⁵ Although the VOC had attempted to establish game laws, the frontier expanded so far beyond the scope of control that landowners in those regions

⁴⁹⁰ Lucile Brockway, *Science and Colonial Expansion: The Role of the British Botanic Gardens* (New Haven: Yale University Press, 1979); Drayton, *Nature's Government*; Mark Nesbitt and Caroline Cornish, 'Seeds of Industry and Empire: Economic Botany Collections Between Nature and Culture', *Journal of Museum Ethnography*, 29 (2016), 53-70; Caroline Cornish, 'Curating Science in an Age of Empire: Kew's Museum of Economic Botany', PhD diss, Royal Holloway, 2013; Grove, *Green Imperialism*.

⁴⁹¹ William Beinart, 'African History and Environmental History', *African Affairs*, 99:395 (2000), 272-273; Jules Skotnes-Brown, 'Pests, Knowledge and Boundaries in the Early Union of South Africa: Categorising, Controlling, Conserving', PhD diss, University of Cambridge, 2020.

⁴⁹² John M. Mackenzie, *The Empire of Nature: Hunting, Conservation and British Imperialism* (Manchester: Manchester University Press, 1988), 116.

⁴⁹³ Stephen Gray, 'Our Hunting Fathers: The Sportsman as Pioneer in Southern African Literature', *African Perspective*, 9 (1978), 48; Stephen Gray, 'The Rise and Fall of the Colonial Hunter', in Gray (ed.), *Southern African Literature: An Introduction* (Cape Town: David Philip, 1979); John M. Mackenzie, 'Chivalry, Social Darwinism and Ritualised Killing: The Hunting Ethos in Central Africa up to 1914' in Anderson and Grove (eds.), *Conservation in Africa: People, Policies and Practice* (Cambridge: Cambridge University Press, 1987), 41-62; Joseph Sramek, '"Face Him Like a Briton": Tiger Hunting, Imperialism, and British Masculinity in Colonial India, 1800-1875', *Victorian Studies*, 48:4 (2006), 659-680.

⁴⁹⁴ Mackenzie, *Empire of Nature*.

⁴⁹⁵ Lance van Sittert, 'Bringing in the Wild: The Commodification of Wild Animals in the Cape Colony/Province c. 1850-1950', *The Journal of African History*, 46:2 (2005), 272.

were able to shoot game without much interference by the state. In order to obtain their own zoological curiosities in the 1820s, the Drège brothers had to appeal to the government to allow them not only to cross boundary lines, but also to ‘shoot a couple of each sort of the Bucks protected to be killed without leave, by the Game Laws, now in Force’.⁴⁹⁶ Governor Charles Henry Somerset had instituted new game legislation in 1822, modeled on British lines, which provided special protections for elephants, hippopotamus, and bontebok; a closed season for certain other types of game; a prohibition on killing immature animals; stringent anti-trespassing provisions; and even an embryonic game reserve.⁴⁹⁷ However, there had always been strong opposition from settlers in the frontier districts, and because those regions were often thinly populated, game laws went effectively unregulated outside a fifty-kilometer radius of Cape Town. A divide in colonial attitudes toward hunting are reflected in disagreements between members of Andrew Smith’s expedition to the Transvaal with the Cape of Good Hope Association for Exploring Central Africa (1834-36). Jane Carruthers asserts that Smith did not kill for pleasure, confining his shooting only to the number of required specimens or food, while his scientific assistant John Burrow wantonly shot a considerable number of animals, particularly rhinoceros.⁴⁹⁸ This divide seems typical of the Cape scientific community, although it could be argued that Krebs and Drège tended toward the latter than the former although restricted by law.

Whether Krebs and Drège felt motivated by the financial reward of their respective enterprises, or rather had adopted the sensibilities of frontier life in the Colony, both engaged in the excessive killing of wildlife to support their endeavors. In 1831, the Drège brothers were summoned to appear in Swellendam for having shot too many bontebok (*Damaliscus pygargus*), under regulation by Somerset’s game laws. Because they had applied for, and received, government permission to shoot wild game, they went out with six other people to shoot, claiming six bontebok.⁴⁹⁹ In the following days, they shot three more, two of which were pregnant, and a

⁴⁹⁶ WCARS, KAB, CO 3942, 276, 20 May 1829.

⁴⁹⁷ Jane Carruthers, ‘Game Protection in the Transvaal 1846 to 1926’, PhD diss., University of Cape Town, 1988, 36.

⁴⁹⁸ Carruthers, ‘Game Protection’, 28; P.R. Kirby (ed.), *John Burrow: Travels in the Wilds of Africa being the Diary of a Young Scientific Assistant who accompanied Sir Andrew Smith in the Expedition of 1834-1836* (Cape Town: A.A. Balkema, 1971), 58.

⁴⁹⁹ NLSA, MSC 61.8.526, 2 August 1831.

handful of steenbok (*Raphicerus campestris*).⁵⁰⁰ Perhaps thinking they were protected by their permissions, and clearly pleased with their spoils, they thought nothing of the number of bontebok killed, stating, ‘since there was so much game in front of us, the promise was not thought of’.⁵⁰¹ By October, Carl had received a citation to appear in front of the Magistrate of Swellendam, attaching to his diary an anonymous advertisement published in a local newspaper by ‘an enemy of destruction. An old resident of this district’.⁵⁰² The day’s hunt had likely been discussed with Veld Cornet Hans Laurens, himself a hunting enthusiast, who was closely related to a few members of the hunting party. Drège believed it was Laurens who made the complaint and alerted the Magistrate.⁵⁰³ Whoever the anonymous colonist was, they used the local paper as a platform to criticize both the restrictive and unregulated nature of the game laws. They also called into question this kind of natural history collecting when they asked, ‘do these gentlemen need so many rarities?’. They continued,

if the government does not impose any other measures, and the persons granted do not keep to the given permit, and do not prohibit them from going on horseback with so many hunters and with wagons to destroy these animals, then I do not see why, on our own property both on horseback and by cart, we cannot hunt these animals.⁵⁰⁴

Although not calling for completely unrestricted access to shoot wild game, it did not seem like a wholly unfair point for those who traveled through their “property” to be able to shoot freely while the game laws controlled it amongst landowners. Much like in the example of Smith’s party, the disproportionate shooting of wild animals divided many within the community, and the Drège brothers were publicly outed for their rather unrestrained hunt.

Carl and Franz Drège realized their publicity had made them a target, and called upon Ecklon and Zeyher, who had been residing in the vicinity of Swellendam, for help. Together they constructed a memorial in an attempt to exonerate themselves of the fines placed on the hunting group.⁵⁰⁵ They argued that ‘their direction to the persons employed by them were simply to shoot a male and a female’ and although there were several hundred bontebok, ‘the party succeeded in killing females

⁵⁰⁰ NLSA, MSC 61.8.526, 3/4 August 1831.

⁵⁰¹ NLSA, MSC 61.8.526, 2 August 1831.

⁵⁰² NLSA, MSC 61.8.526, 8 October 1831

⁵⁰³ NLSA, MSC 61.8.526, 2 August 1831.

⁵⁰⁴ NLSA, MSC 61.8.526, 8 October 1831.

⁵⁰⁵ NLSA, MSC 61.8.526, 5 November 1831.

only ... being unable to distinguish the male from the female' from a distance.⁵⁰⁶ Thus, they proceeded another day in order to procure a male specimen and, 'in the heat of the pursuit', killed more than intended.⁵⁰⁷ Assuring the colonial government that their intent was not to overhunt for pleasure, they promised that they would 'be more grounded in future' while hunting animals (but presumably only when hunting animals protected by law). Although they expressed regret, likely a formality in rationalizing their wrongdoing, they were sure to include that their 'object in this country is surely scientific'. In being forced to abandon their wagon in Plettenberg Bay, they suffered 'a great loss of time', but were more so concerned for the 'very severe and irreparable losses' they endured in being summoned to Swellendam. Never forgetting their primary objective, even while pleading for forgiveness from the colonial government, their insistence on the protection of their collection is salient.

The use of the words "destroy" and "destruction" by the anonymous colonist points to an interesting development of some sort of ecological awareness, signaling both the extermination of animal life and a certain blatant disregard for the natural world.⁵⁰⁸ Although Krebs is guilty of equally extractive and fervent collection practices, he too recorded the dispersal and disappearance of animal populations. When sending the list of specimens in his twelfth consignment to Lichtenstein in 1830, he discussed the difficulty in obtaining the 900 birds he sent, 'owing to the many changes and the very increased population of the frontier region, birds have been frightened away and become rare'.⁵⁰⁹ Animals were responding to the increased impact of settler colonialism in the Cape, forcing them further away from their original habitats. The issue of overhunting was also recognized by Krebs. In the same consignment he sent a baby elephant, 'for it happens very seldom that, within the Colony, one meets at present anything but young elephants'.⁵¹⁰ He took special care to place blame on the members of the mission stations at Enon, Bethelsdorp, and Theopolis, who continually hunted elephants both for their meat and their tusks, 'so that the elephants and buffalo have almost disappeared from the Colony'.⁵¹¹ While we already know Krebs

⁵⁰⁶ WCARS, KAB, CO 3950, 7 November 1831, 214.

⁵⁰⁷ Ibid.

⁵⁰⁸ See: Bernard Gissibl, *The Nature of German Imperialism: Conservation and the Politics of Wildlife in Colonial East Africa* (New York: Berghahn, 2016).

⁵⁰⁹ Krebs to Lichtenstein, 8 July 1830, *Ludwig Krebs*, 71.

⁵¹⁰ Ibid., 72.

⁵¹¹ Ibid.

held a certain disdain for the missionaries in the Colony, his observations about their actions toward elephants are no less relevant. By the 1830s, the ecological impact of European settlement in the Cape was apparent, but not shocking enough to deter Krebs from attempting to gather more specimens to send to the Berlin Zoological Museum.

Conclusion

Collecting in the field was an essential aspect of natural history, a process that should be given equal weight, both historically and historiographically, alongside the cataloguing of specimens and the determination of taxonomic categories in the museum or herbarium. The humble, independently organized, and self-financed expeditions of these German collectors were highly mobile and flexible, depended entirely upon local inhabitants and infrastructures, and maintained regular contact with metropolitan connections, whether that be family, natural history dealers, customers, or patrons. While there are some commonalities between these collectors and the traditional figures of African exploration long pervasive in the historiography, focusing on these smaller outfits allows us to better understand how interaction in the contact zone shaped scientific practice and knowledge production. The nature of field collecting was also fundamentally affected by place. The Cape was not a neutral theatre for scientific activity, but rather directly influenced how these Germans organized their expeditions and businesses, how they went about collecting and preserving their specimens, who they trusted for hospitality and assistance, how they operated day-to-day, and how their own activities impacted local plant and animal life. Focusing on the field, an already overlooked feature of the knowledge production process, continues to add depth to the social and situated worlds of natural history collecting. Similarly, it complicates our view of science in a “British” colony, offering an avenue by which to understand how German practice and expertise influenced Cape scientific life.

As much these endeavors were shaped by practice in the field and local conditions in the Cape, they were also deeply impacted by the commercial competition that arose between the factions of entrepreneurial collectors. This chapter illustrated *how* commercial factors impacted the mindset of these German collectors in the field and the steps they took to protect the integrity of their

enterprise both materially and financially. Borne out of the relative failure of Lichtenstein's attempts to send salaried collectors on behalf of the Berlin Zoological Museum and the Prussian state, as explored in the previous chapter, entrepreneurial collecting became the understated norm in Cape natural history in the early nineteenth century. However, Lichtenstein's particular brand of *mercantilisch* natural history, and the new methods it spawned, also fashioned an intensely destructive form of collecting, one in which all human and material considerations were part of a cost-benefit analysis and the Cape's environment became an ill-fated playground. Commercial competition in Cape natural history collecting was perhaps more harmful than progressive, much as the standard narrative of scientific progress would like us to think. The proliferation of commerce in this story is unusual when one considers metropolitan disapproval of it in scientific matters, as shown in Chapter One, and for the sheer number of commercial practitioners extant in the Cape. Yet, importantly, this chapter has introduced how commercial considerations impacted collecting in the field, a theme within the historiography sorely lacking. As will also be seen in Chapters Four and Five, this mindset clouded rational judgment, instead motivating collectors to move ever further afield in search of their material and allowing commercial competition to interfere in the progress of Western taxonomy.

The field was also a space in which the uneven power dynamics of interaction in colonial environments was made visible. These collectors' relationships to their African assistants, reflected in the Cape's specific racial dimensions formed in the brutal process of slavery in the Dutch period, also took on a pejorative language and sometimes physical violence. This is perhaps the result of close affiliation with the frontier Boers who offered them hospitality and assisted them in their travels, oftentimes farmers who amplified the vicious treatment of Africans who were part of the colonial labor system. These stories, of which admittedly there is minimal detail, help to reconstruct the relations between colonizer and colonized which were ostensibly erased upon a collection's entry into European museums and herbaria. Their African assistants were also part of the destructive cost-benefit analysis mindset of these collectors, as simply another commodity they had to spend money on to sustain their enterprise. Unlike the new literature that has developed on the field, or contact zone, as a place where flexible and dynamic hierarchies between colonizer and colonized existed and which profoundly shaped knowledge production, southern Africa is a site which offers exactly what one would expect of this kind of encounter: a reiteration of racist and

derogatory views typical of the colonial experience. While reminiscent of current trends in the literature, this argument also complicates the new themes emerging within it. However, it also opens a space for natural history collecting to be added to the wide-ranging literature on imperialism, race, and labor in the nineteenth century, a genre all but omitted from these categories except in the history of science. Ultimately, the myriad factors offered in this chapter provide a welcome opportunity to incorporate southern Africa into wider historiographies in the history of science, fieldwork, and collecting.

This chapter opened with a short examination of the main protagonists of the chapter, and of the rest of the dissertation, introduced through an assessment of Carl and Franz Drège's pursuit of a natural history collecting business in the Cape and the potential competition they faced. Once these kinds of natural history businesses got off the ground, considerations of collecting practices were paramount as part of the cost-benefit analysis, discerning what could be collected at the lowest cost to both the collector and the consumer. Equally, this included specific preservation techniques to ensure that specimens that had been well preserved in the Cape remained so during the months-long sea journey back to Amsterdam or the German states. Collecting expeditions like this would have been impossible without the assistance of both white settlers in the interior as well as African assistants. While these German collectors demonstrated a greater affinity toward Boer settlers and German missionaries than any British administrator or settler, this affinity also impacted their treatment of the Africans they employed. They saw their African assistants as disposable and costly, valued simply for their utility in a capitalist system rather than as advantageous and effective companions. Finally, the chapter closed with a discussion of the effect that this kind of extraction and hunting had on the local environment; their commercial motives inspired these collectors to go to ever greater lengths to secure rare and valuable specimens. But even they recognized the effects that settler colonialism and overhunting had on their ability to collect, as indigenous plant species could no longer be found and animals, once found in the Western Cape region, had fled further outward in search of new habitats. Ultimately, this shows us *how* these German collectors engaged in collecting. The next chapter will shift the focus onto *what* they collected, offering a material history of two "objects" of natural history which captured their attention.

Chapter Four

Interpreting the Collector's Logic: The Pursuit of *Desiderata*, 1820-1845

‘Every *desideratum* is an imperfect *discovery*’.⁵¹²
Joseph Priestley (1772)

On 25 November 1825, aspiring entomologist and natural history dealer M.C. Sommer of Altona penned a letter to his friend, apothecary's assistant at Pallas & Polemann in Cape Town, Carl Friedrich Drège of Hamburg. Drège had recently sent a few boxes of specimens to be distributed amongst Sommer's patrons, but Sommer himself most appreciated the fifth box containing a series of insects, particularly beetles, and suggested a reciprocal relationship with which he could acquire new insects to enrich his collection. In return, Sommer sent entomology pins, incredibly difficult and expensive to obtain in Cape Town, and offered to help Drège with the identification of his developing insect collection. No doubt to encourage him to continue collecting insects for his own benefit, Sommer remarked that a shipment rich in butterflies and beetles, whether in pristine or imperfect condition, would be of value in the German states. He mused about the beauty of beetles in the Western Cape region, especially in its ‘inner wilderness’, and expressed his wish to procure ‘a pair of *Manticornuti*, which should be located in the sand deserts there. They are a kind of big Caraban with strong feeding tongs. Mr. Krebs sent it from there to Berlin’.⁵¹³

The ‘*Manticornuti*’ is certainly the *Manticora*, a well-known genus of tiger beetle endemic to southern Africa. Ludwig Krebs, who Sommer references and whose fieldwork practices were considered in the previous chapter, was the Cape Naturalist to the King of Prussia, contracted to send twelve consignments of natural history material to the Director of the Berlin Zoological Museum, Hinrich Lichtenstein. If Sommer had laid eyes on the specimen by the end of 1825, it is likely that it would have arrived in one of five shipments Krebs sent between 1821 and 1823, which included thousands of botanical, zoological, and entomological specimens from his time

⁵¹² Joseph Priestley, ‘Hints of some desiderata in the doctrine of vision, light, and colours’, in *The History and Present State of Discoveries Relating to Vision, Light, and Colours*, vol. 2 (London: Johnson, 1772), 773.

⁵¹³ NLSA, MSC 61.1.184, Sommer to Drège, 25 November 1825.

spent in the Uitenhage and Albany districts, in the vicinity and outskirts of present-day Gqeberha.⁵¹⁴ Its first appearance in Berlin came with a note that J.C.F. Klug, Professor of Medicine and Entomology at the University of Berlin, had been the one to identify it.⁵¹⁵ Krebs had been in regular contact with him on insect-related matters, and reported in an 1822 letter that ‘the season of the mantinora [*sic*] begins and I have already several available for the next shipment’.⁵¹⁶ When the Krebs collections arrived in the hands of Lichtenstein and Klug, the best preserved and rarest samples were retained by Berlin institutions while the rest were sold at auction to bring in revenue for the chronically under-funded Museum, the process of which was detailed in Chapter Two. An auctioned *Manticora*, or a personal visit to the Museum, would explain how Sommer came to know and desire a pair for his personal collection.

⁵¹⁴ Pamela Ffolliott and Richard Liversidge, *Ludwig Krebs: Cape Naturalist to the King of Prussia, 1792-1844* (Cape Town: A.A. Balkema, 1971), 184-211; Gqeberha’s former colonial name was ‘Port Elizabeth’, located between Knysna and East London.

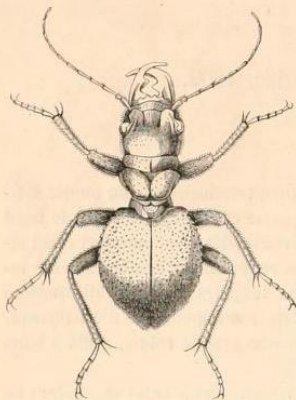
⁵¹⁵ The only species that this could have been is the present-day *Manticora tuberculata* (Geer, 1778). A pupil of Linnaeus, Johan Christian Fabricius, first formally described the genus as *Manticora* from an example in the collection of Sir Joseph Banks. He designated the species of this particular beetle as *Carabus maxillosa*, a junior synonym of *Manitcora tuberculata*. This was the only known species of *Manticora* until Andrew Smith’s ‘discovery’ of the *Manticora latipennis* (Waterhouse, 1837) during his expedition to the Transvaal region. *Magazine of Natural History*, ‘Short Communications’, N.S. 1 (1837), 503-504; Friedrich Klug, ‘Die Arten der Gattung Manticora F.’, *Linnaea Entomologica*, 4 (1849), 417-424. See also: William F. Lye (ed.) and Andrew Smith, *Andrew Smith’s Journal of His Expedition into the Interior of South Africa 1834-1836* (Cape Town: A.A. Balkema, 1975).

⁵¹⁶ Krebs to Klug, 12 October 1822, *Ludwig Krebs*, 43.

1^{er} GENRE. — MANTICORE. *MANTICORA*. Fabricius, 1791.

Species Insectorum.

Μαντιγόρας, animal fabuleux armé de grosses dents.

Fig. 53. — *M. maxillosa*.

Tête grande, aplatie sur le front; palpes grands, à dernier article un peu sécuriforme; mandibules fortes, arquées, plus longues que la tête; antennes minces, filiformes, à troisième article allongé et anguleux; yeux petits, arrondis et peu saillants; corselet de même longueur à peu près que la tête, et comme divisé par un sillon transversal; élytres soudés, larges, plans en dessus, fortement chagrinés, à bords latéraux carénés et légèrement dentelés; pattes grandes et couvertes de poils roides, serrés; les trois premiers articles des tarses antérieurs simples dans les deux sexes.

Les Manticores ont, au premier aspect, quelque ressemblance avec les grosses Araignées du genre *Mygale*, ou plutôt avec la plupart des espèces de Coléoptères du genre *Anthia*. Ces insectes sont d'ailleurs remarquables pour leur grande taille; ils sont entièrement noirs, courent avec assez de vivacité sur le sable, se cachent sous les pierres, et se nourrissent d'insectes. On n'en connaît que cinq espèces: le *Manticora maxillosa* de Fabricius, le *Manticora latipennis* décrit, en 1857, par M. Waterhouse; enfin depuis peu M. Klug a fait connaître trois espèces nouvelles, les *Manticora granulata*, *scabra* et *Herculeana*; toutes sont de l'Afrique australe.

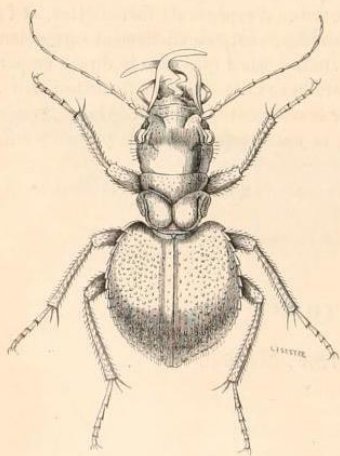
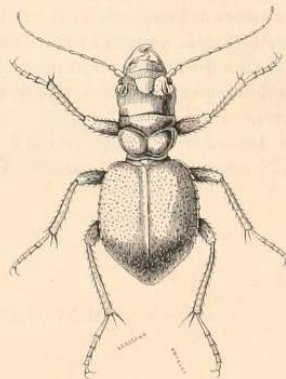
Fig. 54. — *M. scabra*.Fig. 55. — *M. granulata*.

Fig. 4.1: Illustrations of different species of the *Manticora*. Georges-Louis Leclerc, Comte de Buffon, et. al., *Encyclopédie d'histoire naturelle*, vol. 4, *Coléoptères* (Paris: Maresq, 1851-1860), 12.

As this brief anecdote illustrates, individual specimens like the *Manticora* were the impulse of natural history. Not only were they essential to the collectors engaged in its commercial trade and to naturalists attempting to classify and order the natural world, but they were also at the heart of the transnational and trans-imperial networks of communication and exchange so ubiquitous to the study of science and empire. Thus, this chapter will focus on the collector's pursuit of two "objects" of natural history, as episodes in southern Africa which challenged traditional ideas of materiality, objectness, and what it meant to collect and interpret natural history material: the *Hydnora africana* and human remains. What exactly were these collectors looking for? Why were they important? How did the search for these "objects" affect their enterprise? Or more broadly, how did these materials facilitate, or more curiously resist, knowledge production? In leading on from Chapter Three, which examined the logistics of fieldwork and the social, racial, and environmental impact of these collectors' commercial mindset, it became clear *how* such a natural history enterprise operated and what considerations the collectors considered. This chapter will shift the focus onto *what* they collected and their attempts to harness the natural world for their own financial and intellectual benefit. This allows us to highlight the depth and complexity of the actual collections that were, and still are, held in botanic gardens, herbaria, and museums around the world which inspired the scientific imagination of nineteenth-century naturalists.

When Arjun Appadurai argued that objects, like people, have 'social lives', he offered a theoretical model with which to explore "things" with value.⁵¹⁷ With the advent of the material turn, historians have increasingly looked to objects as primary sources to trace the mechanisms and mobilities of the global production of knowledge.⁵¹⁸ This has most often led scholars toward studies on economic botany and products of popular or luxury value, like rubber, cinchona, tea, tobacco, and

⁵¹⁷ Arjun Appadurai (ed.), *The Social Life of Things: Commodities in Cultural Perspective* (Cambridge: Cambridge University Press, 1986).

⁵¹⁸ Caroline Cornish, 'Curating Global Knowledge: The Museum of Economic Botany at Kew Gardens', in Finnegan and Wright (eds.), *Spaces of Global Knowledge: Exhibition, Encounter and Exchange in an Age of Empire* (London: Routledge, 2016), 119. See Margot Finn's 'Material Turns in British History' series with the *Transactions of the Royal Historical Society* for different interpretations of the material turn; Sandip Hazareesingh and Johnathan Curry-Machado, 'Editorial – Commodities, Empires, and Global History', *Journal of Global History*, 4:1 (2009), 1-5; Felicia Gottman (ed.), *Commercial Cosmopolitanism? Cross-Cultural Objects, Spaces, and Institutions in the Early Modern World* (London: Routledge, 2021).

sugar.⁵¹⁹ In a similar sense, the rise of science studies has proven that the existence and agency of nonhuman (or other-than-human) objects and organisms can (and should) be a central point of inquiry.⁵²⁰ As Rohan Deb Roy contends, this kind of analysis has allowed historians to better understand the symbiotic relationship between humans and objects and how these multi-layered connections were consistently engendered and delimited by nonhumans, deepening the structural, ideological, prejudicial, biopolitical, and physical foundations of the British Empire.⁵²¹ Although Roy's study re-centers some of the more popular nonhuman elements of empire (cinchonas, quinine, mosquitoes, etc.), in the world of nineteenth-century natural history collecting, materials of economic or medicinal benefit were not necessarily always the most sought after.

Historically, these items were framed as *desiderata*, objects sought by metropolitan naturalists who required material for taxonomic determination, morphological comparison, or for display as rarities in museums and botanic gardens. The search for *desiderata*, as Vera Keller argues, 'encouraged doubt, risk-taking and the pursuit of the potentially impossible'; a declaration of desire was a technique for expansion, inspiring 'imagination, ambition and desire to reach ever further afield toward an unpredictable and far different future'.⁵²² Thus, the collector's search was inherently tied to networks that encouraged increasing intellectual and physical control over

⁵¹⁹ For a few examples, see: Sidney Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (New York: Penguin, 1985); Judith Carney, *Black Rice: The African Origins of Rice Cultivation in the Americas* (Cambridge: Harvard University Press, 2001); John Soluri, *Banana Cultures: Agriculture, Consumption, and Environmental Change in Honduras and the United States* (Austin: University of Texas Press, 2005); Zheng Yangwen, *The Social Life of Opium in China* (Cambridge: Cambridge University Press, 2005); Marcy Norton, 'Tasting Empire: Chocolate and the European Internalization of Mesoamerican Aesthetics', *The American Historical Review*, 111 (2006), 669-691; Anne McCants, 'Poor Consumers as Global Consumers: The Diffusion of Tea and Coffee Drinking in the Eighteenth Century', *Economic History Review*, 61 (2008), 172-200; Michael R. Dove, *The Banana Tree at the Gate: A History of Marginal Peoples and Global Markets in Borneo* (New Haven: Yale University Press, 2011); Carol Benedict, *Golden Silk Smoke: A History of Tobacco in China, 1550-2010* (Berkeley: University of California Press, 2011); Mary C. Neuberger, *Balkan Smoke: Tobacco and the Making of Modern Bulgaria* (Ithaca: Cornell University Press, 2013); Sven Beckert, *Empire of Cotton: A Global History* (London: Penguin, 2014); Erika Rappaport, *A Thirst for Empire: How Tea Shaped the Modern World* (Princeton: Princeton University Press, 2017); Davis, 'Cultivating Imperial Networks'.

⁵²⁰ Rohan Deb Roy, *Malarial Subjects: Empire, Medicine and Nonhumans in British India, 1820-1909* (Cambridge: Cambridge University Press, 2017), 14; Lorraine Daston, 'Science Studies and the History of Science', *Critical Inquiry*, 35:4 (2009), 798-813; Jan Golinsky, *Making Natural Knowledge: Constructivism and the History of Science* (Cambridge: Cambridge University Press, 1998), 1-45. The term 'non-human' is inherently problematic, especially in the context of this article in which human remains are materials stripped of their humanity and remade as objects. The category 'non-human' is also grounded in human exceptionalism. See: S. Eben Kirksey and Stefan Helmreich, 'The Emergence of Multispecies Ethnography', *Cultural Anthropology*, 25:4 (2010), 554-555.

⁵²¹ Roy, *Malarial Subjects*, 12.

⁵²² Vera Keller, 'Deprogramming Baconianism: The Meaning of *Desiderata* in the Eighteenth Century', *Notes and Records*, 72 (2018), 120, 126.

colonial territories and which facilitated the uninhibited extraction of flora, fauna, and human remains from colonial environments.⁵²³ While *desiderata* seldom changed the world like their more financially viable commodity counterparts, Keller and Caroline Cornish argue that the very desirability or curiosity value of an object can help to deconstruct relationships between materiality, place, and mobility in a globalizing world.⁵²⁴ In following the life of things, historians can move beyond narratives of natural history collecting that privilege anthropocentrism, broadening the scope of what it meant to produce scientific knowledge.

Strange in appearance, morphology, and most importantly fragrance, the *Hydnora africana* confounded the bounds of floral life, exposed the limits of botanical taxonomy, and defied attempts at collection, preservation, and cultivation. Unlike Londa Schiebinger's peacock flower (*Poinciana pulcherrima*) which underwent a process of knowledge *nontransfer* from the Caribbean to Europe, the *Hydnora* raises questions of *material nontransfer*, similar to Elaine Ayers' exploration into collectors' inability to source and preserve viable specimens of the corpse flower (*Rafflesia arnoldii*) from Sumatra.⁵²⁵ Issues of materiality made it difficult for European botanists to dissect and classify parasitic plants like *Hydnora*, challenging attempts to transform natural curiosities growing *in situ* into scientific specimens in colonial storehouses like botanic gardens, herbaria, and museums. On the other hand, the collection of human remains presents a more sinister aspect of natural history collecting, one in which African bodies were seen as no different to a collector's stock of plants, animals, and insects. The collectors' vehemence, both in enthusiasm and violence, was observed with horror by a variety of indigenous onlookers, indicating a cultural and ethical disregard for local customs. Stripped of their biography and personhood through science and savage warfare, human remains were quite readily transformed into scientific material as they were disinterred and extracted from their home in southern Africa. Unlike *Hydnora* which resisted easy transfer into European institutions and frameworks of knowledge, human remains were almost effortlessly dehumanized to become nameless objects of commerce, display, and racial theory. As *desiderata*, these materials not only encouraged

⁵²³ Anna Winterbottom, 'Medicine and Botany in the Making of Madras, 1680-1720' in Damodaran, Winterbottom and Lester (eds.), *The East India Company and the Natural World* (Basingstoke: Palgrave, 2015), 35.

⁵²⁴ Keller, 'Deprogramming Baconianism', 126; Cornish 'Economy Botany', 121.

⁵²⁵ Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge: Harvard University Press, 2004), 3; Elaine Ayers, 'Strange Beauty: Botanical Collecting, Preservation, and Display in the Nineteenth Century Tropics', PhD diss, Princeton University, 2019, 337.

imagination and risk-taking amongst collectors and naturalists, but they also pushed the boundaries of racial capitalism, the commodification of the natural world, and the production of imperial knowledge.

***Hydnora Africana* and Parasitism in the Floral Kingdom**

At the 1836 meeting of the *Gesellschaft Deutscher Naturforscher und Ärzte* in Jena, Gustav Kunze of Leipzig University presented a dried specimen of *Hydnora africana*, a ‘remarkable Asarine which grows parasitic on the large Euphorbias in the Carro [*sic*] near Worcester’ in the Western Cape region of South Africa.⁵²⁶ Kunze’s identification of *Hydnora* as belonging to *Asarina* reveals the lack of knowledge European botanists had of the curious parasite. Parasitic plants are characterized by their ability to feed directly on other plants, invading the host’s roots or shoots through parasitic structures called haustoria.⁵²⁷ Found in the semi-arid regions of the northwestern Cape and southern Namibia, *Hydnora* is a root holoparasite which grows almost completely subterranean.⁵²⁸ After leaching enough energy from its spurge host, a fleshy orange-pink flower emerges, releasing a fetid odor to attract is carrion and dung beetle pollinators.⁵²⁹ The Africans and Boer farmers who lived in the area called it ‘Jackhalls Kost’ (*jakkalskos*), or jackal food, and it is thought to have a sweet and starchy taste.⁵³⁰ The rhizomes of *Hydnora*, called *uMayumbuka* in isiZulu and isiXhosa, are used and traded as traditional medicine in South Africa to treat diarrhea, piles, acne, menstrual problems, stomach cramps, and to stop bleeding, likely due to the plant’s high tannin content.⁵³¹ Today, botanists are keen to study *Hydnora* because holoparasites have multiple origins and varying degrees of parasitism, making them ideal for studying the

⁵²⁶ Translation: The Society of German Naturalists and Physicians. ‘Zweite Sitzung den 21. September’, *Tageblatt bei der vierzehnten Versammlung der Naturforscher und Aerzte Deutschlands*, 14-15:1 (1836), 132.

⁵²⁷ James H. Westwood, John I. Yoder, Michael P. Timko and Claude W. dePamphilis, ‘The Evolution of Parasitism in Plants’, *Trends in Plant Science*, 15:4 (2010), 227.

⁵²⁸ Lytton J. Musselman and Johann H. Visser, ‘Taxonomy and Natural History of *Hydnora* (Hydnoraceae)’, *Aliso: A Journal of Systematic and Evolutionary Botany*, 12:2 (1989), 317-326.

⁵²⁹ Jay F. Bolin, Erika Maass and Lytton J. Musselman, ‘Pollination Biology of *Hydnora africana* Thunb. (Hydnoraceae) in Namibia: Brood-Site Mimicry with Insect Imprisonment’, *International Journal of Plant Sciences*, 170:2 (2009), 157-163; Rudolf Marloth, ‘Notes on the Morphology and Biology of *Hydnora Africana* Thunb.’, *Transactions of the South African Philosophical Society*, 16 (1905-1907), 467.

⁵³⁰ RGBK, DC 58/194, Baron von Ludwig to Hooker, 27 August 1836.

⁵³¹ V.L. Williams, M.P. Falcão and E.M. Wojtasik, ‘*Hydnora abyssinica*: Ethnobotanical evidence for its occurrence in southern Mozambique’, *South African Journal of Botany*, 77 (2011), 474.

evolutionary origins of parasitism in plants. Equally, they are designated as basal angiosperms, one of the first flowering plants to branch off before the separation into monocots and eudicots in the fossil record. *Hydnora*, therefore, is one of the most primitive flowering plants in the natural world.

The cryptic nature and seasonal appearance of *Hydnora* had made European encounters with the plant extremely rare, let alone the collection and preservation of any parts of its fleshy vegetative flower. First extracted by Swedish naturalist Carl Peter Thunberg from the Bokkeveld Mountains in the Hantam district of the Western Cape in 1774, *Hydnora* was by no means a new “discovery” when it was displayed in Jena.⁵³² Unable to grasp the peculiarity of such a plant, Thunberg remarked, ‘but of all that I have so far had the opportunity to see and discover, nothing has seemed to me more strange ... So strange is its composition that many would certainly doubt the existence of such a plant on the face of the earth’.⁵³³ In an initial description published with the Royal Academy of Sciences in Stockholm, Thunberg erroneously grouped it as a fungus related to the genus *Hydnum*.⁵³⁴ What seems curious in hindsight is that he did not consider *Hydnora* as potentially related to its spineless, stem succulent friend the *Stapelia*, which also has visible hairs and generates an odor of decay upon blooming.⁵³⁵ Nonetheless, it took some time to disprove Thunberg’s assertion, as it is only distinguishable from fungi when the flower has opened. This was a common problem when collecting plants out of season; the Linnaean taxonomic system was fundamentally based on flower, making identification tricky with species that flowered infrequently. This initial lapse in taxonomic judgment serves to foreshadow the longstanding biological and taxonomic complications that botanists would endure in the classification of *Hydnora*. To view dried specimens in Thunberg’s herbarium, many nineteenth-century botanists

⁵³² This remains the type species of the *Hydnora africana* today. Jay F. Bolin, Erika Maass and Lytton J. Musselman, ‘A New Species of *Hydnora* (Hydnoraceae) from Southern Africa’, *Systematic Botany*, 36:2 (2011), 255.

⁵³³ Nils Svedelius, ‘Carl Peter Thunberg (1743-1828)’, *Isis*, 35:2 (1944), 130-131.

⁵³⁴ Carl Peter Thunberg, ‘Anmärkningar vid *Hydnora Africana*’, *Kungl. Svenska vetenskapsacademien handligar*, ser. 1, 38 (1777), 144-148. Apparently, he later corrected his mistake in a letter to Linnaeus. ‘Auszug aus Herrn Professor Adolph Murrays Briefe’, *Der Königl. Schwedische Akademie der Wissenschaften Abhandlungen, aus der Naturlehre, Haushaltungskunst und Mechanik, auf das Jahr 1775* (Leipzig: Johann Samuel Heinsius, 1781), 352.

⁵³⁵ For comments on Thunberg’s *Stapelia*, N.E. Brown, ‘The *Stapeliæ* of Thunberg’s Herbarium, with Descriptions of four new Genera of *Stapeliæ*’, *Botanical Journal of the Linnean Society*, 17:99 (1878), 162-172; Francis Masson, the first plant collector sent to the Cape by Kew Gardens in 1785, focused on describing the different species of *Stapelia*. Francis Masson, *Stapelia Novae: or, a Collection of New Species of that Genus; Discovered in the Interior Parts of Africa* (London: W. Bulmer & Co., 1796).

would have had to go to some length to travel to Uppsala, making the (relatively) freshly dried *Hydnora* something of a floral spectacle in 1836.



Fig. 4.2: *Stapelia ambigua* in Francis Masson, *Stapelia Novæ: or, a Collection of New Species of that Genus; Discovered in the Interior Parts of Africa* (London: W. Bulmer & Co., 1796).

Already by 1833, it was clear that Cape collectors had brought back *Hydnora* specimens to Europe, perhaps the first time they had been seen since the time of Thunberg. The collectors, Christian Ecklon, Karl Zeyher, and Johann Franz Drège, all came from humble backgrounds in the German

states, and were part of a new generation of entrepreneurial botanical collectors in the region.⁵³⁶ As quickly as they had become companions in the field, Chapter Three's opening anecdote foreshadows the suspicion that returned in consideration of the impending sale of their specimens. When they arrived in Europe, both attempted to capitalize of their strange finds in German scientific journals, albeit with different motives. In the journal of the German National Academy of Sciences Leopoldina, Drège's patron Ernst Meyer, Professor of Botany at the University of Königsberg, published a treatise describing *Hydnora africana* in relation to Thunberg's initial assessments.⁵³⁷ He also used this as an opportunity to discuss the "discovery" of a new species, the *Hydnora triceps*.⁵³⁸ A small synopsis of the treatise was published in that year's volume of Berlin-based scientific journal *Linnaea* almost directly alongside an announcement of the sale of Ecklon and Zeyher's dried specimens, who mentioned *Hydnora* specifically as one of the more 'remarkable plants' collected on their travels.⁵³⁹

⁵³⁶ Christian Ecklon and Karl Zeyher were collecting partners from 1828 to 1838, and thus should be considered throughout this piece as a pair.

⁵³⁷ Ernst Meyer, 'De Hydnora', *Nova Acta Physicomeditica Academiae Caesareae Leopoldino Carolinae Naturae Curiosorum*, 16 (1833), 770-788.

⁵³⁸ The *Hydnora triceps* is found exclusively in Namaqualand and southern Namibia (Drège's specimen was collected from the Okiep area of the northwestern Cape) and was thought extinct until the 1980s. Erika Maass and Lytton John Musselman, 'Hydnora triceps (Hydnoraceae) – First Record in Namibia and First Description of Fruits', *Dinteria*, 29 (2004), 1; Kushan U. Tennakoon, Jay F. Bolin, Lytton J. Mussselman and Erika Maass, 'Structural attributes of the hypogean holoparasite *Hydnora triceps* Drège & Meyer (Hydnoraceae)', *American Journal of Botany*, 94:9 (2007), 1439-1449.

⁵³⁹ Anon., 'De Hydnora. Auctore Ernesto Meyer Dr. Cum tabulis duabus (LVIII. et LIX) p. 771-788', *Literatur-Bericht zur Linnaea*, 8 (1833), 183-184; C.F. Ecklon, 'Nachricht über die von Ecklon und Zeyher in Südafrika unternommenen Reisen und deren Ausbeute in botanischer Hinsicht', *Linnaea*, 8 (1833), 391.

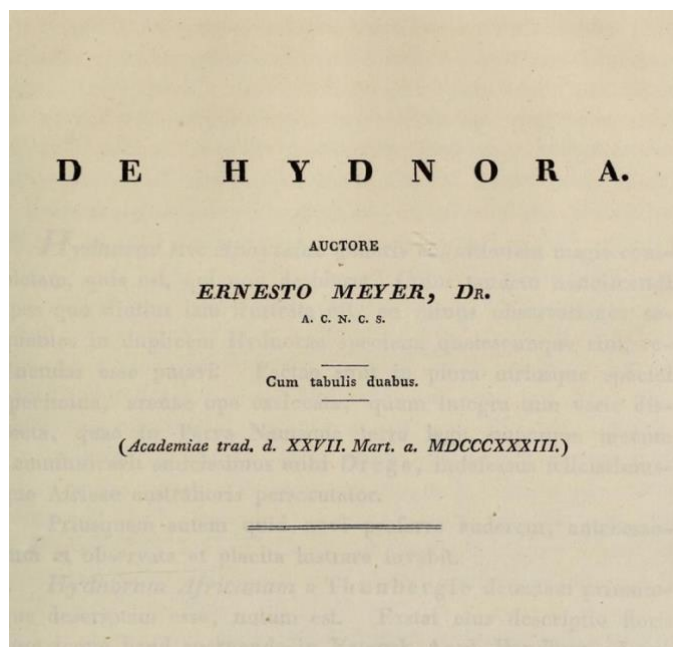


Fig 4.3: Ernst Meyer, 'De Hydnora', *Nova Acta Physicomeditica Academiae Caesareae Leopoldino Carolinae Naturae Curiosorum*, 16 (1833), 770-788.

As Drège would not advertise the sale of his dried collections until 1835, the difference in approach and the placement of *Hydnora* in the two announcements implies opposing intentions between the factions of collectors. Drège and Meyer's choice to publish singularly on the *Hydnora* with the Leopoldina points to their lofty ambitions toward the "discovery" of a new species. Naming a new species provided quite an impressive social advantage. Although Drège's name was not quoted at the end of the binomial, his name was left indelibly on the plant's only known host, the *Euphorbia dregeana*, and both Drège and Meyer's names appear as the taxonomic marker on the *triceps*.⁵⁴⁰ Aiming for the journal of the oldest and most well-respected scientific society in the German-speaking world, and selecting Latin rather than German as their *lingua franca*, suggests a desire to reach the widest sub-section of the global scientific community and that they saw a potential opening by which they could advance their standing within that community. In contrast, Ecklon's commercial imperatives are evident in his straightforward elaboration of collecting localities, placing such a complex find as *Hydnora* merely as one among an array of other rare and popular

⁵⁴⁰ Christophe Bonneuil, 'The Manufacture of Species: Kew Gardens, the Empire, and the Standardisation of Taxonomic Practice in Late-Nineteenth Century Botany' in Bourguet, Licoppe and Sibum (eds.), *Instruments, Travel and Science: Itineraries of Precision from the Seventeenth to the Twentieth Century* (London: Routledge, 2002), 214.

Cape plants. While he does mention the publication of their forthcoming *Enumeratio*, the title gives away its fairly superficial contents. As a simple list of the Ecklon-Zeyher collection with basic descriptions, any “philosophical” work on the material was considered secondary to the sale of specimens. South African botanist Peter MacOwan later reflected that the *Enumeratio* showed little ‘botanical sagacity’ and evinced ‘tokens of great haste’.⁵⁴¹ While it is difficult to trace who Kunze received the *Hydnora* specimen from for his 1836 display, the South African parasite had re-entered the European botanical imaginary.

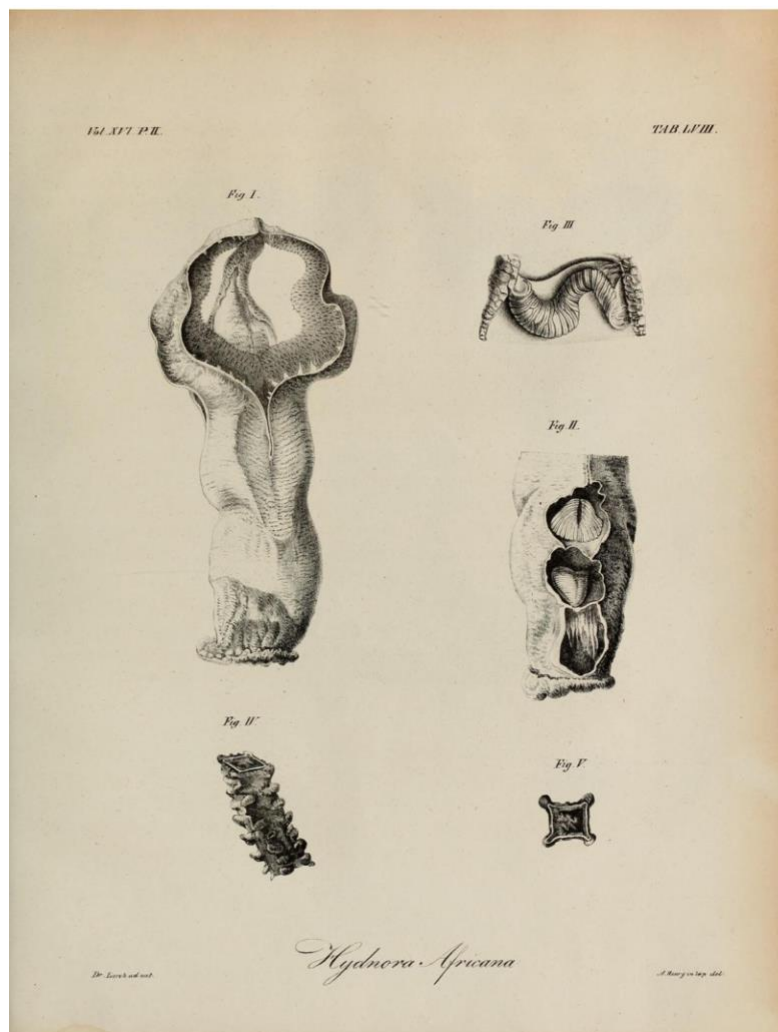


Fig 4.4: Ernst Meyer, ‘De Hydnora’, *Nova Acta Physicomeditica Academiae Caesareae Leopoldino Carolinae Naturae Curiosorum*, 16 (1833), 770-788.

⁵⁴¹ Peter MacOwan, ‘Personalities of Botanical Collectors at the Cape’, *The Transactions of the South African Philosophical Society*, 4:1 (1884-1886), xlv.

Soon enough, European demands for *Hydnora* reached South Africa. After the departure of Ecklon and Drège in 1833, Zeyher remained in the Colony as one of two experienced botanical collectors. Hamburg-born physician Ludwig Pappe was also collecting in his attempt to branch out from medicine into a botanical vocation. The two Cape scientific patrons of this period, Baron von Ludwig and William Henry Harvey, implored Pappe and employed Zeyher to fulfill European *desiderata*.⁵⁴² In fact, Pappe had acquired the only dried specimen of *Hydnora* available in the Cape.⁵⁴³ Professor of Botany at the University of Glasgow, William Jackson Hooker, had requested the specimen from the Baron in 1833, presumably after news had spread that *Hydnora* had been collected by Ecklon-Zeyher and Drège. Despite their scarcity, which would have been known to Hooker, the Baron seemed confident that Pappe could extract more specimens, not only dried but also in spirits.⁵⁴⁴ It took two years for Pappe to deliver on this promise; he collected specimens from Worcester in the vicinity of the Hex River, promptly dried them, and placed one in a preserving agent.⁵⁴⁵ As a consolation for Hooker's patience, the Baron transmitted to him another rare parasitic plant in spirits, the *Ichthyosma wehdemanni*.⁵⁴⁶ In any attempt to gather a *Hydnora*, former Kew collector James Bowie had suggested that another species could be 'found at the frontiers' near the Fish River and Grahamstown, which he claimed he met with on previous travels.⁵⁴⁷ As an employee of the Baron and Harvey, Zeyher had taken residence near Uitenhage and was asked to seek out this potential *Hydnora* varietal, as well as more examples of *Ichthyosma*, among a number of other requests.⁵⁴⁸ These requests not only forced Zeyher to push further outside

⁵⁴² A former apothecary, Baron von Ludwig married the widow of a wealthy tobacco merchant. He pursued natural history in his leisure time, donated money to Cape scientific institutions, and ran a privately-owned botanic garden (1829-1848). William Henry Harvey was the Treasurer General of the Cape (1836-1842) until he took up the post of curator of the Trinity College Herbarium (1844) and Professor of Botany of the Royal Dublin Society (1848).

⁵⁴³ RGBK, DC 58/192, Baron von Ludwig to Hooker, 7 August 1833. The emphasis of 'only' is the Baron's and not my own, but its continued emphasis seems important to highlight here.

⁵⁴⁴ Ibid.

⁵⁴⁵ RGBK, DC 58/188, Baron von Ludwig to Hooker, 27 January 1835.

⁵⁴⁶ Today it would be referred to as the *Sarcophyte sanguinea*. D.F.L. Schlechtendal, 'Nachricht von einer neuen capischen Pflanze Ichthyosma Wehdemanni, mitgetheilt', *Linnaea*, 2 (1827), 671-673; D.F.L. Schlechtendal, 'Nachtrag zu der Ichthyosma Wehdemanni', *Linnaea*, 3 (1828), 194-198. Unlike *Hydnora*, *Ichthyosma* feeds off of African *Acacias* rather than *Euphorbias*, but like the *Hydnora* it resembles fungi and emits a foul smell; its bright colors, too, attract the attention of different insects and pollinators.

⁵⁴⁷ RGBK, DC 58/194, Baron von Ludwig to Hooker, 27 August 1836.

⁵⁴⁸ RGBK, DC 58/59, Harvey to Hooker, 6 October 1837; RGBK, DC 58/190, Baron von Ludwig to Hooker, 28 February 1835. In these years when Zeyher acted as the primary collector, he fulfilled a number of *desiderata* for Hooker and Harvey, two of which seems of particular note: the *Dioscorea elephantipes* (today *Tamus elephantipes*), known as the 'Elephant's Foot' or 'Hottentot Bread', and varietals of the *Zamia*, a genus of the cycad family.

of the Cape's geographical boundaries, but also outside the boundaries of European botanical knowledge, in order to claim the desired specimens.

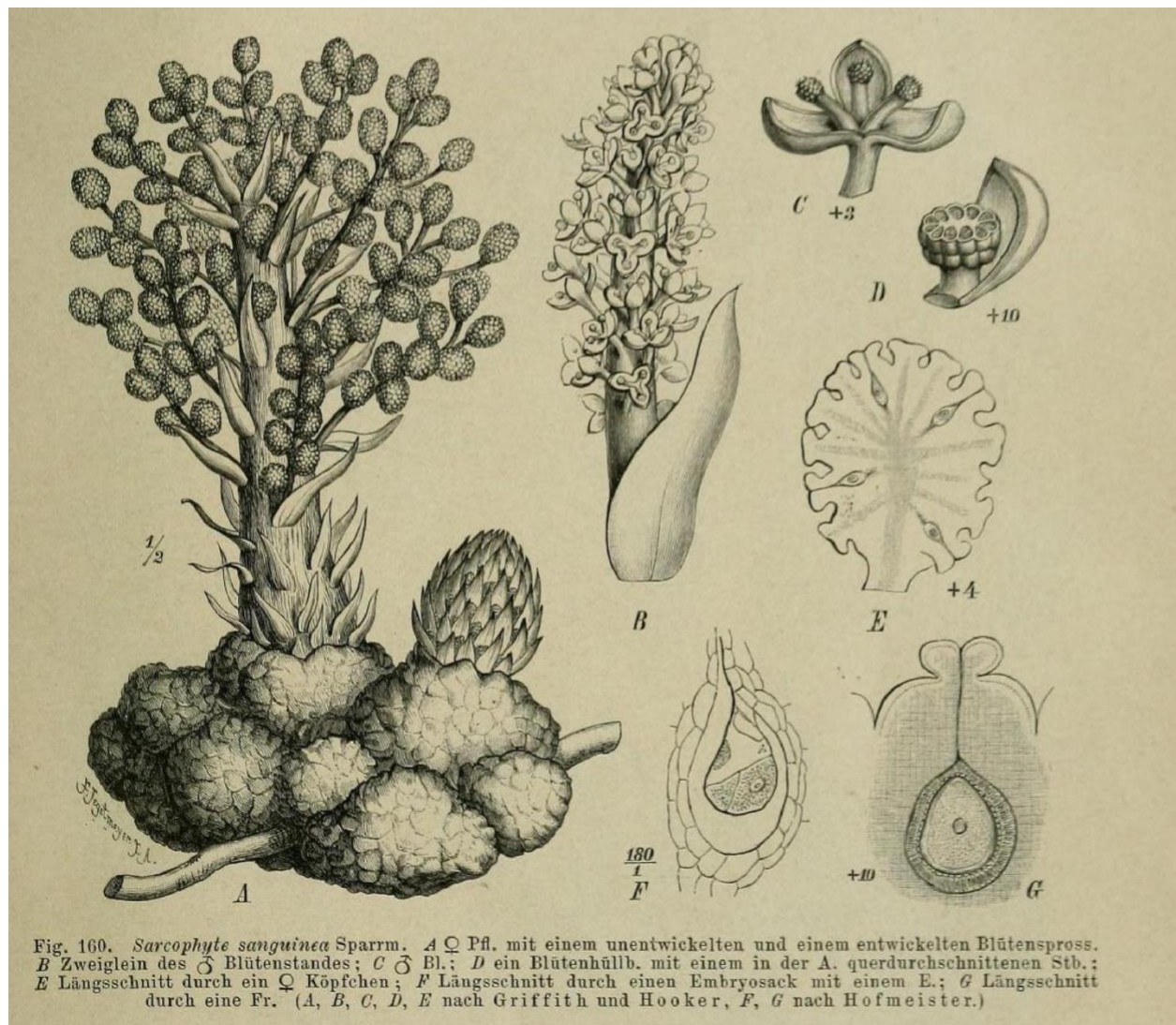


Fig. 4.5: *Ichthyosma wehdemanni* (*Sarcophyte sanguinea*) in A. Engler and K. Prantl, *Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten insbesondere den Nutzpflanzen*, Teil 3, Abteil 1 (Leipzig: Wilhelm Engelmann, 1889), 253.

However, at precisely the point in which *Hydnora* and other desirable Cape plants made their (re)entrance into Europe, Cape collectors became rather restricted in their access to certain parts of southern Africa. Prior to the outbreak of the Sixth Frontier War (1834-36), Baron von Ludwig elaborated his displeasure about ‘the unexpected, sudden & formidable irruption of our barbarous neighbours, the Caffres’ which jeopardized his ability to send anything ‘unless they are driven

back and pursued by the Military and Burgher forces into the very heart of their savage country'.⁵⁴⁹ Yet again, the Baron had confidence in his collectors. He ensured that Zeyher would do everything in his power to follow the burgher forces into the interior to 'collect whatever he can find interesting' despite the danger presented by Xhosa raids.⁵⁵⁰ After the conclusion of the conflict, Zeyher attempted to drive north into 'Massilicatres territory, a chieftan [*sic*] of part of the Zoola tribe'.⁵⁵¹ After a number of Boer families had been murdered 'by that horrible despot', he could scarcely persuade his African assistants to continue on, forcing him to retreat to the Orange River, 'where civilization commenced'.⁵⁵² As a result, Harvey recognized that 'any trip beyond the boundary is now out of the question'.⁵⁵³ In an alternative explanation of the difficulty collectors faced during this period, Bowie claimed that 'the wanton destruction of shrubs by the vagrant emancipated slaves & the consequent accumulation of sand on denuded grounds' better described the disappointment in unfulfilled requests.⁵⁵⁴ The stripped earth, he argued, had been covered in *Ericaceae* and *Proteaceae* only twenty-five years prior, but now apparently no longer grew there. Here, Africans and their "impenetrable environment" are unjustly blamed for the pause in the physical and intellectual extension of European knowledge, rather than processes of ecological degradation and botanical extraction.

⁵⁴⁹ RGBK, DC 58/189, Baron von Ludwig to Murray, 28 February 1835.

⁵⁵⁰ RGBK, DC 58/189, Baron von Ludwig to Murray, 28 February 1835.

⁵⁵¹ RGBK, DC 58/238, Zeyher to Hooker, 25 October 1840; Zeyher has attempted to pronounce Mzilikazi, ruler of the rising Ndebele polity, phonetically. If he was attempting to travel north of the Vaal River, that placed Zeyher in the Transvaal region in the rough end years/aftermath of the *mfecane* and as the Voortrekkers began to arrive in the region. The clashes between Mzilikazi and the Voortrekkers ultimately pushed Mzilikazi's amaNdebele into Matebeleland (southwestern Zimbabwe). See Elizabeth Eldredge, *The Creation of the Zulu Kingdom, 1815-1828: War, Shaka, and the Consolidation of Power* (Cambridge: Cambridge University Press, 2014); John Wright, 'Turbulent Times: Political Transformations in the North and East, 1760s-1830s' in Hamilton, Mbenga and Ross (eds.), *The Cambridge History of South Africa*, vol. 1 (Cambridge: Cambridge University Press, 2009), 211-252. For revisionist analyses of Zulu-centrism in this period, including the possibility of abandoning the term *mfecane* as part of the outdated Zulu-centric line of argument: Carolyn Hamilton. (ed.), *Mfecane Aftermath: Reconstructive Debates in Southern African History* (Johannesburg: Wits University Press, 1995).

⁵⁵² RGBK, DC 58/238, Zeyher to Hooker, 25 October 1840

⁵⁵³ RGBK, DC 58/66, Harvey to Hooker, 29 June 1838.

⁵⁵⁴ RGBK, DC 58/12, Bowie to Hooker, 12 March 1842.

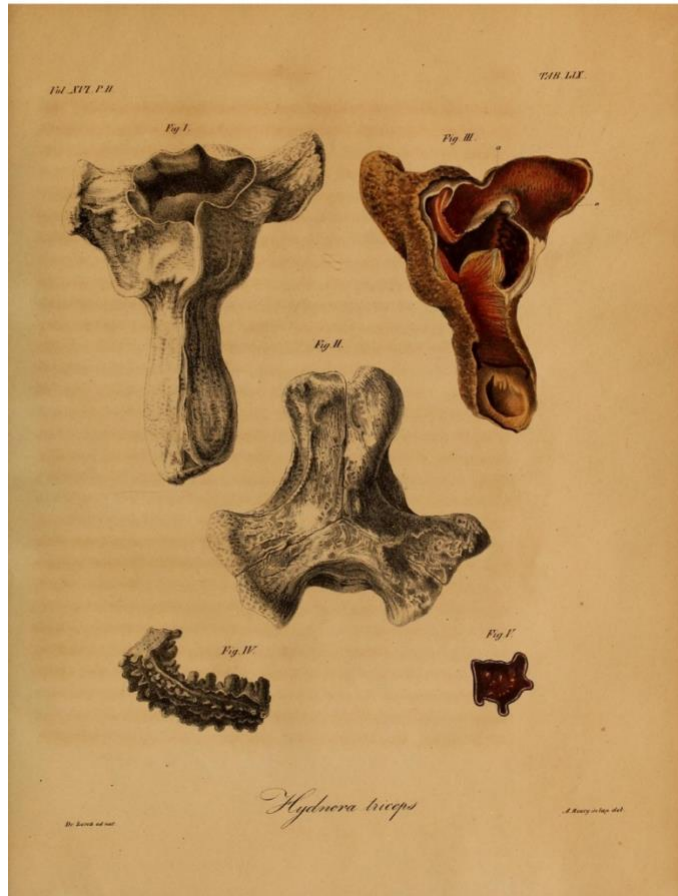


Fig. 4.6: Ernst Meyer, 'De Hydnora', *Nova Acta Physicomedica Academiae Caesareae Leopoldino Carolinae Naturae Curiosorum*, 16 (1833), 770-788.

Despite the logistical difficulties in obtaining *desiderata* from southern Africa, the nature of *Hydnora* itself made procuring a sample a primary issue for collectors. The lack of proper herbarium material sparked enormous controversy and debate, manifesting in questions of how botanists could classify plants without seeing them *in situ* and what characteristics should be considered in defining and ordering flowers that 'appeared decidedly afloral'.⁵⁵⁵ Elaine Ayers has detailed similar complexities in relation to the Sumatran *Rafflesia arnoldii*.⁵⁵⁶ She argues that problems in 'material availability and preservation, intensified by the precise point of contact between host and subject' exacerbated the collection and classification not only of *Rafflesia*, but

⁵⁵⁵ Ayers, 'Strange Beauty', 374.

⁵⁵⁶ See also: Timothy P. Barnard, 'The *Rafflesia* in the Natural and Imperial Imagination of the East India Company in Southeast Asia', in Damodaran, Winterbottom and Lester (eds.), *The East India Company and the Natural World* (Basingstoke: Palgrave, 2015), 147-164.

of parasitic species around the globe.⁵⁵⁷ British botanist and keeper of the Banksian Botanical Collection at the British Museum, Robert Brown, formally introduced *Rafflesia arnoldii* to the scientific world in 1820. Although initially drawn to unassuming flora like cryptogams and mosses, he quickly turned his attention to the puzzling field of plant parasitism. In his inaugural report, he referred the dearth of material evidence needed to better understand what he considered a necessary field of botanical research. He wrote, ‘sufficient materials, indeed, for such an investigation are hardly to be expected in collections, in which the parasite is most frequently separated from the root; and even when found in connection with it, is generally in a state too far advanced to afford the desired information’.⁵⁵⁸ In his attempt to ascertain how the flower reproduced and whether it was indeed a parasite, Brown seemed unsure of his conclusions. Most surprising was his claim that the plant’s outward characteristics signified its parasitism.⁵⁵⁹ Consequently, this account on *Rafflesia* called into question the place of parasitism in the accepted Western perception of the order of the floral kingdom.

In 1834, Brown revised his classification of *Rafflesia* after the arrival of new specimens and *in situ* observations, as well as an intervention from Braunschweig-born botanist Karl Ludwig Blume on the *Rafflesia patma*.⁵⁶⁰ In a paper read to the Linnean Society, he included new findings not just on the corpse flower, but on *Hydnora*, too, discussing their affinities and whether they should be classed together. Because of the new specimens that had entered the market, as well as Meyer’s treatise, Brown could now claim that there were points in *Hydnora*’s structure ‘which seem to throw some light on one of the most difficult questions respecting *Rafflesia*’, bringing him to more fully realized conclusions about the nature of parasitism.⁵⁶¹

⁵⁵⁷ Ayers, ‘Strange Beauty’, 373.

⁵⁵⁸ Robert Brown, ‘Account of a New Genus of Plants, Named *Rafflesia*’, *Transactions of the Linnean Society of London*, 13 (1821), 225.

⁵⁵⁹ Brown, ‘Account’, 203-204.

⁵⁶⁰ Karl Ludwig Blume serves as another potentially interesting case study of transnational/trans-imperial scientific Germans. He introduced a new species of *Rafflesia* (*Rafflesia patma*) in his *Flora Javae*, classing them with other large flowering parasites (*Rhizanthæ*), eschewing the idea that *Rafflesia* might be a fungus or other cryptogram. Karl Ludwig Blume, *Flora Javae nec non Insularum Adjacentium* (Brussels: J. Fraank, 1828-51); C.G. Nees von Esenbeck, ‘Etwas über die Rhizanthæae, eine neue Pflanzenfamilie, und die Gattung *Rafflesia*’, *Flora, oder botanische Zeitung*, 8:2, Nro. 39 (1825), 609-624.

⁵⁶¹ Robert Brown, ‘Description of the Female Flower and Fruit of *Rafflesia Arnoldi*, with Remarks on its Affinities; and an Illustration of the Structure of *Hydnora Africana*’, *Transactions of the Linnean Society of London*, 19 (1845), 221.

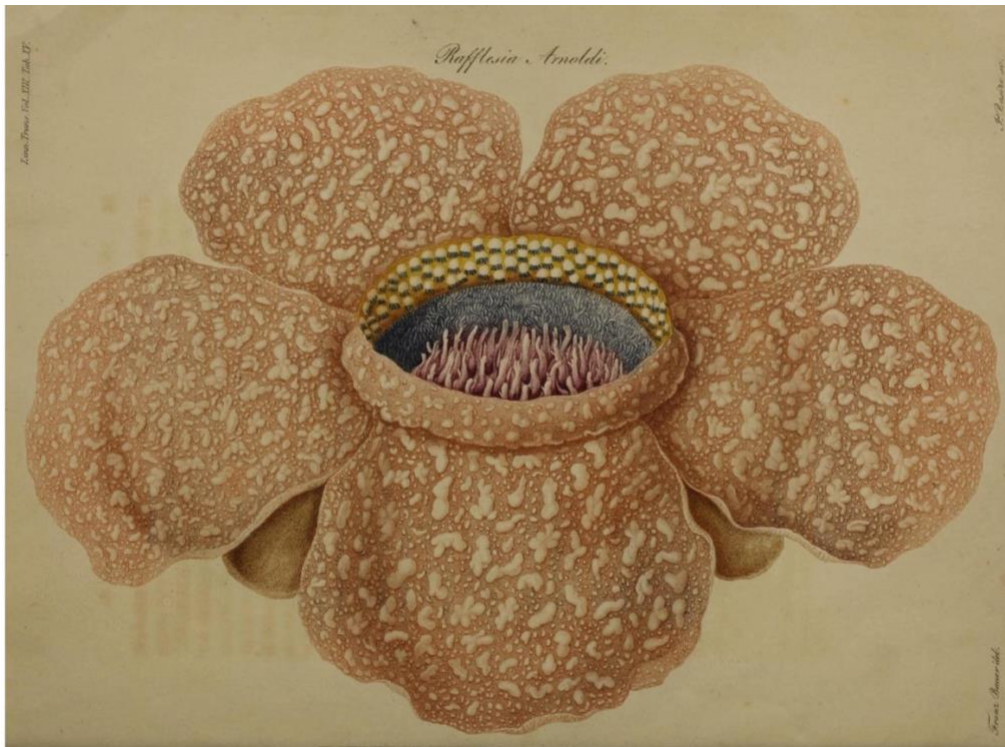


Fig 4.7: *Rafflesia arnoldii*, ill. Franz Andreas Bauer, in Robert Brown, 'Account of a New Genus of Plants, Named *Rafflesia*', *Transactions of the Linnean Society of London*, 13 (1821).

British botanist William Griffith, a student of Brown's who had been working in scientific positions across the British Empire, published a multi-part response questioning Brown's methodology and central premise, likewise invoking *Hydnora* to explain his findings.⁵⁶² His contentions were both taxonomic and material, and the latter wholly informed the former. Fundamentally, he believed that parasitism alone could scarcely be used as the singular point of comparison between what he perceived as widely divergent plants.⁵⁶³ This was part of an evolving debate in taxonomy: should naturalists keep the one-character method of Linnaeus or was it possible to use more than one morphological characteristic to differentiate when naming a new genus and species?⁵⁶⁴ But, determining those characteristics in such a complicated and mysterious process as parasitism could only be studied using live plants, or at least freshly cut ones. This had

⁵⁶² Some biographical information on Griffith in: Richard Axelby, 'Calcutta Botanic Garden and the Colonial Re-Ordering of the Indian Environment', *Archives of Natural History*, 35:1 (2008), 155-157.

⁵⁶³ William Griffith, 'On the Root-Parasites Referred by Authors to Rhizanthaceae: and on Various Plants Related to Them', *Transactions of the Linnean Society*, 19 (1845), 304-305.

⁵⁶⁴ This is outlined in entomological terms by Mary P. Windsor, 'The Development of Linnaean Insect Classification', *Taxon*, 25:1 (1976), 57-67.

been forwarded by Austrian botanist Franz Unger in 1840, who suggested that the work of collectors in the field was absolutely essential for studying parasitism: ‘it will also make known in detail about their way of life, which must be studied on the spot’.⁵⁶⁵ Other botanists like Carl W. von Nägeli, C.C. Babington, and Richard Spruce agreed; this method was seen as ‘more natural than experimental studies in a garden, and more accurate than the herbarium observation of dried specimens.’⁵⁶⁶ Thus, the herbarium specimens of *Rafflesia* available to Brown presented, in Griffith’s opinion, desiccated, degraded, and ultimately useless evidence.⁵⁶⁷ Based on his own fieldwork rather than ‘incomplete’ herbarium samples, Griffith concluded that *Rafflesia* and *Hydnora* were not similar in their parasitism.⁵⁶⁸ Yet, he could not claim virtue, as he had never seen *Hydnora* in its natural habitat in order to make his own comparisons. Acting somewhat hypocritically in his derision of Brown, the specimens of *Hydnora* he examined were ‘both in the dry state and in ... pyroligneous acid’, clearly the examples that Pappe had collected years earlier.⁵⁶⁹ The questions that arose from attempts to create order out of seeming chaos led Griffith into a lengthy reflection, critiquing the system of botanical taxonomy as a process mainly conducted in the elite confines of the herbarium and museum. Where to study traits like parasitism – in the field or in the herbarium – seemed irreconcilable, and *Hydnora africana* stood at the center of this debate.

⁵⁶⁵ Franz Unger, ‘Beiträge zur Kenntniss der Parasitischen Pflanzen’, *Annalen des Wiener Museums der Naturgeschichte*, Bd. 2 (1840), 15.

⁵⁶⁶ Bonneuil, ‘Manufacture of Species’, 194.

⁵⁶⁷ Ayers, ‘Strange Beauty’, 390.

⁵⁶⁸ Griffith, ‘Root-Parasites’, 313.

⁵⁶⁹ ‘Proceedings of Learned Societies’, *The Annals and Magazine of Natural History; Zoology, Botany, and Geology*, 6:97 (1845), 192.

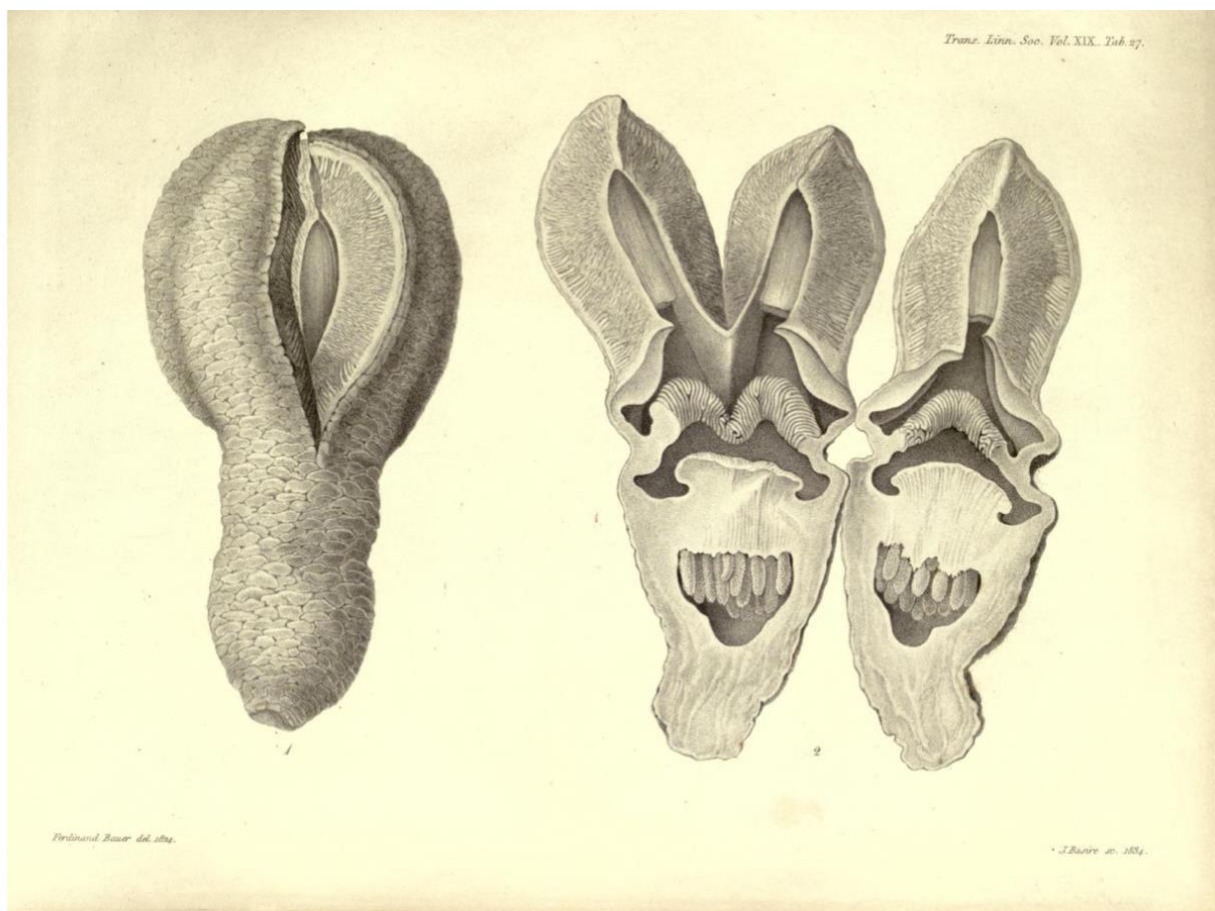


Fig. 4.8: A visual accompanying Griffith's analysis of the *Hydnora africana*. William Griffith, 'On the Root-Parasites Referred by Authors to Rhizanthaceae: and on Various Plants Related to Them', *Transactions of the Linnean Society*, 19 (1845).

Ultimately, the defiance of plants like *Rafflesia* to submit to human endeavor contributed to the difficulty in studying the plant's parasitism and internal structures. Zeyher understood *Hydnora* in similar terms, as it was one among 'many a Cape plant' which was 'obstinate in the first instance, to submit to the treatment and wishes of man'.⁵⁷⁰ For Brown and Griffith, the impenetrability of *Rafflesia* was essentially tied to their understanding of its tropical home in the Sumatran rainforest. The corpse flower, like many unusual and exotic plants, became deeply entwined with configurations and constructions of the environment. Yet, botanists dwelled very little on the desert landscape which gave life to *Hydnora*, omitting it from grandiose portrayals and popular imaginings of the idiosyncrasy of nature. It is possible that this is because they understood very

⁵⁷⁰ RGBK, DC 59/351, Zeyher to Hooker, 5 March 1851.

little about its specific ecological context; in their mind, they separated the desert plant from its desert environment. The enigmatic character of *Hydnora*, though, was not lost on those who studied it. The flower's strangeness is best embodied by botanist C.G. Nees von Esenbeck in a hanging quote attached to Franz Unger's *Beiträge zur Kenntniss der Parasitischen Pflanzen* (1840): 'Aphyteja Hydnora thus stands as a hieroglyphic key between two worlds, which like dream and waking, are laid out in an endless interrelationship and flee before us.'⁵⁷¹

Nonetheless, in the herbarium, plants defined by their physical structure occupied a paradoxical place, inextricably tied to their home while simultaneously abstracted to help explain undefinable aspects of nature. Likewise, their resistance to travel and their dramatic structural change in the drying process offered a similarly liminal space, rarely captured in their true living form beyond the root which offers their nutrients. Although new technologies and taxonomic methods partially helped to streamline the process of physical and intellectual transmission, the best chance for understanding complex plant life was to bring the experts to the data rather than extracting the material to be sent for analysis.⁵⁷² The moment these collectors detached *Hydnora* from its *Euphorbia* root, an indigenous African plant was both materially and intellectually abstracted to fit into Western notions of scientific knowledge. In attempts to comprehend the essence of parasitism, *Hydnora* both resisted and facilitated human understanding. While we now have a better grasp of its place amongst other parasitic plants in the floral kingdom, *Hydnora* has been successfully cultivated only once outside of southern Africa, illustrating how even today the plant poses difficulties for botanists. But *Hydnora*'s furtive life histories, poor representation in herbaria, and recalcitrance to cultivation continue to make it one of the more mysterious organisms in the natural world.

⁵⁷¹ Unger, 'Beiträge', 14. Robert Mitchell argues that the Romantics underwent 'a vertiginous falling for the strange and dark life of vegetation', which seems characteristic of the sentiment Nees von Esenbeck is attempting to convey here. Robert Mitchell, 'Cryptogamia', *European Romantic Review*, 21:5 (2010), 632.

⁵⁷² Matthew Sargent, 'Recentring Centers of Calculation: Reconfiguring Knowledge Networks within Global Empires of Trade' in Findlen (ed.), *Empires of Knowledge: Scientific Networks in the Early Modern World* (New York: Routledge, 2019), 314.

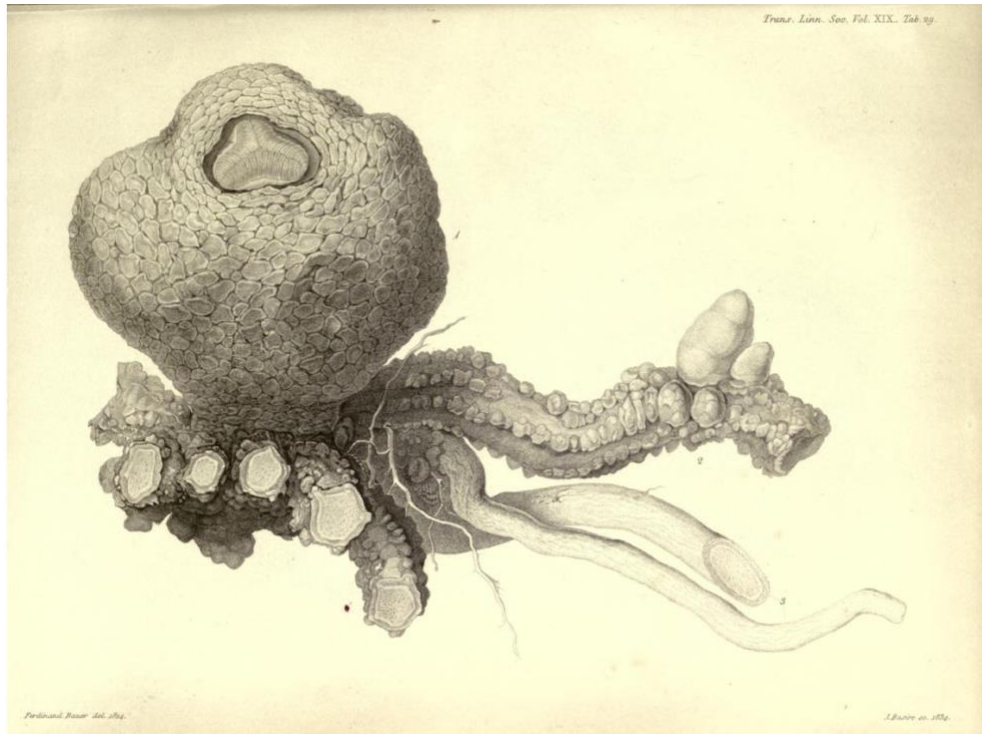


Fig. 4.9: *Rafflesia arnoldii* in Robert Brown, 'Description of the Female Flower and Fruit of *Rafflesia* Arnoldi, with Remarks on its Affinities', *Transactions of the Linnean Society of London*, 19 (1844).

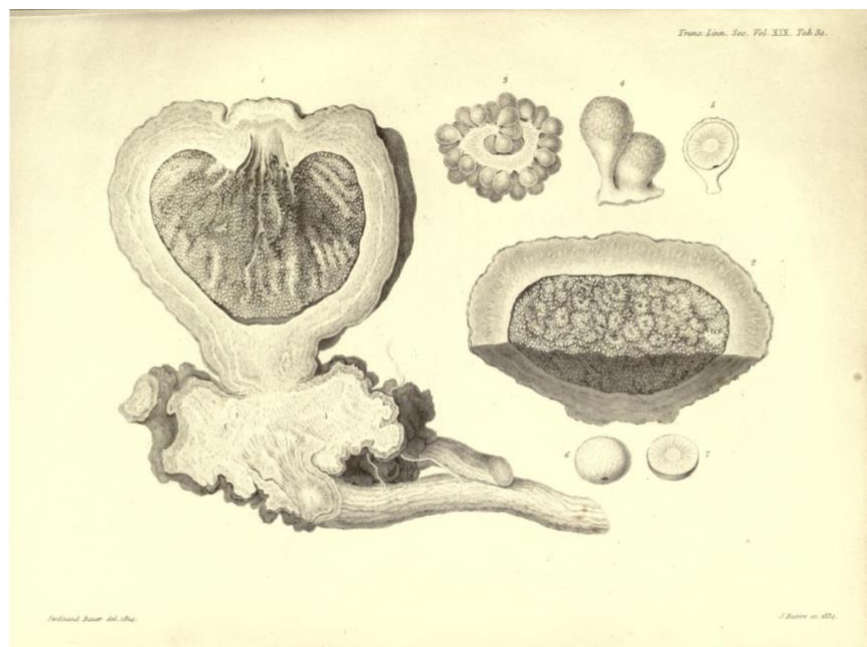


Fig. 4.10: *Rafflesia arnoldii*, in Robert Brown, 'Description of the Female Flower and Fruit of *Rafflesia* Arnoldi, with Remarks on its Affinities', *Transactions of the Linnean Society of London*, 19 (1844).

The Collection of Human Remains in the Cape

While the Sixth Frontier War was seen as a major interference to metropolitan naturalists and colonial collectors wishing to fulfill botanical *desiderata* in the eastern districts, the brute violence of the conflict presented an opportunity to collect a different type of *desiderata*: human remains. The collection of human remains was not an uncommon practice in the early nineteenth-century Cape Colony. Internecine warfare was convenient for such a practice, as it provided a continuous stream of cadavers increasingly sought by anatomists and naturalists in Europe. The sub-disciplines of phrenology and craniology would soon form supposedly legitimate sciences, the further study of which required more bodies from around the world for experimentation and analyses. These remains offered the raw material that could be transformed or interpreted into scientific data about human beings, ultimately aiding in the development of racial biology.⁵⁷³ In the South African case, although Saul Dubow makes a compelling case for the entrenchment of theoretical racism by the twentieth century, Andrew Bank maintains that the nineteenth-century antecedents of ‘full-fledged’ racial science still remain rather obscure.⁵⁷⁴ With a ready interest and market for human specimens waiting in Europe, task of these collectors was simply to find appropriate and intact examples, materials which abounded in a violent colony. Thus, southern Africa was fundamental to the commercialization and objectification of human remains and a major site for the emergence of a racist branch of anatomical science.

While a large scholarly literature has come to exist on the subject, its focus often tends to lie more in current politicized debates around the identification and repatriation of human remains to their places and communities of origin.⁵⁷⁵ However, as Patrick Grogan appropriately argues, the

⁵⁷³ Laura Franey, ‘Ethnographic Collecting and Travel: Blurring Boundaries, Forming a Discipline’, *Victorian Literature and Culture*, 29:1 (2001), 219; Patrick Harries, ‘Warfare, Commerce, and Science: Racial Biology in South Africa’, in Bancel, David and Thomas (eds.), *The Invention of Race: Scientific and Popular Representations* (London: Routledge, 2014), 172.

⁵⁷⁴ Saul Dubow, *Scientific Racism*; Andrew Bank, ‘Of “Native Skulls” and “Noble Caucasians”’: Phrenology in Colonial South Africa’, *Journal of Southern African Studies*, 22:3 (1996), 388. This is besides the wealth of research done on Robert Knox and his time as a military surgeon in the Eastern Cape (1817-20).

⁵⁷⁵ Premesh Lalu, *The Deaths of Hintsa: Postapartheid South Africa and the Shape of Recurring Pasts* (Cape Town: HSRC Press, 2009); Jeremiah J. Garsha, ‘Expanding *Vergangenheitsbewältigung*? German Repatriation of Colonial Artefacts and Human Remains’, *Journal of Genocide Research*, 22:1 (2020), 46-61; Ciraj Rassool, ‘Re-storing the Skeletons of Empire: Return, Reburial and Rehumanisation in Southern Africa’, *Journal of Southern African Studies*, 41:3 (2015), 653-670; Martin Legassick and Ciraj Rassool, *Skeletons in the Cupboard: South African Museums and the Trade in Human Remains, 1907-1917* (Cape Town: South African Museum, 2000); H. Stoeker, T.

circumstances and narratives of their initial collection are equally valuable ‘if we are to recover some of the humanity lost by human beings as their mortal remains were converted into objects of science, commerce, and racial theory’.⁵⁷⁶ Laura Franey has also remarked that historians have not responded considerably to a similar entreaty: that attention be paid not only to each museum specimen’s ‘whole history’ but also to the ‘historical contextualization of the collecting process’.⁵⁷⁷ Accordingly, provenance remains a crucial factor in linking local peoples and customs, historical narratives, and museum artifacts, but also constitutes an indispensable prerequisite for the successful repatriation of human remains.⁵⁷⁸ Kim Wagner offers a skillful example in his exploration into the life and death of Alum Bhég, a rebel of the 1857 Indian Uprising. He reveals how human remains were often appropriated as war mementos and trophies (particularly if they were ‘named’), rendering them highly valuable in a personal collection or at auction.⁵⁷⁹ In the case of Alum Bhég, it was not simply the scientific paradigm that permitted the collection of human skulls, but “savage warfare” in itself inherently involved a process of completely dehumanizing indigenous populations.⁵⁸⁰ The ambition to claim a prized trophy, or to acquire a large profit,

Schnalke and A. Winkelmann (eds.), *Sammeln, Erforschen, Zurückgeben? Menschliche Gebeine aus der Kolonialzeit in akademischen und musealen Sammlungen* (Berlin: Christoph Links Verlag, 2013); the special issue ‘Human remains from Namibia in German Collections’ in *Human Remains and Violence: An Interdisciplinary Journal*, 4:2 (2018).

⁵⁷⁶ Patrick Grogan, “‘Nothing but love for natural history and my desire to help your Museum’”? Ludwig Krebs’s transcontinental collecting partnership with Hinrich Lichtenstein’ in Lengwiler, Penn and Harries (eds.), *Science, Africa and Europe: Processing Information and Creating Knowledge* (London: Routledge, 2019), 77. See: Patrick Grogan, ‘German Natural History Collectors and the Appropriation of Human Skulls and Skeletons in Early Nineteenth Century Southern Africa: Towards a Discursive Analysis of Collecting’ in Arlt, Bishop and Schmid (eds.), *Explorations in African History: Reading Patrick Harries* (Basel: Basler Afrika Bibliographien, 2015), 65-69.

⁵⁷⁷ Laura E. Franey, *Victorian Travel Writing and Imperial Violence: British Writing on Africa, 1855-1902* (Basingstoke: Palgrave, 2003), 113; Michael Ames, *Cannibal Tours and Glass Boxes: The Anthropology of Museums* (Vancouver: University of British Columbia Press, 1992), 141; See Ann Fabian, *The Skull Collectors: Race, Science, and America’s Unburied Dead* (Chicago: University of Chicago Press, 2010); Astrid Swenson, *The Rise of Heritage: Preserving the Past in France, Germany and England, 1789-1914* (Cambridge: Cambridge University Press, 2013).

⁵⁷⁸ Kim A. Wagner, ‘Confessions of a Skull: Phrenology and Colonial Knowledge in Early Nineteenth-Century India’, *History Workshop Journal*, 69 (2010), 47.

⁵⁷⁹ Kim A. Wagner, *The Skull of Alum Bhég: The Life and Death of a Rebel of 1857* (Oxford: Oxford University Press, 2017). A recent PhD also follows this line: Jeremiah J. Garsha, ‘The Head of Chief Mkwawa and the Transnational History of Colonial Violence, 1898-2019’, PhD diss, University of Cambridge, 2020; Simon J. Harrison, ‘Skulls and Scientific Collecting in the Victorian Military: Keeping the Enemy Dead in British Frontier Warfare’, *Comparative Studies in Society and History*, 50:1 (2008), 295-303; Simon Harrison, *Dark Trophies: Hunting and the Enemy Body in Modern War* (New York: Berghahn, 2012); Laura E. Franey, *Imperial Violence*, 116-123; Cora Bender, “‘Transgressive Objects’ in America: Mimesis and Violence in the Collection of Trophies during the Nineteenth Century Indian Wars’, *Civil Wars*, 11:4 (2009), 502-513.

⁵⁸⁰ Wagner, *Alum Bhég*, 197.

encouraged collectors into imaginative and blatant forms of risk-taking in order to realize their *desiderata*. These processes ultimately transformed humans into objects, of both science and commerce.

Hinrich Lichtenstein made a point of collecting skulls during his travels in southern Africa in the first years of the nineteenth century. He toured the northern frontier, a site of frequent conflict between Dutch farmer commandos and the San, an indigenous hunter-gatherer group who resided in present-day Namibia, Angola, Botswana, South Africa, Zambia, and Zimbabwe. Keen to claim a “Bushman” skull for himself, he recorded at length his efforts to do so:

... lying out in the open fields were the skeletons of some Bosjemans, who had been shot a few years before by the owner of the place, as they were stealing some of his oxen. Long as I had been anxious to secure the skull of some of these strange savages, I entreated our host to permit some of his slaves or Hottentots to go and fetch me one of the skulls, for which I would give them a tip: to this he willingly consented but neither menaces or entreaties could prevail on any of them to earn the promised recompense. They declared that they would rather carry the heaviest burden all the way from Graaf Reynett [*sic*], than the head of a dead man the distance of only a quarter of an hour ... All I could obtain was that one of the slaves should accompany me to the place where the skeletons were lying ... At the place indicated, I found the bones of, as I supposed, about four men, but the carcasses had been so torn, gnawed and scattered about by the wild beasts, that I could with great difficulty find among the fragments parts of two skulls: these for want of better specimens, I was forced to carry away with me as a great treasure. My conductor stopped at some distance, where he remained until I returned to him, nor would he offer to carry my burden for me a single step of the way.⁵⁸¹

He did, in fact, claim his prize: the skull (and sections of facial tissue) of a San man who had died in a prison at Tulbagh, a village north of Cape Town. Likely through connections fashioned through his father Anton, zoologist and Professor of Theology at the University of Helmstedt, or with the help of his mentor in Berlin, Johann Illiger, he presented the skull to the well-known comparative anatomist Johann Friedrich Blumenbach in Göttingen.⁵⁸² Lichtenstein’s travel

⁵⁸¹ Hinrich Lichtenstein, *Travels in Southern Africa in the years 1803, 1804, 1805 and 1806*, trans. A. Plumtre, vol. 2 (London: Henry Colburn, 1815), 21. Also in Hinrich Lichtenstein, *Reisen im südlichen Africa in den Jahren 1803, 1804, 1805 und 1806*, vol. 2 (Berlin: C. Salfeld, 1812), 35. On Plumtre’s translation of Lichtenstein, see: Alison E. Martin, ‘Performing Scientific Knowledge Transfer: Anne Plumtre and the Translation of Martin Hinrich Lichtenstein’s *Reisen im südlichen Afrika* (1811)’, *Journal of Literature and Science*, 8:1 (2015), 9-26.

⁵⁸² Lichtenstein, *Reisen*, vol. 2, 588. Alan G. Morris alleges that a skull in the Berlin Museum is listed as being donated by Lichtenstein but that it is not possible to link it to the specimen described in Lichtenstein’s journal. He

account was one that collectors would have consulted for general advice when traveling. Setting an example in his narrative, he demonstrated that ‘scientific advantage’ could be made of any kind of ‘unhappy incident’, and in return, one might have the opportunity to present it to a high-status naturalist like Blumenbach.⁵⁸³

What is striking is the immediate indication of an ethical and cultural offense between Lichtenstein’s extractive action and what the African onlookers perceived – no slave or servant would retrieve the skulls, nor would they carry the fragments any distance, much to Lichtenstein’s frustration. Sensitivity to the indigenous dead was often a “problem” for collectors. When Eugen Fischer, founding Director of the Kaiser Wilhelm Institute for Anthropology, Human Genetics and Eugenics, arranged to steal bodies of the ~~≠~~Aonin (Kuiseb Topnaar) community from the Namib Desert in 1908, his autobiographical account betrays a clear recognition of his transgressions.⁵⁸⁴ Aware of the full impact of his actions, he wrote, ‘as drivers and diggers I used two Cape boys, since I tried to avoid taking native Hottentots or Hereros in this case, who presumably might have considered it painful that for scientific purposes that were beyond their comprehension we would disturb the peace of the graves of their own kind’.⁵⁸⁵ Andrew Zimmerman details similar cognizance in the writings of Felix von Luschan, assistant to Adolf Bastian at the *Königliches Museum für Völkerkunde* and later the first chair of anthropology at the University of Berlin. Luschan used the 1904-05 Maji Maji Rebellion in German East Africa as an opportunity to acquire

also claims that Lichtenstein brought back a skull belonging to an unknown female Khoe who had been found dead in the veld, citing Lichtenstein’s *Travels* as the source, but I have been unable to locate that claim. It seems uncertain between Harries and Morris how many (intact) skulls Lichtenstein actually brought back with him. Alan G. Morris, ‘The Reflection of the Collector: San and Khoi Skeletons in Museum Collections’, *The South African Archaeological Bulletin*, 42:145 (1987), 12; Harries, ‘Racial Biology’, 172. Professor Holger Stöcker is presently investigating Lichtenstein’s San skull from this incident at Göttingen, work forthcoming.

⁵⁸³ Krebs to Georg Krebs, 2/3 October 1820, *Ludwig Krebs*, 22. For more on Blumenbach, see: Nicolaas Rupke and Gerhard Lauer (eds.), *Johann Friedrich Blumenbach: Race and Natural History 1750-1850* (London: Routledge, 2019); Wolfgang Böker, ‘Blumenbach’s Collection of Human Skulls’, in Rupke and Lauer, eds., *Johann Friedrich Blumenbach: Race and Natural History 1750-1850* (London: Routledge, 2019).

⁵⁸⁴ Reinhart Kößler, ‘Imperial Skulduggery, Science and the Issue of Provenance and Restitution: The Fate of Namibian Skulls in the Alexander Ecker Collection in Freiburg’, *Human Remains and Violence: An Interdisciplinary Journal*, 4:2 (2018), 31.

⁵⁸⁵ Eugen Fischer, *Begegnungen mit Toten: Aus den Erinnerungen eines Anatomen* (Freiburg i.B.: Haans Ferdinand Schulz, 1959), 78. Zoé Samudzi, ‘Capturing German Southwest Africa: Racial Production, Land Claims, and Belonging in the Afterlife of the Herero and Nama Genocide’, PhD diss, University of California, San Francisco, 2021 also touches on the subject of Fischer’s actions in Namibia.

bodies; he suggested that bones and soft tissue should be secured in an ‘unproblematic’ way.⁵⁸⁶ Particularly keen to obtain the brains of soldiers from New Guinea recruited to fight in East Africa, he advised those on the ground to take action only ‘if it can be done without upsetting the survivors’.⁵⁸⁷ His solution if it were to cause a cultural clash: inter them in a separate part of the graveyard with a well-sealed bottle that contained the exact nationality of the corpse; ‘then it would be easy to dig up and identify the skeletons in several years, after the survivors have already been repatriated’.⁵⁸⁸ Europeans often switched between blatant disregard and attempts to disguise their actions, fully conscious of indigenous reactions.

Looking back into nineteenth-century ethnography, the general doctrine of the Khoekhoe in matters of death is that they believed ‘the soul of a dead person goes with him into the grave, from which it has the faculty of emerging at will as a ghost, in either luminous or terrifying form’.⁵⁸⁹ Ghosts of the dead were known by many terms, particularly //gaunagu, the masculine plural form of //Gaunab, who is one of the outstanding figures in Khoekhoe religion, intimately linking the mythical being //Gaunab with the ghosts of the dead.⁵⁹⁰ Heinrich Vedder, a missionary ethnographer of the *Rheinische Missionsgesellschaft*, remarked that anyone ‘who treads on a grave, passes on unmindfully, or points at a grave with his finger, has disturbed the rest of the dead and must expect his revenge’.⁵⁹¹ South African anthropologist Winifred Hoernlé took Vedder’s observations a step further, discussing the fear of the skeleton. She is quoted saying,

If one asks a Nama why he is afraid of the grave, he answers it is because of the thing that is there, the skeleton, which he says is a fearsome thing. No Nama will touch a dead man’s bones, if he can help it, and on the Orange River, when I found a skeleton on the sand dunes and picked it up, my native guide told me the /hei/nun [ghost] would surely follow us, did they not know I was not afraid of them.⁵⁹²

⁵⁸⁶ Andrew Zimmerman, *Anthropology and Antihumanism in Imperial Germany* (Chicago: University of Chicago Press, 2001), 161.

⁵⁸⁷ Ibid.

⁵⁸⁸ Ibid.

⁵⁸⁹ Isaac Schapera, *The Khoisan Peoples of South Africa* (London: Routledge, 1930), 366.

⁵⁹⁰ Ibid., 366-367.

⁵⁹¹ Ibid., 368.

⁵⁹² Ibid., 368. See: A. Winifred Hoernlé, ‘The Social Organization of the Nama Hottentots of Southwest Africa’, *American Anthropologist*, 27:1 (1925), 1-24; Thomas Widlok, ‘Unearthing Culture: Khoisan Funerals and Social Change’, *Anthropos*, 93:1/3 (1998), 115-126.

Part of the fear inherent in graves and skeletons is the belief that ghosts cause the majority of sicknesses and death, either in themselves or through the *!gei aogu*, the magicians.⁵⁹³ Consequently, the attitude of the living towards the ghost (or dead) was one of fear and dread.

However, colonial philologist Theophilus Hahn demonstrated that feelings toward the dead were not always negative; sometimes dead people could be invoked to help their descendants.⁵⁹⁴ Isaac Schapera posits that this is perhaps a distinction made between the spirit of the deceased, arising from the soul and looked upon as capable of doing good, and of the ghost, arising from the corpse and thus something to be dreaded.⁵⁹⁵ But Hahn's observation is significant in that it points to the possibility of a future life. When one of his female informants was in distress after losing several sheep to drought and raids, she went to 'pray and weep' at the grave of her father in the hope that he would 'see [her] tears'.⁵⁹⁶ She thought this might provide luck to her husband, an ostrich hunter, to help the family acquire wealth to invest in more sheep. Recognizing that her father was dead, she reminds us that 'he only sleeps'.⁵⁹⁷ The special customs of Khoekhoe burial suggest that the dead 'mature in the darkness of the earth in preparation for a new birth'.⁵⁹⁸ It is perhaps with these brief sketches of the Khoekhoe belief system that we may better understand the deliberately aggressive, desecrating actions in the following episodes.

Ludwig Krebs was keen to prove himself as an able collector to Lichtenstein. In his pursuit of human specimens, he implied that he 'did not so much consider the monetary gain' of his relatively lucrative relationship with the Museum, but rather wanted to exhibit 'what zeal I will go for the rare and the new', especially if they led to new discoveries in natural history.⁵⁹⁹ He openly professed his goal of supplying the Berlin Zoological Museum with 'a kaffir skull, or if possible, a kaffir skeleton'.⁶⁰⁰ In 1820, he reported to his brother on the 'wonderful treasure' that he had finally acquired. An uprising had occurred at Robben Island amongst prisoners from the eastern

⁵⁹³ But Schapera was quick to note that this suggestion arises from very incomplete data. Schapera, *Khoisan Peoples*, 368-369.

⁵⁹⁴ Theophilus Hahn, *Tsuni-||Goam: The Supreme Being of the Khoi-Khoi* (London, Trübner & Co., 1881).

⁵⁹⁵ Schapera, *Khoisan Peoples*, 373.

⁵⁹⁶ Hahn, *Tsuni-||Goam*, 112.

⁵⁹⁷ *Ibid.*, 113.

⁵⁹⁸ *Ibid.*, 112.

⁵⁹⁹ Krebs to Lichtenstein, 29 July 1821, *Ludwig Krebs*, 32.

⁶⁰⁰ Krebs to Georg Krebs, 2/3 October 1820, *Ludwig Krebs*, 22.

frontier who were arrested for their refusal to cooperate with colonial rule.⁶⁰¹ Among them was Makhandu Nxele, the umXhosa prophet and warrior-hero from the Fifth Frontier War (1818-19).⁶⁰² The rebels seized three boats in their attempt to escape across the channel to the nearest shore at Bloubergstrand.⁶⁰³ However, not all of those who escaped arrived onto shore safely. Julia Wells details a ‘conspiracy of silence’ about Makhandu’s fate, given the amount of attention paid to his arrival and general recognition of him as a highly significant prisoner of war. Although colonial authorities kept meticulous autopsy records, including those of every unknown body, there is no mention of a body fitting Makhandu’s description. She details two different possibilities regarding his death: first, an independent Xhosa oral tradition that claims Makhandu was shot on land by his pursuers, who then threw his body back into the sea; second, by the missionary Stephen Kay, who claimed Makhandu’s body washed ashore.⁶⁰⁴ While it is impossible to say which story, if either, is the truth, what is clear is that Makhandu did not survive.

When Krebs received news that some of the dead had washed ashore, he and fellow apothecary Joachim Brehm traveled immediately to the locality. They looked ‘in vain for bodies’ until told by local farmers that ‘a certain Stadler had buried last evening several of the bodies of kaffirs half-eaten by hyenas’.⁶⁰⁵ Apparently, Stadler was also keen to retrieve the body of Makhandu for himself, but up to that point had been unsuccessful. Krebs wrote,

Only two bodies of a kaffir and a hottentot were washed ashore ... the kaffir’s body was mostly eaten by wild animals and ... the head of the hottentot was smashed on the rocks by waves. [Stadler] thought, however, that the head of the kaffir was well preserved ... Three slaves now began to dig, and I noticed with pleasure that the head was well-preserved, although the neck was already half-eaten. I decided immediately to separate it from the body. Those present, in particular the slaves, looked at me in horror! But I placed my conquest into a container and tied it up with a cloth.⁶⁰⁶

⁶⁰¹ WCARS, KAB, A 1454, 2 October 1820.

⁶⁰² There were important roles played by Hans Trompetter and David Stuurman, Khoekhoe prisoners from an earlier generation of anti-colonial wars, who displayed their solidarity with the eastern frontier amaXhosa. Julia C. Wells, *The Return of Makhandu: Exploring the Legend* (Scottsville: University of KwaZulu-Natal Press, 2012), 234.

⁶⁰³ See Wells, *Makhandu*, 215-239.

⁶⁰⁴ Wells, *Makhandu*, 230.

⁶⁰⁵ Krebs to Georg Krebs, 2/3 October 1820, *Ludwig Krebs*, 22.

⁶⁰⁶ *Ibid.*

Although it seems unlikely based on the evidence, it cannot be ruled out that the skull retrieved by Krebs was that of Makhanda, even though Stadler did not seem convinced he was among any of the buried bodies the previous day. What is clear is that they all recognized the immense value of the body of a famous (and named) anti-colonial rebel, either as a personal trophy or an auctioned specimen of natural history, desiring the possible fame that accompanied such a find. The unearthing of buried bodies again came to the noticeable shock of the unnamed slaves who attended Krebs, Brehm, and Stadler. It is obvious from the way Krebs casually severed the head of the umXhosa man that there was little inconsistency with treating the bodies of Africans like that of his other natural history specimens. Although he handled the bones with care, he did so only to preserve their commercial or scientific value rather than out of any respect toward Xhosa customs.

II. Schädel.		
51.	<i>Antilope Oreas</i> sehr groß mit $1\frac{1}{2}$ Fuß langem Gehörn	10 Thlr.
52.	<i>Antilope lunata</i> , wahrscheinlich von einem Weibchen.	8 Thlr.
53.	<i>Antilope Pygarga</i> .	6 Thlr.
54.	<i>Antilope Pygarga</i> .	6 Thlr.
55.	<i>Equus Burchellii</i>	} Diese 3 Schädel gehören zu den unter No. 2. 3. 4. verzeichneten Fellen, und können auf Verlan- gen auch mit denselben verkauft werden.
56.	Idem	
57.	Idem	
58.	} Schädel von Hottentotten aus einer Höhle am Um- pukanie, ohne Unterkiefer, sonst gut erhalten. Je- der wird geschätzt auf	5 Thlr.
59.		
60.		

Fig. 4.11: 'Three Hottentot skulls from a cave on the Umpukanie, without lower jaws, otherwise well-preserved. Each is valued at 5 Thlr'. Human skulls being advertised alongside skulls of antilopes and the *Equus burchelli*. Hinrich Lichtenstein, *Verzeichniß einer Sammlung von Säugthieren und Vögeln aus dem Kaffernlande* (Berlin: Königlichen Akademie der Wissenschaften, 1842), 10.

Similar themes emerge in the diary of Carl Friedrich Drège, suggesting that there was a systematic way to treat human remains, but that the method of the collector was inherently subjective. The aspiration of collecting remains of relative notoriety also struck Drège and he, like Krebs, jumped at the opportunity to take his prized skull. Amidst a crisis in relations between Khoekhoe and missionaries in the northern Cape, Wesleyan missionary William Threlfall was murdered near Warmbad in 1825.⁶⁰⁷ Although warned of the dangers posed by the lack of support from the local Bondelswarts Nama for his journey into the interior, including Threlfall's own refusal to furnish Captain Bondelswart /Garimûb with ammunition, he was nonetheless granted a guide (Naugaap) who allegedly instigated others to commit the murder.⁶⁰⁸ Cape officials were unable to decide whether Threlfall had been murdered on the instruction of /Garimûb, who had by that point conspicuously abdicated in favor of his son !Naugab (Abraham Christian).⁶⁰⁹ Although Naugaap had attempted to defend himself by claiming he had received his orders from /Garimûb, his choice to flee into the interior rather than returning to Warmbad after the murder, coupled with accusatory witness statements, convinced the colonial authorities of Naugaap's guilt. He was executed by a Bondelswart firing squad in 1827.⁶¹⁰ Arriving in Silverfontein in 1830, Drège explained in his diary some of the events surrounding Naugaap's conviction and execution, which he had likely learned through personal conversations with !Naugab.⁶¹¹ Upon leaving the area, Drège remarked,

I let the wagons drive on ahead, and dug out the head of Platje Saumap Naugap. Carrying this and a long-haired jackal skin (*Proteles Lalandii*), and driving the one-year-old calf, I took leave of our friendly hosts Van Zyl and Van der Westhuizen, I followed the wagons ... The calf refused to go on, no matter what I did, so I threw head, skin, coat and a newly captured and well-secured snake on to the road, and returned in the night to Van Zyl's.⁶¹²

The following day, he confirmed that he 'found everything that was thrown away yesterday', including the exhumed skull of Naugaap.⁶¹³ While not necessarily the umXhosa hero of the Fifth

⁶⁰⁷ See: Tilman Dederling, *Hate the Old and Follow the New: Khoekhoe and Missionaries in Early Nineteenth-Century Namibia* (Stuttgart: Franz Steiner, 1997).

⁶⁰⁸ Tilman Dederling, 'The Murder of William Threlfall: The Missionaries in Southern Namibia and the Cape Government in the 1820s', *South African Historical Journal*, 24:1 (1991), 95. See also: Percival Kirby, 'William Threlfall and his Hottentot Murderer', *South African Journal of Science*, 39 (1943), 307-310.

⁶⁰⁹ Dederling, 'Threlfall', 95.

⁶¹⁰ Dederling, 'Threlfall', 97.

⁶¹¹ NLSA, MSC 61.8.526, 27 October 1830.

⁶¹² NLSA, MSC 61.8.526, 31 October 1830.

⁶¹³ NLSA, MSC 61.8.526, 1 November 1830.

Frontier War, Drège had still acquired a skull of merit, one with a disturbing story that could potentially drive up the price of its sale on his return to Europe.

Significantly, Drège commented on the secrecy of his actions when he discussed human remains. When unearthing Naugaap's skull, he was certain to let the wagons drive ahead and to bring something to conceal the skull so as not to be detected. He made a similar gesture while in the vicinity of Graaff-Reinet in 1829, when he and other prominent men in the area held an inspection of a San woman who had died from cold and hunger. Drège returned in the afternoon, where he 'searched in vain for a long time' until one of the men present at the inspection guided him to the burial site: 'in the evening I dug up the maid again and stuck her under the cliffs'.⁶¹⁴ In the same manner as with a considerable natural find, Drège jumped 'from calm domesticity ... to a gruesome description of his efforts to skin the corpse'.⁶¹⁵ He recorded the following day,

Tonight it was cold, I found thick frost. All blossoms of the peach and plum trees were frozen dead. Stormy. I cut only the bones and some flesh from the woman's corpse, during which a Briqua surprised me by appearing in front of me but did not dare to come any closer. I hid the flesh and bones deep under stones and put the skin away late that evening into a sack in the waggon, having walked in a wide circle around the Briqua kraals.⁶¹⁶

Here, Drège concealed the flesh and ensured a safe distance between himself and the local kraal so that he was unobserved and could retrieve the hidden elements later. While Lichtenstein and Krebs seemed almost amused by the reaction of their African witnesses, Drège anticipated local disapproval, taking delicate steps to safeguard his position and possessions. No matter how discreet, the practice of collecting human remains confirms the collector's ambivalence (at best) toward the local populations and their cultural and religious values.

The desire to collect human remains in the nineteenth century, nourished by ongoing colonial brutality and warfare in the frontier districts, enabled acts of violence and power against the bodies and customs of African peoples. These are only a few of the written instances available in the colonial archive. There were likely some which took place under the watch of Lichtenstein, Krebs, and Drège that went unaccounted, and there were certainly more Europeans who sadistically mined

⁶¹⁴ NLSA, MSC 61.8.526, 12 September 1829.

⁶¹⁵ Grogan, 'Skulls', 68.

⁶¹⁶ NLSA, MSC 61.8.526, 13 September 1829.

southern Africa for its human treasures.⁶¹⁷ Undoubtedly, all these removals took place in violent and insolent circumstances. Many of these African bodies were disinterred from their graves illegally and taken to Europe, where they entered the world of racial science as museum artifacts of a primitive type. The collecting process and classificatory systems of natural history denied them any biography or personhood other than what was granted through typology.⁶¹⁸ More often than not, there are no such details, or information is difficult to trace, to link human remains and their theft from colonial environments. As Förster et al. argue, the debates surrounding the restitution of remains which occurred in Germany in 2011, and again in 2014, ‘had been essentially shaped by the question of the (indeterminable) identity of the bones’, making it challenging to return remains to the descendants of the deceased.⁶¹⁹ However, Ciraj Rassool is correct in saying that repatriation and re-humanization do not belong simply to the traceable.⁶²⁰ In recent years, museum objects are typically researched and linked to their place of origin; here, we have the opposite, episodes of provenance which have not yet been linked to museum objects.⁶²¹ This difficult humanitarian and epistemic project places human remains at the center of new intellectual and cultural debates on how we understand the history of collecting and colonialism, how to remake museums for the twenty-first century, and the relationship between museums and society.

Conclusion

On the surface, it would seem that the collection of *Hydnora africana* and human remains involved wholly different ideologies and collecting techniques, some of which were developed in the previous chapter. Yet, in handling human remains, these collectors adopted the same methods of collection, storage, and preservation as for their other botanical and zoological finds. As Jim

⁶¹⁷ See Harries, ‘Racial Biology’.

⁶¹⁸ Rassool, ‘Skeletons of Empire’, 664.

⁶¹⁹ Larissa Förster, Dag Henrichsen, Holger Stöcker and Hans Axasi ≠Eichab, ‘Re-individualising Human Remains from Namibia: Colonialism, Grave Robbery and Intellectual History’, *Human Remains and Violence: An Interdisciplinary Journal*, 4:2 (2018), 46.

⁶²⁰ Rassool, ‘Skeletons of Empire’ and Rassool, *Skeletons in the Cupboard*.

⁶²¹ In the process of this dissertation, I have attempted to connect these episodes to museum holdings, communicating with European institutions where these actors could have potentially sold or donated their human remains, but not yet to any avail. It is entirely possible they were destroyed during the World Wars, as many German institutions were bombed and suffered great losses to their collections.

Endersby maintains in his discussion of botanical collecting, teaching interested parties ‘what and how to collect’ involved training them in ‘a uniform process of transforming plants into specimens in which - at each stage of selecting, sorting, drying, pressing, pickling, drawing, and shipping – aspects of the original plant were destroyed’.⁶²² In short, removing idiosyncrasies also eliminated the individuality of the plant. Considering this, the collector’s cold logic is jarring: the excitement, patience, skill, and luck required to obtain a precious specimen of *Hydnora africana* was no different than discovering a hyena-ravished African skeleton in the veld or encountering an undisturbed grave to disinter. Much as the process of drying botanical specimens reduced the distinctiveness and materiality of the plant, so too did the methods and processes of collecting de-individualize and objectify human beings. Krebs recounted how one night during the Sixth Frontier War, ‘when the Kaffirs were particularly impudent, they frightened the servants so much that a Bushman wife lost a five-month baby prematurely. My brother placed the foetus in alcohol and it will follow in the next shipment’.⁶²³ Just as Baron von Ludwig had hoped to send William Jackson Hooker a specimen of *Hydnora* in spirits, the same strategy was employed in the hope of keeping the African fetus in perfect condition for metropolitan naturalists to inspect. To the collector, these two “objects”, which seem utterly incomparable, were not so different from one another in the field. Reaffirming the arguments from the previous chapter, it again demonstrates how the field as a space, and fieldwork as a practice, are essential avenues with which to study the methods of nineteenth-century natural history.

Not only do we learn more about the practice of science, the juxtaposition of plant and human material allows for a better understanding of the collectors’ attitudes toward the Africans they encountered and the environment which produced their botanical bounty. It could certainly be argued that the peoples of southern Africa were widely understood as being “of nature”, echoing the concept of the *Naturvölker* put forward by anti-humanist anthropologists in the *Kaiserreich* period.⁶²⁴ If African peoples were assumed to be an inherent part of the environment alongside

⁶²² Endersby, *Imperial Nature*, 82.

⁶²³ Krebs to Lichtenstein, c. 1835, *Ludwig Krebs*, 96. Andrew Zimmerman offers a similar portrait from Luschan: ‘if the opportunity to rescue for science a freshly severed head ever presents itself again, I would be most grateful if these heads would be treated with formaldehyde or in another appropriate way and sent to the Royal Museum’. Likewise with the brains of the New Guinea soldiers: ‘...the brains should be removed and treated according to one of the familiar methods of preservation’. Zimmerman, *Antihumanism*, 161.

⁶²⁴ Zimmerman, *Antihumanism*, 3.

flora and fauna, blurring the line between humans and nature, then treating human remains as objects of nature was merely part and parcel of a collector's instinct. Thus, a flower which we now refer to as being one of the most "primitive" organisms in the natural world was seen as inextricable from the "primitive" humans who inhabited the African continent and the "impenetrable" environment where they resided, helping to contribute to racialized visions of nature. If nineteenth-century collectors and naturalists perceived floral curiosities like *Hydnora* as signifiers of primitivity, both plants and humans could be powerfully "othered", inviting further colonial exploitation and permitting the theft of human remains in the European mind.⁶²⁵ By fleshing out the relationships between humans and objects, and the sometimes casual links between different kinds of natural historical material, it allows us as historians to come to more fully realized conclusions about how collectors constructed, and interacted with, the world around them.

As this chapter has shown, the pursuit of *desiderata* facilitated the colonial enterprise, implicating these German collectors in acts of colonial violence prior to their own period of formal colonialism. In attempting to source workable specimens of *Hydnora africana*, their actions revealed the material, environmental, and intellectual limits of what was known by European collectors and naturalists. This would not be the first, nor the last time that European naturalists' intellectual limits would be tested while attempting to understand Cape flora. The next chapter uncovers how the arrival of the Ecklon-Zeyher and Drège collections in Europe led to a material overload which fundamentally disrupted the process of determining their South African flora and illustrates how botanical taxonomy was never a straightforward, or friendly, process. In challenging classificatory and preservationist impulses, *Hydnora* evaded the "normal" processes of locating, shipping, ordering, and displaying the vegetable world. In a sense, this may be seen as floral resistance, as *Hydnora* was essentially protected by the limits of the desert environment in which it lived, and by the very nature of its parasitism, shaping imperial notions of unattainability and scientific conceptions of materiality. Almost the opposite is true of the collection of human remains. Swiftly stripped of their danger in death and their humanity in the process of collection, collectors broke cultural and ethical barriers in the hunt for human remains, actions which resulted in no repercussions for those who intellectually and financially feasted upon the remains of African bodies in Europe. The process of drying and preserving plant material was, ultimately, no different

⁶²⁵ Ayers, 'Strange Beauty', 283.

from how collectors handled their human remains. These material considerations allowed them to construct interpretations of the African environment, one which was “primitive” in nature and justified further geographical expansion into the African continent and the violent exploitation of its peoples. While Chapters Two, Three, and Four have demonstrated how the actions of these German collectors in the field profoundly affected the development of nineteenth-century natural history, the next chapter will reveal how these actions influenced the ways in which metropolitan naturalists fitted these experiences into “universal” and Western frameworks of knowledge.

Chapter Five

Determining the Flora of Southern Africa in the German States, 1828-1847

‘Botany is a *bore*! What a pity to be chained to a science which empties the pocket continually, and never returns anything thereto.’⁶²⁶
William Henry Harvey, (1835)

‘...botany, though ever so interesting, was by no means a lucrative science to its cultivator *per se*.’⁶²⁷
South African Advertiser and Mail (1868)

In August 1842, entrepreneurial collector Johann Franz Drège published an announcement in the Regensburg-based scientific journal, *Flora*. His extensive collection of dried specimens from southern Africa had been on the European natural history market for seven years, and by this point interested buyers were relatively infrequent. Perhaps seeking a way to offload some of the more common elements of the collection, he advertised a *Verlosung*, or raffle, for South African plants under the direction of the *Naturwissenschaftlicher Verein* in Hamburg.⁶²⁸ Unlike the auctions which had dominated natural history in the early years of the nineteenth century, like the kind at the Berlin Zoological Museum in Chapter Two, a raffle for natural history specimens seemed entirely new, partly motivated by the need for liquid cash and partly a clever ploy to enliven an otherwise quiescent public. Participants could purchase from sixty lots at the price of 6 Louis d’or, 82 Hamburg Mk Courant, or 33 Prussian Thaler, upon receipt of which the lot was verified with Drège’s personal signature.⁶²⁹ To add further incentive, the number of prizes equaled sixty, meaning anyone who entered would receive a set of plants. The grand prize consisted of a set of 85 centuries containing approximately 17,000 dried specimens from different locations throughout southern Africa.⁶³⁰

⁶²⁶ Harvey to J Harvey, 10 February 1835, in Harvey, *Memoir of W.H. Harvey* (London: Bell and Daldy, 1869), 50.

⁶²⁷ RGBK, MR 603, 14, *South African Advertiser and Mail*, ‘Death of Dr. Ecklon’, 12 October 1868.

⁶²⁸ J.F. Drège, ‘Plan zu einer Verloosung südafrikanischer, getrockneter Pflanzen’, *Flora*, 25 Nr. 32, Band II (1842), 509.

⁶²⁹ Today this would amount to something between £250 and £350.

⁶³⁰ 85 centuries amounts to 8500 species.

The *Verein* set the date for 28 June 1843, after some delay due to low sales of the lots, which they attempted to rationalize by saying Drège wished to see the plants distributed alongside his forthcoming publication, *Zwei pflanzengeographische Documente*, a numbered system of his entire collection with notes on locality, habitat, and geographical distribution.⁶³¹ In an interesting twist, perhaps as an encouragement to increase the sale of lots, if the winner was uninterested in the plants on offer they could also redeem a cash payment of 120 Louis d'or. On the evening, the sixty ticket numbers were rolled up on white paper, each 'thrown into a hat and shaken properly', while the same procedure was followed with the sixty winning numbers on red paper.⁶³² Alexander von Bunge, Director of the Botanic Garden at the University of Dorpat, was the lucky winner not only of the grand prize but also of the third-place prize (31 centuries).⁶³³ The fourth-place prize went to the President of the *Verein*, Johannes Buek (20 centuries), and lots two, six, seven, and eight went to undisclosed Hamburg residents. The rest of the numbers drawn received four centuries each. In the end, Drège and the *Verein* were only able to sell 28 out of sixty available lots in the raffle, Drège reclaiming the 32 remaining lots after all the numbers had been drawn. A year later Drège targeted a similar, but wider audience, sending Buek to the 1844 *Versammlung deutscher Naturforscher und Ärzte* in Bremen. Here, Buek would sell centuries of Drège's remaining specimens mixed with the residual stock of the Ecklon-Zeyher collections that Drège had purchased from J.G.C. Lehmann, Director of the Botanic Garden in Hamburg, for a significantly reduced price.⁶³⁴ By the mid-1840s, Drège struggled to make any profit from his lingering stock of plants; the curiosity and market for material from the Cape had now seemingly withered away.

⁶³¹ Anon., 'Anzeige', *Flora*, 26, Nr. 12, Bd. I (1843), 200; J.F. Drège, 'Zwei pflanzengeographische Documente von J.F. Drège nebst einer Einleitung von Ernst Meyer', *Flora*, 26, Bd. II (1843), 1.

⁶³² Johannes Buek, 'Verloosung der Drege'schen Pflanzen', *Flora*, 26, Nr. 25, Bd. I (1843), 435-436.

⁶³³ Anon., 'Nachrichten über botanische Anstalten, Sammlungen, u.s.w.', *Flora*, 26, Nr. 34, Bd. I (1843), 572.

⁶³⁴ Anon., 'Sitzung am 20. September', *Flora*, 28, Nr. 2, Bd. I (1845), 18.

A n z e i g e.

Verloosung der Drège'schen Pflanzen.

Zur Verloosung der Drège'schen Pflanzen war seit längerer Zeit die Generalversammlung des Hamburger naturwissenschaftlichen Vereins am 28. Juni d. J. bestimmt worden und ward dieselbe an diesem Tage Abends 7 Uhr, in Gegenwart des Hrn. Drège, vorgenommen. Ein ausführliches Verzeichniss von dem Inhalte eines jeden Gewinnes hatte Hr. Drège bereits früher bei dem unterzeichneten Präsidenten der botanischen Section des Vereins deponirt und ward dasselbe vor der Verloosung den Anwesenden vorgelegt. Sodann wurden die 60 Loosnummern, auf weissem Papier, aufgerollt, ein jedes in einen Ring gesteckt, in einen Hut geworfen und gehörig durch einander geschüttelt, während mit den 60 Gewinnnummern, auf rothem Papier, eben so verfahren wurde. Darauf zog der Vicepräsi-

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dent des Vereins, Hr. Prof. Wiebel, die Loose, welche von dem Präsidenten, Hrn. Dr. Birkenstock, laut verlesen wurden; ein Mitglied der Gesellschaft, Hr. Dr. Prösch, zog zu jedem Loose aus dem anderen Hute eine Gewinnnummer, verlas dieselbe gleichfalls laut und alle Loose, ein jedes mit dem darauf gefallenen Gewinn, wurden sodann auf einen Faden gezogen, um in dieser Form später Hrn. Drège überliefert zu werden. Der Secretär des Vereins, Hr. Dr. Schmidt, führte ausserdem ein Protocoll, welches im Archive des Vereins aufbewahrt wird, Hr. Drège führte ein zweites und der Unterzeichnete ein drittes. Nachdem sämtliche Loose gezogen worden, wurden diese 3 Protocolle mit einander verglichen und völlig gleichlautend befunden, und damit die Verhandlung geschlossen. — Nach diesen Protocollen fielen auf folgende Loose, hier der leichteren Uebersicht wegen in fortlaufender Reihe aufgeführt, die beistehenden Gewinne, als

Loos.	Gewinn.	Loos.	Gewinn.	Loos.	Gewinn.	Loos.	Gewinn.
1	12 (400 Sp.)	16	47 (400 Sp.)	31	54 (400 Sp.)	46	24 (400 Sp.)
2	1 (8500 Sp.)	17	48 („ „)	32	15 („ „)	47	2 (7600 Sp.)
3	3 (3100 Sp.)	18	29 („ „)	33	33 („ „)	48	18 (400 Sp.)
4	26 (400 Sp.)	19	42 („ „)	34	57 („ „)	49	14 („ „)
5	22 („ „)	20	23 („ „)	35	21 („ „)	50	28 („ „)
6	11 („ „)	21	55 („ „)	36	39 („ „)	51	45 („ „)
7	53 („ „)	22	9 („ „)	37	32 („ „)	52	30 („ „)
8	59 („ „)	23	19 („ „)	38	41 („ „)	53	6 (1400 Sp.)
9	40 („ „)	24	38 („ „)	39	25 („ „)	54	34 (400 Sp.)
10	8 (1000 Sp.)	25	60 („ „)	40	51 („ „)	55	36 („ „)
11	16 (400 Sp.)	26	50 („ „)	41	44 („ „)	56	37 („ „)
12	49 („ „)	27	17 („ „)	42	31 („ „)	57	10 („ „)
13	5 (1600 Sp.)	28	43 („ „)	43	52 („ „)	58	13 („ „)
14	4 (2000 Sp.)	29	27 („ „)	44	7 (1200 Sp.)	59	46 („ „)
15	56 (400 Sp.)	30	58 („ „)	45	20 (400 Sp.)	60	35 („ „)

Dr. Buek,

d. Z. Präsident der botanischen Section des Hamb.
naturwissenschaftlichen Vereins.

Fig 5.1: The results of Drège's *Verloosung*.

The difficulty in finding buyers for Drège's plants was the result of a long-standing interest in, and circulation of, Cape flora since the eighteenth century and a recent oversaturation of the market by Drège and his competitors. This chapter will discuss the dramatic effect of this specimen influx on the treatment of the Ecklon-Zeyher and Drège collections by continental and British botanists in the 1830s and 1840s. Completing the arc which began in Chapter Three, this chapter will continue an investigation into the various ways in which commercial collecting was often more destructive than it was progressive. While Chapters Three and Four explored this through an examination of the *how* and *what*, demonstrating the ways in which the Cape's peoples and natural environment were severely affected by processes like specimen preservation and the exhumation of human remains, this chapter will interrogate the extent to which the collectors' commercial motivations were intellectually detrimental to the classification and ordering of Cape flora. The flood of specimens was both a quantitative and qualitative challenge to the established Western taxonomic order. Botanists tried to fit new Cape forms into the old genera (like *Hydnora africana* in the previous chapter made clear) and the growing number of botanical practitioners, like Ecklon, Zeyher, and Drège, who had their own ideas about the ordering and naming of Cape species, made an inventory of the Cape's vegetable productions a problematic enterprise.⁶³⁵ The Ecklon-Zeyher and Drège collections therefore offer an excellent example of the kind of material and intellectual disarray that forced European botanists to impose standardized taxonomic practices to the study of systematic botany, allowing them to bring order to the chaos of accumulation.

Initially, the arrival of the Ecklon-Zeyher and Drège collections was a welcome addition: European botanists could now bridge previous material and intellectual gaps, allowing them to classify and order a much wider range of South African flora than had hitherto been available. However, as the collectors used their familial and professional ties to secure patrons and buyers, clear lines of communication and transfer existed between the Cape and the German states (as seen in Chapter Two), leaving Britain conspicuously absent from most of their negotiating processes. Their appearance in Europe coincided with the period before state-sponsored imperial botany centered around Kew Gardens made its return, and as debates about the "decline" of Kew (and of science more generally) consumed men of science in Britain. Described as a period of stagnation in which natural history, specifically botany, was seen as lacking in philosophical rigor, the lack of funding

⁶³⁵ Bonneuil, 'Manufacture of Species', 191-192.

available for botanists to acquire plant specimens meant they could not acquire the materials they desperately needed to establish botany as a philosophical subject in the first place. Although Cape patrons William Henry Harvey and Baron von Ludwig ensured that plant material did make its way to Britain, as in the case of *Hydnora africana*, in some ways British botanists were forced to work outside of their own (national) established norms to conform to continental (German) practice. Significantly, this meant paying for specimens rather than engaging in a gentlemanly reciprocal exchange. As Chapter One argued, the capital of the learned world was never money. Service was returned by service, friendship by friendship, and this arrangement was most apparent in the British system of natural history exchange.⁶³⁶ While British botanists certainly purchased parts of the Ecklon-Zeyher and Drège collections, incorporating them into their publications on plant families and popular botany, this chapter argues that much of the early classification of Cape flora stemming from their material was done in the German states than Britain, despite the fact that the Cape was a well-established British colony by this point.

The power that Ecklon-Zeyher and Drège held over their Cape material, and the unspoken commercial competition between the two, caused three main problems for European botanists in their attempts to order the Cape's floral productions. Firstly, the lack of literary aids and botanical publications made it difficult to make initial determinations of new species on location; detailed *in situ* observations were essential in establishing both the commercial and scientific value on an individual specimen or the entire collection. Although the collectors were no doubt experts in field collecting and identification, they fell prey to a process Jim Endersby outlines in his *Imperial Nature*: that colonial collectors tended to be taxonomic splitters.⁶³⁷ Therefore, they can be added to a growing historiography on the complex relationships between metropolitan naturalists and colonial collectors, although much of the existing literature is entirely Kew-centered. Secondly, because two competing factions of entrepreneurial collectors entered the market at the same moment, two processes of taxonomic splitting happened simultaneously, and importantly, separately. This became a point of contention toward the collectors themselves as increasing calls to compare the two collections to Thunberg's herbarium later evolved into appeals to compare the

⁶³⁶ Kinukawa, 'Learned vs. Commercial', 593.

⁶³⁷ Endersby, *Imperial Nature*; Jim Endersby, 'Lumpers and Splitters: Darwin, Hooker, and the Search for Order', *Science*, 326 (2009), 1496-1499; Bonneuil, 'Manufacture of Species', 189-215.

collections to one another to avoid excessive taxonomic naming. Finally, in the urgency to publish (and this sell more stock), the collectors became embroiled in a controversy about which of their publications had the right of priority, a subject not often covered in the historiography.⁶³⁸ By establishing precedence early on, European botanists could have accordingly sorted the issue of taxonomic splitting to an extent; instead, their bickering on the very large and economically important *Leguminosae* family resulted in even more redundant and unnecessary synonyms. The chaos that the right of priority debate caused cast doubt on the entire process of classifying and naming Cape flora that had emerged from the use of the Ecklon-Zeyher and Drège collections.

The rise and fall of entrepreneurial collecting in the Cape by German collectors was swift, as was the popularity of their material in Europe. The decline in fashion for Cape plants, eclipsed by “orchidelirium” and an increasing interest in tropical nature, corresponded with both the physical and professional deterioration of the collectors themselves.⁶³⁹ Perhaps because a consensus on who retained the right of priority had not been reached, continental botanists seemingly abandoned the project of classifying families of Cape plants. Drège, however, applied his local knowledge, observations, and extensive collection in an attempt to reverse the damage, compiling a systematic and geographical distribution of not only his herbarium, but also that of Ecklon-Zeyher. While this finally addressed the issue of material separation which had plagued the determination of Cape flora in the previous decade, it did very little to entice new buyers in the natural history market, nor to revive any of their scientific reputations. Although Harvey endeavored to persuade Zeyher, and Carl Friedrich Drège his brother, to return to collecting on the promise of regions untapped and profits to be earned, neither Ecklon, Zeyher, or Drège returned to collecting full-time. On the whole, these diverse issues contribute to an argument previously made in Chapter Four, illustrating the ways in which natural history collections like Ecklon-Zeyher and Drège’s could both aid and confound the production of Western knowledge on southern Africa.

The State of Natural History in Britain and the German States

⁶³⁸ Bonneuil, ‘Manufacture of Species’, 205-206.

⁶³⁹ Jim Endersby, *Orchid: A Cultural History* (Chicago: University of Chicago Press, 2016); Elaine Ayers, ‘Strange Beauty: Botanical Collecting, Preservation, and Display in the Nineteenth Century Tropics’, PhD diss, Princeton University, 2019, Ch. 2.

After the death of Sir Joseph Banks in 1820, ‘the whole Banksian cosmos of imperial science lost its centre’.⁶⁴⁰ Without Banks to argue for the usefulness of science among his influential contacts in Parliament, the Admiralty, and the East India Company, scientific objectives at home and abroad became easy targets for those looking to trim their budgets, including Kew Gardens. As the Crown’s expenditure waned, gardener William Townsend Aiton, once solely charged with Kew, became the Director General of all royal parks and gardens in 1827, diverting his attention to new and varied responsibilities. Unlike its counterpart, the *Jardin des Plantes* and its attached *Muséum d’Histoire Naturelle*, Kew Gardens failed to render service to the public (as a royal rather than public park) and had never sheltered botanical research of any importance. Thus, not only did British botany lose its most loyal supporter and financier in Banks, but the decline in spending led to the recall and dismissal of Kew’s imperial collectors, including James Bowie in the Cape, and questioned the ‘real practical value of botanic gardens’ in the metropole and throughout the empire.⁶⁴¹ It is for these reasons that most historians of Kew have described the period between the death of Banks and the establishment of the ‘new Kew’ in 1841 as one of retrograde or decline.⁶⁴² Richard Drayton has challenged this idea, arguing rather that stagnation best represents the activity of this period; that it was certainly not a time of expansion, but that things likely ‘pottered on’.⁶⁴³

Yet, the idea of decline is not just an analytical tool that historians have used to describe this period in Kew’s history. In fact, men of science across disciplines began to use “decline” as a political slogan to criticize the political elite for failing to nurture British science and for corrupting its institutions with the values of the amateur.⁶⁴⁴ While “amateur” as a diagnostic category is not entirely helpful, its invocation certainly impacted the future development of British science.

⁶⁴⁰ Richard Drayton, *Nature’s Government*, 130

⁶⁴¹ Ibid.

⁶⁴² W.T. Thiselton-Dyer, ‘Historical Account of Kew to 1841’, *Bulletin of Miscellaneous Information (Royal Botanic Gardens, Kew)*, 60 (1891), 314-322; R. Desmond, *Kew: The History of the Royal Botanic Gardens* (London: Harvill Press, 1995), 127-149.

⁶⁴³ Drayton, *Nature’s Government*, 135.

⁶⁴⁴ Charles Babbage, *Reflections on the Decline of Science in England and Some of its Causes* (London: B. Fellowes, 1830), v-x and 1-2; Jack Morrell and Arnold Thackray, *Gentlemen of Science: Early Years of the British Association for the Advancement of Science* (Oxford: Clarendon Press, 1981), 47-57; Frank M. Turner, ‘Public Science in Britain, 1880-1919’, *Isis*, 71:4 (1980), 590-591.

Firstly, in Charles Babbage's *Reflections on the Decline of Science in England* (1830), he placed responsibility on the 'party which governs' the Royal Society for the lag which had emerged between Britain and 'the more difficult and abstract sciences' on the continent.⁶⁴⁵ British men of science perceived themselves as amateurish in comparison to scientific activity on the continent. In this moment of self-reflection, the whole of the sciences in Britain began to look at their institutions and patrons with a more critical eye, looking toward the continent for inspiration as they reformed their system. Secondly, no community within the scientific world had depended more on networks of patronage, or a web of "amateurs", than natural history. Even the new generation who took part in the "decline" debate fundamentally depended on private wealth and patronage to secure their positions. Likewise, those positions were reliant on collectors to ensure they had the dried specimens and *in situ* observations necessary to inform their taxonomic assignments, just as gardeners and horticulturalists required seeds to cultivate and nurture live plants coming in from around the globe. This untenable situation meant that natural history generally, and botany even more so, was not given due respect as a serious, "philosophical" discipline in Britain. Consequently, as the new generation of botanists grew into their role as patrons, they sought ways to distinguish themselves from colonial collectors, gardeners, horticulturalists, and seed dealers to ensure a rigid hierarchy of experts and amateurs.

The low standing of natural history in Britain was also due in part to the survival of the Linnaean classification system long after the rest of Europe had abandoned it for the natural system of Antoine Laurent de Jussieu and Augustin Pyramus de Candolle. This was, in part, due to Sir James Edward Smith's purchase of the Linnaeus collection of books, manuscripts, and herbarium specimens in 1784, using his influence to establish the Linnean Society at Burlington House in 1788, which became a prominent space for the dissemination of natural history and taxonomy in Britain. Moreover, the simplicity of the Linnaean sexual system had made it both popular and influential in Britain, opening botany to anyone with a passing interest, especially women. And, because several British botanists relied on selling popular botanical readers to supplement their insufficient income, reinforcing botany's broad appeal, they could not afford to drop the Linnaean system entirely. Some botanists like William Jackson Hooker and John Lindley included both systems, 'to provide a bridge to the natural system, across which the widest possible audience

⁶⁴⁵ Babbage, *Reflections*, v-x, 1-2.

could be guided'.⁶⁴⁶ Others adopted the natural system as a way to identify themselves as philosophical botanists in their more technical works, or to align themselves with continental botanical practice. William Whewell's sketch of botany in *The History of the Inductive Sciences* commented on the chaos of these rival systems, underlining the fragility of botanical classification relative to those of the physical sciences, and even of zoology.⁶⁴⁷ As a result, botany received very little attention and funding from institutions like the British Academy for the Advancement of Science throughout this period, consolidating their dependence on the Linnean Society.⁶⁴⁸ Hence, the continued use of the Linnaean system contributed to perceptions that botany was too backward to take its place alongside either continental botany or the physical sciences.⁶⁴⁹

Although the French example was always heralded as the ideal model for a state-sponsored garden and museum under the direction of salaried naturalists, their colleagues in the German states were highly regarded for their botanical progress, too. While promoting an emerging Württemberg natural history society to British audiences in 1827, William Jackson Hooker lamented the British 'antipathy to the operation of gathering and drying plants', observing that 'in Germany, especially, the art of preserving plants is carried to a very high degree of perfection; and the advantage which the student derives from examining such specimens is incalculable, almost equal to that of doing so in the living state'.⁶⁵⁰ 'The French and Germans far excel us in this important department of a botanist's pursuits', another ode to continental botany which contributed to the perception that British botany lagged behind.⁶⁵¹ Scottish gardener John Claudius Loudon was also quick to offer praise in the 1834 introduction to the *Magazine of Natural History*, that 'the continent of Europe, and more especially France and Germany, may be considered as having been long in advance of Britain in natural history pursuits'.⁶⁵² Although the British looked in admiration to their colleagues in the German states, communication and transfer between them was relatively embryonic. If

⁶⁴⁶ Endersby, *Imperial Nature*, 178.

⁶⁴⁷ Drayton, *Nature's Government*, 138; William Whewell, *History of the Inductive Sciences* (London: John W. Parker and Son, 1857). For more on Whewell, see: Richard Yeo, *Defining Science: William Whewell, Natural Knowledge, and Public Debate in Early Victorian Britain* (Cambridge: Cambridge University Press, 1993).

⁶⁴⁸ Endersby, *Imperial Nature*, 36-42.

⁶⁴⁹ *Ibid.*, 171.

⁶⁵⁰ William Jackson Hooker, 'Some Account of a Society lately established in Germany', *Edinburgh Journal of Science*, 7 (1827), 23-24.

⁶⁵¹ *Ibid.*, 24.

⁶⁵² John Claudius Loudon, 'Preface', *Magazine of Natural History and Journal of Zoology, Botany, Mineralogy, Geology and Meteorology*, 7 (1834), iii.

British naturalists wished to be informed of new collections or treatises by German naturalists or scientific societies, they needed to appear in ‘english dress, for without it, there would be little chance of its coming to the knowledge of british botanists’.⁶⁵³ Even by 1843, it was noted that ‘the botanical intercourse ... [had been] till now very scanty’, suggesting that some progress had been made but clear channels had yet to be established.⁶⁵⁴ An important element of this, too, is that even in the pre-nation-state period, British men of science considered their continental compatriots as “Germans” living in “Germany”, complicating our ideas about the extent to which outsiders understood the complex nature of German identity and nationhood.

The only direct line of communication to help to bridge the separation between British and German naturalists was John Hunneman. Born in London, though of German descent, he sold botanical specimens, prints, and books from his business at No. 9 Queen Street, Soho Square until his death in 1839, only a stone’s throw from where Sir Joseph Banks had held residence. Hunneman acted as the singular agent for German, Swiss, and Russian naturalists and societies seeking contact and publicity in Britain, who introduced ‘a greater number of plants to our collections than almost any other individual’⁶⁵⁵ In dedicating the species *Hunnemania* to him, it was remarked that

...botanists have felt that the long and unremitted services rendered by him to science and scientific men, have been too serious to admit of the light and ordinary idea recurring to them, of rewarding these services by a compliment. There is not a botanist or reading gardener on the Continent or in this country [Britain] to whom the name of Hunneman is not familiar; and by far the greater number of the former are under personal obligations to him, for transmitting them seeds, specimens, or books.⁶⁵⁶

It is clear from this short tribute that Hunneman enjoyed a close relationship with many of the most prominent naturalists in the German states, visiting the continent regularly and acting as ‘the most excellent Forwarder of the botanical treasures of England to the continent’.⁶⁵⁷ Not only did he

⁶⁵³ RBGK, DC 50/73, Box 1, Hunneman to Hooker, 21 November 1835.

⁶⁵⁴ RBGK, DC 51/210, Box 1, Hochstetter to Hooker, 29 August 1843.

⁶⁵⁵ William Pamplin Jr., ‘Foreign Botanical and Horticultural Agency’, *The Gardener’s Magazine*, 15 (1839), 303; ‘Obituary’, *The Gardener’s Magazine*, 15 (1839), 208; ‘Linnaean Society’, *The London and Edinburgh Philosophical Magazine and Journal of Science*, 3rd series, 16 (Jan-June 1840), 78. Hunneman was also a publisher, most notably involved in John Lindley’s, *The Genera and Species of Orchideous Plants*, Parts II and III (London: J. Hunneman, 1832-1833). The flower named for him is the *Hunnemannia fumariifolia*, a flowering plant in the poppy family *Papaveraceae*, found in the highlands of Mexico.

⁶⁵⁶ Robert Sweet, ‘The British Flower Garden’, *The Gardener’s Magazine*, 5 (1829), 162

⁶⁵⁷ BL, OIOC, MSS Eur C 280, Schules to Wallich, 14 November 1829.

transmit prints, books, seeds, and specimens, he also acted as the translator for letters and circulars that German naturalists wished to have published in British journals, translations which often required Hooker's 'filing and trimming'. With deference, he often 'merely attended to the sense of its contents', allowing Hooker to add the finesse which flowed 'from [his] pen with a facility' that Hunneman claimed he could never acquire.⁶⁵⁸ Although Hooker himself clearly read German, it was access to Hunneman, a trusted member of the scientific community, which granted admission to the wider world of global botany.

In contrast to Britain, the structure of natural history in the German states allowed more flexibility and mobility for those who would have been considered amateurs. Not only did the German states offer more institutional and university positions for natural history to be practiced, the fine-meshed network of natural history societies 'formed local centers of a privately organized scientific practice' with a wide socio-professional composition.⁶⁵⁹ The *Unio Itineraria* functioned as exactly this kind of local society which offered access to global natural history specimens, meanwhile extending the potential for scientific advancement, between 1825 and 1845.⁶⁶⁰ Operating from the medieval town of Esslingen, near Stuttgart in the kingdom of Württemberg, Ernst Steudel and C.F.F. Hochstetter envisioned a scientific society where continental naturalists would be sent on collecting expeditions funded by subscriptions. Donors would receive a certain amount of botanical material in proportion to the amount contributed as dividends, what Arno Wörz has termed 'a joint stock company' for the collection and distribution of herbarium specimens.⁶⁶¹ This quickly expanded to include localities where naturalists were stationed permanently or semi-permanently, to help the *Unio* 'establish connections in the areas where European culture has already penetrated', saving them the costly expense of sending naturalists abroad using their own funds.⁶⁶² This was in the hope that, along with supporting the cause of natural history and the "discovery" of new species, that 'objects of nature' could become the 'common property of all

⁶⁵⁸ RGBK, 50/92, Box 2, Hunneman to Hooker, 27 January 1837.

⁶⁵⁹ Bettina Dietz, 'Making Natural History: Doing the Enlightenment', *Central European History*, 43 (2010), 30-31.

⁶⁶⁰ The *Unio Itineraria* was known by several names, interchangeably as the *Botanische Reiseverein* or the *Naturhistorischer Reiseverein*, or more unofficially as the *Württembergischer Reiseverein* or the *Esslinger Reiseverein*.

⁶⁶¹ Arno Wörz, 'The "Botanische Reiseverein" – A 19th-Century Joint Stock Company for the Collecting of Herbarium Specimens', *Huntia*, 13:2 (2007), 123.

⁶⁶² Christian Friedrich Ecklon, *Topographisches Verzeichniss der Pflanzensammlung* (Esslingen: Hrsg. auf Kosten des Naturhistorischen Reise-Vereins, 1827), iii-iv.

friends of science’.⁶⁶³ The *Unio* aimed to counteract the prevailing trend that natural history belonged to small circles of museum directors or to the ‘rich and great’ by making exotic specimens from around the world available ‘without limitation to amateurs and collectors generally’.⁶⁶⁴ A glance at the list of subscribers will, predictably, reveal a majority from the German states and the continent, and only one single subscriber from Britain – William Jackson Hooker. All of the *Unio*’s business was promoted in Hooker’s journals to British audiences via information fed to him by John Hunneman. The *Unio* serves as a good example of how a natural history society could be simultaneously local, “national”, and global, as well as host a wide professional and socio-economic base of support, in the nineteenth-century German states.

Patronage

Although these entrepreneurial collectors were self-funded, they nonetheless allied themselves to a patron who could act on their behalf in Europe. This provided a benefactor who could help them publish and promote the sale of their collections, as well as a linked institution where they could arrange their specimens and cultivate seeds and live plants. The *Unio* also operated as a form of patronage for aspiring naturalists to make a name for themselves collecting abroad. Already by 1826, as his contract with Pallas & Polemann pharmacy in Cape Town was coming to an end, Christian Ecklon became affiliated with the nascent *Unio*. In the following year the society began to promote its new connection to the Cape, both with a description of Table Mountain composed by Ecklon for *Flora* and by sponsoring the publication of his *Topographisches Verzeichniss der Pflanzensammlung*, a detailed list of his Cape collection, accompanied by color, location, and flowering time, that would form the nucleus of his material available to subscribers.⁶⁶⁵ When the

⁶⁶³ Ibid., iv.

⁶⁶⁴ Ibid.; *Annals of Natural History*, 7 (1840), 219-220. For more on the *Unio* Itineraria, see Arno Wörz, *Der Esslinger Botanische Reiseverein 1825-1835: Eine Aktiengesellschaft zur Durchführung naturkundlicher Sammelreisen* (Berlin: Logos, 2016).

⁶⁶⁵ C.F. Ecklon, ‘Excursion nach dem Tafelberge auf dem Kap der guten Hoffnung, den 16. Jul. 1826. Dargestellt von Herrn Apotheker L.F. Ecklon’, *Flora*, 10, Nr. 27, Bd. II (1827), 417-427; My guess is perhaps Ecklon was connected to the society through Baron von Ludwig, who was in regular contact with naturalists from all across the Württemberg region; Ecklon, *Topographisches*, iii-iv; Anon., ‘Literatur. Topographisches Verzeichniß der Pflanzensammlung von C.F. Ecklon’, *Linnaea*, 3 (1828), 7-8; Topographic Directory of the Plant Collection of Ecklon.

collection was finally advertised in 1828, it had over 1000 different species of plants amount to 6000-7000 copies for distribution, offering a cheaper price of 55 florins if buyers were willing to purchase an entire set of 800 species.⁶⁶⁶ Plants available to subscribers included ‘8 genera of Proteas with 26 species, including the magnificent ones: Leucadendron argenteum, Protea mellifera, Lepidocarpodendron, etc’, 21 genera of grasses with 74 species, 14 species of Oxalis, and a ‘large abundance’ of other types.⁶⁶⁷ This is merely to outline briefly how the collector-patron relationship operated and how the specimens were treated and advertised in a haul of this kind, to get a qualitative sense of the level of botanical extraction that these collectors were engaged in.

⁶⁶⁶ C.F.F. Hochstetter, ‘Nachricht an die verehrlichen Mitglieder des botanischen Reisevereins und an Solche, welche denselben vielleicht noch beizutreten wünschen dürften’, *Flora*, 11, Bd. II (1828), 14; C.F.F. Hochstetter and Ernst Steudel, ‘Nachricht an die Mitglieder des naturhistorischen Reisevereins, und Einladung an alle Botaniker und Mineralogen zum Beitritt für das Jahr 1828’, *Flora*, 11, Bd. II (1828), 3. The Rhenish florin (or guilder) was one of the most important long-distance trading cons in Bohemia, Hungary, Germany, Switzerland, Moravia, the Netherlands, Spain and France during this period.

⁶⁶⁷ ‘verehrlichen Mitglieder’, 14.



Fig 5.2: The *Protea mellifera* (Thunb.). *The Botanical Magazine*, 9-10:289-360 (1795-96), No.346.

The response to Ecklon's topographical catalogue was rather less than complimentary and foreshadows some of the complications that Cape plants and their collectors would endure in the

next decade. In the *South African Commercial Advertiser*, a commentator signed “J.B.” (likely James Bowie) complained about Ecklon’s publication, feeling it necessary to publicly point out his numerous inaccuracies. Particularly cutting, Bowie claimed that,

the student may often overrate his abilities, and imagine that he has done more for science than those who have preceded him, and that he alone has discovered novelties, while many of them exist in European collections, and are becoming what their professors call, old.⁶⁶⁸

He argued that it would have been impossible for Ecklon to prove his own claim that of the 375 *Coronariae* and *Irideae* mentioned in the catalogue, 127 were new species, remarking that European botanists ‘might as well receive a list of so many Hottentot names, as those too often misplaced scientific ones’.⁶⁶⁹ Even a *tyro*, to use Bowie’s term, would have known that the classification of *Coronariae*, given by Linnaeus in his *Methodi Naturalis Fragmenti* (1738), was obsolete and now belonged to the order of *Asphodelaeae* of Robert Brown.⁶⁷⁰ Yet, Ecklon’s mistake may not have been entirely accidental. The criticism Bowie outlines helps to illustrate two issues. Firstly, that Ecklon’s publication demonstrates that he is perhaps an early iteration of a “species monger”, a term Joseph Dalton Hooker later applied to those who were out to make money by multiplying species.⁶⁷¹ The popularity of certain kinds of natural history specimens helped to create a larger market for collections of rare or unusual forms; the more species the taxonomic splitters devised, the more unusual specimens they had to sell. Later in the century, the term species monger linked all splitters, i.e. colonial collectors, with the low-status world of commercial rather than philosophical botany.⁶⁷² Secondly, he points to the place of Cape plants in the European framework at this particular moment. The fact that, already, European botanists perceived Cape genera as “old” aligns with the low demand for Ecklon’s Cape plants amongst subscribers of the *Unio*.⁶⁷³ Judging by messages released by the *Unio* in 1829 and 1830, there were still complete sets available for purchase. In an attempt to sell off more shares, Steudel and Hochstetter used their influence to implore ‘young botanists to pay attention to this opportunity

⁶⁶⁸ *South African Commercial Advertiser*, 5 August 1829, 1.

⁶⁶⁹ Ibid.

⁶⁷⁰ Carl Linnaeus, *Classes plantarum* (Leiden: Conradum Wishoff, 1738), 484-514.

⁶⁷¹ Endersby, *Imperial Nature*, 270-271.

⁶⁷² Ibid.; Endersby argues that this helped to express the younger Hooker’s anxiety about his own social position. He wanted to mix socially with gentlemen of science while needing to earn a living from science. Ultimately, he was not that different from the colonial collectors he wished to set himself apart from.

⁶⁷³ RGBK, DC 49/66-67, Box 1, Hunneman to Hooker, 16 February 1829.

that may never offer again of Cape plants any way so reasonable'.⁶⁷⁴ Although it is unlikely that Bowie's indictment of Ecklon would have been read far beyond the Cape, it offers a junction both into the potential pitfalls of commercially motivated collecting and the onset of a decline in interest in Cape specimens.

Not only did Ecklon's relationship with the *Unio* help to forward his agenda, but he established a partnership with J.G.C. Lehmann, founder of the Hamburg Botanic Garden. In his first step as Ecklon's institutional patron, Lehmann appealed to Ecklon to write to Hooker in Glasgow about determining his considerable moss collection.⁶⁷⁵ By this point, Hooker had established himself as the premier scholar on mosses, liverworts, and ferns, having published his own works on the subject, and in collaboration with Alexander von Humboldt and Aimé Bonpland on South American cryptogams.⁶⁷⁶ Realizing he had neither the knowledge nor time to devote to classifying cryptogams, Ecklon was desirous to place it 'into the hands of the first connoisseur of Mosses in Europe'.⁶⁷⁷ As the most miniscule, mundane, and commonplace of plants, this was perhaps not the most financially rewarding part of the collection for Ecklon, but for Hooker, it was an opportunity. Ecklon assured him that no other naturalists had received assemblages of his mosses and lichens other than Kurt Sprengel, eminent naturalist and physician at Halle who published on them in the sixteenth edition of Linnaeus's *Systema Vegetabilium*.⁶⁷⁸ Ever the promoter of his work, Ecklon hoped that alongside a financial reimbursement, Hooker would publish a Cryptogamic Flora of South Africa based on his collections. Although he surely understood the importance of having such a significant contact in Britain, in Ecklon's eyes, an exchange of this kind would not be without retribution. He requested 40 guineas in payment for the assemblage and recommended Hooker distribute them amongst British naturalists to recover the funds of the original purchase.

⁶⁷⁴ RGBK, DC 49/244, Box 3, Nachricht an die Mitglieder des Württembergischen naturhistorischen Reise-Vereins, published in Hesperus, 24 (1830).

⁶⁷⁵ RGBK, DC 43/169, Lehmann to Hooker, 19 June 1828. In a similar instance, Ecklon had been introduced to a friend of Hooker's who merely went by the name of 'Scouler', who invited Ecklon to write to Hooker about potentially providing determinations for his collection of Cape mosses and lichens. RGBK, DC 43/168, Ecklon to Hooker, 18 June 1828.

⁶⁷⁶ William Jackson Hooker, *British Jungermanniæ* (London: Longman, Hurst, Rees, Orme, and Brown, 1816); William Jackson Hooker, *Plantæ Cryptogamicæ, quas in Plaga Orbis novi Æquinoctiali collegerunt Alexander de Humboldt et Amat Bonpland* (London: J. Harding, 1816); William Jackson Hooker, *Musci Exotici* (London: Longman, Hurst, Rees, Orme, and Brown, 1818); William Jackson Hooker and Thomas Taylor, *Muscologia Britannica* (London: Longman, Rees, Orme, Brown, & Green, 1827).

⁶⁷⁷ RGBK, DC 43/168, Ecklon to Hooker, 18 June 1828.

⁶⁷⁸ Kurt Sprengel (ed.) and Carl Linnaeus, *Systema Vegetabilium*, ed. 16 (Stuttgart: J.G. Cottae, 1824-1828).

The suggestion that Hooker might sell the specimens second-hand displays his lack of knowledge on how the British system of botanical exchange operated, which may have been interpreted as rather impolite.⁶⁷⁹ Nonetheless, by the time Ecklon returned to the Cape to assume his collecting partnership with Zeyher in 1829, he already had a reputation in the sale of Cape specimens, a patron with a connection to a botanic garden, and significant contacts to help promote his future work.

Franz Drège, too, secured a patron long before his return to Europe. From the 1829 volume of *Linnaea*, it is clear that Drège had aligned himself with Ernst Meyer, Professor of Botany at the University of Königsberg and the Director of its Botanic Garden.⁶⁸⁰ The two likely met in Göttingen, where Drège received his horticultural training and Meyer lectured until 1826.⁶⁸¹ Already by 1828, Drège was sending seeds and dried specimens to Meyer in order to begin the determination process for their eventual publication and sale.⁶⁸² The announcement revealed that Drège was collecting plants and that already there were a number of new species that Meyer aimed to describe and catalogue.⁶⁸³ Detailing one such plant, the *Mercurialis triandra*, a genus belonging to the *Euphorbiaceae* family, this snapshot marketed one of the rare varieties Drège's collection would offer potential buyers, remarking that he already could 'provide friends with seeds of the same plant'.⁶⁸⁴ However, in the same volume of *Linnaea*, Lehmann saw fit to promote his association with Ecklon in a similar fashion.⁶⁸⁵ Lehmann presented the reader with a description of *Hepaticarum capensium*, among a longer description of other liverworts indigenous to southern Africa.⁶⁸⁶ Although it cannot be certain, the simultaneous submission of these pronouncements

⁶⁷⁹ For more on correspondence and exchange between different social groups in Britain, see: Anne Secord, 'Corresponding Interests'; Secord, 'Science in the Pub'.

⁶⁸⁰ Although it was later remarked that Meyer was 'no great botanist', his *Geschichte der Botanik* showed that he 'possessed a clever and cultivated intellect'. Julius von Sachs, *History of Botany (1530-1860)*, trans. by Henry E.F. Garnsey and revised by Isaac Bayley Balfour (Oxford: Clarendon Press, 1906), 161; Ernst Meyer, *Geschichte der Botanik* (Königsberg: Verlag der Gebrüder Bornträger, 1854).

⁶⁸¹ Drège made a point to visit Meyer when he traveled through the German states before setting off for the Cape. NLSA, MSC.61.4.402, WE to IH Drège, 14 November 1825.

⁶⁸² NLSA, MSC.61.4.402, WE to CF Drège, 8 February 1830; NLSA, MSC.61.2, 258, WE to IH Drège, 30 June 1830; NLSA, MSC.61.2.288, Raeuper to CF/JF Drège, 23 January 1831; NLSA, MSC.61.2.289, Raeuper to CF/JF Drège, 8 November 1831.

⁶⁸³ Ernst Meyer, 'De Insolita Quadam Mercurialis Specie', *Linnaea*, 4 (1829), 237.

⁶⁸⁴ Today it is known as the *Seidelia triandra*.

⁶⁸⁵ J.G.C. Lehmann, 'Hepaticarum Capensium a C.F. Ecklon collectarum Brevem Recensionem cum Schlechtendalio suo communicavit J.G.C. Lehmann', *Linnaea*, 4 (1829), 357-371.

⁶⁸⁶ Today this would be classified as the *Chiloscyphus semiteres*.

strikes as deliberate, much like the opposing intentions the two factions had in promoting the *Hydnora africana* as part of their collections for sale detailed in the previous chapter. Although friends and collaborators in the field in the Cape, on European soil the Ecklon-Zeyher and Drège antagonism reached new heights as their collections entered the natural history market.

Publicity and Publishing

As Ecklon had learned in allying with the *Unio Itineraria*, publicity and publishing could be a powerful tool in helping these collectors to advertise their assemblages, particularly to metropolitan botanists. Unlike the philosophical botanists who prioritized taxonomic classification, geographic distribution, and morphology, these collectors were focused simply on the purchase and sale of botanical specimens, aiming to give them a well-rounded picture of the diversity of Cape flora, for a price. The editor of *Linnaea*, D.F.L. von Schlechtendal, seemed particularly surprised by the extent of the Ecklon-Zeyher collections, especially considering they were self-funded and operated with no formal lines of individual or institutional pecuniary patronage. He observed that botanists should ‘admire their diligence and zeal, and all the more so since no government helped’ them logistically or financially in their compilation.⁶⁸⁷ The same compliment was handed to Drège, as well. When a synopsis of his travels was published in the 1835-36 volume, Schlechtendal admired the mass of material, noting that it was especially venerable ‘when one considers that it has been brought together by a traveler without the assistance of a state, through his own strength and perseverance and no small zeal’.⁶⁸⁸ These small encouragements also served as a reminder to readers that the livelihood of these collectors was wholly dependent upon their financial contributions. But, more importantly, Schlechtendal’s surprise was likely shared across the continental botanical world, signaling a break in the traditional structures of patronage and collecting the German states.

⁶⁸⁷ ‘Enumeratio plantarum Africae australis extratropicae, quae collectae, deterjintae et expositae sunt a Christiano Friederico Ecklon et Carolo Zeyher’, *Literatur-Bericht zur Linnaea*, 9 (1834), 131-132.

⁶⁸⁸ ‘Ueber die verkäuflichen Pflanzen von Drège aus Südafrika’, *Linnaea*, 10 (1835-1836), 445.

Having made it clear that Ecklon would organize his collections under the patronage of Lehmann at the Hamburg Botanic Garden, he intended to separate the collection into different assemblages for a variety of prices. Inspired by his earlier experience with the *Unio*, he modeled the sale of his next collection with Zeyher on the same example. An insinuation that the *Unio* was not interested in taking on Ecklon's collections a second time, he stated that he would prefer 'if any botanical society were inclined to contract with me about all of the doubles for sale, or a significant part of them'.⁶⁸⁹ Likewise, within a year of the official announcement of the sale, Ecklon and Zeyher released the first volume of their *Enumeratio* listing the entirety of their collections, much like Ecklon had done with the *Topographisches Verzeichniss* in 1828.⁶⁹⁰ Although Drège advertised his collections almost in parallel, there is one glaring distinction between the two factions, coming only in a postscript to Drège's announcement. Offering sets of his collection 'to friends of botany for really moderate prices and under very cheap conditions', Drège ensured that people did not interpret the sale of his collections as 'a profit-seeking sale', but rather 'only an attempt to compensate ... for the great costs and various sacrifices' of his long and extensive journeys.⁶⁹¹ Much like the divergence in publicity tactics on *Hydnora africana*, Drège very clearly wanted his work and reputation to be seen as being of a different category than Ecklon-Zeyher. Rather than selling specimens to make a living, he sold to pursue his passion of collecting plants, which he perceived as a mutually beneficial pursuit and perhaps had some intent on pursuing botany at a different caliber than merely the commercial.

What is most significant about the distribution and determination of the two collections is the wide-ranging problems they caused amongst members of the European scientific community. Firstly, the collections suffered due to a lack of illustrations and literary aids available in the Cape which would have allowed them to make more accurate initial determinations. Collectors were especially hungry for botanical books, not least because a specimen's value (scientific or commercial) was increased if a collector could identify and describe it with correct technical terms.⁶⁹² In the introduction to Ecklon's *Topographisches Verzeichniß*, Steudel and Hochstetter anticipated the

⁶⁸⁹ 'Nachricht über die von Ecklon und Zeyher in Südafrika unternommenen Reisen und deren Ausbeute in botanischer Hinsicht', *Linnaea*, 8 (1833), 394.

⁶⁹⁰ 'Enumeratio', 131-132.

⁶⁹¹ 'Drège aus Südafrika', 445.

⁶⁹² Endersby, *Imperial Nature*, 79.

potential backlash and sought to ensure Ecklon did not receive blame for incorrect determinations. Offering a counterpoint to the criticism Bowie launched at Ecklon regarding the *Coronariae*, they vouched that ‘since there is a complete lack of literary aids at the Cape one cannot reasonably argue with the author if some species already known and described in Europe appear to him as new’.⁶⁹³ Although I would argue that Ecklon purposefully engaged himself in taxonomic splitting for his own financial and reputational benefit, Steudel and Hochstetter prudently defended him against such accusations in Europe. European men of science recognized the benefit of naturalists and collectors in the colonies having books as two-fold: it improved the initial ordering of the plant but also served as a bartering tool for rare specimens. Ludwig Pappe moaned to John Lindley that ‘the Cape Botanist from want of proper *supplex literaria* is very often in a dilemma, in as much, as he is kept in utter ignorance with regard to the new necessary botanical publications’.⁶⁹⁴ In return for such useful manuscripts, Pappe agreed to send any Cape specimens that Lindley wished to have for his collection. Baron von Ludwig engaged in the same conversations with Hooker, promising the newest and rarest specimens that Zeyher brought from the frontier in repayment for a steady stream of botanical publications.⁶⁹⁵ The lack of literary aids and illustrations in the Cape perhaps fed into the underlying belief that collectors of this sort were inherently splitters, but it certainly made classification much more difficult both locally in the Cape and in the metropole, despite the very comprehensive and nuanced local knowledge that Ecklon, Zeyher, and Drège had on South African flora. Much like the debates surrounding the taxonomic ordering of *Hydnora africana*, detailed *in situ* observations and judgments were crucial in this process.

Secondly, although naturalists throughout Britain and the German states immediately went to work in classifying families of Cape plants, there was a wider call for the Ecklon-Zeyher and Drège specimens to be compared with other Cape collections. Once Ecklon’s collection came into the hands of the *Unio* in 1828, Steudel remarked that even his own modest library and herbarium made it impossible to correct more than a few glaring inaccuracies. In *Flora*, he called upon specialists in certain genera to take up the task as quickly as possible, but more importantly insisted that work be done by those in possession of the Sieber-Zeyher assemblages from 1825. Thus, material

⁶⁹³ Ecklon, *Topographisches*, v-vi.

⁶⁹⁴ WCARS, A 1663, Pappe to Lindley, 13 June 1845, 249.

⁶⁹⁵ RGBK, DC 58/192, Baron von Ludwig to Hooker, 7 August 1833.

comparisons could be made to extant Cape specimens in order to ‘draw attention to creeping errors and almost inevitable synonyms’.⁶⁹⁶ Yet, in this appeal Steudel stressed comparison not only to the Sieber-Zeyher collection, but also the necessity of linking the specimens with Carl Peter Thunberg’s herbarium in Uppsala and to his *Flora Capensis*.⁶⁹⁷ For all its merits, Thunberg’s *Flora* left much to be desired in terms of completeness of precision according to the standards of the time, but as it was one of the few literary aids available with which to compare, Steudel emphasized that it must remain the basis of all studies of Cape plants.⁶⁹⁸ A year later, Steudel took up ‘the abandoned thread’, attempting to convince continental botanists to make more serious determinations of Ecklon’s material in consultation with previous Cape herbarium collections.⁶⁹⁹ Once able to acquire a centurion of Zeyher’s plants, Steudel claimed he was able to make several corrections on the Ecklon plants himself.⁷⁰⁰ This process of material comparison was essential in preventing the widespread creation of synonyms, thus confusing the process of naming and ordering Cape plants.

Although the extensive Ecklon-Zeyher and Drège collections were circulating widely by the mid-1830s, the commercial (and competitive) imperatives of the two camps nevertheless insisted on separateness, which further plagued the process of ordering. In the 1837 issue of *Linnaea*, editor Schlechtendal took up the issue that Steudel had forwarded years earlier while offering his own commentary on the second volume of Ecklon and Zeyher’s *Enumeratio*: ‘it is a great pity that the various treatments of Cape plants were neither connected to one another nor to the Thunberg Herbarium’.⁷⁰¹ In contrast to Steudel, however, he wondered why one single botanist had not made it their career’s work to combine the separate collections into one large project, rather than numerous botanists taking up the different strands based on their expertise. But those who did take up the difficult taxonomic revision of Cape flora found Schlechtendal’s point salient, questioning why these collectors had not combined their efforts or made it easier, or cheaper, to purchase the

⁶⁹⁶ Ernst Steudel, ‘Einige Bemerkungen über Kap’sche Restiaceen, Cyperaceen und Gramineen; von Hrn. Dr. Steudel in Esslingen’, *Flora, oder Botanische Zeitung*, 12:1, No. 9, (1829) 131; A synonym is a scientific name that applies to a taxon that (now) goes by a different scientific name.

⁶⁹⁷ Carl Peter Thunberg, *Flora Capensis* (Uppsala: Joh. Fr. Edman, 1807).

⁶⁹⁸ Steudel, ‘Einige Bemerkungen’, 132.

⁶⁹⁹ Ernst Steudel, ‘Zu erwartende bedeutende Pflanzen-Sammlungen vom Kap der guten Hoffnung’, *Flora*, 13, Nr. 34, Band II (1830), 537-538.

⁷⁰⁰ Ibid.

⁷⁰¹ ‘Literatur-Bericht. Enumeratio plantarum Africae austr. extratrop...’, *Linnaea*, 11 (1837), 6.

collections together. Karl Presl, Professor of Botany at the University of Prague, referred to the separation of the two collections as ‘a great confusion’ and a ‘detrimental circumstance’ to the treatment of Cape plants.⁷⁰² In 1839, German botanist G.W. Walpers claimed that the problems he encountered in naming the Cape *Leguminosae* caused him ‘a huge distress of spirit’, offering a lengthy criticism about the difficulty of collating the huge amount of data on one genus spread between the two collections.⁷⁰³ In his opinion, the descriptions were often too brief, the works included too many synonyms, and the sometimes strangely described ‘absurdities’ contributed to a rather extensive disorder in his attempt to provide a thorough rendering of the genus. The latter sentiment was taken up by English botanist George Bentham, who explained that sets of similar plants that did not look like other species of known genera were lumped together under a new generic name, often without verification. The consequence of this was that those species not reexamined by other botanists ‘must remain as mere puzzles’.⁷⁰⁴ Schlechtendal, on the other hand, had a slightly more optimistic view of the chaos that seemed to paralyze the work of Walpers and others, arguing that the desire to bring Cape genera to order inspired ‘hope that the Cape flora ... will in time be completely processed’.⁷⁰⁵ Responses to the difficulties presented by these two collections seemed to fluctuate between frustration and hope, giving ‘rise to the fear that this work would remain unfinished and therefore less useful’.⁷⁰⁶

The urgency with which European botanists took to the elaboration of the Cape *Leguminosae*, on top of the unresolved material disconnection of the two collections, led to a botanical polemic in the 1840s.⁷⁰⁷ Frans van Lunteren has recently approached the phenomenon of scientific conflict, arguing that a number of factors made men of science more prone to clashes: the reward system of science based on the winner-takes-all principle; the fact that the credibility of an author’s claim was not based on the author’s social standing, reputation, or seniority, but merely on factual

⁷⁰² Karl Bor. Presl, *Botanische Bemerkungen* (Prague: Gottlieb Haase Söhne, 1844), 4.

⁷⁰³ G.W. Walpers, ‘Animadversiones Criticae in Leguminosae Capenses’, *Linnaea*, 13 (1839), 449-452.

⁷⁰⁴ George Bentham, ‘Enumeration of *Leguminosae*, indigenous to *Southern Africa*, and *Central and Southern Africa*’, *London Journal of Botany*, 2 (1843), 427.

⁷⁰⁵ D.F.L. von Schlechtendal, ‘*Florae Africae australioris illustrationes monographicae*. Scripsit C.G. Nees von Esenbeck etc. L. Gramineae. Glogaviae sumtibus Prausnitzianis MDCCCXL. 8. XX et 490 pp.’, *Linnaea*, 15 (1841), 127-128.

⁷⁰⁶ Schlechtendal, ‘*Florae Africae*’ (1839), 128.

⁷⁰⁷ Legumes are the third largest plant family; presently, they have around 20,000 species and 800 genera. For over forty-five years, the Bean Bag Newsletter has been published to promote communication between those concerned with the systematics of *Leguminosae*.

evidence; and the gradual divergence between social and intellectual hierarchies in the nineteenth century.⁷⁰⁸ If the tense competition between Ecklon-Zeyher and Drège in the commercial sale of their Cape specimens was not already clear, the near identical publication date of Meyer's *Commentariorum* (1835) and the second volume of Ecklon and Zeyher's *Enumeratio* (1836) became 'a matter of controversy' over which publication should take priority and which species names should be retained for future reference.⁷⁰⁹ The generally adopted principle stated that the right of priority was dependent upon the date printed on the title page.⁷¹⁰ When Walpers published his 1839 treatise on the Cape *Leguminosae*, he rather consciously adjudged priority to Ecklon and Zeyher, altering Meyer's names to suit the Ecklon-Zeyher genera. He argued that because Ecklon and his Cape plants had already seen publication (through the *Unio* and the first volume of the *Enumeratio*), he aimed to limit the rise of more taxonomic lapses and typographic errors by assigning Ecklon priority despite the later publication date on the title page.⁷¹¹ He also controversially suggested that Meyer had not been forthright, claiming there had been a concerted effort to beat Ecklon and Zeyher to the printing press, or some sort of falsification of the 1835 publication date, raising 'suspicion against the candour of Dr. Meyer'.⁷¹² Although it is uncertain why Walpers would have launched this direct attack on Meyer's character, his decision to do so would ultimately disrupt the entire taxonomic assignment of the Ecklon-Zeyher and Drège collections. Interferences like that of Walpers are often overlooked in the historiography on the history of science, but ultimately shed light on the true nature of scientific competition embedded within Western systems of knowledge.

By the next year's volume of *Linnaea*, Schlechtendal was forced to address the 'tangle of quarrels' incited because of Walpers' provocative intervention, likening his journal to a 'battlefield'.⁷¹³ As

⁷⁰⁸ Frans van Lunteren, 'Making Sense of Conflicts in Science', accessed 15 March 2021, <https://www.shellsandpebbles.com/2021/03/01/making-sense-of-conflicts-in-science/>

⁷⁰⁹ H.S. Marshall, 'The Dates of Publication of Ecklon and Zeyher's "Enumeratio" and E. Meyer's "Commentarii"', *Journal of the Society for the Bibliography of Natural History*, 1:4 (1937), 101-103; Bentham, 'Enumeration', 426; Christian Friedrich Ecklon and Karl Zeyher, *Enumeratio plantarum Africae australis extratropicae, quae collectae, deterjintae et expositae sunt a Christiano Friederico Ecklon et Carolo Zeyher*, vol. 2 (Hamburg: Perthes & Besser, 1836); Ernst Meyer, *Commentariorum de plantis Africae Australioris: quas per octo annos collegit observationibusque manuscriptis. Illustravit Joannes Franciscus Drege* (Leipzig: Voss, 1835-1837).

⁷¹⁰ C.F. Meisner, 'Contributions towards a Flora of South Africa', *London Journal of Botany*, 2 (1843), 60.

⁷¹¹ Walpers, 'Leguminosae', 451.

⁷¹² Meisner, 'Contributions', 60.

⁷¹³ D.F.L. von Schlechtendal, 'Den Freunden der Linnaea', *Linnaea*, 14 (1840), 705.

the editor of the journal, he felt it was his position to contribute to the correction of accusations made against Meyer. ‘Justice will demand that both parties be heard, and then it will be left for the literary public to make its judgment’, he recommended, hoping that this would help quash the disputes occurring within, and beyond, the pages of *Linnaea*.⁷¹⁴ In his understanding of the events, Meyer’s finished manuscript was first given to the printer in December 1835, and thus the title contained that year. However, at no fault of the author, ‘the printing dragged on until the beginning of the year 1836’; Schlechtendal offered 18 February 1836 as the official release date, a month later than the January 1836 release of the *Enumeratio*.⁷¹⁵ Using this to discredit Walpers’ suggestion that Meyer and/or his publisher had fabricated the publication year and subsequently covered it up, Schlechtendal continued that Walpers perhaps

only had the purpose of sealing a few “*mihi*” or “*nobis*”, on which only those who want to earn their spurs usually attach the weight of a conquest, which the experienced fighter, on the other hand, often disregards and pays little attention to an easy trophy.⁷¹⁶

C.F. Meisner, Professor of Botany at the University of Basel, applauded Schlechtendal’s condemnation, stating that Walpers’ remarks, ‘though offending to the feelings of everyone who is acquainted with Dr. Meyer’s real character, will, we trust, do less harm to the latter than to the credit of its own author’.⁷¹⁷ It could be suggested that Walpers’ consummate attack on Meyer was both personal and professional, without much evidence to prove otherwise; the responses indicate that it was unusual for such an assault to take place so publicly. Nonetheless, it demonstrates the extreme and abnormal frustrations that some botanists experienced in their attempt to work with the Ecklon-Zeyher and Drège collections and the difficulty botanists had in navigating a poorly ordered field riddled with synonyms and contradictions.

Although Schlechtendal had cleared up the false accusations made against Meyer, he offered no solution to the issue of priority, only brief evidence. In 1843, Meisner offered his own intervention

⁷¹⁴ Schlechtendal, ‘Freunden’, 705.

⁷¹⁵ Ibid., 706; In Bentham, ‘*Leguminosae*’, 427 he places the release of the *Commentariorum* on 14 February 1836.

⁷¹⁶ Schlechtendal, ‘Freunden’, 706; I apologize for such a strange translation of an important passage. Consulting with native German speakers, we decided that this was an extremely difficult passage, which I will leave here in German for the reader to decide. ‘Wer überdies den Charakter der Herausgeber und Bearbeiter der Commentare nur ein wenig kannte, konnte gar nicht auf den Einfall einer durch Druck- oder Schreibfehler zu vertuschender Verfälschung kommen, die ja nur den Zweck haben musste, einige “mihi” oder “nobis” zu erbeuten, auf welche nur der, welcher sich die Sporen verdienen will, das Gewicht einer Eroberung zu legen pflegt, welche der erfahrene Kämpfer dagegen als eine zu leichte Trophäe oft von der Hand weist und gering achtet’.

⁷¹⁷ Meisner, ‘Contributions’, 60.

into Walpers' choice of adhering to the Ecklon-Zeyher names, taking the hard line that Meyer's 1835 publication date should stand as the priority. To him, the adopted law 'with which we perfectly agree' stated that the date on the title page gave precedence, regardless of the reason Meyer's work bore the earlier date; this matter was 'of the least importance'.⁷¹⁸ Because Walpers did not follow the assumed protocol, he needlessly added 'a mass of unnecessary synonyms', making botanists' work more difficult in future. Moreover, in a case of this nature, Meisner advocated for a change in this unwritten rule, stating that 'the intrinsic value of the works ought to be taken into account' as well. This way, preference would be determined by manuscripts which had 'been most scientifically treated', helping to clear up issues of close publications dates.⁷¹⁹ This consideration is interesting, as Meisner seemed to believe that Drège's publication was more "scientifically treated" than Ecklon-Zeyher's, adding further evidence to the idea that Drège had motivations of upward mobility. Presl held the same view as Meisner, believing that Walpers had 'unnecessarily violated priority, increased synonymy, and gave rise to further confusion'.⁷²⁰ Bentham, too, became involved in the debate, translating what was mainly a continental, German-language controversy for English scientific audiences in Hooker's *London Journal of Botany*. Though in principle he agreed with Meisner, he could not deny the fact that Ecklon and Zeyher's *Enumeratio* was the first publication in the hands of the public.⁷²¹ Although Meisner had published his work with considerable care and exactness, because he claimed Meyer's priority over Ecklon and Zeyher, his great number of changes in nomenclature likely went unheeded.⁷²² 'There are now perhaps very few sets of plants which have so great a mass of synonyms, certain or doubtful, as the six or seven hundred South African Papilionaceæ', Bentham reflected.⁷²³ After Bentham's interjection, the controversy seemed to grind to a halt, as no evidence appears on the subject in later volumes of *Linnaea*, making it difficult to ascertain what conclusion the scientific community came to in giving preference to either Ecklon-Zeyher or Drège. Not only did the controversy decelerate, but much of the work and interest in Cape plants also seemed to lose speed, foreshadowing a difficult decade for the collectors ahead.

⁷¹⁸ Ibid.

⁷¹⁹ Ibid.

⁷²⁰ Presl, *Bemerkungen*, 4-5.

⁷²¹ Bentham, 'Enumeration', 427.

⁷²² Ibid., 428.

⁷²³ Ibid., 429.

Competition Meets Collaboration, Again

By the turn of the 1840s, as the controversy over right of priority between the Ecklon-Zeyher and Drège publications raged, the entrepreneurial collectors of Cape specimens also faced difficulties in their livelihood. Ecklon and Zeyher ended their nearly ten-year collecting partnership in 1838 and Ecklon, who had been the ostensible darling of commercial Cape botany, by this point had earned himself a rather degraded reputation, both in the Cape and in Europe. Harvey gossiped at length on the subject, noting that he was ‘glad that [Zeyher] has at length shaken himself clear of Ecklon, though it cost him dearly’.⁷²⁴ Using language that implied abuse, Zeyher acted ‘patiently with every bad treatment – both pecuniary & other’. A section of the letter is worth quoting. He continued,

Of the last it sufficient to say that all Europe knows Ecklon & no one thinks much of Zeyher; whereas at the Cape every one knows that Ecklon is a drunkard & that Zeyher is a very respectable & hard working man – indeed he was by far the principal collector. Ecklon is too an ignorant person – Zeyher a very acute observer & with a competent knowledge of Botany. To conclude I would have nothing to do with Ecklon – but I would do all in my power to serve Zeyher.⁷²⁵

This did not stop many within the Colony of supporting Ecklon when he ‘was found laboring under very extensive disease’, so much so that it was ‘feared his life [could] only be saved by an amputation of a diseased leg’.⁷²⁶ This perhaps explains why Ecklon did not issue a formal response or defense when Schlechtendal called for the authors to help dispel the priority debate themselves. Baron von Ludwig, Ludwig Pappe, and others signed a memorial to Governor Sir George Thomas Napier to have Ecklon placed under the superintendence of the Somerset Hospital in Cape Town after being reduced to ‘a state of great poverty and distress’.⁷²⁷ Thus, as Europe was still engaged in organizing his collections, Ecklon himself became indisposed: unable to engage in his former livelihood, and incapable of participating in the examinations of his specimens on the continent.

⁷²⁴ RBGK, DC 58/80, Harvey to Hooker, 9 March 1840.

⁷²⁵ Ibid.

⁷²⁶ WCARS, KAB, CO 4012, 164, 16 April 1842; WCARS, KAB, CO 4012, 164, 14 April 1842.

⁷²⁷ WCARS, KAB, CO 4012, 164, 14 April 1842.

With Ecklon's health and reputation declining, Zeyher, on the other hand, benefitted only temporarily from the dissolution of the partnership. Likely through the endorsement of Harvey, Lord Derby, an enthusiastic natural history collector with his own menagerie at Prescott, Lancashire, recruited Zeyher to collect Cape flora with Joseph Burke through 1842.⁷²⁸ The journey took Zeyher as far north as present-day Magaliesberg, and to tracts of southern Africa neither he nor others had yet been, allowing him to expand his own herbarium collection and collect duplicates for eventual sale. It soon became evident to him, however, that the collection of Cape plants, whether living or as *exsiccate*, was no longer remunerative. Already by 1837, Harvey enquired with Hooker whether there were still any complete sets of Drège's plants available, as Ecklon's were 'too expensive' and, he had heard, in bad order.⁷²⁹ Although he knew he could receive some of the Ecklon material at a good price through Zeyher directly, Drège had lowered the price of his remaining specimens 'in England at the rate of 30 Shillings pr. Cent.', forcing Zeyher to lower his own prices to remain competitive.⁷³⁰ ⁷³¹ After the completion of his expedition with Burke, and a stint at Kew Gardens to arrange the collection, Zeyher, under pressure of poverty, was forced to sell his extensive herbarium to Ludwig Pappe, whose house in Loop Street in central Cape Town he worked arranging his collections.⁷³² After his short employment in the botanic garden (covered in the next chapter), Colonial Secretary Rawson W. Rawson wrote to Hooker that Zeyher had been reduced to organizing a market garden and hence, there were no more full-time collectors available to source new Cape plant material.⁷³³

The entrance of Ferdinand Krauss of Stuttgart into the European natural history market also posed a potential threat to the continued dominance and sale of the Ecklon-Zeyher and Drège collections. On a visit to Württemberg in 1837, Baron von Ludwig persuaded the young apothecary to come to the Cape as a plant collector under his patronage. Initially following the same routes as those before him, he 'collected principally in the Natal and Amazoolaland, where he resided about twelve months' alongside Swedish naturalist Johan Wahlberg and French naturalist Adulphe

⁷²⁸ RGBK, KCL/6 and KCL 6/1.

⁷²⁹ RGBK, DC 58/59, Harvey to Hooker, 6 October 1837.

⁷³⁰ RGBK, DC 58/238, Zeyher to Hooker, 25 October 1840.

⁷³¹ Ibid.

⁷³² NLSA, Frank Bradlow Collection, MSB 64.7 (3). Pappe's herbarium, including Zeyher's specimens, ultimately became the foundation of the Cape Government Herbarium.

⁷³³ RGBK, DC 59/274, Rawson to Hooker, 26 January 1858.

Delagorgue.⁷³⁴ This was significantly longer than the Drège's had collected there while traveling with Andrew Smith's party in 1832, and this extended period of residence is precisely how Krauss's collections were marketed upon his return to set his collections apart.

There was considerable excitement about the Krauss collections, but the state of the market, and the state of the collection, proved underwhelming. Despite traveling to new areas, Krauss was forced to operate under the shadow of Ecklon-Zeyher and Drège's thoroughness and of their continued presence in the market. He certainly acknowledged the accomplishments of the three collectors, stating 'of course, my collection cannot compete'.⁷³⁵ Arriving in London before returning to Stuttgart in 1840, the British Museum was desirous of obtaining a full set of his Natal zoological and botanical specimens, although the price offered, in Krauss's view, was 'not equivalent with what I have gone through'.⁷³⁶ Though the British Museum had a reputation for disorganization and low-balling, Krauss nonetheless decided to take the lower asking price, stating that 'the only satisfaction will be for that they shall be exhibited in an institut [*sic*] so highly celebrated'.⁷³⁷ It is unusual that the British Museum, rather than Hooker or Harvey, would have acquired this incoming South African collection in the first instance, especially given Hooker and the Baron's long and fruitful collaboration. While Hooker did receive some of Krauss's specimens, the arrangement with the Museum dictated that they receive two of every species and that Krauss held two for his own herbarium, oftentimes excluding other botanists from the rarer varieties.⁷³⁸ With the remaining Natal duplicates, Krauss was obliged to lower the price, likely to the price that had been set by Drège, because they also included well-circulated species from the Cape.⁷³⁹ Harvey and Robert Brown seemed disappointed with the Krauss collection, with Brown groaning that there was 'nothing very remarkable' about it, to which Harvey hoped that he would not 'regret having taken it'.⁷⁴⁰ Rather the opposite of Ecklon, Zeyher, and Drège, this journey was part of Krauss's

⁷³⁴ 'Dr. Krauss's Return from Southern Africa', *Annals of Natural History*, 5 (1840), 342.

⁷³⁵ Ferdinand Krauss, 'Pflanzen des Cap- und Natal-Landes, gesammelt und zusammengestellt', *Flora*, 27:17 (1844), 261-262.

⁷³⁶ NHML, DF 200/144, 183, Krauss to Gray, n.d. (probably 1840).

⁷³⁷ Ibid.

⁷³⁸ RBGK, DC 50/181, Box 2, Krauss to Hooker, 1 August 1840.

⁷³⁹ RBGK, DC 59/180, Krauss to Hooker, 9 November 1842.

⁷⁴⁰ RBGK, DC 58/91, Harvey to Hooker, 18 July 1840.

career-making: he went on to have a successful position as the Director of the Natural History Museum in Stuttgart, despite his comparative lack of success as a collector.

Drège was obliged to remain firmly on the commercial side of natural history. He struggled to continue selling Cape plants from Hamburg, instead opening a merchant's business for local and foreign seeds. In 1848, his former agent Raeuper wrote to Carl Drège that Franz's 'business in plants has dwindled considerably'.⁷⁴¹ However, it is clear that he had aspirations for a higher standing, or fuller acceptance into, the scientific community with his attempt to publish on South African phytogeography. There had been an established tradition in the German states to focus on geographical matters in botany, beginning with the work of Johann Reinhold and Georg Forster on Cook's *Resolution* voyage, detailed in Chapter One. Yet, the field was profoundly shaped by Alexander von Humboldt's work on South America, a legacy so immediately identifiable with early nineteenth-century natural history.⁷⁴² While Humboldt's isothermic mapping of species based on numerical measurements has received the bulk of historiographic consideration in the history of biogeography, privileged field collectors were also putting together the practical applications of climatic zones and vertical cartography simultaneously. As Humboldt and other miners studied subterranean fossilized plants excavated from rock as a way of mapping time as a function of geographic distribution, collectors traveling within and between colonies also viewed "living fossils" like palms, tree-ferns, and cycads as markers of climatic continuity.⁷⁴³

In Britain, phytogeography formed the intellectual center of "philosophical" botany, used to justify its practical and economic benefits to society.⁷⁴⁴ Though it was a widespread perception that distribution theories held the key to advancing the philosophical standing of natural history in

⁷⁴¹ NLSA, MSC.61.2.291, Raeuper to CF Drège, 20 September 1848.

⁷⁴² With the notable exceptions of Janet Browne and Jane Camerini, few historians have considered the botanical origins of biogeography at length, and even these studies tend towards the biographical. Janet Browne, *The Secular Ark: Studies in the History of Biogeography* (New Haven: Yale University Press, 1983); Janet Browne, *Charles Darwin: Voyaging* (Princeton: Princeton University Press, 1995); Jane Camerini, 'Evolution, Biogeography, and Maps: An Early History of Wallace's Line', *Isis*, 84 (1993), 700-727; Andrea Wulf, *The Invention of Nature: Alexander von Humboldt's New World* (New York: Alfred Knopf, 2015). Malcolm Nicholson noted that for Johann Reinhold Forster, as for Humboldt, 'the vegetation of a region was an expression of the physical environment, and also a direct influence on Mankind, both materially and spiritually'. Nicholson, 'Alexander von Humboldt, Humboldtian Science, and the Origins of the Study of Vegetation', *History of Science*, 25 (1987), 177.

⁷⁴³ Patrick Anthony, 'Mining as the Working World of Alexander von Humboldt's Plant Geography and Vertical Cartography', *Isis*, 109:1 (2018), 28-55; Ayers, 'Strange Beauty', 82.

⁷⁴⁴ Endersby, *Imperial Nature*, 232-233.

Britain, it was nonetheless inextricably tied to economic botany, which in turn guaranteed government funding for future botanical projects.⁷⁴⁵ The intellectual rigor of “philosophical” botany was also forwarded as a way to set rigid boundaries between botanists and collectors. Although these boundaries were certainly more fluid in the first half of the nineteenth century, the global knowledge of plants required to engage in phytogeography made it easier for metropolitan naturalists to retain the power of determining scientific statuses. Since the Cape was home to what is now the greatest non-tropical concentration of plant species in the world, the great diversity and endemism of the region would not have been lost on the collectors who saw it firsthand.

In 1830, Ecklon attempted a brief phytogeographical study, aiming to answer ‘how far one and the same family, genus or species, is distributed’.⁷⁴⁶ Although a promising start, this endeavor was likely not taken very seriously due to the fact that a number of species were incompletely or incorrectly named, and he focused solely on the district of Uitenhage rather than attempting to make a wider study of the region.⁷⁴⁷ Much like he had attacked Ecklon’s topographical catalogue published a year earlier, James Bowie again believed that Ecklon had failed in his effort to map out a geographic distribution of Uitenhage. Commending Humboldt and calling the field a ‘chaotic uncertainty’, he made particular reference to Ecklon’s claim that the habitat of the *Leucadendron argenteum* stood at a height of 1000 feet. He asserted

any casual observer need only cast his eye on Table Mountain and notice the species (the silver tree) and remark whether or not it thrives above the height mentioned. If Mr. E has chosen that species from among the *Proteaceæ* as a standard, I consider the selection as an unhappy one.⁷⁴⁸

Because Bowie had spent two years in Brazil as a collector for Kew Gardens, his spatial crossover between southern Africa and South America allowed him to establish ‘interesting links’ between genera from both continents, ‘which tend[ed] greatly to connect the chain’ that Humboldt was in the process of theorizing.⁷⁴⁹ Though Bowie’s attack probably had as much to do with competition

⁷⁴⁵ Ibid., 248.

⁷⁴⁶ C.F. Ecklon, ‘A List of Plants found in the District of Uitenhage, between the Months of July, 1829, and February, 1830, together with a description of some new Species’, *South African Quarterly Journal*, 1:4 (1830), 358-380.

⁷⁴⁷ Peter MacOwan, ‘Catalogue of Printed Books and Papers relating to South Africa. Pt. 1: Botany’, *Transactions of the South African Philosophical Society*, 2 (1882), 136.

⁷⁴⁸ *South African Commercial Advertiser*, 5 August 1829, 1.

⁷⁴⁹ Ibid.

as it did with attempting accurate phytogeographical analysis, what is significant is that these analyses were coming from below, from collectors on the ground observing, rather than the traditional line of intellectual transmission from metropole to periphery.

Yet, Drège and Meyer took their attempts at Cape phytogeography to a level far beyond Ecklon's capabilities. Although they had wished to publish such a work in the 1830s, the endeavor 'failed because of the enormous size of the collection and the need to bring it to the public faster than the work could progress'; commercial imperative momentarily halted philosophical progress.⁷⁵⁰ Now they were offering a new systematic arrangement of Drège's collection: an alphabetical list of the names or numbers of all plants he had collected on the one hand, and the names of all locations he collected on the other, with constant reference to each other in both lists. Here, they left 'the secure field of observation deeper and deeper into the foggy land of hypotheses', proving that they were qualified to engage intellectually, beyond simple identification and classification.⁷⁵¹ Although this work was lauded throughout the nineteenth century as 'the most valuable published record of phyto-geographical facts relating to the Cape', it was not applied where it would have been most useful: in Harvey and Wilhem Sonder's *Flora Capensis*.⁷⁵² In the late nineteenth century, South African botanist Harry Bolus asserted that 'Drège's observations cannot be over-estimated, and form the necessary basis of all later investigations'.⁷⁵³ Bolus' contemporary Peter McOwan also reflected on this misstep, arguing that it could have been reasonably expected that the two authors would use Drège's pre-established lists and systematic order to arrange the *Flora*, but, in what seems like typical fashion, this was unfortunately not done.

For both financial and philosophical reasons, Drège bought the remaining stock of the Ecklon-Zeyher duplicates in Hamburg, still in the hands of their patron Lehmann at the Botanic Garden.⁷⁵⁴ Drège's investment in the collection created two new opportunities: a convenient arrangement in which he acted as Zeyher's botanical agent on the continent while Zeyher returned to the Cape to collect, and the chance to correct the errors which had consumed the European botanical

⁷⁵⁰ J.F. Drège, 'Zwei pflanzengeographische Documente von J.F. Drège nebst einer Einleitung von Ernst Meyer', *Flora*, 26, Band II (1843), 1.

⁷⁵¹ *Ibid.*, 37.

⁷⁵² MacOwan, 'Catalogue', 134.

⁷⁵³ Harry Bolus, *Sketch of the Flora of South Africa* (Cape Town: W.A. Richards & Sons, 1886), 3.

⁷⁵⁴ J.G.C. Lehmann, 'Anzeigen', *Flora*, 26, Nr. 18, Band I (1843), 293; Anon., '20. September', 18-19.

community in the previous decade.⁷⁵⁵ In acquiring what likely amounted to a near complete set of the Ecklon-Zeyher herbarium, and having direct access to Zeyher himself, Drège was able to unite the two collections under his self-devised numbering and geographical systems, allying two of the most extensive South African assemblages up to that point.⁷⁵⁶ This was certainly a breakthrough of sorts not only in trying to understand the distribution of Cape flora, but also in bringing together the disparate collections into one cohesive set.

In the same way that a lull in collecting produced a desire for more specimens of rare plants during the Sixth Frontier War, the end of the Ecklon-Zeyher-Drège collecting period was felt severely by those still analyzing Cape plants. Harvey, in the process of compiling the *Flora Capensis*, was especially keen to send collectors into underexplored districts. For example, in championing Zeyher in the wake of his separation from Ecklon, Harvey suggested Zeyher establish himself in the vicinity of Tulbagh rather than his usual residence near Uitenhage, as it had already been comparatively well documented.⁷⁵⁷ In an attempt to convince Zeyher, Harvey insinuated that he would be able to re-enter the natural history market with new and rare specimens, ones which would be sure to sell, while at the same time providing raw material for the *Flora*.⁷⁵⁸ Namaqualand and Damaraland also featured heavily in these pleas now that English merchants had opened copper mines at the Kooperbergen and Grootrivier, and with the expedition of Sir James Alexander on behalf of the Royal Geographical Society.⁷⁵⁹ The increased European mining and missionary presence reasonably lowered the risk that had previously plagued naturalists wishing to collect in the region in the 1820s and 1830s.⁷⁶⁰ Carl Drège, who had taken up his old profession as an apothecary in the Paarl, wrote to his brother in a similar plea to engage in another lengthy collecting journey. Franz weighed the pros and cons, stating that collecting would only be decent if there was not a drought, which had impeded their previous attempts in that region. He discussed his considerations in detail, noting that

⁷⁵⁵ RGBK, DC 59/346, Zeyher to Hooker, 7 April 1846.

⁷⁵⁶ J.F. Drège, 'Standörter-Verzeichniss der von C.L. Zeyher in Südafrika gesammelten Pflanzen', *Linnaea*, 19:3 (1847), 583-598; J.F. Drège, 'Vergleichungen der von Ecklon und Zeyher von Drège gesammelten südafikanischen Pflanzen', *Linnaea*, 19:3 (1847), 599-680; J.F. Drège, 'Nachtrag zum Standörter-Verzeichniss', *Linnaea*, 20 (1848), 258.

⁷⁵⁷ RGBK, DC 58/116, Harvey to Hooker, 4 January 1843.

⁷⁵⁸ Ibid.

⁷⁵⁹ NLSA, MSC.61.2.225, Draft letter of CF Drège, April 1854.

⁷⁶⁰ RGBK, DC 58/116, Harvey to Hooker, 4 January 1843.

the plants collected in few days between Natveet and Werleptpram are practically all of them new species and have probably also not been collected again by anyone else since. We also did not make any stay in the Kaus Mountains. Even the Kooperberge should still offer many new things, because those collected near Silverfontein consisted to more than two-thirds of kinds not found by either Zeyher or previous collectors. How much more can be expected if it were possible to get a few degrees of latitude across the Grootrivier in the right time of year - I imagine September-December. - On the whole the west coast is not as rich as towards the east. But this very fact may be the reason for no-one going there. Seeds alone, particularly of pretty annuals which are well suited for culture here in pots as garden flowers, would promise a good return, as I have tried in vain to tell Zeyher in the past. In my garden here I probably have a dozen such plants in bloom and they are popular in England as in Germany.⁷⁶¹

Ultimately, Franz would not return to the Cape for another series of excursions, even though Carl offered to fund everything except the trip to and from Hamburg.⁷⁶² Just as the discipline was beginning to draw stricter boundaries between “philosophical” botanists and botanical collectors, these former Cape collectors were no longer able to depend on income made from their collections. Their post-collecting professions certified their lower status in the annals of botany, from coveted collectors to mere gardeners, horticulturalists, and merchants.

Conclusion

The intellectual project of systematic botany was fundamentally disrupted by the arrival of the Ecklon-Zeyher and Drège collections in the 1830s, just one of many scientific undertakings which challenged European botanists’ conceptions about the Western taxonomic order and the nature of their practice. This chapter has been particularly difficult to conceptualize, as there is not much literature with which to frame these epistemic processes on display, signaling that more work needs to be done amongst these nineteenth-century scientific journals, particularly in languages other than English. Much of the existing historiography omits this particularly fruitful period, despite what it can add to our understanding of both the eighteenth-century encyclopedic project and the late nineteenth-century development of modern science. Likewise, more evidence on how the

⁷⁶¹ NLSA, MSC.61.2.226, JF to CF Drège, 11 August 1854.

⁷⁶² NLSA, MSC.61.2.225, Draft letter of CF Drège, April 1854.

chaos of specimen classification and delimitation in the first half of the nineteenth century forced leading systematic botanists, particularly Joseph Dalton Hooker at Kew Gardens, to impose new criterion onto taxonomic practices at the end of the century would be particularly welcome.⁷⁶³ The confusion that collections like the Ecklon-Zeyher and Drège assemblages wrought on European botanists helps to dispel any preconception that processes of Western knowledge making were simple, straightforward, or friendly, offering an alternative to the sometimes unconscious acceptance of certain narratives about the advance of Western science.

In the context of this thesis, the period in question is particularly illuminating because of the void left by the stagnation of Kew Gardens, allowing the classification of specimens from British colonies to be conducted in the German states and continental Europe. Transnational and trans-imperial knowledge production became more fraught throughout the nineteenth century, as national affinities displaced “universal” scientific identities (although there were certainly instances of collaboration). This shifts our understanding of how, and by whom, knowledge about the British colonies was recorded and disseminated within, and outside of, the British Empire. The “decline” of Kew Gardens, infighting within the British scientific community, and the lowly position of natural history within their hierarchy of scientific disciplines opened a space by which the imperial center was not, and could not, be the botanical repository it would later become in the second half of the nineteenth century. Instead, the German states were a model for how science could be practiced and how botany could be taken seriously as a “philosophical” discipline in Britain. But, interestingly, as much as historians champion reciprocity and exchange amongst the Republic of Letters in the eighteenth century, a scientific discourse between Britain and the German states was only just developing in the nineteenth century, as evidenced by the position of John Hunneman as both an essential mediator and translator. There is space for more work on Anglo-German scientific relationships prior to German nationhood, including what ways they were connected or disconnected, and the extent to which British botanists conformed to continental practice. Importantly, this shows how Europe and Europeans were deeply involved in the scientific conceptualization of a British colony.

⁷⁶³ This is where Jim Endersby’s *Imperial Nature* is a triumph.

Ecklon-Zeyher and Drège's commercial competition again provides the underlying thread of this chapter, completing the narrative arc set out in Chapter Three: that, in this case, scientific progress was more destructive than it was progressive. Whereas the turn toward a more collectable and marketable vision of nature fundamentally affected these collectors' choices in the field in Chapter Three, Chapter Four furthered this line of questioning and foreshadowed what would come in this chapter. While the collection of human remains offered a sobering account of the vicious nature of their cost-benefit analysis mindset, the portrait of *Hydnora africana* demonstrated how plants themselves could resist processes of Western knowledge making. Despite the wide circulation and knowledge of Cape flora since the end of the seventeenth century, the intellectual challenge of determining the particularly prodigious influx of Ecklon-Zeyher and Drège material threatened to overwhelm the process entirely, affecting all work on Cape families that stemmed from the use of these collections. Not only did the lack of literary aids and botanical illustrations contribute to the perception that Ecklon-Zeyher and Drège were "taxonomic splitters", but this categorization was also proven by their competition with one another. By not combining their efforts, European botanists struggled to make sense of their excessive synonyms. And, because the determinations were done by multiple practitioners who were experts in particular plant families, oftentimes new, potentially useless names were assigned to the plants they classified. The pressure to publish culminated in a debate, which played out in the pages of *Linnaea*, about whose list of names would take precedent. Because European botanists took different sides, synonyms abounded, ultimately making the Cape *Leguminosae* one of the most complicated sets of plants in the whole of European botany. The physical, material, and intellectual difficulties that commercial collecting had on the natural world and Western knowledge production is clearly a profound, yet understudied, theme in the history of science.

The right of priority controversy ostensibly ended this period of collecting in the Cape that had dominated the previous twenty years, proving the relative unviability of such an arrangement. European interest in the collectors themselves, and any remaining passion for Cape genera, was left to William Henry Harvey, who would (with difficulty) undertake the compilation of a *Flora Capensis* in the 1850s. The next chapter will detail his efforts to do so. More importantly, however, the next chapter will focus on the attempts to establish a Cape botanic garden in the nineteenth century, a site which revealed both the obvious and unconscious ambitions of the German actors

throughout this thesis. While European botanists were struggling to place Cape plants into Western systems of knowledge, Cape naturalists struggled to compel ordinary Cape colonists recognize those same plants. The apathy felt toward botany in Britain itself, detailed in this chapter, reverberated into the colonies, and oftentimes directed the decisions made in relation to a botanic garden in the Cape. Whether caused by taxonomic confusion or a fondness for exotics, indifference became the standard attitude toward South African flora in both Europe and the Cape itself.

Chapter Six

Anti-Science and a Colony in Transition: The Making of a Cape Botanic Garden and the Colonial Flora, 1827-1867

“Let not thy servile care
Too close a copy of our fathers bear
Give new resources to the rustic art,
Try other schemes, and other views impart.”⁷⁶⁴
Henry Phillips (1823)

When the young naturalist William Burchell first rambled on Table Mountain with German Lutheran minister and natural history enthusiast C.H.F. Hesse in 1810, ‘at every step’ he recognized ‘some well-known flower which I had seen nursed with great care in the green-houses of England’.⁷⁶⁵ Because Burchell’s father had owned the prosperous Fulham nursery and Botanical Garden in London, he had been afforded an unparalleled opportunity in his youth to study the seeds, bulbs, and plants from around the world that passed through his father’s business. He expressed that he ‘could not for some time divest myself of feelings of regret, that at every step my foot crushed some beautiful plant’, explaining how difficult it is on one’s first walks on the mountain ‘to lay aside a kind of respect which one is accustomed, in Europe, to treat the *Proteas*, the *Ericas*, the *Pelargoniums*, the *Chionias*, the *Royenas*, &c.’.⁷⁶⁶ Cape flora had been ‘quite the rage’ in Europe since the last quarter of the eighteenth century and for Burchell, in observing the variety and diversity of Cape vegetable productions *in situ* for the first time, he likened what he saw ‘to a botanic garden, neglected and left to grow to a state of nature’.⁷⁶⁷ His somewhat euphoric

⁷⁶⁴ Henry Phillips, *Sylva Florifera: The Shrubby Historically and Botanically Treated; with Observations on the Formation of Ornamental Plantations, and Picturesque Scenery*, vol. 1 (London: Longman, Hurst, Rees, Orme, and Brown, 1823), 68.

⁷⁶⁵ William Burchell, *Travels in the Interior of Southern Africa*, vol. 1 (London: Longman, Hurst, Rees, Orme and Brown, 1822), 14-15. The idea for this opening: Lance van Sittert, ‘Making the Cape Floral Kingdom: The Discovery and Defence of Indigenous Flora at the Cape ca.1890-1939’, *Landscape Research*, 28:1 (2003), 113-129. For some material on Hesse, see: MfN HBSB, Zool. Mus. S I, Hesse, Rev. C.H.F., 1-9. Hesse also frequently botanized with Bergius, Mund, and Maire. MfN HBSB, Zool. Mus. S I, Bergius, C.H., Bergius to Lichtenstein, 20 January 1817, Blatt 57-58.

⁷⁶⁶ Burchell, *Travels*, 17.

⁷⁶⁷ Harry Bolus, *Sketch of the Flora of South Africa* (Cape Town: W.A. Richards & Sons, 1886), 1; Burchell, *Travels*, 17.

response was not uncommon amongst travelers who landed at the Cape and botanized on Table Mountain, particularly those who were inclined toward natural history.

Interestingly, however, Burchell was very quick to observe two conspicuous issues. The first, as Lance van Sittert has detailed, was the Cape elite's preference for exotics; Burchell commented on the perverse nature of man's judgment' to prefer 'whatever is distant, scarce, and difficult to be obtained' rather than what is locally abundant.⁷⁶⁸ The 'carnations, hollyhocks, balsamines, tulips, and hyacinths' he viewed in Cape gardens perhaps helped colonists feel connected to their European home and to familiar forms of scientific thinking and aesthetic refinement.⁷⁶⁹ Van Sittert argues that the preference for the exotic was a hallmark of botanical tastes in the British settler colonies, and the seeming indifference toward Cape flora, which colonists indiscriminately referred to as "mere weeds" and "*bosjes*", was frustrating and unimaginable to the visiting Burchell.⁷⁷⁰ Relatedly, and more importantly, he conveyed that he was 'disappointed' upon visiting the former Dutch Company Garden, remarking that 'it contained scarcely any thing except vegetables for the table'.⁷⁷¹ What was once the pride of Cape Town, and of the wider Dutch imperial world, had very quickly become derelict in the back-and-forth of Dutch and British negotiations between 1795 and 1806. Placing the care of indigenous flora at the center of his deliberations, he suggested that a well-ordered botanic garden would not only bring with it the advantages to science and to the public gardens and nurseries of Britain, but it might also 'be the means of making the colonists ... better acquainted with the productions of the country'.⁷⁷² The tension between settler indifference to Cape flora and the desire for a space to foster the growth and study of indigenous plant life form the main theme of this chapter.

This chapter investigates the effort to establish a botanic garden in the Cape Colony and to forward the claim that while the Cape example was a result of the apathy felt toward botany both locally and in Britain itself, it was also, in many ways, an anomaly in the wider network of colonial botanic gardens. Moreover, the theme of the botanic garden demonstrates how the German actors at the

⁷⁶⁸ Burchell, *Travels*, 22-23.

⁷⁶⁹ Ibid., 22-23.

⁷⁷⁰ Lance van Sittert, 'From "Mere Weeds" and "Bosjes" to a Cape Floral Kingdom: The Re-Imagining of Indigenous Flora at the Cape c.1890-1939', *Kronos*, 28 (2002), 102-126.

⁷⁷¹ Burchell, *Travels*, 24.

⁷⁷² Ibid., 24.

heart of this thesis interacted with, and were treated by, the British colonial administration in the Cape, as a way to test the extent to which they integrated into Cape civic life.⁷⁷³ The botanic garden, both in the abstract and reality, functioned as the site where the ambitions, and commonality, of the Germans who have seen treatment throughout this thesis played out, bringing together the wide range of characters examined over the previous five chapters. Therefore, as the opening anecdote suggests, this chapter is decidedly less “German” in nature, to reflect a Colony in transition and a much larger embrace of British cultural and social values.⁷⁷⁴ In a sense, this chapter picks up where Chapter One’s discussion of the Dutch Cape Company Garden left off: Swedish naturalist Carl Peter Thunberg affirmed Western botany’s indebtedness to Germans Paul Hermann, Heinrich Oldenland, Jan Hartog, and crucially Jan Andreas Auge, and recognized the singular role of the Dutch Cape Company Garden in the dissemination of knowledge on Cape flora. This continuing thread extends our present understanding of the garden’s history, connecting the Dutch, interim, and British periods, and draws out how each administration reacted to both metropolitan and public demands for a botanic garden.

As key institutions in the production of botanical, agricultural, and environmental knowledge, botanic gardens have provided an intersection by which to understand the convergence of cultural, social, economic, political, and scientific interests across time and space. As sites that showcased the collection, study, cultivation, and dissemination of plants to further settler colonial ideas and the economic exploitation of colonial environments, they often presented Western science as universal knowledge and celebrated narratives about those who acted as directors and political allies of garden projects. However, they produce, and continue to reproduce, colonial imaginaries that marginalize other epistemologies and ontologies, silence the histories of the African workers, convict laborers, intermediaries, and slaves, and sideline the role of women.⁷⁷⁵ Thus, they are

⁷⁷³ James Belich, *Replenishing the Earth: The Settler Revolution and the Rise of the Angloworld* (Oxford: Oxford University Press, 2009), 62.

⁷⁷⁴ J.B. Peires, ‘The British and the Cape 1814-1834’ in Elphick and Giliomee (eds.), *The Shaping of South African Society, 1652-1840* (Middletown: Wesleyan University Press, 1979), 472-518.

⁷⁷⁵ Melanie Boehi, ‘A South African Social Garden: People, Plants, and Multispecies Histories in the Kirstenbosch National Botanical Garden’, PhD diss, University of Basel, 2018; J’Nese Williams, ‘Plantation Botany: Slavery and the Infrastructure of Government Science in the St. Vincent Botanic Garden, 1765-1820s’, *Berichte zur Wissenschaftsgeschichte*, 44:2 (2021), 137-158.

distinctly imperial and colonial spaces.⁷⁷⁶ As Melanie Boehi has argued, botanic gardens cultivated plants but also people; their displays educated visitors about flora, European “universal” scientific practices, and about citizenship.⁷⁷⁷ Importantly, she sees the “botanic garden” in the Cape context as a social garden, shaped by the social relationships among and between humans and non-humans, and spaces in which social hierarchies among people, plants, and other nonhuman beings (like land) are constantly defined and negotiated.⁷⁷⁸ Although her analysis focuses on the establishment and legacy of Kirstenbosch, founded in Cape Town in 1913, the idea of a “social garden” is no less applicable in this case. The intellectual and spatial conception of a “garden” helped to form the scientific reputations and social lives of those who contributed to the debate, defined concepts of citizenship in a racially and ethnically diverse Colony, and now opens the possibility to study the impact that plants themselves had on the development of a national consciousness.

Although studies remain geographically uneven in scope, the network of colonial botanic gardens emanating from Kew is perhaps the most well-documented historiographical work on botanic gardens in the nineteenth century.⁷⁷⁹ Surprisingly little has been written on the attempts and

⁷⁷⁶ Work examining botanic gardens and questions of empire includes: Arthur W. Hill, ‘The History and Functions of Botanic Gardens’, *Annals of the Missouri Botanical Garden*, 2:1/2 (1915), 185-240; Londa Schiebinger and Claudia Swan (eds.), *Colonial Botany: Science, Commerce, and Politics in the Early Modern World* (University of Pennsylvania Press, 2005); David Philip Miller and Peter Hanns Reill (eds.), *Visions of Empire: Voyages, Botany, and Representations of Nature* (Cambridge: Cambridge University Press, 1996); Grove, *Green Imperialism*; Emma C. Spary, *Utopia’s Garden: French Natural History from Old Regime to Revolution* (Chicago: University of Chicago Press, 2000); James Delbourgo and Nicholas Dew (eds.), *Science and Empire in the Atlantic World* (New York: Routledge, 2008); Katja Kaiser, ‘Wirtschaft, Wissenschaft und Weltgeltung. Die Botanische Zentralstelle für die deutschen Kolonien am Berliner Botanischen Garten und Museum Berlin (1891-1920)’, PhD diss, Freie Universität Berlin, 2019; Katja Kaiser, ‘Exploration and Exploitation: German Colonial Botany at the Botanic Garden and Botanical Museum Berlin’ in Geppert and Müller (eds.), *Sites of Imperial Memory: Commemorating Colonial Rule in the Nineteenth and Twentieth Centuries* (Manchester: Manchester University Press, 2016), 225-242.

⁷⁷⁷ Boehi, ‘Social Garden’.

⁷⁷⁸ Ibid. This likely follows the argument of Henri Lefebvre who contended that ‘spaces are produced, and are themselves productive of different social and material relationships’. David Livingstone and Charles Withers (eds.), *Geographies of Nineteenth Century Science* (Chicago: University of Chicago Press, 2011), 2. Another example of ‘situating’ a botanic garden can be found in: Adrian Peter Thomas, ‘Calcutta Botanic Garden: Knowledge Formation and the Expectations of Botany in a Colonial Context, 1833-1914’, PhD diss, King’s College London, 2016, ch. 1.

⁷⁷⁹ Richard Drayton, *Nature’s Government*, Donal P. McCracken, *Gardens of Empire: Botanical Institutions of the Victorian British Empire* (London: Leicester University Press, 1997); Lucile H. Brockway, *Science and Colonial Expansion: The Role of the British Royal Botanic Gardens* (New York: Academic Press, 1979); Jim Endersby, *Imperial Nature: Joseph Hooker and the Practices of Victorian Science* (Chicago: University of Chicago Press, 2008); Duncan Taylor, ‘Circulating Tropical Nature: An Historical Geography of the Botanical Gardens on Jamaica, 1774-1907’, PhD diss, Queen’s University Belfast, 2015; Duncan Taylor, ‘Botanical Gardens and their Role in the Political Economy of Empire: Jamaica (1846-86)’, *Rural History*, 28:1 (2017), 47-68; J’Nese Williams, ‘Imperial Intervention: Botanic Gardens, Science, and Colonial Administration in the British Empire, Late Eighteenth and

failures to institute a Cape botanic garden between British acquisition and the founding of Kirstenbosch, let alone to connect it to the wider network of colonial gardens under the imperial center at Kew.⁷⁸⁰ There are two reasons for this. Firstly, Ludwigsburg Garden continues to be classified as simply a private garden, which it no doubt was. Yet, this limited view obscures our understanding of its position as a popular node of both local and international plant exchange networks emanating from the Cape. Likewise, although Ludwigsburg did provide a space to showcase indigenous flora, more research could be done into the role of Ludwigsburg as an importer of exotics and the environmental consequences of such an ingress to the present day. Secondly, although there are some similarities with other colonial botanic gardens, particularly Sydney, the Cape's general omission from the wider literature is perhaps expressive of its unique trajectory. More work could be done in drawing out those specific similarities and differences across colonies, in discussing the nature of plant transfer emanating from the Cape across the world, and the ways in which the Cape interacted with the imperial center and other metropolitan gardens. This would be aided by further research into this former point, in expanding our thinking about the role of Ludwigsburg.

However, attention to indigenous flora does remain a constant thread between the gaps. Van Sittert maintains that the Cape experience is unique, in that the 'creolised southwestern Cape became an anachronistic appendage to a larger region in which indigenous peoples greatly outnumbered settlers and the European cultural portmanteau was africanised'.⁷⁸¹ Thus, some historians have framed the late nineteenth-century campaign for a botanic garden as merely a regional interest,

Early Nineteenth Centuries', PhD diss, Vanderbilt University, 2018; Jim Endersby, 'A Garden Enclosed: Botanical Barter in Sydney, 1818-39', *The British Journal for the History of Science*, 33:3 (2000), 313-334; Q.C.B. Cronk, 'W.J. Burchell and the Botany of St Helena', *Archives of Natural History*, 15:1 (1988), 45-60; Zaheer Baber, 'The Plants of Empire: Botanic Gardens, Colonial Power and Botanical Knowledge', *Journal of Contemporary Asia*, 46:4 (2016), 659-679; Richard Axelby, 'Calcutta Botanic Garden and the Colonial Re-Ordering of the Indian Environment', *Archives of Natural History*, 35:1 (2008), 150-163. Timothy B. Barnard, *Nature's Colony: Empire, Nation and Environment in the Singapore Botanic Gardens* (Singapore: NUS Press, 2016); Thomas, 'Calcutta Botanic Garden'.

⁷⁸⁰ For more on the late nineteenth century and the establishment of Kirstenbosch, see: Conrad Lighton, *Cape Floral Kingdom* (Cape Town: Juta & Co., 1960); Robert Harold Compton, *Kirstenbosch: Garden for a Nation* (Cape Town: Tafelberg-Uitgewers, 1965); Donal P. McCracken, 'Kirstenbosch: The Final Victory of Botanical Nationalism', *Contree*, 35 (1995), 30-35; Donal P. McCracken and Eileen M. McCracken, *The Way to Kirstenbosch* (Cape Town: National Botanic Gardens, 1988); Jane Carruthers, 'Trouble in the Garden: South African Botanical Politics ca. 1870-1950', *South African Journal of Botany*, 77 (2011), 258-267; Boehi, 'Social Garden'; Saul Dubow, *Commonwealth of Knowledge*, 53-55, 94-95, 182-184; van Sittert, 'Mere Weeds'; van Sittert, 'Indigenous Flora'.

⁷⁸¹ van Sittert, 'Mere Weeds', 102-103.

with Cape flora becoming a badge of regional (rather than national) identity made by, and largely for, an urban, English-speaking middle class.⁷⁸² This perhaps explains why, for the majority of the nineteenth century, “apathy” best categorizes ordinary colonists’ stance toward indigenous flora, despite appeals toward “botanical nationalism” displayed by a variety of scientific men throughout the Colony. But success in dismantling this apathy came only at the turn of the twentieth century amidst increasing concern that indigenous flora was under threat. Saul Dubow maintains that South African botanist Harry Bolus expressed this side of the debate most eloquently, championing the preservation and appreciation of the ancient and unique floral kingdom of the Cape, which was already feared to be ‘doomed to extinction’.⁷⁸³ Bolus’s plea was reinforced by botanist and Professor of Botany at the South African College Harold Pearson, who fought to link indigenous flora inextricably to white citizenship formation and South African national patriotism.⁷⁸⁴ In Pearson’s view, the natural world was uniquely expressive of the nation. By following demands for the protection of indigenous flora throughout the nineteenth century, as this chapter aims to do, it becomes clear how these late nineteenth-century botanists were able to use indigenous flora to their advantage as a tool of national identity.

Reviving the Dutch Cape Company Garden

As outlined in Chapter One, the rationale behind the Dutch colony at the Cape was to provide fresh fruits and vegetables for the resupply of arriving and departing ships. Within a few years of its establishment, the garden had likewise earned its repute for sending specimens of botanical and medicinal interest back to the Netherlands, becoming the epicenter of foreign plant material in the

⁷⁸² Dubow, *Commonwealth of Knowledge*, 183; McCracken and McCracken, *Kirstenbosch*, chs. 11 and 12; Jane Carruthers, ‘Botanical Politics’, 259; van Sittert, ‘Mere Weeds’, 108.

⁷⁸³ Ibid., 183; van Sittert, ‘Mere Weeds’, 108; Brian W. van Wilgen, Jane Carruthers, et al, ‘Ecological Research and Conservation Management in the Cape Floristic Region between 1945 and 2015: History, Current Understanding and Future Challenges’, *Transactions of the Royal Society of South Africa*, 71:3 (2016), 207-303.

⁷⁸⁴ Harold Pearson, “A National Botanic Garden: Address by the President of Section C”, Report of the South African Association for the Advancement of Science, 8 (1911), 37-54; Melanie Boehi, ‘A South African Social Garden: People, Plants and Multispecies Histories in the Kirstenbosch National Botanical Garden’ (paper presented at the WISER Seminar, Johannesburg, South Africa, 15 October 2018), 6-7. Saul Dubow also makes the claim that South African botanist Harry Bolus was a key figure in the preservation of Cape plant diversity, linking ‘the country’s unique botanical heritage to wider calls to awaken patriotic South African sentiment’. Dubow, *Commonwealth of Knowledge*, 95.

Dutch imperial world. One of its last caretakers, Jan Andreas Auge of Stolberg am Harz who retired in 1783, had taken a particular interest in indigenous plants, and it was remarked that this helped to convert it ‘into a true botanic garden’.⁷⁸⁵ Enormously popular amongst visiting naturalists to the Cape, Auge had earned a reputation for his knowledge of local plants, which he insisted be seen as equally useful and equally valuable alongside foreign and exotic plant material in the Company Garden. By the time Hinrich Lichtenstein visited Auge on the farm “Rotterdam” in 1804, the latter blind and in failing health, he was able to respond to Auge’s inquiries about the plants remaining in the garden from his tenure:

He enquired with very particular interest about the botanic garden at the Cape Town, asking whether such and such trees that he had planted were in a flourishing condition, with the same anxiety as if they had been the friends of his youth. “Is my *heliconia alba* alive? – is my *corallodendron* as fine a tree as ever?” – As I answered in the affirmative to his enquiries after these and many others, he begged me to describe them to him, how tall and how thick they were, and he said he should die happier, if he could but feel them once again. He enquired about several others, concerning which I could not give him any information, either because they were no longer in existence, or that I did not understand the names by which he distinguished them.⁷⁸⁶

Only a few years later, Burchell also confirmed that a fine *Strelitzia augusta* and some large *Erythrina caffra* trees (Auge’s *heliconia* and *corallodendron* respectively) were bright spots of indigenous flora in what had otherwise become a disappointing garden.⁷⁸⁷ Even from the first two decades of the nineteenth century it is already obvious that, for Lichtenstein and Burchell, showcasing Cape flora was an essential prerequisite in the creation, maintenance, and prestige of a future botanic garden.

⁷⁸⁵ Hinrich Lichtenstein, *Travels in Southern Africa in the years 1803, 1804, 1805 and 1806*, trans. A. Plumtre, vol. 2 (London: Henry Colburn, 1815), 134.

⁷⁸⁶ Ibid., 135-136.

⁷⁸⁷ Burchell, *Travels*, 24. In fact, Mia Karsten, while doing research for her monograph on the Company Garden, located both of these plants in the vicinity of the Cape Town Municipal Garden even in the 1950s. The *Strelitzia augusta* is a white bird of paradise and the *Erythrina caffra* is an African coral tree, or *Kafferboom*. The *Erythrina* is a good example of eighteenth-century racist taxonomies and local vernaculars, argued by Londa Schiebinger as ‘linguistic imperialism’, a politics of naming that accompanied and promoted European global expansion and colonization. Karsten, *Company’s Garden*, 149; Londa Schiebinger, *Plants and Empire: Colonial Bioprospecting in the Atlantic World* (Cambridge: Harvard University Press, 2004), 194-197.



Fig 6.1: Auge's corallodendron, or the *Erythrina caffra*. Curtis's *Botanical Magazine*, 50: 2356-2440 (1822-23), No. 2431.

When the British finally re-settled in the Cape in 1806, the administration expressed interest in rehabilitating the Company Garden under the guise of “improvement”. Once a slogan for the local activity of the gentry, improvement became a new ideology representing responsible authority, agricultural progress, and a mission towards which government might legitimately expand its

powers.⁷⁸⁸ These criteria quite naturally expanded into the scientific realm, leading to the establishment of colonial societies and institutions dedicated to testing and improving the viability of the colonies to serve the imperial center. Reviving the Company Garden would have been a physical commitment to these emerging ideologies, yet contrary to their stated intentions, the British imperial government retreated from any further investment in a botanic garden. When Governor Sir George Yonge presented a plan to the War Office in 1800, they certainly agreed that the Cape ‘may be considered as a proper spot for the encouragement of Botany’, but the expensive and protracted Napoleonic Wars guided the advice and funds offered.⁷⁸⁹ They argued that maintaining the botanic garden on its current footing would have been better than engaging in an ‘extensive and speculative Enterprize [*sic*]’.⁷⁹⁰ In fact, the War Office reproached Yonge for even suggesting the repair of the garden, reminding him that his appeal was ‘directly contrary’ to his instructions: to avoid considerable expenditure within the Colony.⁷⁹¹ This is a predictable response. Not only were all extraneous funds being diverted to war, but the British would have been uncertain whether the Cape Colony would remain in their possession. Had it been claimed by the French, any expenditure on refurbishing the Company Garden would have ultimately been a waste.

When Yonge departed in 1801, a commission was established to enquire into ‘certain abuses’ said to have taken place during his administration, one of which included the closure of the Company Garden. A public order was issued through the Colonial Secretary to uncover the reasons that had induced him to adopt ‘this tacit but effectual interdiction’, the principal of which was to tend to the expensive repairs the garden required, despite his alleged intention to incorporate the garden into Government House for his own private use.⁷⁹² The closure of the Company Garden, although not directly violating any of the formal Articles of Capitulation, ‘nevertheless breached an ancient privilege enjoyed from time immemorial’ and infringed upon the central space of community and

⁷⁸⁸ Saul Dubow, *Commonwealth of Knowledge*, 53; Drayton, *Nature’s Government*, 89-94.

⁷⁸⁹ George McCall Theal, *Records of the Cape Colony from December 1796 to December 1799*, vol. 2 (London: Clowes and Sons, 1898), 428.

⁷⁹⁰ George McCall Theal, *Records of the Cape Colony from December 1799 to May 1801*, vol. 3 (London: Clowes and Sons, 1898), 204.

⁷⁹¹ *Ibid.*

⁷⁹² George McCall Theal, *Records of the Cape Colony from May 1801 to February 1803*, vol. 4 (London: Clowes and Sons, 1899), 252, 222; George McCall Theal, *Records of the Cape Colony from February 1803 to July 1806*, vol. 5. (London: Clowes & Sons, 1899).

relaxation for (white) inhabitants of Cape Town and its many visitors.⁷⁹³ But Yonge's intentions may have been genuine. When he wrote to Sir Francis Dundas in the transfer of power, he again mentioned plans for reviving the Company Garden, observing that the Cape was once considered to have the finest botanic garden in the world, but now it was 'very much on the Decline, has gone to Ruin and Decay, like everything Else'.⁷⁹⁴ Claiming his only desire was to restore the garden to its former success and to make it a valuable addition to the network of botanic gardens connected to Kew, he invoked the language of "ruin and decay" to illustrate that the disintegration of the Company Garden fundamentally violated the spirit of "improvement" coursing through the empire, and that "everything else" in the Colony was following suit.

By the 1820s and 1830s, a new surge of liberalism was now visible in the new interconnecting set of public and voluntary institutions which had taken root at the Cape. With relative degrees of success and support, these associations were guided by the 'spirit of improvement, civic virtue, scientific inquiry, and reasoned debate that marked the emergence of an increasingly confident and predominantly English-speaking urban middle class'.⁷⁹⁵ The Library, Museum, College, and Institution helped to form a framework for a knowledge-based civic society, stimulated by growing mercantile prosperity and steady British immigration.⁷⁹⁶ Although this growing institutionalization created a vibrant civic culture in the city and helped to consolidate British traditions and administration throughout the Colony, the Company Garden was conspicuously neglected and entreaties for the formation of a new botanic garden were ignored or rejected. Appeals came from a predictable range of scientific men, demanding that the project be government-funded and set into motion as quickly as possible. One of the first of these was, curiously, J.L.L. Mund, who briefly reappeared in the Cape and British scientific worlds after his abandonment by the Prussian one. He appealed to William Jackson Hooker on the essential nature of a Cape botanic garden to properly care for notoriously fickle Cape plants, like succulents, and to compare their different varietals before shipment to Europe.⁷⁹⁷ He believed that such an establishment at the Cape would 'be a greater advantage to Botany than similar institutions in any other Colony', a rather grand

⁷⁹³ Theal, *Records*, vol. 4, 223.

⁷⁹⁴ Theal, *Records*, vol. 3, 375.

⁷⁹⁵ Dubow, *Commonwealth of Knowledge*, 44.

⁷⁹⁶ Leigh Davin Bregman, "'Snug Little Coteries': A History of Scientific Societies in Early Nineteenth Century Cape Town, 1824-1835", PhD diss, UCL, 2004, 118-140. Dubow, *Commonwealth of Knowledge*, ch. 1.

⁷⁹⁷ RGBK, DC 58/208, Mund to Hooker, 18 May 1829.

statement considering the relative accomplishments of other colonial botanic gardens by 1830.⁷⁹⁸ Although Mund's influence in the debate was minimal, and, as stated in Chapter Two, his reputation as a scientific collector in the Colony and in Europe had been sullied by his misadventures, his sentiment nonetheless falls in line with Lichtenstein and Burchell's earlier claims, and the wider aims of British imperial control. Not only was the botanic garden essential for the successful care of indigenous flora, but, in his view, it would form the cornerstone of the colonial garden network emanating from Kew.

However, central to this phase of the botanic garden debate were James Bowie and Christian Ecklon, both of whom were keen to create an opportunity to gain botanical employment and scientific prestige within the Colony and in the wider world of natural history. As noted in Chapter Five, Bowie took to the *South African Commercial Advertiser* in 1829 to criticize Ecklon for his lack of knowledge on the taxonomic changes in Cape flora being done in Europe, revealing in a small sense the nature of their competition with one another. This criticism was likely a consequence of their primary goal: to oversee the new botanic garden. Both men of humble means, the financial and moral support of private individuals and civic institutions was essential in forwarding their objective, yet each employed different means to achieve these ends. By 1827, Ecklon sent a memorial to Lieutenant Governor Richard Bourke ensuring that he was of capable qualification to request that part of the Government Gardens and a few slaves be placed at his disposal to commence the formation of a garden. He offered to furnish a plan, superintend the systematic arrangement of the garden, and supply indigenous plants from his own collection. Upon his return to the Cape after a year of selling specimens with the *Unio Itineraria* in Europe, he was forced to repeat his offer to Governor Sir Lowry Cole. He supplied a new, similar petition in 1829, claiming that 'the establishment of a Botanic Garden in the vicinity of this town [is] an object much desired by almost every enlightened stranger visiting these shores and not uninteresting to the inhabitants themselves'.⁷⁹⁹ Using a line that would oft be repeated in trying to persuade the colonial government to support a garden project, Ecklon, too, made his best attempt to plead his case, appealing directly to the Governor that such a garden would be useful to the Cape's colonists.

⁷⁹⁸ Ibid.

⁷⁹⁹ WCARS, KAB, CO 3935, 104, 16 November 1827; WCARS, KAB, CO 3942, 282, 3 February 1829.

A lack of response, or perhaps for want of the desired response, motivated Ecklon to look beyond Cape patronage to Europe in search of support for his cause. As was typical of patron-collector relationships, he was incited to write to J.G.C. Lehmann in Hamburg, who he persuaded to influence Hooker in Glasgow to speak to the colonial government on his behalf. Including Ecklon's appeals as a short postscript, Lehmann attempted to convince Hooker that 'if he can remain there, he may be very usefull [*sic*] both to us and science in general'.⁸⁰⁰ With this nudge from Lehmann, Ecklon believed that Hooker would be encouraged to 'second his petition to be placed at that garden', which would lend much-desired authority to the original proposal and all but ensure his placement at its head.⁸⁰¹ In signaling the advantages that could be gained from Ecklon's prospective position, Lehmann's own stakes in the matter are detectable: he could secure a direct line of communication and exchange between Hamburg and the Cape, thus enhancing his own image along with that of the newly formed Hamburg Botanic Garden. Hooker, too, could benefit equally from advancing Ecklon as a candidate, creating a similar line of interaction between the Cape and Glasgow. Although it is unclear whether Hooker did, in fact, petition the Cape colonial government in Ecklon's favor, based on the evidence and events that follow, his attempts ultimately did not generate the desired effect.

On the other hand, Bowie made use of his association with the South African Institution (SAI) and its concomitant *South African Quarterly Journal* to garner local support for his expertise in botany. As Leigh Davin Bregman observes, Bowie was the most prominent presenter at the SAI, delivering eight papers in 1829 and 1830, while his name and hand were seen across both the *Quarterly* and the *Literary Gazette*, verifying his credentials in advocating for the creation of a garden.⁸⁰² Yet unlike Ecklon, he did not outwardly propose to be placed as its director, perhaps on the assumption that his strong commitment to the cause would have warranted nomination as its frontrunner. While Bowie's extensive contributions to knowledge of indigenous flora were increasingly recognized, it was proposed that the SAI establish its own garden separate from the state; the call for a garden was the single longest section in the Institution's first annual report.⁸⁰³ Bowie's

⁸⁰⁰ RGBK, DC 49/167, Box 2, Lehmann to Hooker, 15 October 1830.

⁸⁰¹ Ibid.

⁸⁰² See, for example: James Bowie, 'Sketches of the Botany of South Africa', *South African Quarterly Journal*, 1 (1829-30), 27-36; James Bowie, 'Remarks on the Culture of Exotic Vegetables, adapted for the Soil and Climate of South Africa', *South African Quarterly Journal*, 1 (1829-30), 160-171, 293-304, 408-414.

⁸⁰³ Bregman, 'Coteries', 153.

‘unwearied perseverance [*sic*] and disinterested surrender’ of botanical knowledge to the public was regularly applauded in the *Gazette* by its editor, A.J. Jardine, demonstrating that there was some local support of his activities and expertise.⁸⁰⁴ Significantly, it seems that Bowie saw the garden as an intensely local endeavor whose success would be based on coordination with other local scientific societies and cultivated his expertise accordingly. In contrast, Ecklon reached toward the highest echelons of the colonial government and metropolitan botany, thinking that their sway would secure him the coveted position.

Bowie’s complaints about the state of the Company Garden, and his desire to see a new garden installed, echoed the language that was floating around the Cape scientific community. Like Mund had advocated in his private correspondence, Bowie pointed out that the ‘frequent failures and much uncertainty’ in the transport of live plants was a consequence of having no temporary resting place, particularly when circumstances were ‘unfavorable to their survival’.⁸⁰⁵ Similarly, because of widespread peculiarities in certain classes of Cape plants, it was crucial to have a place to properly distinguish between them before sending specimens to be classified by European botanists, which would perhaps have helped Ecklon-Zeyher and Drège in avoiding excessive nomenclatural synonymy. Besides promoting the study of indigenous flora, he, like Burchell, asserted that the success of such an institution ‘would be a stimulus to the Colonists at large’ and would prevent ‘any excuses being made in relation to improvements’.⁸⁰⁶ Improvement, both literally and figuratively, again played a role in advocating for a garden. In the *Literary Gazette*, the language of “ruin and decay” was reiterated:

it is impossible not to experience exquisite regret, that while the perfection of science and of art are shedding their lights on every other land, this country in *some things* is made to remain stationary – nay, altogether to retrograde. Where is the former glory and grandeur of our *botanic gardens in Cape Town*? – At one time the pride of the Cape, and the praise of the whole earth, what are they *now*?⁸⁰⁷

Ultimately, Bowie’s attempt at local popularity and name recognition were equally disappointing: the SAI claimed that they could ‘only aid’ in the garden project, rather than ‘carrying on

⁸⁰⁴ Quoted from Bregman, ‘Coteries’, 149; *The Cape of Good Hope Literary Gazette*, 1 (16 June 1830), 4.

⁸⁰⁵ *South African Quarterly Journal*, 1 (1829-30), 83.

⁸⁰⁶ *South African Quarterly Journal*, 2 (1835), 162.

⁸⁰⁷ Quoted from Bregman, ‘Coteries’, 154 - *The Cape of Good Hope Literary Gazette*, 12 (4 May 1831).

successfully an independent establishment'.⁸⁰⁸ Appeals from ambitious, yet modest individuals like Ecklon and Bowie, who required significant public funds and outspoken civic support, were ostensibly declined. The only way the Cape would establish its next iteration of a botanic garden was through the auspices of a wealthy private individual, Baron von Ludwig.

The Ludwigsburg Garden

In the failure of the Cape colonial government and its newly established scientific institutions to both maintain the Company Garden and institute a new garden, local individuals sought to curate their own personal botanic gardens both for functional and commercial purposes. As Richard Drayton has maintained, the British political classes always believed that learning should be left to the Church or the volunteer, aligning with the eighteenth-century convention that men of science were traditionally disinterested and monied, pursuing science as hobby rather than paid vocation.⁸⁰⁹ British retrenchment after the Napoleonic Wars meant that this was true of gardens in St. Vincent, Sydney, and the Cape, where private collections quickly eclipsed public initiative.⁸¹⁰ For example, while settling a petition filed to the newly reinstated British administration in 1807, prominent Weinsburg-born physician Friedrich Ludwig Liesching requested a piece of land in Green Point 'with the intention of establishing (if profitable) a Botanical Garden'.⁸¹¹ It was later observed that Liesching's botanic garden was to be for pharmaceutical purposes, likely in an attempt to supply his popular medical business with herbs and remedies too costly to import from elsewhere or too time-consuming to collect locally.⁸¹² While some set out to construct their own personal gardens, other opened their gardens to men of science. In discussing the collection of plants that he intended to sell through the *Unio*, Ecklon attributed what classifications he could make prior to his arrival in Europe 'to a great friend and promoter of science, the lawyer Joubert',

⁸⁰⁸ 'Annual Report of the South African Institution', *South African Quarterly Journal*, 1 (1829-30), 114.

⁸⁰⁹ Drayton, *Nature's Government*, 132.

⁸¹⁰ Ibid.; Endersby, 'A Garden Enclosed', 314-315; As Alberti has shown, the development of provincial city museums commonly saw collections move from private hands into the custody of learned societies and voluntary associations. Samuel J.M.M. Alberti, 'Placing Nature: Natural History Collections and Their Owners in Nineteenth-Century Provincial England', *The British Journal for the History of Science*, 35:3 (2002), 309.

⁸¹¹ WCARS, KAB, CO 3864, 427A, 2 September 1807.

⁸¹² Ernst Schüz, 'Baron von Ludwig in Kapstadt und seine Briefe an Ferdinand Krauss in Port Natal 1838', *Jahreshefts des Vereins für Vaterländische Naturkunde Württemberg*, 122 (1967), 58.

who allowed him to use part of his garden to cultivate and compare families of local plants side-by-side.⁸¹³ Ecklon used his *Topographisches Verzeichniss* as an organ to lament the lack of progress on a botanic garden in the Cape, instead recognizing civic-minded private individuals ‘who have earned the greatest respect for their devoted participation in science’.⁸¹⁴ These were certainly not the only private gardens which operated in the public or semi-public sphere. As van Sittert has contended, increasing suburbanization sparked a private gardening boom over the course of the nineteenth century.⁸¹⁵ Nonetheless, these examples illustrate the initiative that some Cape individuals took to support horticultural and botanical interest in the Colony in the absence of a civic institution.

In the same year that Bowie and Ecklon came to blows in their battle to be given authority of the new garden, Baron von Ludwig quietly acquired a piece of land in Tamboerskloof to establish a botanic garden. Like everyone else, the Baron had complaints about the absence of a botanic garden in the city, but also criticized not being granted (or sold) a section of the large Government Garden for such an endeavor, like Ecklon had requested in his first petition. His desired parcel was only one part of the ‘once famous Bot. Gard. and beautifull [*sic*] ground’ now mainly in use for the cultivation of fruits and vegetables for the Governor’s table but had otherwise been laying waste.⁸¹⁶ Reaffirming earlier protestations, the Baron claimed that the avenues of the Company Garden were ‘still in existence, for the convenience of the inhabitants a public walk. But in a deplorable state’.⁸¹⁷ Although he had hopes of restoring the Garden’s former eminence, the primary reason he desired land in this area is due to its ‘abundant supply of water from Table Mountain, and the best soil in the neighbourhood’.⁸¹⁸ To complete his grievances, he discussed how the Cape colonial government had found the expenses of the former Company Garden and menagerie too enormous, at only £37.10 per annum.⁸¹⁹ The Baron’s criticism here is valid and curious. At the end of Ecklon’s second petition in 1829, just months before the Baron was granted

⁸¹³ Christian Friedrich Ecklon, *Topographisches Verzeichniss der Pflanzensammlung* (Esslingen: Hrsg. auf Kosten des Naturhistorischen Reise-Vereins, 1827), x.

⁸¹⁴ Ecklon, *Topographisches*, x.

⁸¹⁵ Van Sittert, ‘Mere Weeds’, 104-105.

⁸¹⁶ RGBK, DC 58/189, Baron von Ludwig to Murray, 28 February 1835.

⁸¹⁷ Ibid.

⁸¹⁸ Ibid.

⁸¹⁹ This equals out to approximately £5,000 in 2021.

land for Ludwigsburg, a short note was penciled which stated that the colonial government would not only ‘refuse to sanction the establishment of a botanical garden on any land however small’ but that the expenditure on public walks was limited to a yearly allowance of £200.⁸²⁰ Not only did the colonial government have enough funds for the upkeep of the Company Garden, they also sanctioned land to the Baron within the same year for the ‘express purpose’ of a botanic garden. It seems likely that the colonial government considered the Baron’s request a solution to the garden problem – a private, wealthy individual willing to assume responsibility for what they considered a huge financial and logistical annoyance.

Between 1829 and 1848, Baron von Ludwig’s garden was a site of botanical knowledge production in its own right, but also an active node in the network of colonial botanic gardens. It fulfilled the same role an official state-sponsored garden in the British Empire should have done and facilitated the transfer of indigenous and exotic plant material to and from Cape Town from across the globe.⁸²¹ Not only did collectors Ecklon, Zeyher, and Drège contribute seeds and live specimens to the Garden after they returned from their collecting journeys, so too did Andrew Smith from his Namaqualand, Natal, and Basutoland travels in the 1830s and the Baron’s protégé Ferdinand Krauss from Natal in 1840.⁸²² Although in theory the Baron was dedicated to the cultivation of indigenous species, his garden became known primarily for naturalizing exotics. He published a list of 207 exotics brought from Württemberg, Hamburg, and the Netherlands that he was naturalizing in his garden, and the SAI made particular note of the European trees which it hoped would add ‘beauty and variety’ but also under which it was ‘necessary to seek shelter from the summer’s heat’.⁸²³ Although he would not become head superintendent of the garden until 1838,

⁸²⁰ WCARS, KAB, CO, 3942, 282, 3 February 1829.

⁸²¹ See: William Beinart and Karen Middleton, ‘Plant Transfers in Historical Perspective: A Review Article’, *Environment and History*, 10:1 (2004), 3-29; Haripriya Rangan, Judith Carney and Tim Denham, ‘Environmental History of Botanical Exchanges in the Indian Ocean World’, *Environment and History*, 18:3 (2012), 311-342.

⁸²² Bradlow, *Baron von Ludwig*, 30; O.H. Spohr (ed.) and Ferdinand Krauss, *Travel Journal/Cape to Zululand: Observations by a Collector and Naturalist 1838-40* (Cape Town: A.A. Balkema, 1973); William F. Lye (ed.) and Andrew Smith, *Andrew Smith’s Journal of his Expedition into the Interior of South Africa, 1834-36* (Cape Town: A.A. Balkema, 1975); Percival R. Kirby, *Sir Andrew Smith, M.D., K.C.B.: His Life, Letters and Works* (Cape Town: A.A. Balkema, 1965).

⁸²³ James Bowie, ‘List of Exotic Trees, Shrubs, Plants, Bulbs; Garden, Flower, Forest, and other Seeds...’, *South African Quarterly Journal*, 1:5 (1831), 40-48; Anon., ‘Annual Report’, 116; See: Richard N. Mack, ‘Plant Naturalizations and Invasions in the Eastern United States: 1634-1860’, *Annals of the Missouri Botanical Garden*, 90:1 (2003), 77-90; Brian W. van Wilgen, John Measey, David M. Richardson, John R. Wilson and Tsungai A. Zengeya (eds.), *Biological Invasions in South Africa* (Berlin: Springer, 2020).

Bowie again used the *Quarterly* to continue his own self-promotion and endorse the garden he had finally been placed at the head of.⁸²⁴ While offering a snapshot of the state of the garden in 1834, he indicated that in total there were 1698 species introduced from places like England, Brazil, Mauritius, India, and the German states, and including plants like cinnamon, nutmeg, cocoa, black tea, casava, and a small pineapple pit.⁸²⁵ While some of these exotics seem harmless, highly integrated and mass produced into modern life, exotics like palms and pines nurtured by the Baron and Bowie, which were widely distributed and replanted throughout the Colony, have since become a destructive force on the South African landscape.⁸²⁶

Ludwigsburg, like all colonial botanic gardens, wholly relied on a network of international contacts to import this exotic plant material into the Cape. The Baron made particular use of his close alliance with Glasgow, likely to nativize and distribute them to comply with British settler taste. Hooker and Stewart Murray, superintendent of the Glasgow Botanic Garden, were keen on exchanges to enhance their own collections in return for deposits of ‘choice seeds, either flowers, horticultural or ornamental plants, shrubs, or tree’s [*sic*] from Scotland’.⁸²⁷ He also used these links to source a potential assistant to Bowie, preferably a Scotsman, who was ‘not only a good Gardener but also a pretty good botanist’, illustrating the particular necessity of having someone with horticultural skill and botanical knowledge.⁸²⁸ In addition to Glasgow, alongside his familial connections to the state of Württemberg and professional ties to many German-speaking naturalists throughout the German states, he had his hand in many of the most important gardens throughout the world. Not only was he sourcing plants from British estates such as Chatsworth, Woburn Abbey, and Kew Gardens, he had ties to Leiden, Rotterdam, Paris, Calcutta, St. Helena, and New

⁸²⁴ The first superintendent of the Baron’s garden was Dorfgarten-born Friedrich Ernst Leibold from 1834-38; Bowie held the position from 1838-42; and then Thomas Draper from 1843-47, who later became the first head gardener of the new Government Botanic Garden in Cape Town in 1848.

⁸²⁵ Anon., ‘Annual Report’ (1831), 115-116; Anon., ‘Annual Report of the South African Literary and Scientific Institution’, *South African Quarterly Journal*, 2 (1835), 380-381.

⁸²⁶ Often clumping around or displacing the indigenous fire-resistant fynbos, these trees are known for exacerbating wildfires. The recent fire which destroyed the Jagger Library at the University of Cape Town is a perfect example of how alien and invasive trees can affect the landscape. Kate B. Showers, ‘Prehistory of Southern African Forestry: From Vegetable Garden to Tree Plantation’, *Environment and History*, 16 (2010), 295-322; Jacques van Rensburg, Brian W. van Wilgen and David M. Richardson, ‘Reconstructing the Spread of Invasive Plants on Privately-Owned Land in the Cape Floristic Region: Vergelegen Wine Estate as a Case Study’, *South African Geographical Journal*, 100:2 (2018), 180-195.

⁸²⁷ RGBK, DC 58/197, Baron von Ludwig to Murray, 24 December 1837.

⁸²⁸ *Ibid.*

South Wales. *Sam Sly's African Journal* promoted this aspect of the Baron's work: 'the noble proprietor is still in constant correspondence with almost every part of the globe, to accumulate new and valuable additions to his gardens'.⁸²⁹ The Baron's assiduous transnational communication was rewarded in 1835, when Hooker dedicated a volume of *Curtis's Botanical Magazine* to him, 'to whom our European gardens are indebted for many African plants of great rarity and beauty'.⁸³⁰ Two years later, these tributes were again reiterated. When Zeyher sent specimens of a new species to Glasgow, it was given the taxonomic determination of *Tulbaghia Ludwigiana* by Hooker.⁸³¹ These dedications certainly lent Ludwigsburg international prestige and legitimacy as a private garden, but it did not necessarily reach the same esteem given to other colonial botanic gardens. In fact, it seems like a mistake to exclude it simply because it is not a "formal" garden of the British Empire. However, his tireless work ensured that botanical exchanges and scientific relationships were being forged and sustained between the Cape and the rest of the world, particularly in the absence of imperial and colonial administrative support.

To contemporary visitors, the garden was applauded as a marvel. When Sir Charles James Fox Bunbury, Secretary to the Geological Society, visited the garden in 1838, he noted that it contained 'a rich collection of rare and curious plants from all parts of the colony, as well as from Australia and other countries, and its treasures are open in the most liberal manner to all who can appreciate them'.⁸³² Even the most disinclined toward the Colony offered positive observations. While resting at the Cape after his voyage to the Antarctic on the *Erebus* in 1843, Joseph Dalton Hooker paid a visit to the Baron, one of his father's longtime friends and correspondents. He remarked, 'except for Ludwig's garden I enjoyed nothing in Cape Town', calling it 'the saving clause' of the Colony.⁸³³ Although Sir John Hall, an army surgeon in British Kaffraria, was not impressed by Ludwigsburg, recalling that it appeared 'ordinary enough to a person just from England', he was also quick to say that citizens of the Cape deemed it 'one of the wonders of the world' after his

⁸²⁹ Bradlow, *Baron von Ludwig*, 50.

⁸³⁰ *Curtis's Botanical Magazine*, 62 (1835).

⁸³¹ *Curtis's Botanical Magazine*, 64 (1837), 3547.

⁸³² Charles J.F. Bunbury, *Journal of a Residence at the Cape of Good Hope* (London: John Murray, 1848), 221.

⁸³³ Leonard Huxley (ed.) and Joseph Dalton Hooker, *Life and Letters of Sir Joseph Dalton Hooker*, vol. 1 (London: John Murray, 1918), 151, 149.

visit in 1847.⁸³⁴ Even further, Hall pronounced that ‘to utter a word of disparagement against it would be considered a specimen of treason’, illustrating the great effect the garden had provoked.

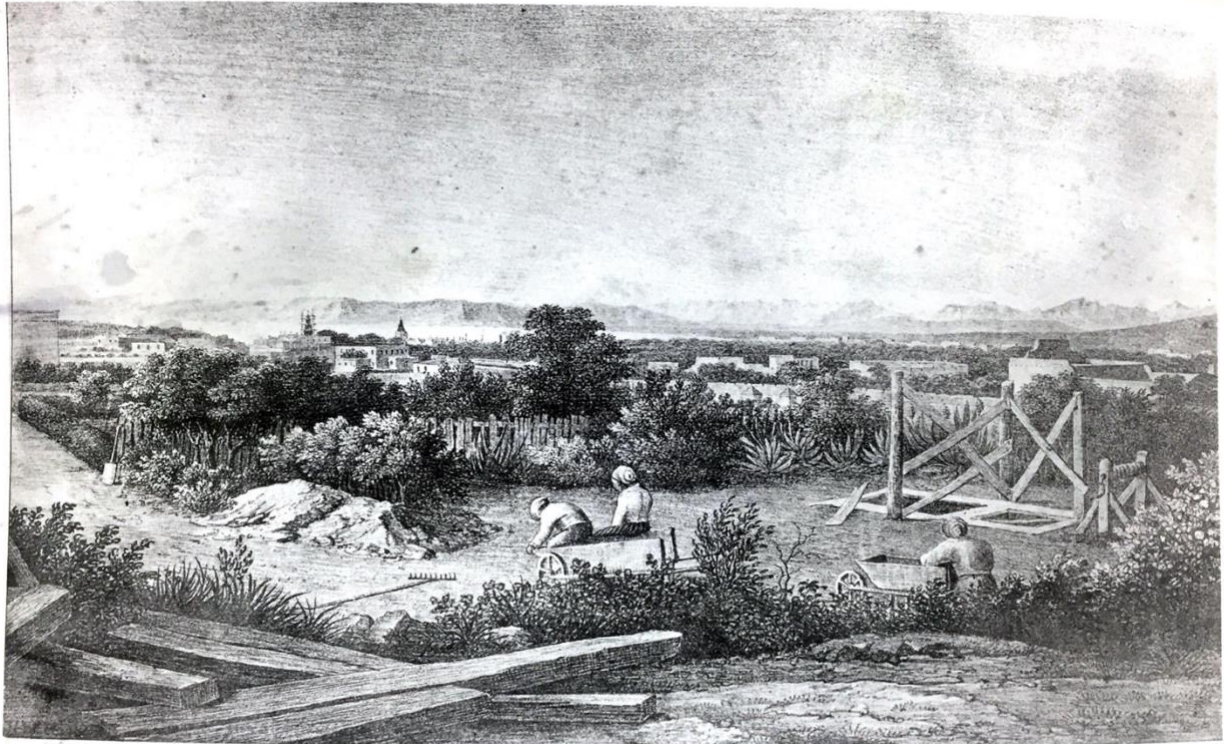


Fig. 6.2: The botanical garden of Baron von Ludwig being laid out on Kloof Street, Cape Town.
WCARS, KAB, AG 1375.

As Hall’s statement makes clear, adoration for the garden also came from within the Colony itself, primarily through *Sam Sly’s African Journal*, which devoted space to praising both the liberality of the Baron and the ‘paradise’ of the Garden.⁸³⁵ Its editor, William Layton Sammons, could find few gardens in Cape Town worthy of mention, ‘with the exception of Baron von Ludwig’s’ and none, ‘public or private, that are conspicuous for order or design’.⁸³⁶ However, as the Cape was gradually institutionalizing its scientific associations, what is perhaps more interesting is how the

⁸³⁴ Siddha Mohana Mitra (ed.) and John Hall, *The Life and Letters of Sir John Hall* (London: Longmans, Green & Co., 1911), 105-106.

⁸³⁵ *Sam Sly’s African Journal*, 1:20 (1843).

⁸³⁶ *Sam Sly’s African Journal*, 1:18 April (1844); *Sam Sly’s African Journal*, 1:47 (1844).

African Journal helped to fashion Ludwigsburg as a haven of “Britishness” or British values.⁸³⁷ Although primarily a literary and satirical newspaper, it functioned ideologically to extend British cultural dominance and norms while simultaneously instilling and preserving bourgeois moral codes.⁸³⁸ Thus, Sammons often publicized the garden to shape a sense of community and to encourage and invent British national feeling in the Cape. This sense of “Britishness” was meant to include those with different backgrounds. Its flexible message of egalitarian rights, coupled with British cultural affinity and political allegiance, still allowed Dutch colonists to embrace their own linguistic and religious independence while displaying the patriotism of belonging to a wider empire.⁸³⁹ Here, the Baron’s German heritage and embeddedness into the Cape Dutch gentry could be used for political advantage: he and the garden not only embodied British values, but they offered a symbol of Anglo-Dutch cooperation. As Dubow has recognized, two of the key Victorian knowledge-based institutions in the Cape were formed from the collections of Germans, providing ‘the elements of that shared foundation myth of European cultural mutuality’ that was becoming increasingly important to underline.⁸⁴⁰ Not only should historians enlarge analysis on the role of Ludwigsburg in the wider history of botany and in the network of British colonial botanic gardens, but it should be considered an emblem for a cooperative vision of Cape civic society.

Establishment of the Garden

Perhaps anticipating the death of the Baron, discussions about the establishment of a government-sanctioned garden, and the use of the Government Gardens as the preferred site, commenced again. Governor Sir Peregrine Maitland received a memorial in early 1845 requesting action on the formation of a botanic garden, signed by respected members of Cape society. First, they needed to appoint someone of appropriate expertise to run the garden. The Secretary of State for the Colonies

⁸³⁷ For more on *Sam Sly’s African Journal*, see: Chris Holdridge, ‘Sam Sly’s African Journal and the Role of Satire in Colonial British Identity in the Cape of Good Hope, c. 1840-1850’, MA thesis, University of Cape Town, 2010; Chris Holdridge, ‘Circulating the *African Journal*: The Colonial Press and Trans-Imperial Britishness in the Mid Nineteenth-Century Cape Colony’, *South African Historical Journal*, 62:3 (2010), 487-513.

⁸³⁸ Chris Holdridge, ‘Laughing with Sam Sly: The Cultural Politics of Satire and Colonial Identity in the Cape Colony, c. 1840-1850’, *Kronos*, 36:1 (2010), 29.

⁸³⁹ Holdridge, ‘Laughing’, 31; Vivian Bickford-Smith, ‘Writing about Englishness’ in MacPhee and Poddar (eds.), *Empire and After: Englishness in Post-colonial Perspective* (Oxford: Berghahn, 2007), 57-72.

⁸⁴⁰ Dubow, *Commonwealth of Knowledge*, 55.

requested that Hooker and Sir John Herschel offer their opinions on the subject and recommend who should be employed in the garden's management.⁸⁴¹ Ludwig Pappe ventured to put himself forward as a potential candidate, stating that having 'studied that beautiful science under the guidance of the late Curt Sprengel, the renowned Prussian Polyhistor ... I would indeed most willingly abandon Medical Practice ... to devote all my time exclusively to the study of Botany'.⁸⁴² Second, they had to find a suitable location for the project. Although the Cape colonial government had suggested the suburban areas of Wynberg or Rondebosch as a preferable site, both public and scientific pleas demanded that the usefulness of the garden would only be felt if it stayed in the center of Cape Town.⁸⁴³ Shortly after, the colonial government offered part of the old Company Garden, about fourteen acres of the Government Garden considered earlier by Ecklon and the Baron, and presently by Pappe, as 'one of the most fertile spots in the immediate vicinity of Cape Town' for a botanic and experimental garden.⁸⁴⁴ They were offered a fixed annual grant of £300 from the general revenue and sum equal to that raised by subscription to assist in the early years of building up the institution.⁸⁴⁵ For a moment, it seemed as though the long-awaited botanic garden project would finally be undertaken. However, the financial and material commitment brought on by the outbreak of the Seventh Frontier War (1846-48) occupied the colonial government and frustrated the hopes of the memorialists.⁸⁴⁶

Fortunately, the instatement of Sir Harry Smith in December 1847, and the passing of the Baron in that same month, provided a serendipitous opportunity to get the garden off the ground. In the extensive public sale of his property, the contents of the garden were conspicuously excluded, offering an occasion for the colonial government to acquire the Baron's impressive stock of plants

⁸⁴¹ RGBK, DC 59/336, Eardley-Wilmot to Hooker, 9 November 1845; *South African Commercial Advertiser*, 22 July 1846; Sir John Herschel was a revered astronomer who spent four years at the Cape to extend his comprehensive astronomical survey of double stars and nebulae to the southern hemisphere. See: David S. Evans, Terence J. Deeming, Betty Hall Evans, Stephen Goldfarb (eds.) and Sir John Herschel, *Herschel at the Cape: Diaries and Correspondence of Sir John Herschel, 1834-1838* (Cape Town: A.A. Balkema, 1969).

⁸⁴² WCARS, KAB, A 1663, 20 June 1846, 251.

⁸⁴³ Ibid.; This would have perhaps been a good idea and was taken up later in the institution of Kirstenbosch. Dubow remarks that subscription numbers fell off sharply in the 1860s as the middle classes migrated away from the city to the expanding suburbs. Dubow, *Commonwealth of Knowledge*, 53.

⁸⁴⁴ WCARS, KAB, A 1663, 13 May 1848, 252.

⁸⁴⁵ WCARS, KAB, CCP 1/2/2/1/2, 'Report of the Select Committee Appointed to Inquire into the State of the Botanical Garden, Cape Town', 1855, 4.

⁸⁴⁶ Ibid., 3.

wholesale.⁸⁴⁷ Dr James Adamson, Professor of Science at the South African College, wrote to Smith that the ‘conjecture of circumstances render it possible to make an immediately commencement in a very effective style’ for an inconsiderable portion of the sum required to collect it.⁸⁴⁸ The Baron was labeled by the *Commercial Advertiser* as the ‘patriarch of the Garden’, among other equally effusive praises, but the most important acknowledgment of his legacy came, surprisingly, from Smith.⁸⁴⁹ He remarked that ‘the Baron’s noble garden is in that position that its advantages may be lost to the Colony unless we make some bold exertion to secure them’.⁸⁵⁰ Adamson’s entreaty in the *Cape Town Mail* came after the Baron’s widow, Eliza von Ludwig, wrote to the colonial government about the potential purchase of the garden’s stock before it was broken up and auctioned or donated piecemeal.⁸⁵¹ She, with declarations from Bowie and the present gardener Thomas Draper, constructed a catalogue of the plants, offering them for an estimated value of £2,154 and a period of six months to transplant the garden from its home in Kloof Street.⁸⁵² Ultimately, the colonial government only purchased a portion of the Baron’s botanical estate, when, by May 1848, the rest of ‘that splendid and well-known Botanical Garden’ was offered for sale in the *Government Gazette*.⁸⁵³ While it is difficult to pinpoint why the colonial government did not invest in the entirety of the Ludwigsburg stock, although the familiar mixture of retrenchment and apathy seem a likely culprit, after years of campaigning the Cape finally had a civic botanic garden.

Yet, as soon as they began to lay the ground of the new garden, problems began to arise. While Pappe was named corresponding secretary on the Board of Commissioners, allowing him to open an interchange between the Cape and the gardens of Calcutta, Mauritius, London, Hamburg, and New York, Draper resigned from his post as head gardener due to ‘interferences’ into the management and affairs of the garden.⁸⁵⁴ While the circumstances of these ‘interferences’ are not well known, this provided a convenient opportunity for Zeyher to be appointed as botanist in the

⁸⁴⁷ WCARS, KAB, GH 23/24, 4507

⁸⁴⁸ *Cape Town Mail*, 25 March 1848.

⁸⁴⁹ *South African Commercial Advertiser*, 29 December 1847.

⁸⁵⁰ UCT Libraries, Special Collections, Frank Bradlow Papers, BC1115, H6.3.

⁸⁵¹ WCARS, KAB, MOOC 13/1/147, 7 March 1848, 45.

⁸⁵² WCARS, KAB, MOOC 13/1/147, 27 April 1848, 46; Worth the equivalent of approximately £225,000 today.

⁸⁵³ *Cape of Good Hope Government Gazette*, 18 May 1848.

⁸⁵⁴ WCARS, KAB, CCP 1/2/2/1/2, ‘Report’, 1855, 4.

garden, although he was already the preferred candidate for this position. In a letter from Cape resident and keen naturalist John Fry, he noted that Zeyher would ‘most probably in a few months be at the head of the garden’, continuing that he had personally recommended Zeyher to the Governor as the ideal choice.⁸⁵⁵ Earlier in the decade, William Henry Harvey had written to Hooker that Zeyher was ‘a very acute observer & with a competent knowledge of Botany’ and that he would ‘do all in [his] power to serve Zeyher’.⁸⁵⁶ He had long been supported by Hooker and Harvey, the two botanists ostensibly overseeing Cape botany from the metropole, particularly in the aftermath of his split with Ecklon in 1838. Zeyher himself saw this position at the garden as a significant one, one in which the reputation of the Colony was at stake if the venture were regarded as a failure. He wrote to Hooker that this institution should ‘stand with respect to the establishments of a similar kind in other countries, and that its merits, acknowledged [*sic*] by the refined taste of the learned of civilized countries, would honorably reflect over to our shores’.⁸⁵⁷ Should he succeed in his task, he believed it would help to disperse ‘prejudices of an old stand, that the Flora of this country is inferior to others, not to be admired with their vegetable productions’.⁸⁵⁸ In this uncompromising view, the garden would help to finally raise awareness of indigenous flora within and outside of the Colony, bringing the Cape, perhaps for the first time, onto equal footing with the rest of the colonial botanic gardens in the British Empire.

According to Donal P. McCracken, the work done by the founding curators of many of the colonial botanic gardens in the 1830s and 1840s was obstructed by official apathy and the frequent appointment of ‘practical gardeners’ rather than botanists.⁸⁵⁹ Yet, the issues that colonial gardens experienced in this period were not strictly limited to the colonies. In the struggle to establish Kew Gardens as a public institution in the 1830s, infighting between Hooker and John Lindley meant botanists were not able to put up a united front while wrangling for government support. They, too, struggled with government apathy and retrenchment, as well as the newly instated Royal Botanical Society of London, a club of horticultural enthusiasts who quickly threatened to relieve

⁸⁵⁵ RGBK, DC 59/107, Fry to Hooker, 1 October 1849.

⁸⁵⁶ RGBK, DC 58/80, Harvey to Hooker, 9 March 1840.

⁸⁵⁷ RGBK, DC 59/351, Zeyher to Hooker, 5 March 1851.

⁸⁵⁸ *Ibid.*

⁸⁵⁹ McCracken, *Gardens of Empire*, 12. There were similar issues with Hong Kong (29), gardens throughout Australia (30-31), and Mauritius (47-48).

the Treasury of the expense of Kew.⁸⁶⁰ If this were to have taken place, the botanists worried that gardeners would have control – ornamental gardening would eclipse scientific botany. While McCracken offers Sydney as a colonial example, the new Cape garden also fell into this category. The Cape colonial government's interest in the project, already inadequate judging by the treatment of the Baron's estate and their reluctance to fully invest, never improved. Although they had promised a pound-for-pound principle in matching public subscriptions, when the public raised £875 to support the garden, they quickly withdrew from their side of the agreement.⁸⁶¹ They hoped the garden would become self-sustaining by becoming a nursery and market garden, profiting from the seeds and bulbs of culinary vegetables, garden flowers, and commonplace shrubs and trees, again fulfilling settler interest in private gardening and exotics. Because Zeyher's qualifications were deemed botanical rather than horticultural, and thus of less value to the financial well-being and self-sufficiency of the institution, Zeyher was dismissed of his duties in 1851.⁸⁶² Although Hooker was forced to concede on the idea that Kew might provide recreation to the citizens of London, professional botany triumphed in the metropole. Unfortunately, in the Cape context the former would very quickly overshadow any interest in scientific imperatives.

The controversy surrounding the removal of Zeyher begged the question: what is *really* meant when speaking of a botanic garden and how should it serve both the public and science together?⁸⁶³ Amongst metropolitan and visiting naturalists, a sense of failure and acute despair was felt in not having a trained botanist present in the garden. This was elaborated by Hanover-born Berthold Seemann, appointed naturalist on the *HMS Herald* (1847-51) to the American West and Pacific, who called at the Cape on his return to Europe. He observed that the garden

is now, however, retrograding, chiefly through the mismanagement of the Commissioners, a body of men who, with a few exceptions, seem to be quite incapable of exercising the supreme direction, and who, by a series of measures, have brought not only ridicule upon themselves, but the whole institution.⁸⁶⁴

⁸⁶⁰ Drayton, *Nature's Government*, 159-165.

⁸⁶¹ NLSA, Frank Bradlow Collection, MSB 64.7 (3).

⁸⁶² Ibid.

⁸⁶³ RGBK, DC 59/351, Zeyher to Hooker, 5 March 1851.

⁸⁶⁴ Berthold Seemann, 'Abstract of a Journal kept during the Voyage of the H.M.S. Herald', *Hooker's Journal of Botany & Kew Gardens Miscellany*, 4 (1852), 215.

Seemann argued that the Commissioners' power should be constrained strictly to financial matters, with general control residing in the hands of the botanist. Zeyher's influence was clearly stifled: Seemann suggested he 'could not attempt any alteration or improvement without meeting an ill-timed opposition both from the head-gardener and the commissioners'.⁸⁶⁵ Hooker also intervened in this debate, both to question the role of the Cape garden and to lament Pappe and Zeyher's absence from it. 'For what purpose are Botanical Gardens, formed at great expense in our colonies, but to afford assistance by the knowledge and experience of their superintendents...' he considered.⁸⁶⁶ In discussing entries of South African flora submitted to the 1851 Great Exhibition in London and that of Paris in 1855, he highlighted how nearly all specimens had been collected by Pappe and Zeyher, who by this point were operating independently of any institutional botany in the Cape. Though the garden was still in operation, now under the supervision of gardener James McGibbon, Hooker argued that it was not 'in any way beneficial to the country' and did not engage in any 'correspondence or interchange of plants with the Mother Country, or with other Colonial gardens'.⁸⁶⁷ Yet, the opinions of metropolitan naturalists meant very little to locals. Far removed from local politics and local circumstances, their voices were not representative of the Cape public's voice on the issue of the botanic garden.

Although British botanists had fought against Kew becoming too much of a recreational and ornamental site as called for by the horticulturalists, Cape citizens tended to believe that the garden should be a space of both instruction and leisure.⁸⁶⁸ Again, McCracken's example of Sydney parallels events happening in the Cape. After a succession of non-scientific men in charge, even Sydney Governor George Gripps admitted: 'the term Botanic Garden is now almost a misnomer – since the Garden is scarcely to be looked upon as more than a very agreeable promenade for the inhabitants and sojourners in Sydney'.⁸⁶⁹ Likewise, David Arnold details the same response from William Griffith upon taking over the Calcutta Garden in the 1840s, who remarked, 'it is not a

⁸⁶⁵ Ibid.

⁸⁶⁶ Anon., 'Literary Review', *Cape Monthly Magazine*, 2 (July-December 1857), 52-53.

⁸⁶⁷ Anon., 'Notices of Books: Pappe, L.M.D.; *Floræ Capensis Medicæ Prodrômus*', *Hooker's Journal of Botany and Kew Garden Miscellany*, 9 (1857), 126.

⁸⁶⁸ See: Victoria E. Thompson, 'Telling "Spatial Stories": Urban Space and Bourgeois Identity in Early Nineteenth-Century Paris', *Journal of Modern History*, 75 (2003), 523-556; Michel Conan, *Bourgeois and Aristocratic Cultural Encounters in Garden Art, 1550-1850* (Washington D.C.: Dumbarton Oaks Research Library and Collection, 2002).

⁸⁶⁹ McCracken, *Gardens of Empire*, 13.

Botanical Garden at all, but a pleasure ground, and not very ornamental either'.⁸⁷⁰ Similar comments were made in the Cape context by Hooker and Pappe, who called it 'mere lounge for the townspeople, attracted thither thrice a week by the presence of a band of music' and 'a mere farce, and nothing more but a pleasure-walk'.⁸⁷¹ However, an anonymous commentator, 'Hortulanus' helped to adequately explain in a public forum how the garden was failing to serve the broader interests of the Colony, both from a scientific and recreational standpoint. They saw the garden as a space for the instruction of farmers; a place to help improve landowners' selection of crops; as a depot for the reception of exotic plants and herbarium specimens; and as a nursery for popular trees, shrubs, and flowers.⁸⁷² Most significantly, though, Hortulanus stressed the essential message that Cape men of science had called for since the 1820s, but with a conservationist cognizance: to provide a space for South African plants to be 'preserved for futurity, that are at present fast disappearing from their native wilds'.⁸⁷³ In helping to articulate the views of both sides of the argument, 'Hortulanus' reasonably argued that the garden should be a multi-functional site, one that served the interests of the elite and the public, both scientific and recreational.

This ongoing debate became so serious that by 1855, a committee was appointed to inquire into the state of the botanic garden, which concluded that the management *should* be subject to an experienced botanist and that its success depended more on judicious management than a large expenditure of capital. Likewise, they suggested that the Commissioners should be appointed annually, two nominated by the colonial government and two elected by the subscribers, who would appeal to all parties - the government, the scientific community, and the public – in the future administration of the garden.⁸⁷⁴ Pappe offered his testimony and naturally continued his ongoing protests, claiming that the garden was 'nothing more nor less than a place for recreation or amusement'.⁸⁷⁵ He maintained,

⁸⁷⁰ David Arnold, *Tropics and the Traveling Gaze*, 174.

⁸⁷¹ Anon. "Literary Review." *Cape Monthly Magazine*, 2 (July-December 1857), 53; RGBK, DC 59/254, Pappe to Hooker, 28 January 1857.

⁸⁷² Hortulanus, 'A Cape Botanical Garden, As It Should Be', *Cape Monthly Magazine*, 2:9 (1857), 173-176.

⁸⁷³ Ibid.

⁸⁷⁴ WCARS, KAB, CCP 1/2/2/1/2, 'Report', 1855.

⁸⁷⁵ Ibid., 2.

I could not call it *botanical*, unless I should resort to the old etymology of *lucus* – a *non-lucendo*, or quote the more modern appellation of a *speaker* for a man who is in duty bound to hold his tongue. A garden, without a [*sic*] educated and experienced botanist, has no claim to be called botanical, and can be of little service to science and the public.⁸⁷⁶

By early 1856, nothing had yet been done to secure a botanist in the garden, causing Chairman L.C. Biccard to declare that the garden was indeed ‘a failure’. He argued that only by enlarging public interest and enhancing its scope of usefulness would the garden become self-supporting.⁸⁷⁷ By 1858, the desire to instill scientific imperative and conservationist necessity in the garden led to Pappe’s instatement as the Cape’s first colonial botanist.⁸⁷⁸ Pappe himself, following Hooker’s lead, had suggested the creation of the position, claiming it was the only remedy for a country with a botanical character that was ‘yet but little understood’.⁸⁷⁹ Though it may appear as though science and botany had triumphed, this victory would be relatively short-lived.

Settler Apathy and the Creation of the *Colonial Flora*

In theory, the scientific community at the Cape had succeeded in their basic, but long-awaited goals: they established an official botanic garden and, eventually, placed it into the care of an experienced botanist. Although the garden still had to carry on a precarious retail business in plants and seeds to eke out its existence, the position of Colonial Botanist would help to ensure that botanical correspondence was taking place and that indigenous flora was being preserved.⁸⁸⁰ Now, the key was to figure out how best to convince society that South African flora was useful, unique, and worth protecting. Not only had men of science been arguing for this since the 1820s, official organs such as the *South African Almanack* also remarked upon the ‘apathy with which those treasures are passed’ by ordinary colonists’.⁸⁸¹ The scientific failure of the botanic garden inspired many discussions about the indifference of Cape colonists toward their own flora. For example, David Arnot wrote to Hooker in 1860, ‘I regret that there is not a great love existing in this Colony

⁸⁷⁶ Ibid.

⁸⁷⁷ WCARS, KAB, CCP 1/2/2/1/3, ‘Report of the Select Committee on the Botanical Garden’ (1856), iii.

⁸⁷⁸ RGBK, DC 59/272, Rawson to Hooker, 30 March 1857.

⁸⁷⁹ RGBK, DC 59/254, Pappe to Hooker, 28 January 1857.

⁸⁸⁰ RGBK, MR 602, 35

⁸⁸¹ Krebs to Lichtenstein, 1 September 1828, *Ludwig Krebs*, 161.

for Botany, abounding as this Colony does in such numerous and rare varieties'.⁸⁸² Reiterating this sentiment a few months later, he quipped that 'it is much to be regretted that the rule motto all over this colony still is "where ignorance is bliss it is folly to be wise"'.⁸⁸³ Pappe, too, continued his tirade against the lack of scientific character extant in the Colony. He argued that 'the lovely study of Botany and natural history generally, still lies in its cradle', claiming that its brilliant flora had 'up to this day, been duly appreciated only by foreigners'.⁸⁸⁴ Just before taking his new position, he observed, 'owing to the indifference of Cape Colonists in general, so very little is done for scientific pursuits' and that for this reason, the Cape would 'be left behind other colonies for years to come', highlighting Pappe's commitment to botanical nationalism.⁸⁸⁵ As was in its character, the government continued to neglect the garden. Not only did they decline offering funds for a display of Cape woods at the 1862 International Exhibition, but they also pulled the entirety of the garden's government grant as part of the 1867 retrenchment scheme.⁸⁸⁶ This was certainly an attack on the study of botany in South Africa, as the Library, Museum, and other public knowledge-based institutions had their grants renewed without question.

However, this criticism of botanical apathy was not entirely warranted. Despite making indigenous flora the headline of all attempts to establish a botanic garden, it was recorded that Cape colonists consistently asked, 'how are we to designate the different plants which we find, and how are we to learn what properties they possess?'.⁸⁸⁷ There was a clear discord between the pretensions of the scientific elite and the information distributed to ordinary colonists. Not only was there not a thorough or instructive display of South African flora in the botanic garden, but there had been few attempts at discussing economic botany in printed form and plain language. One such attempt was made by Pappe, who firmly believed in the importance of local knowledge and gathered it on his many tours through the Colony as Colonial Botanist. Intended as a commentary to a choice collection of Cape medical drugs sent to the 1851 Great Exhibition, his *Enumeration of South African Plants* acknowledged that much of the knowledge gleaned was not owed to scientific

⁸⁸² RGBK, DC 60/3, Arnot to Hooker, 8 August 1860.

⁸⁸³ RGBK, DC 60/107, Arnot to Hooker, 11 February 1861.

⁸⁸⁴ WCARS, A 1663, 251, 20 June 1846.

⁸⁸⁵ RGBK, DC 59/254, Pappe to Hooker, 28 January 1857.

⁸⁸⁶ WCARS, KAB, CCP 1/2/1/21, 'Report of the Commissioners of the Botanic Garden, Cape Town, for the Year 1868', 1.

⁸⁸⁷ RGBK, MR 603, 'Report of the Colonial Botanist for the Year 1863', 15 January 1864, 38.

research, but rather ‘the experience of the colonial farmer, ... to occasional travelers, or to the wandering native’.⁸⁸⁸ Part of his duty as the Colonial Botanist was to work together with colonists to collect, to inquire into the geographical distribution of South African plants, to survey land best calculated for cultivation, and to work expressly with agricultural plants and products of economic botany. Likewise, he was to use this information to ‘aid in the new work on the vegetable products of South Africa, now preparing in England’.⁸⁸⁹ This referred to Harvey’s proposed *Flora Capensis*.

Much like Pappe’s *Enumeration*, Harvey’s earlier *Genera of South African Plants* (1838) was meant to be a response to colonists’ questions about local vegetation. Seen as a *prodromus* to an eventual *Flora*, he hoped the project would introduce him to colonists living in remote districts who might ‘be willing to unite with [him] in amassing materials from which a future Flora should proceed’.⁸⁹⁰ Anxious to acquire specimens that had not been part of the Ecklon-Zeyher or Drège collections, he hoped to establish a reciprocal exchange with frontier colonists: physical specimens for knowledge of local flora. For this volume, Harvey ‘opened a correspondence with missionaries in the Zoola country, Litaku, Griquatown ... & Cafferland’ and had ‘persuaded the different military frontier parts of the 72nd Regt. to collect’.⁸⁹¹ He remarked that the military men were a very intelligent set of fellows’ and even promised to publish their plants in a separate volume and to preserve the names of all who contributed specimens.⁸⁹² However, the missionaries were excellent gardeners and oftentimes avid collectors themselves, as evidenced in Chapter Three. Only a few months later, Harvey wrote that he had ‘already got a good correspondent in a missionary at the Paarl’ who collected for him a ‘weedlike a thing, an *Oldenlandia capensis* which was not mentioned by either Ecklon or Zeyher’.⁸⁹³ Likewise, he received seeds of the *Erythrophylla undulata* from the Reverend Heinrich Schmelen, an LMS missionary in Namaqualand.⁸⁹⁴ Despite

⁸⁸⁸ Ludwig Pappe, *Floræ Capensis medicæ prodromus, or, an enumeration of South African plants used as remedies by the colonists of the Cape of Good Hope* (Cape Town: W. Brittain, 1857), iii.

⁸⁸⁹ RGBK, MR 603, ‘Report of the Colonial Botanist on an Official Tour through certain of the Western Districts, 4 April 1859, 1.

⁸⁹⁰ William Henry Harvey, *The Genera of South African Plants*, 2nd ed. (Cape Town, J.C. Juta, 1868), 9.

⁸⁹¹ RGBK, DC 58/62, Harvey to Hooker, 17 January 1838. The 72nd Regiment were the Duke of Albany’s Own Highlanders who had been present in the Cape since 1828, fighting in the Sixth Frontier War.

⁸⁹² Ibid.

⁸⁹³ Ibid.

⁸⁹⁴ RGBK, DC 58/117, Harvey to Hooker, 13 March 1843. I have been unable to locate the present-day taxonomic name for this plant. My best guess, as it is endemic to South Africa and a threatened species, would be that it is the *Eugenic erythrophylla*.

some success, Harvey still did not think much promise in the venture; he wrote that many missionaries ‘are callous to the charm of botany’ and that it might all be simply a waste of time and effort.⁸⁹⁵ He also worried that many would shy away from collecting plants ‘under the erroneous supposition that because they have little or no knowledge of Systematic Botany, they are incapable of making collections or observations that can be useful to a botanist’.⁸⁹⁶ Although Harvey’s *Genera* was supposed to be an affordable companion to the inclined colonist, by the 1850s it was no longer in print and therefore difficult to acquire, available primarily to the elite, scientific men who had first purchased it.

If the struggle to establish a botanic garden had not already exposed the limits of settler interest in botany, the production of the new *Flora Capensis* brought those limits again into focus. The Colonial Floras scheme, stemming from the success of Hooker’s Museum of Economic Botany, was a powerful weapon which sought to revive and extend the scientific initiatives of the Admiralty and the East India Company during this era of Banks.⁸⁹⁷ The old notion of the scientific inventory, which compiled a colony’s natural resources for the use of government, found new relevance, linking geographical and botanical knowledge once again to improvement, philanthropy, and profit.⁸⁹⁸ As Richard Axelby argues, only the metropole had the knowledge to understand nature globally, and this knowledge was accompanied by the belief that the center could, and should, attempt to refashion the world according to its understandings.⁸⁹⁹ By financing and supporting these botanical surveys of Britain’s imperial possessions, William Jackson and Joseph Dalton Hooker could impose their particular view of systematics onto the field of botany. In the fight against “splitters” and “species mongers” mentioned in Chapter Five, they could stabilize taxonomic knowledge through the broad species concept in practice.⁹⁰⁰ With specimens and knowledge funneling into Kew from around the globe, the Colonial Floras helped to alter the

⁸⁹⁵ RGBK, DC 58/64, Harvey to Hooker, 23 May 1838.

⁸⁹⁶ Harvey, *Genera*, 9.

⁸⁹⁷ For more on the Museum of Economic Botany, see: Caroline Cornish, ‘Curating Science in an Age of Empire: Kew’s Museum of Economic Botany’, PhD diss, Royal Holloway University, 2013; Felix Driver and Caroline Cornish, “Specimens Distributed”: The Circulation of Objects from Kew’s Museum of Economic Botany, 1847-1914’, *Journal of the History of Collections*, 32:2 (2019), 327-340; Felix Driver, Mark Nesbitt and Caroline Cornish (eds.), *Mobile Museums in Circulation* (London: UCL Press, 2021).

⁸⁹⁸ Drayton, *Nature’s Government*, 201-206.

⁸⁹⁹ Axelby, ‘Calcutta’, 160.

⁹⁰⁰ Christophe Bonneuil, ‘Manufacture of Species’, 207.

perception of botany as an “unphilosophical” pursuit, addressing the essential concern in contemporary botany: phytogeography. At the same time, the Floras were meant to be ‘good, but inexpensive, scientific works’; the Hookers broke with the tradition of expansive, richly illustrated volumes in quarto and instead aimed for something ‘not so exclusively scientific in method and language as to be useful to the professed man of science only’.⁹⁰¹ Because the Floras would be accessible to a wider range of people, they could discipline beginners, local collectors or botanists, and travelers to their standard taxonomic practice. Thus, the Colonial Floras scheme allowed the Hookers to transform ‘scientific desideratum into an imperial necessity’, ensuring that Kew Gardens was the center of imperial botanical collecting.⁹⁰² Hooker framed this “necessity” in terms of economic botany and practical utility, that the classification of botanical specimens ‘was vital to any future colonial economic progress’; in a sense, the questions being asked by Cape colonists were the justifications used by Hooker in London to ensure government funding for the project.⁹⁰³ As Richard Drayton rightly argues, this great publishing enterprise perhaps mattered more for the evolution of contemporary botany than for the growth of the imperial economy.⁹⁰⁴ Despite being given a surprising £1,500 by the Cape colonial government, the Flora project in the South African context did not necessarily meet with colonial interest.

Although Pappe contributed a great deal of his own time, energy, and material to the project, there was very little done during his tenure to respond to Harvey’s initial entreaty of involving ordinary colonists in the frontier districts in the *Flora*. After Pappe’s premature passing in 1862, his successor, John Croumbie Brown, worked even more closely with Harvey to ensure incoming specimens from the interior amongst two other major contributions.⁹⁰⁵ Firstly, Brown tried to spread his wider environmental concerns about deforestation, incendiarism, and irrigation in the Colony.⁹⁰⁶ Secondly, he attempted to make botany accessible, particularly to farmers, women, and

⁹⁰¹ Anon., ‘Colonial Floras’, *The Natural History Review*, New Series 1 (1861), 256.

⁹⁰² Drayton, *Nature’s Government*, 204. Kew became the center of imperial botany instead of the British Museum.

⁹⁰³ Drayton, *Nature’s Government*, 205.

⁹⁰⁴ *Ibid.*

⁹⁰⁵ For more on John Croumbie Brown, see: Richard Grove, ‘Scottish Missionaries, Evangelical Discourses and the Origins of Conservation Thinking in Southern Africa 1820-1900’, *Journal of Southern African Studies*, 15:2 (1989), 163-187.

⁹⁰⁶ Richard Grove, ‘Scotland in South Africa: John Croumbie Brown and the Roots of Settler Environmentalism’ in Griffiths and Robin (eds.), *Ecology and Empire: Environmental History of Settler Societies* (Edinburgh: Edinburgh University Press, 1997), 148-149.

anyone with a passing interest in natural history. He undertook tours of the Colony, much like Pappe had done before him, and delivered lectures on botany, gave field-lectures, and guided botanical excursions. Outside of scientific society, he offered lectures in private schools, in the Cape Town Mechanics' Institute, and a botanical lesson for a ladies meeting in the Education Museum in Cape Town.⁹⁰⁷ Using the rather mundane colonial blue books and government reports of the Cape Colony, he attempted to spread conservationist and botanical knowledge throughout the Colony, responding to mail sent him on botanical and agricultural matters directly through these mediums.⁹⁰⁸ In beginning this dialogue with the public, Brown immediately proposed that they take part in the compilation of Harvey's *Flora*. After hearing his intended plans, Harvey wrote to Brown stating, 'what is most needed at present ... is to diffuse a taste for botany as much as possible'.⁹⁰⁹ One would think that the exertions of Brown were exactly what the Colony needed to help bring people from all divisions of society into environmental and botanical matters.

Seeking to make use of their privileged geographical position in the more remote districts of the Colony, Harvey and Brown again targeted missionaries to help fill both intellectual and material gaps for the construction of the *Flora*. They were particularly keen to get missionaries from the *Rheinische Missionsgesellschaft* in Namaqualand and Damaraland involved, as this was the least well-known region to metropolitan and colonial botanists, imperfectly investigated by Ecklon-Zeyher and Drège decades before. Brown sent a circular attached to the 1864 Report of the Colonial Botanist which discussed the desired specimens and offered 'short directions' for drying botanical material composed by Harvey, encouraging them to start 'collecting and drying specimens of the plants of their neighbourhood *indiscriminately*'.⁹¹⁰ Although Harvey and Brown were seeking specific *desiderata*, 'a cucurbitaceous plant called *Naras* by the natives of Waalvisch Bay' and an '*Uncaria procumbens* of Burchell' (known as the "Grapple Plant"), they hoped to show that there were many indigenous plants seen as '*too common* to be worth collecting' that were still all but unknown to European botanists.⁹¹¹ By 1866, the results of this circular had seen such a successful return that Harvey and Brown believed they could start asking for roots, bulbs,

⁹⁰⁷ RGBK, DC 60/59, Brown to Hooker, 20 August 1863

⁹⁰⁸ RGBK, MR 603, 'Report of the Colonial Botanist for the Year 1863', 15 January 1864, 4; RGBK, DC 60/59, Brown to Hooker, 20 August 1863

⁹⁰⁹ RGBK, MR 603, 'Report of the Colonial Botanist for the Year 1863', 15 January 1864, 3.

⁹¹⁰ WCARS, KAB, CCP 1/2/1/14, 'Report of the Colonial Botanist for the Year 1864', 139.

⁹¹¹ *Ibid.*

and seeds of living plants, as well as dried specimens, to fulfill the requests of botanic gardens around the world.⁹¹² In the absence of any formal collectors in the region, this was the only possible way that ‘a Flora Capensis, in any degree worthy of the subject, [could] be prepared’.⁹¹³ Extending this entreaty to colonists, Brown had to do slightly more convincing. He attempted to stress the indirect benefits of participating in such a scheme: healthful mental occupation, the promotion of the prosperity of the Colony by extending the knowledge of its flora; and the contribution to the extension of modern science.⁹¹⁴

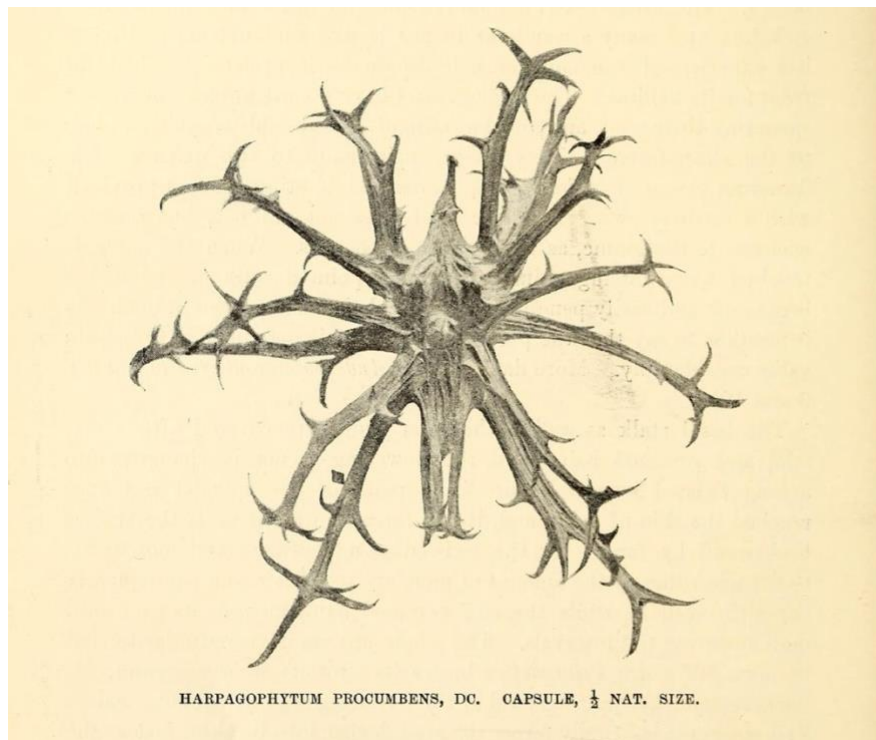


Fig. 6.3: The ‘Grapple Plant’. Rudolf Marloth, ‘On the Means of the Distribution of Seeds in the South African Flora’, *Transactions of the South African Philosophical Society*, 8 (1890-95), lxxxii.

After the premature death of Hooker (1865) and Harvey (1866), and the dissolution of the Colonial Botanist position in 1867, the *Flora Capensis* project stalled until the end of the nineteenth century. While Richard Grove contends that Brown was dismissed because of his public condemnation of the illicit deforestation carried out by railway interests with influential friends in Parliament, a

⁹¹² RGBK, MR 603 (5), ‘Circular from Colonial Botanist relative to South African Plants desired by the Directors of Botanic Gardens in Europe and elsewhere’, 20 February 1866, 1.

⁹¹³ WCARS, KAB, CCP 1/2/1/14, ‘Report of the Colonial Botanist for the Year 1864’, 139.

⁹¹⁴ RGBK, MR 603 (5), ‘Circular’, 20 February 1866, 6.

series of severely critical newspaper articles attacking Brown's character began to appear.⁹¹⁵ One complained that 'the length of his epistles is dependent upon the quantity of paper he accidentally has before him'.⁹¹⁶ Others objected that his lengthy reports and circulars were a financial drain on the taxpayer, as the publishing and distribution of the Colonial Blue Books was already too expensive. In elaborating the 'mental discipline' that amateur collecting could have on participatory colonists, an anonymous correspondent noted that this incentive was 'quite out of place' and that Brown would be met with the response: 'Thank you, sir, we are not in want of any more discipline or occupation than our business requires, and our leisure hours afford'.⁹¹⁷ Jim Endersby has examined a similar phenomenon at the Sydney Botanic Garden. When residents were quick to condemn government overspending in the 1830s, they immediately attacked the botanic garden and the Colonial Botanist position as superfluous, and that anyone who wanted 'to dabble in such things ought to do so in their own gardens, and not at the public expense'.⁹¹⁸ It appears that in his attempt to create a botanical and agricultural discourse between himself and the colonists, he instead incited widespread condemnation from many who found his character obnoxious and his position pointless.

Conclusion

Before his death, Hooker was quick to commend the widespread contributions of Cape colonists, writing that 'collectors (who will by-and-bye be botanists) are springing up in all directions of the colony from Cape Town to the northern boundary, Colesberg, and to the extreme east of Natal'.⁹¹⁹ Because of this effort on the part of the colonists, he even went so far as to suggest that 'this Flora of the Cape will be the best and most instructive of all our colonial Floras, and a pattern for the rest; scientific, yet written in a popular language'.⁹²⁰ However, others believed that indigenous flora should be placed solely in the hands of *English* or *British* colonists. After a few weeks' stay

⁹¹⁵ Grove, 'Settler Environmentalism', 149.

⁹¹⁶ *Het Volksblad*, 'The Colonial Botanist and His Circulars', 5 March 1866.

⁹¹⁷ *Ibid.* Further criticism in *The Great Eastern*, 10 January 1867; *Cape Standard*, 26 July 1866; *Cape Standard*, 31 July 1866.

⁹¹⁸ Endersby, 'Garden Enclosed', 327-328.

⁹¹⁹ *Cape Argus*, 2 April 1861 or RGBK, DC 60/107, 'Cape Botany'.

⁹²⁰ RGBK, DC 60/107, 'Cape Botany'.

in Natal, Reverend Edward Armitage delivered a lecture on the botany of the region to the members of the Natal Society in Pietermaritzburg. While attempting to convince Natal colonists to devote some of their leisure time to botany, he remarked:

I think it is a shame to Englishmen, when we look at this place and also at the Cape Colony, to remember that almost all that has been done for the study of the vegetable world has been done by foreigners. The father of the Cape flora is Thunberg, a Swede, and its principal observers are three Germans; and here all that has been done has been by a couple of Germans. It is time, I think, that the English, to whom these colonies belong, should take up the matter, and see what they can make of it.⁹²¹

The pursuit of South African flora had become matter of British national and imperial pride rather than the shared European endeavor it had been in the eighteenth and early nineteenth centuries. Not only have the lives of the Germans collectors throughout this thesis been marginalized in historiographies of history of science, the British Empire, and South Africa, but by the 1850s, as the Cape came into its own as a British Colony, their contributions ultimately became a sore point of British pride, allowing them to be relegated into the Cape's distant past.

By the 1880s, a new generation of South African botanists, positioned to oversee Cape botany from Cape Town, and in eastern districts such as Albany, Graaff-Reinet, and Grahamstown, began to take up the work that had been undertaken by these German collectors. When Peter MacOwan was appointed the Director of the Cape Town Botanic Garden, the Curator of the Cape Government Herbarium, and Professor of Botany at the South African College, he reflected on the legacies and oversights of the specimens produced in this earlier period, specimens they were still wholly dependent upon, but which time and neglect had threatened. In discussing the distribution of Cape plants to the museums and herbaria of Europe, he wrote that 'the outward and visible representation of the Cape flora in public museums consisted almost exclusively of the results of the early labours of Ecklon and Zeyher and of J.F. Drège'.⁹²² When MacOwan put together a series of Cape Exsiccata (the *Herbarium Normale Austro-Africanum*), they remarked that the specimens

of Ecklon and Zeyher, and Drège, are now more than half-a-century old. Many of them, collected on hasty journeys, do not fulfil their purpose, and the temptation, inevitable in

⁹²¹ Printed as an appendix to James Chapman, *Travels in the Interior of Southern Africa*, vol. 2 (London: Bell & Daldy, 1868), 11.

⁹²² RGBK, MR 612, 'Report of the Government Botanist and Curator of the Cape Government Herbarium for the year 1899', 2.

making up many sets for sale, to break up a few good examples into many bad ones, has tended to lower the working value of their issues'.⁹²³

Even after their death, the effect that commercial competition had on the state of the collections was obvious to those attempting to make use of them. Finally, while working with the *Compositae*, a list of plants liable to the attack of insects, MacOwan complained about the 'once useful duplicata' gathered by the earlier collectors, many of which 'fail to have any representative value ... [and] have to be condemned'.⁹²⁴ By the end of the nineteenth century, even South African botany had disparaged any use of their collections and criticized the fact that European institutions also still relied on their material. In the institutions where their work should have been venerated, they were instead consigned to a subordinate position and an ambivalent legacy.

By the end of the century and the start of the twentieth, however, indigenous flora and a new botanic garden attempted to consolidate a *South African* national identity.⁹²⁵ When Harold Pearson delivered an address on the subject of a national botanic garden in 1910, he envisioned the garden as a center which could both preserve indigenous flora and promote civilization and patriotism.⁹²⁶ Although he wanted it to include both indigenous and exotic flora like other colonial botanic gardens, others argued that it should be a site 'where in one spot, in one part of the country, a stranger might come and see the flora of South African displayed together'.⁹²⁷ Interestingly, German-born South African botanist Rudolf Marloth thought the garden 'would have a great educational influence on the generation that was growing up and foster a love of the country by means of something that was purely South African'.⁹²⁸ Here, men of science tried to cultivate national feeling across British and Afrikaner society through affective attachment to indigenous

⁹²³ RGBK, MR 612, 'Report upon the Botanic Gardens and Government Herbarium, Cape Town, for the Year 1885', 6-7.

⁹²⁴ RGBK, MR 612, 'Report of the Government Botanist and Curator of the Cape Government Herbarium for the year 1898', 1-2.

⁹²⁵ See: Tomaz Mastnak, Julia Elyachar and Tom Boellstorff, 'Botanical Decolonization: Rethinking Native Plants', *Environment and Planning D: Society and Space*, 32 (2014), 363-380; Franklin Ginn, 'Extension, Subversion, Containment: Eco-Nationalism and (Post)colonial Nature in Aotearoa New Zealand', *Transactions of the Institute of British Geographers*, 33:3 (2008), 335-353; Brett M. Bennett, 'Decolonization, Environmentalism and Nationalism in Australia and South Africa', *Itinerario*, 41 (2017), 27-50.

⁹²⁶ Pearson, "A National Botanic Garden", 43, 46; Pearson was an English, Kew-trained botanist and Professor of Botany at the South African College; van Sittert, 'Mere Weeds', 115.

⁹²⁷ 'Our National Flora', *Cape Times*, 9 March 1912.

⁹²⁸ *Ibid.*

plants.⁹²⁹ Van Sittert maintains that this was a peculiar ideological hybrid of cosmopolitan and nativist strands of geographic nationalism, which sought ‘to nationalize and naturalize the imperial connection’⁹³⁰ Ultimately, he argues that the identification with Cape flora became more a marker of class, ethnic, regional, and imperial rather than national loyalty.⁹³¹ This nationalist impulse of the botanic garden story in the twentieth century also provides a final nail in the coffin, again explaining how the lives of these Germans were erased.

Almost every German written into these chapters had a hand in some iteration of the Cape’s botanic garden, if not in the wider promotion and study of the Cape’s indigenous flora, making it a salient final theme of this dissertation. The trajectory of the garden demonstrated how things moved on, local circumstances changed, and interest in natural history (botany especially) experienced a harsh process of ebb and flow both within and outside of the Colony. While earlier chapters of this dissertation showed how social relations, commercial considerations, objects, and collections all had the ability to hinder scientific progress, and in fact did so, this chapter showed the extent to which apathy also had the power to negatively affect that process. This is best exemplified both in the story of the Cape botanic garden and in the difficulties William Henry Harvey experienced in the compilation of the Cape Colonial Flora, about which more research could, and should, be conducted. It could be said that apathy, a powerful emotion which no doubt affected the development of Western science much like trust in Chapter Two, fundamentally shaped the trajectory of natural history in the British Empire, as briefly made evident in Chapter Five. Disappointment follows apathy as the dominant emotion of this chapter, as the Cape colonial government time and again failed to fund the botanic garden project and made decisions that compromised the scientific integrity of the project and those working to promote, display, and preserve indigenous flora within the Colony. Again, a closer examination of emotions in the history of science could elicit some quite formidable conclusions which overturn our presumed notions about the trajectory of science in the nineteenth century.

⁹²⁹ Boehi, ‘Social Garden’, 7.

⁹³⁰ van Sittert, ‘Mere Weeds’, 126.

⁹³¹ Ibid.

Although the culture of the Colony slowly assumed a more British disposition in this period, the garden plays an unconventional role which complicates traditional historiographical renderings of British colonial botanic gardens - it formed the site where these Germans' scientific ambitions were projected and sometimes (though rarely) realized. While some used their metropolitan connections to persuade the British imperial and Cape colonial governments to fund a new garden, others appealed to local scientific and bourgeois citizens to forward the same idea. This is where work on Ludwigsburg Garden could be expanded. As a private garden which functioned as a *de facto* colonial, state-run botanic garden, it did more for Cape botany in the early nineteenth century than any other Cape scientific institution. Although it was fashioned as a haven of British values in the Cape press, the Baron's German heritage and prominent position within the Cape Dutch gentry made his garden a symbol of Anglo-Dutch cooperation and the "universal" and cosmopolitan spirit of European science. Its attention to exotic plants deserves further mention, as work could be done to investigate the ramifications of the Baron's work on the environmental issues that the region presently suffers from, like drought and fire. Likewise, more could be done to follow the connections between the 1848 iteration of the garden and botanic gardens across the world through plant exchanges, which certainly took place despite limited funds and minimal scientific interest. This would help to qualify or dispel claims by Ludwig Pappe and his contemporaries that the garden was an assured failure. However, the fact that these German collectors struggled under the weight of the botanic garden project, both in theory and reality, only reinforces their ambiguous legacy. As collectors who caused numerous problems in the production of knowledge about the Cape and its insertion into Western frameworks, it is no surprise that they were unable to persuade those outside of the scientific world of their proficiency or reputation, challenging some of the opening remarks in this thesis about the significance of German expertise in the British Empire. Though this thesis has demonstrated their equivocal legacy, that ambiguity makes their lives and work even more interesting as a topic of historical research.

Conclusion

In a broad sense, this thesis has shown how a small, but exceptionally mobile group of Europeans became enmeshed in the overlapping human, material, and intellectual networks of the British Empire and revealed the extent to which the scientific knowledge generated by their work was fashioned outside of the Empire's traditional spatial and conceptual boundaries. Moreover, it provided a unique opportunity to unite two historiographies often written in isolation from one another – those of central Europe and the British Empire. These historical actors sit at the intersection of different conceptual approaches, emergent methods, and historiographies which would have otherwise never been brought into the same frame.

Chapter One acted as a preamble to this thesis, offering an introductory look at four main points. Firstly, it examined how German merchants, physicians, apothecaries, and naturalists used the established transnational and trans-imperial networks of the Dutch East India Company to realize their overseas ambitions. Because the Company quickly prioritized the production of medical and ethnographic knowledge about the territories which it governed, a host of Germans who worked for the Company were able to establish their own personal scientific reputations, while also subconsciously building a wider “national” reputation which earned the respect of their European contemporaries. Secondly, it began to flesh out how the intricate relationship between science and commerce came to be so fraught with cynicism and distrust in the early modern period. Although the conventions of the learned world and the commercial world were fundamentally antagonistic, modes of economic exchange had always been inherently intertwined with the development of natural knowledge, especially in the world of the Dutch East India Company. Thirdly, it briefly discussed the role of Germans at the Cape of Good Hope, and how the German gardeners of the Company Garden came to play a particularly significant role in the dissemination of knowledge about the region's indigenous flora both locally, in Europe, and in the wider Dutch imperial world. Finally, as Dutch influence in global commerce waned at the end of the eighteenth century, the chapter shifted to discuss how Germans then became central to scientific undertakings in the British imperial world through the influence of Johann Reinhold and Georg Forster on James Cook's *Resolution* voyage. All of this helped to position the German actors at the center of this

thesis and to shift our focus away the series of successful naturalists and travelers who dominate histories of the Cape in the time of the VOC's administration, particularly those who arrived at the end of the eighteenth century, who receive the bulk of the historiographical treatment.

Chapter Two explored what the disintegration of social relations between the Prussian state, the Berlin Zoological Museum, and their salaried Cape collectors can tell us about trust, emotions, and power in histories of science. Trust is already a largely overlooked framework for understanding what these historical actors considered essential criteria in their scientific associations, yet even more understudied is how we interpret mistrust or distrust. Hinrich Lichtenstein was able to secure the trust through the publication of *Verzeichnisse*, directories which displayed the price of the specimens they had to sell. For the Prussian state, it was a way to measure the success of their collectors; for the public, it was a transparent way of ensuring a safe commercial transaction. Thus, Lichtenstein embodied the ultimate commercial naturalist, personifying the two opposing poles of scientific endeavor in this period. Though Lichtenstein had received positive testimony about his Cape collectors, the language embedded in the correspondence that traveled between Prussia and the Cape reveals a complete collapse of trust on several social levels. However, the desire for trust and the necessity of being commercially frugal inevitably helped to fashion a new way of collecting specific to the German states in the early nineteenth century. The “entrepreneurial” collector was a way to stabilize the problems the Prussian state experienced in the Cape, allowing them to receive natural history specimens from abroad without any financial losses. Not only does this inculcate Prussia in links to colonialism, but it reveals the process by which social relations in natural history became economized and how emotions had the potential to interfere in the production of Western knowledge.

The next three chapters formed an arc which presented, through different methods, a challenge to the idea that competition drives progress; rather, “entrepreneurial” collecting in Cape natural history collecting was more destructive than it was progressive. The third chapter demonstrated this through the creation of natural history “businesses” in the Cape, discussing the considerations they adopted and the practices they employed to assemble their collections, to bring in more revenue for themselves, and to improve their local and European reputations. Likewise, it assesses how these collectors’ competition with one another encouraged them to push further afield toward

more violent and extractive methods of collecting. These humble, independently organized, and self-financed collecting parties offer a challenge to traditional renderings of African exploration which focus on “great men” and state-sponsored expeditions. The chapter also highlighted a diversity of local individuals who supported these collectors in the field, including their Boer frontier hosts and African assistants. However, rather than the dynamic and fluid hierarchies which characterize knowledge sharing in other colonial locales, these collectors relied on, and acted in line with, the uneven power structures and human exploitation specific to Cape society. Finally, it confirmed how local experiences in the field were critical to the shaping of scientific knowledge, shifting historiographical emphasis from “ideas” and “great men” to one of practice and social relations. Understanding these collectors’ approach to the field allows us to make sense of their participation in the larger social endeavor of natural history.

After understanding *how* these Germans harnessed their commercial objectives and put them to practice in the field, Chapter Four concentrated on examples of *what* they collected and how the agency of objects could fundamentally shape the trajectory of Western knowledge production. *Hydnora africana* and human remains were framed as European *desiderata*, offering an alternative view of natural history specimens that were not necessarily of significant economic or medicinal value. Instead, this interpretation offers a fuller history of the objects which captured the nineteenth-century imagination in entirely anti-utilitarian ways. While human remains were readily dehumanized, catalogued, and transferred into European museums and institutions, *Hydnora*’s materiality made it difficult for European botanists to visualize and comprehend, let alone to place it within their Eurocentric classification schemes. However, a declaration of desire encouraged these already ambitious collectors into ever more imaginative forms of risk-taking, pushing geographical, intellectual, and moral boundaries in the process. Thus, the pursuit of these objects reveals the collector’s logic: that plucking a botanical specimen from the earth was no different than skinning the flesh from a human skull. Objects which seem utterly incomparable can therefore be brought into the same analytical frame, offering innovative methods for exploring the field as a space, fieldwork as a practice, and the ways in which collectors constructed, and interacted with, the world around them. It also highlights the depth and complexity of collections that were, and still are, held in botanic gardens, herbaria, and museums around the world.

However, *Hydnora* would not be the first, nor the last time that European naturalists' intellectual limits would be tested while attempting to understand Cape flora. Chapter Five rounded out the narrative arc on "progress" through an analysis of how the Ecklon-Zeyher and Drège collections were treated by European botanists once they arrived in Europe. The stagnation of Kew Gardens, and the low standing of natural history in Britain, left the imperial center almost entirely absent from the deliberations on Cape flora, as the collectors used their familial and professional ties to the German states to promote and sell their material. However, the collectors' commercial motivations proved intellectually detrimental to the classification and ordering of Cape flora; the flood of specimens became both a quantitative and qualitative challenge to the established Western taxonomic order, as botanists tried to fit new Cape forms into the old genera. Likewise, the collections called into question the growing number of botanical practitioners who had their own ideas about the ordering and naming of Cape species, which made an inventory of the Cape's vegetable productions a problematic enterprise. This resulted in a botanical polemic in the 1840s which cast doubt on the entire process of classifying and naming Cape flora that had emerged from the use of the collections, fundamentally disrupting the intellectual project of systematic botany. Thus, this example shows how material and intellectual disarray forced European botanists to impose standardized taxonomic practices to the study of systematic botany and how Europe and Europeans were deeply involved in the botanical conceptualization of a British colony.

Finally, Chapter Six discussed the rather complicated efforts to establish a botanic garden in the Cape Colony in the first half of the nineteenth century. Extending our present understanding of the garden's history, it connects the Dutch Company Garden to the British period, drawing out how different British administrations reacted to demands for a botanic garden. Turning away from the predominantly "German" focus, it looked instead at the extent to which the Germans explored in this thesis integrated into Cape civic life. Yet, the Cape example suffered under the weight of apathy from both the colonial government and local colonists, which fundamentally impacted the garden project throughout the nineteenth century, as well as the construction of William Henry Harvey's *Flora Capensis* in the 1850s. This apathy perhaps helps to clarify why the Cape has been omitted from the rather extensive literature on British colonial botanic gardens and offers an avenue by which to study the role of emotions like apathy and disappointment in the history of science. Moreover, the limited view of the privately-operated Ludwigsburg Garden has obscured

our understanding of its position as a popular node of both local and international plant exchange networks emanating from the Cape. Much as the garden became a space where the Germans explored in this thesis could project their scientific ambitions, the Baron's German heritage and prominent position within the Cape Dutch gentry made his garden a symbol of Anglo-Dutch cooperation and the "universal" and cosmopolitan spirit of European science. These collectors' failure, however, play any major role in the garden's development or administration, or to persuade local and metropolitan authorities of the importance of the Cape's indigenous flora, only serves to reinforce their rather ambiguous legacy.

This study reorients traditional analyses of the British Empire which focus solely on Britons and/or their colonial subjects, proving that the empire's internal workings were unquestionably shaped by external participation. It sheds light on connections previously disregarded, it explicates European influence both within Britain's colonies and in Britain itself, and it offers an unparalleled opportunity to take unique methodological and global approaches to imperial history. Future scholarship on the British Empire should follow the course that historians working on international migration in the Dutch East India Company have taken, which has increasingly recognized the impact of the multi-national character of the Company's employees and the dynamic hierarchies of knowledge exchange between colonizer and colonized. A distinctive case study like this allows us to complement the work that has been done in recent years by scholars of the "new imperial" history, but more importantly it advances that work by introducing new actors whose local experiences, imperial mobilities, global connections challenge the existing analytical frameworks upon which this field depends. In light of Brexit and a particularly volatile strain of populist nationalism, studies of Britain and the British Empire that demonstrate the long-standing influence of Europe and Europeans become increasingly important to underline.⁹³² Even in the present day, renewed debate on "imperial nostalgia" and the so-called "culture war" it has spawned against imperial historians focuses instead on migration, race, and politics in twenty-first-century Britain.⁹³³ While Britain's reckoning with its imperial past from these perspectives is a huge and necessary social and epistemic undertaking, these discussions seem to exclude Europe almost

⁹³² Stuart Ward and Astrid Rasch (eds.), *Embers of Empire in Brexit Britain* (London: Bloomsbury Academic, 2019); Priya Satia, *Time's Monster: History, Conscience and Britain's Empire* (London: Penguin Books, 2020).

⁹³³ Akala, *Natives: Race & Class in the Ruins of Empire* (London: John Murray Press, 2018); Sathnam Sanghera, *Empireland: How Imperialism Shaped Modern Britain* (London: Penguin, 2021).

entirely. As the consequences of Britain's detachment from Europe become more pronounced, we must remember that Europe, too, was part of that process.

While German historians often consider this kind of overseas participation in the frame of *Auslandsdeutsche*, or Germans abroad, this thesis takes the *Auslandsdeutsche* literature to a new level. Not only can this case be used to examine citizenship, identity, and feelings of belonging amongst expatriate German communities across two colonial administrations in one locality, but it also implicates those communities in European imperialism prior to becoming a nation-state or colonial empire. The dense, yet ordinary social networks of informal (familial) and formal (professional) connections that these Germans maintained in continental Europe from the Cape, which they utilized to ship, market, and sell their collections, reveals the nebulous and inconspicuous ways that Germans could be implicated within colonial networks. This, of course, occurred alongside a rather pernicious form of botanical and zoological extraction, exposing how their commercial drive encouraged them toward more overt methods and actions representative of colonial power. This overthrows the long-held historiographical consensus on German imperial desire in the pre-nation-state period, questioning to what degree it was all merely part of a “colonial fantasy”. Historical literature and public thinking long considered the German colonial period to be marginal because of its short thirty-year span. However, postcolonial studies and new appeals to “decolonize” colonial institutions have reignited debates on Germany's colonial past which first emerged in the centenary year of the Herero and Nama genocide in 2004 and which have recently intensified with the construction of the Humboldt-Forum in Berlin.⁹³⁴ This study thus offers a timely intervention into contemporary discussions on the role of colonialism and memory politics in German society.

Moreover, the symbiotic relationship between science and empire made territorial and intellectual control part and parcel of an increasing frontier of knowledge. The activities of natural history collectors are deeply entangled in both the development of Western scientific knowledge and in

⁹³⁴ Elise Pape, ‘Postcolonial Debates in Germany – An Overview’, *African Sociological Review*, 21:2 (2017), 2-14. See also the ‘Catechism Debate’ which took place in the summer of 2021, where scholars of twentieth century Germany, Black Studies, critical theory and the history of empire weighed in with reactions to a piece by genocide historian A. Dirk Moses on memory politics of the Federal Republic of Germany. Accessed 26 September 2021, <https://newfascismsyllabus.com/category/opinions/the-catechism-debate/>

the physical and environmental violence that accompanied imperial expansion, facilitating alleged (white) European intellectual superiority and colonial rule both practically and ideologically. However, their actions also demonstrate how human social relations, emotions, commercial considerations, botanical collections, and even plants themselves facilitated, but more importantly obstructed, processes of Western knowledge making about southern Africa. These conclusions not only incorporate new and innovative methods to the history of science, but they also fundamentally disrupt our own understanding of the “progress” of Western science and its supposed “universality”. By taking an approach to the history of science that privileges practice and social relations, this thesis shifted away from the “big ideas” and “great men” who have conventionally dominated historiographical analyses, showing how sometimes the local context mattered more to collectors in the field than metropolitan connections or international exchange. This study also brings southern Africa into a wider imperial and global frame, one from which it has typically been excluded, to show how local experiences and knowledge produced about its indigenous flora and fauna has had far-reaching effects beyond the tip of the continent.

As the smallest of the six recognized floral kingdoms with a highly distinctive phytogeographic character, more attention should be paid to our historical understanding of the Cape’s biodiversity and ethnobotanical understanding of its flora. In consideration of the April 2021 fire on Table Mountain which gutted the Jagger Reading Room at the University of Cape Town, destroying archival documents of intangible value which would have formed the future of interdisciplinary African and global scholarship, we must reassess the role of these collectors and the plant transfers they instigated. South Africa’s mountain slopes are covered in *fynbos*, a fire-adapted vegetation accounting for half of the surface area and 80% of the plant species in the Cape floral kingdom. *Fynbos* requires regular burning for its persistence; managing fynbos equates to managing fires. Alien trees, like those imported by Baron von Ludwig, not only increase the risk of uncontrollable fires, but they also eliminate the natural biodiversity and reduce water runoff. The importation of European and American pines has proven a devastating problem for *fynbos*. In particular, the stone pine (*Pinus pinea*), an aesthetic landscape element since the Italian Renaissance-garden period, was introduced widely to other Mediterranean climate regions of the world as an ornamental tree, including South Africa. Thus, the fire is a present-day remnant of the actions of these collectors in the nineteenth century, reminding us of the ways in which Dutch and British colonialism is built

into the South African landscape in a way that continues to inflict severe damage. While the Rhodes Must Fall movement reacted to a physical and ideological relic of colonialism when it began at the University of Cape Town in 2015, we must also begin to address the environmental implications of colonialism on South Africa which continues to devastate its natural environment.

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